The Development of the SS-20; a case-study of Soviet Defence Decisionmaking During the Brezhnev Era

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Abstract

The latter part of 1976 witnessed the initial deployment of a new Soviet missile which was codenamed "SS-20" by the United States. The SS-20 was an intermediate-range ballistic missile which could deliver each of its three nuclear warheads to within 400 metres of their designated targets throughout Western Europe from launch sites deep within Soviet territory. In addition the SS-20 was a fully mobile system which reduced significantly the likelihood of its detection and destruction by enemy forces. This, in conjunction with its accuracy and reliability, ensured that the SS-20 added a significant new dimension to Soviet nuclear forces within the European theatre. The Soviet Union's deployment of this new weapon system presaged a new era of uncertainty and tensions in East-West relations. Its initial service history coincided with the beginning of the end of *detente* and within a few years it had come to hold a position of pre-eminence as a focal point for superpower competition. Along with its Western counterparts - Cruise and Pershing II - the SS-20 became a name familiar to the wider public and served as an effective litmus test of superpower relations.

Throughout the Cold War era a host of analytical models were promulgated with the stated aim of rationalising, explaining and, ultimately, predicting the nature of state weaponry procurement policy. Such models displayed a marked diversity of character and were the cause of conjecture and debate among their various proponents. The Action-Reaction model sought to explain weaponry procurement as a response to the activities of a potential adversary. By contrast both the National Leadership and Interest Group models stressed the importance of studying internal political factors in the pursuit of an explanation of such activities. A further alternative - the Military Mission model - contended that weaponry production was predicated upon the operational demands of specific and predetermined defence requirements. A variant which was applied with increasing frequency during the period of the SS-20's deployment was the Military Superiority model. It interpreted the development of the Soviet nuclear arsenal as evidence of her desire to establish political dominance through military power. Given both its undoubted military significance and the political symbolism it came to hold it is surprising that the development and deployment of the SS-20 was never employed as a case study through which to test the veracity and applicability of the hypotheses.

New evidence gleaned during the course of this study from interviews with former high-ranking Soviet officers and officials and from restricted-access sources has necessitated a significant revision of the history of the SS-20's development and deployment. Consequently evolving Soviet theatre strategy and the United States' persistent refusal to include Forward Based Systems - medium-range aircraft and missiles capable of carrying nuclear ordnance - within the constraints of the SALT treaties are both reaffirmed as factors which did incline the Soviet Union towards the pursuit of a new missile system for the European theatre of operations. Significantly however neither factor seems to have possessed the overt influence upon the development of the SS-20 that so many past analyses have accorded them. The accepted course of the SS-20's technical development, its institutional origins and its links with other ballistic missile systems are now subject to radical re-evaluation in the light of the evidence which has emerged. Similarly the course and nature of this weaponry system's development is shown to have been subject to the vagaries and complexities of inter-elite relations to an extent previously unsuspected by all but a handful of analysts. The predominance of such bureaucratic interaction was a recurring theme in Soviet weaponry procurement throughout the period of the SS-20's developmental cycle. Analysts face considerable challenges when seeking to model a policy which was so heavily reliant upon the complexities of personal relationships and bureaucratic rivalries.

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[1] All illustrations within this study have been reproduced from, Rosvooruzhenie, 1996. *Vooruzhenie i voennaya teknikha raketniykh voisk strategicheskogo naznacheniya.* Moscow: Military Parade.

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Abbreviations and Acronyms

ABM	Anti-ballistic missile
ACDA	Arms Control and Disarmament Agency
ALCM	Air-Launched Cruise missile
BMD	Ballistic Missile Defence
C^3	Command, Control and Communicatioin
CIA	Central Intelligence Agency
CEP	Circular Error Probability
CPSU	Communist Party of the Soviet Union
DOD	Department of Defence (US)
FBS	Forward Based Systems
GLCM	Ground-Launched Cruise Missile
ICBM	Inter-Continental Ballistic Missile
INF	Intermediate-Range Nuclear Forces
IRBM	Intermediate-Range Ballistic Missile
KGB	Committee for State Security of the USSR *Komitet Gorsudarstvennoi Bezopasnosti*
LDA	Light Delivery Aircraft
LRCM	Long-Range Cruise Missiles
LRTNF	Long-Range Theatre Nuclear Forces
MIRV	Multiple Independently-targetable Re-entry Vehicle
MRBM	Medium-Range Ballistic Missile
MRV	Multiple Re-entry Vehicle
NATO	North Atlantic Treaty Organisation
NCA	National Command Authorities
NDMG	asymmetric dimetyl hydrazine (nesimmetrichnyi dimetilrgeedrazin)
RV	Re-entry Vehicle
SALT	Strategic Arms Initiative
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SRBM	Short-Range Ballistic Missile
TNF	Theatre Nuclear Forces
TVD	Theatre of Military Operations (*teatr voyennykh deystviy)*
USAF	United States Air Force
VPK	Military-Industrial Commission of the Council of Ministers (*Voyenno-promyshlennaya Komissiya)*
VRBM	Variable-Range Ballistic Missile

Preface

The roots of this thesis lie in a misspent youth in which my early teenage years at the start of the 1980s were devoted to an avid consumption of current affairs publications and documentaries. This had the effect of producing a rather serious young man given to seeking solutions to many of the world's insoluble problems. My principal concern was the avoidance of nuclear war, an issue whose inherent complexities and seemingly inexorable progress were encapsulated in the imbroglio concerning the introduction of a new generation of NATO missiles into Western Europe ostensibly in response to the Soviet Union's deployment of the SS-20. A plethora of documentaries seemed to accompany the deployment of these weapons detailing the physical effects of nuclear war and the absolute devastation which would be wrought upon all structures and inhabitants within a ten-mile radius of every major conurbation. This offered little solace to one whose home lay seven miles from the centre of Glasgow.

The fatalistic acceptance of the vagaries and uncertainties of the world which accompanies the passing of one's youth and is accelerated by the study of history served to diminish my propensity towards angst-ridden introspection. The removal of the principal theatre nuclear weapons through the INF Treaty and the end of the Cold War and subsequent demise of the Soviet Union provided more tangible means of allaying my previous fears. However my interest in the SS-20 system was not subsumed by the passing of time. The SS-20 seemed to have served a vital role as a catalyst in the deterioration in East-West relations which was ultimately associated with the cataclysmic implosion of the Soviet state. I was thus surprised that no more than a handful of dedicated scholars had deemed the motives and causal factors which underpinned the Soviet Union's decision to develop this particular weapon system to merit detailed investigation. Moreover a consensus emanated from this select band that the development of the SS-20 merited further research and provided a potentially invaluable means of investigating wider aspects of Soviet defence decisionmaking at the height of the Brezhnev era. Thus it was that when I decided to set aside the mantle of the teacher and don that of the student once more it was towards this subject that I gravitated.

Professor Stephen White has played a pivotal role during the course of this study. He has availed me of his vast experience in the study of Soviet and Russian political science and helped to delineate precise avenues of investigation from the rather amorphous research proposal that I broached with him fours years ago. All too often have I taken advantage of his "open door" policy to distract him from his own work with questions and observations concerning obscure details of Soviet rocket development and defence politics. His responses to these numerous intrusions have always been characterised by a combination of wisdom and good humour. I express heartfelt thanks for the constant support and forbearance he has afforded me throughout the duration of my studies. I also owe a huge debt of gratitude to Professor John Erickson and Mrs Ljubica Erickson. I have been privileged to have witnessed the "Erickson Partnership" at work and have derived priceless assistance from the wealth of knowledge that they have accumulated throughout their many years of research in the field of Russian history. I am greatly indebted to them for the warmth with which they received me and the good grace with which they suffered my inordinate impositions upon their busy timetables.

A key role in advising and supporting me throughout much of my research was played by a gentleman whom I have yet to meet in person. From his home in Hawai'i Dr Greg Varhall has been a constant companion throughout the last two years of my studies. Like his friends in Edinburgh, the Ericksons, Dr Varhall has gone out of his way to assist me in my studies. He has directed me towards sources of vital information and offered numerous perceptive insights which served to guide me

through the vagaries of Soviet defence politics. Dr Varhall was also kind enough to contact a former colleague of his on my behalf in order to secure declassified US Department of Defence photographs of Soviet missile systems. Mr Dennis McDowell of the US Arms Control and Disarmament Agency (ACDA) furnished me with some prize shots as a result for which I am most deeply grateful. Professor Erickson and Dr Varhall also acted as a conduit through which I was able to secure an interview with Dr Alexander Savel'yev and Lieutenant-General Nikolai Detinov. I am indebted to Dr Savel'yev for both the integral role in facilitating the Moscow interviews and acting as interpreter, while also sharing with me his own views on the nature of Soviet defence decisionmaking. I would like to thank General-Lieutenant Detinov for allowing me the opportunity to interview him. He was privy to the bureaucratic mechanics and personal relations which characterised the inner workings of the Soviet Union's governmental hierarchy during the Brezhnev era and is possessed of enormous authority on the subject. His candour is welcome and refreshing and enhances still further his invaluable contribution to study of this subject. Dr Savel'yev also secured an invaluable interview with General Vladimir Belous during my stay in Moscow. General Belous had enjoyed a long and distinguished career in the Soviet armed forces and provided and adroit account of the development of the Strategic Rocket Forces.

My thanks are extended to my student colleagues, the members of the academic and secretarial staff of the Department of Politics and their colleagues in the Department of Modern History for their unfailing patience in dealing with my numerous requests for advice and assistance during the past four years. My thanks are also directed to Mrs Tania Frisby of the Institute of Russian and East European Studies for her sterling efforts in introducing me to the joys of the Russian language. Mrs Frisby is a teacher of undoubted ability who can make much of those with little inherent ability although I suspect that my dearth of talent served to test her to the full. The staff of the University Library dealt with my numerous enquiries concerning obscure texts with a combination of good grace and diligence to their great credit. Mrs Ann Aldis of the CSRC at Sandhurst was similarly plagued by my enquiries and was responded with a generosity which belied her busy workload. My friend and neighbour Mr John Lomax provided me with invaluable assistance during the final stages of producing this work which was greatly appreciated.

I was fortunate enough to be awarded a scholarship by the University of Glasgow during two of my four years of study. In addition I received a travel bursary from the Carnegie Trust which financed a vital fieldtrip to Moscow in June 1997. To both the University of Glasgow and the Carnegie Trust I offer deep gratitude for the generosity of their support without which the completion of my research would have been placed in jeopardy.

To my family I owe a huge debt for the unqualified material and emotional support they have offered throughout this venture. My parents and my fiancee Avril demonstrated admirable forbearance throughout my dark hours and an ever-present sense of loving support which was the keystone of my efforts. My father always described this as a family adventure and it is to those who are closest to me, my family, that I dedicate this work with my unending love and gratitude.

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1 Introduction

Narrative[2]

The year 1976 witnessed the first deployments of a new Soviet mobile MRBM (medium-range ballistic missile), the RSD-10, which came to be more widely known by its US designation SS-20. The system was developed to redress a perceived NATO advantage in the sphere of theatre nuclear weapons[3], an advantage which was expected to be enhanced by the new generation of such weapons systems then being developed by the United States. The SS-20 boasted impressive performance attributes and was viewed with considerable concern by NATO analysts. In contrast to its predecessors the missile was transported on a mobile launcher and possessed solid-fuel propellants (thus reducing the time required for launch preparations), factors which markedly diminished the system's vulnerability to surprise attack by enemy forces. Flight time from the Western Soviet Union to Great Britain was estimated to have been in the region of 15-20 minutes. Upon arrival, the missile could deposit three 150 kiloton warheads on given targets with a degree of accuracy unsurpassed by any previous Soviet missile systems. Finally, its estimated range was 4,000 kilometres, which meant that it could be targeted on Europe and much of China from well within the boundaries and enhanced security of the Soviet Union itself. As the deployment of a new generation of theatre systems by both sides ensued TNFs came to hold a place of vital symbolic political importance in the ensuing East-West confrontation and the deep divisions within Western Europe itself which stretched beyond even their undoubted military significance. Their deployment was the

[2] Those wishing a detailed account of the tortuous progression towards the elimination of Theatre Nuclear Forces from Europe through the eventual resolution of the INF Treaty should see Haslam, J., 1989. *The Soviet Union and the Politics of Nuclear Weapons in Europe, 1969-87: The Problem of the SS-20.* London: Macmillan; Nitze, P.H. 1989. *From Hiroshima to Glasnost: At the Centre of Decision.* New York: Grove Weidenfeld; Savel'yev, A.G. and Detinov, N.N. 1995. *The Big Five: Arms Control Decisionmaking in the Soviet Union.* Westport, Ct.: Praeger.

[3] Subsequently referred to as TNFs.

principal cause of the manifestation of a degree of East-West tension which had not been in evidence for almost two decades.[4]

While the *détente* which evolved during the first half of the 1970s led to an unprecedented level of superpower co-operation and cordiality, the process was neither inexorable nor without constraint. The renewed confidence with which the Soviet Union sought to expand her influence throughout the Third World during the 1970s was a source of considerable concern to many US commentators and was often accompanied by a belief that the Soviet Union had enjoyed a significant unilateral advantage from the SALT (Strategic Arms Limitation Treaty) agreements and was continuing the process of strategic weaponry acquisition to the detriment of US security. While the SALT I and II limits upon strategic weapons systems and the ABM (Anti-Ballistic Missile) Treaty undoubtedly played a role in circumscribing the continuation of weaponry development in these two vital fields, the deployment of large numbers of strategic systems continued to be permitted within the confines of SALT and the development of other forms of nuclear weapons remained unconstrained. While "strategic" weapons such as ICBMs, SLBMs and, latterly, long-range bombers fell within the SALT parameters, short and medium range nuclear systems such as nuclear-armed aircraft and missiles based within Europe were persistently excluded at the behest of the US and her NATO partners, much to the chagrin of the Soviet Union. It was within this field of weaponry development that the next round of the East-West arms race was set to occur. While many of the motivating factors which underpinned the development of this new generation of weaponry systems replicated those of the Soviet strategic build-up of the 1960s, the effects upon the course of East-West relations and the ensuing fortunes of the Soviet Union were markedly different.

[4] Evidence recently uncovered from the former East German archive indicates that the level of concern engendered within the Soviet leadership was such that some went so far as to consider the possibility of a pre-emptive strike against the West. Hellen, N. The Sunday Times, London 1997. "Kremlin Was Poised to Launch Nuclear Strike", 30 November, p.5.

Within Europe the fears of a superpower condominium which had accompanied the SALT process had not been assuaged and led to a fear of a US disengagement from its European security commitment. The debacle surrounding the proposed development of the neutron bomb and doubts surrounding the efficacy of NATO defences served to heighten existing European concerns over the Carter administration's lack of constancy. It was against this backdrop that in May 1977 NATO heads of government agreed to a 3% p.a. increase in members' defence budgets and twelve months later accepted a US proposal to seek effective means of galvanising NATO forces. Although the ensuing LTDP (Long Term Defence Programme) formed the basis of the subsequent deployment of a new generation of TNFs within the European theatre, its remit included the entire gamut of NATO forces, and its initial investigations were centred upon the strengthening of conventional forces and their employment in a defensive operational role. Indeed at this point in time American desire to embark upon a programme of TNF modernisation was singularly absent, despite knowledge of the deployment of the SS-20 which was initiated in March 1976 and which coincided with the introduction of a number of other new Soviet TNF systems. However "doubts about the military necessity or even desirability of deploying new TNF systems were overwhelmed by a perceived political necessity within the NATO alliance."[5]

Pressure to pursue this field of development emanated from within Europe and was advocated with most vehemence by Germany's Chancellor Schmidt. Schmidt's address to the International Institute for Strategic Studies in October 1977, in which he highlighted the challenge of maintaining a nuclear parity within the European theatre in the wake of the SALT agreements, came in time to be viewed as a seminal point in the process of NATO TNF modernisation. His sentiments coalesced with

[5] Garthoff, R.L. 1994. *Detente and confrontation: American-Soviet relations from Nixon to Reagan.* Washington D.C.: The Brookings Institution, p.945 and n.20.

those emerging from an increasingly vocal and influential constituency of defence experts in both Europe and the US who expressed their deep unease at the nature and extent of the continued Soviet build-up of nuclear weapons. However at the time of Schmidt's London speech the US government still remained to be convinced of the need for TNF modernisation, and of the operational efficacy of cruise missiles themselves. Despite this, European pressure upon the US mounted during the course of 1978 and by the autumn of that year the Carter administration had acceded to the demand. The timing of the acquiescence is in itself instructive, following hard on the heels as it did of the political debacle surrounding the neutron bomb. Although late converts to the notion of TNF modernisation, the Americans soon became its most dedicated adherents and came to view it as an invaluable conduit through which to signal continuing US resolve to the NATO alliance, the American electorate, the Soviet leadership and, particularly, her NATO allies.

The principle of developing a new generation of TNFs and deploying them upon NATO soil was accepted by the British Prime Minister, the French President and the German Chancellor during a meeting with President Carter in Guadeloupe in January 1979. The accompanying communique announced the intended deployment of a new generation of Western TNFs and sought to rationalise their development as a response to "Soviet decisions over the last few years to implement programmes modernising and expanding their long-range nuclear capability substantially. In particular, they have deployed the SS-20 missile".[6]

Schmidt pushed for the adoption of a "twin-track" policy with a view to heading off anticipated domestic opposition to the NATO deployments. Western efforts to pursue this line were desultory. The working group responsible for seeking Soviet concessions to forestall the NATO deployment was established several months after the key decisions on deployment had been taken and failed to make up the lost ground. A fleeting visit to Moscow by Schmidt was the sole instance of intervention

[6] Garthoff, R.L. 1983. "The Soviet SS-20 Decision", *Survival*, 15(1):118, n.1.

on the part of a Western political leader to seek an accommodation prior to the NATO deployment.[7] The notion that unilateral constraints should now be imposed upon the Soviet Union's right to modernise a class of weapons which had been persistently proscribed from SALT despite numerous Soviet attempts to secure their inclusion was received with unrestrained indignation in Moscow.[8] The two year prelude to NATO deployment was similarly devoid of detailed consideration of the implications for East-West relations or its effect upon the balance of forces within the European theatre.

Significant popular opposition to the proposed NATO deployment grew within Europe as the TNF issue became a *cause celebre* among proponents of nuclear disarmament and the resolve of several member governments wavered. However neither this nor the eventual emergence of a Soviet offer of negotiations stymied the NATO deployment, which had by this time developed a powerful bureaucratic and political momentum, particularly within the US. Against a backdrop of the Soviet invasion of Afghanistan in December 1979 and the unravelling of *détente*, the Carter administration became wedded to the principle of NATO TNF modernisation. The incoming Reagan administration retained the commitment to proceed towards deployment and allied it to a new stridency in its relations with the Soviet Union. During the initial exchanges at the INF (Intermediate-range Nuclear Forces) negotiations both sides adhered to mutually unacceptable positions. The Soviet

[7] In June 1979 Schmidt was returning from a visit to Japan and met briefly with Prime Minister Kosygin, Foreign Minister Gromyko and First Deputy Prime Minister Tikhonov at a Moscow airport. Although Schmidt, *Men and Powers*, pp.73-4, was rather coy in his description of his Moscow offer, authoritative Russian sources claim that he identified the rapid rate of SS-20 deployment as the West's principal concern. They claim that he assured his hosts that if the number of new warheads deployed on SS-20s tallied with the number removed via the decommissioning of obsolete SS-4s and SS-5s, "the West would prove understanding." Detinov interview and Akhromeyev, S.F. and Kornienko, G.M. 1992. *Glazami marshala i diplomata.* Moscow: Mezhdunarodnye otnosheniya, p.43. (This would have entailed a smaller SS-20 force in numerical terms as it carried three warheads, while the SS-4 and SS-5 were each armed with a single warhead.)

[8] At the ensuing meeting of the Politburo Kosygin's and Kornienko's espousal of the possible merits of pursuing this offer were subsumed by Defence Minister Ustinov's heated admonition that such a path represented an intolerable intrusion into the Soviet Union's weaponry procurement process. Foreign Minister Gromyko made no attempt to counter Ustinov's position. Detinov interview and Akhromeyev and Kornienko, *Glazami marshala i diplomata*, p.44.

Union's position was predicated upon the inclusion of all nuclear-capable theatre systems within the negotiations' remit. This harked back to their persistent attempts to include American, British and French TNFs within the SALT process. Such an approach was rejected by the US which proffered instead the "Zero Option". Essentially this offered the Soviet Union the opportunity to avert the planned NATO deployment of Cruise and Pershing II as the *quid pro quo* for the removal of SS-4, SS-5 and SS-20 systems. The negotiating process made little progress and the planned NATO TNF deployment developed an inexorable momentum.

The ultimate NATO deployment consisted of 108 Pershing II ballistic missiles and 464 Tomahawk GLCMs (Ground-Launched Cruise Missiles). The level of Pershing II deployment was predicated upon that of its nominal predecessor the Pershing IA, with Cruise missiles being used to make up the balance towards the upper level limit.[9] The first deployments were completed by December 1983 and elicited a swift and dramatic response from the Soviet Union, which suspended negotiations in protest. This response had been unanimously agreed upon by the Soviet leadership several months prior in advance as it was thought that continued participation in the INF negotiations in the wake of the NATO deployment would signal a *de facto* acceptance of its legitimacy. However neither a fall-back position nor a means of resurrecting the negotiations had been formulated by the Soviet side and the process fell into abeyance against a backdrop of stagnant turmoil within the Soviet leadership due to the demise of Brezhnev, Andropov and Chernenko in rapid succession and increasing rancour in US-Soviet relations.

The Soviet Union was drawn back towards the negotiating table by the prospect that the NATO TNF deployment represented merely the first step in a wider programme of US strategic force-building envisioned by the Reagan administration. The Strategic

[9] Cruise missile units comprised of sixteen missiles - four launchers each armed with four missiles. Hence their final deployment total was a multiple of sixteen.

Defence Initiative (SDI) was unveiled in March 1983 and was accompanied by a programme to upgrade the counterforce capabilities of US strategic forces. Given the parlous state of the Soviet economy the resumption of the process of negotiation came to be regarded as the sole means of avoiding the onset of a new, unfettered arms race, whose emphasis upon new technologies would lie well beyond the economic means of the Soviet Union in the foreseeable future. Although Gorbachev was the General Secretary who played the principal role in the next stage of the INF process, the initial invitation to resume the negotiations was extended during Chernenko's tenure in June 1984. By the time of Chernenko's death in March 1985 Gorbachev had already assumed effective control of the formulation of the Soviet Union's arms control position. The adoption of a new Soviet approach was achieved in the face of significant internal opposition but was partially facilitated by the political demise of Marshal Ogarkov in September 1984 and the denial of Politburo membership to his successor and by the death of Defence Minister Ustinov in December. Another stalwart of the old guard, Foreign Minister Gromyko, was replaced by Eduard Shevardnadze in July 1985 as the new General Secretary sought to invigorate the government structure.

One vital strand of continuity which bound Gorbachev's revised approach to the negotiating process to that espoused by Chernenko before his death was the attempt to link the resolution of the INF issue with a prohibition upon the development of SDI. This remained the central tenet of the Soviet approach at the Reykjavik Summit in October 1985, where Gorbachev offered radical cuts in strategic systems over a ten year period and the liquidation of all US and Soviet TNFs. Significantly this would have entailed the dual concession on the part of the Soviet Union of exempting both US FBS and British and French nuclear systems from the agreement. The *quid pro quo* desired by the Soviet Union was a ban on the SDI programme or a long-term moratorium which was intended to have a similar effect. SDI was however possessed of powerful advocates in President Reagan's adviser Richard Perle and Secretary of Defence Caspar Weinberger, and was accorded near-Messianic status by the President

himself; the Soviet proposals were accordingly rejected out of hand. Both sides continued to no avail to seek a means of compromise at the formal talks process in Geneva. By the end of February 1986 Gorbachev had recognised the disengagement of the question of INF and SDI controls as a prerequisite to substantive progress and secured Politburo backing to authorise the unilateral pursuit of an INF agreement. The ensuing "Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles" ensued with a rapidity and simplicity which compared favourably with previous SALT negotiations and the stultifying stalemate of the preceding years. It was signed by President Reagan and General Secretary Gorbachev on 8 December 1986 during a state visit to Washington and signalled the demise of all SS-20s and other US and Soviet intermediate and medium-range missiles within three years of the Treaty's ratification. Future agreements secured the limitations upon SDI and strategic forces that the Soviet Union had sought with such fervour to complement the resolution of the INF issue. Ironically however the removal of these perceived threats to the Soviet Union's strategic security coincided with the demise of the Soviet state itself.

The SS-20 played a vital role in what turned out to be the final act of the Cold War confrontation. In addition to its significant military potential the SS-20 played a vital role as a catalyst in this imbroglio which held fatal consequences for the Soviet state. The deployment of the SS-20 and Pershing II and Cruise was at once both a symptom and cause of the dramatic deterioration in East-West relations which continued unchecked in the coming years and came to hold a position of symbolic importance unmatched by any other Soviet weapon system in the public perception of the East-West military confrontation. This provides an apparent dichotomy whereby the weaponry procurement process which had done so much to secure Western recognition of the Soviet Union's superpower status during the 1960s served, by contrast, to undermine that very status as the 1970s and 1980s progressed.

Rationale, methodology and sources

The SS-20's impact upon the Soviet Union's geopolitical relations was such that it possessed a unique degree of political importance among Soviet weaponry developments. As such it has often been viewed as a definitive weapon system of the period. Its decade-long development cycle corresponded precisely with the period that has been characterised as the "golden era" of defence resource allocation and civil-military relations[10] and also witnessed the acknowledged rise of Brezhnev himself to a position of pre-eminence within the political leadership. Moreover the strategic rationale which seemed to underpin the missile's development and its apparently uneventful progression through the decisionmaking chain led one of the most authoritative commentators in this field to characterise its procurement as being entirely "natural".[11] The Soviet Union's decision to develop and deploy the SS-20 missile thus affords researchers an unsurpassed opportunity to investigate the characteristics of the bureaucratic and inter-personal dynamics which formed the basis of Soviet defence decisionmaking at the height of Brezhnev's tenure.

While acknowledging the inherent difficulties associated with the study of such a sensitive issue Raymond Garthoff bemoaned the dearth of analytical energy directed towards the pursuit of such a goal.[12] The passing years have witnessed a certain diminution of the constraints on security but this has not been matched by a discernible renaissance in research activity in the field. Thus an area of prime importance to the understanding of the Soviet Union's defence decisionmaking process at the height of Brezhnev's tenure remains neglected to this day.

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[10] Azrael, J.R. 1987. *The Soviet Civilian Leadership and the Military High Command, 1976- 1986.* Santa Monica Ca.: RAND Corporation, pp.5-12 and Cooper, J. "The Defence Industry and Civil-Military Relations", in Colton, T.J. and Gustafson T. (eds.) 1990. *Soldiers and the Soviet State: Civil-Military Relations from Brezhnev to Gorbachev.* Princeton N.J.: Princeton University Press, pp.166-170.

[11] Garthoff, "The Soviet SS-20 Decision", p.112.

[12] Ibid., p.110 and n.2.

The SS-20's all-pervading impact upon East-West relations during this period was reflected by its frequent citation in sources of varied hue. It is surprising therefore that so few studies sought to move beyond the analytical confines of such a tangential approach and subject the underlying motivating factors to closer scrutiny. Few can have written with more authority on the subject of the SS-20 than Raymond Garthoff. As a participant in the pre-SALT I discussions between 1967-69 and a senior Department of State adviser and executive officer of the SALT I delegation between 1969-72 he gained an invaluable insight into the mechanics and perceptions which underpinned Soviet defence decisionmaking. While much of his work concentrated upon the SALT accords he considered at some length the later deployment of the SS-20 with particular reference to their respective political and strategic links.[13] However Jonathan Haslam's 1989 study of the political and strategic factors which lay behind its development and deployment stands virtually alone in the detail and breadth of the exposition it provided.[14] Haslam cogently argued that increasing deficiencies in Soviet theatre forces ensured that modernisation through the deployment of a weapon such as the SS-20 was perceived as a strategic imperative. However he criticised its deployment in political terms as an action which would inevitably provoke a Western response, thus placing Soviet theatre forces in a still more precarious position. *The Soviet Union and the Politics of Nuclear Weapons in Europe* is to be commended as a sober and considered study of a contentious issue which provides a realistic assessment of Soviet capabilities and intentions in both the military and diplomatic spheres. This monograph served as a natural starting point for my own research and provided an avenue through which to pursue the investigation of the intricate details of the process of Soviet defence decisionmaking as it applied to the SS-20.

This thesis seeks to provide a critical re-evaluation of the nature and extent of the roles played by the four pre-eminent factors whose interaction has customarily been

[13] Ibid.; Garthoff, *Detente and Confrontation*, pp.958-974.
[14] Haslam, *The Soviet Union and the Politics of Nuclear Weapons in Europe.*

posited by most previous accounts as a causal explanation of the SS-20's development. The study is based upon a detailed study of the now-available Russian primary sources and a number of ground-breaking interviews with former members of the Soviet military-political elite. While the veil of secrecy has yet to be completely removed, the end of the Cold War and demise of the Soviet state have facilitated a remarkable process of *glasnost* in the field of security studies as former officials of the Soviet state now enjoy the opportunity to discuss their experiences with Western researchers with unprecedented freedom. Access is neither readily available to all Westerners nor is it without constraint. However if secured it can provide the researcher with an invaluable source of knowledge and perception with which to formulate a study of the Soviet defence decisionmaking process. Archival evidence pertaining to such matters is unlikely ever to emerge. Its highly confidential nature would of itself ensure that it would probably remain classified for many years to come. Such an issue is however most probably academic as many of the key elements of defence decisionmaking were predicated largely upon amorphous and intangible factors of interpersonal relations and institutional interaction which remained devoid of documentary record. Against this backdrop the recollections of key figures within the former Soviet ruling elite provide a vital concomitant to the few new pieces of documentary evidence as the means of pursuing the most comprehensive analyses of the causal factors involved in the Soviet leadership's decision to develop the SS-20 missile system. Interviews that I conducted during a fieldtrip to Moscow in June 1997 and those that emerged as part of a University of Edinburgh Department of Defence Studies project enabled me to garner significant new information and insights into Soviet defence decisionmaking of this period from the entire gamut of the institutional military-political elite.

During my fieldtrip to Moscow I was fortunate enough to interview three individuals who while they held positions of considerable authority within the upper echelons of the former Soviet Union's defence community, emanated from diverse institutional

backgrounds. General-Lieutenant Nikolai N. Detinov was a high-ranking official in the Central Committee's Defence Secretariat. He played an critical role in the formulation of the Soviet position at arms control negotiations from their inception in the late 1960s until the early in 1990s. He was involved in the SALT talks between 1969-72 and participated directly at the Vladivostok Summit between First Secretary Brezhnev and President Ford in November 1974 and the Helsinki Conference of 1976. He subsequently participated in the next generation of arms control negotiations, the Soviet-American Nuclear and Space Talks (START, INF and DST) between 1985-91. Lieutenant-General Detinov is presently a senior analyst in a scientific centre of the Russian Academy of Sciences and a participant in the Russian-American joint Global Protection Programme. Dr Vladimir S. Belous (Major-General retd) is currently a member of the Committee of Soviet Scientists for Global Security and heads one of their sections. Born in 1927, Dr Belous joined a junior artillery college at the outbreak of the war with Germany before later graduating to its senior counterpart. He served in the Soviet artillery in the Sakhalin region during the war. In the post-war era he attended the SRF academy first as a student before returning as a lecturer. He retired in 1990.

Dr Alexander G. Savel'yev is the Vice President of the independent Institute for National Security and Strategic Studies in Moscow. He participated in the Soviet-American Nuclear and Space Talks in Geneva as an adviser to the Soviet delegation and as the representative of the Academy of Sciences of the USSR.

The record of interviews with a similarly catholic grouping of former officials is contained within the University of Edinburgh's Defence Studies Archives.[15] General-Colonel Igor V. Illarionov was an aide to Ustinov within the Ministry of the Defence Industries, Central Committee Secretariat and the Council of Ministers, (1965-76). Illarionov served as an assistant to Ustinov for special assignments in the Ministry of Defence specialising in air defence, rocket forces and front aviation between 1976-84.

[15] University of Edinburgh, Department of Defence Studies Archive, (limited access only).

Following Ustinov's death in 1984, he worked with Marshal Sokolov in the Ministry of Defence. General-Colonel Makhmut A. Gareev served as the Chief of the Tactical Training Directorate of the General Staff between 1974-7, Deputy Chief of the Main Operations Directorate of the General Staff for Training and Readiness from 1977-84 and Deputy Chief of the General Staff for Scientific Work and Operational Readiness from 1984-9. Iu. A. Mozzhorin was General Director of TsNIIMash, the main research and design institute of the Ministry of General Machinebuilding (MOM) responsible for missile production for thirty years. General-Colonel (Ret.) Andriian A. Danilevich was a General Staff officer from 1964-90. He served as a Senior Special Assistant (*pomoshchnik*) to the Chief of the Main Operations Directorate (GOU) in the 1970s and was Assistant for Doctrine and Strategy to Chiefs of the General Staff Marshal Akhromeev and General Moiseev from 1984 and 1990. Danilevich was also the Director of the General Staff authors' collective that composed and refined between 1977 and 1986 the top-secret, three-volume *Strategy of Deep Operations* (Global and Theatre) that was the basic reference document for Soviet strategic and operational planning for at least the last decade of the Soviet state. Dr Vitaly N. Tsygichko - Senior Analyst in the All-Union Scientific-Technical Institute for Systems Studies (VNIISI), Academy of Sciences, USSR, and Director of the Centre for National Security and Strategic Stability Studies.

While much of my research was based upon Russian sources I also benefited from the knowledge and perception of the subject possessed by two gentlemen, who though bonded by a close common friendship, hail from rather different institutional backgrounds. Professor John Erickson's reputation served as a vital catalyst in the pursuit of high-level contacts; his depth of knowledge of the events surrounding the development of the SS-20 is remarkable and he devoted many hours of personal discussion on the subjects surrounding the development of the SS-20. Another gentleman of the highest standing in the field of Soviet strategic weaponry procurement is Dr Greg Varhall (Lieutenant-Colonel USAF, Ret.). Dr Varhall is an

arms control expert who served for three years as an adviser to the Office of the Secretary of Defence on the US DST delegation at the Nuclear and Space Talks in Geneva. He also backstopped the DST Talks and the ABM Treaty in Washington and also served as an American INF Treaty Inspector who oversaw the elimination of INF weapons including the SS-20 in the Soviet Union.

Soviet Weaponry Performance Estimates

During the Cold War unstinting efforts were made on the part of the Western intelligence agencies via a plethora of clandestine methods to derive accurate assessments of the performance characteristics of Soviet weaponry in general and nuclear missile systems in particular. Interest in this field extended beyond the intelligence realm and was apparent throughout academic and technical studies of Soviet weapons systems. Many studies of the Strategic Rocket Forces' arsenal relied upon the official US estimates obtained through the US Freedom of Information Act or disclosed during open Congressional sessions when discussing systems' technical and institutional backgrounds and estimated performance characteristics. Others sought to avoid the circuitous practice of collating and evaluating diverse evidence from disparate sources through reliance upon specialised collections which were themselves based principally upon such Western governmental and institutional analyses. One of the most authoritative and oft-quoted texts on the subject of Soviet strategic and TNF forces is Berman and Baker's *Soviet Strategic Forces: Requirements and Responses.*[16] Berman and Baker cited declassified reports by the US Secretary of Defence to Congress, the annual publication of the *United States Military Posture* by the Joint Chiefs of Staff and hearings before the Senate's Armed Forces Committee among their sources. However at least one author has noted the "general belief that they had access to classified information for the preparation of their study. It is certainly indisputable that the sources they cite themselves do not contain much of the information they provide."[17] Barton Wright's contribution to the *World Weapon Database*[18] enjoys a reputation of authority on a par with Berman and Baker. Assisted by John Murphy, Wright sought to provide a broad overview of

[16] Berman, R.P. and Baker J.C. 1982. *Soviet Strategic Forces: Requirements and Responses.* Washington D.C.: The Brookings Institution.
[17] Bluth, C. 1992. *Soviet Strategic Arms Policy Before SALT.* Cambridge: Cambridge University Press, p.11.
[18] Wright, B., (assisted by J. Murphy; series editor, R. Forsberg) 1986. *World Weapon Database, Volume I, Soviet Missiles.* Lexington Mass.: D.C. Heath and Company.

Western analyses of Soviet missile development, production and deployment. To this end, thirty-five different sources were cited in his work. Chief among them were the *Secretary of Defence's Reports to Congress* (both unclassified versions and those later obtained via a Freedom of Information Act request), the *United States Military Posture*. The International Institute for Strategic Studies' *Military Balance* series, various publications by Jane's and the works of leading analysts such as Meyer, Nitze and Berman and Baker were also consulted. The *Nuclear Weapons Databook, Volume IV: Soviet Nuclear Weapons* also made extensive use of a host of classified and partially declassified documents obtained under the US Freedom of Information Act.[19] Finally, an assortment of *Jane's* publications dealt with the subject of Soviet military hardware. Principal among these was *Jane's Soviet Intelligence Review* prior to its incorporation into *Jane's Intelligence Review* in 1990.

Despite the end of the Cold War era few new details of the technical specifications and operational performance of ballistic missile systems have emerged. Many key issues remain classified while interest in this field has waned somewhat with the passing of time and the demise of the Soviet Union. A number of new Russian sources have emerged which though apparently unnoticed in the West portray a markedly different account of the institutional and technical background of the SS-20. *Raketnii Voiska Strategicheskovo Naznachenia: Voenno-Istoricheskii Trud*[20] was published in 1992 and boasted an impressive editorial committee. Its account of the solid-fuel systems which preceded the SS-20 served to challenge the very fundamentals of Western explanations of the systems' technical antecedents. These claims were later supported by Lieutenant-General Detinov and General Vladimir Belous during the course of my interviews with them in June 1997. Documentary

[19] Cochrane, T.B. *et al.* 1989. *Nuclear Weapons Databook: Volume IV: Soviet Nuclear Weapons.* New York: Harper & Row.

[20] Kochemasov, S.G., Sizov, V.M. and Nosov, V.T. (eds.) 1992. *Raketnye voiska strategicheskogo naznacheniya: voyenno-istoricheskii trud.* Moscow: Strategic Rocket Forces. I am deeply indebted to Professor John Erickson for sharing the details of this rather rarefied source with me. It was from this source that I gleaned the first indication that the traditional portrayal of the SS-20's "lineage" was in need of considerable revision.

substantiation was obtained via copies of two further Russian sources acquired while in Moscow. *Mezhkontinetalnii Ballitichiskii Raketii SSSR (RF) i SShA: Istorii Sozdania i Sokrashenia*[21] belonged to General Belous himself. This Strategic Rocket Forces publication is not intended for public sale and is not expected to enter mainstream circulation. I also obtained a copy of *Strategicheskoe Raketno Yaderni Orujee*,[22] a contemporary account which utilised a number of open, yet authoritative, Russian sources. Although I possess neither the desire nor the technical ability to master the scientific vagaries of missile technology I have sought to delve into Soviet writings on the subject. The principal source for this adventure was *Stroitelnaya Mekanika Raket.*[23]

The recent publication of *Vooruzhenie i voennaya teknikha raketniykh voisk strategicheskogo naznacheniya*[24] serves only to reinforce the dramatic turn-round in Russia's international relations of recent times. After many years of struggling to obtain photographic records of Soviet weaponry in general, and missile systems in particular, lavish reproductions are now accessible to those in possession of sufficient hard currency. I am obliged to Professor John Erickson for being so kind as to lend me this precious acquisition to his personal records.

[21] Volkova, Ye.B. *et al.* 1996. *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA: sozdanie i sokrashenie*. Moscow: Strategic Rocket Forces.
[22] Kolesnikov, S.G. 1996. *Strategicheskoe raketno-yadernoe uruzhie*. Moscow: Arsenal Press.
[23] Balabuch, L.I., Alfutov, N.A. and Usukin, V.I. (eds.) 1984. *Stroitel'naya Mekhanika Raket*. Moscow: Visshaya Shkola. Again I am indebted to Professor John Erickson as the source of this text.
[24] Rosvooruzhenie, 1996. *Vooruzhenie i voennaya teknikha raketniykh voisk strategicheskogo naznacheniya*. Moscow: Military Parade.

Soviet Nuclear Strategy

Few areas of Soviet studies were subjected to such relentless academic investigation or elicited such contentious debate during the Cold War era as Soviet nuclear strategy.[25] My consideration was conducted largely within the well-established confines of research and similarly sought to use pertinent articles within the restricted journal of the Soviet officer corps *Voennaya mysl'*, texts in the army newspaper *Krasnaya Zvezda* and set-piece public pronouncements by both the political and military leadership to discern the evolving nature of Soviet theatre nuclear strategy. To the voluminous writings by a host of eminent Western scholars I have sought to add my own interpretation of the salient developments of strategic principles which emanated from the Soviet military and political leaderships via authoritative Soviet publications. In addition the evidence obtained from these rarefied but accessible sources has since been enriched with accounts of Soviet strategic analysis derived from defectors[26] and latterly from the archives of former Soviet allies.[27] Moreover the

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[25] For a comprehensive cross-section of Western analyses, see Baylis, J. and Segal, G.(eds.) 1981. *Soviet Strategy*. London: Croon Helm; Dinerstein, H.S. 1962. *War and the Soviet Union: Nuclear Weapons and the Revolution in Soviet Military and Political Thinking*. London: Praeger; Douglass, J.D. jnr. and Hoeber, A.M. 1981. *Conventional War and Escalation: The Soviet View*. New York: Crane, Russak and Co; Garthoff, R.L. 1990. *Deterrence and the Revolution in Soviet Military Doctrine*. Washington D.C.: The Brookings Institution; Glantz, D.M. 1992. *The Military Strategy of the Soviet Union: A History*. London: Frank Cass; Goldberg, A.C. 1987. *New Developments in Soviet Military Strategy*. Washington D.C.: Centre for Strategic & International Studies; Hines, J.G. and Petersen, P.A. 1983. "The Conventional Offensive in Soviet Theatre Strategy", *Orbis*, 27:695-739 and "The Soviet Conventional Offensive in Europe", 1984. *Military Review*, 4:3-29; Kintner, W.R. and Scott, H.F. 1968. *The Nuclear Revolution in Soviet Military Affairs*. Norman, Ok.: University of Oklahoma Publications; Lee, W.T. and Staar, R.F. 1986. *Soviet Military Policy Since World War II*. Stanford: Hoover Institution Press; Leebaert, D. and Dickinson. T. (eds.) 1992. *Soviet Strategy and New Military Thinking*. Cambridge: Cambridge University Press; MccGwire, M. 1987. *Military Objectives in Soviet Foreign Policy*. Washington D.C.: The Brookings Institution; Monks, A.L. 1984. *Soviet Military Doctrine: 1960 to the Present*. New York: Irvington Publishers Inc.; Scott, F.S. and Scott, W.F. 1979. *The Armed Forces of the USSR*. Boulder, Co.: Westview Press; Zisk, K.M. 1993. *Engaging The Enemy: Organisation Theory and Soviet Military Innovation, 1955-1991*. Princeton, N.J.: Princeton University Press.

[26] Wardak, G.D. 1989. *The Voroshilov Lectures: Materials from the Soviet General Staff Academy*. Washington D.C.: National Defence University Press. I was informed by a highly placed US source that the emergence of Wardak's transcript was the cause of heated internal debate and was viewed by some as a calculated Soviet attempt to dupe US intelligence.

[27] Federal Republic of Germany Ministry of Defence report, "Warsaw Pact Military Planning in Central Europe: A Study", translated by Kramer, M. reproduced in *Bulletin of the Cold War International History Project*, Issue 2, Autumn 1992, Washington D.C.: Woodrow Wilson Centre for

issue of Soviet nuclear strategy emerged on several occasions within the context of interviews with former members of the Soviet military-politico elite. Their accounts add vibrant colour and provide a deeper perspective to existing interpretations of the internal debate which surrounded the evolution of Soviet theatre nuclear strategy and ran parallel to the development of the SS-20 and serve to raise intriguing questions as to how the Soviet leadership might have reacted to the outbreak of a largescale conflict within the European theatre with its attendant concomitant of escalation to an unrestricted nuclear exchange.

Scholars; Heuser, B. 1993 "Warsaw Pact Military Doctrines in the 1970s and 1980s: Findings in the East German Archives", *Comparative Strategy*, 12(4):437-57.

The SALT Process

The Strategic Arms Limitation Talks dominated US-Soviet relations for a decade and more. The SALT process served as an indicator of the state of bilateral relations at any given time, while it itself played a significant role in determining the vitality of the wider détente process. It has long been regarded as having played an instrumental and multifaceted role in the Soviet Union's decision to develop the SS-20. The pattern of Soviet arms control policymaking described in *The Big Five* was claimed to have closely resembled that of defence decisionmaking as a whole.[28] An appraisal of the Soviet Union's policymaking practices in the realm of arms control might therefore serve to provide an invaluable insight into the procedural mechanics and political culture which existed in the parallel field of defence procurement policy. It was traditionally believed that the chronology of SALT ran parallel to the developmental cycle of the SS-20 programme. As the decision to pursue its development was taken in the immediate aftermath of the Vladivostok Summit my consideration of SALT uses this as its chronological end point. Limitations of space militate against consideration of the SALT process in its entirety. Moreover, as this study seeks to investigate the motivating factors which lay behind the decision to develop the SS-20 system, consideration of the period beyond the decision itself is a secondary concern.

The detail afforded to the consideration of the Vladivostok Summit reflects the key role that it has been traditionally accorded in Western explanations of the development of the SS-20. The initiation of the SS-20's flight testing programme coincided with the Vladivostok Summit while the decision to proceed towards full production was taken in the immediate aftermath of the publication of the Vladivostok Accords. The strategic rationale behind its deployment was strengthened still further by the terms of the Vladivostok Accords, as they once again excluded FBS from the bilateral strategic limitations while placing new numerical constraints upon the SS-11 ICBM which had

[28] Savel'yev and Detinov, *The Big Five*, p.186.

recently been diverted to a TNF role. The agreement to preclude the development of mobile ICBM occurred later and the ensuing cancellation of the SS-16 undoubtedly facilitated the rapid pace of SS-20 production. However, the decision to develop the SS-20 predated this development and can be traced to the immediate post-Summit period. The Vladivostok Summit and its Accords have thus been traditionally viewed as a vital crossroads in the story of the SS-20 programme.

Detailed and authoritative accounts of the course of the negotiations and the internal US political situation which served as a backdrop to them are provided by the memoirs of the respective leaders of the US delegations to SALT I and II, Gerard Smith[29] and U. Alexis Johnson.[30] An often-contrasting account is provided by the memoirs of Nixon[31] and Kissinger[32] themselves. John Newhouse's *Cold Dawn* enjoyed high level patronage most probably from Kissinger himself.[33] The most comprehensive account of the entire SALT process and the whole gamut of East-West relations is offered by Raymond Garthoff's voluminous *Detente and Confrontation: American-Soviet Relations from Nixon to Reagan.*[34] A plethora of subsidiary accounts dealing with both the SALT process as a whole and specific issues pertaining to it also appeared during the duration of the negotiating process and beyond. Western accounts of the Soviet approach to SALT written at the time of the negotiations and in the years after they had stalled could do little more than speculate

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[29] Smith, G.C. 1985. *Doubletalk: The Inside Story of SALT I.* London: University Press of America.
[30] Johnson, U.A. and McAllister J.O. 1984. *The Right Hand of Power.* Englewood Cliffs, N.J.: Prentice-Hall.
[31] Nixon, R.M. 1978. *The Memoirs of Richard Nixon.* London: Sidgwick and Jackson.
[32] Kissinger, H.A. 1979. *The White House Years.* London: Weidenfield and Nicolson and Michael Joseph Ltd; Kissinger, H.A. 1982. *Years of Upheaval.* London: Weidenfield and Nicolson and Michael Joseph.
[33] As the leader of the American SALT II delegation U. Alexis Johnson was later to observe "his information was extremely detailed, and he obviously had access to the most sensitive records. He revealed things that even the delegation members did not know. The only possible source for the leaks was Henry Kissinger. Newhouse told Paul Nitze that he had received his materials from the White House and that he had even listened to tape recordings of Verification Panel meetings which I, for one, had not been aware were being taped." Johnson subsequently sent Kissinger a sardonic telegram bewailing the leak of such detailed information and its potential effect upon the SALT negotiations themselves. Johnson, *The Right Hand of Power*, pp.591-2.
[34] Garthoff, R.L. 1990. *Deterrence and the Revolution in Soviet Military Doctrine.* Washington D.C.: The Brookings Institution.

as to the true nature of the internal political dynamics and decisionmaking process which had together forged the Soviet Union's approach to arms control.[35]

There remains to this day a paucity of detailed Russian analyses of the Soviet approach to SALT. Moreover those non-military institutions which offered strategic and geopolitical analyses were themselves merely affirming lines of argument that had already been adopted by the Communist Party itself.[36] Allied to this is the dearth of written records detailing the formation of the Soviet Union's arms control negotiating position which served to reinforce the secrecy which had traditionally surrounded the rarefied deliberations of the governmental elite on matters of national security. This was principally due to the prohibition of note-taking during meetings of the Big Five and the Five, the central crucibles for the formulation of Soviet arms control policy. "Only final decisions were recorded to be put later in memorandums to the Central Committee (*zapiska v TsK*) or cables or delegations. All discussions were conducted informally with note-taking prohibited. Twice the representative of the KGB was noticed to discreetly take notes and each time, after a scandal, he was made to destroy the notes".[37]

Researchers are thus forced to place heavy reliance upon the personal accounts offered by key participants as the most effective means of developing an accurate appraisal of Soviet practices in this realm. However the emergence of such sources does not in itself guarantee elucidation on the major questions surrounding the Soviet approach to SALT.[38] The recent publication of *The Big Five: Arms Control*

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[35] Shulman, M.D. "SALT and the Soviet Union," in Willrich, M and Rhinelander, J.B. (eds.) 1974. *SALT: The Moscow Agreements and Beyond.* London: Collier Macmillan Publishers, pp.108-9; Blacker, C.D. "The Soviets and Arms Control; The SALT II Negotiations, November 1972-March 1976", in Mandelbaum, M. (ed.), 1990. *The Other Side of the Table: The Soviet Approach to Arms Control.* London: Council on Foreign Relations Press, p.69.

[36] Savel'yev and Detinov, *The Big Five*, p.18. Arbatov and Inozemtsev were apparently the two exceptions to this rule and did play an active role in advising Brezhnev on the course of the negotiations.

[37] Sokov, N. 1996. "Crises and Breakthroughs: Notes Towards the History of Soviet Decisionmaking on START Talks" in *The Journal of Slavic Military Studies*, 9(2):262.

[38] Witness for example the memoirs of Georgii Kornienko, 1995. *Kholodnaya voyina: svidetel'stvo ee uchastnika.* Moscow: International Relations. Their dearth of additional detailed material and personal insights were rightly criticised in review. See Stone, D.R. "'A Voice Crying Out in the

Decisionmaking in the Soviet Union[39] has at last provided an authoritative account of the formulation of Soviet SALT policy positions and the wider strategic and political issues which underpinned them. The principal contributor to the text - Lieutenant General Nikolai Detinov - was himself a participant in policy formulation within the highest echelons of the Soviet state.[40] In his foreword Paul Nitze accorded the text the distinction of having succeeded in providing a uniquely authoritative and objective account of the inner workings of the highest echelons of Soviet government.[41] That it elicited such an accolade is striking, given both the Ambassador's authority on the subject and his well-earned reputation for the candour of his expression.

A significant portion of the wide-ranging discussion on the Soviet development of the SS-20 which took place during my interview with Lieutenant-General Detinov at his Moscow residence in June 1997 was centred upon the SALT process and its implications for this particular weaponry programme. Lieutenant-General Detinov was able to shed new light upon the precise effect of the course of the SALT process upon the development of the SS-20.

Wilderness': The Professional's Revenge", in *Cold War International History Project Bulletin*, issues 6-7, winter 1995-6, pp.272-4.

[39] For an assessment of *The Big Five's* contribution to the study of the formulation of Soviet disarmament policy, see Sokov, "Crises and Breakthroughs", p.261.

[40] Nitze emphasised Detinov's integral role in the workings of the Five. His principal criticism of *The Big Five* was that Detinov was "far too modestly absent from its pages". Savel'yev and Detinov, *The Big Five*, p.xiii.

[41] Ibid., pp.xi-xiv.

The Defence Economy

The form and extent of the Soviet defence economy and its attendant enterprises lie beyond the remit of this thesis and have been the subject of numerous lengthy discourses whose attention to detail could not be matched at this juncture. Providing a definitive account of the true mechanics of this process proved impossible throughout the Cold War era and even the most highly respected analysts struggled to provide a detailed and authoritative account of the actual proceedings of the decisionmaking process.[42] Many sources served to do little more than recount the official texts which, while they purported to describe the details of Soviet governmental practice, in reality did little more than intimate the formalities associated with this process. However merely recounting the *formal* workings of Soviet defence decisionmaking is of marginal value to scholars seeking to create an accurate account of Soviet defence decisionmaking behaviour.[43] It is now possible to offer with some confidence an authoritative account of the *dynamics* of the weaponry development process as it existed at the height of the Brezhnev era.[44] More intrepid analyses sought to delve beyond the superficial and through evaluation of the subtle nuances of conflict and development provided by painstaking review of official pronouncements, publication and set-piece events sought to discern the shifting sands of Soviet intra-

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[42] Warner III, E.L. "The Bureaucratic Politics of Weapons Procurement", in McGwire, M., Booth, K. and McDonnell, J. (eds.) 1975. *Soviet Naval Policy: Objectives and Constraints.* New York: Praeger, pp.71-9; Holloway, D. 1983. *The Soviet Union and the Arms Race.* London: Yale University Press, pp.111-5, 140-5.

[43] Ibid., pp.109-11; Jones, E. 1985. *Red Army and Society: A Sociology of the Soviet Military.* Boston: Allen and Unwin, p.1.

[44] The most accurate Western account of this process was provided by Cooper in McLean, S. (ed.) 1986. *How Nuclear Weapons Decisions are Made.* London: Macmillan, pp.24-7. This section draws in part from this account but adds a number of significant points of information and clarification gleaned both from my own interviews conducted while in Moscow and past interviews conducted with high-ranking Soviet officials. See also Cochrane, T.B. *et al.* 1989. *Nuclear Weapons Databook: Volume IV: Soviet Nuclear Weapons.* New York: Harper and Row, p.95; Central Intelligence Agency, 1986. *The Soviet Weapons Industry: An Overview.* Washington D.C.: Directorate of Intelligence, pp.11-16; For formal Soviet accounts, see Alekseyev, N.N. 1977. *"Ispytaniya voyennoy tekhniki", Sovetskaya voyennaya entsiklopediya.* vol.3, Moscow: Voyenizdat, pp.616-8; Tikhomirov, V. 1978. *Organizatsiya, planirovanie i upravlenie proizvodstvom letatel'nykh apparatov.* Moscow: "*Mashinostroenie*" and Fakhrutdinov, I. 1981. *Raketnye dvigateli tverdogo topliva.* Moscow: "*Mashinostroenie*". The latter two Soviet sources are cited in Cooper, n.23 in McLean, (ed.) *How Nuclear Weapons Decisions are Made.*

elite relations. Accounts provided by Soviet emigres and surreptitious interviews were also employed in the pursuit of a more accurate account of the machinations which underpinned the governmental process in general and weaponry procurement policy in particular.

Elucidation into the true nature of Soviet defence decisionmaking does indeed lie in the amorphous realm of intra-elite interaction and it is to this often-intangible subject that this thesis looks for a more accurate appraisal of the formulation of Soviet weaponry procurement policies. While the Council of Ministers' Decree, which served to initiate specific programmes, provides a potentially useful means of gauging the chronological framework of systems' development. They do little to delineate the political forces which underpinned the decision itself. Against this backdrop the recollections of key figures within the former Soviet ruling elite, which detail both the personal dynamics and inter-institutional rivalries which formed the backdrop to the decisionmaking process, provide a vital concomitant to the few new pieces of documentary evidence as the means of pursuing the most comprehensive analyses of the causal factors of the Soviet leadership's decision to develop the SS-20 missile system.

Models[45]

Those who have sought to consider the Soviet defence decisionmaking in terms of intra-elite and inter-institutional interaction have posited a number of interpretations of the process' salient characteristics. One school of thought sought to portray the Soviet Union itself as a leviathan of military production in which the Party and military leaderships shared common aims with those of the defence sector in a monolithic fashion. Others argued the existence of an alliance of interests between the military leadership and the defence sector which sought to ensure that the already sympathetic Brezhnev leadership maintained the high levels of weaponry production that had characterised the regime's policy since its inception. Still others posited that there existed a potential division of interests between the military leadership and their suppliers in the defence sector. Cooper saw the extraordinary munificence directed towards the latter group during a ten year period from the mid 1960s as evidence of a "golden age" in civil-military relations.[46] Despite the differing emphases placed upon the degree of elite consensus and the relative weight of military influence, most observers were agreed that the Soviet military was a powerful player in the defence decisionmaking process at the time of the SS-20's development. Some went so far as to claim that military interests were the pre-eminent determinant of procurement policy at this time.

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[45] This section draws upon the overview of models provided by Meyer, S. "Soviet National Security Decisionmaking: What Do We Know and What Do We Understand?" and Simes, D.K. "The Politics of Defence in the Soviet Union: Brezhnev's era," in Valenta, J. and Potter, W.C. 1984. *Soviet Decisionmaking for National Security*. London: George Allen and Unwin, pp.255-97. See also Evangelista, M.A. 1984. "Why the Soviets Buy the Weapons They Do", *World Politics*, 36(4):597-618.

[46] Cooper, J. "The Defence Industry and Civil-Military Relations", in Colton and Gustafson (eds.), *Soldiers and the Soviet State*, p.167.

Action-reaction model

The action-reaction model posited the notion that a state's weaponry procurement policies were predicated principally in response to those of their potential adversaries and its advocates[47] were often closely associated with the promotion of the principle of arms control. Within the theoretical strictures imposed by such a model any qualitative or quantitative enhancement in an opponent's arsenal which was perceived to alter the strategic balance would, *ceteris paribus*, be expected to elicit a compensatory response in an attempt to restore the previous equilibrium. In the case of the Soviet Union the military potential of both the US and its NATO allies constituted a longstanding threat which had emerged in the immediate postwar period. To this had been added by the 1960s a nascent threat from the East as the rise of China as a potential military force was paralleled by a dramatic deterioration in Sino-Soviet relations. The action-reaction model identified the Soviet Union's principal aim as being to match the military power of its potential enemies or at least maintain a credible level of deterrence. Thus Soviet actions were claimed to reveal "a reactive decision process that reflexively and systematically responds to external threats (stimuli) in an effort to offset and neutralise increased threats to national security".[48] Although a desire to respond to adversaries' weaponry procurement initiatives formed the principal motive for force development, policy practices and behavioural constraints could serve to mask the reactive character of the decisionmaking process. While the state's reaction might take the form of imitative procurement which closely paralleled that of its adversary and was readily discernible as a reactive measure, this motive could be obscured if - by contrast - a deployment possessed of an off-setting characteristic ensued. The latter course of action might emerge due to the interplay of domestic factors such the degree of political consensus surrounding the decision to

[47] Bottome, E. 1971. *The Balance of Terror*. Boston, Mass., Beacon Press; Lapp, R. 1968. *The Weapons Culture*. Baltimore, Md.: Penguin Books; York, H. 1970. *Race to Oblivion*. New York: Simon and Schuster.
[48] Meyer, "Soviet National Security Decisionmaking", p.257.

adopt a particular weapon system or the economic and technological feasibility of its development. Thus the resultant decision may lead to the development of a weapon whose characteristics may be markedly dissimilar to those of its Western counterparts, thus masking the reactive motives which underpinned its development.

An extension of the action-reaction model emerged in 1974 when Steinbruner proposed the "cybernetic process". This maintained the concept of reactive decisionmaking on the part of the Soviets while emphasising the importance of previously-defined thresholds and of a select group of critical variables, rather than the strategic balance *per se.* Under the precepts of this variant, "reactions need not be proportionate, nor equitable. A cybernetic process does not necessarily respond to every change it senses, but may wait until a particular threshold is crossed. Delayed responses, involving either over-reactions or under-reactions are to be expected".[49] These models were susceptible to characterising as reactive Soviet deployments whose initiation was often largely concurrent with those of the West.[50] This led to a further refinement which sought to overcome this apparent anomaly while remaining within the reactive precepts of the action-reaction principle. Thus the technological dynamic variant of the action-reaction model contended that Soviet procurement policies would be influenced by current adversarial procurement policies and the anticipated trends in this realm commensurate with their level of hostile intent and technological and economic potential. Within the technological dynamic variant scant attention was paid to the political aspects of the decisionmaking process as it was assumed that political approval of any technologically and economically feasible weapons programme would inevitably emerge. Such an approach ran the risk of characterising the Soviet defence decisionmaking elite as a monolithic force devoid of internal divisions or rivalries and insulated from the ramifications of geopolitical and

[49] Ibid., p.258.

[50] The pace of the ensuing development vis-a-vis their US counterparts might be constrained by political or technological factors. The Soviet nuclear and ballistic missiles programmes serve as testament to the importance of these factors.

strategic considerations. Were it to emerge that a more "pluralistic" characteristic pertained in weaponry procurement policymaking, this too would serve to undermine the model's analytical utility.

These models were afforded credence by the circumstances of the Soviet strategic build-up in the quarter of a century following World War II. Initial Soviet attempts to break the West's monopoly on nuclear weapons and her ensuing drive to attain strategic parity were readily characterised as responsive in form. To a lesser extent the Soviet Union was also perceived to have been forced to adopt a reactive stance towards the unfolding events surrounding the deterioration in Sino-Soviet relations and its geopolitical ramifications rather than dictating their course. The initial attraction of these models also turned out to be their greatest inherent weakness. Their unreserved acceptance of offsetting, threshold and even anticipatory responses as being of equal validity to imitative reactions endowed them with great flexibility, yet at the same time detracted from their potential for detailed consideration of state weaponry acquisition. In short most any deployment of a new weapons system could be justified and explained by simple reference to allegedly provocative or threatening measures which had been taken by perceived adversaries. It seemed that such models sought to overcome their inherent inability to explain the contrasting nature of Soviet force structures largely by denigrating its importance or by alluding to the influence of internal factors which somewhat undermined the foundations of their central argument.

National leadership model

The national leadership model presented the personal preference of the dominant figure in the political leadership or a consensus which emerged from the ruling cabal as the principal determinant of defence policy. A number of differing scenarios could fall within the defining parameters of this model due to the interaction of its inherent variables. When a single figure like Stalin enjoyed a position of untrammelled dominance or when an elite consensus existed as in the case of the strategic build-up of the 1960s, there was a high probability of implementation of the chosen policy option. During an interregnum or similar period of factional struggle residual bureaucratic interests were endowed with an enhanced ability to promote their sectional interests and obstruct unwelcome policy initiatives. Indeed in some instances a still more pro-active approach might ensue as institutional support was courted by rival groupings. The military establishment was viewed as the pre-eminent institutional element of the Soviet elite, second in power only to the Party itself and was seen to have played an integral role in the direction of procurement policy and leadership battles in the post-Stalin era. While this model offered a useful framework with which to investigate intra-elite political interaction in the defence decisionmaking realm, it was best suited to retrospective analyses as it was dependant upon a detailed knowledge of the integral balances and political forces at play *within* the ruling elite at a given point in time - a challenging task during the Cold War period.

Interest-group model

The interest-group model of Soviet defence decisionmaking emerged in the wake of the adoption of a similar analytical regime in the study of the US style of policy formulation in this field. In marked contrast to the various forms of action-reaction model, the interest-group model was predicated upon the notion that factors that were *internal* to the Soviet governmental structure dominated the decisionmaking process. Thus the eventual form of weaponry adopted was the result of the interaction - both co-operative and competitive - of the principal institutional interest groups concerned in the formulation and implementation of defence procurement policies. Several divergent variants of the interest-group model were proffered. Some analysts sought to delineate "fault lines" within the Soviet elite not immediately discernible behind the public facade of unity, and to identify potential coalitions of interest and rivalries in pursuit of political influence and its attendant reward of resource allocation. Some portrayed a united front of defence industrialists and their military "customers" as a military-industrial complex which stood in *de facto* opposition to the interests of consumer production through the advance of light industry.[51] Some sought to avoid an unreserved conflation of industrial and military policy preferences[52] while others posited the notion that alliance-building occurred between institutions to further their common aims, often in competition with those, and implicitly opposed to, those of their colleagues in different sections of the same institution.[53]

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[51] Agursky, M. and Adomeit, H. 1979. "The Soviet Military-Industrial Complex", in *Survey*, 24(2):106-32; Aspaturian, V., Dallin, A. and Valenta, J. 1980, *The Soviet Invasion of Afghanistan: Three Perspectives*. ACIS Paper no.27, UCLA: Los Angeles, Ca.; Lee, W.T. 1972. "The Politico-Military Industrial Complex", *Journal of International Affairs*, 26(2):73-86.

[52] Alexander, A. 1976. *Armour Development in the Soviet Union and the United States*. Santa Monica, Ca.: RAND; Caldwell, L. 1971. *Soviet Attitudes Toward SALT* Adelphi Paper 75. London: IISS; Deane, M. 1977. *Political Control of the Soviet Armed Forces*. New York: Crane Russak; Kolkowicz, R. 1967. *The Soviet Military and the Communist Party*. Princeton, N.J.: Princeton University Press; Warner, E.L. 1977. *The Military in Contemporary Soviet Politics: An Institutional Analysis*. New York: Praeger; Wolfe, T. 1965. *Soviet Strategy at the Crossroads*. Cambridge, Mass.: Harvard University Press; Wolfe, T. 1980. *The SALT Experience*. Cambridge, Mass.: Ballinger.

[53] Alexander, A. 1970. *R&D in Soviet Aviation.* Santa Monica, Ca.: RAND; Alexander, A. 1976. *Armour Development in the Soviet and the United States.* Santa Monica, Ca.: RAND; Boyd, A. 1977. *The Soviet Air Force*. New York: Stein & Day.

By contrast the apparent unity of the Soviet leadership led some to posit that attempts to influence policy options were characterised by a sense of gradualism and were confined exclusively to internal debate[54] while yet another theory rejected the premiss that widespread intra-elite rivalry and competition provided the backdrop to the Soviet defence decisionmaking process and instead claimed that a heightened degree of elite consensus was the prevailing condition.[55] The strongest adherent of this interpretation as a means of explaining the emergence of the SS-20 was Andrew Cockburn who sought to place its development within an all-embracing context of intra-elite competition and alliance-building with which he sought to characterise Soviet defence production.[56] Hagelin offered as a means of explanation a not dissimilar portrayal of the missile as the end product of an inexorable process of weaponry procurement.[57]

[54] Griffiths, F. "A Tendency Analysis of Soviet Policymaking", in Skilling, H.G. and Griffiths, F. 1971. *Interest Groups in Soviet Politics*. Princeton N.J.: Princeton University Press.
[55] Holloway, D. "Technological Change and Military Procurement", in MccGwire M. and McDonnell, J. 1977. *Soviet Naval Influence*. New York: Praeger; Jacobsen, C.G. 1979. *Soviet Strategic Initiatives*. New York: Praeger; Odom, W. 1975. "Who Controls Whom in Moscow?" *Foreign Policy*, 19:109-23; Odom, W. 1976. "A Dissenting View on the Group Approach to Soviet Politics", *World Politics*, 28(4):21-34.
[56] Cockburn, A. 1983. *The Threat: Inside the Soviet Military Machine*. London: Hutchinson.
[57] Hagelin, B. 1984. "Swords into Daggers: The Origins of the SS-20 Missiles", *Bulletin of Peace Proposals*, 15(4):341-53.

Military-superiority model

Advocates of this model came increasingly to the fore as the 1970s progressed and were at the height of their powers at the time of the SS-20's deployment. They argued that Soviet weaponry procurement practice represented a pre-determined and cohesive policy predicated solely upon the desire to achieve military superiority over the West. Some viewed the ultimate aim of such a policy to be the use of military superiority as a means of political leverage with which to cajole the West into political submission to Soviet demands.[58] Specifically a Soviet preponderance in TNFs (theatre nuclear weapons) was viewed as a means through which the Soviet Union was seeking to achieve a powerful leverage upon US-European relations. William Hyland characterised the process of development of Soviet TNFs in the 1970s as an attempt to secure a "veto" over West European policy and singled out the SS-20 as the integral component of such a policy.[59] Those who adopted a still more alarmist approach, warning of Soviet ambitions in the development of a nuclear warfighting strategy[60] similarly portrayed the SS-20 as the principal component of the Soviet theatre nuclear warfighting strategy.

[58] Finley, D. 1980. "Conventional Arms in Soviet Foreign Policy", *World Politics*, 33(1):1-36; Vincent, R.J. 1975. *Military Power and Political Influence: the Soviet Union and Western Europe*, Adelphi Paper 117. London: IISS; Wolfe, T. 1970. *Soviet Power and Europe*. Baltimore, Md.: John Hopkins University Press.

[59] Hyland was Director of the Bureau of Intelligence and Research at the US State Department (1971-5) and Deputy Assistant to the President for National Security Affairs (1975-7.) Hyland, W. "The Struggle for Europe: An American View", in A. Pierre (ed.) 1984. *Nuclear Weapons in Europe*. New York: Praeger, pp.30-1, cited in Haslam, *The Soviet Union and the Politics of Nuclear Weapons in Europe*, p.x.

[60] The seminal work in this field was Richard Pipes ominously titled, "Why the Soviet Union thinks it could fight and win a nuclear war", *Commentary*, 1977. 64:31-9. See also Gray, C. 1977, *The Future of Land-Based Missile Forces*, Adelphi Paper 140. London: IISS; Lee, W.T. "The Rationale Underlying Soviet Strategic Forces", in Kitner, W. (ed.) 1969. *Safeguard: Why the ABM Makes Sense*. New York: Hawthorn Press; Nitze, P. 1976. "Deterring Our Deterrent", *Foreign Policy*, 25:195-210.

Military mission model

Advocates of the military mission model emanated predominantly from those studying Soviet strategic force development programmes.[61] The military mission model argued that weaponry acquisition policy was dictated by the need to fulfil certain combat missions whose characters were prescribed by the military doctrine and strategy adopted by the state's leadership. The significance of these missions was assessed according to their efficacy in the pursuit of an overall military victory as determined by current strategic perceptions. At first sight the military mission model bears a resemblance to the organisational model with their shared attention to the established patterns of institutional behaviour and procedures. The military mission model places more emphasis upon the specific strategic concepts and concerns which serve to formulate institutional concerns and their historical underpinning. In addition the military mission model recognised the potential for rapid policy transformation in response to the emergence of a new threat or challenge to the existing strategic balance, in contrast to the incremental transition process posited by the organisational model. What served to distinguish the military mission model was the emphasis it placed upon internally-devised strategic objectives as the principal determinants of weaponry procurement. Although Western procurement policy continued to play a significant role within this model, its significance was adjudged solely by its effect upon the continued ability of Soviet forces to fulfil the combat roles ascribed to them. Moreover, this model asserted that weapons for which no role existed or was expected to evolve in military doctrine would not be developed.

[61] Connell, G.M. 1980. "The Soviet Navy in Theory and Practice", *Comparative Strategy,* 2(2):129-47; Goure, L. Kohler, F. and Harvey, M. 1974. *The Role of Nuclear Forces in Current Soviet Strategy*. Miami, Fla.: University of Miami Press; Hudson, G. 1976. "Soviet Naval Doctrine and Soviet Politics", in *World Politics*, 29(1):90-113; MccGwire, M. (ed.) 1973. *Soviet Naval Developments: Capability and Context*. New York: Praeger; MccGwire, M and McDonnell, J. 1977. *Soviet Naval Influence*. New York: Praeger.

Most major studies of the SS-20's development can be placed within the parameters of the military mission model[62] and provide a plausible response to the charges of military superiority levelled by those advocates of the military superiority model. However through their concentration upon largely strategic factors they faced the inherent risk of dissembling the process of weaponry procurement from the wider policy concerns and objectives of the Soviet leadership.

Such an approach thus ran the risk of adopting "a most un-Clausewitzian assumption".[63] The task that Haslam set for himself, the investigation of the development of the SS-20 *within* all the parameters which served to define Soviet security perceptions and attendant policy formulation represents the most efficacious means of seeking a definitive explanation of the motivating factors and institutional interests whose complex interaction served to promote the development of the SS-20 missile system. Consequently this thesis will seek to consider the key facets - nuclear strategy, technical potential, international relations and internal political machinations - which are assumed to have constituted the basis for Soviet defence decisionmaking and attendant weaponry procurement policy at the height of the Brezhnev era. Following a detailed consideration of each in turn a final assessment of the relative weight of their contribution to the SS-20's development will be offered in conclusion.

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[62] Berman, R. and Baker, J. 1982. *Soviet Strategic Forces: Requirements and Responses.* Washington D.C.: Brookings Institute; Meyer, S. 1984. *Soviet Theatre Nuclear Forces. Part II: Capabilities and Implications.* Adelphi Paper 188, London: IISS; Holloway, D. 1983. *The Soviet Union and the Arms Race.* London: Macmillan; Garthoff, R.L. "The SS-20 Decision"; Garthoff, *Detente and Confrontation*; MccGwire, M. 1987. *Military Objectives in Soviet Foreign Policy.* Washington D.C.: Brookings Institute.

[63] Haslam, *The Soviet Union and the Politics of Nuclear Weapons in Europe*, p.xii.

2 The Evolution of Nuclear Strategy

The origins of Soviet nuclear strategy

Prior to Khrushchev's fall there had emerged a new strand in Soviet strategic thinking which heralded major implications for Soviet theatre strategy. It was now argued that a future superpower conflict might not necessarily resort to the employment of nuclear weapons from the very outset. From this hypothesis grew an important re-evaluation of Soviet doctrine and strategy as it pertained to conflict at the theatre level in general and in the European TVD in particular. This was of fundamental importance to the military planning process and was the principal source of the operational requirement for a weapon possessed of operational capabilities akin to those of the SS-20. This revision was motivated in part as a response to the US adoption of a policy of "Flexible Response" and increased US attention towards 'limited' nuclear options. It can also be attributed at least in part to the build-up of Soviet strategic forces which gathered pace during the course of the 1960s. This had the dual effect of diminishing the Soviet Union's fear of the United States launching an all-out strategic attack and allowing a new balance and maturity to emerge within Soviet strategic thinking. This period was also marked by a growing awareness among Soviet military analysts of the detrimental effect of the employment of nuclear weapons upon the control of massed troop operations. While recognising that nuclear weapons had led to a 'qualitative' change in military affairs, Soviet strategists did not want to 'absolutise' them in the manner in which Khrushchev had sought to do. By adopting this path they reaffirmed the Soviet tradition of reliance upon 'mixed forces' and attendant weapons systems. It was perhaps no coincidence that such an approach also held out the prospect of continued high levels of resource support for all sectors of military production and their respective clients within the armed forces. The policies pursued in the era which followed have since been characterised as an attempt

by the Soviet Union to pursue comprehensive weaponry programme to fulfil an all-embracing strategic posture. This occurred during a period of munificence in defence resource allocation which has since been referred to as 'a golden age'. The SS-20's development cycle paralleled this era and might thus have been expected to have been affected by its dual characteristics.

The question of whether or not the Soviet Union's military strategy was modified during the course of the 1960s to incorporate the possibility of a conventional aspect to a future conflict proved to be a source of continuing contention among a host of Western analysts and was the cause of much often-polemical debate. Despite the repeated assertions of a number of high profile Western analysts,[64] the evidence presented below will serve to demonstrate that a significant revision of Soviet strategy did in fact occur during the course of the 1960s. However, this raises the related - and more complex - issues of the precise form that this revision took and the motives, defining characteristics and timetable of events which accompanied the decision.

[64] See for example, Wolfe, T.W. 1973. "The Convergence Issue and Soviet Strategic Policy", *The RAND 25th Anniversary Volume*, Santa Monica: RAND; Douglass J.D. Jnr. and Hoeber, A.M., 1981. *Conventional War and Escalation: The Soviet View*, London: Crane, Russak and Co.

The Dawn of a New Era

Stalin's rule placed stifling constraints upon the evolution of Soviet doctrine and strategy during the two decades which preceded his death.[65] Although Soviet theoreticians had studied military strategy in the late 1920s and early 1930s, such investigations were abruptly curtailed in the middle of the decade on Stalin's orders. Political commissars were reintroduced into the armed forces in May 1937, while the following month witnessed the trial and execution of Tukhachevsky and the opening rounds of Stalin's purge of the high command. Ironically it was the strategy formerly espoused by Tukhachevsky that came to form the foundations of the Soviet operations in depth which characterised their prosecution of the Great Patriotic War, and remained in place for much of the Cold War era. While evidence suggests that Stalin's generals succeeded in influencing his strategic and tactical decisions during the course of the Great Patriotic War[66] the General Secretary retained absolute authority in the realm of doctrinal formulation. Indeed against the backdrop of the turning of the tide against Nazi Germany in 1942, Stalin promulgated the "Permanently Operating Factors" of warfare, whose applicability was deemed to be both universal and eternal. The Permanently Operating Factors consisted of:

1 the stability of the rear

2 the morale of the army

3 the quality & quantity of servicemen

4 the quality & quantity of equipment

5 the organisational ability of military commanders

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[65] The terms doctrine, strategy and operational art have been used in accordance with the definitions provided in the General Staff's *Dictionary of Basic Military Terms*, Moscow: Voyenizdat, 1965. For discussion of their significance within Soviet military planning, see Skiubedia, P.I. (ed.) 1966. *Explanatory Dictionary of Military Terms*, Moscow: Voyenizdat.

[66] Colton, Timothy P. "Perspectives on Civil-Military Relations in the Soviet Union", in Colton, T.J. and Gustafson T. (eds.) 1990. *Soldiers and the Soviet State: Civil-Military Relations from Brezhnev to Gorbachev*, Princeton N.J.: Princeton University Press, p.20.

As Stalin reimposed his grip upon military affairs in the immediate postwar period the General Staff found itself in an invidious situation. The Permanently Operating Factors were little more than generalised categorisations of military potential which offered little scope for meaningful operational planning. However, their hallowed status prevented a direct challenge being made upon them and further tightened the bind placed upon innovative strategic analysis. Moreover the General Staff were precluded from considering the theoretical potential of surprise attack, lest it detract from the facade of Stalin's omniscience in his conduct of the Great Patriotic War. Similar restrictions were imposed upon investigation of the strategic implications of the most recent addition to the Soviet arsenal- nuclear weapons.[67]

Stalin had been an enthusiastic supporter of the development of nuclear weapons. The Soviet programme had been on-going since the 1930s and although disrupted by the German invasion in 1941, it had resumed by the end of the following year. To the intelligence concerning American progress in this field was added the tangible evidence of the weapon's capabilities in the wake of its use against Japan. The Soviet programme continued to enjoy generous levels of support in the immediate postwar period in terms of resource allocation, intelligence efforts and- significantly - in the pursuit of an effective means of delivery. Soviet denials of nuclear weapons' unique military potential espoused during this period have been cited as evidence of a reluctance to acknowledge American possession of a monopoly upon such a powerful new weapon system and its attendant geopolitical ramifications. Indeed some have posited that a desire for international prestige may have played as important a motivating role in the Soviet Union's development of nuclear weapons as perceptions of their military utility.[68] However this should be given credence as only a partial

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[67] For a more detailed discussion of these restrictions, see Dinerstein, H.S. 1962. *War and the Soviet Union: Nuclear Weapons and the Revolution in Soviet Military and Political Thinking*. London: Praeger; Garthoff, R.L. 1958. *Soviet Strategy in the Nuclear Age*, New York: Praeger; Holloway, D. 1983. *The Soviet Union and the Arms Race*, London: Yale University Press.

[68] Hines, J.G., Petersen, P.A. and Trulock, N. 1986. Soviet Military Theory from 1945-2000: Implications for NATO. *The Washington Quarterly*, 9:119.

explanation of early Soviet perceptions of these new weapons. The manner in which nuclear weapons were initially incorporated within existing Soviet strategic concepts and military forces was not merely the result of Stalin's doctrinal conservatism. Rather it also represented an adherence to the Soviet tradition of 'mixed forces' as the only guarantor of military victory. The long-held aversion to over-reliance upon one particular branch of the military service was now extended to include a denial that one weapon might by itself provide an 'absolute' capability to achieve all military requirements. The very scarcity of nuclear warheads available to either superpower in the initial postwar period, their considerable physical bulk and the limitations imposed upon their delivery by aircraft in the pre-ICBM era led both sides to underestimate the strategic potential that they would come to hold in the near future.[69] Thus the earliest Soviet nuclear weapons were incorporated into existing arsenals and their attendant strategic theories of "fire support" to conventional offensive operations. The advent of Soviet nuclear weapons occurred in tandem with the development of Soviet long-range aviation forces (principally through Tupolev's 'copy' of the US B-29, the Tu-4). In the event of conflict with the West, Soviet bombers armed with free-fall nuclear bombs would have sought to destroy targets such as airfields, logistical nodal points and military-industrial production centres. It was not anticipated that such attacks would lead to the immediate defeat of the West. Rather such actions were seen as disrupting the enemies' 'rear' areas and tilting the balance in the Soviet Union's favour in the anticipated war of attrition. As such they would play an important, though subsidiary, role in support of a massive thrust westwards by Red Army infantry and armoured divisions.

[69] Similarly, the US underestimated nuclear weapons' strategic potential and possessed few atomic warheads in the late 1940s. See Meyer, S. 1984. *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, Adelphi Paper 187, IISS: London, p.8. Moreover Soviet analysts remained unconvinced of the merits of massed aerial raids in the achievement of strategic aims, citing their limited results against Britain and Germany during World War II and attributing Japan's surrender in 1945 to the threat of imminent Soviet invasion.

The 'Interregnum'

In the wake of Stalin's death there began a process of doctrinal redefinition of the role and potential of nuclear weapons within military strategy which ran in parallel to and was interrelated with, the contest to succeed as Soviet leader. Malenkov, Chairman of the Council of Ministers, argued that nuclear weapons' potential for mass destruction was such that protagonists in such a conflict could hope to achieve no more than a pyrrhic victory. As even the forces of imperialism would recognise this Soviet security could be achieved merely by the construction of a deterrent nuclear arsenal. As a corollary this would allow the reallocation of resources from the defence sector to light industries with resultant increases in the production of consumer goods. Such a dramatic departure from Marxist-Leninist orthodoxy was afforded a degree of ideological credence by the previously-unknown author, M. Gus. His article recognised that Marxist ideology had traditionally posited that the internal contradictions and uneven economic development of capitalist states led inevitably to war. However it also contained the unprecedented claim that the addition of nuclear weapons to the arsenal of the Soviet Union had allowed her to "paralyse the actions of this law".[70] At this juncture, Khrushchev portrayed himself as an avowed supporter of the traditional military structure as represented by the concept of 'mixed forces.' He also seemed to favour devolving greater autonomy to the military in the realm of strategic analysis while diminishing the extent of Party interference in their professional conduct. Such a manifesto elicited support from a large section of the Soviet military and proved to be a significant factor in determining the eventual outcome of the leadership contest. Attacks upon the removal of war as a viable policy option and the proposed reliance upon a minimum deterrent emerged from both Party and military circles and restated Khrushchev's rejection of the notion of a new 'absolute' weapon, while reaffirming the continuing validity of Marxist-Leninist theory

[70] Gus, M. "The General Line of Soviet Foreign Policy", *Zvezda*, Leningrad, November 1953, p.109. Cited in Dinerstein, *War and the Soviet Union*, p.67.

as an exact science, which could not be manipulated to suit short-term political goals.[71] This argument continued throughout the course of 1954 with both sides employing contrasting doctrinal assertions as a means of attacking one another's stance, while minimising overt evidence of public disunity within the political elite. When counterpoised the claims made by the protagonists served as a litmus test of the wider political and doctrinal struggle in which they were engaged. Significantly, when Khrushchev eventually prevailed in February 1955 Soviet pronouncements on relations with the West and the likelihood of war lost much of their stridency, indicating that his earlier gloomy portents had been fuelled - at least in part - by the exigencies of the intra-elite conflict.

Although strategic discourse was muted during the leadership struggle, it was not suspended and several issues of vital importance were raised during the period. The first tangible indication that a review of the role of nuclear weapons within Soviet strategy was underway had emerged in September 1953, a mere six months after Stalin's death. It took the form of an article in *Voennaya mysl'* by its then editor Major General Nikolai Talensky.[72] Talensky's thesis has often been misrepresented as a direct challenge to the relevance of the Permanently Operating Factors in defining Soviet strategy. Rather, his critique was more subtle and sought to attack their status as both the eternal and sole determinants of military potential. He characterised such an assertion as being methodologically unsound as it accorded them the status of an overarching fundamental or basic law and thus placed them outwith the dialectic processes of military science. Although he accepted their great importance, he argued that they should be incorporated *within* the rubric of military science. This contention held potentially revolutionary implications for the study and evolution of Soviet

[71] Fedorov, G. "Marxism-Leninism on War and the Army: The Origin and Essence of Wars", *Krasnaya Zvezda*, 6 January 1954; Tereshkin, V. "The Great Mass Movement of the Present Day", *Zvezda*, Leningrad, February 1954 and Piatkin, A. 1954. "Some Questions of the Marxist-Leninist Science of War", *Voennaya mysl'*, no.3 cited in Dinerstein, pp.68-70.

[72] "On the Question of the Character of the Laws of Military Science", 1953. *Voennaya mysl'*, no.9 cited in Dinerstein, *War and the Soviet Union*, p.47.

strategy and the article elicited an immediate and lively response.[73] The resulting discussion identified a

> diversity of views on matters of basic importance that it had not been possible to discuss in the Soviet Union for a generation. There seems to be no doubt that this was a real, and not a staged, discussion, for there was considerable irrelevance and some of the disputants failed to discern the main issues, concentrating on peripheral ones.[74]

Something of a backlash emerged against Talensky's formulations and the Permanently Operating Factors were reaffirmed by Stalin's former Minister of Defence, Marshal A.M. Vasilevsky in articles published in *Krasnaya Zvezda* in February and May of 1954[75] and a new strategic text, "On Soviet Military Science" which was published by the Ministry of Defence in 1954. Talensky's removal as editor of *Voennaya mysl'* and his transfer to the Institute of History in the Soviet Academy of Science in June 1954 has long been regarded as punishment for "overstepping some undefined bounds".[76] Significantly, however, his reassignment did not prevent his future participation in the strategic debate. Indeed the momentum towards some form of reconsideration seems to have been inexorable. In October 1953, Soviet military literature contained its first specific mention of nuclear weapons [77] and in the months that followed the Ministry of Defence ordered a re-evaluation of the weapons' potential in a move which heralded a major revision of the General Staff Academy's curriculum. A series in *Krasnaya Zvezda* in early 1954 dealing with nuclear weapons appeared to herald a desire to inculcate the massed ranks of the Red Army as a whole.

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[73] The article elicited a largescale response. *Voennaya mysl'* received in the order of forty letters responding to its claims, many of which emanated from authors who saw Talensky's views as "both radical and pernicious". Dinerstein, *War and the Soviet Union*, p.47.
[74] Ibid., p.10.
[75] Scott F.S. and Scott, W.F. 1979. *The Armed Forces of the USSR*, Boulder, Co.: Westview Press, p.40, n.9 and 10.
[76] Ibid., p.40. See also Bluth, C. 1992. *Soviet Strategic Arms Policy Before SALT*, Cambridge: Cambridge University Press, p.89 for similar sentiments.
[77] Bluth, *Soviet Strategic Arms Policy Before SALT*, p91, n.32.

That such a series appeared in the same publication and at the same time as the defence of Stalin's Permanently Operating Factors by Vasilevsky serves to highlight the fluid nature of Soviet strategic conceptualisation at this point in time.

In the aftermath of Khrushchev's victory the Soviet military enjoyed a new-found sense of autonomy in several important spheres. Nowhere was this more apparent than in the field of strategic analysis. [78] The military's loyalty to Khrushchev was rewarded by Marshal Zhukov's promotion to the post of Defence Minister and the accession of his predecessor, Marshal Bulganin, as Premier. In March 1955 no fewer than eleven generals were promoted to the rank of marshal. The period from the spring of 1955 until Zhukov's dismissal in October 1957 has been characterised as an "alliance" between Khrushchev and his new Defence Minister.[79] A key concomitant of this process was that the Soviet military leadership enjoyed a new independence in the formulation of strategy, free from the constraints of Stalinist rule and the perceived threat of resource allocation that had been associated with Malenkov's policy preferences. There soon began an unrestrained consideration of the likely strategic potential of nuclear weapons and the practical means by which their power might best be utilised.

> The speed with which the restraints on the internal military debate were removed after the ouster of Malenkov may be an indication that the predominance of the need to oppose Malenkov's policies was suddenly replaced by other institutional objectives, such as reasserting a greater role for the military in the formulation of military doctrine.[80]

On the eve of his accession, Zhukov is said to have made a secret speech to the officer cadres in which he criticised Stalinist strategy and stressed the need for modernisation

[78] This serves to refute the characterisation of military thought as "stagnant" in the era prior to Khrushchev's speech to the 22nd Party Congress in 1961. Scott & Scott, *The Armed Forces of the USSR*, p.46.
[79] Garthoff, *Soviet Military Policy*, p.49.
[80] Bluth, *Soviet Strategic Arms Policy Before SALT*, p.126.

in military affairs. [81] Confirmation that strategic revision now enjoyed official approval was signalled by the reversal of the earlier decision to omit an article by P.A. Rotmistrov from *Voennaya mysl.'* Rotmistrov echoed Talensky's assessment of the Permanently Operating Factors as important - but not sole - determinants of the outcome of a future conflict. He specifically attacked previous failures to consider the potentially decisive effect that a surprise nuclear attack might entail - a clear dissension from the line promulgated only a year previously by the authors of "On Soviet Military Science."[82] With remarkable rapidity the acceptance of a strategic revision and Talensky's academic rehabilitation were completed. Soon after, an editorial in *Voennaya mysl'* contained an unequivocal rejection of the exclusive use of the Permanently Operating Factors. [83] Moreover, while the Permanently Operating Factors had been re-affirmed on at least 57 occasions [84] in military literature between 1953 and 1955, they made no appearance in 1956 and by 1957 their accordance of a unique and exclusive role in the determination of strategy had been virtually proscribed.[85]

The Twentieth Party Congress in 1956 was the setting for Khrushchev's secret denunciation of Stalin but also occasioned a call for a re-examination of military matters. A major conference on the subject took place in May 1957 and was followed by a number of seminars held under the auspices of the General Staff. These proceedings formed the basis of a series of articles in *Voennaya mysl'* which came in time to be known as "The Special Collection" and played a key role in defining the revised strategy. The series demonstrated a general consensus that the introduction of nuclear weapons and missile technology had combined to necessitate a significant

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[81] Ibid., p.92.
[82] Marshal P. Rotmistrov, "For Creative Examination of the Questions of Soviet Military Science", *Krasnaya Zvezda*, 24 March 1955. See Dinerstein, *War and the Soviet Union*, pp.49-51, Bluth, *Soviet Strategic Arms Policy Before SALT*, p.92.
[83] "On the Results of the Discussion on the Character of the Laws of Military Science", 1954. *Voennaya mysl'*, 4:20.
[84] Garthoff, R.L. 1959. *The Soviet Image of Future War*. Washington, D.C.: Public Affairs Press, p.32.
[85] Dinerstein, *War and the Soviet Union*, p.52.

reappraisal of Soviet military strategy. Despite the revision, two vital strands of existing strategy remained intact - notwithstanding their destructive power, nuclear weapons did not in themselves possess a decisive military potential and only through the defeat of the enemy's military forces upon the battlefield itself could victory be assured.

At this juncture Soviet strategy maintained its traditional adherence to the concept of a 'balanced' or 'mixed' force structure, where nuclear weapons would be dovetailed with existing conventional armaments as would any other new weapon. Although the impressive destructive potential of nuclear weapons was recognised by political leaders and military strategists, neither recognised them as being capable of fundamentally altering the character of warfare. Indeed it should be noted that although the Permanently Operating Factors had been stripped of their former kudos they retained a vital role in a new guise as 'decisive factors'. It was maintained that despite the introduction of nuclear weapons, ultimate victory still rested primarily upon the decisive defeat of enemy military forces in the various theatres of operations. There did emerge a growing recognition of nuclear weapons' potential to strike at military-economic targets, but this continued to be viewed as a 'supporting' mission. The primary aim of the Soviet armed forces remained the destruction of enemy forces 'in the field'.

"The Revolution in Military Affairs"

It is difficult to ascertain exactly when Soviet strategists first detected a possible shift in Western nuclear strategy, as much of the Western discourse - let alone Soviet responses - took place at a classified level. However it is clear that by the mid-to-late 1950s certain sections of the Soviet officer corps were being exposed to Western concepts that contradicted the strictures of pure "Massive Retaliation" theory and were cognisant of the debate in the West concerning the continued efficacy of such a declaratory policy. From 1956 the semi-classified *Voyennyi Zarubezhnik* embarked upon a process - which was soon emulated by the military publishers, Voyenizdat - of translating key Western texts and reproducing accounts of pertinent doctrinal concepts which seemed to signal an evolution to a new US strategic posture. This process continued apace till the end of the decade and can be assumed to have provoked a keen interest and lively exchanges among those members of the Soviet military who were exposed to them. This period also witnessed the publication of a series of articles which sought to assess the implications that the introduction nuclear weapons held for tactical forces.[86] However although the West's revision continued, Soviet discussion of strategic innovation in response to the new demands and opportunities presented by the US' adoption of "Flexible Response" became muted. The sudden diminution of strategic discussion and conjecture within Soviet military publications was evidence of the perceived threat to military autonomy emanating once again from the civilian leadership. Just as open discussion of potentially-contentious issues had diminished in the face of Malenkov's threatened policy of minimum deterrence, so too was it set aside as the military sought to present a unified opposition to Khrushchev's foray into the formulation of military policy.

[86] Zisk, K.M. 1993. *Engaging The Enemy: Organisation Theory & Soviet Military Innovation, 1955-1991*, Princeton, N.J.: Princeton University Press, pp.53-8 for a detailed discussion of the Soviet Union's reaction to the emergence of "Flexible Response".

A radical departure in Soviet military doctrine was announced by Khrushchev on the occasion of the fourth session of the Supreme Soviet of the USSR on 14 January 1960. In his speech, he accorded nuclear missiles a unique and unprecedented position as a weapon whose unilateral employment could strike a decisive blow against an opponent. Nuclear firepower was now the sole determinant of victory and the employment of nuclear weapons would take place at the very outset of any future conflagration. The initial nuclear exchange would of itself determine the outcome of the conflict as a whole. Although the Strategic Rocket Forces had only been established during the previous month, they were accorded the status of the Soviet Union's 'pre-eminent service' in preference to the Red Army which had held this coveted position since the inception of the Bolshevik state. Nuclear missiles were said to have rendered obsolete at a stroke all traditional forms of military forces such as surface ships, aircraft[87] and infantry and armoured forces. Khrushchev announced that an increase in the Soviet Union's security had been achieved through the development of the SRF while also facilitating a reduction in outlays upon traditional conventional forces. The most tangible effect of his reforms was the announcement of a cut of 1.2M men - approximately one third - from the ranks of the Red Army. Khrushchev even went so far as to suggest that the Soviet Union might in the future return to the system of territorial militia which had been employed in the early days of the Bolshevik state. [88] While Khrushchev's motives remain difficult to gauge,[89] the reaction among military circles is readily discernible. Opposition to the plans was immediate and emanated from a large section of the military leadership, including his previously-staunch allies within the 'Stalingrad Group'. Indeed the military had already been engaged in a process of obstruction against Khrushchev's attempts to

[87] Berman, R.P. and Baker J.C. 1982. *Soviet Strategic Forces: Requirements and Responses*, Washington D.C.: The Brookings Institution, pp.25-6, 47-8 made the point the missile forces accorded more closely with the traditional Soviet penchant for artillery forces than did strategic aviation. Additionally, the Soviets may have been seeking to downplay the US lead in this field.
[88] Khrushchev, N.S. *Izvestia*, 15 January 1960, p.4.
[89] Zisk, K.M. *Engaging The Enemy*, pp.63-4 offers a concise outline of most of the reasons offered to explain his policy. Another potentially significant factor is highlighted by Scott and Scott, *The Armed Forces of the USSR*, pp.42-3, who highlight how the demographic effects of the Great Patriotic War led to a shortage of available manpower in the 18-21 age bracket during this period.

reassert the authority of the MPA in the wake of Zhukov's removal.[90] The doctrinal pronouncements forced the conflict onto a new plane and led to a dogged policy of resistance through bureaucratic inertia and concerted co-operation with Khrushchev's Party critics. Significantly the Minister of Defence, Marshal Malinovsky, adopted a markedly different tone in his reference to the implications of widespread deployment of nuclear missiles and the creation of the SRF as the 'pre-eminent' branch of the Soviet armed forces. While in his speech to the Supreme Soviet he accepted that force restructuring justified the "wise and timely" cuts in Red Army manpower and that nuclear strikes would be of "paramount significance" in any future war, he reiterated the importance of the traditional concept of "mixed forces" and assured his audience that "we are retaining at a definite strength and in relevant sound proportions all types of our armed forces whose military operations, as far as their organisation and means of operation are concerned, will resemble what took place in the last war".[91]

Malinovsky has been portrayed as a moderate who sought to reconcile the conflicting views of the future course of Soviet strategy and force structure[92] and it seems clear that the military were willing to accept significant aspects of Khrushchev's revision. The creation of the SRF as an independent service and its accreditation as the 'pre-eminent' branch of the Soviet Union's armed forces was portended by high level discussion among senior figures in the General Staff, the Defence Ministry, the High Command and the Central Committee.[93] In addition, while many of Khrushchev's doctrinal assertions were disavowed in the wake of his fall, military and Party leaders alike continued to trumpet the SRF as the central component of Soviet defence and they retained their status among the services without hint of challenge. It seems that while the military leadership were willing to accept that the marriage of nuclear warheads and missile technology did indeed hold major implications for the

[90] Bluth, C. *Soviet Strategic Arms Policy Before SALT*, pp.132-4.
[91] Malinovsky, *Izvestia*, 16 January 1960, p.2.
[92] Zisk, K.M. *Engaging The Enemy*, p.64, n.91.
[93] Tolubko, V.I. 1979. *Nedelin*, Moscow: Molodaya Gvardiya, p.181.

framework of military strategy,[94] they refused to accept that it led inevitably to the obsolescence of all other types of military forces. The opposition to drastic reductions in the traditional service sectors was inevitably motivated to an extent by bureaucratic self-interest among those services which felt most threatened by Khrushchev's plans. Given that this entailed all services with the exception of the newly-created SRF, the extent of this opposition can hardly be overstated.[95] It was also motivated by a continued adherence to the notion that only co-ordinated actions by a 'mixed force' structure could ensure military victory. The very manner in which Khrushchev had sought to impose his restructuring plans was viewed as a serious threat to the autonomy in the formulation of strategic concepts that the military had recently enjoyed following decades of Party interference. This new-found freedom was prized and would be jealously guarded.[96] Given that the relationship between nuclear and conventional warfare served as the litmus test in the imbroglio with Khrushchev, the conventional force implications of "Flexible Response" might have expected to have featured rather more prominently in the literary assaults upon the Party leader. Rather than "open the floodgates" [97] of discourse, Khrushchev's speech to the 22nd Party Congress in 1961 acted as a brake upon discussion among Soviet military planners. Discussion of the most potentially divisive strategic issues was postponed at this point as the military sought to present a united front in opposition to Khrushchev. [98] This would accord with the relative conservatism that was displayed on issues of strategic modernisation and revision less than a decade previously, when Malenkov's proposals for a reduction in defence efforts met with a similar unanimity of resistance. Zisk adds further weight to this case by highlighting the predominance within the military

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[94] Penkovsky, O. 1965. *The Penkovsky Papers*. New York: Doubleday and Co., pp.248-9.
[95] Up to 250,000 officers alone faced losing their posts as a result of Khrushchev's proposals. This alone would have provoked deep resentment among the officer corps.
[96] By contrast, Scott and Scott claim that, "Soviet military thought had stagnated during Stalin's long tenure and was not openly revived until Khrushchev denounced the former dictator at the 22nd Party Congress in 1961. Once this was accomplished the floodgates were open. Scott and Scott, *The Armed Forces of the USSR*, p.46.
[97] Ibid.
[98] Zisk, *Engaging The Enemy*, pp.58, 62 and 68-9 provide an excellent account of the military's stance on this issue.

hierarchy of "old timers who would undoubtedly resist not only Khrushchev's intrusion into their affairs, but also the innovative ideas about doctrine proposed by those who wanted to overturn the positions worked out in the previous decade...In order to maintain a strong, unified coalition against Khrushchev, the issues of Ground Force resources and conventional war-planning had to be kept separate until Khrushchev was out of the way."[99]

As a caveat it must be added that a number of authoritative articles - several of which were accorded the status of formal pronouncements of Soviet doctrine - which acknowledged the possibility that a future war might possess a conventional aspect, actually predated Khrushchev's departure by a not inconsiderable length of time. Therefore the conclusion must be drawn that while there may have been something of a lull in strategic discourse as the confrontation with Khrushchev reached its peak, this did not entail a full suspension of analytical discourse for the duration of his tenure. Khrushchev sought to quell military opposition by inflicting a series of blows against key individuals and institutions during the course of 1960. In the immediate aftermath of his speech to the Supreme Soviet two leading figures of the High Command who had failed to endorse the proposals - Chief of the General Staff, V.D. Sokolovsky and Commander-in-Chief of Warsaw Pact Forces, I.S Konev - were suddenly removed from their posts. [100] Khrushchev also sought to remove another perceived obstacle to his plans through the planned closure of the General Staff Academy in March of that year. A successful rearguard action was mounted by the new Chief of the General Staff, M.V. Zakharov, which culminated in the Council of Ministers overturning Khrushchev's plan in April 1961. This defiance of the Party leader was the probable cause of Zakharov's subsequent removal from his post.[101] Following his removal as Chief of the General Staff, Sokolovsky went on to edit the 1962, 1963 and 1967

[99] Ibid., pp.68-9.
[100] Scott, F.S. and Scott, W.F. 1988. *Soviet Military Doctrine: Continuity, Formulation and Dissemination*, Boulder and London: Westview Press, p.63, n.19, speculate that their previous close relationship with Stalin might serve to explain their removal.
[101] Zisk, *Engaging The Enemy*, p.67, n.100 and n.101.

editions of the *Voyenizdat* publication, *Military Strategy*, which came to match its billing at the time of its initial publication as the most important book written on the subject since 1929. It was hardly evidence of Sokolovsky being consigned to oblivion in the determination of strategic concepts. Meanwhile, Zakharov had regained his old post within days of Khrushchev's own demise. The persistent grumblings of discontent which emanated from most sectors of the military press and the continued high status enjoyed by those military leaders sacked by Khrushchev bore witness to the extent of opposition that he faced and the tenuous nature of his own hold upon power. A plethora of articles was published which signalled profound disagreement with Khrushchev's proposed policy of a one-variant form of conflict reliant solely upon nuclear missile forces. Many argued that the advent of atomic weapons called for still larger ground forces to overcome the anticipated effects of a nuclear attack.[102] One line of attack implied that Khrushchev's proposed strategy shared the same fundamental flaws that had bedevilled Napoleon,[103] while another warned of the dangers of ignoring Clausewitz's dictums on the laws of war.[104] Within the journal of the MPA a bitter polemical struggle was waged between Lieutenant Colonel E. Rybkin and Colonel I. Kuz'min, both of whom had higher degrees in philosophy, and who were respectively an apologist for and avowed critic of the notion that nuclear weapons had led to a qualitative change in military affairs.[105]

Khrushchev's attempts radically to restructure Soviet nuclear doctrine and force structure had effectively been stalled some time prior to his ouster. The cumulative effect of the renewal of Cold War tensions[106] and bureaucratic inertia combined to remove what momentum Khrushchev's programme may initially have possessed.

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[102] Meyer, S. 1984. *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.18; Iovlev, A.M. *Krasnaya Zvezda*, 5 April 1961 from Current Digest of the Soviet Press 13(13):8-9; Rotmistrov, P. *Izvestia*, 20 October 1962 from CDSP 14, no.43, pp.20-1.

[103] Zisk, *Engaging The Enemy*, p.65, n.93 and n.94.

[104] Ibid., p.65, n.95.

[105] Ibid., p.66.

[106] The Powers U-2 incident in May 1960; Kennedy's announcement of the US strategic build-up in January 1961 to bridge the "missile gap" - at a time when the Soviet military was all too well aware that the Soviet Union possessed a mere handful of ICBMs; the Bay of Pigs raid in April and the fruitless Vienna Summit in June of that year.

Within weeks of returning empty-handed from the Vienna Summit Khrushchev had adopted a strategic posture which accorded closely with that previously enunciated by Malinovsky. In the public arena afforded by *Pravda* the Soviet leader reaffirmed that nuclear weapons would continue to be the prime means of defending the Soviet Union, but that "the strengthening of the defence of the Soviet Union depends upon the perfecting of all branches of our armed forces".[107]

The contrast with the sentiments expressed in his speech to the Supreme Soviet a mere seventeen months earlier could hardly have been more striking. However the emphasis continued to be placed upon the inevitable use of nuclear weapons were war with the West to break out. In his speech to the 22nd Party Congress in 1961, Malinovsky had reiterated Khrushchev's assertion of the primacy of nuclear weapons and stated that any future world war would inevitably witness the use of nuclear rockets as the main means of combat. The publication of *Military Strategy* early the following year represented a reaffirmation of the moderated Soviet doctrine. Its text stated that any future war would inevitably be waged through the employment of nuclear rockets, although a balanced force structure and mixed operations would also be required to ensure eventual victory. While the text as a whole was dominated by discussion of the expected nuclear aspects of any future conflict, the issue of a conventional introduction to a future war was alluded to, albeit in rather a tangential manner. All but subsumed within a section dealing with wars of national liberation and localised conflicts, there was a single paragraph which referred to the threat of a West German-led attack upon the GDR, which might not employ nuclear weapons from the outset.[108] While the implication was clearly that this particular "local" conflict would rapidly develop into a full East-West conflict with the ensuing use of nuclear weapons, the introduction of even this minor caveat is noteworthy. *Marxism-Leninism on War and the Army*, which was published late in 1962, demonstrated a

[107] Khrushchev, *Pravda*, 22 June 1961.
[108] Sokolovsky, V.D. (ed.), 1962. *Voyenna Strategiia*, Moscow: Voyenizdat, p.325.

striking similarity to *Military Strategy* in its emphasis on the primacy of nuclear weapons. The respective General Staff and MPA publications thus seemed to accord closely with the new doctrine announced by the Minister of Defence in 1961. The form of Malinovsky's pamphlet, "Vigilantly Stand Guard Over The Peace", was finalised just as the Cuban Missile Crisis repeated the assertion that a future war would inevitably be thermo-nuclear in character and that nuclear missiles would be the principal form of destruction.

The emergence of theatre strategy[109]

The 1963 Doctrinal Revision

In 1965, the editor of *Voennaya mysl'*, Major General S.N. Kozlov, wrote that although military doctrine constantly underwent evolutionary changes, its complete replacement represented a rare action by a state. The fact that, "the formal replacement of Soviet military doctrine had taken place on only three occasions during the existence of the Bolshevik state, served as confirmation of this".[110] This serves as an excellent precis of the process by which Soviet military doctrine evolved throughout the 1960s. It took the form of a methodical and gradual process through which a more sophisticated doctrinal stance emerged by the end of the decade, a stance which admitted the possibility that war with the West *might* assume a markedly different character from the unbridled and instantaneous nuclear exchange posited by Khrushchev in 1961. When taken to its most extreme conclusion, a handful of Soviet sources argued that war with the West might remain conventional for the duration of the conflict. The majority however were rather less sanguine. Indeed the extent to which a conventional aspect in a future war was viewed as a likely scenario of significant duration, and the rapidity of the process by which this possibility was incorporated into the mainstream of Soviet doctrinal analyses, have both been subject to exaggeration on the part of Western analysts. Rather the process of doctrinal revision was ongoing for much of the 1960s and although a wide spectrum of possible scenarios was accepted by the end of the decade, most Soviet sources still anticipated escalation to nuclear employment in a matter of days. The conventional option was viewed for the most part as a short-lived introductory period or a peculiarity confined

[109] For an authoritative precis of the evolution of Soviet nuclear strategy see Kokoshin, A.A. 1998. *Soviet Strategic Thought, 1917-1991*, Cambridge, Mass.: MIT Press, pp.111-129.
[110] Kozlov, S.N. "Military Doctrine and Military Science", in Derevyanko, P.M. 1965. *Problems of the Revolution in Military Affairs*, Moscow: Voyenizdat.

to a particular geographical area for specific reasons. However, despite the misgivings and caveats that were attached, the acceptance of the possibility of a conventional aspect in a future conflict with the West was in itself a major revision of Soviet doctrine. Moreover, this provided the catalyst for a lively discourse on the strategy most suited to meet these doctrinal requirements which proceeded well into the next decade. The revision also entailed major implications for Soviet theatre forces - most especially TNFs - and has traditionally been viewed as a prime motivating factor in the development of new generations of TNFs such as the SS-20.

The Evolution of the Conventional Option

The second edition of *Military Strategy* published in 1963 was said to have contained "one glaring change that had taken place in military doctrine", [111] as it acknowledged that aggression against the Soviet Union or a fellow socialist state need not inevitably lead to a world (and by implication, nuclear) war. Although it was not stipulated in detail, the authors seem, by implication, to have concluded that a "local" conventional war might ensue. Such a conflict would have been expected to escalate to a full-scale nuclear exchange, the admission of the possibility - slim though it may have been - of a conventional introduction in such an authoritative source was an apparent indication of a formal modification in Soviet doctrine.[112] A major conference of military strategists in May 1963 provided a forum for wide-ranging discussions on a number of strategic issues. Entitled "The Essence and Content of Soviet Military Doctrine", it was called by one of the central administrations of the Ministry of Defence, "in all probability the Military Science Administration of the General Staff, the organisation that had supervised the writing of *Military Strategy*".[113] Colonel V.V. Larionov[114]

[111] Scott and Scott, *Soviet Military Doctrine: Continuity, Formulation and Dissemination*, p.41.
[112] The gravity of this revision has been underestimated by some analysts. See MccGwire, M. 1987. *Military Objectives in Soviet Foreign Policy*, Washington D.C.: The Brookings Institution, p.405.
[113] Scott and Scott, *The Armed Forces of the USSR*, p.46.
[114] Assistant editor of *Military Strategy*.

and Colonel V.M. Kulish both addressed the conference. Major General A. A. Prokhorov presented a key discussion paper - whose title matched that of the conference itself - which was devoted to responding to recent Western doctrinal innovations. While a nuclear exchange would represent the "central tenet" of any future conflict, Prokhorov now acknowledged that its opening stage could take the form of a "localised" - and thus by implication conventional - conflict. Another speaker, Colonel V. Mochalov, supported the assertion that such a development had occurred in Western strategy. Both stressed the need for detailed consideration of such innovations and their implications for Soviet strategy.[115] In the wake of the conference, a series of articles appeared in *Voennaya mysl'* during the course of 1963 which urged Soviet planners to remain cognisant of developments in Western military planning and argued that Soviet strategy should remain responsive in character.[116] Pressure to review Soviet strategy gathered further momentum in December 1963 with the publication in *Izvestia* of an article by the Chief of Staff, Marshal S.S. Biryuzov which contended that although there remained a continuing danger of nuclear conflict, it was no longer inevitable and Soviet forces should be prepared to meet any eventuality.[117] The tenor of such articles stood in contrast to much of the literature of the era which had considered a future conflict exclusively in nuclear terms.[118] The debate continued into 1964 and this year witnessed the entry into the fray of Major General S. N. Kozlov. Kozlov enjoyed a position of considerable authority as editor of *Voennaya mysl'* from 1963-9.[119] In the immediate aftermath of Khrushchev's removal, the second edition of "On Soviet Military Science" was

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[115] Belousov, L. 1963. "Conference on Soviet Military Doctrine", *Voyenno-Istorichesky Zhurnal*, 10:122-3.

[116] Kazakov, D. 1963. "The Theory and Methodology Pertaining to Soviet Military Science", *Kommunist vooruzhennykh sil*, 10:11-2, 71-2 urged Soviet planners not to lose sight of the possibility of a conventional introduction to a future war.

[117] Biryuzov, S.S. "Politics and Nuclear Weapons", *Izvestia*, 11 December 1963. Biryuzov was later killed in a mysterious crash while on a flight to Yugoslavia, days after Khrushchev's removal.

[118] Balansov L. and Sapozhnikov, L. 1963. "Troop Combat Operations Under Conditions of Radioactive Contamination of Terrain", *Voennaya mysl'*, 7:48-61; Lapshin, K. 1963. "Surmounting Obstacles and Zones of Destruction and Radioactive Contamination of the Offence", *Voennaya mysl'*, 10:15-27 and Zisk, *Engaging The Enemy*, p.59, n.58.

[119] Kozlov was to become a leading exponent of mathematical modelling for strategic planning in the following decade.

published by Voyenizdat. It was written by Kozlov, M. V. Smirnov, I. S. Baz and P. A. Sidorov.[120] This publication followed a fairly conservative line, asserting that war would be nuclear and swift-moving. Such a war might well be of a limited duration, although a more protracted timescale was not ruled out. A strong and balanced force structure was thus required. The possibility that general war might evolve from a localised - and by implication conventional - conflict was accepted. However of perhaps greatest significance for future developments was the assertion that "doctrine is not dogma, but a guide to action". Kozlov's other contribution to the debate during the course of this year accorded still more overt credence to the notion of conventional conflict.[121] Indeed he went so far as to warn against the over-estimation of the operational utility of nuclear weapons and argued that the waging of a prolonged, conventional war of attrition might avoid the resort to nuclear exchange.[122] Another source advised that Soviet forces should be trained to fight under nuclear or conventional conditions, thus requiring the dovetailing of conventional and nuclear weapons.[123] On a related theme, there was a warning that any use of nuclear weapons - whether strategic or TNFs - would probably cause an escalation to all-out nuclear war that conventional conflict alone could avoid.[124] A particularly strident case against the political utility of nuclear weapons' use had been made in *Kommunist vooruzhennykh sil* in January,[125] while another had claimed that future war would be nuclear in character from the opening minutes.[126] Consideration was given to possible

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[120] In addition to Kozlov's position of authority, Sidorov was secretary of *Voennaya mysl'* from 1963-72, while Baz served for a time on its editorial board.

[121] Kozlov, 1967. "The Development of Military Science After The Great Patriotic War", *Voennaya mysl'*, 2:47 argued that the Soviet military must not ignore the possibility of a conventional introduction to a future war.

[122] Kozlov, 1964. "Military Doctrine and Military Science", *Kommunist vooruzhennykh sil*, 5:47.

[123] Reznichenko, V. 1964. "Questions of Contemporary Combined Operations Combat", *Voennaya mysl'*, 3:21-32.

[124] Ponomarev, P. 1964. "Crisis of Bourgeois Theories of War and Peace", *Kommunist vooruzhennykh sil*, 16:13 cited in Goldberg, A.C. 1987. *New Developments in Soviet Military Strategy*. Washington D.C.: Centre for Strategic and International Studies, p.14 n.43.

[125] Sushko N. and Kondratkov, T. "War and Politics in the 'Nuclear Age'", *Kommunist vooruzhennykh sil*, 2nd January 1964 cited in Garthoff, R.L. "Mutual Deterrence and Strategic Arms Limitation in Soviet Policy", in Lynn-Jones, S.M., Miller, S.E. and Van Evera, S. (eds.) 1989. *Soviet Military Policy*. Cambridge. Mass.: MIT Press. p.174, n.5.

[126] Vasendin, N. 1964. "Comments on the Article, 'Augmentation of Strategic Effort in Modern Conflict'", *Voennaya mysl'*, 9:60.

US' preferences for retaining conflict at a localised and conventional level.[127] On this occasion, however, the author was rather more pessimistic in his conclusions and argued that the very weakness of Western conventional forces would of itself lead to NATO's recourse to the nuclear option.

From 1964, there also began to appear a number of articles which envisaged a conventional aspect as a potential feature in a future conflict for purely operational reasons. In what were set to become recurring themes in the coming years, some argued that conventional weapons might be used on secondary axes of operations, while nuclear strikes were confined to the principal TVD of Central Europe[128], while others foresaw their utilisation in instances where a lack of available nuclear weapons might in itself force the exclusive employment of conventional weapons.[129] Another line of argument favoured the use of a conventional introduction to allow time to prepare for the employment of nuclear weapons to optimum effect.[130]

The fourth edition of *Marxism-Leninism on War and the Army*[131] was one of the first books of the Officers' Library series. Given that it was later nominated for the 1966 Frunze Prize and its authorship was largely the same as that of the second and third editions, it can be regarded as enjoying high level approval and representing a sense of continuity. It repeated the assertion made in the 1962 edition about the potential importance of a surprise nuclear strike. However to this was now added, "*At the same time, Soviet military doctrine takes into account the possibility of waging war*

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[127] Mochalov, V. 1964. "Types of War According to the Pentagon", *Voennaya mysl'*, 9:86-90.
[128] Fedulov, M., Shemelev, M., Sinyayev, A. and Lyutov, I. 1964. "Problems of Modern Combined-Arms Combat", *Voennaya mysl'*, 10:28-9. This theme was still being echoed nearly a decade later. Grechko, A.A. 1972. *On Guard Over the Peace and Building of Communism*, Moscow: Voyenizdat, p.55 and Rodin, A. 1972. "Increasing Anti-Tank Stability - A Trend of Modern Defence", *Voennaya mysl'*, 8:59.
[129] Golvchiner, B. 1964. "Encirclement and Annihilation of Groupings of Defending Troops", *Voennaya mysl'*, 8:42-52; Dzhelaukov, Kh. 1966. "The Infliction of Deep Strikes", *Voennaya mysl'*, 2:47; Reznichenko, V. and Bob, Ye. 1966. "Consolidating a Gain in an Offensive Operation", *Voennaya mysl'*, 3:47; Shkarubskiy, P. 1966. "Artillery Before and Now", *Voennaya mysl'*, 2:51; Smirnov, N. 1967. "An Engagement in Nuclear Warfare", *Voennaya mysl'*, 9:48-9.
[130] Vasendin, N. and Kuznetzov, N. 1968. "Contemporary War and Surprise", *Voennaya mysl'*, 6:45.
[131] Sushko N. and Tiuskevich, S.A. 1965. *Marxism-Leninism on War and the Army*, Moscow: Voyenizdat.

with conventional weapons",[132] while nuclear weapons would play a "decisive role, combined operations were also required".

Zisk claimed to have been told that 1965 was the "key year" in the process of doctrinal revision by a retired General Staff officer whose position made him privy to such information[133] and her chronological framework was supported by Raymond Garthoff.[134] Zisk asserted that articles which later appeared in *Voennaya Mysl'* and General Staff Academy war games support this timing.[135] While this claim might well be accurate, the bulk of the strategic literature which appeared during the course of that year was conservative in tone and did not seem inclined to accept the conventional aspect.[136] The following decade and more witnessed a period of frenetic publication in the Soviet military press and something of a shift in the balance of opinions expressed. Those who favoured the notion of a potential conventional aspect came to enjoy first a parity, then a position of limited ascendancy, over their more conservative colleagues. Detailed comparison of consecutive editions of key texts adds weight to the argument that a significant doctrinal revision was ongoing at this time and that the proponents of modernisation were gradually attaining a more influential position.

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[132] This section was reprinted in italics in the original Russian version, pp.337-8.

[133] Zisk, *Engaging the Enemy*, p.74, n.143.

[134] Garthoff, R. 1990. *Deterrence and the Revolution in Soviet Military Doctrine*. Washington D.C.: Brookings Institution, p.52, n.7.

[135] Zisk, *Engaging the Enemy*, p.74, n.144, n.145 and n.146.

[136] Derevyanko, P. (ed.) 1964. *Problems of the Revolution in Military Affairs*, Moscow: Voyenizdat. Typeset immediately prior to Khrushchev's fall, this contained a number of articles previously contained in *Kommunist vooruzhennykh sil* and *Krasnaya Zvezda*. Boasting Malinovsky as one of its authors, it argued that a future war would definitely be nuclear and brief in character. Malinovsky reaffirmed this gloomy prediction in an individual piece entitled, "The Historic Exploits of the Soviet people and their Armed Forces in the Great Patriotic War", *Voennaya mysl'*, 1965. 5:27. Malyanchikov, S.V. 1965. "On the Nature of Armed Struggle in Localised Wars", *Voennaya mysl'*, 11:12-24 refuted the notion that war in the European TVD could remain "local" and conventional. Lomov, N.A. 1965. "Vliyanie sovetskoi voennoi doktriny na razvitie voennogo iskusstva", *Kommunist Vooruzhennykh Sil*, 21:15-24, admitted the need for balanced forces, but anticipated nuclear war in which the initial period would be decisive.

Marxism-Leninism on War and the Army

This text already possessed a history of playing the role of signalling new Soviet doctrinal stances. Its first edition in 1961 had detailed Khrushchev's radical initial stance. Its second edition in 1962 (with "Military Strategy") outlined the doctrinal refinement in the wake of the 22nd Party Congress. The fifth edition of "Marxism Leninism on War and the Army"[137] was published in 1968. The fact that it was felt necessary to update a Frunze Prize nomination a mere 32 months following its previous publication is offered as evidence that a significant doctrinal revision had in fact occurred.[138] Authored by chairs of such prestigious institutions as the Military Academy of the General Staff, Frunze, the Malinovsky Tank Academy and the Lenin Military Political Academy, its comments on the likely form a future war provided an interesting contrast to those contained within the previous edition of 1965. While the fourth edition had argued that a future global conflict would *inevitably* be nuclear in character, it was now stated that such a war *might* be nuclear. Although nuclear escalation was still posited to be the likely eventual outcome, "the possibility of conducting operations (does *not* stipulate "local" wars only) with conventional weapons"[139] was now acknowledged. Moreover the authors also stated that military doctrine was subject to change over time and that Soviet doctrine was currently undergoing a process of re-evaluation, although its principal aspects remained unaltered. Scott and Scott view this as "another confirmation of the modification which had first appeared around 1965: War might begin with the use of conventional weapons, but escalation was likely".[140] Subtle but significant alterations in phraseology were also apparent in the 1968 edition.[141] The "special responsibility"

[137] Tiushkevich, S.A., Sushko, N. and Dzyuba, Ya. S. 1968. *Marxism-Leninism on War and the Army*, 5th ed., Moscow: Voyenizdat.
[138] MccGwire, *Military Objectives in Soviet Foreign Policy*, pp.397-404. MccGwire believed that unlike the 3rd edition of *Military Strategy*, *Marxism-Leninism on War and the Army*, was not subject to last minute revision. He claimed that the "doctrinal revision" could thus be traced to the December 1966 Party Plenum.
[139] Sushko, *Marxism-Leninism on War and the Army* 5th ed., pp.350-1.
[140] Scott and Scott, *Soviet Military Doctrine: Continuity, Formulation and Dissemination*, p.48.
[141] MccGwire, *Military Objectives in Soviet Foreign Policy*, pp.390-1.

previously accorded to the SRF was now devolved once more onto all branches of the Soviet military. "Contemporary war" replaced "nuclear war" in section headings and nuclear war was now posited as "a possibility" rather than, "inevitable". "War could begin as non-nuclear and then escalate to nuclear; in certain circumstances...(other)...means of carrying out extended war" might be found. A section detailing the initial period of conflict as, "the time in which nuclear strikes will be carried out" was deleted. In apparent expectation of the potential for a prolonged conflict, more attention was devoted to the role of the economy.

Methodological Problems of Military Theory & Practice

Zheltov, Kondratkov and Khomenko edited the work of twenty authors in the *Methodological Problems of Military Theory and Practice.*[142] Published shortly after the 23rd Party Congress in 1966, it argued that Soviet strategy and attendant force structures should be prepared to respond to the contrasting requirements of both conventional and nuclear aspects of conflict. The second edition was published in 1969.[143] Its authorship boasted contributions from twenty-four of the Soviet Union's leading strategic planners.[144] Kozlov provided a chapter for both editions.[145] Comparison of Kozlov's contributions to both editions is instructive. In the second edition, far more attention was devoted to conventional weapons and they were clearly distinguished from their nuclear counterparts. Moreover, he argued that "the

[142] Zheltov, A.S., Kondratkov, T.R. and Khomenko, Ye.A. (eds.) 1966. *Methodological Problems of Military Theory and Practice.* Moscow: Voyenizdat.
[143] Zheltov *et al.* 1969. *Methodological Problems of Military Theory and Practice.* Moscow: Voyenizdat.
[144] This in part explained its increase in size from 328 to 510pp.
[145] Although his star was obviously rising - he was promoted immediately prior to the publication of both the first and second editions - Kozlov still felt the need to defend his ideas. In 1966, he authored an article in which he defended the study of "foreign" strategic concepts against the charge of seeking to emulate imperialists. This can be seen as evidence of the on-going debate within military circles concerning the efficacy of allowing the formulation of Soviet strategy to be influenced by Western innovations. Kozlov, S.N. 1966. "The Formulation and Development of Soviet Military Doctrine", *Voennaya mysl'*, 7:57.

imperialists may for some time wage war without nuclear weapons".[146] The text as a whole was markedly less didactic in style and seemed to place a new emphasis upon the historical lessons provided by the Soviet experience during the Great Patriotic War. Perhaps the most dramatic *volte face* was that of one of the joint editors, Zheltov, who as late as 1967 had asserted that war would inevitably witness the use of nuclear weapons.[147]

Military Strategy

MccGwire has argued that the third edition of *Military Strategy* was subject to last-minute editorial adjustments, perhaps even after it had been sent for printing.[148] This task was helped by the fact that almost all of the changes involved the omission of past sections.[149] The third edition contained "a number of amendments that touched on Soviet strategic concepts, and taken together, these implied a fundamental shift in underlying military doctrine".[150] MccGwire contrasted the articles co-authored by Marshal Sokolovsky and Major General Cherednichenko[151] which were published in March 1966 and October 1968 respectively.[152] While the former made no specific

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[146] Scott and Scott, *Soviet Military Doctrine: Continuity, Formulation and Dissemination*, pp.45-52 for a full textual comparison.

[147] Zheltov, A.S. 1967. *V.I. Lenin and the Soviet Armed Forces*, 1st ed., Moscow: Voyenizdat, pp.226-7.

[148] MccGwire, *Military Objectives in Soviet Foreign Policy*, pp.387-96.

[149] Sent to the typesetters in late November 1966, it was not released to the printers until a full year later and was eventually published in 1968. In the third edition, the heavy emphasis on the importance of surprise and pre-emption was dropped; the notion of a "limited" war was discussed in detail while in the 2nd edition it had been disdainfully discounted and more attention was paid to the logistical and industrial requirements of a protracted struggle.

[150] MccGwire, *Military Objectives in Soviet Foreign Policy*, p.387.

[151] It is instructive to compare Cherednichenko's 1968 offering to his subsequent solo works which were characterised by their rather cautious approach to the subject of a conventional option. Cherednichenko, M.I. 1970. "Features in the Development of Military Art", *Voyenno-Istorichisky Zhurnal*, 6:29 cited in Goldberg, *New Developments in Soviet Military Strategy*, p.10, n.29 and Cherednichenko, M.I. 1973. "Military Strategy and Military Technology", *Voennaya mysl'*, 4:53 cited in Zisk, *Engaging The Enemy*, p.72, n.134.

[152] Sokolovsky, V.D. and Cherednichenko, M. 1966. "On Contemporary Military Strategy", *Kommunist vooruzhennykh sil*, 7 and Sokolovsky, V.D. and Cherednichenko, M. 1968. "Military Strategy and its Problems", *Voennaya mysl'*, 5 cited in Hines, Petersen and Trulock, "Soviet Military Theory from 1945-2000: Implications for NATO", p.122 n.9.

mention of a potential conventional aspect in a future conflict, the latter stated that "military affairs are entering or have already entered the next stage of their development".[153] Sokolovsky and Cherednichenko also contended that "the possibility is not excluded of wars occurring with the use of conventional weapons, as well as the limited use of nuclear means in one of several theatres of military action, or of a relatively protracted nuclear war with the use of capabilities of all types of armed forces".[154] This would seem to indicate something of a shift on the authors' part to include not only the conventional option, but also an early recognition of a concept of a limited nuclear exchange. In the style of classic Soviet strategy, it sought to prepare for all perceived eventualities.

MccGwire has also highlighted the plethora of new editions of key military texts, many of which had only recently been updated.[155] A major contribution to the debate was made by General Zav'yalov. The author was a distinguished military strategist in his own right, who had contributed to Sokolovsky's *Military Strategy*. He had authored a rather cautious article in the wake of the 23rd Party Congress in July 1966 which had concluded that escalation was inevitable in time.[156] Thus a nuclear warfighting capability was essential.[157] However, almost a year after the 23rd Congress, Zav'yalov produced a new study which, while it restated many traditional Soviet views, introduced some subtle and innovative nuances. Through the vehicle of criticism of "bourgeois strategists", he chided those who made a "fetish of nuclear weapons" and stressed the importance of a balanced force structure and strategic defence. Soviet military doctrine, he added, was currently being "enriched with new theses".[158] Set against this rather innovative approach, Zav'yalov's 1971 article in

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[153] Sokolovsky and Cherednichenko, "On Contemporary Military Strategy", p.40.
[154] Ibid., p.383.
[155] MccGwire, *Military Objectives in Soviet Foreign Policy*, pp.400-5.
[156] Zav'yalov, I. 1966. "The 23rd Party Congress and Questions Concerning the Further Consolidation of the armed Forces", *Voennaya mysl'*, 7.
[157] On p.10, he stated, "at this time, a consensus exists on the fundamental questions of military affairs."
[158] Zav'yalov, I. "On Soviet Military Doctrine", *Krasnaya Zvezda*, 30 and 31 March 1967. This two-part article was reproduced at the foot of pp.2 and 3 of the paper, a position identified by MccGwire

Voennaya mysl'[159] seems rather reactionary, restating as it did the primacy of nuclear weapons in a European TVD conflict which was assumed to possess a specifically nuclear character. The apparent *volte face* on the part of both Zav'yalov and Zheltov is indicative of the fact that the strategic debate within Soviet circles was far from linear in its character and the position of individual analysts themselves changed over time. Indeed, a brief survey of related literature which emerged during the following decade serves to highlight an absence of unanimous acceptance of the implications of the doctrinal shift among key figures within the military elite. Increasing credence was afforded to the possibility of a conventional aspect in a future conflict by the support afforded to it by certain members of the military leadership. An article that was personally attributed to the Minister of Defence called upon Soviet forces to be able to meet the operational requirements of combat under either conventional or nuclear conditions,[160] while no less a figure than Marshal Krylov, head of the SRF, acknowledged the possibility that future war might be initiated with a conventional introduction, "which might last for some time."[161] Marshal Yakubovsky, then Commander-in-Chief of Warsaw Pact force, stated that despite the constant threat of nuclear attack, operations could remain conventional.[162]

Evidence of the greater attention to the conventional aspect was also apparent in Soviet military exercises and their accompanying literature in the late 1960s. The "Dnepr" exercise in 1967 featured a conventional introduction and it was reported that both conventional and nuclear conditions should be simulated in such exercises.[163]

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as the "usual location for major theoretical statements". In addition, MccGwire highlights the apparently related article by Admiral Gorshkov in *Morskoy sbornik* which for the first time since the "Revolution in Military Affairs", called for a balanced naval force capable of carrying out conventional operations. See MccGwire, *Military Objectives in Soviet Foreign Policy*, pp.397 and 399.

[159] Zav'yalov, I. 1971. "Evolution in the Correlation of Strategy, Operational Arts and Tactics", *Voennaya mysl'*, 11:36.

[160] Order of the USSR Minister of Defence, 6 November 1965, no.303, cited in "Under the Banner of the Great Lenin", *Voennaya mysl'*, 1966. 2:13-14.

[161] Krylov, N. 1967. "The Nuclear Missile Shield of the Soviet State", *Voennaya mysl'*, 11:17. Cited in Garthoff, R.L. "Mutual Deterrence and Strategic Arms Limitation in Soviet Policy", in Lynn-Jones, S.M., Miller, S.E. and Van Evera, S. (eds.) 1989. *Soviet Military Policy*. Cambridge, Mass.: MIT Press, p.186, n.41.

[162] Yakubovsky, I. 1968. "Fifty Years of the Armed Forces of the USSR", *Voennaya mysl'*, 2:31-2.

[163] Penkovsky, V. 1967. "Combat Training of Troops at the Present Stage", *Voennaya mysl'*, 11:60.

The "Dvina" exercise of 1970 also possessed a conventional aspect, though greater emphasis was placed upon the escalatory link between the conventional and nuclear phases.[164] Despite the gradual move towards recognition of the conventional possibility, Soviet commentators themselves admitted on several occasions during the next decade that heated debate continued at the highest echelons on the related questions of strategy and force structure.[165]

Diametrically opposing views appeared in high level publications for the rest of the 1960s and well into the 1970s. Some articles stipulated that a future war would certainly be dominated by "decisive" nuclear weapons[166] or would certainly escalate to involve their use,[167] while some went so far as enthusiastically to advocate their use.[168] Others implicitly discounted the conventional option through omission,[169] while others assured their readers that escalation to the employment of "decisive" nuclear forces

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[164] Erickson, J. 1971. *Soviet Military Power*, London: Royal United Services Institute, p.68. Interestingly, the only Soviet account which cast light upon the question of simulated nuclear employment during the Dvina exercise alluded to it by discussing landing forces *following-up* strategic nuclear strikes. Volkov, A.F. and Zapara, N. 1971. "The Scientific Revolution in Military Affairs", *Kommunist vooruzhennykh sil*, 2:12.

[165] Dzhelaukov, Kh. 1967. "The Evolution of US Military Doctrine", *Voennaya mysl'*, 9:94; Korotkov, I. 1973. "Some Questions on the History of Soviet Military Science", *Voennaya mysl'*, 11:107; Zhakarov, M.V. (Khrushchev's old adversary), 1976. "New Horizons of the Military Press", *Voennaya mysl'*, 9:5.

[166] Poluboiarov, P. 1967. "The Armoured Troops of the Soviet Army", *Voennaya mysl'*, 9:26-7; Azovtzev, N.N. 1971. *V.I. Lenin and Soviet Military Science,* Moscow: Nauka, p.283; Skovorodkin, M. 1967. "Some Questions on the Co-ordination of Branches of the Armed Forces in Major Operations", *Voennaya mysl'*, 2:36-7; Begunov, S. 1968. "The Manoeuvre of Forces and Materiel in an Offensive", *Voennaya mysl'*, 5:42; Simonyan, R. 1972. "The Development of Military Intelligence", *Voennaya mysl'*, 8:74. The case of General I. Shavrov provides a fascinating insight into the complex and often contradictory evidence provided by the study of Soviet texts of the period. While he argued in "Soviet Operational Art", *Voennaya mysl'* 1973. 10:11-12, that war within the European TVD would result in a decisive nuclear exchange, Zisk, *Engaging the Enemy*, p.69, n.116 highlights the fact that he was uniquely identified as one whose contribution to the Voroshilov Lectures had identified the conventional pause as a contingency which required study. Whether this indicates that such a scenario was intended to be considered in the more discreet surroundings of the Voroshilov Academy is unclear.

[167] Semenov, G. 1968. "The Content of the Concept of an Operation", *Voennaya mysl'*, 1:92.

[168] "The Tasks of Soviet Military Science in the Light of the Decisions of the 24th Party Congress", an unsigned editorial in *Voennaya mysl'* 1971. 8:8.

[169] Bondarenko, V.M. 1966. "Military Technical Superiority: The Most Important Factor of the Reliable defence of the Country", *Kommunist vooruzhennykh sil*, 17; Shchedrov, V. 1966. "Camouflaging Troops During Regrouping and Manoeuvre", *Voennaya mysl'*, 6:61; Kalashnik, M. 1966. "Actual Questions of Ideological Work in the Armed Forces", *Voennaya mysl'*, 8:2; Ruban, M. 1968. "The Strategic Forces of the Soviet Union and the Transition to a Communist Structure", *Kommunist vooruzhennykh sil*, 13:80-1; Strokov, A.A. 1966. *The History of Military Art.* Moscow: Voyenizdat; Yepishev, A. 1968. "The Question of Moral-Political and Psychological Training of Troops", *Voennaya mysl'*, 12:16.

was inevitable. By contrast, on rare occasions, enthusiastic proponents of the conventional-only option were apparent.[170] Indeed examples of this theoretical conflict also exist in microcosm, with contrasting views apparent in the same or consecutive publications of the same journal.[171]

Despite this a general consensus can be discerned as having emerged over time. It was recognised that conventional operations were possible, though they would occur under the constant threat of escalation.[172] While some now recognised conventional and nuclear war as separate entities,[173] escalation to nuclear employment was perceived as the eventual outcome of any conflict with the West.[174] A mere handful of sources contended that the conventional period could be maintained for a sustained period, although it was conceded that it might increase in duration as the US was

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[170] Sidorov, P. 1969. "The Leninist Methodology of Soviet Military Science", *Voennaya mysl'*, 4:26; Kurochkin, P. 1973. "A Chronicle of Heroism and Victories", *Voennaya mysl'*, 4:53.

[171] Arushanian, B. 1966. "Combat Units by Tank Units Against Operational Defence Reserves", *Voennaya mysl'*, 1:29-35 advocated the use of Soviet nuclear weapons to destroy NATO TNFs; Liyutov, I. 1966. "Some Problems of Defence Without the Use of Nuclear Weapons" *Voennaya mysl'*, 7:36-46 advocated the use of conventional forces for this mission. Shakarubskiy, B. 1966. "The Artillery in Modern Combat Operations", *Voennaya mysl'*, 6:61-66 and Shliapkin, A. 1968. "Air Support of Ground Troops", *Voennaya mysl'*, 8:35 clashed in a similar fashion on the most effective means of destroying NATO TNFs.

[172] Reznichenko, V. *et al.* (eds.), 1966. *General Tactics: A Textbook*, Moscow: Voyenizdat, p.ii; Reznichenko, "The Tendencies of the Development of Nuclear Battle", *Krasnaya Zvezda*, 28 June 1967; Nikitin, M. 1968. "To Develop the art of Conducting Battles", *Voyennyi vestnik*, 10, pp.EE8-14 FBIS trans.; Bondarenko, V.M. 1968. "The Modern Revolution in Military Affairs and Combat Readiness of the Armed Forces", *Kommunist vooruzhennykh sil*, 24:29 cited in Scott and Scott, *Soviet Military Doctrine: Continuity, Formulation and Dissemination*, p.57, n.78.; Shtrik, S. 1968. "The Encirclement and Destruction of the Enemy During Combat Operations Not Involving the Use of Nuclear Weapons", *Voennaya mysl'*, 1:53-5; Vorob'yev, I. "The Power of Fire and Armour: On the Role of Weapons and Equipment in the Victorious Outcome of the Great Patriotic War", *Krasnaya Zvezda*, 5 February 1970; Ionin, G. and Kushch-Zharko, K. 1971. "Defence in the Past and the Present", *Voennaya mysl'*, 7:62-75; Milovidov, A.S. and Kozlov, V.G. 1971. *The Philosophical Heritage of V.I. Lenin and Problems of Contemporary War*. Moscow: Nauka, p.136; Strokov, A.A. 1971. *Military History*. Moscow: Voyenizdat, pp.340-5; Shkadov, I. 1973. "The Contemporary Art of Warfare and Some Questions on the Training of Military Personnel", *Voennaya mysl'*, 11:19 and Cherednichenko, M.I. 1970. "Features in the Development of Military Art in the Postwar Period", *Voyenno-Istorichesky Zhurnal*, 6:29; Ivanov, S.P. 1969. "Soviet Military Doctrine and Strategy", *Voennaya mysl'*, 5:47-9.

[173] Zhakarov, M.V. 1968. "Soviet Military Science Over Fifty Years", *Voennaya mysl'*, 2:51; Samurokov, B. 1967. "Combat Operations Involving Conventional Means of Destruction", *Voennaya mysl'*, 8:30.

[174] Sliunin, N. 1967. "Nuclear Resistance of Ground Troops", *Voennaya mysl'*, 12:44; Kir'ian, M. 1971. "Weapons of Mass Destruction in the Aggressive Plans of NATO", *Voennaya mysl'*, 12:108.

attempting to increase NATO reliance upon conventional forces.[175] Soviet nuclear and conventional forces should thus be dovetailed to provide optimum levels of flexibility for military planners.[176] However the key role that would be accorded to nuclear weapons was such that the nuclear warfighting capabilities of the Soviet armed forces must be maintained as a matter of priority.[177]

A conservative synthesis emerged in the strategic literature of the late 1960s. A conventional aspect to a future war was acknowledged to exist. However this acknowledgement was guarded, was not unanimously held and qualified with vital caveats. Major figures continued to challenge, undermine and on occasion directly refute it throughout the 1970s. Moreover there did not seem to exist widespread optimism that a conflict would remain conventional for a prolonged period. This was due to the belief that NATO would be forced to resort to escalation. The disparate response among NATO members to Flexible Response recurred in the wake of the Schlesinger Doctrine and served only to accentuate Soviet strategists' scepticism that escalation to nuclear employment could be avoided.

Interviews conducted in the wake of the Soviet Union's demise serve to amplify the notion that the issue of the likely nature of a future war led to considerable ferment within the upper echelons of the military itself. Moreover they portray a process of

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[175] Nepodayev, Yu. 1966. "On the Nuclear Threshold in NATO Strategy", *Voennaya mysl'*, 6:70-2 cited in Goldberg, *New Developments in Soviet Military Strategy*, p.11, n.34. The timescale of NATO retention of the conflict at the conventional level increased still further in the 1970s but Soviet strategists displayed a perennial expectation that NATO conventional weakness would eventually force an escalation to the employment of nuclear weapons. They were joined in this view by many of their Western counterparts.

[176] "Let's Raise Military-Scientific Work to the Level of Party Demands", *Voennaya mysl'*, 1966. 3:2; Grechko, A.A. 1970. "On Guard Over Peace and Socialism", *Kommunist*, 3; Grechko, A.A. 1970. "Loyalty to Lenin's Behests on the Defence of the Motherland", *Kommunist vooruzhennykh sil*, 7; Zheltov, A.S. 1980. *V.I. Lenin and the Soviet Armed Forces*, 3rd ed, Moscow: Voyenizdat, pp.226-7.

[177] Bochkarev, K.S. "Nuclear Arms and the Fate of Social Progress", *Sovetskaya Kirgizia*, 25 August 1970 cited in Garthoff, R.L. "Mutual Deterrence, Parity and Strategic Arms Limitation in Soviet Policy" in Leebaert, D. (ed.) 1981. *Soviet Military Thinking*. London: George Allen and Unwin, p.121, n.10; Milovidov, A.S. and Kozlov, V.G. 1971. *Filosofskoye Naslediye V.I. Lenina i Problemy Sovremennoy Voyny*. Moscow: Nauka, p.136; Lomov, N.A. (ed.) 1973. *Nauchno-Tekhnicheskii Progress i Revolyutsiya v Voyennom Dele*, Moscow: Voyenizdat, p.138; Grechko, A.A. 1974. *Vooruzhennye Sily Sovetskogo Gosudarstva*. Moscow: Voyenizdat, pp.344-7.

disengagement on the part of the political leadership in the formulation of military strategy and doctrine for the greater part of the Brezhnev era and beyond in vivid contrast to the traditional appraisal of the creation of Soviet strategic precepts in their *classical* form. Western analyses frequently identified defence minister Marshal Grechko as an ideological and strategic hardliner who was a late and somewhat reluctant convert to the merits of the SALT process. However it is apparent that none managed to gauge the true extent of his antipathy towards and suspicion of the West, nor of his unswerving adherence to a strategy of pre-emptive nuclear attack.

Grechko was deeply opposed to the concept of graduated military responses and remained wedded to the notion of a massive pre-emptive strategic strike. He stridently attacked the notion of a second strike posture and its attendant ideological and technological ramifications.[178] Tolubko was similarly portrayed as "dying to push the button"[179] - an attitude he apparently retained throughout his service career. Grechko's opposition to mobile ICBMs and their associated strategic precept of assured retaliation placed him at odds with the political leadership and the proponents of strategic innovation within the General Staff. Grechko sought to block the development of mobile ICBMs which had been proposed by Yangel in the early 1960s and which enjoyed the support of Ustinov and the Defence Council. Furthermore he apparently disbanded the science committee of the SRF which had had the temerity to endorse the proposal.[180]

General-Colonel Illarionov spoke of Grechko's continued preference for a "first-strike" policy which persisted even in the wake of the Defence Council's revision of nuclear strategy in 1969. Illarionov observed that he was "able to hold back much of

[178] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.
[179] Ibid., file 2.
[180] Ibid., file 2. The technical failure of the ensuing SS-15 programme ensured that the argument was at this stage merely academic. However it might reasonably be assumed that the ensuing development of the SS-16 and SS-20 systems in the near future brought this subject to the fore once again. Grechko's apparent failure to prevent continued attempts to develop mobile systems is in itself significant.

the Ministry of Defence and the technical analytical specialists in the military industries and military-political staff in making progress in improving systems and systems' survival. He overruled many, including the chief of the Strategic Rocket Forces who relied for his advice on his own military-technical committee."[181] Iu. A. Mozzhorin, the General Director of TsNIIMash, spoke of his own temerity in seeking to interject during the "silo debate" and the short shrift his views were afforded by Grechko, Ustinov, Chelomei and a number of other military industrialists. They deemed the quantitative advantages offered by the production of more missile systems a more effective utilisation of resources than the qualitative enhancement of strategic survivability engendered by silo basing. Mozzhorin similarly recounted the initial antipathy towards single-shot missile systems displayed by commanders who shared Grechko's Great Patriotic War vintage. Imbued with the traditions of Soviet artillery from which so many of the first generation of SRF officers were drawn, they initially displayed deep scepticism as to the operational efficacy of such "cannon" that could fire but a single salvo without the capacity to reload.[182]

Dr Tsygichko, a Senior Analyst in the All-Union Scientific-Technical Institute for Systems Studies (VNIISI), has observed that while the effects of nuclear war were understood by the General Staff, Minister of Defence Ustinov "did not really comprehend" the full implications of such a scenario.[183] This assertion was supported by General-Colonel Danilevich of the General Staff. Danilevich recounted that Brezhnev and Kosygin were "visibly terrified" when presented with the results of computer models of the likely effects of a nuclear attack upon the Soviet Union. Danilevich recounted in sardonic fashion Brezhnev's visible unease when asked to push the button for a simulated ICBM as the exercise's culmination. "When the time came to push the button Brezhnev was visibly shaken and pale and his hand trembled and he asked Grechko several times for assurances that the action would not have any

[181] Ibid., file 2.
[182] Ibid., file 3.
[183] Ibid., file 1.

real-world consequences. 'Andrei Andrevich (Grechko), are you sure this is just an exercise?'" Given its potentially deleterious effects upon morale the results of the modelling procedure were subsequently altered to lessen the predicted impact of a mass nuclear strike and the report's conclusions were "buried". This position persisted until the early 1980s.[184] Indeed in the wake of his experience of 1972 Brezhnev studiously avoided undertaking a participatory role in the formulation of Soviet nuclear strategy. This approach was also adopted by his Politburo colleagues and extended to include Minister of Defence Ustinov following his accession to the post in 1976. Moreover it continued to be the policy norm during the tenures of Andropov, Chernenko and Gorbachev. Danilevich supposed that in the event of conflict with the West the political leadership "would have become concerned and would have turned to people who, they would have hoped, had been thinking about what to do in the event of a strategic emergency".[185]

An excellent synopsis of unrivalled authority of the course and nature of the Soviet strategic revision was offered by General-Colonel Danilevich who contended that conservatism and realism returned to Soviet strategic analyses with the advent of the Brezhnev regime and were accompanied by an appreciation of the likely effects of nuclear conflagration. The advent of a Soviet SLBM force and the strengthening of the SRF as a whole combined with an interaction with evolving US strategic concepts to enable the development of more sophisticated strategic concepts by Soviet military planners. The role played by such Western concepts as Flexible Response or the Schlesinger Doctrine was rejected by Soviet theorists in their public pronouncements. Their effects in practical terms were however more readily apparent. Thus by the mid-1970s and despite the bombastic public statements by Grechko and his allies, the notion of an unrestrained response to *any* use of nuclear weapons against Soviet territory was increasingly tempered. A limited NATO tactical strike might thus have elicited a strategic strike of similar magnitude upon a specific target on US territory.

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[184] Ibid., file 1.
[185] Ibid., file 1.

This was accompanied by the rise of the concept of a conventional introduction to a future conflict which was "officially documented" in the 1974-6 period. The possible duration of such a period increased from a matter of hours to 7-8 days to; in its final form, the advance to the Rhine, an operation which itself was calculated to last several weeks. Soviet planners were confident that their forces could prevail in such a conventional conflagration in the European TVD but anticipated an eventual escalation to the employment of strategic nuclear forces.[186]

It was claimed by one source that prior to the SALT era no serious research had been undertaken into concepts of strategic parity and mutual deterrence in the Soviet Union.[187] General-Colonel Illarionov stressed that there was no formal acceptance of the concept of deterrence on the part of the Soviet Union, and its attendant implications for strategic force structure which would have met with bitter opposition from entrenched sections of the military leadership, allied in common cause with the rocket design bureaux. Illarionov identified the extraordinary Defence Council meeting of July 1969 as the forum at which a revised strategic posture of "launch on warning" (*otvetno-vstrechnyi udar*) was adopted. Professor Mstislav Keldysh, the president of the Soviet Academy of Sciences and Brezhnev's most trusted adviser on matters of strategy, played a pivotal role in the formulation of his new strategy.[188] Tsygichko has argued that the Soviet Union's repeated rejection of the notion of deterrence[189] merely represented posturing for propaganda purposes. In his view the *de facto* acceptance of the principle of deterrence accompanied the Soviet Union's possession of its first ICBM systems in the mid-1960s. Even at this point it was recognised that either side might retain a retaliatory potential even following a surprise attack. This mutual fear served as the foundation for Soviet military policy from that point onwards - attempts to differentiate between *ustrashenie* and

[186] Ibid., file 1.
[187] Savel'yev and Detinov, *The Big Five*, pp.2 and 5.
[188] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.
[189] Soviet sources often differentiated between *ustrashenie* (terrorising, Western deterrence) and *sderzhivanie* (restraint, or morally correct, Soviet deterrence).

sderzhivanie were mere semantics according to Tsygichko. Tsygichko speculated that the Soviet political leadership would have sought to avert conflict through negotiation and would have been supported in such a course of action by the General Staff.[190] Such a belief accords with Danilevich's portrayal of Brezhnev's visceral fear of nuclear war. Tsygichko revealed the existence of a plan during the 1960s and 1970s which detailed the means of retaliation in the event of a nuclear attack upon the Soviet Union. The plan was updated every six months and detailed a "launch on warning"[191] (of an impending attack) policy employing *all* available Soviet silo-based systems. This annihilating retaliatory strike[192] would have been directed against US and Western European military and politico-economic targets. NATO strategic systems were not themselves deemed likely targets as it was assumed that they would already have been launched against the Soviet Union itself.[193]

Thus MccGwire's assertion that the months spanning the end of 1966 and beginning of 1967 contained a dramatic defining moment for the formulation of Soviet doctrine which led to a sudden break with past concepts and a consensual adoption of the new precepts[194] is undermined by close inspection of published Soviet texts and the accounts subsequently offered by high-ranking former officials. Rather it is apparent that proponents of both doctrinal stances felt able to present the merits of their respective positions both prior to the Central Committee Plenum of December 1966 and beyond. However, Zisk's criticism of MccGwire's attempt to portray these developments as a "sea change"[195] should be somewhat tempered. Although MccGwire claimed that a new and well-defined doctrinal stance was adopted at this time, he did not claim that all related debate would immediately cease as a

[190] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.
[191] *otvetno-vstrechnyi udar.*
[192] *unichtozhayushchii otvetno-yadernyi udar.*
[193] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.
[194] MccGwire, *Military Objectives in Soviet Foreign Policy*, p.400.
[195] Zisk, *Engaging the Enemy*, p.74.

consequence.[196] Much - though not all - of the ensuing debate which Zisk portrays as undermining MccGwire's analysis could be portrayed in this fashion. Moreover, MccGwire himself admitted that even in the wake of the accession of the conventional concept to a position of primacy, Soviet doctrine did not conclude that avoidance of escalation in a future world war was likely, let alone guaranteed.[197] He sought to explain the not-infrequent publication of articles and speeches in the post-1967 period which seemed to defy his perceived new orthodoxy as an anomalous legacy which would be rectified in time as Soviet strategy and theatre force structure evolved to meet the requirements of the new doctrine.[198] However, this does not fully explain the host of dissenting doctrinal claims which emanated from high level sources in the years following 1967. The character of this debate would seem to reaffirm the notion that the higher echelons felt both the need and freedom to express their views on this contentious issue of great magnitude.

From the middle of the 1960s, there began a process of doctrinal reconsideration from which emerged a conservative synthesis of new and existing strategic concepts. The possibility that a future conflict might entail some form of conventional introduction was generally accepted.[199] However, the expected chronological timescale of the former and the geographical magnitude of the latter were both perceived as limited and escalation to nuclear use was viewed as being inevitable in the medium-to-long term by the vast majority of Soviet planners. A potential avenue through which to

[196] As MccGwire himself noted when discussing the military's attempts to dilute the effects of Khrushchev's new doctrine in the previous decade, "the fact that it was a doctrinal decision did not mean that all the loose ends were tied up; there was ample room for argument about implications for force structure." MccGwire, *Military Objectives in Soviet Foreign Policy*, p.22.

[197] "It seems unlikely that their formal plans have ever assumed that the odds of avoiding an intercontinental exchange were as good as even." MccGwire, *Military Objectives in Soviet Foreign Policy*, p.34. Berman and Baker offered a prescient appraisal of the implications for Western planners of the Soviet strategic revision. *Soviet Strategic Forces*, p.35.

[198] Ibid., p.405.

[199] The tempo of the turnover in personnel in the highest echelons of the Soviet military was heightened in the latter part of the 1960s. The influx of technically-proficient officers of a younger generation may have helped - at least in part - to facilitate the acceptance of the implications of the new doctrinal stance. See Erickson, J. "Rejuvenating the Soviet High Command", *Military Review*, 50(7):83-4 and Erickson, J. 1971. *Soviet Military Power*, pp.17-22.

undermine this theory's foundations was the downplaying of the likelihood or expected timespan of a conventional element in the strategic extrapolation of the doctrinal pronouncements to such a degree that it bore marginal relevance to military planning. Many pursued this line of attack and the related one of omission of discussion of the conventional aspect, but a significant number of high-ranking military men chose to overtly contradict the new doctrine on a number of occasions without apparent fear of punitive action. Despite this reaction a significant revision of Soviet theatre strategy did occur during this period, a revision which placed concomitant operational demands upon theatre forces, most especially TNFs.

Theatre Strategy and Force Requirements

Strategic Requirements of the Revised Doctrine

Under the previous doctrinal regime, Soviet theatre nuclear strategy had possessed a rudimentary characteristic. From the initial stage of the nuclear era until after Khrushchev's demise, the role of TNFs was straightforward and unquestioned. The anticipated employment of nuclear weapons *en masse* from the outset of hostilities was an area of consensus between Khrushchev and his opponents within the military. Immediate TNF use was viewed as a *fait accompli* and study was thus devoted to how they might be employed to greatest strategic effect in the face of a growing array of NATO TNFs and the emergent Chinese nuclear potential. It should be stressed that even in the wake of the doctrinal shift in the late 1960s, a conventional introduction to a future conflict was viewed as only one of several potential scenarios and was expected to be of a transitory nature, succeeded in a matter of days by escalation to nuclear exchanges.[200] However, Soviet military planners were faced with the challenge of developing a theatre strategy which would meet the requirements of the more sophisticated doctrinal stance. In a highly innovative fashion, they sought to do so through the reversal of mission allocations among Soviet theatre forces as a whole, thus formulating a strategy which drew heavily upon the Soviet tradition of largescale offensive strikes, deep into enemy territory.

By the mid 1970s, Soviet strategy had identified six distinct types of military engagement. Of the six, only two referred to war between the West and countries of the Warsaw Pact organisation:

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[200] Wardak, G.D. with Turbiville, G. (ed.) 1989. *The Voroshilov Lectures: Materials from the Soviet General Staff Academy*. Washington D.C.: National Defence University Press, pp.68-78.

- general nuclear war between the two antagonistic (Capitalist and Socialist) world social systems, using all types of weapons;
- war between several Capitalist and Socialist nations conducted using conventional weapons and subsequent initiation of the limited use of nuclear weapons.[201]

Soviet strategy posited that each type of war possessed particular characteristics and required individual study. In the case of war between the two opposing blocks being initiated solely through conventional means, the following strategic principles were expected to apply:

> When strategic action is initiated with the employment of conventional weapons, the basic method of its execution will be the accomplishment of missions in successive phases. Under such circumstances, the principal strategic tasks of the Armed Forces will be:

- weakening enemy nuclear forces and destroying the main groupings of armed forces that are deployed in the TSMA;
- destroying enemy air force groupings to seize air superiority;
- seizing important areas and ground objectives and foiling enemy mobilisation and attempts to raise reserves;
- covering friendly armed forces groupings and rear service objectives against enemy air and space attacks.

[201] Ibid., p.69.

In conducting a war using only conventional weapons, the following would become important for the successful conduct of strategic action in the war:

- rapid destruction of enemy air force groupings at the beginning of the war;
- seizure of the strategic initiative and its retention during the war;
- decisive destruction of enemy groupings of forces deployed in the TSMA;
- seizure and occupation of vital operational and strategic areas in enemy territory.

The seizure of the strategic initiative and the accomplishment of assigned missions in a conventional war can be ensured by launches of heavy air strikes on enemy air fields and control means, air battles, decisive attacks of Ground Forces on the main direction, in co-ordination with naval and the PVOS Forces, and rapid and bold actions of airborne assault landing forces.[202]

The principal focus of revision was the reallocation of the task of the *preventative* destruction of enemy TNFs, from Soviet TNFs to Soviet conventional forces. This was now designated as the principal strategic task of Soviet conventional forces during the non-nuclear phase of operations.[203] Working in conjunction with reconnaissance and intelligence units, Soviet conventional forces were charged with the responsibility for locating enemy TNFs and ensuring their rapid destruction.[204] The strategy was designed to call upon the combined weaponry assets of Soviet conventional forces, to mount a swift and all-embracing co-ordinated offensive on the

[202] Ibid., pp.237-8.
[203] Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.25, n.87.
[204] Ibid., n.88.

central European front. The Soviet conventional offensive was to be cohesive and well-orchestrated, "the action of friendly forces should be as dynamic and decisive as possible to foil enemy attempts and efforts in seeking to engage friendly forces in heavy and intense combat. Attempts should be made to destroy enemy forces before they can fully deploy. Rapidly cutting enemy forces into pieces, isolating enemy individual groupings and individual strategic areas and countries, and foiling enemy actions to move reserves from the rear or overseas areas are of significant importance".[205]

Target acquisition for Soviet theatre strategic missions was predicated strictly upon the level of priority accorded to their destruction.

Group I: Nuclear Means of Strategic Function

MRBM and IRBM
SSB and SSBN and bases
Long-range strike aircraft and bases
Nuclear storage sites
Strategic C^3 facilities

Group II: Nuclear Means of Operational and Operational-Tactical Function

Tactical aviation and aircraft-carrier aviation and bases.
Short-range cruise and ballistic missiles
Nuclear storage depots
C^3

[205] Wardak, *Voroshilov Lectures*, p.311.

Group III:

Ground force formations

Strategic and operational reserve concentrations

Stores of non-nuclear ammunition, weapons

POL

Naval bases

Group IV:

Air defence airfields

Air defence missile complexes

Group V:

Military-industrial objectives

Political-administrative centres

Transportation nodes[206]

[206] Dzhelaukov, Kh. 1966. "The Infliction of Deep Strikes", *Voennaya mysl'*, 2 and Kutakhov, P.S. 1973. "Air Forces in the Past and Present", *Voennaya mysl'*, 10. Source: Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.26, n.92.

Operations against these target sets would take the following forms:

Aerial bombardment

Massed air strikes would have played a pivotal role in Soviet attempts to nullify NATO's TNF force structure with conventional means.[207] They would have been directed against the first echelon of targets which consisted of bases housing NATO TNFs and C^3 capabilities.[208] The importance of strikes against the latter increased over time as improvements in early warning systems and the enhancement of TNF mobility and response capabilities reduced the vulnerability of the weapons themselves to direct attack.[209] Attacks against tactical nuclear forces and their attendant ancillary forces would have been mounted in tandem with strategic nuclear strikes, or as soon as available forces allowed.[210] The strategic significance of these targets was such that the entire complement of Soviet Long Range Aviation and Frontal Aviation forces would have been exclusively devoted to their destruction, despite the temporary neglect of the latter's traditional role of ground support that such a policy might have entailed.[211]

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[207] Wardak, *Voroshilov Lectures*, p.311.

[208] Bryukhanov, Yu. 1969. "The Massed Employment of Aircraft", *Voennaya mysl'*, 6; Kravchenko, A. 1966. "Trends in the Development of Military Aviation", *Voennaya mysl'*, 66:42-3; Lyutov, K. 1966. "Some Problems of Defence Without the Use of Nuclear Weapons", *Voennaya mysl'*, 7:36-46 and Lyutov, K. 1972. "Massing of Forces and Weapons in the Course of Combat Actions", *Voennaya mysl'*, 11; Vershinin, K. 1967. "The Development of the operational Art of the Soviet Air Force", *Voennaya mysl'*, 6; Shtrik, "The Encirclement and Destruction of the Enemy During Combat operations Not Involving the Use of Nuclear Weapons", p.59; Semenov, N. 1968. "Gaining Supremacy in the Air", *Voennaya mysl'*, 4; Kutakhov, P.S. 1973. "The Air Force in the Past and Present", *Voennaya mysl'*, 7; Korobkov, P. 1973. "Dispersed Basing of Aviation Under Conditions of Waging Modern War", *Voennaya mysl'*, 11. Source: Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p26, n.89.

[209] Dzhelaukov, Kh. 1966. "The Infliction of Deep Strikes", *Voennaya mysl'*, 2; Semeyko, L. 1968. "Methodology of Determining the Correlation of Nuclear Forces", *Voennaya mysl'*, 8; Smirnov, N. 1967. "A Meeting Engagement in Nuclear Warfare", *Voennaya mysl'*, 9; Tarakanov, K.V. 1974. *Mathematics and Armed Combat*. Moscow: Voyenizdat; Sidorenko, A.A. 1970. *The Offensive*, Washington, DC: USGPO. Source: Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p26, n.90.

[210] Dzhelaukov, "The Infliction of Deep Strikes"; Kutakhov, "The Air Force in the Past and Present".

[211] Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.26, n.94. See also Sokolovsky, *Military Strategy*.

These operations were intended to shift the balance of TNF forces towards the Soviet Union and to provide air superiority to help facilitate the ground forces drive westwards:

> gaining air superiority is of particular significance... the most important element of the strategic operation is the air operation to destroy or weaken enemy aviation groupings and destroy enemy nuclear rocket forces deployed in TSMA.[212]

Ground attack

A largescale incursion into NATO territory by ground forces was designed to occur in tandem with the aerial bombardment. Artillery and tactical missiles were entrusted with the task of further undermining NATO defences[213] to help facilitate the advance of armoured divisions and motorised rifle troops. As with the aerial attack TNFs were deemed to be the prime targets of the ground forces' advance. Destruction of NATO TNFs would have been accorded priority over all other potential targets.[214] Airborne special forces were expected to play a key role in storming NATO TNF facilities and ensuring their destruction.[215]

Naval operations

A similar strategy would have been pursued at sea as Soviet forces sought to detect and destroy SLBM-armed submarines and aircraft-carriers with nuclear-armed aircraft. Once again, such attacks would have been carried out with specifically

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[212] Wardak, *Voroshilov Lectures*, p.262.
[213] Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.27, n.95.
[214] Ibid., n.96-9.
[215] Ibid., n.100.

conventional weapons- in this instance, torpedoes and cruise missiles. The Soviet navy's own aviation forces would have played an integral role in such a mission.

TNFs' role during conventional operations

Soviet TNFs' role during this phase of operations was to deter NATO escalation for the maximum period, thus allowing Soviet conventional forces the opportunity to make deep inroads into NATO territory. Ideally, this would enable Soviet conventional "search and destroy" missions against NATO TNFs to turn the theatre nuclear balance increasingly in the Soviet Union's favour. Ideally, the Soviet Union might come to acquire a near-monopoly in TNFs. Realistically, the most it could hope for was to achieve a significant advantage in the balance of such forces and dissuade or delay their employment by NATO due to the "intermingling" of ground forces which might result from a deep thrust into NATO territory by Soviet armoured and infantry divisions. The realisation of any one - or combination - of these scenarios would however have afforded the Soviet Union a considerable strategic advantage. The conventional period would be "characterised by the need to maintain high combat readiness of strategic nuclear forces as well as units and large units of front operational-tactical rocket troops for the rapid deployment of nuclear weapons, should it become necessary."[216]

Escalation to TNF employment

General Danilevich noted that consideration of the practical aspects of conducting continued military operations under nuclear conditions forced revision of the existing "naive expectation" of advance at a rate of 100km per day. Such deliberations were

[216] Wardak, *Voroshilov Lectures*, p.239. Similar sentiments were expressed on p.311.

the preserve of a mere handful of officers within the General Staff itself. "Such planning was not widely discussed, even within the General Staff. Major commands such as the SRF were not normally involved in this level of planning, and the various institutes outside direct General Staff oversight definitely were not included in such discussions and analyses."[217] This assertion was implicitly supported by the professed ignorance of a leading member of such an institution of the existence of planning for such a contingency. Dr Tsygichko of the Academy of Sciences has claimed that while Soviet declaratory policy called for continued operations under nuclear conditions "in practice the General Staff did no actual planning beyond the initial exchange of nuclear weapons on a tactical or operational scale."[218]

Escalation to the nuclear level was considered a near-certain eventual outcome of a conventional introduction by the overwhelming majority of Soviet planners. Those who continued to argue during the 1970s that war would immediately assume a nuclear character were few in number. They did however, heavily outweigh the handful at the opposite end of the spectrum who posited that a conflict could be fought at the conventional level for its entire duration. It was expected that in the face of a Warsaw Pact westward drive, the weakness of NATO's conventional forces would force escalation. Such a view was shared by many Western analysts and seemed to be reinforced by the form of NATO exercises during this period. The Voroshilov Lectures warned that while operations might escalate rapidly beyond the nuclear threshold as an enemy faced the prospect of being overwhelmed, their devastating effect might, conversely, delay their employment. While the duration of the conventional period would be determined by the interaction of a number of factors the evidence of recent NATO exercises was claimed to indicate a likelihood of escalation on the part of NATO after five or six days of conflict.[219]

[217] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.
[218] Ibid., file 5.
[219] Wardak, *Voroshilov Lectures*, pp.74, 238 & 312. Levadov L. and Viktorov, V. "NATO's Training Manoeuvres; A Threat To Peace", *Zarubezhnoe Voyennoe Obozrenie,* no.7, July 1984, pp.3-9 stated that NATO might not be forced to resort to escalation or face the loss of their TNFs for 10-15 days.

It was thus concluded that,

> It is not likely that strategic operations in the European TSMAs will be conducted for the duration of the war without using nuclear weapons. There is every indication that a war initiated in European TSMAs with conventional weapons will transform into a nuclear war at a certain stage.[220]

Against this backdrop, the process of escalation came to hold a position of vital strategic significance. The optimal moment for escalation was perceived to lie immediately prior to a decisive enemy TNF employment. The responsibility for adjudging the arrival of this crucial moment was accorded to the skill of the Soviet political leadership.[221]

> Transition to combat action using nuclear weapons is a profound, fundamental, and qualitative change in the conduct of strategic operations, and requires tremendous initiative on the part of the Supreme High Command and all commanders and staffs in the proper assessment of the situation, so that time is not lost and the enemy is not allowed to act before friendly forces. All nuclear delivery means must be prepared to strike on time, and their missions in launching the initial nuclear strike must be reconfirmed. The missions of co-ordinating operational formations and large units must be adjusted and measures taken to protect troops against enemy nuclear strikes. All of these task should be accomplished in the shortest possible time.[222]

This was in marked contrast to Soviet estimates of the late 1960s and early 1970s, when 3-5 days was considered the norm.

[220] Wardak, *Voroshilov Lectures*, p.262

[221] Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.27, n.103. n.104, n.105.

[222] Wardak, *Voroshilov Lectures*, p.313. See also Pavlovsky, I.G. "The Art of Controlling a Modern Combined-Arms Battle", *Krasnaya Zvezda*, 6 March 1970 and Samurokov, D. 1971. "On the Question of Foresight", *Voennaya mysl'*, 9:27-40 for a discussion of the difficulties and importance of anticipating enemy escalation to nuclear employment.

The absence of effective protection from a massed US strike placed a heavy premium upon successful Soviet pre-emption. However, the prolonged preparation times required by the first generation of Soviet missile systems militated against the ready employment of such a strategy. This problem was largely overcome[223] by the development of markedly more responsive systems in the late 1960s. This has led some Western analysts to argue that while the Soviet military had "in the mid-1950s developed a concept of pre-emptive action as a response to an imminent and irrevocable enemy decision to attack...(it)...was largely, if not entirely superseded in the latter 1960s by the concept of launch on warning or under attack."[224] By the end of the 1960s, the Soviet Union did possess ICBM systems whose storable fuels endowed them with a time-urgent responsiveness which could utilise the 5-10 minutes warning time afforded by the Riga array radar. Whether this simply allowed the Soviet Union to fulfil its previously-stated policy of pre-emption or led to its adoption of refined variant[225] remains a matter of some contention, even within the former upper echelons of Soviet military planners.[226] The characteristics of a "launch-on-warning" policy were clearly evident in articles (one of which was authored by the commander of the SRF) in the immediate pre-SALT era.[227] The US SALT negotiating team later forwarded a document from the US Secretary of Defence to their Soviet counterparts. It contained a disavowal of the notion of "launch-on-warning" and described it as a flawed and potentially destabilising policy option. An invitation to provide a similar assurance was met with a stony silence; ostensibly as it

[223] The quality and extent of radar coverage later became the principal limiting factor in the Soviet Union's response potential.
[224] Garthoff, *Deterrence and the Revolution in Soviet Military Doctrine*, pp.77-8.
[225] As alluded to by Garthoff, ibid., p78 and elsewhere indentified by a leading Soviet military planner as "a retaliatory-meeting strike" [*otvetno-vstrechnyi udar*,] wherein Soviet missiles were expected to pass their (previously-launched) US counterparts in mid-flight.
[226] In marked contrast to the line of interpretation offered by his former colleague General Danilevich categorically stated that the terms "first use" and "pre-emptive" were synonymous.
[227] Krylov, "The Nuclear Missile Shield of the Soviet State", p.20. See also Vasendin N. and Kuznetsov, N. 1968. "Contemporary War and Surprise", *Voennaya mysl'*, 6 and Ivanov, S.P. 1969. "Soviet Military Doctrine and Strategy", *Voennaya mysl'*, 5.

lay outwith the remit of the SALT process. The fact that it formed an integral part of Soviet strategy was an additional cause of their reticence.

As General-Colonel Danilevich himself highlighted Soviet strategy underwent something of a revision throughout the second half of the 1970s. While previously any strategic attack upon the Soviet Union would have elicited a maximal response, significant attention was increasingly devoted to the concept of limited nuclear options. Despite this, any attack upon Soviet territory which employed nuclear weapons possessed unpredictable attendant risks, especially if Soviet C^3 posts were a principal target grouping. General Gareev confirmed that a "symbolic" US strike, such as those posited against Soviet radar stations north of the Arctic Circle, would have been interpreted as an attempt to "decapitate" Soviet C^3 capabilities as a prelude to a strategic attack and could well have elicited a full-scale Soviet response.[228] Soviet strategy perceived the delivery of the first largescale TNF strike as the decisive determinant of the outcome of conflict with West. The dismissal of the strategic importance of an isolated or limited NATO employment of TNFs[229] would have fatally undermined any "political signalling" intention on the part of NATO. Ironically, it might well have elicited a full-scale Soviet TNF response instead.[230] Once nuclear hostilities had commenced - whether from the outset or in the wake of a conventional introduction - Soviet TNFs would have been employed against Group I and Group II targets. The urgency with which their destruction was sought during a conventional conflict was replicated under nuclear conditions. MRBMs and IRBMs were specifically designed to carry out strategic strikes within the European and Far Eastern TVDs. They would have been supported by those SLBMs and ICBMs designated to a theatre role. In marked contrast to NATO's incremental policy of escalation, Soviet TNF employment would have been characterised by its far greater

[228] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 6.
[229] Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.28 n. 106 and 107.
[230] Ibid., p.30 for a strongly-argued portrayal of this view. It is restated in slightly less strident terms in the Wardak, *Voroshilov Lectures*, p.74.

scale, rapidity and the mounting of operations against targets of prime strategic importance from the very outset of operations.

> In general nuclear war, important missions are accomplished by nuclear weapons, primarily by strategic nuclear forces that will be used simultaneously throughout the entire territory of the enemy coalition. Consequently, military action will assume a continental form...The principal form for the conduct of nuclear war is the infliction of massive losses by nuclear strikes on the enemy's military and economic base and armed forces throughout his entire territory.[231]

Centrally authorised and directed by the General Staff from Moscow,[232] strategic TNF missiles[233] were expected to play the principal role in attacking NATO TNFs.[234] However their actions were intended to be complemented by supporting missions undertaken by other service branches, in accordance with the Soviet tradition of 'mixed' force operations.

> The essence of the need to unify the efforts of the Armed Forces lies in the fact that the achievement of the final aim of strategic action is only possible through co-ordinated action of operational formations and large units of all Services of the Armed Forces...Each element plays a specific role and occupies a certain position by virtue of its combat capabilities and methods of conducting strategic actions.[235]

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[231] Ibid., p.71. See also Meyer, *Soviet Theatre Forces, Part I: Development of Doctrine and Objectives*, p.30.
[232] Meyer, *Soviet Nuclear Options*, p.527.
[233] In this context - and in marked contrast to their stance at the SALT negotiations - Soviet definitions were predicated upon weapon systems' range:

"tactical nuclear" = <150km

"operational-tactical" = 150-1,000km

"strategic theatre" = +1,000km
[234] Wardak, *Voroshilov Lectures*, p.242.
[235] Ibid.

Subsidiary TNFs were expected to play a supporting role to the principal strategic TNFs. Given their relatively short flight-times, SLBMs were viewed as an effective means of destroying "soft" mainland targets. Operational-tactical missiles and cruise missiles launched from submarines and surface ships were intended to provide target coverage of those Group I and Group II targets remaining in the wake of the strategic TNFs' initial salvo. If necessary, nuclear-armed aircraft might be called upon to perform support operations and would be expected to prove particularly effective against mobile or camouflaged targets. Soviet conventional forces were expected to play a key role in the destruction of enemy air forces and the seizure of enemy territory.[236] Such a strategy placed stringent operational demands upon Soviet strategic TNFs. They were required to respond instantaneously in the face of imminent NATO escalation and possess the ability to inflict accurate strikes against a varied - and perhaps, rapidly changing - array of targets within their own and neighbouring TVDs. The Soviet TNFs of the latter 1960s were singularly ill-equipped to meet this challenge.

[236] Ibid.

3 Soviet Theatre Nuclear Force Potential and the Lineage of the SS-20

The manifest deficiencies which were apparent in the operational potential of the Soviet Union's theatre nuclear forces by the end of the 1960s have often been proffered as a key explanatory factor in the decision to develop and deploy the SS-20. The introduction of the SS-20 signalled the phased withdrawal of the SS-4 and SS-5 systems which had served as the backbone of the Soviet TNF since their deployment in the late 1950s and early 1960s. It also removed the need for the continued diversion of the SS-11 ICBM to a theatre role. However such an apparently smooth and unremarkable transition masked the complex interaction of R&D and political machinations which had provided the backdrop to Soviet missile development during the preceding two decades.

With near-absolute unanimity Western sources portrayed the SS-20 as being possessed of a long and rather checkered lineage of system development whose progenitors had all emanated from the Nadiradze Bureau and could be traced back to the late 1950s. The modular evolution of the two-stage SS-20 from the three-stage SS-16 was viewed as an attempt to develop a technically-viable IRBM from an unsuccessful ICBM project. This was portrayed as a replication of the pre-existing production practice established during the development of a previous generation of Nadiradze designs. What distinguished the SS-20 was its technical viability which stood in marked contrast to that of the SS-14 and SS-15. Soviet claims that the third generation ICBM, the SS-25, which emerged in the 1980s was a direct derivative of the first generation SS-13 served only to reinforce the perception that three generations of solid fuel missile designs had emanated from the Nadiradze Design Bureau.

This belief formed the cornerstone of Western analyses of the Nadiradze Design Bureau's role in the history of Soviet solid fuel missile development. To the notion of

a "family" of Nadiradze designs was added the assertion that this particular bureau had been endowed with a monopolistic status within Soviet attempts to develop this particular type of fuel propellant. However new evidence which has recently emerged from a number of diverse and authoritative Russian sources has served fatally to undermine this longstanding portrayal of the course of Soviet development efforts in this field of rocket research and has led to a dramatic re-evaluation of the SS-20's technical "lineage" and its relation to other missile systems. Moreover they portray the backdrop of the Nadiradze Design Bureau's initial forays into the development of longer range systems as having been accompanied by a degree of intra-elite rivalry and dissonance that has been identified by very few Western analyses.

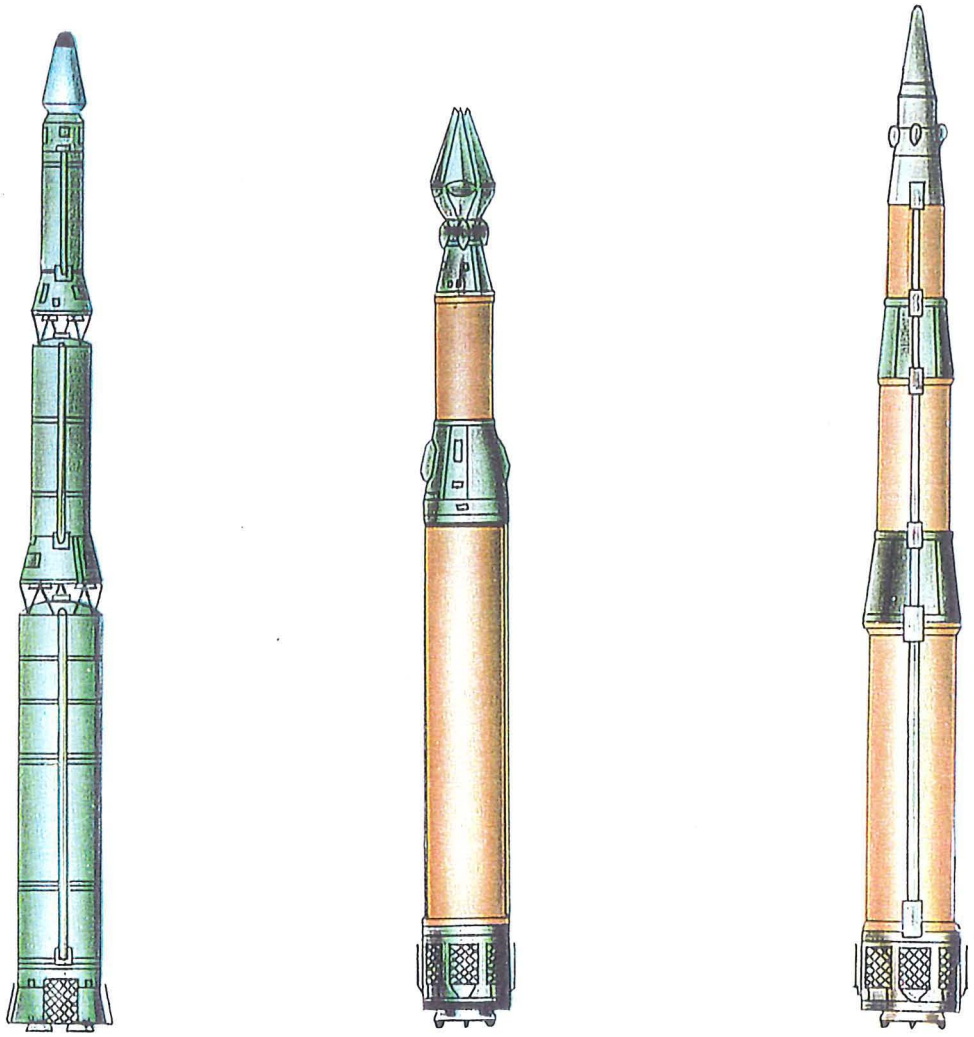
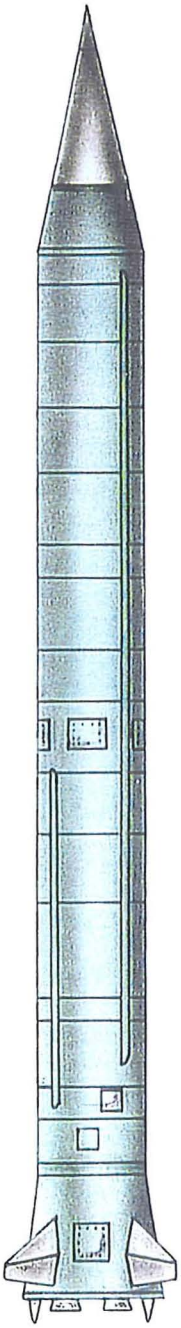
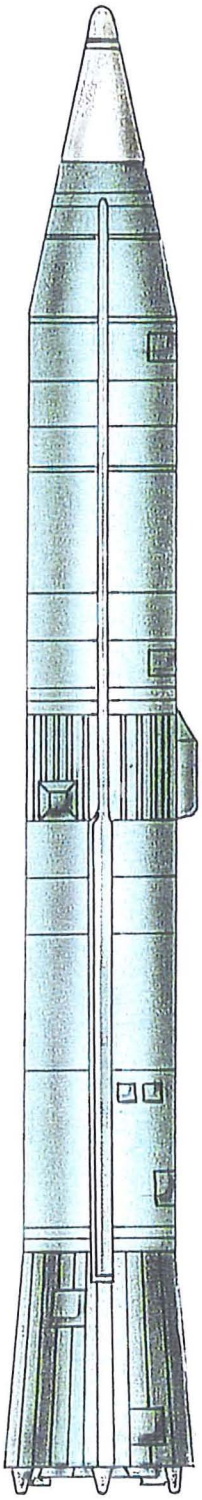


Figure 1: Soviet ballistic missiles



Р-12
(SS-4)
1959



Р-14
(SS-5)
1961

УР-100
(SS-11)
1967

УР-100К
(SS-11)
1972

Existing Theatre Nuclear Force Potential

SS-4, SS-5 and SS-11.

The Yangel Design Bureau was responsible for the design and production of the Soviet Union's early TNFs. They owed much of their characteristics to the German V-2 missile on which they were closely modelled. Following small-scale deployments of the SS-1 and SS-3 systems, the SS-4 and SS-5 were the first Soviet TNFs to go into mass production and they came to form the backbone of the Soviet Union's TNFs until their replacement by the SS-20 a decade and a half later. Initial deployment of the SS-4 began in 1959 and the majority of the c.550-600 units finally deployed were in place by 1962. The SS-5 was a close derivative of the SS-4 with an enhanced range of c.2,500nm and its deployment proceeded in 1961. Both systems were one-stage, single-RV[237] missiles powered by liquid fuel. Only 97 SS-5s were eventually deployed, most probably due to the fact that few strategic targets lay outwith the SS-4's c.1,200nm range. When used in tandem the SS-4/SS-5 force allowed target coverage throughout the entire European TVD, while those based in the East of the Soviet Union could be directed towards China and US targets in the Mediterranean and the Middle East. The comparable US TNFs the *Thor* and *Jupiter* missile systems were deactivated by 1963 and were superseded in their role in May of that year by the diversion of five Polaris-armed US submarines to NATO's defence. The vulnerability of Soviet TNFs to NATO attack was further accentuated in the following year as the Polaris A-3 missile entered service offering increased accuracy and multiple warheads.[238]

The SS-4/SS-5 force was endowed with the requisite range to provide target coverage of air bases and missile sites throughout the European TVD and retained

[237] Re-entry vehicle.
[238] Berman, R.P. and Baker J.C. 1982. *Soviet Strategic Forces: Requirements and Responses.* Washington D.C.: Brookings Institution, p.59.

such a theoretical operational potential until their eventual decommissioning.[239] However their inherent unreliability and slow response times significantly detracted from their operational performance to such an extent that their strategic utility had been radically diminished by the late 1960s. Although he was quick to acknowledge the multiplicative uncertainties involved in such calculations, Meyer posited that the targeting of between three and eight missiles would have been required to ensure a 95% chance of the designated target's destruction. Allied to the expected dearth of post-strike reconnaissance, this would have forced Soviet planners to err greatly on the side of caution in their targeting computations. Thus attacks upon SAC bases in the European theatre would alone have exhausted the entire SS-5 force and 50-100 SS-4s. To ensure the destruction of a large proportion of the remaining Group I and Group II targets would have necessitated a further 880-7,150 SS-4s, depending upon their SSKP (Single Shot Kill Probability).[240] There were thus insufficient SS-4 and SS-5 systems to guarantee comprehensive target coverage without reload. This could take several hours and would undermine the principle of a massed, all-encompassing attack which lay at the very heart of the Soviet TNF strategy. Consequently, Soviet planners were forced to rely upon the support of several hundred aircraft delivery systems to ensure adequate coverage of Group I and Group II targets in the initial strike.

> In order to carry out pre-emptive nuclear strikes against the 200-250 primary targets described above, some 550 MRBM/IRBM , 400 medium bombers, 300 fighter bombers, and 20 submarines had to be co-ordinated into a single plan. Though not impossible, the timing and co-ordination of deployment, preparation for attack, and pre-emptive strike by a force so large, diverse and

[239] Meyer, S. 1984. *Soviet Theatre Forces, Part II: Capabilities and Implications,* Adelphi Paper 188. London: IISS, pp.13-16, 57-8.
[240] Meyer used a .15-.45 range.

dispersed would have been no simple feat...In short, the sheer mass of the Soviet TNF posture complicated the implementation of a pre-emptive strike.[241]

The theoretical demands of comprehensive theatre target coverage were themselves imposing and risked pushing Soviet theatre strategic forces to breaking point. Faced with the increasing numbers of weapons systems required to galvanise the SS-4/SS-5 force, Soviet planners faced a daunting task. This was exacerbated by the expected performance limitations of the SS-4/SS-5 force. The low levels of reliability that were common in Soviet weapons systems were endemic within their missile forces, particularly the SS-4 and SS-5. In an attempt to overcome the deficiencies of production quality through quantity, the Soviet Union manufactured large numbers of weapon systems. This went some way to resolving the original problem but in turn it created another, by placing great demands upon those services responsible for technical maintenance and the supervision of these systems. The result was that remarkably few SS-4/SS-5 units were operational at any given moment.[242] Indeed reports in the late 1960s claimed that the SS-4 and SS-5 systems were actually "crumbling in their silos".[243] Thus even without the vagaries of operational performance under conditions of conflict Soviet planners were well aware that a majority (perhaps the vast majority) of their principal strategic TNFs were effectively inoperable.

To this was added the new and additional burden of the revised theatre strategy which envisioned the possibility of TNFs not being employed from the very outset of hostilities and being required instead to maintain a heightened state of readiness for an uncertain duration while under constant threat of attack by their Western counterparts. The SS-4 and SS-5 systems were particularly poorly suited to meeting

[241] Meyer, *Soviet Theatre Forces, Part II: Capabilities and Implications*, p.14.
[242] Meyer estimated that a mere 20-40% of Soviet TNFs would have been operational at any given time. Cockburn, A. 1983. *The Threat: Inside the Soviet Military Machine*. London: Hutchinson, p.198, quoted an unnamed US official who gauged it to be as low as 15-20%.
[243] Cockburn, *The Threat*, p.201.

such operational demands. Although they were powered by storable liquid fuels,[244] they were initially based in a horizontal fashion as technological limitations and the vagaries of the Russian climate prevented their deployment in vertical mode for a sustained period. This precluded the practice of storing the fuel in their on-board tanks which in turn prevented their time-urgent deployment.[245] Simply fuelling the missiles required a prolonged preparatory period - Western estimates of its duration varied between eight[246] and twelve to twenty four hours.[247] Moreover, once fuelled, the missile had to be fired within a short space of time or undergo the complex and time-consuming operation of removing the volatile liquids from its fuel tanks. This was compounded until the late 1960s by the Soviet practice of storing nuclear warheads under KGB control, often at considerable distance from their delivery vehicles.[248] Even when this storage policy was revoked Western estimates of launch preparation time remained in the region of 7-8 hours for both systems.[249] General Danilevich of the General Staff stated that fuelling the SS-4/SS-5 systems required in the order of 5-6 hours while 2-3 hours were required to couple the warheads to the missiles themselves.[250] "Soft-site" deployment of the SS-4 and SS-5 forces in batteries of four missiles offered protection from neither enemy attack nor the Russian weather. Only 135 (84 SS-4s and 51 SS-5s) were silo-based. Contrasting explanations have been offered to explain this low level.[251] However both neglect a simple, but

[244] A strong consensus exists on this point. See Wright, B., (assisted by J. Murphy; series editor, R. Forsberg) 1986. *World Weapon Database, Volume I, Soviet Missiles.* Lexington Mass.: D.C. Heath and Company, pp.80-1.
[245] Meyer, S. "Soviet Nuclear Options," in Carter, A.B. , Steinbruner, J.D. & Zraket, C.A. (eds.) 1987. *Managing Nuclear Operations.* Washington D.C.: The Brookings Institute, p.488, n.43.
[246] US Central Intelligence Agency, "Major Consequences of Certain US Courses of Action in Cuba," SNIE 11-19-62, (declassified 20 October 1962) cited in Berman and Baker, *Soviet Strategic Forces*, p.15, n.22 posited that the SS-4/SS-5 force required eight hours to be readied for firing, could be held in that state for a mere five hours and required a further six hours to reload and refire.
[247] Gregory Treverton, 1981. *Nuclear Weapons in Europe*, Adelphi Paper 168. London: IISS, p.10; US Department of Defence, 1981. *Soviet Military Power*, Washington DC: USGPO, p.27.
[248] Meyer, S. "Soviet Nuclear Options", in Carter, A.B., Steinbruner, J.D. and Zraket, C.A. (eds.) 1987. *Managing Nuclear Operations.* Washington D.C.: Brookings Institute, p.487.
[249] Wright, *World Weapons Database*, pp.81-2.
[250] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1. It remained unclear from his assertion whether these operations were carried out concurrently.
[251] Khrushchev himself had stressed the importance of silo-basing for Soviet missiles, if only to avoid the elements. Khrushchev, N. (Talbott, S. trans.) 1974. *Khrushchev Remembers: The Last Testament*, Boston, Mass.: Little, Brown & Co., pp.48-50. Berman and Baker, *Soviet Strategic Forces*, pp.90-2

potentially vital, explanatory factor and are apparently unaware of the political complexities which surrounded the issue of silo-basing at this time. Between 1964-6, largescale Soviet nuclear tests were used as the basis of an analytical modelling of the likely effects of a US nuclear strike. The results indicated that current Soviet silo-basing practices provided little protection. As a result, a twin-track policy was pursued. One was the priority development of mobile, solid fuel missiles. In this regard the anticipated deployment of the mobile SS-14 and SS-15 systems, which were due to enter service in the mid-to-late 1960s, would have led Soviet planners to expect a marked enhancement of TNF survivability thus diminishing the incentive to divert resources to silo provision construction of dubious value for the SS-4/SS-5 force. The other aspect of the policy was a series of studies into means of improving silo protection potential through improved construction methods and greater dispersal. However, evidence gleaned from a highly placed Soviet official indicates that the detailed studies carried out by a variety of institutions into the question of silo improvements was abruptly disregarded in the face of opposition from a Chelomei-Grechko axis. According to Iu.A. Mozzhorin,[252] Chelomei suggested that Soviet security would be enhanced more effectively by the construction of more missiles and a protective ABM network. Grechko meanwhile shared the constructor's penchant

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argued that silo-building was consciously devoted to the SS-9 and SS-11 ICBM force and the SS-4/SS-5 "reload" capacity (only readily available at "soft" sites) was valued and retained. MccGwire, M. 1987. *Military Objectives in Soviet Foreign Policy*, Washington D.C.: Brookings Institution, pp.504-6 disagreed, highlighting the fact that the silo-building programme for ICBMs had run in parallel with that for SS-4/SS-5 TNFs. Rather, he sought to explain it through the Soviet Union's strategic perceptions c.1962-3, when the silo-building decisions were being made. At this point, war was expected to be initiated with massed nuclear strikes. The Soviet Union's ensuing "launch-on-warning" policy anticipated that most, if not all, of their missiles would have been dispatched towards their allotted targets by the time that enemy missiles struck the launch sites. MccGwire identified the 135 silo-based SS-4s and SS-5s as a limited strategic reserve, with which the Soviet Union could hope to retain a retaliatory capacity in the event of a surprise attack. These missiles would have been targeted against the remaining "hard core of political and military targets", within the theatre. MccGwire points out that - ironically - the construction programme for this small fraction of the TNFs was completed at the end of 1966: at the very point in time that Soviet doctrine began to evolve to accept the possibility of a conventional introduction, with all its attendant requirements for enhanced and prolonged TNF survivabilty.

[252] General Director of TsNIIMash, the main research and design institute of the Ministry of General Machinebuilding (MOM) responsible for missile production for thirty years. University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 3.

for optimal weaponry production levels and launched a bitter ideological onslaught against the defensive strategic stance that he associated with silo-basing, with its emphasis upon an assured second strike capability. By contrast Grechko reiterated his faith in a first strike/launch-on-warning policy as the sole guarantor of avoiding a repeat of 1941. Against this backdrop the silo hardening programme was postponed indefinitely.[253] Emplaced in closely-grouped clusters of three, even silo-based SS-4/SS-5s were vulnerable to an accurate enemy strike, while those that were based in "soft" sites of four missiles enjoyed no protection at all.

Therefore as Soviet doctrine began to consider a conventional introduction to war as a possibility, Soviet TNF forces were already stretched to the outer limits of their *theoretical* operational capabilities to fulfil their mission requirements. Soviet strategists must have feared that Soviet TNFs were more likely to find themselves the victims, rather than the agents, of a largescale disarming strike. The Soviet Union sought to overcome the operational deficiencies of the SS-4 and SS-5 through the development of the SS-14 and SS-15 systems. They were viewed in the West as stable-mates of the SS-13 ICBM, apparently employing two of the ICBM's three stages to create a dual MRBM/IRBM force in much the same way as the SS-5 had been derived from the SS-4. Allied to their tactical range counterpart, the SS-12, these systems were intended to add new elements of performance capabilities to Soviet TNFs through system mobility and more time-responsive fuel propellants. Development of the SS-14 and SS-15 began at the very end of the 1950s and prototype flight testing was underway by the middle of the next decade. Testing proceeded during the 1965-8 period but their subsequent deployment in token numbers was viewed as clear evidence of manifest operational deficiencies. The failure of the SS-14 and SS-15 forced the Soviet Union to utilise an existing missile system to galvanise her TNFs.[254] Chelomei's ubiquitous SS-11[255] had begun its career

[253] Ibid., file 3.

[254] "It is assumed that the routine replacement of the SS-4 and SS-5 by the third-generation SS-14 and SS-15 systems was provided for in the production plans drawn up in the first half of the 1960s,

as a land-based system intended for use principally against US carrier forces. However its impressive adaptability allied to a forceful lobbying campaign on the part of its designer soon led to its employment in an ICBM role, largely at the expense of the curtailed SS-13 programme. It was produced at a rate in excess of 150 p.a. throughout most of the 1960s and by 1971, a total of 970 had been deployed. From 1969 the deployment of the SS-11 in a theatre role began, with 120 being targeted on Western Europe, while a force of around 100 faced the now-volatile border with China. The SS-11 possessed a range which allowed it to switch to a target set in a neighbouring TVD. This flexibility endowed Soviet TNFs with a significantly enhanced cross-targeting and strategic manoeuvre potential. In contrast to the SS-4/SS-5 units, the entire complement of SS-11s in the TNF role was housed within hardened silos. Although the SS-11 was liquid fuelled it had benefited from the technological progress which had been made since the development of the SS-4 and SS-5 and due to its silo-basing in the TNF role, its fuel could be stored within the missile's "internal fuel tanks" for prolonged periods thus, according to General Danilevich of the General Staff, endowing it with a response time of 1-2 minutes.[256] When taken together, such attributes endowed the SS-11 with considerably enhanced survivability and responsiveness compared to that of its rather antiquated counterparts and its operational attributes were a vital catalyst in the Soviet move away from a strategy premised upon pre-emption.[257] While the diversion of the SS-11 to a TNF role coincided with the deactivation of c.70 SS-4s, some 625 SS-4s and SS-5s remained operational. The apparent willingness of Soviet planners to divert 15% of their ICBM force to a specifically theatre role was testament to the importance with which they viewed the European TVD and a lingering concern that existing TNFs were not adequate to fulfil their mission requirements. The supplementing of the SS-4

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but when these systems proved unsatisfactory the requirement remained on the books." McGwire, *Military Objectives in Soviet Foreign Policy*, p.509.

[255] The SS-11 was known by the Soviet "operational index" code name UR100 and was referred to as the RS-10 by the Soviet Union during the SALT and INF negotiations.

[256] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.

[257] Ibid., file 1.

and SS-5 force with a missile system rather than aircraft, would also have allowed more effective time-urgent coverage of strategic missions within the European TVD. However, the deployment of the SS-11 as a TNF added yet another weapon system to the existing complexities of theatre strategic planning. In addition, while the SS-11 was more accurate and less vulnerable than the SS-4 and SS-5, its accuracy did not match that of the most modern systems and it lacked the operational responsiveness and invulnerability of a solid-fuel mobile missile. Moreover the numerical limitations that were anticipated as a result of the SALT negotiations would be expected to apply to the SS-11 as it possessed an intercontinental range. The SS-11 could thus serve as no more than an interim solution to the Soviet Union's TNF requirements. Despite the technical inadequacies of the SS-14 and SS-15, the principles of solid-fuel and mobility that they embodied continued to be viewed as the best solution for Soviet TNF requirements.

Thus even before the prospect of deployment of US Pershing II and Tomahawk Cruise missiles within the European TVD had emerged, there existed a *prima facia* case for the modernisation of Soviet TNFs. This requirement was long overdue by the end of the 1960s. The failure of the SS-14 and SS-15 programmes had forced a continued reliance upon first generation SS-4 and SS-5 systems which had been possessed of marginal operational utility from almost the outset of their service careers.[258] Attempts to galvanise the force through the direction of aircraft, and latterly the SS-11 into a supporting role, provided a partially-enhanced TNF potential. It was however only a transient and partial solution and by the late 1960s, the rationale for a thorough modernisation of Soviet TNFs was undeniable. Ideally it would take the form of a single weapon system whose operational utility and flexibility was such that a plethora of supporting systems - and the attendant planning complexities - were unnecessary.

[258] Garthoff, R.L. 1983. "The Soviet SS-20 Decision", *Survival*, 15(1), p.110.

Figure 2: SS-4 schematic drawing

1 - warhead; 2 - warhead separation pneumatic kicker; 3 - oxidizer tank; 4 - instrumentation section; 5 - oxidizer feed pipeline; 6 - fuel tank; 7 - toroidal compressed air bottle; 8 - hydrogen peroxide tank; 9 - turbopump unit; 10 - liquid propellant sustainer combustion chamber; 11 - tail section; 12 - fin; 13 - jet vane

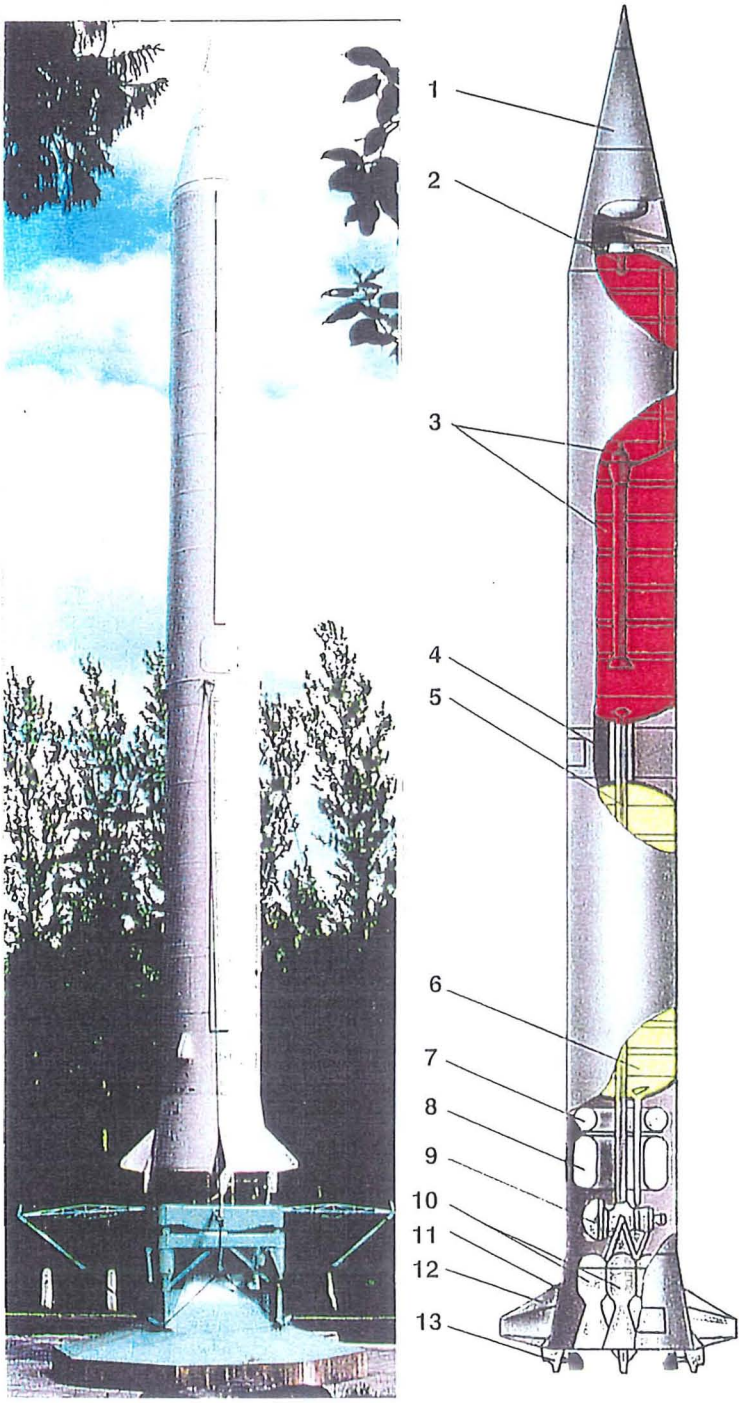


Plate 1: SS-4

Figure 3: SS-5 schematic drawing

1 - warhead; 2 - oxidizer tank; 3 - oxidizer feed pipeline; 4 - instrumentation section; 5 - powder retrorocket; 6 - fuel tank; 7 - sustainer; 8 - tail section; 9 - fin 10 - jet vane

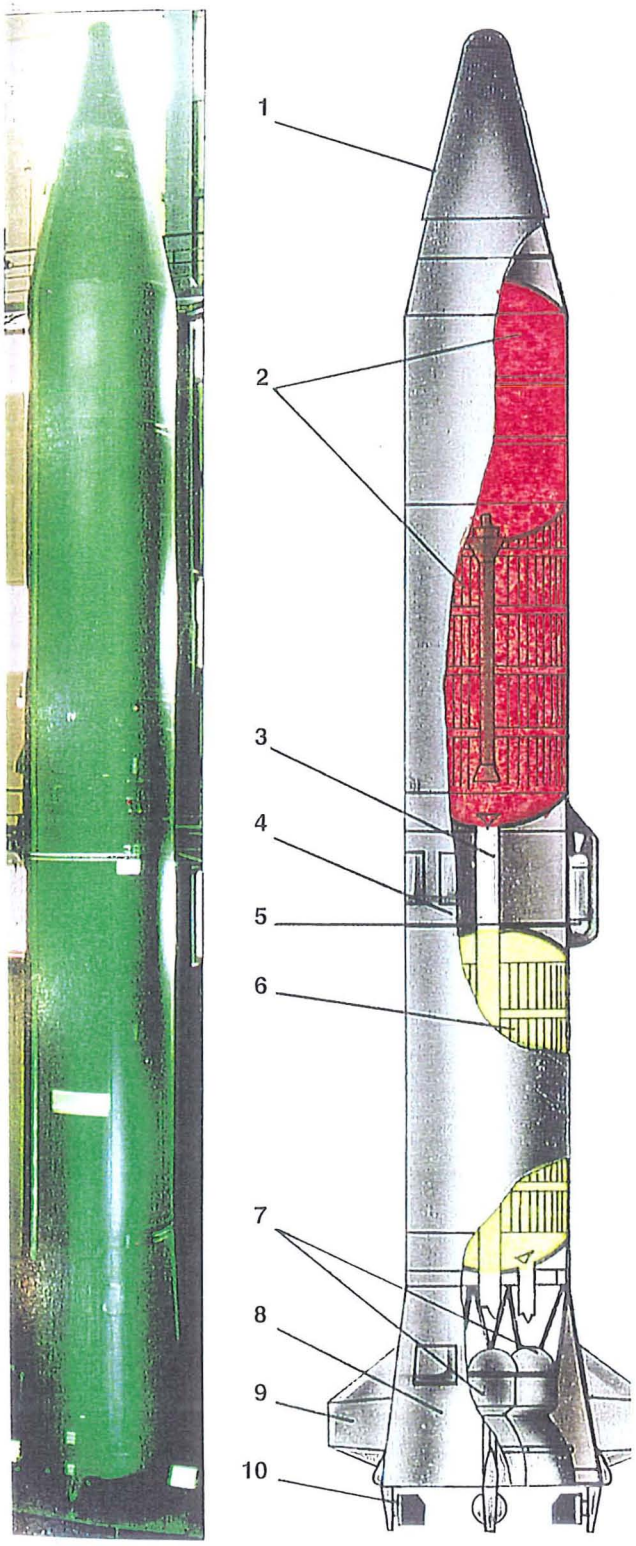


Plate 2: SS-5

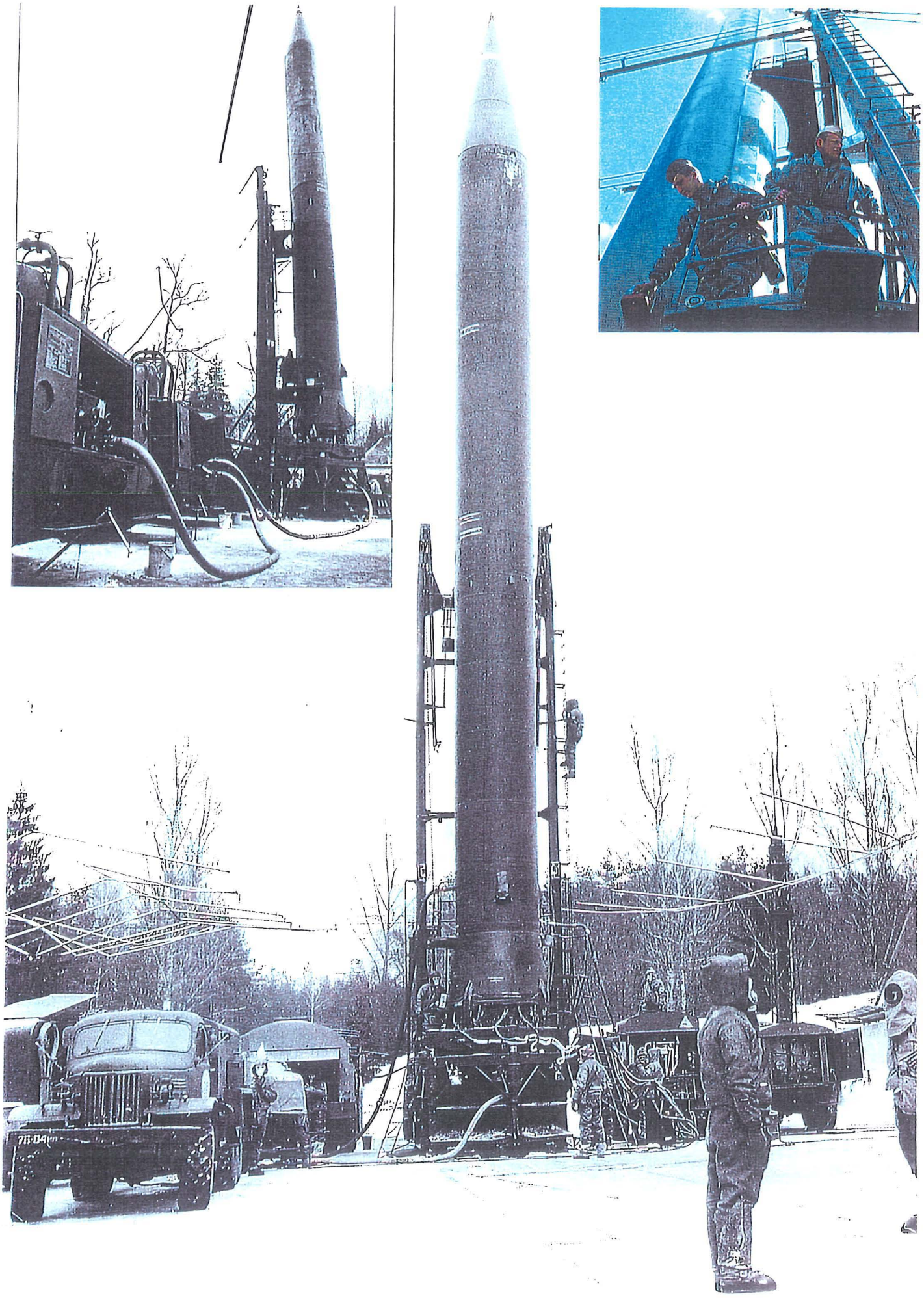


Plate 3: Fuelling an SS-4

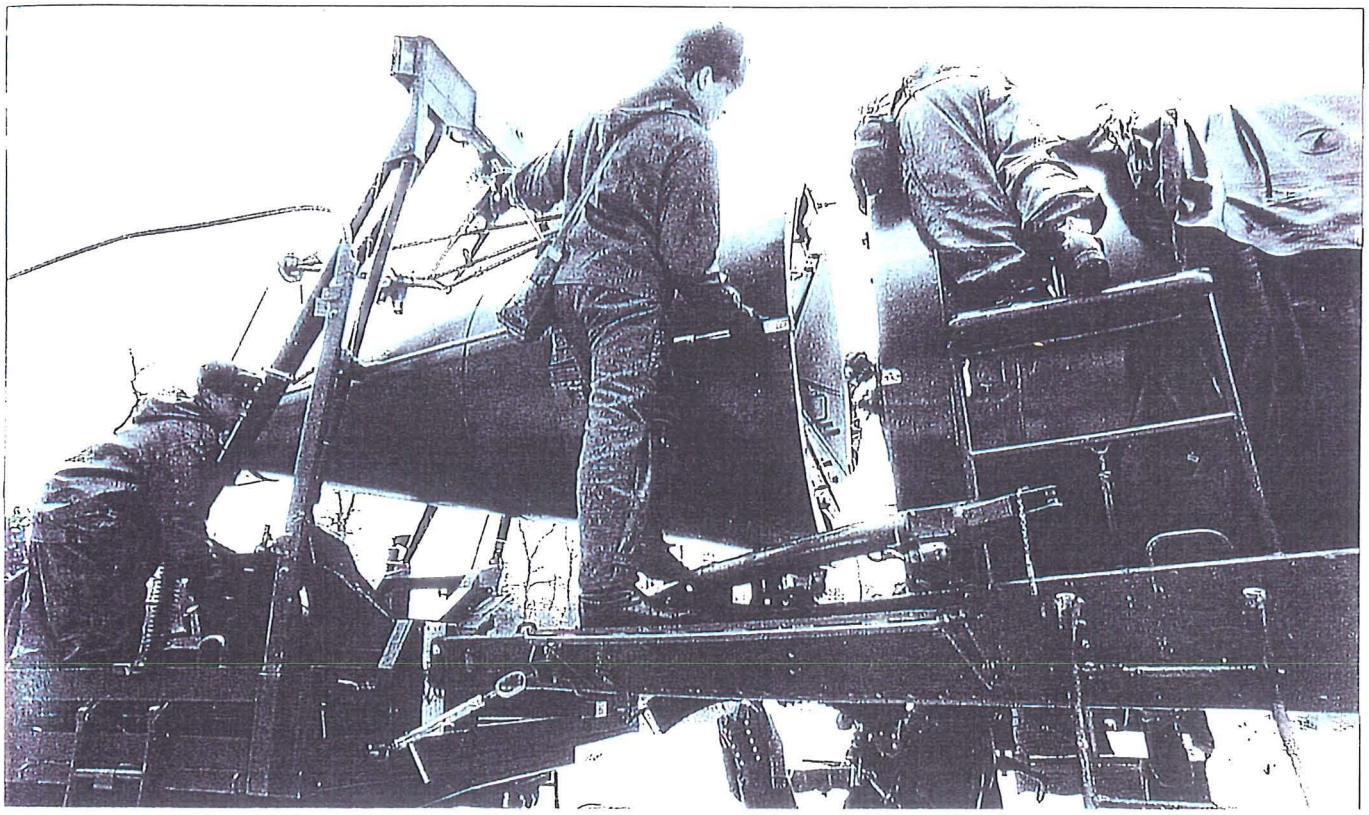


Plate 4: Arming an SS-4

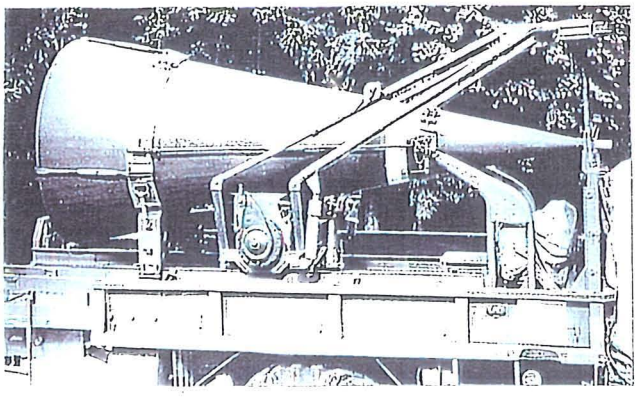


Plate 5: SS-4 warhead

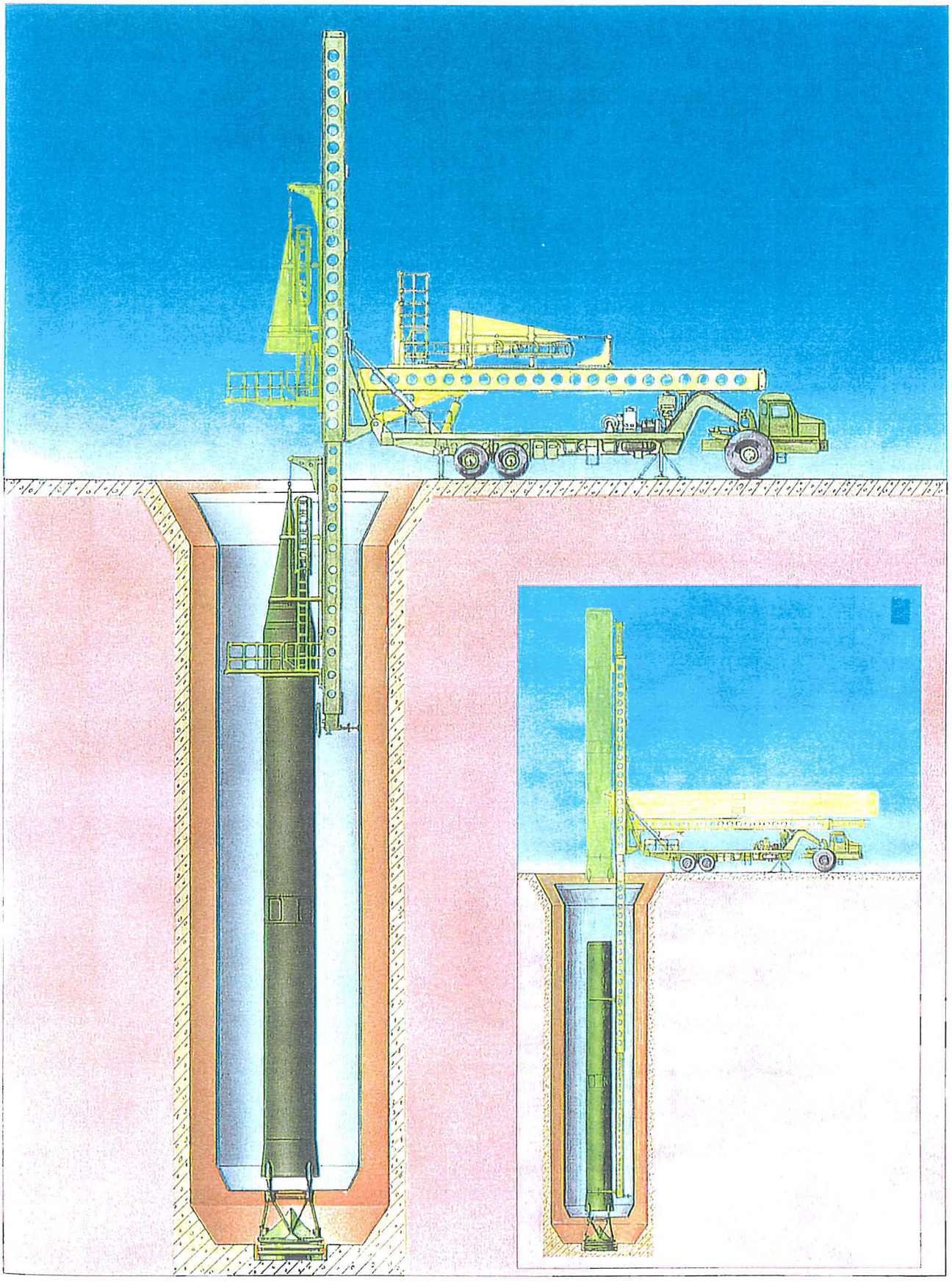


Figure 4: SS-4 silo emplacement

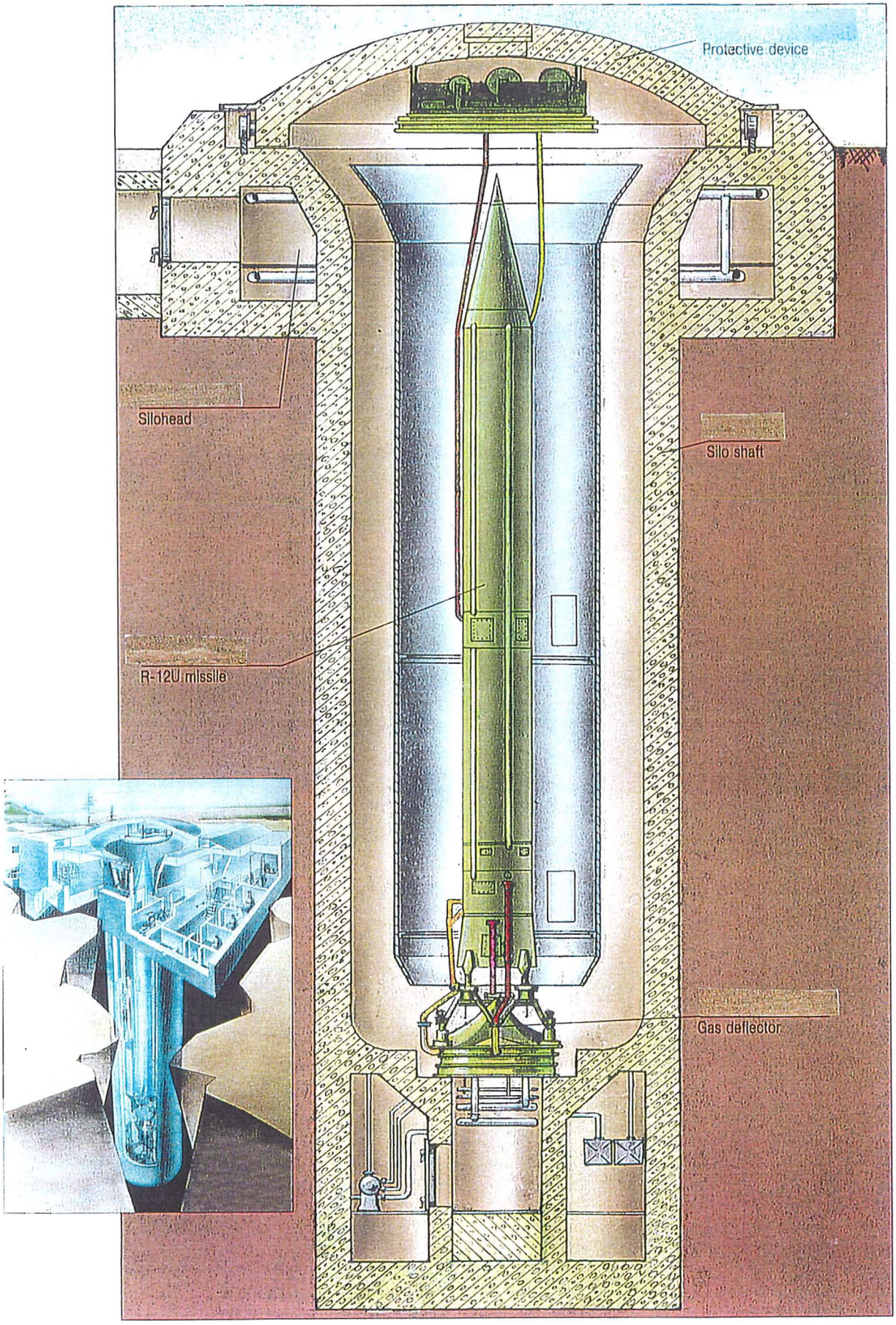


Figure 5: SS-4 silo emplacement

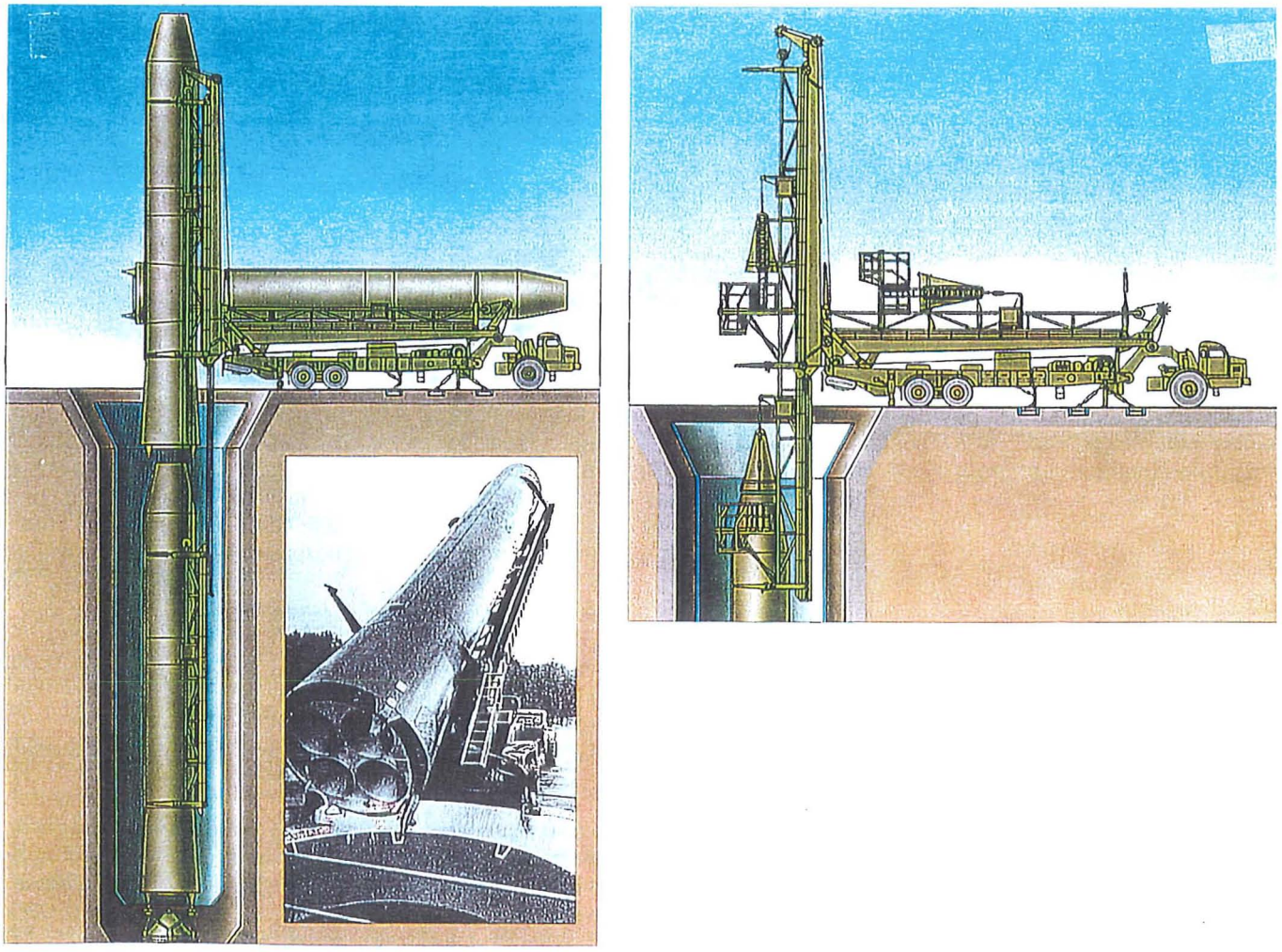
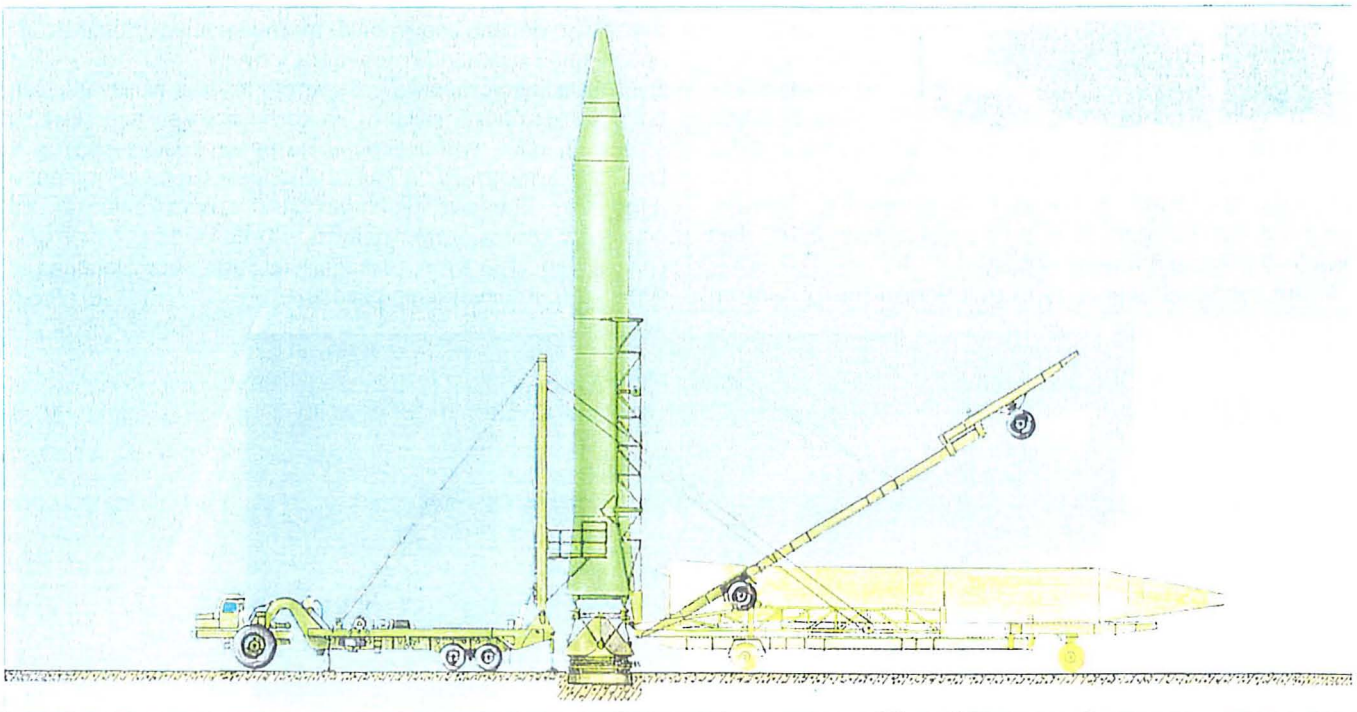


Figure 6: SS-5 silo emplacement



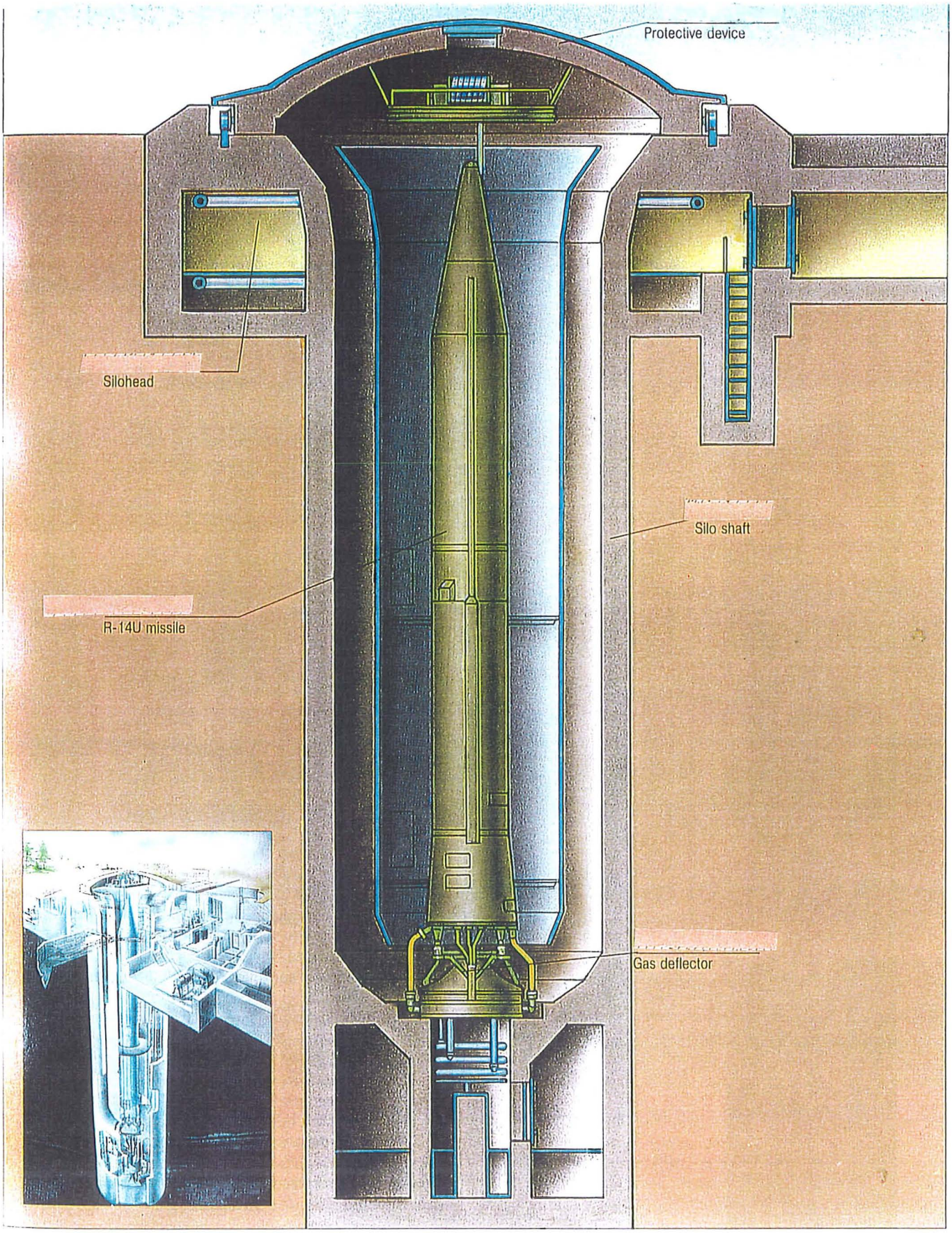


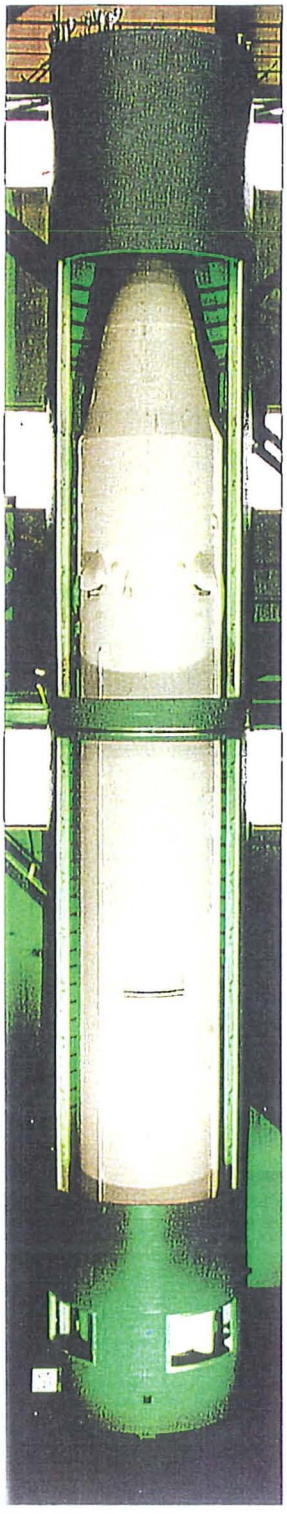
Figure 7: SS-5 silo emplacement

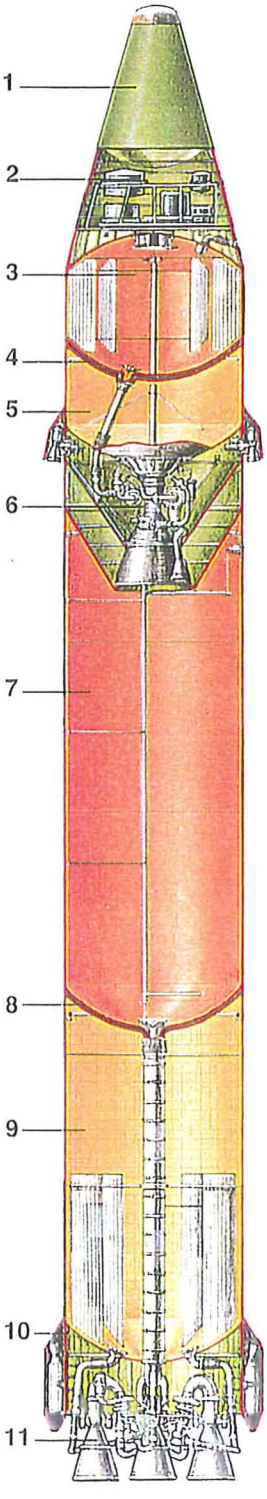
Figure 9: SS-11 Mod.2 schematic drawi

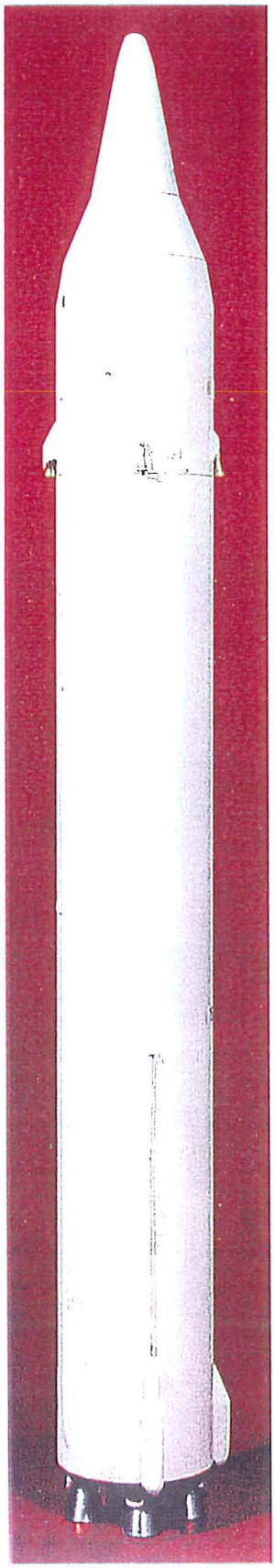
1 - warhead; 2 - instrumentation section; 3 - second stage oxidizer tank; 4 - intermediate plate of second stage fuel section; 5 - second stage fuel tank; 6 - second stage sustainer; 7 - first stage oxidizer tank; 8 - intermediate plate of first stage fuel section; 9 - first stage fuel tank; 10 - first stage tail section; 11 - first stage sustainer

Figure 8: SS-11 Mod.1 schematic drawing

1 - warhead; 2 - instrumentation section; 3 - second stage oxidizer tank; 4 - intermediate plate of second stage fuel section; 5 - second stage fuel tank; 6 - second stage sustainer; 7 - first stage oxidizer tank; 8 - intermediate plate of first stage fuel section; 9 - first stage fuel tank; 10 - first stage tail section; 11 - first stage sustainer







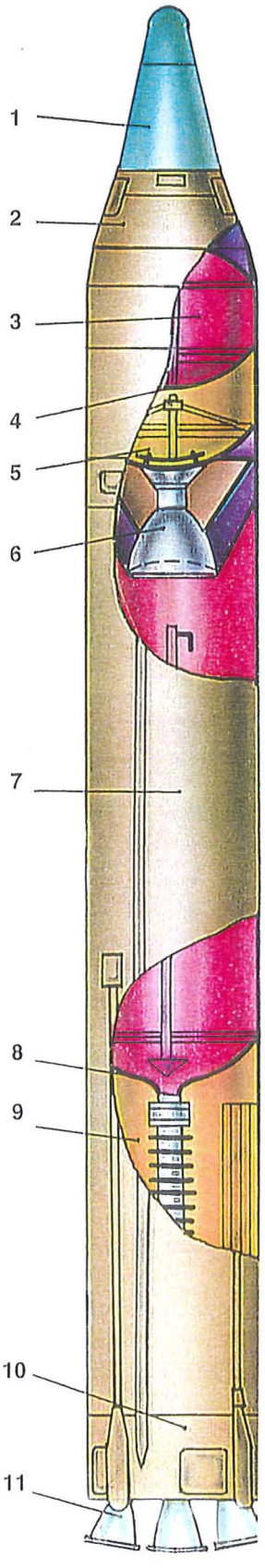


Plate 6: SS-11 Mod.1

Plate 7: SS-11 Mod.2

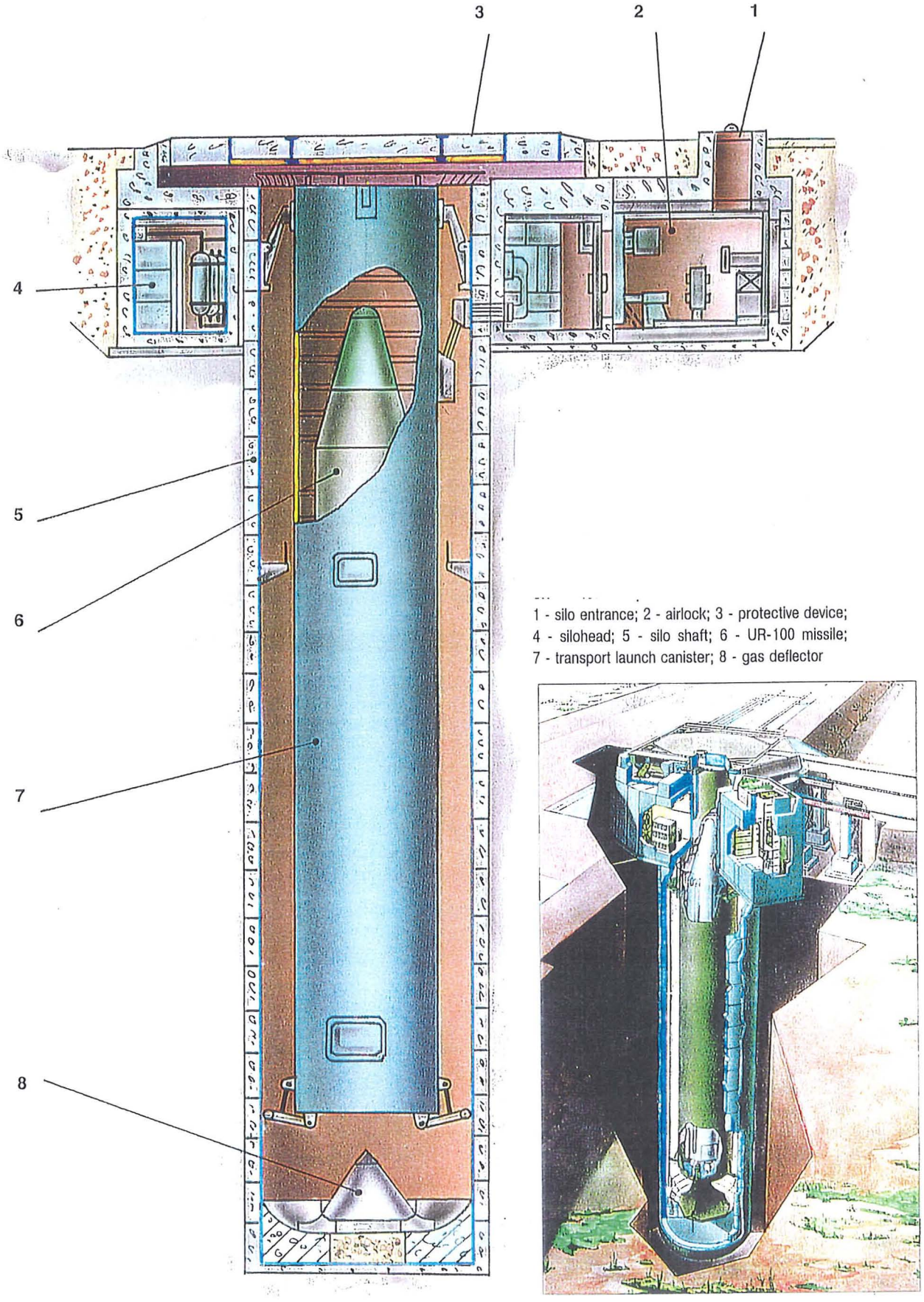


Figure 10: Silo-based SS-11 Mod.2

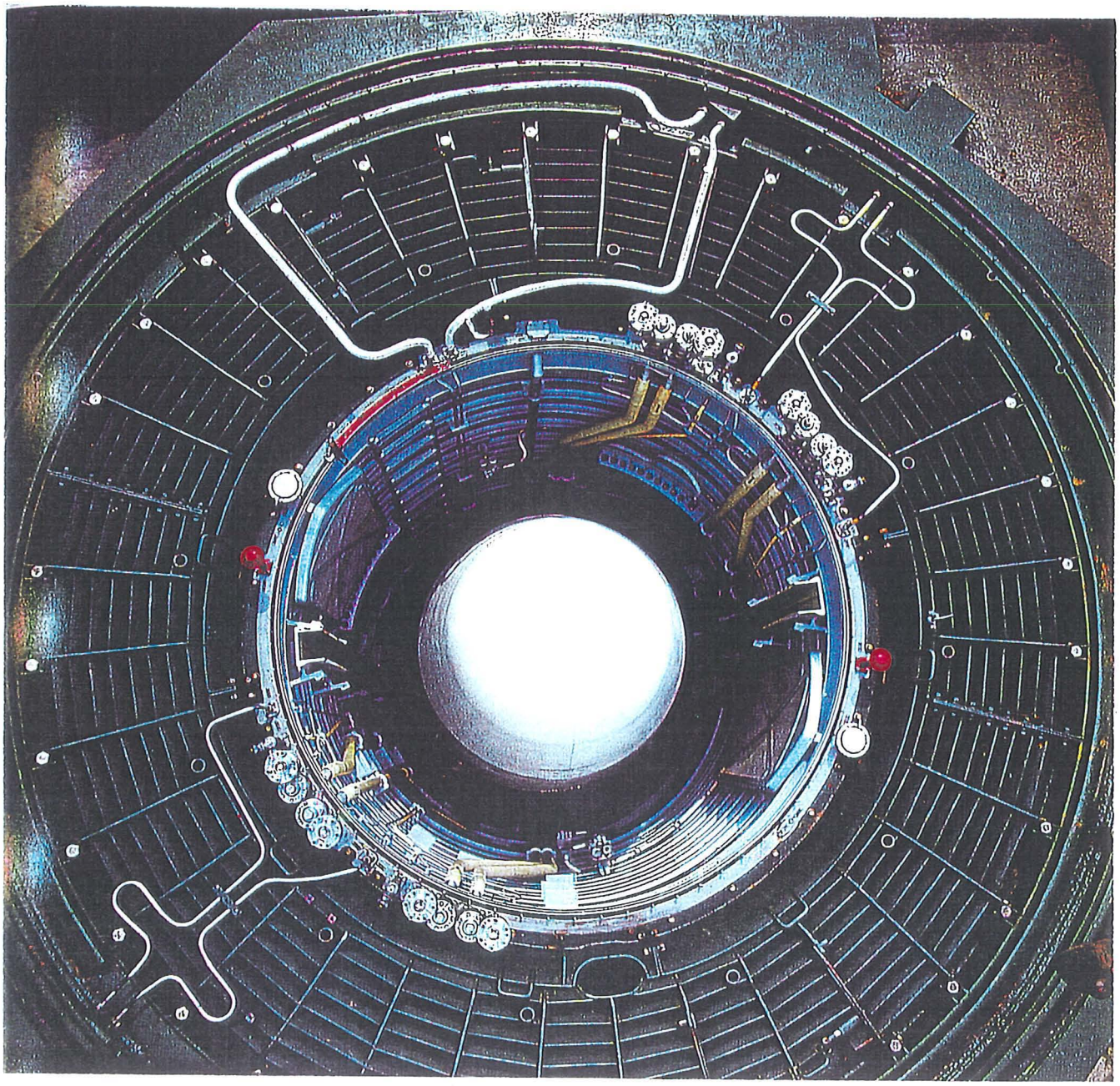


Plate 8: Silo-based SS-11 Mod.2

The Nadiradze "family" of designs and solid fuel monopoly

The SS-13 was widely credited as being the starting point for the Nadiradze Design Bureau's efforts in solid fuel missile development. It was a three-stage solid fuel ICBM project which was seen to provide the foundation for the subsequent development of the "family" of Nadiradze systems. The initiation of this project was traced to the late 1950s[259] and was credited as a Nadiradze design by almost all observers[260]. Its development was explained as an attempt by the Soviet Union to develop a strategic reserve potential,[261] specifically a desire to acquire a solid-fuel system to avoid reliance upon liquid-fuel propellant with all its attendant dangers and limitations.[262] The ensuing absence of widescale deployment of this system was viewed as evidence of its technical deficiencies,[263] while its production in relatively low numbers was explained by a Soviet propensity to deploy even unsuccessful weaponry projects in limited quantities.

The SS-14 and SS-15 were seen to have evolved directly from the SS-13. Both the SS-14 and SS-15 systems were identified as mobile, solid-fuelled systems developed by the Nadiradze Design Bureau by the vast majority of Western analyses. This could take the form of an implication[264] or an overt assertion.[265] *Jane's* was apparently alone

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[259] Cockburn, *The Threat*, p.200 cited it as being "around 1957" while Wright, *World Weapon Database*, p.171 cited 1958.

[260] Berman and Baker, *Soviet Strategic Forces*, p.53, n.41; Wright, *World Weapon Database*, p.173; MccGwire, *Military Objectives in Soviet Foreign Policy*, p.503; *Jane's Strategic Weapon Systems*. An isolated but notable exception was an article by Steven Zaloga in *Jane's Intelligence Review*, August 1994 which cited the SS-13 as a product of the Korolev Design Bureau.

[261] Berman and Baker, *Soviet Strategic Forces*, p.120.

[262] Cockburn, *The Threat*, pp.198-200.

[263] Berman and Baker, *Soviet Strategic Forces*, p.121 and p.132. In Table C7 , p.138 they asserted that 40 SS-13 systems were deployed in the period 1965-70. A further 20 were deployed by 1975 and the resultant force of 60 remained in service in 1980. See also Cockburn, *The Threat*, p.200.

[264] Berman and Baker, *Soviet Strategic Forces*, p.120.

[265] Garthoff, R.L. 1994. *Detente and Confrontation: American-Soviet relations from Nixon to Reagan*. Washington D.C.: The Brookings Institution, p.960; Garthoff, "The SS-20 Decision", p.110; Cochrane, T.B. *et al.* 1989. *Nuclear Weapons Databook: Volume IV: Soviet Nuclear Weapons*. New York: Harper and Row, p.124;

among Western analytical sources in suggesting that the Nadiradze Bureau might not have been responsible for their development.[266] Unanimity did however strongly prevail with respect to Western assessments of the fundamental technical deficiencies which were apparent through the wayward progress of their flight-testing programmes and strongly implicit in the subsequent token deployment levels, despite the glaring inadequacies of the existing SS-4/SS-5 force.[267] Some attributed the high failure rate encountered during flight-testing to the systems' propellant fuels[268] while others posited that it represented the Soviet Union's continued inability to mass produce the sophisticated mechanical and electrical components of an advanced inertial-guidance system.[269] No source could venture a definitive explanation. Token deployment of the SS-14 and SS-15[270] was confined to the Far Eastern regions of the USSR[271] which exacerbated problems of gleaning reliable intelligence on their institutional origins and operational potential.

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[266] *Jane's* speculated that the design of the SS-15 might have been attributable to the Korolev Bureau, "but presumably with considerable assistance from the Nadiradze Bureau". "Russia: Offensive Weapons - Obsolete Systems, SS-X-15 'Scrooge'," *Jane's Strategic Weapon Systems*, Issue 15. A considerably later article by Zaloga in *Jane's Intelligence Review* in August 1994 claimed that the SS-14 and SS-15 were developed by the Korolev and Yangel Bureaus respectively. Such divergent claims were however exceptional.

[267] Berman and Baker, *Soviet Strategic Forces*, p.98; MccGwire, *Military Objectives in Soviet Foreign Policy*, p.506.

[268] Wright, *World Weapon Database*, pp.322 and 328.

[269] Berman and Baker, *Soviet Strategic Forces*, p.88.

[270] Ibid., p.136, Table C4 asserted that 29 SS-14 systems were deployed in the period 1965-70. By 1975, they had all apparently been decommissioned. Wright quoted this figure & source and a 1971 classified Secretary of Defence report which projected 0-18 SS-14s by mid-1971 & 18-27 by mid-1972. There were no other confirmed deployments however. Berman and Baker did not cite the SS-15 as having been deployed at all. Wright had no specific figures for the SS-15, but the implication existed that a small-scale, token deployment (possibly in tandem with SS-14) had occurred.

[271] Whether as "training units" - as posited by Garthoff, *Detente and Confrontation*, p.960 or to add marginal reinforcement of the SS-11 force - as suggested by Berman and Baker, *Soviet Strategic Forces*, p.111.

The SS-16 and SS-20

The SS-16 was viewed as the Soviet Union's first attempt to develop a mobile, solid-fuelled ICBM system. The initiation of its development programme was thought to have overlapped the final stages of that of the SS-13 during the mid-1960s. Had this project succeeded, the Soviet ICBM force would have enjoyed a high level of operational invulnerability for the foreseeable future and may well have leapt ahead of their US counterparts. However as with the SS-13, SS-14 and SS-15 this project encountered insurmountable technical difficulties a fact that became apparent to Western observers in part through the unexpected willingness of Soviet SALT negotiators to accept a comprehensive ban on land-mobile ICBMs. It was never deployed in mobile form and the Soviets denied its continued operational status during the course of the SALT II negotiations.[272] On this occasion however, Nadiradize's design team was thought to have been able to salvage something from a project's demise. By utilising two of the three stages of the SS-16, it was possible to create the SS-20, which possessed an intermediate range which enabled it to target sites throughout the European and Far Eastern theatres and retain the potential pioneered by the SS-11 to "swing" from one theatre to the other. The SS-20 was viewed as an ideal solution to the Soviet Union's pressing military need for TNF modernisation. Moreover, it also benefited from the existing R&D and component production associated with its predecessors, most especially the SS-16. Thus the Soviet Union was able to proceed with a relatively swift process of manufacture which began in 1977 and had by the early 1980s resulted in the deployment of over 300 missiles and rapidly transformed the operational efficacy of Soviet TNFs.

[272] This was in response to increasing concern on the part of some analysts that SS-20s might readily be transformed into SS-16s through the addition of a third stage, thus creating a risk of a Soviet potential for rapid "breakout" from SALT II's provisions.

The SS-25

The SS-25 was a road-mobile ICBM system developed by the Nadiradze Bureau that entered service in 1985. While the SS-25 was solid-fuelled like the SS-20 the new ICBM was armed with only a single-RV. It was designated by the Soviets as a direct descendant of the SS-13[273] and it seemed to most Western observers that something had finally been achieved from this otherwise fruitless programme. The Soviets were thus able to justify its development as being within the provisions of the unratified SALT II accord as it was not a new design as such, rather the development of an existing system.[274] It was also thought to possess strong technological links with both the SS-16 and SS-20 systems. However, scepticism existed among some Western analysts as to the extent of the links between the SS-13 and SS-25 systems. One the four criteria for defining system evolution and development under SALT II was "throw weight". While a 5% increase was deemed to be acceptable under SALT II, the SS-25 was estimated to possess a throw weight double that of the SS-13.[275] Sceptics viewed the apparent similarity in the Soviet designations applied for arms control purposes to be disingenuous. It was noted that US' protests at this apparent violation of SALT II were muted presumably because the deployment of the single-RV SS-25 represented a move away from the MIRVed ICBMs which had served to cause so much concern among American strategic planners during the previous decade.[276]

Thus the SS-13, SS-14, SS-15, SS-16, SS-20 and SS-25 were viewed as belonging to a 'family' of designs which emanated from the Nadiradze Design Bureau over the

[273] The Soviets designated the SS-13 as the RS-12 during the SALT negotiations. The SS-25 was described as the RS-12M.
[274] The SS-24/Scalpel was the Soviet Union's designated single new ICBM design, as permitted by the (unratified) SALT II Treaty.
[275] Zagola, S. 1995. "The Topol (SS-25) Intercontinental Ballistic Missile", *Jane's Intelligence Review*, 7(5):198.
[276] Ibid.

course of a period of two decades and more[277] and it was within this context of such an apparently prolific - though often unsuccessful - output that the Nadiradze Bureau's performance was evaluated.[278] All six systems were believed to have shared a high degree of technological commonality with their Nadiradze stable-mates. The fact that the final member of this lineage, the SS-25, was believed to have evolved *directly* from the progenitor, the SS-13, served to reinforce this notion. Such interpretations were influenced both by past and future Soviet missile developmental practices. As the SS-16 formed the basis of the SS-20 this reinforced the existing notion that the SS-14 and SS-15 had evolved directly from the SS-13.[279] In addition the parallel development of two similar systems with shared technical roots but a differing operational range was reminiscent of the relationship between the SS-4 and SS-5, the systems that the SS-14 and SS-15 were expected to replace.

All six of these new systems were identified as being powered by solid rocket fuel and a strong consensus existed among eminent Western analysts which identified the Nadiradze Bureau as possessing a designated monopoly on the development of solid fuel[280] and was inextricably linked to the belief that the Nadiradze Bureau had been solely responsible for the development of these three "generations" of missile systems.[281]

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[277] Berman and Baker, *Soviet Strategic Forces*, p.82, figure A1 and pp.102-4, table B1 and table B2.
[278] Cockburn, *The Threat*, pp.200-3.
[279] Garthoff, *Detente and Confrontation*, p.963.
[280] Berman and Baker, *Soviet Strategic Forces*, p.54 and p.80. For additional confirmation, see Freedman, L. 1977. *US Intelligence and the Soviet Strategic Threat.* London: Macmillan, p.113; "Russian Missile Bureaux," *Aerospace Daily*, 22 January 1979, p.100. A caveat was provided in the form of *Jane's* account of the SS-15's development by the Korolev Bureau. Even here however, it was assumed that the Nadiradze Bureau had played a supporting role in the context of propellant development. *JSWS - Issue 15, Russia Offensive Weapons - Obsolete Systems.*
[281] Tables created to display the responsibilities and characteristics of the various design bureaux frequently listed the Nadiradze Bureau as the sole exponent of solid-fuel development. Berman and Baker, *Soviet Strategic Forces*, p.83.

Design Bureaux

The majority of R&D for Soviet missile development was carried out in the design bureaux and research institutes of the nine defence ministries. A number of different organisational arrangements had evolved within this sector of the Soviet defence ministries. Some institutes were incorporated into science-production associations while others enjoyed a greater degree of operational independence and in some instances possessed their own research centres and prototype production sites. The latter type was often termed an *OKB* (experimental-design bureau) and such design bureaux played a vital role in the Soviet defence industry. *OKBs* were particularly prevalent in the development of aviation and missile systems. They were to a large extent built upon the reputations of their principal designers and often came to bear his name. There were four leading missile design bureaux and they came over a period of time to specialise in the design and production of various contrasting types of missile weaponry. S.P. Korolev could fairly be seen as the father of Soviet rocket production. Despite a period of imprisonment Korolev later headed the Soviet drive to develop a viable rocket delivery system. Korolev was responsible for the SS-6 the Soviet Union's first, albeit ineffective, ICBM. He enjoyed more success in the parallel development of space booster rockets and his design became the workhorse vehicle for Soviet space projects from the Sputnik onwards. For his efforts he was conferred the honour of "chief designer" in 1966. The Korolev Bureau continued to specialise in ultra-long range rocketry, which in theory held military potential for ICBM vehicles, but for practical purposes was employed chiefly in the role of space research. Upon Korolev's death later in 1966 the title of "chief designer" shifted to M.K. Yangel. Yangel had been a chief scientist under Korolev until he had established his own independent enterprise in 1945. While Korolev had enjoyed the acclaim for designing the first Soviet ICBM, it was to Yangel that the leadership were to turn in the search for technically-viable missile systems. While Korolev's designs relied upon highly volatile non-storable liquid fuels Yangel's missiles could employ a storable

variety which held obvious operational advantages. During the period from the late 1940s till the mid 1950s the Yangel Bureau was commissioned to produce a series of systems which came to be the principal nuclear weapons of the Soviet Union till the 1970s. The SS-4 MRBM and SS-5 IRBM formed the backbone of the Soviet Union's TNF until their reinforcement by the SS-11 in the late 1960s and eventual replacement by the SS-20 in the course of the 1970s, while the SS-9 was the principal Soviet ICBM until the advent of the SS-19 in the mid-1970s. Yangel himself held the post of "chief designer" till his death in 1971. V.N. Chelomei headed the third missile design bureau. He had apparently been introduced to rocket technology through Korolev's work during the latter's time in prison.[282] Although Chelomei's principal interest later lay in aircraft propulsion he also turned his attention to missile design in competition with his old mentor Korolev. While he enjoyed mixed fortunes in his missile designs his close links with Khrushchev ensured continued patronage during Khrushchev's tenure.[283] Chelomei's Bureau sought to develop its expertise in a number of fields, among them space booster rockets, cruise missiles, naval missiles and variable-range ICBMs. Into several of these categories could be placed the ubiquitous SS-11 system which began its career as a long-range naval missile before being developed to play roles both as a light ICBM and long-range TNF. Chelomei was also responsible for the SS-19 ICBM. Its huge throw weight and the possibility of it being armed with MIRVs were viewed with great alarm by many Western commentators as it came into service in the mid-1970s. Like the majority of Yangel Bureau designs Chelomei's missiles depended upon storable liquid fuel propulsion.

[282] See Vladimirov, L. 1971. *The Russian Space Bluff*, (Floyd, D. trans.) London: Tom Stacey for details of Korolev's early career. This account describes Korolev's early career, imprisonment but avoidance of execution and Chelomei's taking the credit for Korolev's early work as he oversaw his entire research project during the Korolev's latter years in prison.

[283] Chelomei appointed Khrushchev's son as one of his engineers and also married Khrushchev's daughter. Central Intelligence Agency, 1986. *The Soviet Weapons Industry: An Overview.* Washington D.C.: Directorate of Intelligence, p.20.

Solid Fuel

While the storable liquid fuel customarily featured in Yangel and Chelomei designs offered greater operational efficacy than the non-storable liquid fuel employed by Korolev for the SS-6 and space booster rockets, no form of liquid fuel could be regarded as ideal propellant for military missile systems. Although the process of manufacturing liquid fuel was relatively straightforward it required a complex rocket motor and series of pumps to burn effectively and was always liable to explode while in storage. In addition missiles and rockets using liquid-fuel propulsion required long hours of preparation prior to firing. By the end of the 1950s, the US had abandoned liquid fuel in favour of solid fuel propellants. This powder was highly stable and could be stored within missiles for long periods of time with minimal risk of explosion and offered a virtually instantaneous firing ability. It relied upon an exact mix of chemical compounds to produce a consistent rate and character of consumption. Any deviation could cause the fuel to produce either insufficient or excess propulsion. Either form of deviation could fundamentally undermine a missile's performance. Uncertainties surrounding the fuel's reliability stemmed from the relatively primitive state of Soviet development in this area and were exacerbated by the fact that, once emplaced within the missile, solid fuel cartridges could be neither checked nor maintained. Soviet designers were also concerned that missiles' structures, in particular their exhaust chambers, would prove unable to withstand the higher levels of heat produced by the burning of solid fuel propellant. However the advantages to be gained through solid fuel in terms of operation capabilities were of vital significance as solid-fuelled rockets could be held at the level of combat readiness for prolonged periods in marked contrast to their liquid-fuelled counterparts. The increasing importance of developing a viable means of solid fuel propulsion played a pivotal role in the emergence of the fourth major missile design bureau.

The Nadiradze Bureau

In contrast and despite the central role it was accorded by Western analyses in the development of Soviet missile systems, relatively little was known about the Nadiradze Bureau.[284] Moreover much of what was said in this regard has since emerged as having been inaccurate. The roots of the Bureau's evolution lie in the *contretemps* which emerged in the mid-1960s surrounding the efficacy of solid fuel development which served in turn as a backdrop for a vital episode in Ustinov's inexorable rise to power. Given the priority accorded to the danger of a rapid surprise attach in Soviet strategy, it was traditionally assumed that the pursuit of a viable solid-fuelled system would have held high priority in Soviet missile R&D. Grechko's opposition to mobile ICBMs and their associated strategic precept of assured retaliation has since been attested to by several Soviet sources.[285] This placed him at odds with the political leadership and the proponents of strategic innovation within the General Staff. Grechko sought to block the development of mobile ICBMs which had been proposed by Yangel in the early 1960s and which enjoyed the support of Ustinov and the Defence Council. Grechko disbanded the science committee of the SRF which had had the temerity to endorse the proposal and his attitude and actions served as a brake upon the Ministry of Defence and the technical analytical specialists in the military industries and military-political staff in making progress in improving systems and systems' survival.[286] Against this backdrop the support that Grechko might have been expected to extend to the development of a rapid response form of propellant such as solid fuel might have been tempered by his suspicion that its employment might inculcate the *defensive* strategic forms that he viewed with such disdain. In addition a deep-seated sense of scepticism permeated *Minobshchemash's*[287] perception

[284] Berman and Baker, *Soviet Strategic Forces*, p.80; p.74; Cochran, *et al. Nuclear Weapons Databook*, p74, n.37.
[285] University of Edinburgh, Department of Defence Studies Archive, (limited access only), files 2, 3 & 5.
[286] Ibid., file 2.
[287] Ministry of General Machine Building.

of the development of solid fuel and was enunciated by several of the chief missile designers, in particular Chelomei, as they sought to justify their continuing reliance upon liquid fuel propulsion.

Despite the lack of impetus towards the development of solid fuel emanating from these key areas of the military and defence production leaderships, by the late 1950s, Sergei Korolev had become increasingly convinced of the need to develop solid fuel propulsion to militate against the operational deficiencies of existing Soviet systems. He was joined in this conviction by First Deputy Chairman of the Council of Ministers with responsibilities for the defence industries, Dmitrii Ustinov. Ustinov viewed the rapid development of solid fuel propellant as a key area of technical development and - in conjunction with mobility - as the principal means of ensuring the operational survivability of Soviet ballistic missile systems. In addition the promotion of this rival development path provided a welcome area of bureaucratic competition through which Ustinov could seek to enhance his political position within the Soviet political hierarchy. Thus it was that Ustinov became the *patron* of Korolev's first foray into the realm of solid fuel development via the RT-1 test-bed system in 1959. Within a few years, this project had evolved into two parallel, though independent, programmes. Development of the IRBM variant, which came to be known as the SS-14 in Western parlance, was devolved to Tsirulnikov and Tyurin of the Perm SKB-172 and TsKB-7 bureaux respectively while control of the ICBM version of the programme was retained by the Korolev Bureau. However Korolev himself had anticipated the eventual diversification of the department responsible for solid fuel ICBM development as a new, independent venture as soon as it was considered well enough established to sustain an independent existence. This would have followed the precedent set by the creation of the Makeyev SLBM and spy satellite bureaux as filial off-shoots of the Korolev Bureau. Korolev's sudden death in January 1966 threw the Bureau into turmoil and threatened the future of the SS-13 project in particular. The new head of the Korolev Bureau, Vasiliy Mishin was equivocal about the importance

of solid fuel development and was far more concerned by the fate of the N-1 manned lunar programme which hung in the balance at this time. Given the dearth of support that solid fuel development enjoyed within *Minobshchemash* Mishin was keen to avoid conflict with Minister S.A. Afanseyev in what might well have proven to be a futile quest to save the SS-13 project. Against this backdrop Chelomei waged an energetic campaign seeking the adoption of his rival SS-11 system at the expense of the SS-13. He contrasted its ready availability, low cost and proven technology with the uncertainties and delays which beset the SS-13 programme. Finally division appeared from *within* the SS-13 design team itself, principally between the project leader, Igor Sadovsky and Boris Zhukov who was responsible for the propellant development. Zhukov sought a new patron from within the defence establishment who emerged in the person of Ustinov at a crucial point in the history of Soviet defence politics which coincided with a major restructuring of the defence industries bureaucracy.

The Ministry of Medium Machinebuilding (*Minsredmash*) was established in 1953 and from its inception played a key role in the Soviet Union's development of nuclear weapons.[288] *Minsredmash* was joined from 1965 in the production of Soviet nuclear weapons by the Ministry of General Machine Building (*Minobshchemash*) and the Ministry of the Defence Industry (*Minoboronprom*). Agursky characterised the creation of the Ministry of General Machinebuilding in 1965 as predicated by "bureaucratic-political" factors as Ustinov sought to consolidate his new-found powers.[289] To *Minoboronprom's* remit of *tactical*-range (solid fuel) missile systems, Ustinov sought to add solid fuel *strategic* systems, ICBMs, a range of missile development that had until then been the sole preserve of *Minobshchemash.* While

[288] Prior to this, the nuclear programme was overseen by the First Main Administration of the USSR Council of Ministers under Beria's leadership.
[289] Agursky, M. "Nauchno-isseldovatel'skii institut tekhnologii Mashinostroeniia kak chast' sovetskogo voenno-promyshlennogo kompleksa", pp.32-44 cited in McDonnell, J.A. "The Soviet Weapons Acquisition System", in Jones, D.R. (ed.) 1979. *Soviet Armed Forces Review Annual*, Vol.3.

apathy had characterised *Minobshchemash's* approach to the development of solid fuel up until this point, the prospect of losing jurisdiction over any aspect of development authority was opposed in principle and was apparently viewed as being "seditious" in nature.[290] Ustinov sought to create a new design bureau under the auspices of *Minoboronprom* control founded upon the *MIT*[291] research bureau, headed by A.D. Nadiradze. While this venture had in 1965 been assigned the responsibility for the development of the SS-12 solid fuel *tactical*-range missile it possessed no previous experience in the realm of longer-range systems. This led to a compromise as the SS-13 programme would be retained by the Korolev Bureau in the immediate future, while longer term upgrades would be carried out by the TsKB-7 institute, possessed as it was of prior experience of the project via the filial SS-14 project. According to Detinov the Korolev Bureau became solely devoted to the development of space rockets following Korolev's death. Existing military projects were transferred to other bureaux - ICBMs were, gradually, devolved to Utkin,[292] SLBMs were transferred to Krasnoyarsk and the Nadiradze Bureau was assumed to have utilised the remnants of the SS-13 programme for its future solid fuel ICBM projects.[293] The future course of Soviet solid fuel development would come to be centred principally upon the emergent Nadiradze Bureau which rose to a position of prominence as a result. General Detinov refuted the claim that the Nadiradze Bureau was simply an "offshoot" of the Korolev Bureau.[294] The fact that the Nadiradze and Korolev Bureaux were themselves under the auspices of separate ministries was offered as testament to this fact. Detinov highlighted the fact that the Nadiradze Bureau was established *prior* to the Korolev Bureau and concentrated solely upon the development of tactical missiles. This experience, he said, later endowed it with a

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[290] Pavlov, I. "Polemics: Who Doesn't Like the Topol Missile and Why?" *Nezavisimoye Voyennoye Obozreniya*, 21 March 1997.
[291] *Moskovskovskii Institut Teplotekhniki* - the Moscow Thermo-technology Institute.
[292] Formerly the Yangel Bureau.
[293] Detinov characterised such a process of programme distribution as the customary practice associated with the voluntary surrender of projects by a design bureau ceasing work in a particular field of weaponry development. Detinov interview.
[294] Zaloga, S. 1994. "Russian Missile Designations", *Jane's Intelligence Review*, 6(8):342-349.

position of pre-eminence among design bureaux when it moved into the field of solid-fuel ICBM development. While the emergent evidence lends credence to Detinov's caveat it also serves to clarify the precise nature of the unusual link between the two bureaux themselves.

Thus while it was customary to place strategic missile design bureaux under the authority of *Minobshchemash* the Nadiradze Bureau was placed under the auspices of *Minoboronprom*. This anomaly has almost invariably been overlooked by Western accounts of the position of missile production bodies within the structure of the Soviet defence sector.[295] The Nadiradze Bureau's anomalous ministerial background was partly due to the fact that its origins lay in the development of tactical missiles which had formed part of *Minoboronprom's* remit and the exceptional circumstances that surrounded its creation. However its ensuing expansion into the development of strategic systems was not accompanied by the Bureau's transfer into the designated ministry as Ustinov jealously sought to preserve his new-found influence upon this sector of weaponry production - an area that he himself viewed as a neglected, though vital, area of missile development. The fact that the Nadiradze Bureau continued to flourish against a backdrop of cordial relations between its Chief Designer and Ustinov was testament to both the military and political importance with which the First Deputy Chairman viewed the development of solid fuel. *Minoboronorom*-related ventures undoubtedly enjoyed the benefit of Ustinov's support and Detinov accepted that "his" bureaux benefited from an enhanced position in the process of resource allocation. Detinov acknowledged that ministers were well aware of this situation and concluded that it was in their own interest to, "feed the demands of a

[295] Cooper was a notable exception among Western analysts as he consistently asserted that the Nadiradze Bureau was under the auspices of *Minoboronprom*. Similar credit should be accorded to the CIA's Directorate of Intelligence which stated that the development of "mobile solid-propellant ballistic missiles" - and thus by implication work of the Nadiradze Bureau - was contained within *Minoboronprom*'s remit. See Central Intelligence Agency, *The Soviet Weapons Industry*, p.viii.

General Designer who enjoyed Ustinov's 'patronage'. Apparently former *Minoboronporom* minister Zverev knew this very well."[296]

[296] Detinov interview.

Reappraisal of the SS-20's "lineage"

SS-13[297]

Traditionally and almost without exception the SS-13 was identified as a product of the Nadiradze Bureau and was accorded the status of the progenitor of all subsequent members of the Bureau's "family" of designs. This has been refuted by a number of recently emerged Russian sources which have cast new light upon the true origins of this system's institutional background. The solid-fuel ICBM, the SS-13 was the final member of the first generation of Soviet ballistic missiles. As early as 1959 the Korolev Bureau had initiated an experimental research programme centred upon the development of a solid-fuel motor, intended principally for use in medium-range missiles. The results of tests on the prototype missile demonstrated its potential for development as an ICBM. Discussions between supporters and opponents of the scheme ensued to determine whether the burden of a new field of technological development could be sustained. The decision to develop a solid-fuel ICBM was made at the highest levels against a backdrop of US testing of a similar solid-fuel ICBM. On 4th April 1961 the government appointed Korolev to head the development of a fixed-site, solid-fuel ICBM system, armed with a single RV. The decision to proceed with this programme entailed the involvement of many research establishments and construction bureaux.[298] On 2 January 1963 a new test range at Plesetsk was created for the testing of the new ICBM system. The process of developing this weapon system entailed many new and complex scientific-technical and production challenges, particularly with regard to the solid-fuel propellant, the manufacture of large rocket motor fuel cartridges and the major new guidance system which was also developed. A new type of ignition mechanism for the main engine

[297] This account is based upon Kolesnikov, S.G. 1996. *Strategicheskoe raketno-yadernoe uruzhie.* Moscow: Arsenal Press, pp.61-2 and Kochemasov, S.G., Sizov, V.M. and Nosov, V.T. (eds.) 1992. *Raketnye voiska strategicheskogo naznacheniya: voyenno-istoricheskii trud.* Moscow: Strategic Rocket Forces, pp.114-5.

[298] It is not entirely clear whether this co-operation extended to rival rocket design bureaux.

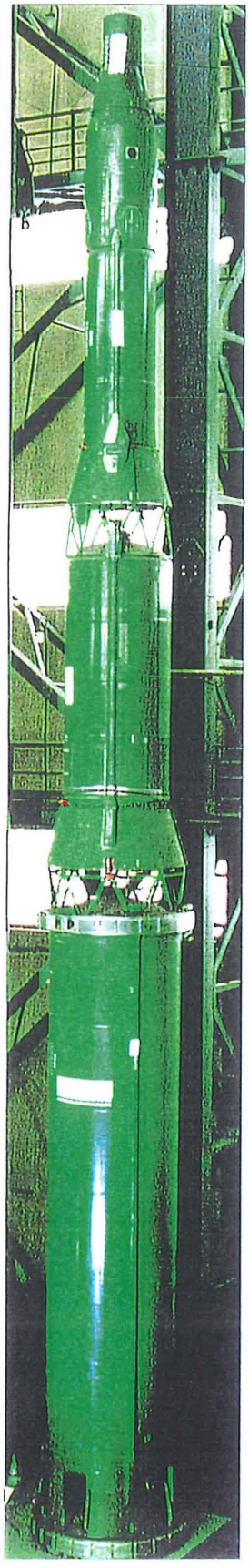
was developed and was sealed within the casing of the missile. The first launch of the RT-2P missile took place on the 4 November 1966. The tests proceeded for a further two at the Plesetsk range under the supervision of a state commission headed by P.V. Rodimov before the missile finally entered service with the SRF on the 18 December 1968. The RT-2P was a three-stage missile employing a lattice construction to link the three stages which was intended to allow the unobstructed exit of exhaust gasses from the next stage as it was ignited. The second and third stages would work in tandem for a few seconds until the former was exhausted and the latter took full control. The rocket engine of the first and second stages had steel casings. They also had blocks of four slit-nozzles situated at the base of both stages to provide guidance. The third stage's construction was distinguished by the composite-construction of its casing. All three stages had different diameters and capacities to ensure that it possessed the requisite range. Special reinforcements were applied to the lower sections of the casing to withstand the effects of igniting the solid-fuel. The SS-13 employed a complex autonomous-inertial guidance system, which guided the missile in flight to the point of the release of its (unguided) single-RV warhead. It employed a "counting-decision device and pendulum accelerator" situated in a module placed between the third stage booster and the RV itself. The SS-13 could deliver a 0.6 MT warhead and possessed a 1.9km CEP. Missile launch was controlled at a distance from the main rocket command and control complex. Its solid fuel propulsion dispensed with the need to fuel the rocket immediately prior to launch thus dramatically enhancing its responsiveness and greatly reducing manpower requirements.

The RS-12 was successfully tested and was manufactured in collaboration with the Ministry of Defence. Much of the development work required high level guidance which was provided by the SRF and representatives of the military including I.S. Kosminov, G.A. Solnetzev, P.P. Sherbakov, N.V. Kravets, N.K. Kudko and V.E. Vedenskiy. The appearance of a US ABM system led to the requirement for an upgraded system. Development work commenced in 1968 and it was first tested at

the Plesetsk range on 16 January 1970. After two years, it was accepted into service with the SRF. The modernised RT-2P (SS-13 Mod.2) was distinguished from its predecessor by its improved operating characteristics, specifically its enhanced guidance system and its warhead whose yield was increased to 750KT. The "accuracy of its firing was improved" to 1.5km. The missile was equipped with a complex system with which to overcome ABM defences. The modernised RT-2P entered service in 1974 and was claimed to have provided a rapid response capability until its eventual decommissioning in the 1990s.

Figure 11: SS-13 schematic drawing

1 - warhead; 2 - coupling section; 3 - instrumentation section; 4, 9, 15 - cable trough; 5 - third stage solid propellant sustainer; 6 - third stage; 7 - third stage tail section; 8, 13 - coupling trusses; 10 - second stage solid propellant sustainer; 11 - second stage; 12 - second stage tail section; 14 - supporting and driving band; 16 - first stage solid propellant sustainer; 17 - first stage; 18 - first stage tail section; 19 - aerodynamic fins; 20 - sump with supporting and driving band



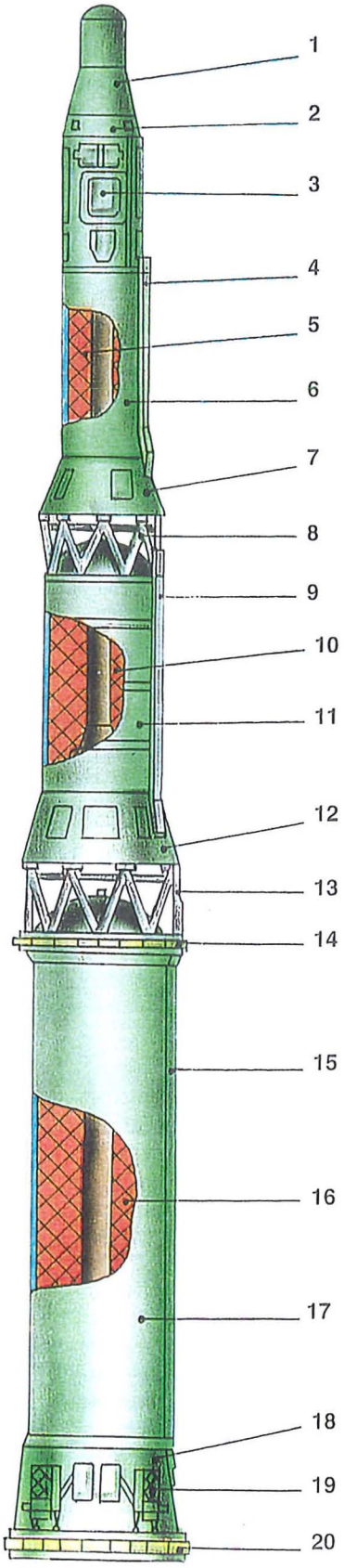


Plate 9: SS-13

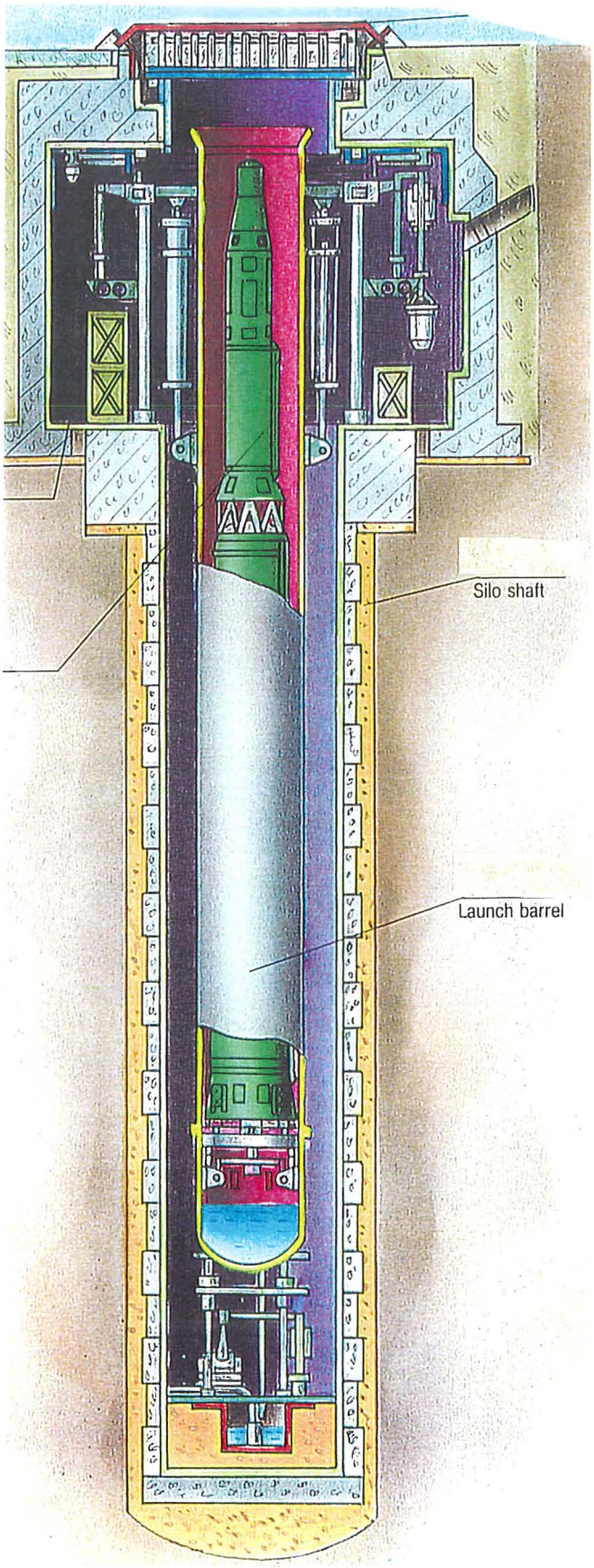


Figure 12: Silo-based SS-13

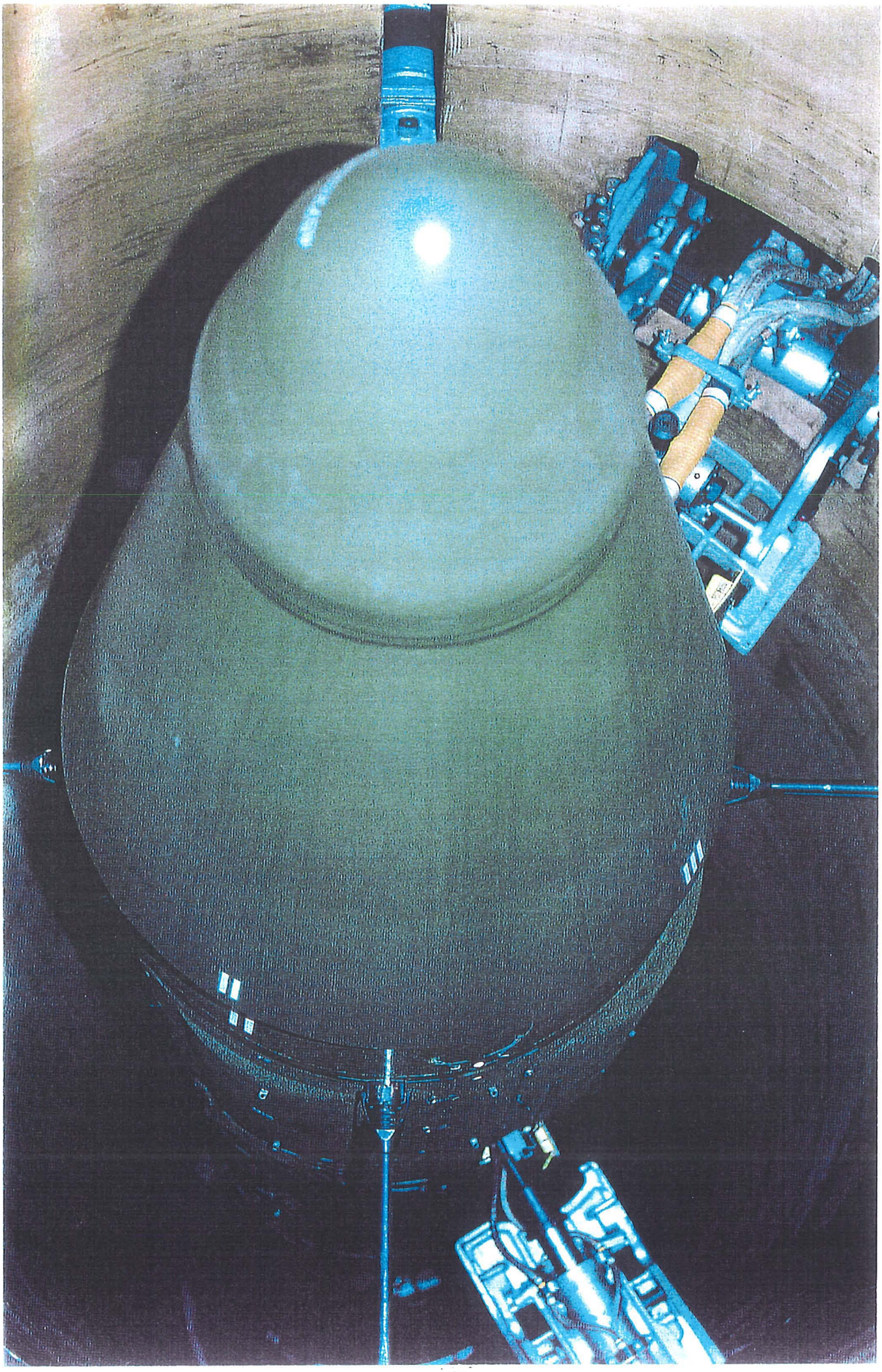


Plate 10: Silo-based SS-13

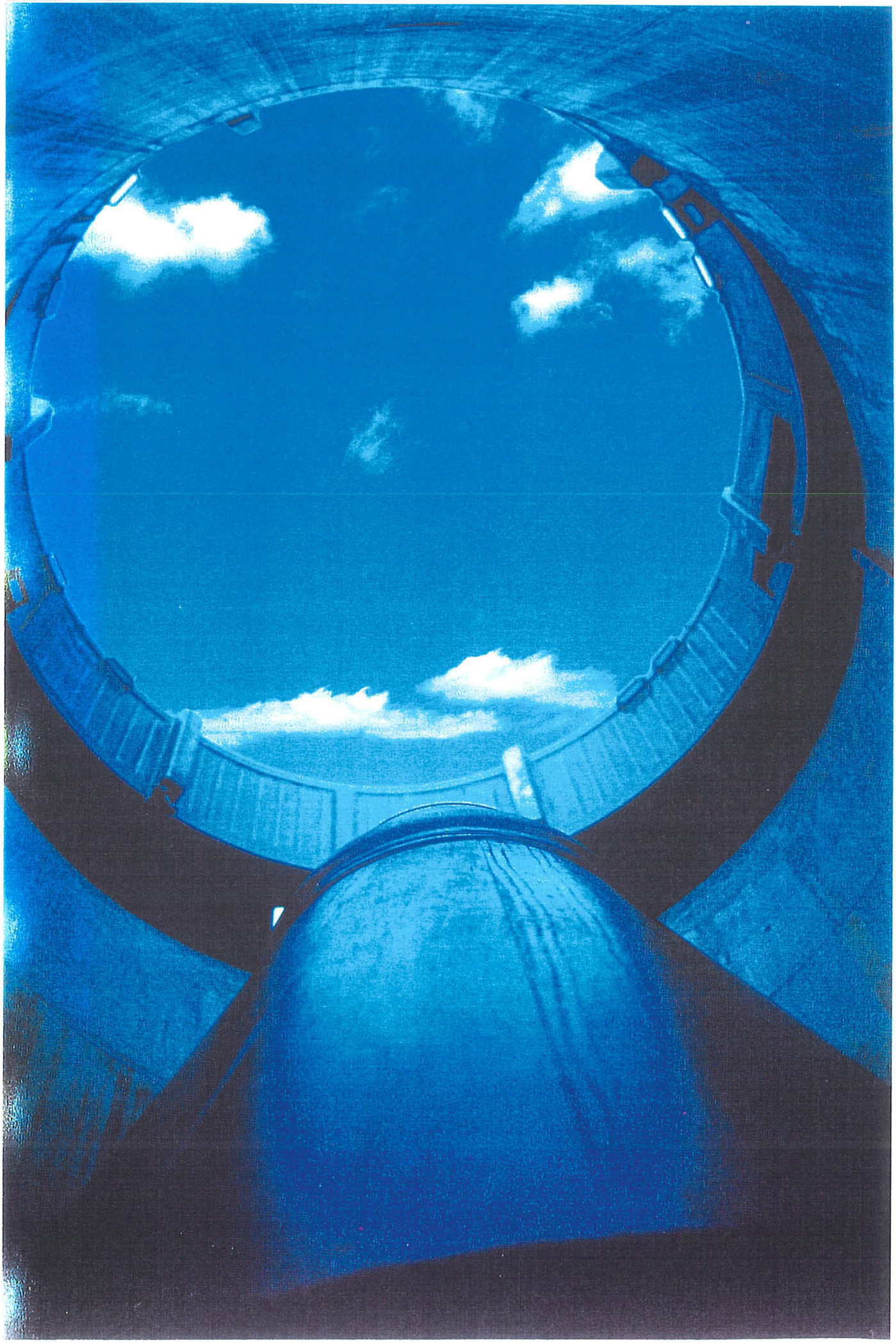


Plate 11: Silo-based SS-13

SS-14

The origins of the SS-14 have traditionally been extremely difficult to ascertain with any degree of confidence. Its technical demerits were apparently so great that it did not proceed beyond the initial testing stage. Its marginal role in the process of missile development during the 1960s is attested to by the near-total lack of narrative or analysis it is accorded within Russian sources. While Volkova listed the SS-14's Soviet "operational" and "technological" designations and its US/NATO codenames were in the general table of Soviet missiles,[299] the SS-14 was almost unique in not being credited with an individual entry detailing its technical characteristics and development history. Kolesnikov went further and made no mention of the missile at any point in his text.[300] Indeed even Berman and Baker's assertion that a modest deployment of 29 SS-14s occurred may itself have been inordinately generous.[301] A line of enquiry was provided by General-Lieutenant Kravets who mentioned the development of a tactical-range mobile missile by the Chelomei Bureau which paralleled that of the SS-15, both of which he claimed went unheeded by NATO. Given its mobile status, one might assume that this Chelomei project would have sought to employ solid fuel propellant. It seemed at first that this obscure development project might itself have been the elusive SS-14.[302] However new evidence has recently emerged from Russian sources which point to the Korolev Bureau as the source of this abortive project,[303] thus substantiating Zaloga's earlier claim.[304]

It has emerged that the Korolev RT-1 test-bed project was the progenitor of both the SS-13 ICBM and the SS-14 IRBM. The RT-2 produced two distinct variants - the

[299] Volkova, Ye.B. *et al.* 1996. *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA: sozdanie i sokrashenie*. Moscow: Strategic Rocket Forces, p.11.
[300] Kolesnikov, S.G. 1996. *Strategicheskoe raketno-yadernoe uruzhie*. Moscow: Arsenal Press.
[301] Berman and Baker, *Soviet Strategic Forces*, p.136, table C4.
[302] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.
[303] Karpenko, A.V. 1993. *Russiskoe raketnoe oruzhie, 1943-1993*. RIKA, ST. Petersburg, p.10.
[304] *Jane's Intelligence Review*, August 1994, p.346.

8K98 possessed with a 500kg warhead and an operational range of 10,00-12,00 km which evolved directly into the SS-13 and another variant, armed with a heavier, 1,400kg, warhead and a reduced range of 4,000-5,000km. Development of the latter was devolved upon Mikhail Tsirul'nikov of the Perm SKB-172 bureau and P.A. Tyurin's TsKB-7 bureau at the Arsenal plant in Leningrad.[305] This venture was redesignated as the RT-15/8K97 and was subsequently identified by the West as the SS-14. Although the Perm bureau had recently been involved in the unsuccessful development of the *Ladoga tactical*-range missile it still boasted more experience in the development of solid fuel, mobile missiles than any of its Soviet contemporaries[306], while Tyurin's bureau had previously concentrated upon the production of naval solid fuel missile systems. A revised Council of Ministers decree of 29 June 1962 heralded the official inception of the project. During the course of its development cycle the programme's management was transferred from the Perm headquarters to those of the Tyurin in Leningrad.

While traditional Western analyses were correct in their assertion that the SS-14 was derived from the two upper stages of the SS-13 they remained largely ignorant of the bureaucratic interaction that had accompanied its devolution from the Korolev Bureau to its filial counterparts. Several potential TEL designs accompanied its development which helped to cause confusion amongst Western observers and led to it being accorded two NATO designator titles.[307] While US sources credited it with a range of a mere 2,950km, Russian sources indicate that its intended range was in the region of 4,000-4,500km. An authoritative US intelligence source credited it with an anticipated CEP of 0.9km[308], a launch reliability of 90% and an overall force

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[305] Zaloga, S. *Russian Solid-Fuel Strategic Ballistic Missile Systems: Decisionmaking, Design and Development*, forthcoming, p.2.
[306] Litovkin, D. "Snaiperskiy vystrel", *Krasnaya Zvezda*, 6 July 1996 and Tyurin, P.A. "Perviy otechestvenniy morskoy strategicheskiy tverdotoplivny raketniy kompleks D-11", *Nevskiy Bastion*, no.1, pp.22-3 cited in Zaloga, *Russian Solid-Fuel Strategic Ballistic Missile Systems*, p.9, n.2 and n.3.
[307] "Scapegoat" and "Scamp".
[308] Zaloga, *Russian Solid-Fuel Strategic Ballistic Missile Systems*, p.10, n.6.

operational reliability of 60%. The SS-14's test programme occurred between September 1965 and March 1970. While Tyurin himself claimed that the system succeeded in accomplishing the state flight tests and was recommended for limited series production and deployment he claimed that the "Strategic Rocket Forces were not yet ready to operate such a new type of missile system".[309] Such a statement seems to sit rather at odds both with US intelligence estimates of the SS-14's marginal operational role and, more significantly, with its omission from the authoritative account of the history of the Strategic Rocket Forces.[310]

SS-15

Jane's speculation on the origins of the SS-15 design proved to be partially correct, although in common with the vast majority of Western accounts it too failed to discern its intended use as an ICBM. The SS-15 did not emanate from the Nadiradze Bureau. However it was in fact the Yangel bureau - not the Korolev Bureau - which was responsible for the design. It seems that Zaloga was alone in ascribing the SS-15's development to the Yangel Bureau.[311] Moreover the SS-15 was not initially conceived as a three-stage[312] IRBM intended to play a TNF role within the European TVD and was thus not initially viewed as a potential replacement for the SS-4/SS-5 force. Rather it was accorded the description of a "combined, two-stage ICBM". It was against the backdrop of the SS-13's laboured development and American plans to deploy the *Minuteman* missile in a rail-mobile mode that the SS-15 project was initiated, rather later than previously thought, in 1964[313]. The SS-13's weight had effectively precluded its deployment in rail-mobile mode and it was thus to the SS-15,

[309] Tyurin, P.A. "Perviy otechestvenniy morskoy strategicheskiy tverdotoplivny raketniy kompleks D-11", p.23.
[310] Kochemasov, S.G., Sizov, V.M. & Nosov, V.T. (eds.) 1992. *Raketnye voiska strategicheskogo naznacheniya: voyenno-istoricheskii trud.* Moscow: Strategic Rocket Forces.
[311] *Jane's Intelligence Review*, August 1994, p.346.
[312] Wright, *World Weapon Database*, p.332.
[313] Volkova *et al.*, *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA*, p.328; Berman and Baker posited 1958-61 as the most likely period for the programme's inception, 1962 was the date offered by *Soviet Military Power*.

which was some twenty tons lighter than its Korolev counterpart, that Soviet planners turned in an effort to secure operational mobility. Initially deployment of the SS-15 was considered in three forms, road-mobile, rail-mobile and silo-based. However just as the SS-13 had been developed in tandem with two warhead/range capabilities[314] so too were two variants of the SS-15 developed. One version was armed with a 1,410kg single-RV 1MT warhead and possessed a range of 7,000km, another with a 545kg warhead and a 9,800km range.[315] It was eventually decided to employ a tracked TEL of the type developed for the SS-14 as the basis for the SS-15's mobile launcher. The tracked TEL was developed by the KB-3 bureau in Leningrad and sought to employ a tracked chassis with lower ground pressure to minimise the levels of vibration associated with traversing the Soviet rural road network. Such vibrations held potentially catastrophic implications for the operational viability of ballistic missile systems, whose structural casings, electronics and guidance systems were all particularly vulnerable to fatal damage under such circumstances. Although the TEL was designed in an attempt to obviate such problems, it is questionable that a vehicle with a combined weight of over one hundred tons could have operated effectively in the Soviet hinterland. Mobility might well have been severely constrained, while untold damage to the missile itself may well have ensued during the course of the journey to the pre-surveyed firing point. However this was to become a moot point as the SS-15 possessed a fatal flaw which led to an abrupt halt in its development programme.

The most significant feature of the SS-15's design was its means of propulsion. Apparently uniquely among Soviet missiles, the SS-15 was a hybrid which sought to use two different types of fuel.[316] The composition of the first stage was described as

[314] Which became, in the case of the SS-13, the SS-14.
[315] It is interesting to note that these two warhead weights were very close in size to those for the SS-13 and SS-14 systems, but the SS-15's IRBM range was longer than that of the SS-14 while its ICBM range was shorter than that of the SS-13.
[316] Golokov, L.G. 1976. *Gibridnye raketnye dvigateli.* Moscow: Voyenizdat, cited in J. Erickson and L. Erickson, 1996. *The Soviet Armed Forces 1918-1992: A Research Guide to Soviet Sources,*

"blended solid fuel". By contrast however, the second stage consisted of *NDMG* and NO4.[317] NDMG - "nesimmetrichnyi dimetilrgeedrazin" - is the Russian term for the substance "asymmetric dimetyl hydrazine". This substance is a liquid which although highly corrosive can be stored for prolonged periods under appropriate conditions. Relatively inexpensive to produce, it can be closely controlled by the use of mechanical valve systems. On contact with NO4 an instantaneous chemical reaction ensues which produces a high specific impulse. The residual poisonous gas produced would be incidental when employed to power a missile. These attributes led the US to employ this propellant during this period on Apollo series rockets, on the booster rockets used to carry out manoeuvres and course adjustments.[318] To the best of my knowledge no published Western source has ever posited the notion that Soviet attempts to combine solid and liquid fuel sections within the same missile had reached such an advanced stage of development. The continued employment of a liquid fuel element to the system's propulsion was most likely to have been a reflection of continuing Soviet difficulties in mastering the intricacies of solid fuel development. In addition Soviet liquid fuelled engines of this period provided a greater thrust-to-weight ratio than their solid fuel counterparts and the Yangel design team may thus have been forced to employ a hybrid design to generate sufficient thrust to power the system.

The SS-15's CEP - Circular Error of Probability - the standard definition of warhead accuracy - was not listed by Volkova in his performance profile of the system which seemed indicative of a major deficiency in the missile's guidance system on the scale previously suspected by Western sources.[319] It transpired however that the system's technical deficiencies were of a rather more fundamental nature. Volkova

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Westport, Ct.: Greenwood Press, p.124 is a rare example of a source devoted to this rather obscure field.

[317] Volkova *et al.*, *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA*, p.328.

[318] I am greatly indebted to Dr Greg Varhall and Mr Steve Bennett, the Programme Manager of "The Starchaser Foundation", for this information on "NDMG."

[319] Volkova *et al.*, *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA*, p.328.

documented nine experimental test-launches of the SS-15.[320] Their apparent lack of success was such that the programme was cancelled.[321] The details which have emerged concerning what proved to be the final prototype launch are themselves instructive and provide compelling evidence of the system's technical deficiency. Despite his claim that this prototype remained unknown to NATO, it seems almost certain that General-Lieutenant Kravets[322] was referring to the SS-15 when he described a "Yangel designed longer range mobile missile that combined a liquid-fuelled first stage with a solid-fuelled second stage tested in 1968 with terrible results - there was a massive explosion - and the programme was cancelled."[323] The failure to accord a "treaty" designation code to the SS-15 and its absence from the table of deployed Soviet systems seem to bear out the assertion that deployment of this system was negligible or nonexistent. Indeed against this backdrop earlier Western estimates of a token deployment of c.60 units in the Eastern Soviet Union may themselves have been exaggerated.

[320] Ibid.
[321] The first test launch in October 1967 was so fleeting in nature that US intelligence systems failed to detect its brief existence. Subsequent tests were detected though their persistent brevity was evidence of their technical failure.
[322] Kravets worked for over 30 years in Soviet rocket design and development and had played a key role in the development of the SS-13.
[323] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

The SS-16 and SS-20 - a shared genealogy

Recent evidence from several key Russian sources has tempered traditional Western portrayals of the lineal relationship between the SS-16 and SS-20. It portrays something of a symbiotic relationship between the SS-16 and SS-20 programmes which serves as a contrast with the "father and son" metaphor so often employed by past analyses. Western analyses were for the most part accurate in ascribing the initiation of the SS-20's development to c.1966. With regard to the SS-16 however they were markedly less reliable, dating its initiation to as early as 1964 or 1965.[324] In fact the origins of the SS-20 programme actually *predated* those of the SS-16 by over three years. The SS-20 programme was initiated on 4 March 1966 while the SS-16 programme was not formally set in motion until 10 July 1969.[325] This stands in marked contrast to the ensuing course of programme development in which the SS-16 came to play the vanguard role. While an unequivocal explanation for this apparent dichotomy cannot yet be proffered two hypotheses have emerged which between them seem likely to hold the key to explaining the uneven course of the missiles' development.

One avenue of explanation posits that the Council of Ministers' Decree of 4 March 1966 which was cited as having initiated the SS-20 programme was intended to facilitate the development of a common test bed for an ensuing twin-tracked programme encompassing both intercontinental and intermediate range components as had Korolev's earlier RT-2 programme.[326] This thesis identifies 1968 as the likely chronological point for the project's separation into two distinct programmes. Official reticence concerning the long-term aim of developing an ICBM system in addition to an IRBM variant could variously be explained by the inherently fluid nature of such

[324] Wright, *World Weapon Database*, p.180 quoted *Soviet Military Power* 1985 and Berman and Baker resectively for these assessments.
[325] Volkova *et al.*, *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA*, pp.336-7.
[326] Karpenko, *Podvizhnye Raketnye Kompleksy Strategicheskogo Naznacheniya*, pp.10-14.

ventures or by the vagaries of Soviet intra-bureaucratic relations. Against the backdrop of *Minobshchemash's* ire at the loss of responsibility for a section of ICBM development to the rival *Minoboronprom* Ustinov may have considered it prudent to await an opportune moment to seek official approval for the development of an intercontinental system under the auspices of the latter Ministry. Thus the SS-20 is portrayed in large part as a "stalking horse" for the SS-16. This thesis derives some measure of additional support from the SS-16's and SS-20's Soviet "technological designations" which were 15Zh42 and 15Zh45.[327] However it fails to address the fact that Volkova's authoritative text specifically identified the SS-20 programme as pre-dating that of the SS-16 by three years and gave no indication that the SS-20 programme was intitially possessed of such dual or test bed status associated with the development of its ICBM sibling. A definitive assessment of this issue will remain elusive in the foreseeable future as it would require the public disclosure of the Council of Ministers' decree.

An alternative explanation of the rather enigmatic course of the systems' development is closely related to the fate of the SS-15 programme. As a result of the longstanding Western misrepresentation of the SS-15 solely as an IRBM the implications of its failure upon Soviet *strategic* force structure has been effectively ignored. The programme's failure would have engendered considerable concern among the increasing numbers of the Soviet defence community who perceived of solid fuel and system mobility as the only effective guarantors of ballistic missile systems' operational survivability. In connection with this General-Lieutenant Kravets described the way in which "another mobile ICBM programme was initiated in 1968 as Soviet scientists improved their competence with solid fuel"[328] following the dramatic demise of the SS-15 programme. This new project closely corresponds to the chronology of the

[327] Such an interpretation is advocated by Zaloga, *Russian Solid-Fuel Strategic Ballistic Missile Systems*, p.15.
[328] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

SS-16's development.[329] It is thus entirely plausible that the Nadiradze Bureau's initial foray into longer range missile design was centred upon the SS-20 IRBM[330] but that its attentions were necessarily diverted toward the pressing demand for a solid-fuel, mobile ICBM in 1969 which caused the effective suspension of the SS-20 programme. The ensuing failure of the SS-16 programme might well have then led the Nadiradze Bureau to resume it development efforts via the SS-20 project. Significantly this is supported by the fact that the SS-16's flight testing programme was coming to an end in the latter stages of 1974 as the SS-20's test programme was about to commence.

The apparently desultory development of the SS-20 and, in particular, the dearth of apparent progress in its development between 1968 and 1974 could thus be attributed either to its secondary role in Ustinov's plans to facilitate *Minoboronprom* production of ICBMs or the pressing nature of the requirement for a mobile ICBM which emerged with both drama and urgency in the wake of the spectacular demise of the SS-15 project. Proponents of the respective interpretations would thus attribute the ensuing resurrection of the SS-20 programme either in terms of resource utilisation from a redundant ICBM programme or a reversion, in the wake of the SS-16's abandonment, to the development of theatre forces whose importance - though vital - was secondary to that of strategic-range missiles. Whichever explanation is favoured - and both hold strong elements of common ground - it is clear that the lineal relationship that existed between the SS-16 and SS-20 was symbiotic in nature to a previously unrecognised extent.

SS-16 performance specification

[329] If, as seems likely, Kravets was referring to the SS-16 this raises a number of intriguing questions regarding the existence of inter-bureaux interaction and the pooling of technological information. Moreover if such a practice did occur, was it conducted upon a voluntary basis or at the behest of the VPK or some other governing agency?

[330] This would accord with Volkova's chronological timescale. It would also have represented a gradual process of entry into longer range missile design on the part of the Nadiradze Bureau which might have been anticipated given both its roots in strategic missile design and earlier high level reluctance to grant it authority over the development of the SS-13 and SS-14 projects.

As the SS-16 was expected to weigh significantly less than either the SS-13 or SS-15 system it was for the first time feasible to employ a wheeled, heavy truck chassis as a TEL platform. This held the prospect of greater road speed and lower maintenance levels. It also facilitated a move away from reliance upon tracked TEL systems whose inherently high levels of vibration could potentially inflict fatal damage upon the missile's intricate electronic systems and casings during the transit process. The TEL units were produced at the Titan Design Bureau's Barrikady plant at Volgograd under the auspices of *Minoboronporom*. Whether due to associated R&D work for the SS-20 system, or surreptitious development of the SS-16 itself, the Nadiradze Bureau succeeded in making rapid progress towards the test flight stage. Following the project's formal inception in 1968 test flights were initiated within four years, a rapid evolution by contemporary standards, still more so in a system employing a host of new technological characteristics. The test flight programme was initiated on 14 March 1972 with the launch of a missile from the Plesetsk range towards the Kamchatka Peninsula. The entire SS-16 test programme was characterised by unprecedented, and largely successful, Soviet attempts to conceal their course and progress from US intelligence-gathering activities.[331] A total of thirty-five test flights were conducted until their effective suspension in December 1974. The sporadic nature of the test programme and the data that was gleaned concerning the flights themselves seem to suggest that the design team encountered serious technical obstacles. US intelligence sources denigrated it as "a dog of a missile"[332] and speculation centred upon the third stage booster or guidance system/PBV[333] as the most likely culprit. The former explanation was given credence by the contrasting efficacy of the SS-20's subsequent performance while essentially employing the SS-16's first two stages. Support for the latter explanation was derived form the fact that

[331] Zaloga, *Russian Solid-Fuel Strategic Ballistic Missile Systems*, p.17, n.11.
[332] Talbott, S. 1979. *Endgame: The Inside Story of SALT II*. London: Harper & Row, p.134.
[333] Post-Boost Vehicle.

while the SS-16 was theoretically designed to operate using a MIRV warhead, test flights had been conducted, without exception, employing a single-RV.

During interview General Detinov observed that as the SS-16 "was not a very good system from a technical point of view" it was decided to "drop" the system. When pressed further on the issue of the SS-16's technical viability and specific problems regarding its development Detinov could offer no further elucidation but indicated that the technical difficulties encountered during the course of the SS-16's development were not in themselves insurmountable. He confirmed that the SS-16 was armed with a single-RV, which further diminished its attraction in an era when "MIRVing" of ICBMs was in vogue. It was thus considered more desirable to fulfil the Soviet Union's ICBM allocation within SALT I with MIRVed systems alone. General Detinov did however categorically state that the SS-16 had been deployed in small numbers in the early 1970s.[334] Such an acknowledgement, of even a small-scale deployment, stands in marked contrast to the repeated Soviet assertions throughout the 1970s and 1980s that the SS-16 had not moved beyond the stage of prototype testing.[335] Moreover a recent and authoritative SRF history confirms Detinov's claim and stated that two SS-16 regiments, commanded by Colonel L.V. Forsov and V.V. Runov, became operational at Plesetsk on 21 February 1976.[336] It is instructive to compare this with Volkova's account which reflected the *official* Soviet line by simply detailing its failure during its acceptance trials and its subsequent preclusion under the remit of SALT II.[337] The significance of this revelation should not be underestimated as US fears of a Soviet "break out" from the provisions of the SALT limitations centred principally upon a rapid programme of conversion of SS-20s into SS-16s via the addition a third stage booster. Soviet attempts to placate such fears were based on an assurance that the SS-16 had not been operationally deployed and a subsequent

[334] Detinov interview.
[335] Ibid.
[336] Kochemasov, Sizov and Nosov (eds.) *Raketnye voiska strategicheskogo naznacheniya*, p.30.
[337] Volkova *et al.*, *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA*, p.336.

undertaking not to proceed with any such development process in the future. The fact that the deployment of the SS-16 seems to have occurred without detection by US intelligence means is additionally significant and is itself testimony to the efficacy of concealment via a mobile basing mode.[338]

However while the Soviet Union stands accused of breaching the letter of SALT on this occasion, it could claim with justification to have adhered to its spirit. General Detinov stressed that the Soviet Union became aware of the United States' deep-seated opposition to allowing the development of mobile ICBMs at an early stage of the SALT proceedings.[339] The system seems to have suffered from a lack of widespread support from within the Soviet military-industrial establishment as a whole. To what extent this equivocal attitude was due to its unimpressive test performance or inherent jealousy due to its Ministry of origin remains unclear.[340] What is strikingly apparent however was the extent of the Soviet Union's continuing amenability to the acceptance of the principle of prohibition of such systems throughout the duration of SALT.[341] This stance provided something of a contrast to the positions adopted by both sides on a host of substantive issues and was perhaps indicative of the low level of institutional backing that the system possessed.

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[338] This assumption is made on the basis that the construction of silos to house the SS-16 would almost certainly have been detected by US satellites. The issue remains shrouded in secrecy however. Significant portions of a CIA "Team B" report on the SS-16 that was released in 1995 remained classified and subject to censor.

[339] Detinov interview.

[340] Accounts sympathetic to the Nadiradze Bureau stress the role played by *Minobshchemash* and rival design bureaux in undermining support for the SS-16 programme through a sustained campaign of disparagement. See for example, Pavlov, I. "Polemics: Who Doesn't Like the Topol Missile and Why?" *Nezavisimoye Voyennoye Obozrenie*, 21 March 1997, (trans. FBIS=UMA -97-075-S).

[341] For details of the role played by the question of mobile ICBMs in SALT and the eventual resolution of the issue see Savel'yev, A.G. and Detinov, N.N. 1995. *The Big Five: Arms Control Decisionmaking in the Soviet Union.* Westport, Ct.: Praeger, pp.73,80n.1,86,135,143,149 and Talbott, *Endgame*, pp.71-2, 134-6, 141, 145, 228.

SS-20 performance specification

The SS-20 was constructed at the Votkinsk Machine Building plant in Votkinsk, Udmurt, in a construction hall that had been built to meet the anticipated production of the SS-16.[342] The IRBM employed a TEL that was virtually identical to that used by the SS-16, the only visible difference being that the canister containing the ICBM variant was in the order of a metre longer than that of the SS-20.[343] The link between the two systems was reaffirmed by Detinov and Belous during my interviews with them. Detinov stated that the SS-20's two-stage booster rockets were "virtually identical" to the first two stages of the SS-16.[344] Within Soviet solid fuel systems "the fuel could be positioned within the missile in one of three ways, integrated into the fabric of the casing during manufacture or as a cartridge, either free to move around within the casing or firmly fastened within it".[345] The SS-20 employed the final of these three options.[346] The major innovation associated with the SS-20 was its employment of a new guidance system.[347] While one variant of the missile was armed with a single-RV[348] the principal effort in the system's development centred upon the MIRV variant.[349] This derivative employed the practice common among early Soviet MIRV designs of leaving the three re-entry vehicles exposed without a ballistic nose cone. This was apparently adopted in the wake of testing which indicated that the

[342] Confirmation of the plant's output was provided in a later article by a former manager of the SS-20 production programme. See Khromov, G.K. "Conversion from military to civilian production: The Votkinsk plant", in Paukert, L. and Richards, P. 1991. *Defence Expenditure, Industrial Conversion and Local Employment*, Geneva: ILO, pp.179-80. The SS-25 was subsequently produced at this same facility.
[343] Their near-identical appearance was a key aspect of US' fears concerning the possibility of a surreptitious SS-16 deployment.
[344] Detinov interview.
[345] Balabuch, L.I., Alfutov, N.A. and Usokin, V.I. 1984. *Stroitel'naya Mekanika Raket*. Moscow: Vysshaya Shkola, pp.370-1.
[346] Kochemasov, Sizov and Nosov (eds.) *Raketnye voiska strategicheskogo naznacheniya*, p.148.
[347] Detinov interview.
[348] This variant was designated as the 15Zh48 in Soviet technological parlance and SS-20 Mod.1 by Western sources.
[349] 15Zh45/ SS-20 Mod.2.

"naked" version was possessed of lower levels of aerodynamic drag than its faired counterpart.[350]

Testing of the SS-20 commenced at the Kapustin Yar range[351] on 21 September 1974 and proceeded with remarkable rapidity culminating in the final pre-deployment flight on 9 January 1976. During the first three years of its service with the SRF over 100 successful training and test flights occurred. The SS-20's operational efficacy was later confirmed during its destruction under the terms of the INF Treaty.[352] One study has claimed that of the 72 test firings permitted under the INF decommissioning procedures 71 of the missiles launched successfully hit their designated targets.[353] An authoritative US intelligence source has confirmed the system's reliability and cited a 100% success rate during the course of 104 LTDs[354] that were monitored by US sources. The exceptionally high degree of component commonality existed between the two systems and facilitated the rapid build-up of SS-20 force levels.[355]

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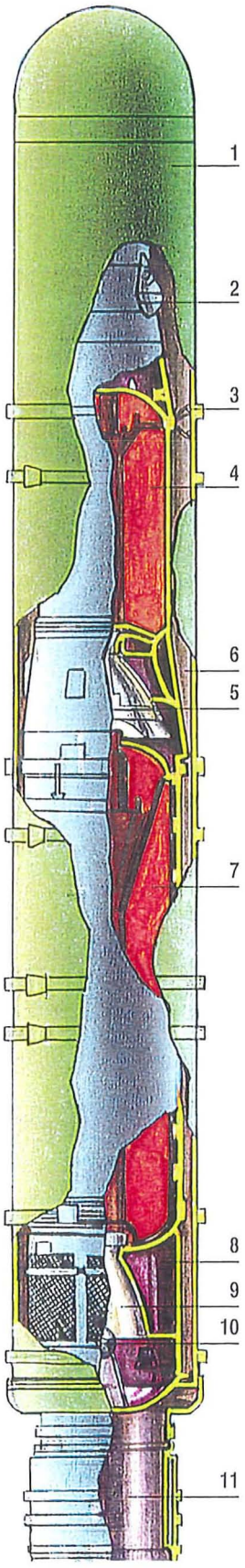
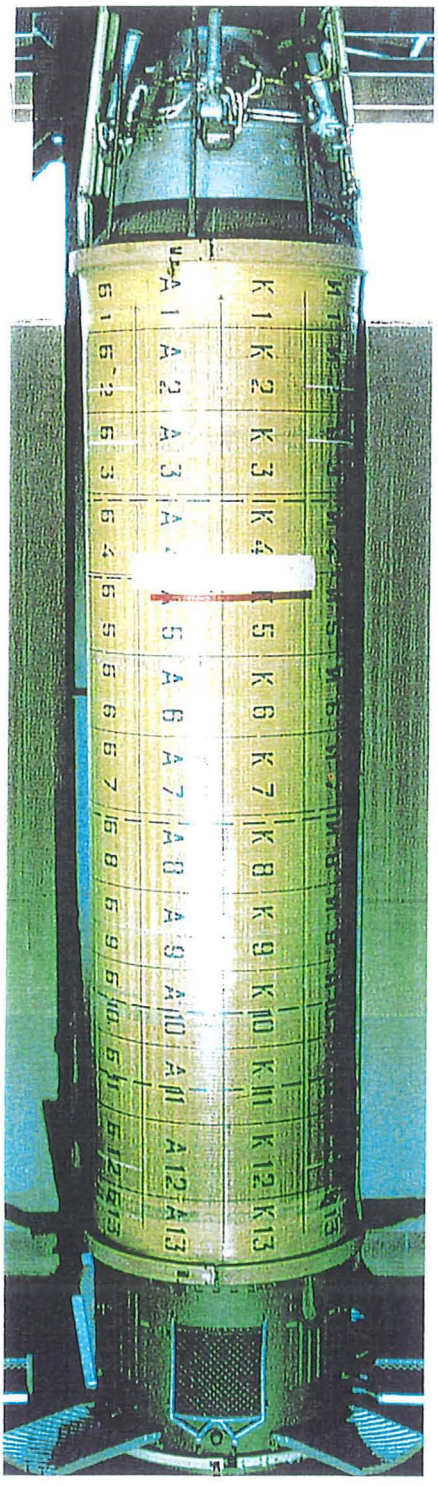
[350] Saratov, S. "Missile Complex Pioner (Rocket SS-20)", 1993, *Russian Magazine of Science and Technology*, p.48.
[351] Significantly the Kapustin Yar range was the designated site for flight testing of *tactical*-range systems, while the Plesetsk and Tyuratam ranges oversaw the testing of solid and liquid fuel ICBMs respectively. It is likely that the decision to host the SS-20's development at Kapustin Yar represented an attempt to signal the SS-20's lack of strategic potential to US intelligence observers.
[352] Confirmation of this was volunteered independently by both Detinov and Belous and was subsequently verified by a top-level Western source.
[353] Zaloga, *Russian Solid-Fuel Strategic Ballistic Missile Systems*, p.24.
[354] Launch to Destruction.
[355] Belous and Detinov interviews.

Figure 13: SS-20 schematic drawing



1 - transport launch canister; 2 - combat stage motor; 3 - supporting and driving band; 4 - second stage power unit; 5 - second stage power unit nozzle assembly; 6 - coupling section; 7 - first stage power unit; 8 - first stage tail section; 9 - first stage nozzle assembly; 10 - solid propellant gas generator; 11 - movable bottom plate of transport launch canister



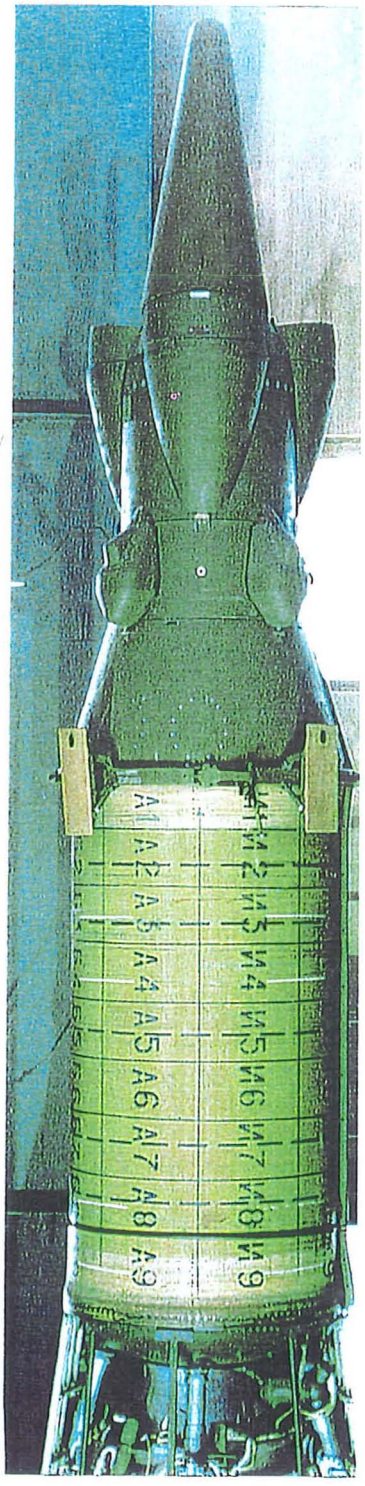


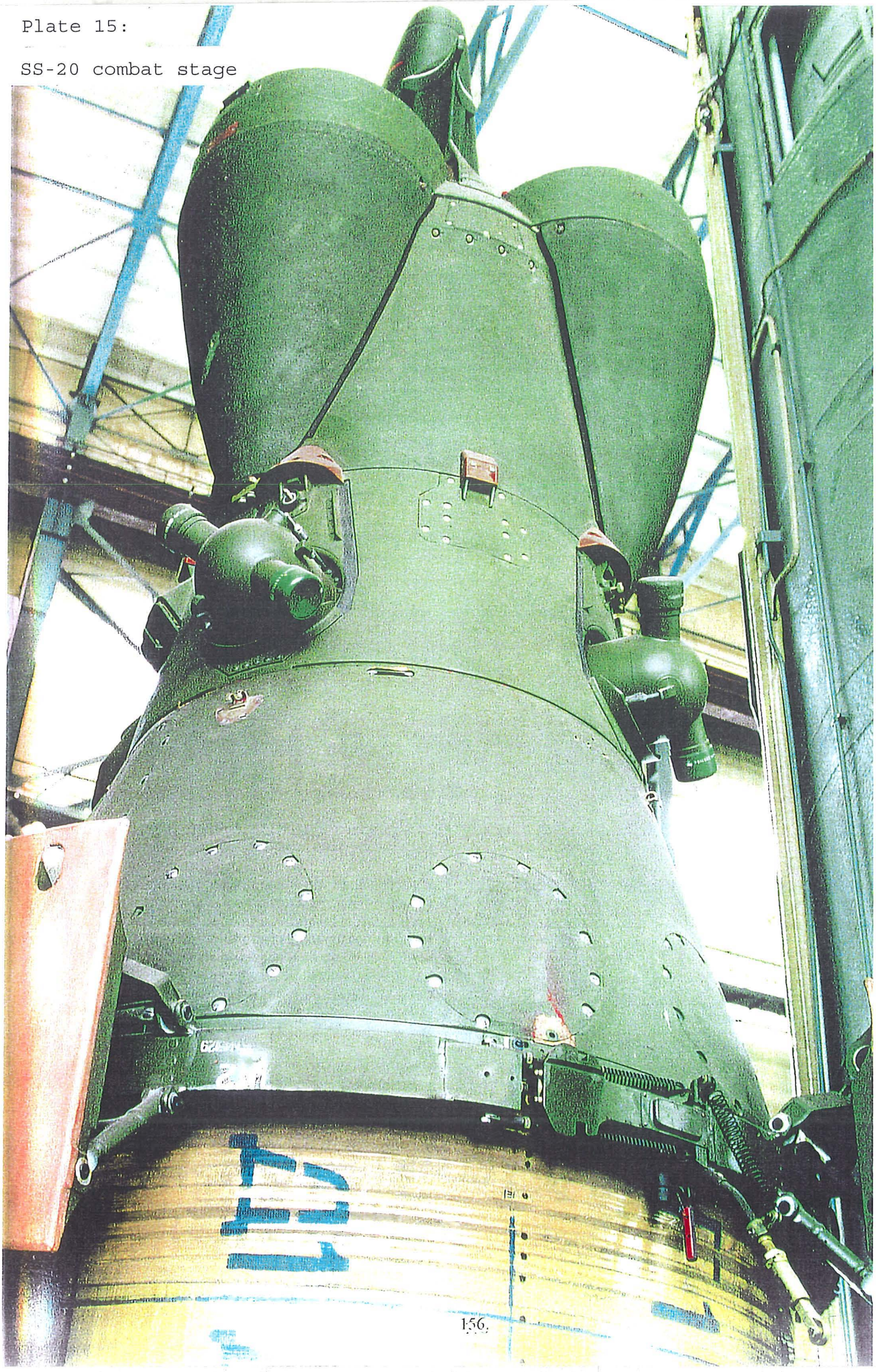
Plate 12: SS-20

Plate 13: SS-20 first stage

Plate 14: SS-20 second stage

Plate 15:

SS-20 combat stage



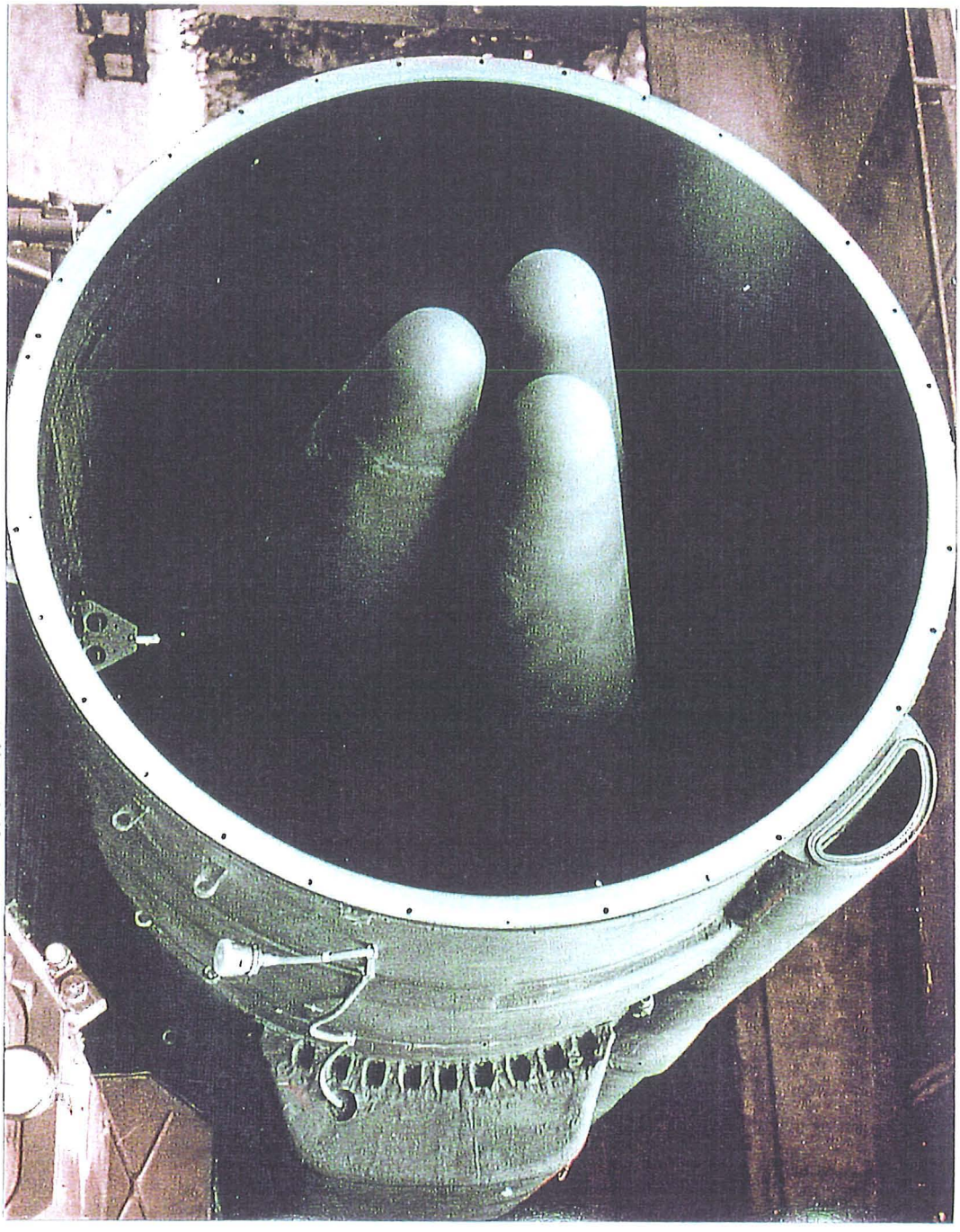
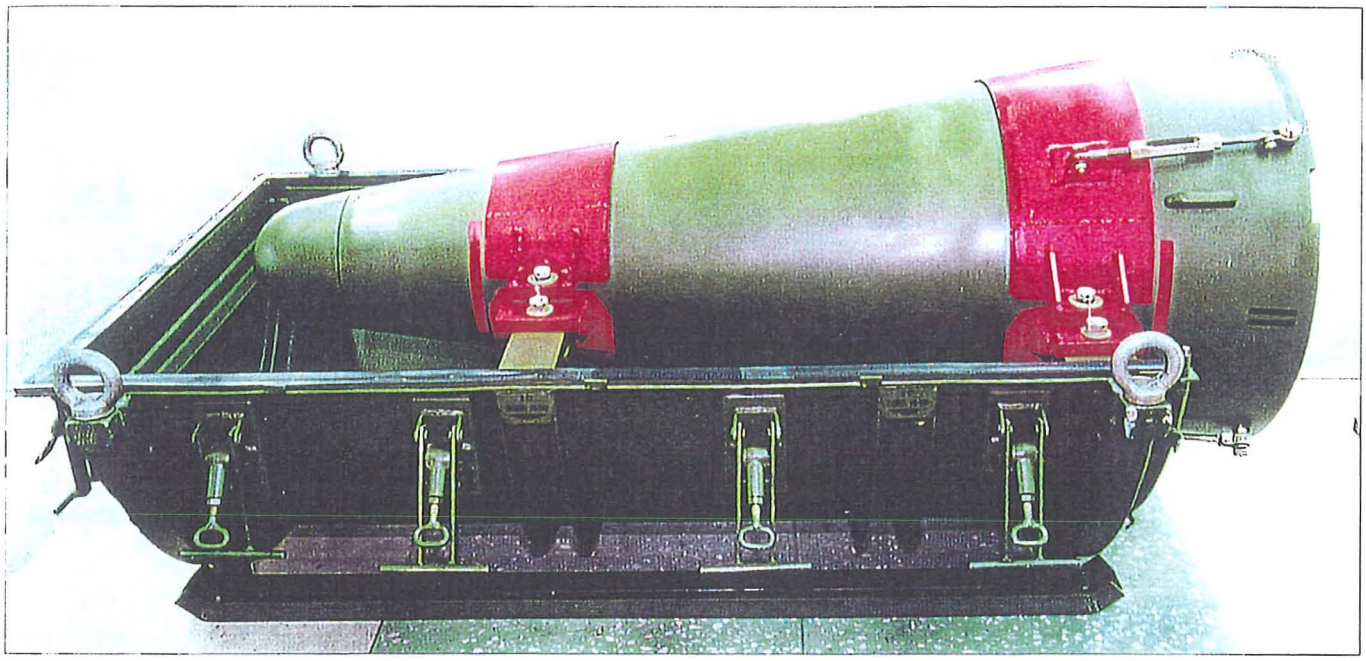


Plate 16: SS-20 MIRVs



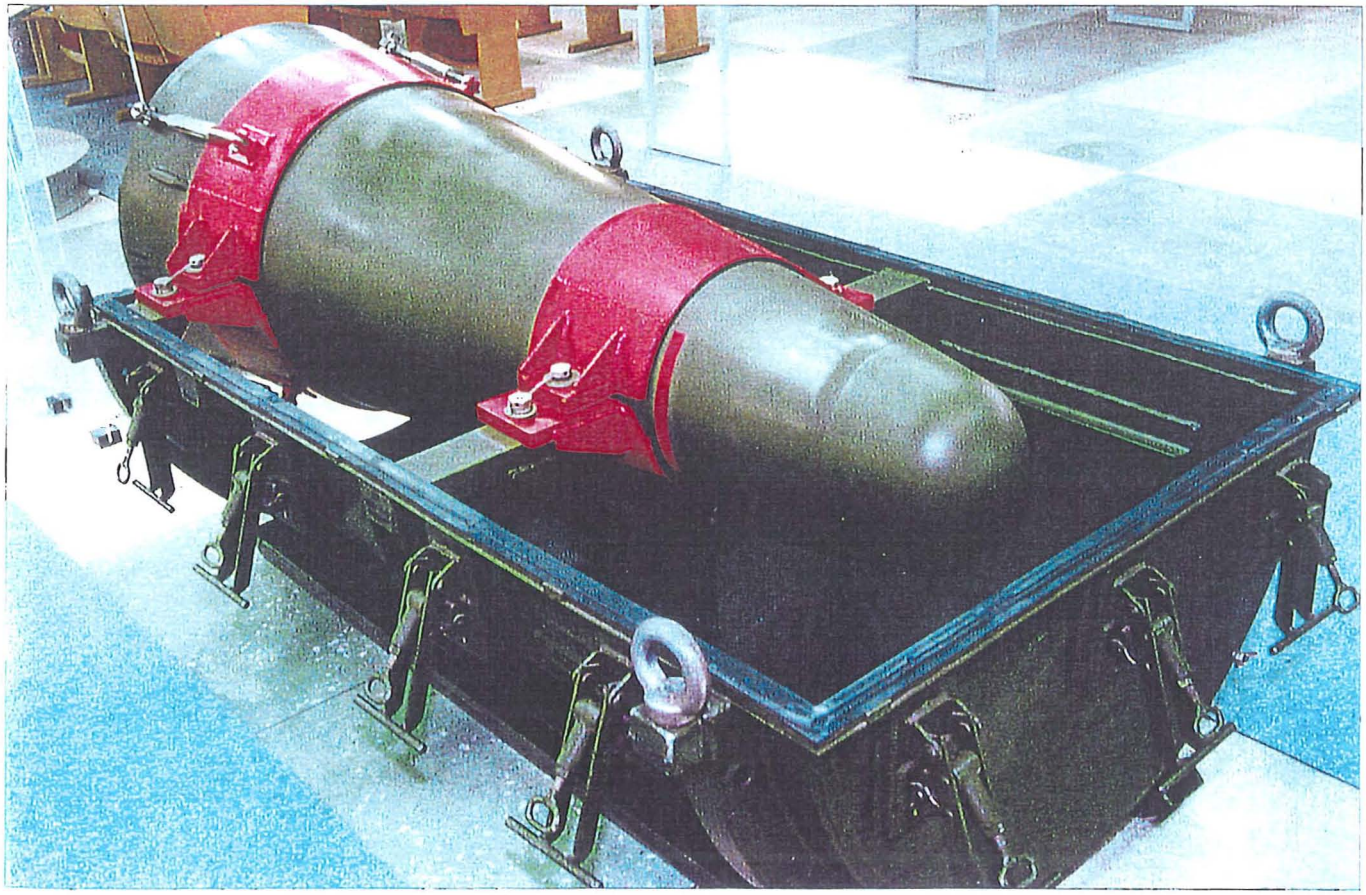
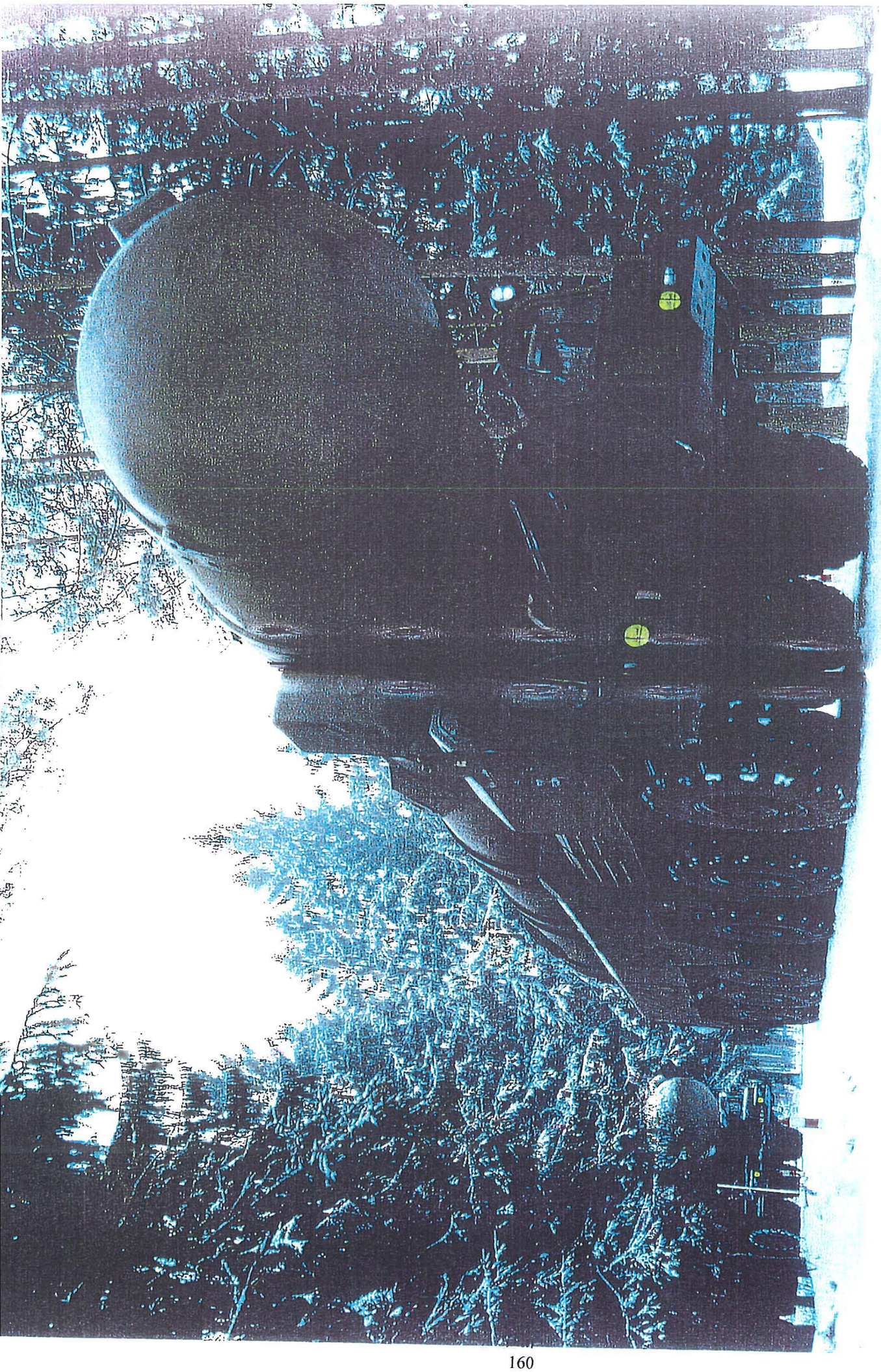


Plate 17: SS-20 RV

Plate 18: SS-20 and TEL



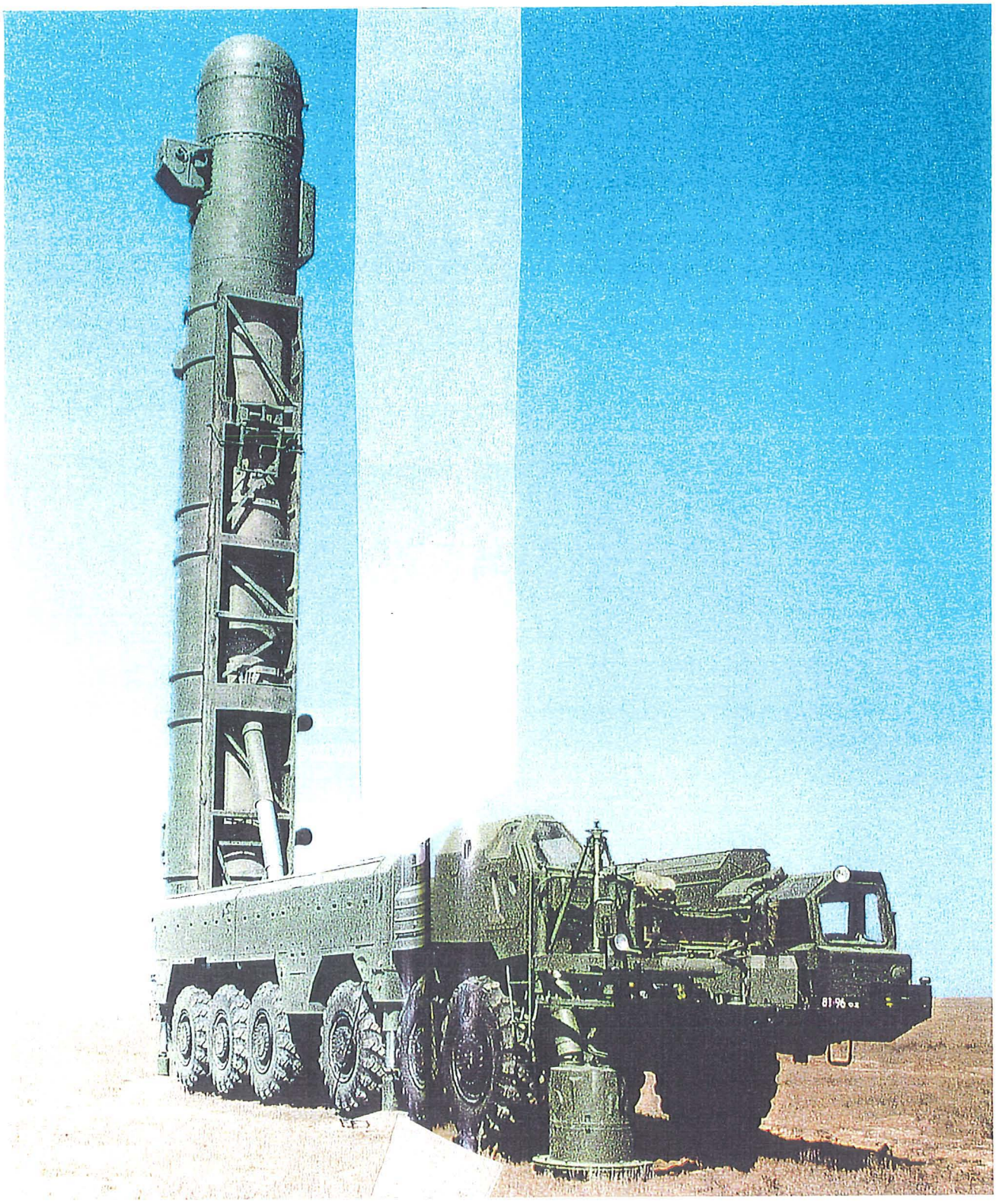


Plate 20: SS-20 TEL in launch position

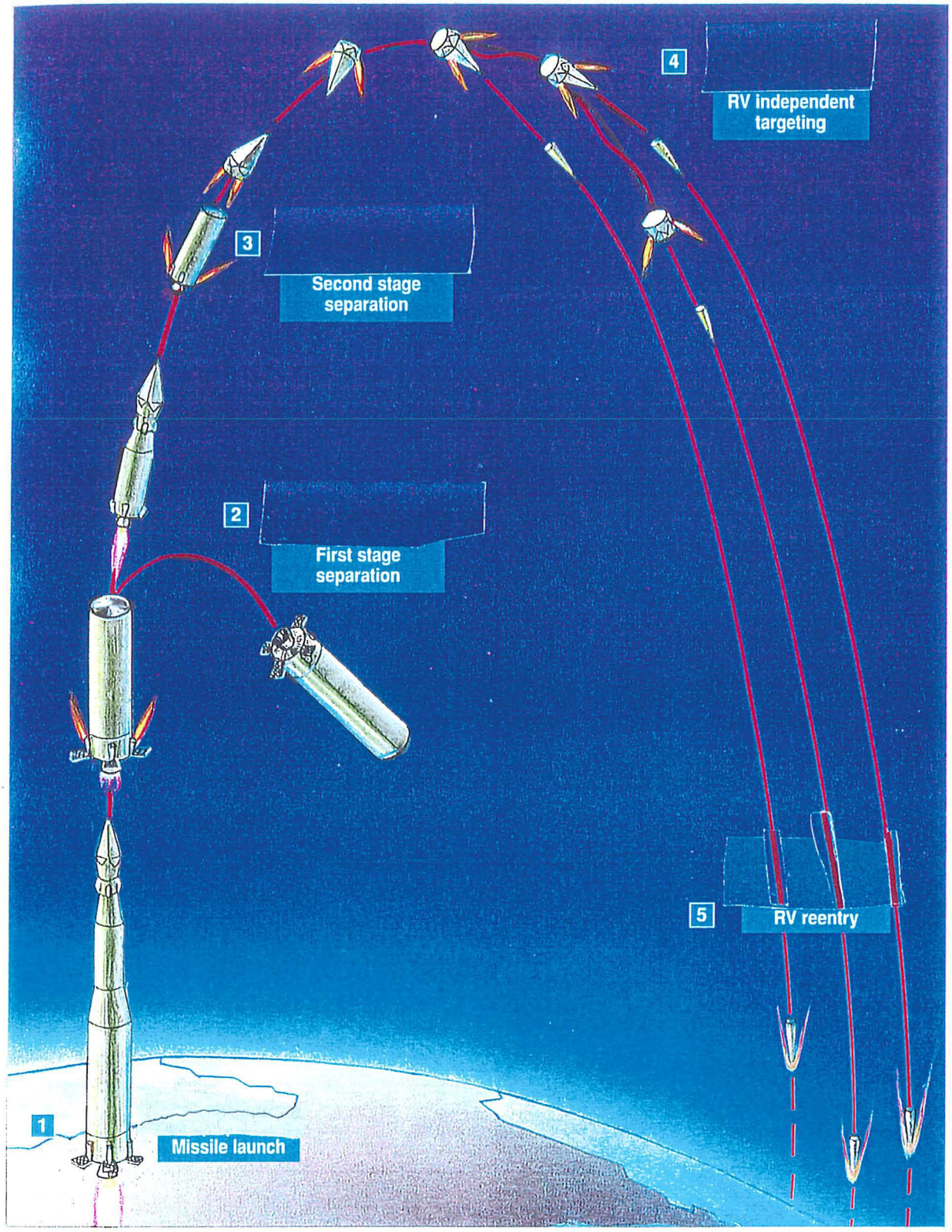


Figure 14: SS-20 flight trajectory

SS-25

The link between the SS-13 and SS-25 is in itself intriguing and serves as a vital postscript to the account of the SS-20 and provides a promising avenue for future research. It was alleged that the Soviet Union was disingenuous in ascribing to it a direct developmental link to the SS-13 in order to disguise the development of a new system in contravention of SALT. Zaloga's specific claim that the SS-25 was endowed with a throw weight double that of the SS-13 was somewhat exaggerated. Although the increase was indeed significant - and vastly exceeded the 5% convention employed in SALT - the SS-25's throw weight potential was similar to that of its immediate predecessor, the SS-16 and was but a fraction of that of its MIRVed contemporary, the SS-24.[356] Detinov confided that the Nadiradze Bureau was assigned the continued development of the Korolev Bureau's ballistic missile programmes in the wake of the latter's specialisation in space launchers. While the incorporation of the SS-13 into the Nadiradze *portfolio* might have provided some impetus to the SS-25 programme its tangible effects were likely to have been limited. The SS-13 programme had not been an unqualified success and had lain dormant for a number of years prior to the development of the SS-25. The experiences derived by the Nadiradze Bureau from the development of the SS-16 and SS-20 were likely to have played a more significant role in the development of the SS-25. However any link which emerged between the SS-13 and SS-25 is of potentially great significance as it would provide evidence of a degree of inter-agency co-operation in Soviet defence production, specifically the degree of inter-bureaux co-operation and interchange of design projects.[357] The existence of such a practice would demand a

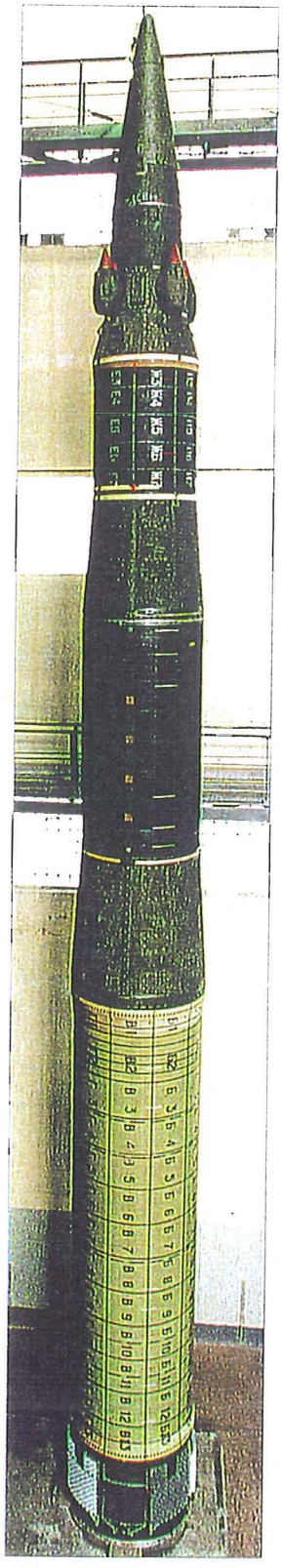
[356] Relatively little elucidation as to the true nature and extent of the link between the two systems is provided by contemporary Russian sources. One highlighted the "wealth of experience" previously acquired in the course of mobile operational-tactical and medium-range systems that was utilised in the SS-25's development but made no mention of the SS-13 itself. Kolesnikov, *Strategicheskoe raketno-yadernoe uruzhie*, p.76.

[357] Kravets also alluded to the existence of a degree of pooled research when he referred to the development of solid fuel and implied that it took place on a *supra-bureau* basis. University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

significant revision of Western analyses of the character of Soviet missile design and development which has traditionally been cast as highly compartmentalised in character.

Figure 15: SS-25 schematic drawing

1 - warhead; 2 - adapter section; 3 - third stage solid propellant sustainer; 4 - second stage coupling section; 5 - second stage solid propellant sustainer; 6 - first stage coupling section; 7 - first stage solid propellant sustainer; 8 - first stage tail section



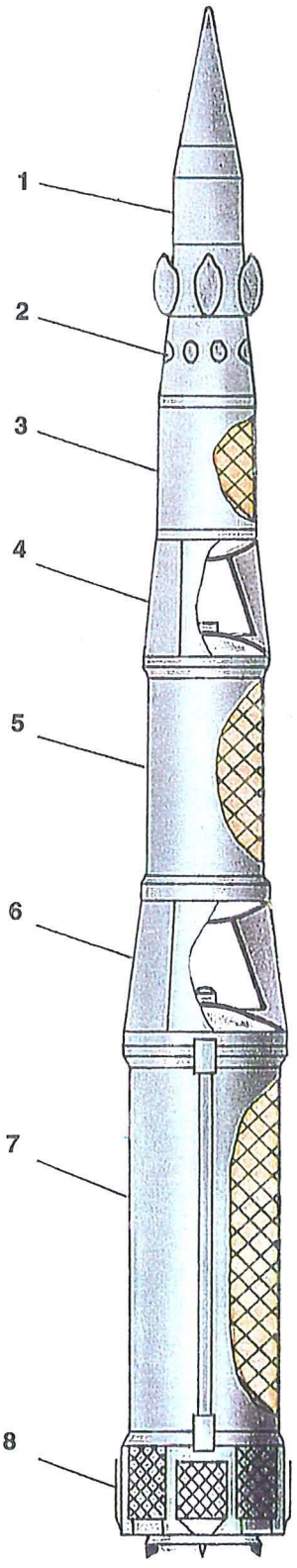


Plate 21: SS-25

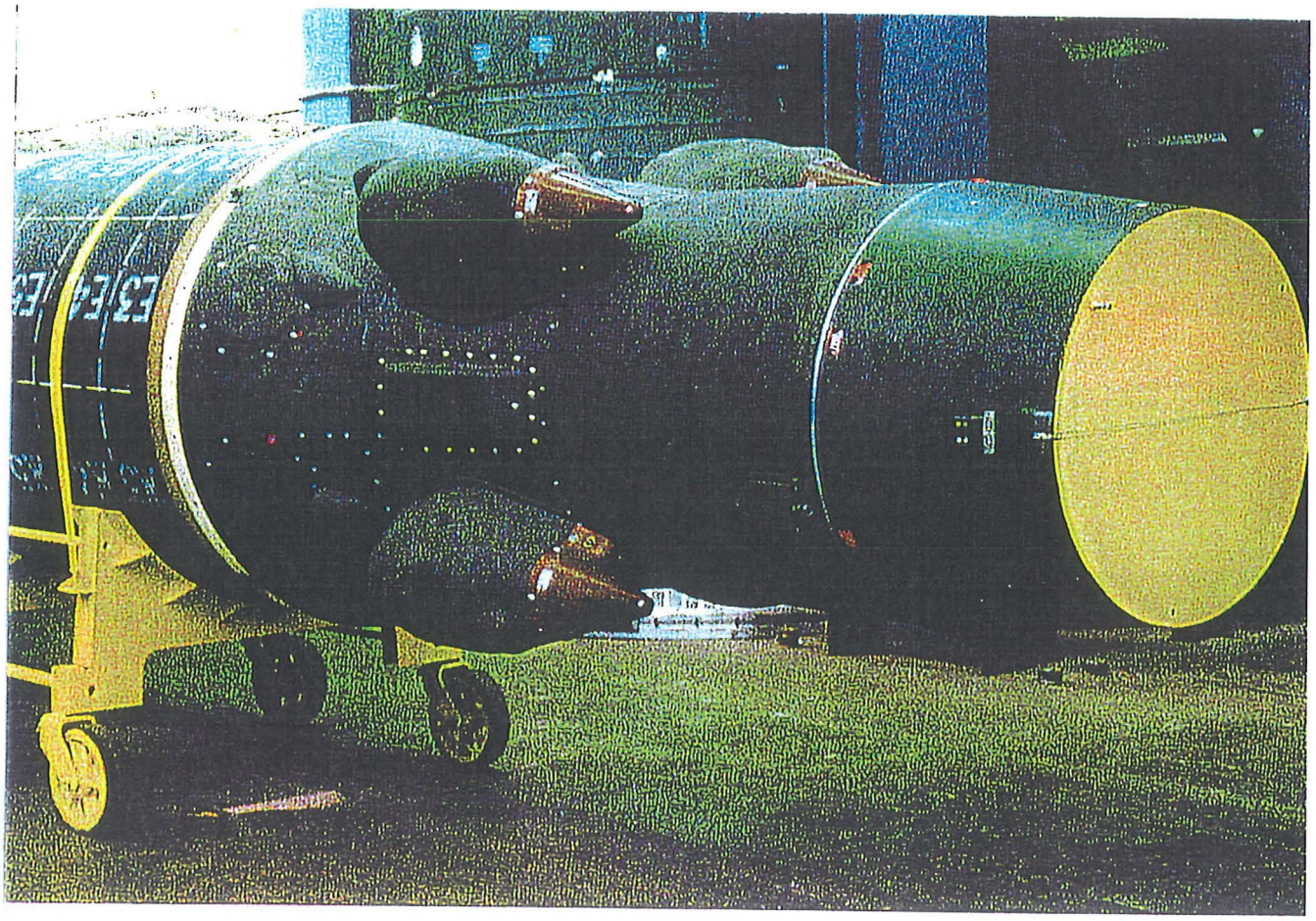
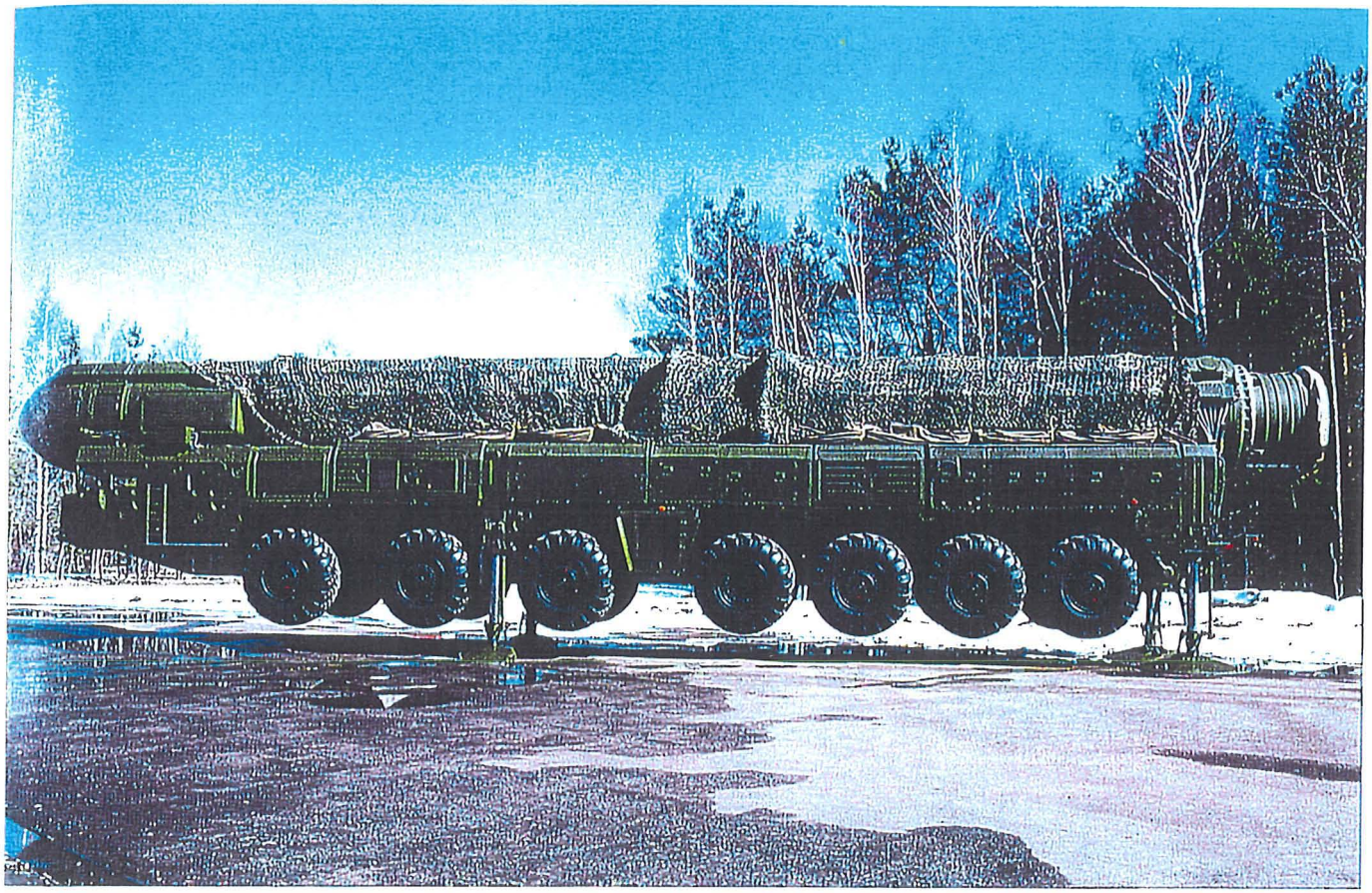
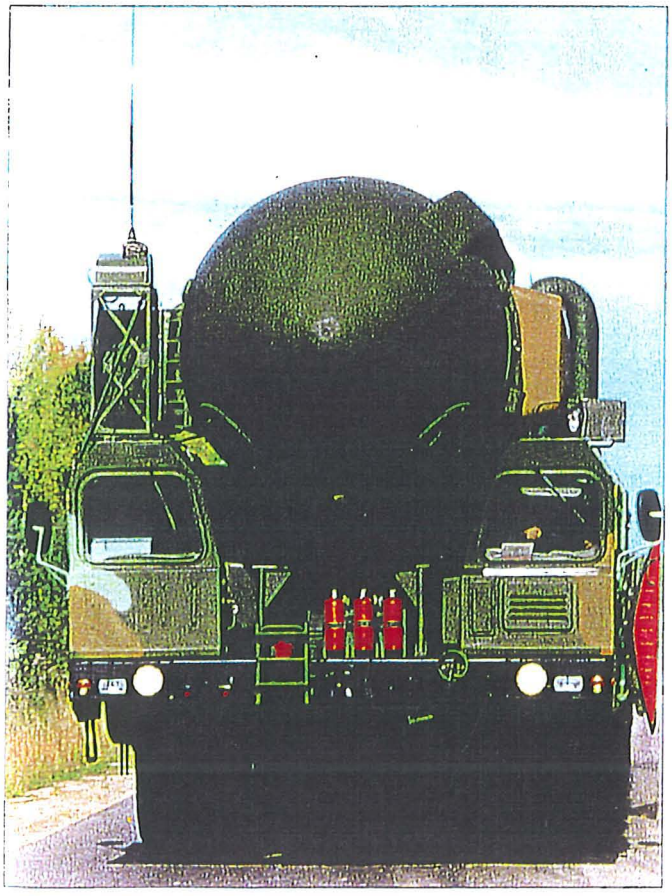


Plate 22: SS-25 RV





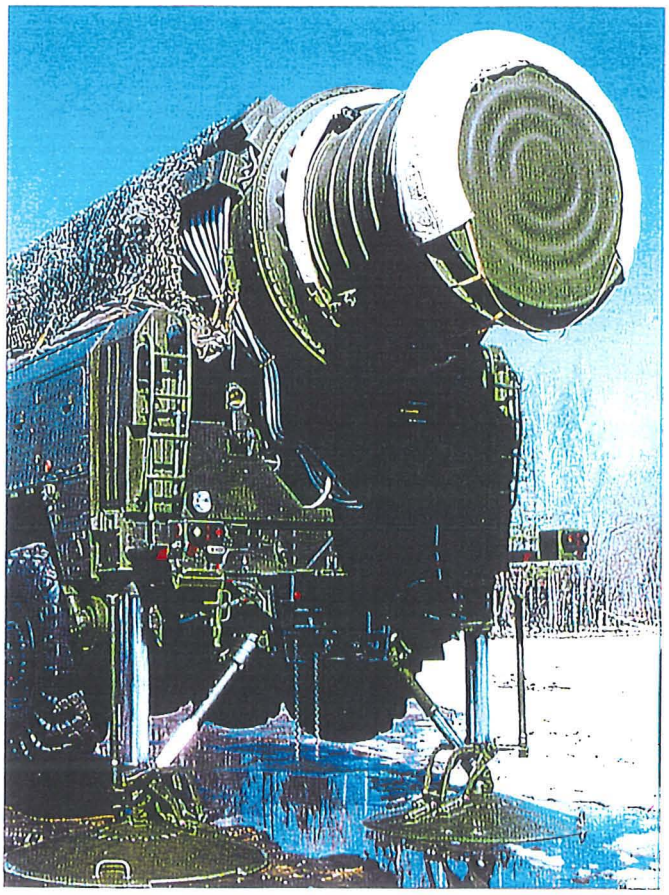


Plate 23: SS-25 and TEL

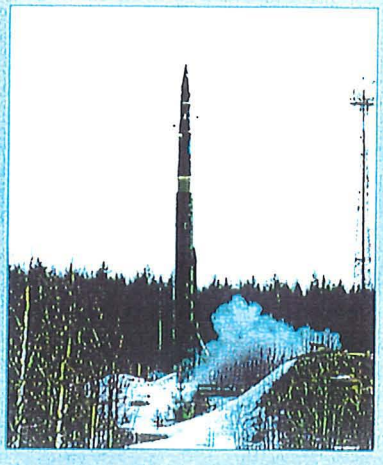


Plate 25: SS-25 test firing

Plate 26: SS-25 test firing

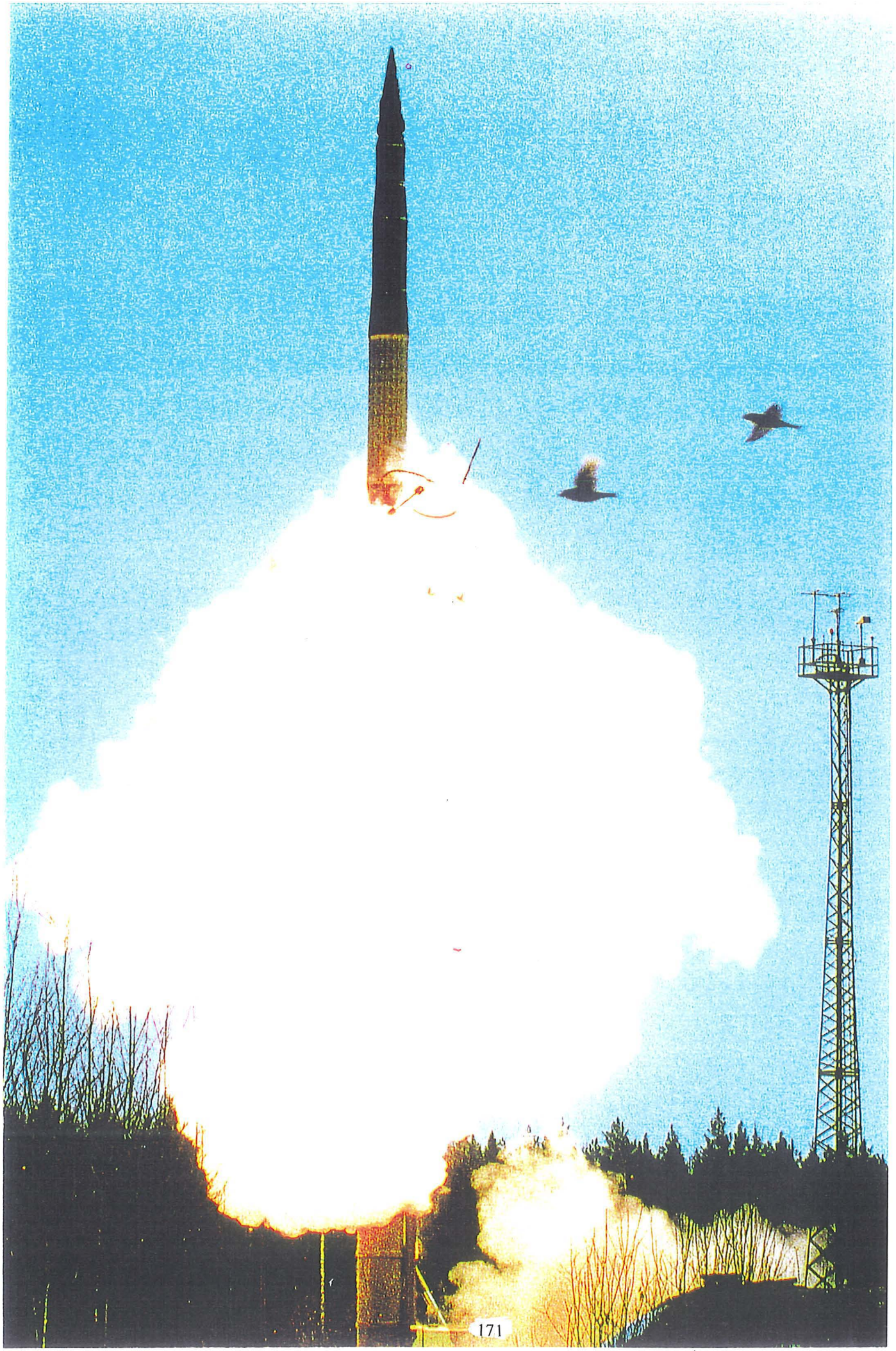


Plate 27: SS-25 test firing

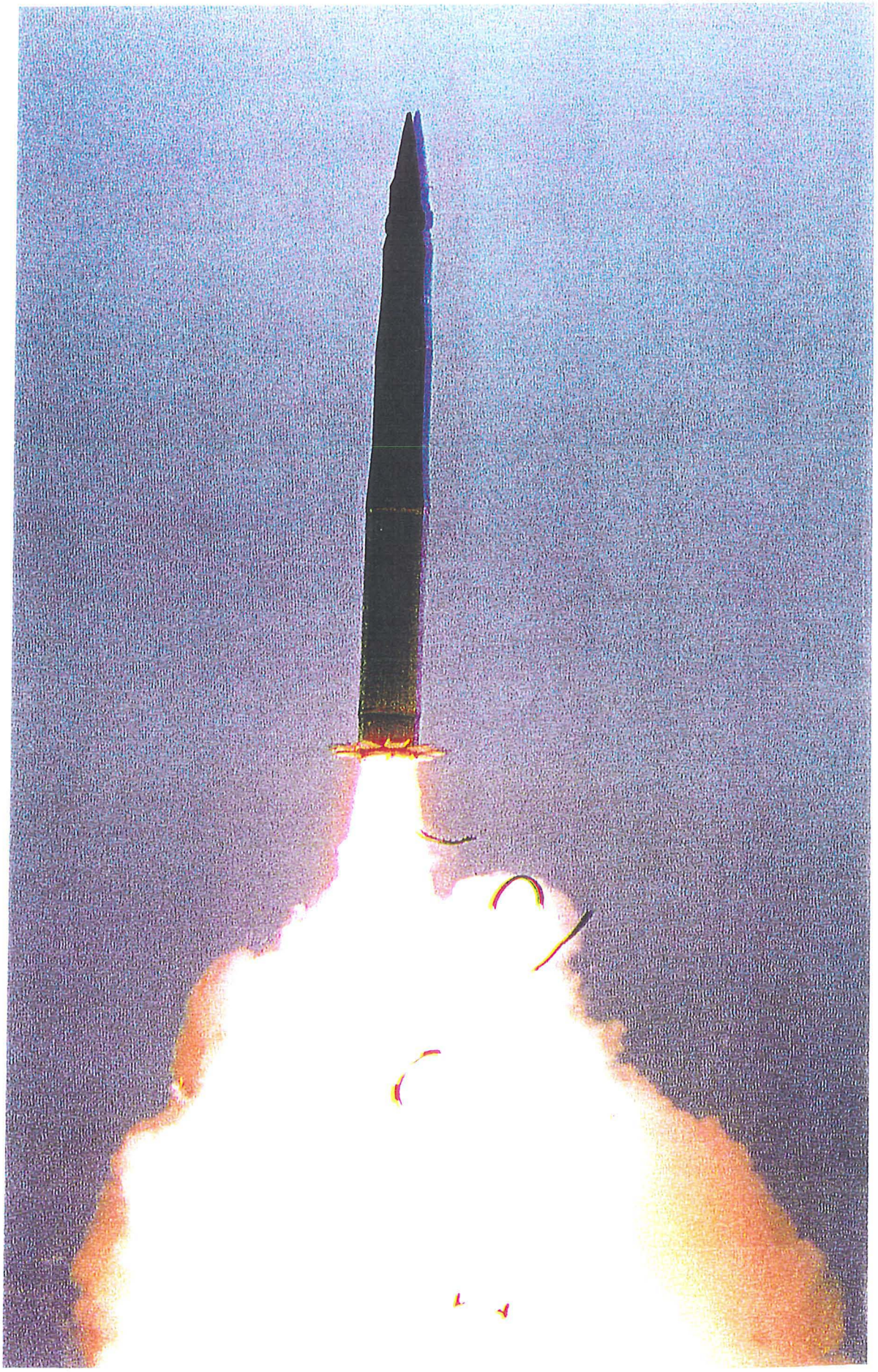


Plate 28: SS-25 test firing

Conclusion

The refutation of the notion of the "Nadiradze family tree" serves to place the Bureau's initial attempt to develop an ICBM system a full decade later than Western accounts have traditionally posited. This portrayal has major implications for the perception of the resource allocation enjoyed by the Nadiradze Bureau as the established narrative had formed the parameters for analysing commission awards and resource allocation. Past analyses consistently concurred that the level of support enjoyed by the Nadiradze Bureau was considerable.[358] However it is now evident that still fewer tangible results emanated from the Nadiradze Bureau than had previously been assumed. While the SS-20 was accurately accorded the status of the Nadiradze Bureau's first operationally-viable system the technical *lineage* upon which its development was thought to have been based has been all but extinguished in the light of the new evidence presented above. This would accord with the fact that the Nadiradze Bureau's roots lay firmly within the realm of tactical-range missiles and is largely explained by its relatively late entry into the development of longer-range systems.

One explanation proffered for the continued patronage of the Nadiradze Bureau was the perceived importance of developing a viable solid-fuel system and the attendant technical problems this entailed. As the Nadiradze Bureau was identified as the sole Soviet exponent of this form of propulsion, support for the principle of solid fuel necessarily entailed support for the Bureau itself. However as the concept of the Nadiradze "family tree" has been demonstrated to have been illusory, so too has the premiss that this Bureau enjoyed a monopoly on the development of solid fuel propellants. It is apparent that both the Korolev and Yangel bureaux and their filial

[358] Cockburn made great play of the fact that the Nadiradze Bureau was apparently not penalised for failing to produce a viable design. The continued support extended to the Yangel Bureau through the small-scale deployment of SS-17s was "eclipsed by the record of the Nadiradze Bureau, which has been trying and failing to build a solid-fuelled ICBM for twenty years". Cockburn, *The Threat*, p.87.

off-shoots sought to develop solid fuel throughout the course of the 1960s. Moreover their pursuit of this form of propulsion for long range systems clearly predated Nadiradze's activity in this field. While such a process might have been anticipated under the precepts of defence procurement theory as allowing a broad range of development options by a number of bureaux provided an enhanced prospect of achieving a breakthrough in this complex and vital field of technological development than the practice of according a monopolistic status to one particular bureau. However the empirical evidence suggests that internal political factors, and, vitally, the role played by Ustinov, were the principal driving forces behind this development effort. Upon reflection, despite the widespread failure to discern the involvement of the Korolev and Yangel bureaux in the pursuit of solid fuel development, Western appraisals of the ensuing unimpressive performance *results* themselves require no significant revision as the Soviet effort to perfect a solid fuel missile system was characterised by a dearth of achievement prior to the SS-20.

The refutation of the notion of the Nadiradze Bureau "family tree" and the its supposed solid fuel monopoly serve to accentuate the scale of resource munificence it enjoyed. This persisted over a prolonged period and was apparently unaccompanied by the threat of punitive sanctions, despite the continued failure to develop a system whose technical viability was thought to justify progression to flight-testing. The SS-20 represented a vital breakthrough for the Nadiradze Bureau and a new frontier in Soviet missile development as the first operationally-viable solid-fuel ballistic system. To this was added its mobility, a high level of accuracy and the potential to proceed rapidly towards largescale deployment due to the pre-existing production lines as a legacy of the aborted SS-16 project. The SS-20 met all of these requirements and endowed the Soviet Union with a markedly enhanced TNF potential. However the extent to which the development of the SS-20 was a direct and calculated response to this particular strategic requirement remains a subject worthy of continued investigation.

4 SALT and the SS-20 - the Process of Detente and its Effect Upon Soviet Defence Decisionmaking

The Soviet Approach to SALT[359]

Strategic Weapons

The Soviet leadership was profoundly affected by the experience of the Great Patriotic War. Its message was seemingly reiterated by the Cuban Missile Crisis which served to illustrate the necessity of creating a Soviet strategic force to match that of the US. During the late 1960s the Soviet Union assumed an unprecedented level of strategic security and geopolitical prestige facilitated largely by her attainment of parity with the US in the realm of strategic forces. The attainment of strategic parity was an essential prerequisite[360] of any process geared towards establishing ceilings upon the numbers of strategic nuclear weapons held by both superpowers. Soviet leaders would not have countenanced participation in arms control negotiations prior to this point for fear that the United States would have sought to codify and preserve her advantage in strategic weapons. Agreement to this would have ensured that Soviet strategic inferiority would persist for at least the duration of any treaty's provisions. Indeed, parity in strategic forces was viewed as the minimum acceptable level for the Soviet Union. A desire to obtain maximal security and a lingering fear of attack by a third power or an anti-Soviet alliance led the Soviet Union to view strategic superiority over the US as the most-favoured option. By 1968, the Soviet Union had deployed 850 ICBMs and by 1970 had surpassed the US in numbers of launchers though not in the overall number of weapons.[361] Consequently, a vital prerequisite for

[359] This section draws heavily upon the information and perceptions gleaned from interviewing General-Lieutenant Detinov and from Savel'yev, A.G. and Detinov, N.N. 1995. *The Big Five: Arms Control Decisionmaking in the Soviet Union*, Westport, Ct.: Praeger, pp.1-42.

[360] This was despite the "strong felt and vocal sentiment" among some members of the Soviet leadership that a *modus vivendi* should be sought with the Kennedy administration on strategic arms levels. Savel'yev and Detinov, *The Big Five*, p.8.

[361] Gerard Smith, 1985. *Doubletalk: The Inside Story of SALT I.* London: University Press of America, pp.105 and 247 noted that Soviet strategic forces were increasing significantly even as the talks themselves were in progress. This could be seen as another potential motivating factor for the

Soviet participation in the process of strategic arms limitation was, by the end of the decade, about to be achieved.[362] The Soviet Union entered into the process of arms control negotiation because it was seen to offer a means of securing the Soviet Union's newly-attained position of parity and averting an unrestricted new round of weaponry development in an arms race in which the US and her allies enjoyed a marked advantage in economic terms. By the mid-1960s concern was growing among the Soviet leadership at the sheer scale of investment required to secure strategic parity with the US. Once achieved, there would exist a strong incentive to seek to retain this position through mutual agreement rather than through the continued process of unrestrained weaponry development in both the offensive and defensive spheres. The prospect of pursuing Soviet security through a process of negotiation as opposed to strategic competition was thus viewed as offering a diminished level of uncertainty and risk, while reducing the onerous burden that defence spending placed upon the Soviet economy. At an early point in the process, the Soviet leadership concluded that the SALT negotiations held potentially beneficial prospects for the Soviet Union which should be pursued. A limitation upon strategic weaponry deployment at appropriate levels would be welcomed at a time when the Soviet procurement cycle was nearing completion and prior to the development of a new generation of US systems. If this could be secured in return for a prohibition of widespread ABM deployment, Soviet interests would be doubly served.

Soviet preference for "playing the long game". Rowny, E.L. "The Soviets Are Still Russians", in Currie, K.M. and Varhall, G. 1984. *The Soviet Union: What Lies Ahead?* Studies in Communist Affairs, Volume 6: USAF, p.150.

[362] For a precis of parity as a vital prerequisite for US-Soviet strategic arms limitations, see Rice, C. "SALT and the Search for a Security Regime", in George, A.L., Farley, P.J. and Dallin, A. (eds.) 1988.
US-Soviet Security Co-operation: Achievements, Failures, Lessons. New York: Oxford University Press, pp.294-5.

ABM

There was a growing recognition among many civilian commentators and a number of military analysts that nuclear conflict held out the prospect of Pyrrhic victory at best and, more likely, annihilation of much of the world's population. Connected with this the creation of an effective ABM/BMD[363] system had initially been seen as vital to complement the strategic build-up and furnish the state with the offensive and defensive capabilities required to achieve a nuclear war-winning capability. Following apparently bright beginnings, the Soviet Union's ABM programme had encountered severe technical difficulties by the late 1960s. The *Galosh* programme's stalled progress coincided with the apparently impressive strides being made in the US' *Safeguard* scheme. The impending advent of MIRVed ICBMs would add to the exacting demands of developing a system capable of intercepting incoming supersonic warheads. Were a technically viable ABM system to be developed - this was in itself by no means certain - it would probably be overwhelmed by the sheer weight of warhead numbers anticipated under conditions of widespread MIRVing of strategic delivery systems. By this time the economic burden imposed by the massive strategic build-up came to be viewed by the Party leadership as "clearly unbearable".[364] This led to a *volte face* in the Soviet Union's stated position on the deterrent efficacy of ABM.[365]

In response to an earlier US proposal for a total ABM ban Prime Minister Kosygin had in 1967 reaffirmed Soviet commitment to BMD (Ballistic Missile Defence) as the most effective and humane means of ensuring national security.[366] Indeed the intention was eventually to develop nationwide ABM coverage from the basis

[363] Anti-Ballistic Missile/ Ballistic Missile Defence.
[364] Savel'yev and Detinov, *The Big Five*, p.4.
[365] It is instructive to compare Kosygin's 1967 assessment of the morality of the principle of BDM and its potential contribution to strategic stability with that proffered by Semyonov in his initial presentation to the SALT negotiations a mere three years later. *Current Digest of the Soviet Press*, 19(6), 1 March 1967; Smith, *Doubletalk*, pp.123-4 and Garthoff, R.L. 1994. *Detente and Confrontation: American-Soviet Relations from Nixon to Reagan.* Washington D.C.: The Brookings Institution, p.153.
[366] Pravda 11th February 1967 - *Current Digest of the Soviet Press*, Vol.XIX, no.6, 1 March 1967.

provided by the Moscow area network. Under the doctrinal precepts of the early 1960s, BMD had been viewed as a vital corollary to the creation of an advanced strategic force in the drive for an integrated arsenal with which to achieve victory in any future nuclear conflagration. Indeed this legacy remained long after the implementation of the ABM Treaty and the doctrinal shift away from immediate nuclear employment, as the principle of withstanding attack by ballistic missiles continued for many years to be viewed as a principal mission of the Soviet armed forces. However, while the Soviet leadership continued to preach the moral and technical efficacy of BMD a growing number among the scientific community began to question the technical feasibility of the Soviet ABM programme. The advent of MIRVs served to reinforce such scepticism. Such sentiments were initially, "scattered and low-key; the individuals who made them either belonged, for the most part, to the weapons research and production communities or were diplomats...their doubts went unheeded by the country's leadership who remained convinced that no problem was beyond solution and no technical difficulty was insurmountable, provided there was enough investment and perseverance".[367] The limited deployment of the Galosh system around Moscow was largely due to the technical difficulties that had been experienced and the growing realisation - which now extended to the political-military leadership - of the enormity of the task of defending a large land mass against a widescale ICBM attack. Furthermore, the apparently rapid progress enjoyed by the US in its fledgling ABM development was a cause of concern to Soviet planners.[368] There was a recognition of the immense technical difficulties and resource implications that the pursuit of a comprehensive ABM structure would entail. Although the development of an operationally effective ABM system by either side was unlikely the Soviet Union would have been forced to participate in a costly new round of military development as insurance against the US gaining an ABM monopoly

[367] Savel'yev and Detinov, *The Big Five*, p.5.
[368] Garthoff, *Detente and Confrontation*, p.163,n.43 and Smith, *Doubletalk*, pp.94-5.

which would have fatally undermined the Soviet Union's new position of strategic parity.[369]

Detailed analysis of the first round of talks engendered a keen interest into the possibility of an ABM ban, most especially from within the Ministries of Defence and Foreign Affairs. Ustinov had chaired a meeting of those responsible for the Soviet ABM programme which had concluded that it faced enormous technical obstacles. In contrast to the offensive weaponry competition, where parity was imminent and the great bulk of opportunity costs had already been expended, the outcome of a defensive weaponry arms race was far from certain at this stage. Its portents seemed clearly to indicate that it would entail an immensely costly R&D programme with little prospect of eventual success. The limited deployment that was eventually permitted under the ABM Treaty served as something of a "sop" to those hawks who had championed its development. It had in any case already been deployed around Moscow and might have offered a degree of protection against a small-scale strike.[370] Thus the Soviet position underwent something of a *volte face* by the time of its entry into SALT. The principal motivating factor behind this shift was, as Detinov himself readily admitted, an acknowledgement of
"insufficient technological development in the Soviet Union vis-a-vis the United States, rather than a product of strategic analysis of the defence-versus-offence relationship".[371]

[369] Laird R.F. & Herspring, D.R. (eds.) 1984. *The Soviet Union and Strategic Arms*. London: Westview, p.115.
[370] From the very outset of the SALT negotiations, the Soviet preference for a limited ABM deployment was apparent to the leader of the US delegation. Smith, *Doubletalk*, p.94.
[371] Savel'yev and Detinov, *The Big Five*, p.21.

The Geopolitical Balance

The unusually fluid nature of the wider geopolitical scene also served to encourage the Soviet leadership to engage in the SALT process. Allied to the Soviet achievement of strategic parity by the end of the decade, America's prowess was itself undermined by her deteriorating fortunes in South East Asia. When taken together, this endowed the Soviet Union with a position of unprecedented strength in the geopolitical balance.[372] To this was added a new stability in Soviet relations with Europe[373] focused principally upon Soviet links with France and West Germany. Cordial relations re-emerged with surprising rapidity in the wake of the invasion of Czechoslovakia in 1968 and took their most tangible form through an historic agreement of huge symbolic importance which recognised the post-war settlement of German borders soon after the signing of the ABM Treaty and SALT I limits in Moscow.

However, the most vital aspect of the new geopolitical complexities which faced the Soviet leadership was the emergence of China as a potentially powerful, yet worryingly unpredictable, player in tri-polar superpower dynamics. The dramatic deterioration in Sino-Soviet relations following the Damansky Island clash in March 1969 seemed for a time to presage a more widespread conflagration between the principal communist powers.[374] It was paralleled in chronology and complexity by the prospect of a US-Chinese rapprochement which had emerged as the result of a long

[372] See Litwak, R.S. 1984. *Detente and the Nixon Doctrine: American Foreign Policy and the Pursuit of Stability, 1969-1976.* Cambridge: Cambridge University Press, pp.49-50, 64-7 and 73-5 for an assessment of the impact of the reversal of American fortunes in South-East Asia upon her geopolitical status and its interaction with the new style of foreign policy enunciated by Nixon and Kissinger.

[373] Kissinger, H.A. 1979. *The White House Years.* London: Weidenfield and Nicolson and Michael Joseph, Chapter XI, pp.380-432; Garthoff, *Detente and Confrontation*, pp.123-45.

[374] Ostermann, C.F. "New Evidence on the Sino-Soviet Border Dispute, 1969-71", and Wishnik, E. "In the Region and in the Centre: Soviet Reactions to the Border Rift", *Cold War International History Project Bulletin*, issues 6-7, winter 1995-6, pp.186-93 and 194-201 respectively; Garthoff, *Detente and Confrontation*, pp.227-42; Robinson, T.W. "The Sino-Soviet Border Conflict", in Kaplan, S. (ed.) 1981. *Diplomacy of Power: Soviet Armed Forces as a Political Instrument.* Washington D.C.: The Brookings Institution, pp.265-313; Haslam, J. 1989. *The Soviet Union and the Politics of Nuclear Weapons in Europe, 1969-87: The Problem of the SS-20*, London: Macmillan, pp.35-41.

and often tortuous process of diplomatic signalling through a host of different intermediaries.[375] Although Chinese caution was clearly evident in their responses to the US overtures, there was evidence of some movement in both sides' positions by the autumn of 1969.

It was against this backdrop that on 20th October, the Soviet Ambassador to the US, Anatoly Dobrynin, relayed Moscow's desire to enter into negotiations aimed at limiting strategic weapons. The same day also witnessed a resumption in the Sino-Soviet peace talks. The border clashes and the Sino-US rapprochement vividly highlighted Soviet concern at the prospect of potential encirclement. To meet this threat there emerged a twin-tracked solution. The Soviet military build-up in the Far Eastern TVD continued apace. The SS-11s which had replaced the ageing force of SS-4 and SS-5s would in turn be replaced by the new SS-20 as a further consolidation of the Soviet southern flank. More immediately, the apparent Chinese move towards a new understanding with the US and the recent rancour in Sino-Soviet relations would act as strong incentives towards active Soviet participation in the process of détente.

FBS

The Soviet Union's clear aim from the outset of the negotiations was to obtain a codification of the strategic balance which preserved her present advantage in certain fields of strategic force development, while allowing her to maintain a compensatory lead in the overall levels of strategic forces vis-a-vis the US to off-set "third power"

[375] Its origins lay in a Chinese invitation to the outgoing Johnson administration in November 1968 that Sino-US ambassadorial talks might resume in February of the following year. In accordance with Nixon's instructions, a positive response was issued to the Chinese leadership. Throughout the summer months of 1969 the new administration sought to open a number of secret channels to the Chinese leadership with France, Romania and Pakistan playing the role of intermediaries, the heightened awareness of the issue of China being reflected in the commissioning of NSSM (National Security Study Memorandum) 14 on 5 February 1969.

nuclear arsenals and US FBS.[376] "Accounting" of the issue of NATO FBS was viewed as "central" to the Soviet position within SALT and stemmed from the Soviet Union's definition of "strategic" weaponry which stood in marked contrast with that employed by the US.[377] The issue of FBS - and the related theme of "third power" nuclear weapons - lay at the very heart of the Soviet demand that SALT should be premised upon the principle of "Equal Security" for its participants. This dichotomy was apparent from the very outset of the negotiations, a fissure which ran throughout the entire SALT process and proved to be the greatest and most enduring obstacle to the agreement of bilateral strategic limitations.[378] The Soviet Union received *de facto* compensation for FBS under the SALT I provisions which enshrined her quantitative advantage in strategic delivery systems. However, while the US hoped that such compensatory provisions would prove to be a unique occurrence, the Soviet Union pressed for this tendency to remain an on-going practice throughout the ensuing SALT II process.

SALT Policy Formulation

The impetus provided by the Partial Test Ban Treaty persisted despite US involvement in Vietnam and the Soviet intervention in Czechoslovakia. By the time of Nixon's accession to power, the Soviet Union was prepared to enter into a process of negotiation with the stated aim of imposing limits upon the numerical deployment of strategic weapons. The Soviet Union entered into the SALT process with "a clearly one-sided negotiating position and a tenacious adherence to it during the

[376] A strong echo of this is to found in Garthoff's accurate appraisal of Soviet aims in "The Military and SALT", in Valenta, J. and Potter, W.C. 1984. *Soviet Decisionmaking for National Security*, London: George Allen and Unwin, pp.141-3.
[377] Lieutenant-General Detinov highlighted in the strongest possible terms Soviet concerns about the potential strategic threat posed by the NATO FBS which had been arrayed around much of the Soviet Union's perimeter from the late 1940s. Detinov interview.
[378] See for example, Vishnevsky, S. "International Week", *Pravda*, 4 February 1973, pp.1-4 and "Missiles in Excess of the Estimate", *Izvestia*, 15 April 1973, p.2.

negotiations."[379] Indeed despite the interest in SALT evinced by the Soviet leadership as a whole they retained throughout the process the belief that the US would seek to gain a strategic advantage through the process of détente. This view took its most virulent form in the person of Grechko, while Brezhnev, Ustinov and Gromyko favoured a more open-minded approach. Nixon himself was viewed as a tough negotiator and the stance adopted by the US Congress towards the Soviet Union in the post-SALT I period served to reinforce this perception. The specific details of the SALT position were developed jointly by the Ministry of Foreign Affairs and the Ministry of Defence. In the summer of 1969, the Central Committee of the CPSU met to be briefed by Marshal Zhakarov, head of the General Staff and Vasiliy Kuznetzov, first deputy of the Foreign Ministry. Ustinov, then Secretary of the Central Committee, Serbin of the Defence Department of the Central Committee, Andropov, the head of the KGB and Ponomaryov, secretary of the Central Committee led the ensuing process of discussion within the Central Committee. Ponomaryov's participation was premised solely upon his role as a Central Committee secretary. The Central Committee's International Department, of which he was the head, was excluded from the entire SALT process by Gromyko as he jealously sought to maintain his department's elevated status in the formulation of arms control policy. This remained the case until Dobrynin became its head during Gorbachev's tenure. Following the preparation of further position papers by the ministries of Defence and Foreign Affairs, the negotiating stance with which the Soviet Union would approach the initial round of SALT negotiations was approved.

Documents pertaining to the forthcoming negotiations were prepared exclusively by the Ministries of Foreign Affairs and Defence. The responsibility for this in the former was devolved to the International Organisations Department (*Otdel Mezhdunarodnykh Organizatsi*) led by Kirill N. Novikov. After the second round of SALT negotiations this task was transferred to Georgii Korniyenko, the head of the

[379] Savel'yev and Detinov, *The Big Five*, p.34.

newly-created "United States desk". Within the Ministry of Defence, the Main Operational Administration (*Glavnoye Operativnoye Upravleniye*) of the General Staff was charged with the task. General Nikolay V. Ogarkov, First Deputy Chief of the General Staff was the principal figure in this process, aided by General Yefim V. Boychuk, First Deputy Chief of the *GOU* and the officers of its staff. The gravity with which the SALT process was perceived was indicated by the active participation of Brezhnev, Ustinov, Andropov and Gromyko in the selection of the delegation personnel. First deputy foreign minister, Vasiliy Kuznetzov was originally selected to head the delegation. Upon his transfer to the pressing problem of the dramatic deterioration in Sino-Soviet relations, his place was taken by Vladimir S. Semyonov. The delegation also contained General Ogarkov, first Deputy Chief of the General Staff, Nikolai Alekseyev, Chairman of the Science and Technical Committee of the Armed Forces (later appointed as Deputy Defence Minister for Armaments,) Academician Shchukin, Chairman of the Technical Council of the VPK, Pyotr Pleshakov, Deputy Minister of the Radio Industry (later promoted to full ministerial status,) Georgii Korniyenko, the later first Deputy Foreign Minister (Korniyenko was soon replaced on the SALT delegation by Oleg Grinevsky, deputy head of the International Organisations Department of the Foreign Ministry) and Vladimir Pavlichenko of the First Chief Directorate of the KGB.

The Commission of the Central Committee of the Politburo for the Supervision of the Negotiations on Strategic Arms Limitations in Helsinki:- The "Big Five."

The *ad hoc* manner of policy formulation, with its reliance upon top-down instructions to the respective Ministries did not remain in place beyond the negotiations' initial stages. As the delegation began to send back reports of proceedings, "it soon became clear that the viewpoints of the various agencies had to be co-ordinated and harmonised to work out an integrated and coherent Soviet government position on specific issues".[380] To this end the creation of the *Komissiya Politbyuro TsK KPSS po nablyudeniyu za peregovorami svyazannymi s ogranicheniyem strategicheskikh vooruzhenii v Khel'sinki*[381] was authorised in November 1969. The six-strong membership of the Big Five, as the committee soon came to be known, represented key agencies of the Soviet governmental structure and its membership was composed of the principal actors in Soviet defence decisionmaking as a whole. The lynchpin of this system was Dmitri Ustinov, the secretary of the Central Committee with responsibility for defence issues. He was delegated to chair the new body. While Ustinov nominally represented the Central Committee on the Committee his close association with the defence industries dated back to the war[382] and was such that he effectively represented their institutional interests in parallel to those of the Party. Ustinov found a natural ally in the Commission's deliberations in the shape of Leonid V. Smirnov, Chairman of the VPK[383]. The Defence Ministry was represented by Marshal Andrey A. Grechko, the Defence Minister whose virulent distrust of the West was manifested on many occasions and must have served to colour his approach to the Commission's proceedings.

[380] Ibid., p.15.
[381] Literally "The Commission of the Central Committee of the Politburo for the Supervision of the Negotiations on Strategic Arms Limitations in Helsinki".
[382] Ustinov had served as a "People's Commissar", Minister of Armaments and Minister of Defence Industry from 1941-57. Between 1957-63 he had served as Chairman of the VPK.
[383] Smirnov was also a Deputy Prime Minister as this time.

Yurii V. Andropov, the head of the KGB was another member of the Commission. The KGB's principal motive for participation was viewed by Detinov as being its proclivity towards maintaining its institutional involvement in all major governmental ventures and to preserve the integrity of Soviet security during the course of the negotiations.

Foreign Minister Andrey A. Gromyko represented his ministry, which was assigned the task of producing appropriate propaganda and ideological materials with which to help substantiate the Soviet negotiating stance.

Academician Keldysh, the President of the Academy of Sciences was the final member of the Commission. Keldysh played a brief role in the Commission's initial deliberations. While "his departure produced no shock waves and he himself did not protest or object"[384] he would prove to be a vital force in the determination of Soviet strategic formulation in the coming years.

The Soviet SALT team sent telegrams detailing the course of the negotiations which were circulated among the membership of the *Big Five*. Following telephone discussions with the members, Ustinov would have his aides assemble the preliminary views of the *Big Five* members. Ustinov apparently discussed arms control issues with Andropov and Smirnov at some length, but rarely went into detail with Grechko and Gromyko.[385] Thereafter Ustinov would call a meeting of the Big Five with a prepared agenda. A quorum of the Big Five was declared when a representative of each of the member agencies was present. It did not require the attendance of the principal figures *per se*. Thus on occasion a principal might send his deputy to represent him at a meeting of the Big Five. Marshal Viktor G. Kulikov. Chief of the General Staff from 1971-7 would deputise for Grechko, while Vasilii Kuznetzov would play a similar role on behalf of Gromyko. The various strands of institutional

[384] Savel'yev and Detinov, *The Big Five*, p.20.

[385] It would thus seem that Ustinov - with aid of Andropov and Smirnov - was the principal in the arena of SALT policy formulation. This provides an obvious parallel with the dominant role he has traditionally been viewed as playing in defence decisionmaking as a whole during this period.

opinion would be presented to the meeting in the form of prepared written memoranda.[386] In the ensuing discussion all present enjoyed the status of *primus inter pares*, regardless of whether they were departmental heads or nominated delegates. All in attendance reserved the right to veto a proposal deemed inappropriate from their institutional perspective. "All the agencies involved were virtually equal, each having a decisive vote, irrespective of the rank of the person representing the agency."[387]

The provisional instructions for the Soviet SALT team were not directly formulated by the Big Five. Rather, the Ministries of Defence and Foreign Affairs were designated the task of drafting the appropriate documentation in the light of the Big Five's negotiations and comments. No third agency was involved at this point. Nor could there have been as the Ministry of Defence possessed a monopoly on defence information, while the Ministry of Foreign Affairs enjoyed a similar status in the realm of international affairs.

> the Ministry of Defence had a monopoly on the information concerning the state's armed forces and its weapons, leaving the Foreign Ministry virtually without experts in the field. The converse was true in dealing with the international political situation...The Foreign Ministry proposed general areas for arms limitations, while the Ministry of Defence prepared the technical issues and detailed responses. One ministry could estimate how particular policy alternatives would affect the country's *oboronosposobnost'* ("defence capabilities") while the second could assess how those decisions related to the international interest of the Soviet Union...During the initial period, all documents were drafted by the Ministries of Foreign Affairs and Defence. Then

[386] The Russian term for such a document is *zapiski*.
[387] Savel'yev and Detinov, *The Big Five*, p.28.

> after further discussion within the Commission they could be amended.[388]

The Commission was dovetailed into the existing defence decisionmaking structure. The Big Five prepared reports for the Politburo which contained an appraisal of the current state of the SALT negotiations and the Soviet stance within them. Alternative negotiating positions deemed feasible and politically acceptable by the institutions represented on the Commission were also contained within such documentation. The customary Politburo treatment of the Commission's reports serves as ample testament to the authority vested in the new consultative body.

> For all practical purposes, there was no case in which the drafts were seriously altered, either by Leonid Smirnov, Dmitri Ustinov or the Central Committee of the Communist Party or the KGB. Changes - if any - were nonsubstantive and totally undramatic.[389]

The Commission's decisions were then forwarded to the Politburo which in most cases simply rubber stamped them, fully trusting the appointed representatives of the key Soviet agencies on the issues.

> As a general rule the Defence Council did not consider the more practical issues related to the preparation of the Soviet negotiating position or guidance for Soviet negotiators. Rather it concerned itself with the more general problems, such as the development of the Soviet armed forces.[390]

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[388] Ibid., pp.28-9.
[389] Ibid., p.28.
[390] Ibid., p.20.

The unquestioned acceptance of the vast majority of documents prepared by the Big Five was testament to the Politburo's implicit trust in their political judgement and the elevated status they were accorded within the highest echelons of Soviet government. The mechanics of decisionmaking within the Commission which placed such stress upon consensual policy formulation would have served to reinforce Politburo confidence that the position papers that were subsequently forwarded to them represented a genuine cross-section of opinion emanating from the key institutional structures of the Soviet government. Exceptions arose most especially from 1972, when progress in the closing stages of the SALT I process prior to the Moscow Summit was dependent upon major policy shifts on the part of the Soviet government on such fundamental issues as the inclusion of SLBMs and exemption of FBS from the definition of strategic weapons. Issues of such magnitude came under the scrutiny of the Defence Council and were discussed in detail at this level. That apart, from the near the outset of the SALT process, the Soviet Union had put in place an inter-agency committee structure which served to formulate the defining parameters of the Soviet negotiating stance with due accordance to the interests of the Soviet institutional elites.

The Big Five seldom met during the course of SALT I as the initial negotiating stance was deemed the most appropriate reflection of Soviet interests and was rigidly adhered to. It is instructive to compare the contrasting appraisals of the Soviet negotiating style offered by their American opposite numbers. The leader of the US delegation, Gerard Smith, bemoaned the fact that the Soviets always expecting US to take the initiative, while Edward Rowny was scathing in his description of the Soviet approach.[391] This practice remained in place until the latter stages of the talks process, when it became clear that certain concessions would be required of the Soviets prior

[391] Smith, *Doubletalk*, p.384; Rowny, "The Soviets Are Still Russians", pp.150-1. For an exhaustive account of the details of all Soviet arms control proposals during the détente era, see Vigor, P.H. 1986. *The Soviet View of Disarmament*. London: Macmillan, pp.94-120.

to the signing of a final agreement at the Moscow Summit. This policy of *laissez faire* was replicated during the opening rounds of SALT II.

The "Special Politburo Commission"

By May 1971 it was recognised that the Soviet Union would have to modify its stance on a number of key issues to accommodate US concerns in order to achieve eventual agreement.[392] It was to this end that the "Special Politburo Commission" was created by the Politburo, a high-level working party whose remit was to review the geopolitical importance of the SALT process to the Soviet Union, the existing Soviet negotiating stance and areas of potential compromise through which it might mollify US concerns. Again it was headed by Ustinov. Ustinov, Ponomaryov and their respective ministries were to liaise with the Ministry of Defence, the Ministry of Foreign Affairs and the KGB in this assignment. It existed for only a matter of months and resembled a high level working party, rather than a commission. Despite the relative brevity of its existence the "Special Politburo Commission" played a vital role in re-affirming a positive perception of the SALT process among the Soviet leadership as a whole. Its conclusion that the improvement in US-Soviet relations associated with the SALT process corresponded to Soviet interests led it to advocate the acceptance of the principle of strategic arms limitations in association with appropriate ABM controls. Its specific recommendations served as the catalyst which enabled the negotiations to proceed towards their eventual fruition at the Moscow Summit.

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[392] Testament to the of the Soviet Union's prescient appraisal of the US negotiating position is provided in a 1971 KGB memorandum from Andropov to Ustinov. "The Committee for State Security, 19th April 1971, no.983-A, To Comrade Ustinov, D.F, Moscow", in *Cold War International History Project Bulletin,* issue 4, autumn 1994, pp.69-70.

The acceptance in May 1971 of the Politburo Special Commission's recommendations as the foundations for the revised Soviet stance is identified as a pivotal point in the SALT process. Indeed the SALT I Treaty is characterised by Detinov as, "largely the product of the deliberations of the "Special Politburo Commission," rather than a product of the actions of the Big Five per se".[393]

Major areas of contention remained in the wake of the adoption of the revised Soviet stance in May 1971. Soviet resistance to the inclusion of SLBMs continued until April 1972 principally due to the persistent opposition emanating from Admiral Sergei Gorshkov the head of the Soviet navy. The eventual resolution of this issue was rightly viewed by Detinov as "a major US concession" to the Soviet Union. The subsequent effusive expression of Gorshkov's satisfaction to Brezhnev also serves as testament to this fact. Other sources of disagreement such as the definition of, and limitations upon, "heavy" ICBMs and the exact location of ABM sites similarly persisted till the eve of the Moscow Summit itself.

[393] Savel'yev and Detinov, *The Big Five*, p.24.

Pyaterka - the *Five*

As the SALT discussions were initially centred upon the issue of strategic force levels, there was little requirement for an ongoing process of briefing by weaponry experts. Their widespread introduction in a consultative role occurred as negotiations on a proposed ABM limitation became embroiled in technical details. Initially Ustinov himself selected various experts on an *ad hoc* basis but the appointment of expert representatives from *within* the institutions of the Big Five soon became the established practice. Such experts responded to requests from their superiors. They were not however empowered to volunteer unsolicited advice. The members of the Big Five became familiar with the practice and the personnel involved and it was decided to retain this organisational framework on a permanent basis - though without formal recognition of its form - in the immediate aftermath of the Vladivostok Summit. The committee came to be known as the Five[394] and it too remained operational until the eventual break-up of the Soviet Union itself. The Five maintained a close supervision of the progress of the SALT negotiations and on occasion issued specific instructions to the Soviet delegation. This Committee was to play the principal role in the determination of the Soviet Union's approach to the minutiae of the SALT process. The Five did not convene on a personal basis and a quorum could be formed providing a representative from each of the institutions was present. The flexibility which characterised the composition of the Five's meetings extended to their numerical size. No upper limit was placed upon attendance and additional military, industrial and diplomatic experts were co-opted as necessary. This practice was particularly prevalent during recesses in the SALT talks, when members of the Soviet negotiating team often participated.

[394] It was initially termed, *malaya Pyaterka* - "Small Five". This was subsequently abbreviated to *Pyaterka* - "Five".

> The rules were straightforward: if the existing instructions prevented deviations from the existing directives - no matter how minor - all documents were to be submitted for Big Five and Politburo approval. However, in the final phase of negotiations, organisational and technical problems became the order of the day. To solve these questions, the Soviet delegation sent telegrams to Moscow asking for acceptance of *ad hoc* agreements or else for additional instructions. The end result was that all American proposals were discussed by the Five, and, if these discussions were within the technical and organisational limitations of their informal charter, the Five took its personal decisions, wrote a telegram , and sent it without even having to notify the members of the Big Five. The telegrams were signed by only two persons: the military representative to the Five - a deputy of the General Staff and formal chairman of the group - who was one of the Deputy Ministers of Foreign Affairs. Sometimes, if the question were purely military, the only signature was by a military representative. However, if the question demanded discussions within the Big Five, this was done. Instructions resulting from these discussions were called 'operational' or 'immediate'.[395]

Issues which lay beyond the Five's delineated field of competence were referred upwards to the Big Five for its consideration and beyond that to the Politburo itself if necessary.[396] In the run-up to the Vladivostok Summit, the Five were customarily headed by General Kozlov, the First Deputy Chief of the General Staff. In addition, Kornienko the Deputy Foreign Minister of the CPSU; Detinov the Deputy Chief of the Department of the Defence Industries of the Central Committee of the USSR; Osadchiyev deputy head of the VPK and Mityayev, an Andropov aide from the KGB were the principal institutional representatives upon this sub-committee.

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[395] Savel'yev and Detinov, *The Big Five*, p.37.
[396] The question remains of *exactly* where the defining limits of the Five's competence lay.

The arms control decisionmaking mechanism in the Soviet Union achieved its final shape - the *Big Five* supported by the *Five* - on the eve of the Vladivostok Summit. That mechanism drew upon the advice and expertise of all the agencies involved. The recommendations it produced were almost never questioned by the national leaders, including the General Secretary of the Communist Party. After Vladivostok, the *Five* became a standing forum to oversee and sort out all issue related to the negotiations.[397]

[397] Savel'yev and Detinov, *The Big Five*, pp.41-2.

The Role of the Military

The Soviet military exerted significant influence in the formulation of the Soviet Union's SALT negotiating position. It shared with the other institutions represented on the Big Five the right to veto any proposal with which it disagreed. However the implication seems to be that the Party leadership placed a high premium upon gaining the acceptance of the military in particular.

> Looking for ways to harmonise the positions of the various government agencies within the ruling bodies of the USSR was a *sine qua non* for working out national decisions on the issues dealt with at the negotiations. Only after that had been done could the official Soviet position be adopted. Voluntarism in that area was completely out of the question. The Soviet leadership tried hard to avoid serious frictions and disagreements in decisionmaking...*only after the Soviet position had incorporated practically all concerns and wishes of the Ministry of Defence would the Politburo endorse it as the official position* (italics added).[398]

In practical terms the Ministry of Defence played an integral role which seemed to endow it with a potential to influence the formulation of policy which was unrivalled among the participating institutions. Although the SALT process itself acted as something of a catalyst towards a slight loosening of the military's grip in this realm the near-obsessive desire on the part of the Soviet military to maintain minimal disclosure of technical and intelligence information was an oft-recurring theme throughout the entire SALT process.[399] This was well-attested to and was applied to

[398] Ibid., p.25.

[399] Ibid., p.51 for details of how codenames for Soviet strategic systems were "invented" purely for the purposes of designation within the SALT negotiations. The anecdote about the Soviet delegate recounted by Smith conveys similar sentiments, Smith, *Doubletalk*, p.306. His successor, Johnson similarly opined, p.613. General Rowny's example from his personal contacts is the most acerbic, though this accords with the tenor of the article by the Joint Chiefs' representative at SALT II. Rowny, "The Soviets Are Still Russians", p.149.

the non-military participants in the Soviet delegation itself with near-equal vehemence to that reserved for the US delegates.[400] This monopoly on intelligence accentuated military power and ensured that it was the only institution capable of formulating military-technical documentation for the proceedings of the Five and the Big Five. Orders issued directly by the Five to the Soviet SALT team were customarily signed by the committee's military representative from the General Staff and the Five's formal chairman, a deputy minister of foreign affairs. However, if the instructions referred to a specifically military matter, the General Staff would on occasion be the sole signatory to the document. This in itself was further testament to the privileged position enjoyed by the military. Military membership consisted of around one third of the overall total at all echelons of the Soviet SALT delegation itself.[401] The leader of the Soviet SALT team - Semyonov - sought to avoid conflict with his military colleagues. He viewed his role as that of an intermediary between the Soviet military and the US delegation. Semyonov accepted any reservations or caveats expressed by the military. Nor did Semyonov view himself as being a "final decision man".[402] Indeed it seems that the reluctance to confront the military leadership extended still higher into the upper echelons of the governing elite and included the Foreign Secretary Andrei Gromyko.[403] The General Staff did not have a specialised office to deal with the question of arms control negotiation in the mid-1970s, so the task fell to its Main operational Administration (GOU.) It "proved immensely beneficial for the development of well thought out arms control decisions as the arms controllers were

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[400] Members of US SALT team were themselves chided by Ogarkov himself for discussing matters of a sensitive nature in front of their Soviet civilian counterparts during the course of the negotiations. Newhouse, J. 1973. *Cold Dawn: The Inside Story of SALT.* New York: Holt, Rinehart and Winston, p.192. Paul Nitze cites a similar incident which incurred the wrath of Marshal Akhromeyev. Savel'yev and Detinov, *The Big Five*, pp.xii-xiii. Gerard Smith told how a member of the US delegation had, in passing, enquired of his Soviet counterpart the Russian name for the "Bear" bomber he had formerly piloted. "Medved'" (bear) he was told brusquely. Smith, *Doubletalk*, p.386.

[401] Warner III, E.L. 1977. *The Military in Contemporary Soviet Politics: An Institutional Analysis.* New York: Praeger, p.240, n.62.

[402] Savel'yev and Detinov, *The Big Five*, p.39. See also Johnson, U.A. and McAllister J.O. 1984. *The Right Hand of Power.* Englewood Cliffs, N.J.: Prentice-Hall, p.613 for an account of the apparent limitations of Semyonov's authority among the Soviet delegation.

[403] Savel'yev and Detinov, *The Big Five*, p.25.

concurrently in control of the Armed Forces",[404] and could view the situation from both the military and arms control perspective - thus allowing the adoption of the most appropriate course of action.

While the Soviet military enjoyed a privileged position of influence in the formulation of the Soviet Union's SALT policy the Party leadership unquestionably retained its position of pre-eminence throughout. Ultimate authority was retained by the Defence Council, and through it, the Politburo. That this authority was seldom directly exercised was perhaps testament to the confidence in which the efficacy of the *Big Five* system was held. Moreover consideration of the attendant consequences and the aftermath of those infrequent occasions when military concerns were apparently overridden for political reasons is in itself instructive. Although Admiral Gorshkov had steadfastly resisted the inclusion of SLBMs in SALT their eventual incorporation was at such a high level that it failed to impinge upon planned deployment levels and led Gorshkov to thank Brezhnev for his preservation of the Soviet navy. On a wider scale, the SALT strategic limitations as a whole largely replicated this phenomenon as they barely impinged upon existing or planned Soviet strategic force deployment programmes, thus ensuring that the military were amenable to its terms. The omission of FBS was similarly inevitable in the face of US intransigence. The Soviet response in this instance would be expected to have elicited similar - albeit grudging - military approval.

[404] Ibid., pp.37-8.

The Negotiation Process[405]

FBS

The SALT process was forced to grapple with the distinct asymmetries which existed between the superpowers' strategic force structures, the often conflicting demands and pressures exerted by the forces of internal politics within the governmental circles of both states and the uncertainty posed by anticipated weaponry technological development. The definition of strategic weapons was to prove a perennial point of contention throughout the entire SALT process and beyond. The Soviets argued that any weapon which had the capability of delivering a nuclear strike against the US or the Soviet Union should be included within the remit of the SALT negotiations. This would have led to the inclusion of US FBS[406] based in Western Europe and carrier-based aircraft of the US Navy.[407] By contrast Soviet TNFs would have been exempt from limitation as their range did not allow them to strike at the US.[408] Although the logic of the Soviet case was sound it rested uneasily alongside the geopolitical situation. The NATO Alliance had been built on the principle that an attack on any member country would be regarded as an attack on all and fears of US disengagement and the prospect of a superpower condominium were already evident among the US' European allies. Agreement to limit unilaterally or withdraw US FBS would have had

[405] Labrie, R.P. 1979. *SALT Hand Book: Key Documents and Issues, 1972-9.* Washington D.C.: American Enterprise Institute for Public Policy Research, provides an excellent summary of the wide range of SALT agreements and detailed accounts of their presentation to the US Congress and press by the President and White House officials, most notably Kissinger. The entire texts of the SALT Treaties and their related Accords can be consulted in *Arms Control and Disarmament Agreements: Texts and Histories of the Negotiations.* 1996. Washington D.C.: United States Arms Control and Disarmament Agency, US Government Printing Office.

[406] The majority of such systems had previously been known as LDA - Light Delivery Aircraft.

[407] The verification of adherence to such constraints by both of these groups would in itself have posed a major challenge due to their inherent mobility.

[408] An important exception to this would have been the ubiquitous SS-11. Although by this time it had largely taken on a TNF role its initial configuration as a long-range naval missile had endowed it with an intercontinental range.

a profoundly detrimental effect upon Western political cohesion[409] and would also have markedly altered the balance of forces in the vital European TVD. Given that within both Western and Soviet strategic thought this TVD was regarded as being the principal determinant of the outcome of any future NATO-Warsaw Pact conflagration there was no prospect of such a unilateral withdrawal. However it would be wrong to view Soviet demands on this issue as simply disingenuous.[410] While they did represent the typical tough stance which the Soviets sought to adopt on many issues at the outset of the SALT negotiations it was also evidence of their very real concerns at the operational potential of NATO FBS which was in contrast to their own rather antiquated TNFs. As such the Soviets hoped and perhaps expected that some form of "compensation" may eventually have emerged on this issue as the SALT process evolved.[411] The unequal ceilings upon strategic delivery systems that were subsequently agreed to in SALT I were certainly viewed in those terms - and not only by the Soviets. From the very outset of the negotiations US resistance to the inclusion of FBS was resolute despite frequent Soviet demands. However although no negotiations concerning FBS took place their spectre remained constantly in the background and they proved to be a useful bargaining chip for the Soviets particularly in arguing for the exclusion of SLBMs from the freeze. US agreement to relatively high levels of Soviet SLBMs could be viewed as evidence of discreet compensation of

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[409] US sensitivity to this concern was demonstrated by the regular briefing of their NATO allies on this aspect of the negotiating process.

[410] Nerlich, U. 1976. *The Alliance and Europe: Part V, Nuclear Weapons and East-West Negotiation*, Adelphi Paper 120. London: IISS was untypical in concluding that FBS' were used principally as a negotiating device by the Soviets and that they possessed marginal utility in a TNF role. The former view is seldom propounded, while the latter ignored their potential vis "one-way" missions; a worst-case scenario that military planners would naturally consider. For evidence of such Soviet planning, see Kissinger, H.A. 1982. *Years of Upheaval*. London: Weidenfield and Nicolson, pp.1,023 & 1,171; Garthoff, "The Soviet Military and SALT", in Valenta and Potter (eds.), *Soviet Decisionmaking for National Security*, p.150. A further caveat on the FBS issue was offered by Meyer who argued that the employment of US ICBMs would have been required in any attack upon Soviet TNFs - whether comprised of SS-4/SS-5s and SS-11s or SS-20s - due to NATO TNFs' lack of requisite range and hard-kill capability against silo-based systems. Meyer, S. 1984. *Soviet Theatre Nuclear Forces: Part II Capabilities and Implications*, Adelphi Paper 168. London: IISS, p.28, n.47.

[411] Smith, *Doubletalk*, pp.92-3. See also pp.126-30, 179-87 for Smith's assessment of FBS' role in the negotiating process as a whole.

the type the Soviets had sought.[412] As the pressure to achieve agreement increased as the Summit approached the question of FBS remained unresolved and was effectively deferred for consideration in SALT II. There it would prove to be as intractable a subject of contention as it had been during SALT I.

MIRVs[413]

Some accounts have been keen to stress Soviet resistance to a MIRV ban and a desire to match US capabilities in this vital development.[414] Closer inspection of the course of the SALT negotiations however serves to cast doubt on this notion of implacable Soviet opposition. Rather the Soviet Union's apparent reluctance is better explained by the unpalatable nature of the US proposals and a determination not to accede to any measure which risked preserving an unassailable US advantage in this vital area of strategic development. Members of the US negotiating team were surprised that the issue had not been raised by Semyonov in his opening statement. However, they concluded that the Soviet side probably felt bound to adopt a reactive position on this issue due to the US monopoly in this field and awaited a US proposal pertaining to this question.[415] At this point in time the US had all but completed technical development of MIRVs, while Soviet research in this field remained in its infancy. The issue had already caused deep divisions among US government agencies. While the Arms Control and Disarmament Agency (ACDA) and the Department of State

[412] Kissinger himself sought to placate Congressional concern over the Soviet SLBM SALT limit by highlighting NATO's advantage in FBS. Ibid., p.93.
[413] For an erudite description of a MIRV system and its strategic potential, see Hersh, S. M. 1983. *The Price of Power: Kissinger in the Nixon White House.* New York: Summit, p.150.
[414] Kober, S.H. "Causes of the Soviet Military Build-up", in Currie and Varhall, *The Soviet Union: What Lies Ahead?*, pp.314-5.
[415] As Smith himself wryly commented, the omission of MIRVs from the initial US Illustrative Elements framework document "must have told the Soviets something about the degree of US interest in that major issue". See Smith, *Doubletalk*, pp.89 & 153-78; Garthoff *Detente and Confrontation*, p.153, n.17 & Hersh, *The Price of Power*, pp.147-67. Newhouse interpreted the omission as being predicated by the Soviet desire to remove the US lead in this and other fields, rather than merely discussing them. Newhouse, *Cold Dawn*, p.174. See also Laird and Herspring, *The Soviet Union and Strategic Arms*, pp.114-5.

favoured a moratorium on MIRV development during SALT, the Joint Chiefs of Staff and the Department of Defence favoured the retention of a free hand to deploy MIRVs on ICBMs and SLBMs. They also hoped to constrain future Soviet MIRV deployments by securing limits on the throw-weight capacity of Soviet heavy ICBMs. Garthoff argued that as early as the spring of 1969 both Nixon and Kissinger had concluded that it was not feasible in political terms to pursue limitation of both ABM and MIRVs in the face of expected opposition from the Pentagon, the wider military establishment and the political right. At this point Kissinger decided to opt for ABM rather than MIRV limitations.[416] Two factors in particular influenced this decision. MIRVs represented a more valuable strategic asset due to their ready availability and the US lead in this field. This was in contrast with ABMs where US deployment could not be expected for a number of years, while the Soviet Union had already deployed the albeit limited Galosh system. In addition, while MIRVs enjoyed widespread support from a number of influential patrons within the US governmental bureaucracy[417], Congressional support for initial development of the new Safeguard ABM system had only been secured by the Vice President's casting vote. With such a tenuous mandate from the outset, ABM development was clearly more expendable than the deployment of MIRVs. The US decision to seek limitations on ABMs while ignoring the subject of MIRVs was thus predicated upon its viability in the sphere of domestic politics, not its inherent role within the strategic balance. This pre-occupation with domestic concerns was to recur on several occasions in the future with detrimental long-term effects upon US strategic interests.

It was against this backdrop that the US' negotiating stance was formulated. Although the NCA-ABM provisions contained within the first US proposal of April 1970 were attractive to the Soviets, its proposed constraint on MIRVs was immediately rejected by Soviet negotiators. Indeed they interpreted US insistence

[416] Garthoff, *Detente and Confrontation*, p.154.
[417] Smith, *Doubletalk*, pp.157-164.

upon on-site inspection and a ban on MIRV research and development, while allowing MIRV deployment - a clause from which only the US could benefit - as clear signalling of a desire to avoid agreement on the subject.[418] The Soviets countered by proposing a ban on production and deployment of MIRVs, while allowing research and development and precluding on-site inspection. This proposal was equally unpalatable to the US as it would have been impossible to verify. Permission to explore a potential ban on MIRV production was denied to the US delegation by Washington who instead ordered the immediate tabling of a second formal proposal allowing the unconstrained development and deployment of MIRVs by both sides. With this development the pursuit of MIRV limitation during SALT I effectively came to an end. Moscow had not at this point taken a final decision on the question of a MIRV ban and whether support for such a ban could have been achieved remains a matter of conjecture. The Soviets interpreted US' actions as evidence of an unwillingness to sacrifice the US lead in this field and this allied to the reactive approach adopted by the Soviet Union during the SALT negotiations prevented them from pursuing the matter further with fresh proposals of their own.

Rather than accept an agreement which would have so obviously prejudiced Soviet strategic interests a policy of untrammelled development was preferred. Kissinger's later confession that he regretted not having "thought through the implications of a MIRVed world more thoughtfully in 1969 and 1970"[419] was disingenuous. He had been fully aware of their potential long-term effects upon the strategic balance.[420] Rather it presented a tangible demonstration of Nixon and Kissinger's perception of SALT as a part of the wider political process rather than as an arms control measure *per se* and their assessment of the domestic political situation in the light of the strong institutional backing enjoyed by MIRVs. Kissinger later sought to explain the

[418] Dobrynin, A. *In Confidence,* p.212; Berezin, V. *Krasnaya Zvezda.* "Spokes in the Wheels", 14 March 1970, p.4; Vishnevsky, S. *Pravda* "Very Dangerous", 20 March 1970, p.5.
[419] Background briefing of Secretary of State Kissinger, 3 December 1974. Department of State, Bureau of Public Affairs. See also Smith, *Doubletalk,* p.177.
[420] Hersh, *The Price of Power,* footnote, p.155.

exclusion of a MIRV ban from the SALT negotiations with a spirited, though rather spurious, justification of their strategic importance.[421] Smith's argument that an ABM limitation was viewed by the administration as the most that "the traffic would bear" remains far more plausible and was affirmed by Garthoff.[422] Thus the warnings of those who had foreseen the potentially destabilising effects of MIRVs and the Soviet Union's greater potential to deploy them in mass due to the larger throw weights of their ICBMs were ignored.[423] In essence an equitable MIRV ban was the only *quid pro quo* of sufficient gravity that the US could offer in the pursuit of a significant curtailment of the Soviet strategic build-up. Consequently the absence of radical constraints from the Interim Agreement of 1972 was largely the result of the hasty retreat from the search for MIRV limitations at the outset of the SALT process. This US decision proved to be short-sighted in both political and strategic terms.

ABM

The exclusion of the SALT negotiating team from the intimate details of policy formulation caused an oversight of immense proportions on the part of the US President and his Chief Adviser on the issue of ABM limitation. In his initial statement of the Soviet position Semyonov identified widespread ABM deployments as a potentially destabilising development and argued that major constraints should be placed upon their numerical levels and geographical location. Indeed he did not rule out a complete ABM ban. This signalled a dramatic *volte face* which apparently went unnoticed by both Nixon and Kissinger. This oversight would subsequently add confusion to the inherent complexities associated with negotiations in this field of weaponry development. The two initial sets of US proposals made to Soviet

[421] Kissinger, *White House Years*, pp.210-212.
[422] Smith, *Doubletalk*, p.118; Garthoff, *Detente and Confrontation*, p.154 and n.20.
[423] See for example Smith's letter to Secretary of State Rogers of June 1969, Smith, *Doubletalk*, p.156.

negotiators in Vienna in April 1970 were the product of a piecemeal and at times chaotic process of policy formulation[424] which contrasted sharply with Nixon's sanitised accounts in official statements and Kissinger's memoirs.[425] They proposed limiting ABM deployments to Moscow and Washington as the National Command Authorities (NCA). Although both of the US proposals of April 1970 had been rejected by the Soviets due to their unacceptable strategic arms limitations, great interest was shown in the specific provisions concerning ABMs. The provisions for a limited ABM network protecting each nation's NCA accorded closely with the existing Galosh deployment around Moscow and would thus have required no adjustment in Soviet force structure. Moreover the protection of NCAs was a distinctive Soviet preference while the US favoured the use of ABMs to protect ICBM silo fields.[426] Thus within a week of receiving the US proposal of April 1970, Soviet negotiators had accepted this component of the proposed limitation. While the swift Soviet acceptance came as little surprise to many within the US negotiating team it was something of a shock to Nixon and Kissinger who until then had remained oblivious to the existence of the revised Soviet policy. The US offer to allow an NCA-ABM system was intended purely as an initial bargaining position with no expectation of Soviet acceptance as with the MIRV and numerical limitations which it accompanied.[427]

Against the backdrop of continuing failure to reach a *modus vivendi* on the parallel issue of strategic arms limitation the Soviets sought to break the impasse through progress on the specific matter of ABM limitation. This was hinted at in Vienna as early as May 1970 and specifically suggested via the Kissinger-Dobrynin channel in

[424] Garthoff, *Detente and Confrontation*, pp.157-9.
[425] Ibid., p.157, n.26; Kissinger, *White House Years*, p.149.
[426] Savel'yev and Detinov, *The Big Five*, p.26 on how the exact distance between ABM sites persisted as an issue of contention until the eve of the Moscow Summit itself.
[427] Indeed implementation of this proposal would have entailed a renunciation of the widespread ABM networks which the Nixon regime had heralded as being of prime importance in a number of reports, the latest of which was unveiled only days before the SALT proposals were made in Vienna in April 1970. Garthoff, *Detente and Confrontation*, p.164.

June.[428] By December this proposal had been made at the formal negotiating forum and in March 1971 the Soviets presented a draft version of a treaty dealing specifically with the ABM question. In the face of contradictory US signals on the possibility of securing a specific ABM agreement Semyonov and other key members of the Soviet delegation privately hinted that some form of "understanding" might be achieved on the question of ICBM limitations including, significantly, sub-ceilings on "heavy" Soviet ICBMs. The surfacing of this offer at the official talks in Vienna caused considerable ire among both Nixon and Kissinger who viewed it as a breach of faith on the part of the Soviet leadership as it appeared to have circumvented the secret "back channel". In fact Kissinger discerned Soviet enthusiasm to reach an agreement on ABMs as an ideal opportunity to pursue a policy of "linkage" with the aim of placing concomitant constraints on the Soviet strategic build-up. Thus an ABM treaty would only emerge as part of a comprehensive agreement.[429] There then followed a remarkable series of revised US ABM proposals as Kissinger sought desperately to extricate himself from this unwelcome position of potential agreement. The process began in August 1970 with a proposal which included an additional ABM option of absolute prohibition, accorded equal status with the earlier offer of an NCA protection network. As expected the Soviets declined this new offer and reaffirmed their acceptance of the NCA-ABM proposal, much to the unease of the US negotiating team. US attempts at disengagement continued in March 1971 when a third ABM proposal (again accorded equal status) was presented to the Soviet delegation. It was suggested that the single Soviet NCA-ABM deployment would be balanced by four

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[428] This was the occasion of Dobrynin's controversial offer to reach an agreement on the prevention of accidental war which has been viewed as a "sweetener" to an ABM Treaty for US domestic consumption (see Garthoff, *Detente and Confrontation*, pp.199-205) or as a Soviet demand for joint action against a future Chinese threat: "Collusion against China was to be the real Soviet price for a summit". *White House Years*, p.117. See also Smith, *Doubletalk*, pp.141-145 and Newhouse, *Cold Dawn*, pp.188-9.

[429] The ABM Treaty was not completed until the Moscow Summit in May 1972 though its final provisions were essentially the same as those accepted by the Soviets in 1970. Most participants in the negotiations have argued that an ABM Treaty could have been secured long before the Moscow Summit. This did not occur because of the US administration's desire to pursue a policy of linkage. Hersh also notes acerbicly that while agreement in 1970 may have been a realistic aim, "Nixon was not running for re-election in 1970". Hersh, *The Price of Power*, p.339.

US networks surrounding its main ICBM sites. However having secured its favoured option in the initial round of US proposals, there was little prospect of the Soviets renouncing their acceptance in the future and this new proposal met with a hostile and rather indignant reception. A further US proposal in July 1971 reduced the US component to three ABM structures while retaining the sole Soviet NCA network and met a similarly frosty response. Ironically the Soviet negotiators now quoted their US counterparts' earlier arguments in support of the NCA-level proposal. In parallel with this diplomatic posturing Washington sought in July to assuage Smith's tenacious pursuit of a total ABM ban by authorising private discussions with Semenov on the matter, secure in the mistaken belief that the Soviets would not surrender NCA under any circumstances. To Washington's surprise the response was cautiously favourable and Smith was swiftly ordered to break-off the contact.[430] The accompanying promise to Smith that a complete ABM ban would be pursued in SALT II was never realised. In August 1971 the US reduced their proposed ABM deployment to two sites to balance the Soviet NCA defence structure. By April 1972 a compromise had evolved which formed the basis of the ABM Treaty of that year. It limited both sides to the deployment of two ABM sites (for NCA defence and one ICBM field), each of a maximum of 100 launchers. The upgrade of air defence systems to ABM status and the deployment of large phased array radars was prohibited. An evolution of this position emerged to form the basis of a Protocol in 1974 which further limited permissible provision to one ABM site of 100 launchers. Soviet enthusiasm for agreement on the ABM issue was seized upon by Kissinger who viewed it as an opportunity to pursue a policy of linkage with which to limit Soviet strategic force levels.

[430] Garthoff, *Detente and Confrontation*, pp.172-4 and Smith, *Doubletalk*, pp.256-263 and Appendix 5 pp.485-6.

Strategic Force Levels

The US' initial dual proposals of April 1970 both contained identical provisions pertaining to strategic weapons levels. ICBM and SLBM launchers would be frozen at the then-current US level of 1,700 then reduced by 100 per annum for the next seven years.[431] Inspection of its provisions soon identified a number of details which would obviously prove unacceptable to the Soviet side. While rejecting the Soviet definition of Western TNFs as strategic weapons, this proposal went further and sought to include Soviet TNFs within its provisions despite their inability to strike at the US. In addition its proposed constraints centred upon land-based ICBMs - the principal component of Soviet strategic forces - while largely excluding long-range bombers where the US enjoyed a longstanding advantage. The proposals sought to specifically constrain deployment levels of the SS-9 "heavy" ICBM, the mainstay of the Soviet ICBM force which possessed great potential as a MIRV carrier. A ceiling of 250 SS-9 launchers would be enforced, which as the Soviet Union had already deployed 222 launchers and had 60 more already in production, allowed no scope for future expansion. By contrast, the US would be able to meet its obligations under these proposals through the impending retirement of obsolescent B-52 bombers.
By August 1970 a new US proposal had emerged. The ICBM ceiling of 1,700 launchers with its sub-ceiling of 250 "heavy" ICBMs remained as did the related right to pursue unconstrained MIRV development and deployment. Previous restrictions on Soviet TNFs were removed but there was a rejection of Soviet demands for the inclusion of Western TNFs. In May 1971 Semyonov hinted to his US counterparts that some form of "accommodation" might be achieved on the question of strategic

[431] Within the US negotiating team this proposal was favoured most strongly by Paul Nitze with the backing of the Department of the Defence.

weapons, including a specific sub-ceiling on "heavy" ICBMs.[432] The reaction in Washington when this news was relayed by the SALT delegation was one of unrestrained rage as the Soviets had brought into the open a topic which had been the subject of discussion via the Kissinger-Dobrynin "back channel" for four months.[433] Nixon was deeply concerned lest Smith's negotiating team gain credit for the breakthrough that he had expected to claim exclusively as his own. Kissinger viewed the development as a deliberate Soviet ploy and demanded a reply to his latest proposals within forty-eight hours. Soviet agreement was given within twenty-four hours and on 20 May 1971 Nixon was able to announce (a simultaneous and identical announcement was made in Moscow) that an agreement had been reached in principle on the matter of ABM and strategic weapon limitations.[434] Despite the upbeat nature of the statement as a whole, the admission in its final sentence was indicative of how far both sides remained from a comprehensive agreement[435].

SLBMs

While Kissinger's persistent use of the "back channel"[436] often unnecessarily constrained the course of the official negotiations, his glaring *faux pas*[437] of February

[432] This was broached almost a year earlier via the "back channel" on 4 July 1970. Smith was the only SALT delegate to be informed of this offer.
[433] Smith, *Doubletalk*, pp.222-233 and Kissinger quoted by Garthoff, *Detente and Confrontation*, p.166, "a bizarre incident interrupted our efforts". See Smith, *Doubletalk*, p.243 for his personal reaction to the uncovering of this surreptitious form of negotiation.
[434] *Weekly Presidential Documents*, p.783.
[435] It now seems clear that a prerequisite corollary of this proclaimed breakthrough was an agreement to relax restrictions on sales of US grain surpluses and capital goods to the Soviet Union. Both Nixon and Kissinger were remarkably reticent about this issue in their memoirs. For a detailed and revealing account of the process of agreement see Hersh, *The Price of Power*, pp.334-349 and Garthoff, *Detente and Confrontation*, pp.100-106. See also *Weekly Presidential Documents*, p.890; Kissinger, *White House Years*, pp.252-3 and Garthoff, *Detente and Confrontation*, p.103.
[436] Smith viewed Kissinger's role in the negotiation process as "all-pervading", *Doubletalk*, pp.108-14. For a detailed account of Kissinger's White House career under Nixon's Presidency, see Hersh, *The Price of Power: Kissinger in the Nixon White House.* Chapters 12, 13, 25 and 37 deal specifically with SALT.
[437] Garthoff, *Detente and Confrontation*, pp.179-190 and Smith, *Doubletalk*, p.228. Dobrynin's account indicated that Kissinger's initial lapse on the issue could be dated as early as January 1970. Dobrynin, *In Confidence*, pp.215-6.

1971 threatened to undermine the entire US negotiating stance. He conceded that SLBMs could be excluded from the agreement's provisions, a caveat which would have allowed the Soviet Union *carte blanche* in her SLBM build-up. US SLBM deployments were by now complete and no plans existed for a renewed building programme in the foreseeable future. Kissinger placed the US representatives in a perilous negotiating position, the more so as they remained ignorant of the existence of such a concession during this vital phase of the talks in May 1971.[438] The exclusion of SLBMs from the provisions would have met with intractable opposition from within the US military establishment and Congress. As the Soviets were naturally reluctant to give up this concession and US negotiators were not authorised to offer a compromise, no progress was made on the matter through official SALT channels. Their eventual inclusion was the result of a deal struck during Kissinger's visit to Moscow in April 1972[439] which allowed him to save face and avoid a storm of internal protest.[440] The compromise was however of little strategic value to the US as the Soviet ceiling of 950 SLBMs and 62 submarines agreed upon closely resembled the planned level of Soviet deployment, a level that the Soviets would be allowed to meet by the withdrawal of the obsolescent SS-7 and SS-8 ICBMs.[441]

On his return to Washington, Kissinger was able to secure Nixon's backing for the unexpected breakthrough by highlighting the lack of progress made on the issue of SLBMs through the official SALT talks, while omitting that US SALT negotiators had been specifically prohibited from offering any such compromise. He was also able

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[438] Garthoff, *Detente and Confrontation*, pp.179-183 and Smith, *Doubletalk*, pp.223-9, 272-6, 325-30, 370-82, 400.

[439] This visit was intended to deal exclusively with the issue of Vietnam. Kissinger defied these specific instructions to raise the issue of SALT - perhaps indicative of his concern over his previous error.

[440] However while Kissinger succeeded in gaining Soviet acceptance of the inclusion of SLBMs, Brezhnev had staked a new claim during the visit that US FBS and British and French SLBMs be included in the assessment of the overall strategic balance and the Soviet Union be accorded some form of compensation. British and French FBS/SLBM forces consisted of 375 launchers in service; a further 250 planned or under construction. Smith, *Doubletalk*, p.145 and Garthoff, *Detente and Confrontation*, p.185, n.87. The inclusion of US FBS was not open to negotiation, while the inclusion of US allies' forces - despite their relatively small size - in a bilateral agreement without prior consent would have been an unprecedented step which would have placed the NATO alliance and co-operation with France in jeopardy.

[441] Garthoff, *Detente and Confrontation*, pp.182-4.

to present his Moscow deal in a favourable light to the Verification Panel meetings held within days of his return by highlighting production potential figures prepared by his staff and based upon inaccurate Pentagon estimates. Five estimates of future Soviet SLBM potential were presented and Kissinger's agreed total of 950/62 tallied favourably with the second lowest projected figure.[442] Nixon's brusque rejection of Smith and Roger's claim during a meeting of the NSC that a lower SLBM limit could well be extracted from the Soviets[443] through further negotiation demonstrated the President's continued mistrust of the highest echelons of government and the Moscow deal's status as a *fait accompli*.[444] Detinov's account of the eventual inclusion of SLBMs confirms both the chronological narrative proffered by his US counterparts and their strongly-held belief that the eventual compromise secured by Kissinger on his visit to Moscow was regarded in a most favourable light by his hosts. He confirmed that the Soviet Union resisted US demands for the inclusion of SLBMs until as late as April 1972. Gorshkov was eventually persuaded to accept the inclusion of SLBMs under the auspices of the SALT I Treaty as it became clear that continued Soviet intransigence on this issue would preclude US acceptance of the agreement. However the *quid pro quo* secured as a result of Kissinger's *faux pas* allowed the unfettered completion of the planned Soviet SLBM build-up and led Admiral Gorshkov to thank Brezhnev for his preservation of the Soviet navy.[445]

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[442] Ibid., pp,187-8 and Hersh, *The Price of Power*, pp.539-541.
[443] Garthoff, *Detente and Confrontation*, p.188 and Smith, *Doubletalk*, pp.370-8.
[444] There remained a final twist with regard to SLBMs. As the Soviets were to be allowed to retire their obsolete SS-7 and SS-8 ICBMs and build-up their SLBMs in a numerical trade-off, the US sought to obtain equal rights to pursue such actions. This was an important matter of principal for any reciprocal treaty but held little practical import as there was no prospect of a renewed US SLBM build-up in the foreseeable future. However in the face of Soviet pressure at the pre-Summit conference Nixon and Kissinger acquiesced and the President gave a written undertaking that no such development would take place. This was to remain secret until 1974 and stood in marked contrast to the solemn undertakings provided to Congress by both men during the 1972 hearings that no secret agreements had been made. When rumours surrounding this covert undertaking surfaced in the summer of 1974 they were seized upon by Senator Jackson and fellow sceptics of détente. The ensuing brouhaha helped constrain Nixon's scope for manoeuvre at the forthcoming Moscow Summit.
[445] Savel'yev & Detinov, *The Big Five*,, pp.25-6.

Silo Dimensions and "Heavy" Missiles[446]

An issue of great import that remained unresolved following Kissinger's May 1971 Moscow sojourn was the question of technical constraints upon ICBM modernisation programmes. The self-imposed Soviet moratorium on the building of new silos had evolved into an agreed ban to come into effect on 1 July 1972.[447] While there were no specific restrictions concerning the development of new missile systems, their introduction would have been constrained by a parallel undertaking not to replace or develop existing silos containing "small" ICBMs in favour of those capable of housing their "heavy" equivalents. While this in itself was an important undertaking of principal, its true effect would be determined by the exact definition of "heavy" ICBMs and the size of the silo housing for the purposes of future deployment and this issue dominated the sixth round of negotiations in Vienna from November 1971 till January 1972. The principal Soviet ICBMs in service at this time were the SS-9 and SS-11. While the SS-9 was c.200 cubic metres in size, the SS-11 (due to its markedly different design background) was a mere 70 cubic metres. The problem of definition arose from the fact, of which both sides were aware, that the next generation of Soviet ICBMs which were currently under development would fall between these parameters. Thus while US negotiators sought 70 cubic metres as the upper limit for the definition of "light" ICBMs, their Soviet counterparts argued that such a limit would amount to a *de facto* constraint on modernisation in contravention of the previously agreed position. Kissinger advised that in the event of failure to gain Soviet agreement on this point the US delegation should issue a unilateral statement asserting that future Soviet deployments of ICBMs larger than the SS-11 would be regarded by the US as falling within the "heavy" ICBM classification. Smith's

[446] Ibid., pp.5-6 & 26 for an excellent summation of the Soviet Union's preference for "heavy" ICBMs, their subsequent strategic implications and their role in the negotiating process.
[447] Those silos already under construction on this date could be completed.

pessimistic evaluation of the effect of such a statement[448] was vindicated by subsequent events and the issue later caused Kissinger considerable discomfiture. [449] When the SS-19 was later introduced it was erroneously portrayed by critics as evidence of Soviet breach of - at the very least - the "spirit" of the SALT agreement.[450] Thus SALT's credibility suffered due to Kissinger's expediency.

The Moscow Summit[451]

At this point the negotiations in Helsinki effectively halted as the Moscow Summit began in May 1972 with a number of technical issues still unresolved.[452] There had been little progress within the official SALT delegations for several months as Nixon and Kissinger strove to ensure that "some issues would be left to the summit for triumphant presidential resolution".[453] Remarkably both SALT delegations remained in Helsinki for the duration of the Summit where negotiations were carried out principally by Kissinger and Gromyko, though Nixon and Brezhnev also participated on occasion. Apparently these negotiations were "too important for negotiators".[454] Soon Nixon and Brezhnev had inadvertently agreed to a proposed ban on missile volume increase of more than 15% which would have had the effect of providing a partial MIRV ban on the future deployments of both sides. [455] This rapid progress was as unwelcome to the negotiating teams as it was unexpected and led to "several days of frenzied negotiations".[456]

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[448] Smith, *Doubletalk*, pp.331-4 and 423.
[449] Garthoff, *Detente and Confrontation*, p.196.
[450] Perry, R. "Verifying SALT in the 1980s", in Bertram, C. (ed.) 1978 *The Future of Arms Control: Part I, Beyond SALT II*, Adelphi Paper 141. London: IISS, p.22 and n.27.
[451] See Smith, *Doubletalk*, pp.407-45; Garthoff, *Detente and Confrontation*, pp.325-38 for a full account of the Moscow Summit.
[452] Smith, *Doubletalk*, pp.409-431.
[453] Hersh, *The Price of Power*, p.349.
[454] Smith, *Doubletalk*, p.408.
[455] Ibid., pp.415-7.
[456] Interestingly, the result of these negotiations was an agreement that silo development in excess of 15% would be defined as "significant" and would thus be prohibited. A final bizarre twist emerged as Kissinger's staff mis-translated a key word in the agreement and thus inadvertently sanctioned a 15%

SALT II[457]

The SALT II process began in November 1972 with the stated aim of pursuing further strategic arms limitations in the new era of detente which seemed to have blossomed in the wake of the Moscow Summit. However the head of the US delegation paid scant attention to this period in his memoirs due to the inertia which beset the negotiating process for the remainder of the Nixon Presidency and contrasted it with the Ford period.[458] Progress continued to be circumscribed by the US administration's inherent preference for political agreements with the Soviet Union rather than seeking to address the more intractable issues of arms control *per se*.[459] To this was now added new levels of Congressional opposition[460] and the Watergate scandal which began to cast its shadow over the process of detente - a shadow which would in the near future effectively paralyse the SALT II process until the demise of Nixon himself. These developments were in part a reflection of a wider and growing questioning of the efficacy of the process among the US populace at large which "was beginning to be less sure of the benefits of detente but had not rejected it."[461]

The SALT II process began only six months after the Moscow Summit. While the Soviet side had made a number of considered concessions in order to secure the Interim Agreement, they reverted to their long-held principle of "Equal Security" at the outset of SALT II. In practical terms this entailed a demand for the inclusion of FBS within the remit of SALT's strategic limits or some form of *de facto* compensation. The continuity of the Soviet approach that was evident in the initial

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increase in silo *dimensions*, thus also allowing a 15% increase in depth which allowed a total volumetric increase of c.32%. Garthoff, *Detente and Confrontation*, p.195. By contrast Detinov was rather more generous in his assessment of the leaders' active participation in Moscow. Savel'yev and Detinov, *The Big Five*, p.25.

[457] For an exhaustive account of the course of the SALT II negotiating process and the internal machinations of US elite politics which accompanied it, see Strobe Talbott, *Endgame: The Inside Story of SALT II*; Johnson, *The Right Hand of Power*, pp.571-624.

[458] Johnson, *The Right Hand of Power*, p.582.

[459] See Garthoff, *Detente and Confrontation*, pp.370-1 and n. 27-9 for more detailed discussion.

[460] See Garthoff, *Detente and Confrontation*, pp.367-9 on the opposition of Senator Jackson *et al.*

[461] Garthoff, *Detente and Confrontation*, p.462.

approach to SALT II was matched by the retention of the key personnel and policy formulation practices which had evolved during SALT I in the shape of the Big Five. The impetus which had reached a zenith at the Moscow Summit had quickly dissipated in the immediate aftermath. The SALT II negotiations would remain becalmed for two years and devoid of substantive progress until the Vladivostok Accords of November 1974. These factors combined to ensure that the Big Five played a largely passive role in the intervening period as the Soviet negotiating stance remained devoid of substantive alteration. Against this backdrop of inaction, the Big Five met on only one or two occasions during SALT II's initial rounds.

The Negotiating Process

In March 1973 the US delegation was instructed to table a new proposal in an attempt to broaden the provisions of the Interim Agreement (as SALT I was officially termed) to include heavy bombers within a revised equal aggregate total. This overall aggregate would have contained specific and equal constraints upon the numbers of ICBMs deployed and their throw-weights. Such a proposal was obviously unacceptable to the Soviets as the new constraints would have principally affected two areas of strategic competition - the numerical level of ICBM deployment and their throw-weights - where the Soviet Union enjoyed a clear advantage and would thus have entailed a reduction of Soviet ICBM forces or would have facilitated a unilateral US build-up of up to 300 ICBMs. Significantly MIRVs were again ignored by the proposals. Not surprisingly this was rejected by the Soviet delegation but they themselves provided no counter-proposal at this juncture. When Soviet proposals eventually emerged they were based exclusively upon the SALT I limitations as the guiding principal for agreement. New US SALT proposals were hurriedly composed in advance of Brezhnev's scheduled visit to Washington in June 1973 for the second Summit meeting. The result was a proposed numerical limit of 2,350 for both sides'

aggregate totals of ICBMs, SLBMs and heavy bombers, while the obviously unacceptable demand for an equal sub-limit of ICBM numbers and throw-weights was dropped. In addition there was now included a proposed freeze on MIRV testing and deployment on land-based missiles for the duration of the negotiations.[462]

Unfortunately as Garthoff points out "this (MIRV) proposal was three years late" as by 1973 US deployment of MIRVs had been taking place for three years while the Soviets had yet to test a MIRV.[463] Thus the preservation of a significant and unacceptable US lead would have been the sole consequence of such a freeze at this time. The Soviet delegation presented a draft treaty in the autumn of 1973 which would have added unspecified limitations upon MIRV deployments to the existing constraints of the Interim Agreement. Given the prevailing political climate within the US at this point in time such a proposal was not regarded as a feasible option by the Nixon administration as it would have further codified the increasingly contentious Soviet numerical lead in strategic systems. Nothing emerged from the US until a February 1974 proposal of equal overall aggregate totals (2,350) of ICBMs, SLBMs and heavy bombers and equal ICBM MIRV throw-weight. The latter aspect of this proposal would have markedly favoured the US due to their traditional utilisation of smaller missiles and warheads.

A more determined US effort to achieve a breakthrough emerged during Kissinger's pre-summit preparatory visit to Moscow in March 1974. As with SALT I the proposed limitations would have effectively frozen the strategic balance at its current level. In this case the Soviet numerical lead in launchers would have been codified and offset by the US lead in MIRV deployments. Despite the optimism shown by Kissinger - mistakenly encouraged by Dobrynin - on his arrival in Moscow the response from the Soviet leadership was swift and negative. Brezhnev argued that the US proposal had sought to constrain missile throw-weight, the only area of clear

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[462] Ibid., pp.368-72.

[463] Despite mistaken US concerns that SS-9s were being "MIRVed" as early as 1972. Ibid., p.370, n.25 and Hersh, *The Price of Power*, p.158. The tangible effect of the US programme was that 350 Minuteman IIIs had been armed with 1,050 MIRVs.

Soviet advantage in the strategic balance. Brezhnev himself proposed that the SALT I limitations be continued until 1980 with a limit of 1,000 MIRVed missiles. During the course of the ensuing negotiations the Soviets offered the US the advantage of an extra 100 MIRVed systems and a reduction of ABM systems to one site.[464] The parley continued during Gromyko's visit to Washington in April and his subsequent meetings with Kissinger in Geneva and Nicosia in the weeks which followed. During the course of these talks the US proposed an extension of the SALT I provisions until 1980 with additional MIRV limits of 1,000 and 850 for the US and Soviet Union respectively. As such the codification of the Soviet numerical lead in strategic launchers as a whole would have been off-set by the retention of a US advantage in the important field of MIRVs. Although this proposal would have based agreement upon a recognition of the existing strengths of both nations as in SALT I it was rejected by Gromyko at the meeting in Geneva on 28 April.

At the third and final summit meeting between the two leaders in Moscow between 27 June and 3 July 1974 both sides adopted slightly modified negotiating positions. However there was insufficient movement to allow a substantive breakthrough on the issue of strategic limitation.[465] An agreement to confine ABM systems to a single site which the Soviet Union had indicated its willingness to accept as early as 1972 and which matched the actual process of deployment by both sides emerged as the sole palliative. Significantly the Moscow summit was the occasion of a renewed Soviet attempt to include US FBS in the determination of the strategic balance. Brezhnev personally presented an array of evidence of Soviet evaluations of the potentially significant role that FBS could play in the event of a future nuclear conflict. He was joined in this process by Colonel General Mikhail Kozlov, first deputy chief of the General Staff and chief of its Main Operations Directorate and Marshal Grechko, the minister of defence.

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[464] Kissinger, *Years of Uncertainty*, pp.1022-25.

[465] Soviet public pronouncements on the Summit were favourable and optimistic at the time but later evaluations of the situation were more candid. Garthoff, *Detente and Confrontation*, pp.480-5.

The Vladivostok Summit and SALT's Implications for Soviet Weaponry Procurement Policy

The Vladivostok Summit

By 1974, the Soviets recognised that the SALT II process required re-invigoration. Although the negotiating teams met in their fifth round of talks between 18 September - 5 November 1974, meaningful progress had long since halted. Discussion was generalised in form and limited to issues of marginal importance in accordance with the instructions received from both capitals. It was hoped that the accession of a new US President and the Summit in Vladivostok scheduled for November of that year would serve as the necessary catalyst. Such an occasion might also have served as a valuable fillip to the new administration. It was the first in US history to be led by a President who had not been elected to national office and faced an uphill struggle to attain public credibility in the aftermath of the Watergate scandal, while its opponents on Capitol Hill became still more vociferous in their criticism of any apparent concessions to the Soviet Union. The retention of Kissinger as Secretary of State was the singular untainted legacy from the previous administration.

Prior to the Summit the official delegations were precluded from entering into substantive negotiations. Rather, the "back channel" link between Kissinger and Dobrynin was preferred. Kissinger visited Moscow on a four-day trip in late October. A week prior to his arrival proposals had been relayed to Moscow via Dobrynin. They would have allowed an overall total of 2,200 strategic launchers, 1,320 of which could be armed with MIRVs. "Heavy" ICBMs or bombers would be limited to 250 and the arming of the former with MIRVs was precluded. ASMs with a range in excess of 3,000km were banned and the pace of force modernisation would be limited to 175 p.a. Although the initial proposals were skewed in the US' favour, their tenor and means of delivery to Moscow afforded them sufficient *gravitas* to serve as a

starting point for Kissinger's ensuing negotiations while in Moscow. During the Moscow meeting, Brezhnev countered with two potential bases for agreement. One served to codify the Soviet Union's advantage in the overall number of strategic systems to be off-set by similar recognition of the US' lead in MIRVed systems. The other offered to set an equal aggregate total of launchers for both nations, within which they would be free to determine the exact nature of their force structures. It was the latter format which came to form the basis of the Vladivostok Accord.[466] Significantly, Garthoff's account seemed to imply that the Soviet Union's acquiescence in agreeing to defer the issue of FBS was secured by Kissinger during his October Moscow trip or in its immediate aftermath.[467] Kissinger himself went still further, claiming that the possibility of deferment of the FBS issue, "at the very end of the process after all other issues were resolved" was hinted by the Soviet delegation as early as the negotiations' resumption in February 1974.[468] By contrast, the principal Russian account laid little stress upon Kissinger's role in preparing the groundwork for the Summit and offered a rather different account of the issue of the status accorded to FBS in the pre-Summit exchanges. According to Detinov, the Soviet negotiating position at Vladivostok was formulated largely in accordance with the well-established practices of the Big Five with the aid of the Five. An initial round of background papers was prepared by the Ministries of Foreign Affairs and Defence. They were reviewed by a meeting of the Politburo held in the spring of 1974, which took an unusual, expanded form to allow the attendance of a number of experts and *nomenclatura*. The Politburo agreed a number of "non-fundamental" changes. Detinov recalled that the Politburo specifically stated at this point in time that no concessions should be made on the question of FBS. The members of the Big Five were not confident that progress would be made at the Summit while the Soviet

[466] Ibid., pp.494-6 for full details of the various proposals.
[467] Ibid., pp.495-6, n.19.
[468] Kissinger, *Years of Upheaval*, p.1,018. If this impression was accurate, it would mark something of a departure from the well-established practice of airing such sensitive matters exclusively via the "back channel" contact. Kissinger makes no observation on this apparent inconsistency.

Union maintained such a rigid insistence.[469] The Five and the Big Five were then delegated to consider the matters in greater depth. The individuals who played the principal role in formulating the minutiae of the Soviet position for Vladivostok were: Kozlov of the Ministry of Defence; Korniyenko of the Ministry of Foreign Affairs; Detinov of the Central Committee; Osadchiyev of the VPK and Mityayev of the KGB (Ivanov was possibly responsible for aiding Mityayev)[470]

Korniyenko who had been responsible for organising the Summit attended the Summit in an advisory capacity. So too did Kozlov and Detinov representing the General Staff and Central Committee respectively. Detinov's institutional background may have been somewhat disguised due to his titular status as a general and the fact that Brezhnev introduced him as a "Representative of the Ministry of Defence" to the US delegation.[471] Detinov, Kozlov and Korniyenko were positioned in an adjacent room while Brezhnev, Gromyko and Dobrynin faced Ford and Kissinger. In his customary fashion, Brezhnev consulted this array of experts on a number of occasions. A contrasting explanation of their location furth of the actual negotiating table was offered indiscreetly by Kissinger himself. During an "off-the-record" briefing of journalists on 3 December 1974,[472] Kissinger claimed to have colluded with Dobrynin to facilitate the removal of Soviet military representatives to an adjacent room during the Vladivostok Summit to prevent a repeat of their frequent interruptions of the negotiations during the previous summit at Yalta in June-July 1973.[473] Garthoff recounted this anecdote, the apparent implication being that it represented an attempt to marginalise the Soviet military from proceedings.[474] Detinov's account however served to directly refute this implicit allegation. As a rule, "Brezhnev *almost never* [italics added] strayed beyond the accepted and approved directives and the experts'

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[469] General Detinov interview.
[470] Savel'yev and Detinov, *The Big Five*, pp.36,39-40.
[471] Ibid., p.40.
[472] The relevant extract was eventually released following legal action in 1981. It is interesting to note that neither Kissinger nor Dobrynin made mention of any such incident in their memoirs.
[473] The question of reducing military involvement was supposedly considered *at Dobrynin's request.* Garthoff, *Detente and Confrontation*, p.480.
[474] Garthoff, *Detente and Confrontation*, p.480 & n.76 and p.515 & n.65.

recommendations... Moreover since these same experts were also members of the Five, their opinion could be accepted as the agreed view of the agencies involved."[475] Blacker's comment that "Kissinger, as well as others who have reported on this drama, may have been reading more into the episode than the evidence warrants; to a degree, at least, they may have seen what they wanted to see"[476] seems perceptive indeed. When interviewed on the subject, Detinov identified FBS and Soviet "heavy" ICBMs as insurmountable obstacles to agreement as the Summit talks dragged on into the early hours with no prospect of a breakthrough.[477] He had not identified them as the principal obstacles to agreement in quite such an unambiguous fashion in the text of *The Big Five*, highlighting instead differences pertaining to "the overall ceiling on MIRVed strategic delivery vehicles".[478] Dobrynin's account of Brezhnev's *contretemps* with Grechko on the subject of FBS' inclusion during a telephone conversation in the course of the Summit negotiations would seem to lend credence to Detinov's implication that the issue was not a *fait accompli* arranged prior to the Summit itself.[479] Other sources appear ignorant of - or disinterested in - the precise chronological details of the Soviet deferment of the FBS issue and discuss it in more generalised terms. They do however imply that the concession was made during the course of the Summit negotiations themselves, rather than during Kissinger's previous preparatory visit to Moscow as claimed by Garthoff.[480] However while the precise chronology might remain open to question FBS' potentially deleterious effect upon the SALT process remained - as did the lingering Soviet desire for appropriate "compensation". Kissinger had hinted during his preparatory trip to Moscow in October that the US would be willing to make a concession to Soviet concerns regarding FBS. The palliative token gesture was subsequently offered by Ford at the

[475] Savel'yev and Detinov, *The Big Five*, p.40,48. At the subsequent summit in Helsinki in 1975, Brezhnev's anger at the lack of room for manoeuvre afforded to him by his advisory team's instructions was all too apparent to his advisers. Significantly however, he followed their advice.
[476] Blacker, *The Soviets and Arms Control*, p.73.
[477] Detinov interview.
[478] Savel'yev and Detinov, *The Big Five*, p.40.
[479] Dobrynin, *In Confidence*, p.330.
[480] See for example, Talbott, *Endgame*, p.33,63,205 and Johnson, *The Right Hand of Power*, p.605.

Summit, with a US undertaking to quit the Rota submarine base in Spain by 1985.[481] On this occasion and in the face of the continuing deadlock the Soviet Union "backed off from its demand to take American FBS into account... the Soviet delegation stated that all those (unresolved) issues had to be resolved in the follow-up talks".[482] US concerns about the Soviet Union's arsenal of "heavy" ICBMs were deferred in a similar fashion.[483] At the press-conference held to unveil the Vladivostok Accords, Kissinger had been effusive in his praise for the Soviet FBS concession. The issue had been "one of the big obstacles to an agreement earlier. The progress that has been made in recent months is that the Soviet Union gradually gave up asking for compensation for the forward based systems partly because most of the forward based systems, or I would say all of them, are not suitable for a significant attack on the Soviet Union."[484]

The Vladivostok Accord was unveiled with considerable fanfare and genuine enthusiasm at the close of the two day Summit.[485] The principles of the agreement were based upon the framework proposed by Brezhnev during Kissinger's earlier visit to Moscow. They provided for a ten-year agreement to limit strategic launchers (including strategic bombers) to a total of 2,400 for each side, with an allowance of 1,320 MIRVed system contained a subtotal within the overall aggregates and seemed set to form the basis for a rapid finalisation in the form of a SALT II Treaty. However despite the glowing public appraisal by both sides, the agreed details of the Accord remained vague[486] and there remained a number of unresolved issues whose

[481] This was planned in any case and was hardly an onerous undertaking. It did however remain a closely guarded secret from the Spanish government. See Dobrynin, *In Confidence*, p.333;Garthoff, *Detente and Confrontation*, p.496, n.19.
[482] Savel'yev and Detinov, *The Big Five*, p.41.
[483] Talbott viewed these twin events as an undoubted *quid pro quo* and argued it marked the effective end of Kissinger's attempts to curb Soviet "heavy" ICBMs. Talbott, *Endgame*, p.33. Carter would later resume venture this with unfortunate consequences for US-Soviet relations.
[484] *Weekly Press Documents*, p.1,491.
[485] It seems that a genuinely cordial atmosphere permeated Ford's trip to the Soviet Union, despite the often frank exchanges which accompanied the Summit negotiations. Dobrynin, *In Confidence*, pp.329-34.
[486] Public statements made no mention of the exact numbers of strategic systems that would be deemed permissible under the agreement. Garthoff, *Detente and Confrontation*, p.497.

importance stretched beyond the realm of mere "technical problems". It was expected that a final written *aide-memoire* of the Accord would be agreed upon within days. However disagreement soon emerged over whether US ALCMs with a range in excess of 600km [487] and the new Soviet "Backfire" bomber should be included within the Accord's provisions.[488]

[487] The issue of US ALCMs arose as a result of careless US definition of terminology during the Summit negotiations. This issue proved to a source of continued discord with the Soviet Union and conflict within US governmental circles until the very end of the SALT II process in 1977. See Garthoff, *Detente and Confrontation*, p.498, n.24,n.25.

[488] For a knowledgeable and perceptive contemporary US assessment of the Vladivostok Summit and its Accords, see "SALT After Vladivostok", Smith, G.C. 1975. *Journal of International Relations*, 29(1):7-18.

Internal Military and Political Reaction.

Attempting to provide a framework for understanding Soviet defence decisionmaking was an inexact science at best. This was still more apparent in analyses which sought to identify the nuances of political interaction which underpinned policy formulation structures and reactions among the ruling elite to the Soviet Union's evolving negotiating position at SALT. Western commentators became well versed in seeking to trace any shift in Soviet policies by sifting through numerous tracts and articles and adjudging the relative status of the Soviet leadership through the swirling eddies of elite interaction and personal pre-eminence through close inspection of the personnel and procedure attendant at formal functions of state and Party.[489] An authoritative account of the incorporation of the Vladivostok Accords into Soviet policy by the arms control bureaucracy and the political response of the leadership elite to its implications has thus far proved elusive. The bureaucratic procedures employed to incorporate the outcome of the Vladivostok Summit into the formal Soviet SALT position were documented for the first time in *The Big Five.*

> As proposals and telegrams arrived from the Soviet Delegation, Osadchiyev of the VPK and Mityayev of the KGB responded with a combination of initiative and team-work, as the situation demanded. Under established practice, the Ministries of Defence and Foreign Affairs discussed questions, first within their *apparat* and then between their ministries. Even then, after consensus had apparently been reached, there were cases in which some of the *Big Five* members disagreed with the solution; when this happened, the two agencies had to start over from the beginning. Now, with the *Five* included in the decisionmaking process, all preliminary meetings could at least include

[489] Warner, *The Military in Contemporary Soviet Politics*, pp.244-8 for an example of the former pratice; Harry Gelman, *The Brezhnev Politburo and the Decline of Detente*, pp.71-104 for an example of the latter.

> representatives of all five agencies. After a draft was prepared, members of the *Five* took copies to their respective chief: Detinov to Ustinov, Korniyenko to Gromyko, and so on. After receiving their seniors' comments, they met to conform the amendments in the next version. When, finally, an approved version was agreed to, the document was then presented to the *Big Five* who, having already agreed to its content and wording, promptly signed it.[490]

While Garthoff made no attempt to provide a descriptive framework of the procedural response to the Vladivostok Accord from within the policymaking bureaucracy, he was keen to stress the magnitude of the Soviet concession on FBS and the fact that US' recognition of it was to prove short-lived.

> The Soviet leaders had made major concessions to reach agreement...the Soviet military leaders regarded as unjustified militarily the Soviet concession in agreeing to equal numbers of strategic forces without allowance for US FBS. While they accepted the decision to do so for broader political objectives, they were not happy with the decision. This attitude was heightened by what they saw as a series of American attempts in the months and years that followed to gain still greater unbalanced concessions, and to take advantage of the loophole to build up forward-based intermediate-range forces.[491]

The omission of FBS from the Accord represented a major - and reluctant - concession on the part of the Soviet military but it was justified in Moscow as a political concession to the US necessary to reach agreement. Equal numerical levels and the exclusion of FBS were accepted despite the fact that they yielded less than equal security to the Soviet Union owing to geopolitical conditions. Garthoff believed

[490] Savel'yev and Detinov, *The Big Five*, p.41.
[491] Garthoff, *Detente and Confrontation*, pp.517.

that military ire would have been further exacerbated by the perception that the Americans had simply "pocketed" the gain then proceeded to seek still further concessions. In support of his case Garthoff provided an array of evidence which, when considered as a whole, served to reinforce the magnitude of the FBS concession from the Soviet perspective and implied that a strong sense of disquiet would have accompanied the military's grudging acceptance of the Accord. Garthoff himself was "struck by the strong emphasis on this particular issue, and on the Soviet concession, in conversations with a number of Soviet political and military officials" and quoted Akhromeyev and Trofimenko to support the claim that the Soviet military viewed it as a major concession.[492] Finally he cited the incident which accompanied the Carter Administration's attempt to circumvent the Vladivostok Accords in 1977 in an attempt to secure a more radical reduction in strategic forces. Korniyenko is claimed to have berated ACDA Director Paul Warnke and warned him that Brezhnev had had to "spill political blood to get the Vladivostok Accords".[493]

Garthoff suspected that at the time of the Central Committee Plenum in December 1974 Brezhnev found himself under some pressure due to a combination of factors which coalesced to undermine the momentum of detente. Prime among them were the heightened obstacles placed in the way of US-Soviet economic co-operation by the US Congress and the continuing tensions emanating from the situation in the Middle East. Against this backdrop, Brezhnev could ill-afford the emergence of a perception that he had succumbed to US pressure on FBS at Vladivostok.[494]

Haslam went still further and adjudged the omission of FBS to have been conceded by Brezhnev "in the face of strong Soviet military opposition (to which he was forced to) make crucial concessions, including the decision to test the SS-20".[495]

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[492] Ibid., pp.517-21.
[493] Talbott, *Endgame*, p.73. Garthoff claimed that the authenticity of this reported aside was personally confirmed to him by Warnke himself. Garthoff, *Detente and Confrontation*, p.518, n.66.
[494] Garthoff, *Detente and Confrontation*, pp.518-9.
[495] Haslam, *The Soviet Union and the Politics of Nuclear Weapons in Europe, 1969-87*, p.57.

While *The Big Five* provided an excellent exposition of the procedural framework with which to study the Soviet reaction to the Vladivostok Summit it gave little attention to the true nature of the political reception afforded to the Accord, particularly the reaction to the renewed Soviet acquiescence on the question of FBS inclusion or compensation. General Detinov spoke frankly and at some length on this matter and provided a first-hand account of unprecedented detail and authority. He stated that in the wake of the compromise, Brezhnev personally telephoned key members of the Soviet government to seek their support. Grechko and Podgornii were both strongly opposed to the proposals, while Ustinov, Andropov and Kosygin were willing to accept them. Upon Brezhnev's return there was a special meeting of the Supreme Soviet, addressed by Brezhnev and Gromyko. This meeting resolved to support the SALT II Accords as agreed at the Summit, a decision that was subsequently reaffirmed by the Politburo itself.[496] Detinov accepted that the compromise on FBS at Vladivostok "didn't exactly draw applause from all quarters".[497] However he specifically rejected the implication that the ensuing development of the SS-20 system represented a *quid pro quo* to assuage discontent among military circles over the terms of the Vladivostok Accords and ensure their acceptance of its provisions. He claimed that the military acted "correctly" throughout and was quick to point out the central role that they played both in the formulation of policy in the run-up to the Summit and during the course of the Summit itself. Kozlov in particular had played a key role both in the formulation of the Soviet position prior to the Summit and was on hand throughout its proceedings to provide Brezhnev with personal advice. When allied to the bureaucratic procedural process of the Five and Big Five both prior to and in the aftermath of the Summit it is apparent that the military was afforded ample opportunity to influence the Soviet SALT stance. The requirement for consensual agreement within the Five and Big Five would in itself have ensured that fundamental military opposition to the omission

[496] Detinov interview.
[497] Ibid.

of FBS could not have been overlooked. Although Grechko remained deeply opposed to accepting the terms of the SALT II Accord agreed at Vladivostok, he refrained from enunciating them in the public forum on this occasion.[498] Moreover, this was essentially a continuation of his own virulent suspicion of all dealings with the West. Although some in the military and Party no doubt shared his outlook, it was far from being a widely held perspective among the Soviet elite as a whole.

There appears to have been a misconception with regard to FBS' role in the wake of the Vladivostok Accords. Although they had been deferred from the negotiating agenda *per se* for the time being this by no means removed them as a source of concern for Soviet military planners. Indeed at the first meeting of the SALT delegations in the wake of the Vladivostok Accord, Semyonov presented a raft of proposals and demands to his US counterparts which included FBS and a number of new issues of Soviet concern.[499] Their expected exclusion from the SALT limitations for the foreseeable future faced Soviet planners with a continued area of potential threat. At the same time however, it also appeared to have provided an avenue of unconstrained weaponry development through which the challenge might be directly countered.

[498] Ibid.

[499] Johnson, *The Right Hand of Power*, p.607. The new issues raised included the prospect of limitations upon the new US Trident SLBM programme.

The persistent refusal of the United States to countenance the inclusion of FBS within the remit of the SALT negotiations confronted the Soviet Union with both challenge and opportunity. The perceived Western advantage in TNFs was expected to increase markedly in the foreseeable future with the advent of a new generation of weapons led by Pershing II and Cruise missiles. The approximate equivalence in the levels of strategic forces which facilitated the SALT process before being codified by it had served to accentuate the importance of perceived force imbalances in other areas of bipolar competition.[500] After strategic forces themselves, Theatre Nuclear Forces were regarded as the most significant determinant of force level potentials. Indeed given the primacy that the European TVD held within Soviet strategic thought and the location of the Soviet state within the continent of Europe itself, the Soviet Union perceived an inextricable linear link between strategic and theatre forces as was demonstrated by their approach to the question of FBS in SALT.[501] However within the parameters of SALT the Soviet Union enjoyed an unconstrained right to seek to match Western development in this field. Both sides thus sought to maximise strategic programmes which remained unconstrained by SALT[502]. Such a course was indeed anticipated and acknowledged by both leaderships at the signing of the SALT I limit at the Moscow Summit in May 1972.

> Presidents Nixon and Brezhnev had advised one another that the US and the USSR were going to go forward with military programmes not specifically limited by SALT... Moreover, the United States Joint Chiefs of Staff and the Soviet General Staff had been in full agreement on the right of each side to

[500] Burt, "Reducing Strategic Arms at SALT", p.11.
[501] Over time, Western analyses came to recognise the merits of this particular Soviet argument. See for example, Burt, "Arms Control and Soviet Strategic Forces"; Lothar Ruehl, "The 'Grey Area' Problem", in Bertram, (ed.), *The Future of Arms Control: Part I, Beyond SALT II*, pp.25-34.
[502] Witness for example the history of the SS-19 development programme. See Garthoff, *Detente and Confrontation*, pp. 192n, 195, 887, 895, 897n, 900-1.

modernise except where specifically limited, and this had been specifically affirmed in the SALT I Agreement.[503]

While the significance of achieving a breakthrough in the SALT process was viewed as being of such importance that the omission of FBS from the Vladivostok Accord was grudgingly agreed to this did little to diminish the issue's continuing importance to the Soviet Union. Indeed the evolution of a strategic parity indirectly increased the significance of marginal forces such as FBS in the determination of the overall military balance. The political leadership had shown itself willing to trust the competence of the military in assessing matters of a strictly military-technical nature. It was thus natural that they should accept the strong case placed before them for the designation of Western FBS as "strategic" weapons. The Soviet experience during SALT had demonstrated a US propensity to agree to the inclusion of particular weaponry forms only when it seemed likely that the Soviet Union had attained the ability to match US deployment in the field or would do so imminently. This was matched by the US' unwavering opposition to the inclusion of FBS within the SALT process. While the rationale for the inclusion of FBS within the SALT limits or the rapid modernisation of the ageing Soviet TNF force might have been compelling the extent of its influence upon the decision to develop the SS-20 can only be placed within a more realistic perspective via a detailed consideration of the workings of the defence decisionmaking process itself.

[503] Garthoff, 1983. "The Soviet SS-20 Decision", *Survival*, 15(1):112 and Garthoff, *Detente and Confrontation*, pp.963-4. For the exact notation of this provision, see Article IV of the Interim Agreement in *Arms Control and Disarmament Agreements: Texts and Histories of their Negotiations*, p.122.

5 Weapons for the Generals? Soviet Defence Decisionmaking and Production

The preceding chapters demonstrate the strong rationale that apparently existed for the development of a mobile nuclear missile system whose range enabled it to target the European and Far Eastern TVDs while remaining outwith the numerical limitations placed upon *strategic* systems by the SALT I Treaty and Vladivostok Accord. The apparent revision in Soviet doctrine and strategy which emerged in the latter 1960s would have placed heavy operational demands upon Soviet TNFs which the existing force of SS-4s and SS-5s could not hope to meet. Their galvanising with SS-11s had provided only temporary respite as this was itself an ageing system and would in any case be counted within the SALT limitations due to its marginal intercontinental potential. By codifying the position of superpower parity in strategic systems the SALT limitations commensurately increased TNFs' weight in the overall balance of forces. SALT singularly failed to address Soviet concerns about Western TNFs and Soviet intelligence was aware of the likely future deployment of a new generation of Western TNFs. Both sides had demonstrated a propensity to expand their nuclear arsenals in those avenues of development unconstrained by SALT and the Soviet Union had demonstrated a remarkable enthusiasm in its attempts throughout the 1960s to match all areas of strategic weaponry where the US held a perceived advantage. Soviet attempts to develop a new generation of TNFs thus came as little surprise to many informed Western observers. Given the readily-available technology and components from the legacy of the SS-16 programme it seemed equally unsurprising that the Soviet riposte to the development of TNFs took the form of the SS-20. If it could be demonstrated that such factors were the principal determining forces behind the decision to develop the SS-20 system then it could be forcefully argued that the defence decisionmaking process was, in this instance at any rate, predicated upon a clearly discernible strategic rationale and closely resembled the definition of military mission/ geopolitical interest policy determination.

The purpose of this chapter is not to provide a detailed account of the form and extent of the Soviet defence economy and its attendant enterprises nor to recount the *formal* procedures followed in the course of weaponry decisionmaking. Both have been the subject of numerous lengthy discourses whose attention to detail could not be matched at this juncture. Furthermore neither avenue of investigation can provide elucidation into the true nature of Soviet defence decisionmaking. This lies in the amorphous realm of intra-elite interaction and it is to this often-intangible subject that this chapter looks for a more accurate appraisal of the formulation of Soviet weaponry procurement policies. The key question is whether the military leadership enjoyed a degree of influence in the selection of weaponry procurement options that was commensurate with its role in the definition of strategic precepts and their preservation during the pursuit of bilateral agreements with the US. If this was found to be the case then it could be argued that the Soviet Union did indeed adopt a holistic approach to defence decisionmaking at the height of the Brezhnev era, predicated upon a considered appreciation of the complex interaction of strategic factors and their implications for force structure requirements. Moreover as Cooper has observed, the interface between the decisionmaking elite, the defence sector and the military hierarchy was "best seen in the context of the weapons-procurement process".[504] This chapter will first consider whether the decision to develop the SS-20 can be attributed to the actions of an individual member of the Soviet elite. It will then offer an overview of the mechanics of the defence decisionmaking process, before providing a detailed account of the evolving balance of power among the principals of defence decisionmaking as it unfolded during the SS-20's development cycle.[505]

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[504] Cooper, J. "The Defence Industry and Civil-Military Relations", in Colton, T.J. and Gustafson, T. (eds.) 1990. *Soldiers and the Soviet State: Civil-Military Relations from Brezhnev to Gorbachev.* Princeton, N.J.: Princeton University Press, p.165.

[505] The SS-20 programme was initiated on 4th March 1966, flight testing occurred between September 1974 and January 1976. Deployment began almost exactly a decade after the project's initiation, on 11th March 1976. Volkova, Ye.B. *et al.* 1996. *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA: sozdanie i sokrashenie.* Moscow: Strategic Rocket Forces, p.337.

This chapter will demonstrate that the military's participation in the defence decisionmaking process was not uniform, while the extent of its influence similarly varied over time. In essence the SS-20's programme can be placed on the cusp, as its initiation corresponded to the zenith of the Soviet military's participation in the weaponry procurement process, while its subsequent development took place against the backdrop provided by the dramatic diminution of military authority in this realm.

The Development of the SS-20 - a single-actor rationale?

General Vitalii Shabanov

Given the controversy which surrounded the SS-20 and the position of key symbolic importance that it came to hold in East-West relations it was perhaps inevitable that Western analysts should seek to identify an individual member or section of the Soviet government responsible for the programme's initiation in an attempt to gain a clearer insight into the Soviet Union's motives for its development. The most credible account which sought to attribute the development of the SS-20 to the decision of an individual member of the Soviet government identified Vitalii Shabanov as the source of its developmental inception. According to an article in *Der Spiegel*,[506] the decision to proceed with the development of the SS-20 should also have been viewed as an attempt to utilise existing scarce resources at his behest. General Shabanov had worked in the Scientific Research Institute of the Air Force testing aviation equipment. From 1949 until the early 1970s he served in the Ministry of the Radio Industry, rising to hold the post of general director of a scientific production association from 1972-4 before promotion to the post of deputy minister in this department. His transfer to the Defence Ministry as deputy minister for defence was first alluded to in an article in *Krasnaya Zvezda* in 1978 although this was not formally acknowledged for several years.[507] Haslam highlighted the *Der Spiegel* article and speculated that the decision to develop the SS-20 *might* have come about as the result

[506] *Der Spiegel* (Hamburg). "Sinnlos und gefahrlich, gefahrlich fur alle", 26 September 1983, 39, p.173

[507] Central Intelligence Agency, 1986. *The Soviet Weapons Industry: An Overview.* Washington D.C.: Directorate of Intelligence, p.16 and Jones, E. 1985. *Red Army and Society: A Sociology of the Soviet Military.* Boston: Allen & Unwin, p.125. The former identified 1980 as the year of Shabanov's official recognition in the post of deputy minister of defence for armaments. The latter identified 1981 as the year, occasioned by the death of the incumbent, Marshal Alekseev.

of consultations within the new interagency working groups thought to have been established in 1972.[508]

While it seemed that the chronology of Shabanov's career might well militate against his having played a central role in the development of the SS-20 it was nonetheless important to seek a definitive assessment of the extent of his involvement. *Der Spiegel's* head office in Hamburg provided a copy of the original article but were unable or unwilling to assist in attempts to contact the reporters who had written it.

Shabanov's role was discussed during the course of elite interviews. Dr Vitalii Tsygichko was a senior analyst in the Academy of Sciences' Research Institute commissioned by Shabanov to create models with which to formulate weaponry procurement policy and conflict analysis prediction. Dr. Tsygichko enjoyed a close working relationship with Shabanov throughout the 1970s and transferred to a new analytical institute[509] created by the General in 1976. Tsygichko noted that although the Directorate of Armaments which Shabanov headed was not formally created until the late 1970s, the General had possessed the authority to develop "general criteria" for weaponry development since the late 1960s. However it quickly became apparent to Tsygichko that procurement policy was not predicated solely upon the analyses produced at the General's behest. Additional factors and institutional interests increasingly came to the fore as the 1970s progressed.[510]

As General Shabanov himself had died in August 1995 I was thus keen to discuss the question of Shabanov's role in the SS-20's development with Generals Detinov and Belous. I raised the question specifically with both men. It transpired that General

[508] Haslam, J. 1989. *The Soviet Union and the Politics of Nuclear Weapons in Europe, 1969-87: The Problem of the SS-20.* Macmillan: London, p.61. See Central Intelligence Agency, *The Soviet Weapons Industry: An Overview*, p.21 for a full discussion of the new interagency bodies, termed by the US Defence Intelligence Agency as *NPO* (*nauka produktsiya obedineni*) or *scientific production associations*.

[509] The new body was generally described as *Institut Shabanova.*

[510] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.

Detinov was a colleague of General Shabanov and was also a close personal friend.[511] Both Detinov and Belous emphasised the support that Shabanov and his department provided in the development of a host of weaponry programmes and Belous noted the cordial and productive relationship between Ustinov and Shabanov. However Detinov discounted the notion that Shabanov was the principal figure behind the inception of the SS-20 programme and categorically rejected the assertion that Shabanov was the "'father' of the SS-20". Indeed Detinov was reluctant to ascribe such an epithet to any individual given the collegiate nature of Soviet defence decisionmaking. He opined that Nadiradze himself most suited such a description.

[511] Both men addressed each other in the familiar form.

The mechanics of decisionmaking

Providing a definitive account of the mechanics of weaponry procurement proved impossible throughout the Cold War era, due principally to the dearth of available detailed information pertaining to the precise nature of the intra-elite interaction which served to define defence policy.[512] Jones referred to the formal acceptance by the Supreme Soviet in 1967 of the proposed decrease in the length of conscript service as a typical example of this practice, whereby this "rubber-stamp parliament had merely formalised a decision which has already been made elsewhere, probably at Defence Council and Politburo level. The formalisation of public policy - in this case through the Supreme Soviet - is the *end-product* (italics added) of the policy process. For military issues, the policy output is frequently the only direct evidence of the decisionmaking process. The Western observer is left to puzzle out the antecedents of the decision through indirect indicators and the few hints of policy controversy that surface in the Soviet press".[513] It is now possible to offer with some confidence an authoritative account of the *mechanics* of the weaponry development process as it existed at the height of the Brezhnev era.[514]

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[512] Holloway, D. 1983. *The Soviet Union and the Arms Race*. London: Yale University Press, pp.109-11; Warner, E.L. "The Bureaucratic Politics of Weapons Procurement", in MccGwire, M., Booth, K. and McDonnell, J. (eds.) 1975. *Soviet Naval Policy: Objectives and Constraints*. New York: Praeger,pp.71-9; Holloway, *The Soviet Union and the Arms Race*, pp.111-5, 140-5.

[513] Jones, *Red Army and Society*, p.1.

[514] The most accurate Western account of this process was provided by Cooper in McLean, (ed.). *How Nuclear Weapons Decisions are Made*, pp.24-7. This section draws in part on this account but adds a number of significant points of information and clarification gleaned both from my own interviews conducted while in Moscow and past interviews conducted with high-ranking Soviet officials. See also Cochrane, T.B. *et al.* 1989. *Nuclear Weapons Databook: Volume IV: Soviet Nuclear Weapons*. New York: Harper & Row, p.95; *The Soviet Weapons Industry: An Overview*, pp.11-16. For formal Soviet accounts, see Alekseyev, N.N. 1977. "Ispytaniya voyennoy tekhniki", *Sovetskaya voyennaya entsiklopediya*. vol.3, Moscow: Voyenizdat, pp.616-8; Tikhomirov, V. 1978. *Organizatsiya, planirovanie i upravlenie proizvodstvom letatel'nykh apparatov*. Moscow: *Mashinostroenie*; Fakhrutdinov, I. 1981. *Raketnye dvigateli tverdogo topliva,* Moscow: *Mashinostroenie*. The latter two sources are cited by Cooper in McLean, (ed.) *How Nuclear Weapons Decisions are Made*, p.25 n.23.

The Formulation of Strategic Requirements[515]

Soviet strategic decisions were defined as "planned" or "non-plan".[516] Strategic decisions had a hierarchical nature corresponding to the structure and functions of state administrative organs. Decisions adopted in the Politburo were then detailed in decisions adopted at lower levels - in the Council of Ministers, ministries and other organisations. Decision trees were developed with corresponding plans for implementing decisions. The overall structure of the planning and decisionmaking cycle was initiated by the Central Committee issuing a directive in the middle of each year dealing with military issues for the next year. This evaluated the international situation, possible paths for its future development, and modified or elaborated tenets of Soviet military doctrine and critically evaluated the current condition of the country's defence capability and formulated state tasks dealing with security for next year. The document was prepared in the Central Committee apparat with the involvement of specialists from different organisations working in this area.[517] On the basis of this directive, the Ministry of Defence and the Ministries of the military industry formulated their tasks for the next year, drew up preliminary planning programmes, determined their costs and presented requests[518] for budget financing. Practically all structural subdivisions at all levels in the administrative hierarchies of these ministries participated in drawing up these plans and requests. The documents prepared by the ministries were reviewed and confirmed in the Central Committee and then sent to the Council of Ministers, GOSPLAN, and the VPK where a draft military budget was drawn up according to the requests and existing capabilities. According

[515] This account is based principally upon the account provided by Dr Tsygichko. University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.
[516] "Planned" decisions referred to the ongoing process of structuring state organs to meet the requirements of the Soviet Union's strategic interests. "Non-plan" decisions referred to unforeseen circumstances which would in all probability have required a policy initiative on the part of the Soviet leadership. The decision to intervene in Afghanistan is cited as an example of the latter form of policymaking.
[517] In the region of twenty-five Central Committee Departmental Chiefs and other officials involved in national security policymaking signed this document before it was submitted to the Defence Council.
[518] *Zayavki.*

to tradition, only expenditures for maintenance and combat preparation of the army and fleet were presented in the state budget confirmed by the Supreme Soviet. The significantly higher expenditures on military production were hidden in other parts of the budget. Therefore, to this day, the exact figures for actual expenditures on defence remain unknown. This draft budget was considered by all interested organisations, reworked many times and then presented for final confirmation by the Central Committee. After being considered and confirmed at a regular Central Committee Plenum, the military budget was formally confirmed by the Supreme Soviet as part of the state budget. This gave it the status of a USSR law which all state organs were obligated to fulfil. We know of no case when the military budget was seriously discussed at any session of the Supreme Soviet. This was always purely a formal procedure. Budgets for the Ministry of Defence and other organs were based on the Law on the USSR Budget for each financial year. A directive issued by the Minister of Defence and based on the Central Committee directive and the USSR budget law served as the basis for planning current activities of the armed forces. This evaluated the military-political situation, determined the main opponent and possible threats, confirmed and elaborated basic tenets of military doctrine and strategy, evaluated the current status of the country's defence capability, pointed out shortcomings and set tasks for the Armed Forces and the services. The Chief of the General Staff and Commanders-in-Chief of the services issued orders based on this document, and the mechanism of internal planning was set in motion. Subordinate organisations always got the agreement of higher-standing commanders, and the Ministry of Defence, General Staff, and services got the approval of the military department of the Central Committee. Military development programmes and plans for the ministries of defence industry were confirmed by the Central Committee apparat and constantly controlled by this apparat. Special legislative acts and documents regulated this entire planning process. The planning process was supported by a system of scientific-research organisations, which carried out scientific

development and provided scientific support for all stages in the adoption of planned decisions.

The Development of Individual Weaponry Schemes

The bureaucratic procedures and documentary authorisation associated with the initiation of Soviet weaponry projects were generally common to all proposed programmes and were encompassed under the generic term *YeSKD - Unified System of Design Documentation.* A heightened level of elite participation in the decisionmaking process was occasioned when the development of the proposed system would be likely to entail significant economic, military or geopolitical ramifications for the Soviet Union. The bureaucratic mechanics of the procurement process possessed a duality of nature. Both design bureaux and individual branches of the Soviet armed services constantly sought to anticipate the likely form of future weaponry design practices and respond to the evolving requirements as they ensued. Weaponry development was a collective process in both the technical and decisionmaking sense and in no case can an individual be accurately accredited as the sole "inventor" of a particular system. A proposal for the development of new weapons systems could emanate from a design bureau, an industrial research institute or a branch of the military services or as a result of institutional co-operation. Design proposals of a military origin were most likely to have been derived from the General Staff or a specific military service - a Technical Administration or Scientific and Technical Committee in the case of the latter source. Most often however new projects were formulated and proposed independently by the design bureau in question. Missile design bureaux - as did their counterparts in the aviation sector - encompassed their own R&D departments whose remit combined future threat assessment and development response. This department's recommendations would be reviewed by the bureau's own Scientific and Technical Council in association with the appropriate Council of the Industrial Ministry. Minor technical problems and the

detail of the design's specifications were addressed at this point by designers and relevant experts in a process overseen by the military-industrial commissions.
Draft design proposals were presented to the appropriate Ministry. The procedural form of the decisionmaking applied to a particular design was predicated by its scale. Design proposals of minor resource or strategic import would be authorised by the VPK without requiring Politburo or Central Committee approval. The requisite documentation would be signed by the Minister of Defence and the Minister of the branch of industry designated to perform the necessary associated R&D. This research resulted initially in an "*avanproekt*"[519] which outlined the military rationale and operating characteristics of the proposed system. Small-scale projects of this type would however proceed swiftly to the *TTZ* stage.[520] The financial burden of such small-scale ventures was borne by the Ministry in question.
In the case of major design proposals such as those for nuclear-armed missiles an *avanproekt* would be prepared in document form. Following consideration by representatives of the Scientific and Technical Council of the relevant industrial ministry and service branch, the Defence and industrial ministries prepared a draft of a Decree of the Central Committee and the Council of Ministers to initiate the developmental programme. This draft decree was formulated to provide a precis of the proposed scheme and was presented to the VPK. It detailed the designated General Designer responsible for its development, the timetable to be followed during the next stage of the programme's development and its designated resource allocation. A scientific committee known as "Institute Four" was responsible for assessing the technical viability of proposed missile designs.[521] The documentation was reviewed by the VPK and prepared for submission to the Politburo. Prior to this however the revised draft was circulated to the design bureau and the relevant section of the military industry and branch of the armed services for their perusal. For example, in the case of the industrial ministry, it was necessary at this point to gain the preliminary

[519] A Preliminary Advance Project
[520] *Taktiko-tekhnicheskoe zadanie* - Tactical-technical Assignment.
[521] This particular aspect of the decisionmaking procedure was revealed by General Belous.

approval of the head of the relevant department, a Deputy minister and several key figures prior to the Minister himself signing the document. Following approval of the revised draft by the institutions and departments concerned the document was signed by the Chairman of the VPK, the Defence Minister, Industrial Minister(s) and the Chief of the pertinent branch of the armed services. Neither the General Designer nor the Chief of the General Staff were signatories to this document although their prior approval of its contents was required. The document was then presented to the Defence Industries Department of the Central Committee. It considered the document's contents in some detail and on occasion consulted relevant experts for further elucidation on specific technical aspects. The Department forwarded the document to the Secretary of the Central Committee on Defence with attached conclusions and remarks. The Secretary was empowered to return the proposals to the relevant Ministries for required alterations. Once satisfied with the proposal's format the Secretary signed it and assumed the responsibility for presenting it to the *apparat* of the Politburo. By the time a proposal document reached the Politburo for consideration it had typically accrued in the region of 200-300 patrons' signatures. On rare occasions a proposed design might be subject to discussion at a formal Politburo meeting but acceptance of proposed schemes was merely a formality in the vast majority of instances. "In ninety-nine cases out of a hundred"[522] the Politburo members, including the General Secretary, would sign the appropriate documentation without debate and pass it directly to the *Upravlenie Delami*[523] of the Council of Ministers. This paralleled the procedures employed by the Big Five in the realm of arms control decisionmaking. This department formulated the document into a "Decree of the Soviet Government". The Decree itself was something of formality and was generalised in character. Significantly however its proclamation signalled the official release of state funds to the project. As ministerial budgets were allocated on an annual basis the economic burden for the first year of a system's of development

[522] Detinov interview.
[523] The literal translation of this phrase is "business department".

was borne by the relevant ministry itself. Attempts to recoup this outlay proved to be futile and underfunding of the subsequent developmental programmes was apparently endemic.[524] Following Politburo acceptance the details of the implementation of the programme were devolved directly to the VPK which created a detailed scheme for the implementation of the programme.

The Technical Administration of the relevant service branch then drafted a *TTZ* which set forth in greater detail the proposed system's technical-operational requirements and economic parameters. This formed the benchmark against which the development process could be adjudged.[525]

The design bureau would then formulate an *EP - eskiznyi proekt* (Preliminary Draft Design) - which contained a detailed exposition of the programme's anticipated path of development. This was in turn reviewed by the Scientific and Technical Council and the central research institutes of the ministry in charge of development, the latter group evaluating the project's design qualities and production and operational viability. The approval of the "customer" service branch was sought and the Industrial Ministry considered its feasibility and created a special commission to this end.

On acceptance, the *EP* formed the basis of a still more comprehensive Technical Project which entailed the technical plans for the prototype systems constructed at the OKB's experimental site. Prototypes were first subjected to "in-house" testing on the part of the OKB itself before being submitted for a further series of military state trials to ensure that the system adhered to its design specification.

Acceptance of the prototype was followed by the issuing of a further document - the *TU*[526] which stipulated the requirements of technical performance and delivery schedule. This served as a *de facto* contract between the military technical administration and the ministry responsible for production.

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[524] Detinov interview.

[525] On occasion - most likely in the case of radically new designs - the "customer" service branch was not possessed of the necessary technical information to compose the *TTZ*. In this instance the design bureau would play the principal role in formulating the document.

[526] *Tekhnicheskie usloviya* - Technical Conditions.

In the case of major weapons systems Defence Council/ Politburo approval and an associated Council of Ministers decree was necessary to authorise series production. Staff from the design bureau responsible for the new system would assist in the initial stages of series production and the acceptance trials staged by the "customer" service branch at this juncture. The *voyenpredy*, the permanent military representatives emplaced within the OKB's and enterprises, oversaw the project for the duration of its development cycle.

While the provision of a detailed account of the institutional mechanics and bureaucratic procedures associated with Soviet defence decisionmaking represents a degree of progress towards a deeper understanding of the decisionmaking process, it fails in itself to provide a comprehensive account of its true intricacies. Writing just before the break-up of the Soviet bloc, Cooper argued that even when possessed of such accounts "it would be an error to believe that the intelligence agencies of the West with their considerable human and technical resources have anything like a full appreciation of the realities of Soviet decisionmaking for national security".[527] However the subsequent dissolution of the Soviet Union facilitated an unprecedented degree of access to a host of key figures in Soviet defence decisionmaking and military planning. While their accounts must naturally be treated with due caution they represent the most promising means of securing an accurate insight into the workings of the Soviet defence decisionmaking process, heavily predicated as it was upon personal interaction and verbal agreements which were usually devoid of accompanying documentary records.[528]

[527] Cooper in McLean, (ed.) *How Nuclear Weapons Decisions are Made*, p.2.
[528] Sokov, N., 1996. "Crises and Breakthroughs: Notes Toward the History of Soviet Decisionmaking on START Talks", in *The Journal of Slavic Military Studies*, 9(2):262.

The Politics of Defence

The Soviet military would have been expected to have enjoyed an increase in their ability to influence the political leadership as a concomitant of Khrushchev's deposition. This had previously been demonstrated during the interregnum following Stalin's death and the military had again been to the fore to suppress the Anti-Party group in 1957. While Brezhnev was the leading figure in the new regime it was differentiated from its predecessors at the outset by the general absence of a pre-eminent figure. This in itself served as a catalyst for increased military influence as members of the ruling oligarchy sought to court military interests in a bid to strengthen their own institutional power base. Brezhnev himself was the premier exponent of this art. The military's political influence was perceived to have increased still further during the period of pointed leadership rivalries at the end of the decade, as Brezhnev courted their support in his bid to outflank Kosygin. The military leadership's ability to resist the appointment of Ustinov as Malinovsky's successor as Minister of Defence in 1967 and the eventual selection of the conservative Marshal Grechko were seen as evidence of their residual power at a time when Brezhnev, Kosygin, Podgorny, Shelepin and Shelest were vying for power. Although Ustinov would have been an ideal choice for Brezhnev as a "civilian" Defence Minister and long-time political ally as the era of détente approached, Brezhnev's position was not yet sufficiently dominant to allow him to force the issue and risk an alliance of his political opponents and military hardliners. Grechko's subsequent promotion to full membership of the Politburo served to reinforce the image of military pre-eminence in intra-elite relations and was viewed as a *quid pro quo* for the Defence Minister's support against Brezhnev's rivals within the Politburo and tacit acceptance of Soviet participation in the SALT process.[529] This impression led most to assume that the interests of the military leadership were similarly to the fore in the field of weaponry

[529] Parrott, B. "Political Change and Civil-Military Relations", in Colton, T.J. and Gustafson T. (eds.) 1990. *Soldiers and the Soviet State: Civil-Military Relations from Brezhnev to Gorbachev.* Princeton N.J.: Princeton University Press, pp.52-4.

acquisition.[530] The new regime's military policies were predicated upon a largescale strategic build-up, while at the same time, maintaining traditional elements of the Soviet force structure. This was combined with the restoration of military autonomy in the definition of strategic precepts and the diminution of overt Party influence by reducing the role of the MPA. The fact that Brezhnev, Kirilenko, Suslov and Shelest were devoid of experience in foreign affairs and non-military intelligence increased their propensity to view the US strategic build-up events through a "military prism". This was coupled with Soviet humiliation over the Cuban Missile Crisis and US intervention in Vietnam. Against this background the Soviet leadership's endorsement of the development of largescale strategic forces was inevitable as was its welcome from the military hierarchy. To this position of strength in resource-allocation and political status was further added the new social kudos attached to the military services by Party propaganda seeking to extol their past glories in an attempt to redress Khrushchev's perceived excesses in denigrating Soviet Union's experiences of the Stalinist era. Of greatest importance was the acceptance of the principle of "combined arms" by the Party leadership which at once removed the main source of past conflict between Khrushchev and the military hierarchy and established the foundation for a cordial institutional relationship - "golden age" which was thought to have remained intact until the mid-1970s.[531] The Brezhnev regime's *de facto* undertaking to retain its commitment to the traditional elements of the Soviet Union's force structure while embarking upon a largescale development of strategic forces heralded an era of apparently limitless resource support for all sectors of the Soviet defence industry. Thus "in the years immediately after Khrushchev's ouster, uniformed officers probably came closer to enjoying a monopoly of expertise on military-technical matters than ever before and the party decisionmakers' reflexive

[530] Azrael, J.R. 1987. *The Soviet Civilian Leadership and the Military High Command, 1976- 1986.* Santa Monica Ca.: RAND Corporation, pp.2-4.
[531] The case for this interpretation was made by Azrael, *The Soviet Civilian Leadership and the Military High Command*, pp.1-5.

belief in military power enabled officers to override any civilian specialists who might question their recommendations on defence".[532]

An increase in the military leadership's ability to influence weaponry procurement policy did occur during the Brezhnev era. However this process was neither linear nor without constraint. Rather it occurred as part of a wider process of institutional realignment in the wake of Khrushchev's ouster and was confined in chronological terms principally to the first half decade of Brezhnev's tenure.

The personnel turnover which was initiated within the General Staff hierarchy in the late 1960s can be assumed to have acted as a catalyst for attendant innovation, as an influx of new officers sought to challenge the assumptions of the *trenche* of longstanding appointees whose service beyond the age of sixty represented "a collective infraction of the 1939 law which stipulated transfer to the reserve at that age".[533] The October 1967 law on Universal Obligation for Military Service was accompanied by a raft of promotions in the wake of the "Dnepr" exercise of that year and an unusually high number of mortalities among the ageing corps which itself allowed scope for an infusion of new officers.[534] Zhakarov's arrival at the General Staff caused something of an invigoration in the late 1960s and led to the adoption of a more analytical approach to strategy formulation. While the strategic debate took place largely on an esoteric level it also led to more practical considerations regarding the requisite force structure in the light of the eventual conventional preference. The transition of personnel facilitated fresh consideration of the technical innovations that had recently emerged in weaponry development and their potential implications for strategic concepts. However the old guard was not entirely subsumed[535] by the more youthful incomers and retained a powerful and largely conservative influence *within*

[532] Parrott, "Political Change and Civil-Military Relations", p.50.
[533] Erickson, J. 1970. "Rejuvenating the Soviet High Command", *Military Review*, 50(7):83-4.
[534] Erickson, J. 1971. *Soviet Military Power*. London: Royal United Services Institute, pp.17-22.
[535] One source claimed that this was due in no small part to the significant number who obtained exemption from compulsory retirement. Gallagher, M. P. and Spielmann, K. F. Jr. 1972. *Soviet Decision-Making for Defence: A Critique of US Perspectives on the Arms Race*. London: Praeger and Pall Mall, p.42.

the military hierarchy itself. Divisions concerning fundamental questions of nuclear strategy and attendant priorities for strategic force development were manifested in the contradictory doctrinal statements which continued to emerge from the military leadership well into the 1970s. The contours of division were similarly replicated via their disparate weaponry procurement preferences and were readily apparent over the issue of mobile systems. The most tangible evidence of the military's eminent position was the appointment of Marshal Grechko as Minister of Defence in 1967. The twelve-day delay between the death of the terminally-ill Malinovsky and the announcement of Grechko as his successor has been cited as evidence of "the fact that the Politburo apparently considered installing a civilian minister indicates that the professional military's influence on military policy was not entirely beyond challenge".[536] While the military held sway on this occasion, such an issue may have been portentous. Certainly the rapidity of Ustinov's later accession to the post in 1976 was seen as testament to the transformation which had occurred during the intervening period.[537]

Grechko himself was able to play an influential role in defence decisionmaking during the initial period of his tenure as Minister of Defence. "By the strength of his ministerial position, his personality, especially his simplistic single-mindedness, and his bureaucratic allies, Grechko was able to stalemate, postpone or ignore numerous decisions proposed or taken in the 1960s and 1970s by the Ustinov-dominated defence policy group. It is important to note that he was able for several years to dilute decisions and to reverse or postpone implementation of weapons and infrastructure programmes that contradicted his position, even though such initiatives were supported by the Politburo."[538]

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[536] Parrott, "Political Change and Civil-Military Relations", p.50. Parrott cited Deane, M.J. 1977. *Political Control of the Soviet Armed Forces*. New York: Crane, Russak, p.171 as one source of the rumour that Ustinov had been the Politburo's preferred candidate in 1967. Azrael by contrast was less convinced of the accuracy of these rumours. Azrael, *The Soviet Civilian Leadership and the Military High Command*, p.4, n.14.

[537] Parrott, "Political Change and Civil-Military Relations", p.50.

[538] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2. The most tangible example of Grechko seeking to avoid the implementation of an unpalatable

Over time however Grechko's influence vis-a-vis Ustinov would come to wane as did that of the military as a whole and by the early 1970s Ustinov had already achieved a more powerful status in the ruling elite than his colleague in the Defence Ministry. Indeed while Grechko's promotion to full membership of the Politburo in 1973 was viewed by many as the symbolic culmination of the military's rise to a position of authority in Soviet government,[539] it actually occurred during the progressive diminution of military influence against the backdrop of Ustinov's inexorable rise to a position of dominance.

Grechko was deeply opposed to the concept of gradated military responses and remained wedded to the notion of a massive pre-emptive strategic strike. Tolubko was similarly portrayed as "dying to push the button"[540] - an attitude he apparently retained throughout his service career. Grechko's opposition to mobile ICBMs and their associated strategic precept of assured retaliation placed him at odds with the political leadership and the proponents of strategic innovation within the General Staff. Grechko sought to block the development of mobile ICBMs which had been proposed by Yangel in the early 1960s and which enjoyed the support of Ustinov and the Defence Council. Furthermore he apparently disbanded the science committee of the SRF which had had the temerity to endorse the proposal.[541] This serves as something of a counterpoise to the relationship between the General Staff and Minister of Defence propounded by Jones.[542] While such divisions would inevitably have had a deleterious effect upon the military's ability to offer a cohesive input into the political interaction of defence decisionmaking, the institutional arrangements that applied at the end of the 1960s did themselves endow the General Staff with a pivotal

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decision was provided by Illarianov and Grechko's attempt to avoid the aftermath of the compromise decision to develop both the SS-17 and SS-19 systems.

[539] Azrael, *The Soviet Civilian Leadership and the Military High Command*, p.4; Parrott, "Political Change and Civil-Military Relations", p.54.

[540] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.

[541] Ibid., file 2. The technical failure of the ensuing SS-15 programme ensured that the argument was at this stage merely academic. However it might reasonably be assumed that the ensuing development of the SS-16 and SS-20 systems in the near future brought this subject to the fore once again. Grechko's apparent failure to prevent continued attempts to develop mobile systems is in itself significant.

[542] Jones, *Red Army and Society*, pp.15-7.

role in the selection and authorisation of weaponry development projects. The General Staff's Scientific-Technical Committee and its Directorate of Armaments were its principal channels of authority.

> Within the General Staff several agencies are responsible for weapons R&D and procurement, including a main operations directorate, central financial directorate, scientific-technical committee and an armaments directorate. The General Staff's scientific-technical committee may have been established around 1960 when General Alekseev was appointed to his post...It would be called upon to provide technical advice on new weapons proposals. As part of this task, it may have the overall responsibility of managing scientific-technical committees formed to review and follow each proposal and project through the R&D process. The Committee is also said to be the centre of operations research activity devoted to the selection of new weapons. The armaments directorate of the General Staff is headed by Colonel General Druzhinin. Most of the General Staff work in requirements, planning and co-ordinating weapons procurement probably takes place in this directorate; the new analytical planning techniques also come from this organisation. It was the appointment of General Ogarkov as first deputy Chief of Staff (with unspecified responsibilities) that signalled the enlarged role of the General Staff in military-scientific work. His duties were thought to include supervision and management of the scientific-technical committees in the General Staff and services, and overseeing weapons programmes and R&D. His appointment also suggests a liaison between the General Staff and the Military-Industrial Commission.[543]

[543] Alexander, A.J. 1978. *Decisionmaking in Soviet Weapons Procurement*, Adelphi Papers 147 and 148. London: IISS, p.18. This account corresponds closely with that offered by Danilevich himself. University of Edinburgh, Defence Studies Archives. *Academic in confidence.*

The five service branches of the Soviet military were subordinate to the General Staff.[544] Although the majority of nuclear systems were controlled by the SRF all of the remaining services possessed contingents of nuclear-armed forces. Within each service branch there was a Deputy Commander-in-Chief who was delegated the task of overseeing force levels and weaponry procurement. It was believed that the Deputy Commander-in-Chief presided over a departmental structure which included Scientific and Research Committees. Individual service branches were thought to co-operate with the central technical administrations of the Ministry of Defence to act as the "customer" for new armament programmes. It was thought that they acted in tandem in an attempt to foresee the course of expected operational requirements and associated Soviet R&D, issue appropriate specifications for new designs, and oversee the prototype testing of new systems.[545]

> Most requests for new or improved weapons as well as the initial estimate of the number required emanate from the individual military services. These requirements can come from several service sources which reflect the organisational structure of the General Staff and Defence Ministry: the armaments directorate, the scientific-technical committee of the Main Staff, the operations directorate of the Main Staff or from field commands. The Services' armaments directorate maintained regular contacts with the research institutes, design bureaux and the industrial plants of the design ministries...The relative importance of the armaments directorate continues but other organisations also contribute to the initiation of requests for new weapons. The Main Staffs are now the most likely additional source of new requests - both from the Services' scientific-technical committee and from the operations directorate...scientific-technical committees are probably

[544] The five branches were the ground forces, navy, air force, air defence forces and the strategic rocket forces. The SRF were the last to be formed and dated from 1959. They were however deemed the "premier" service branch from the outset of their creation - a mantle that went unchallenged throughout during Khrushchev's tenure and beyond.
[545] Cooper in McLean, (ed.) *How Nuclear Weapons Decisions are Made*, p.23.

> responsible for planning research and for managing project review bodies. In this position, they would be alert both to technical opportunities on the one hand and to development problems on the other. They would thus be in an ideal position to make recommendations from a technical point of view. In contrast the operations staff would have the outlook of the equipment user and would be expected to make suggestions based upon particular mission responsibilities or on field-demonstrated problems and needs. Field commanders would promote even more applications-orientated requirements than the operations staff.[546]

It was from the service branches' technical departments that the *voyenpredy*[547] were drawn. These officers were stationed within research enterprises to monitor the course and quality of the development work While some evidence suggested that such officers established a cordial relationship with their civilian counterparts this did not seem to have militated against the discharging of their stated duty of seeking to safeguard military interests in the realm of weaponry production quality. Nor was there evidence that overlapping or interchanging of their career structures with their civilian colleagues was a common practice.[548]

General Detinov highlighted the role played by the Scientific-Technical Committee of the General Staff in the process of weaponry selection. He stated that it had operated independently within the General Staff under the leadership of N.N. Alekseev until the mid-1960s. The Committee itself did not issue contracts authorising weaponry procurement as this was carried out by the relevant service branches themselves. It did however enjoy the right to veto any proposed project on technical grounds and

[546] Alexander, *Decisionmaking in Soviet Weapons Procurement*, pp.18-9.
[547] Military representatives.
[548] Close co-operation mentioned by one source. Cordial relations but this did not blur the lines of demarcation in career structure or institutional interests. Ustinov and Shabanov were the exceptions who "crossed the divide" between the military and the defence industries. See Cooper, "The Defence Industry and Civil-Military Relations", p.166 and Alexander, *Decisionmaking in Soviet Weapons Procurement*, p.19.

was responsible for the detailed planning and direction of all military research programmes. The Chief of the General Staff would approve the initiation of a new project only after it had received the Committee's blessing. Following restructuring in the mid-1960s the Committee was incorporated into the General Staff's Directorate for Armaments and was placed under the authority of the Deputy Defence Minister for Armaments. Alekseev himself was appointed in this role.[549] According to Tsygichko, prior to 1976 the Directorate of Armaments[550] played a central role in shaping weapons programmes and funding. This Directorate gave its recommendations both to the General Staff and to the VPK. Based on these recommendations, the Minister of Defence and the General Staff allocated funding to the armed services. The VPK also worked with the Directorate to distribute funds which were allocated to military industry and weapons programmes. Thus at the end of the 1960s the General Staff was effectively responsible for the determination of military procurement policy (though not its initiation as such) and enjoyed executive powers in this vital aspect of defence decisionmaking.[551] The later removal of these powers and their transfer to Ustinov's allies in the VPK served as a watershed in the process of diminution of the military's role in weaponry procurement.

[549] Detinov interview.
[550] *Upravleniye zakazov.*
[551] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.

The Brezhnev Regime and the Defence Sector[552]

While Khrushchev's leadership did not threaten the continued existence of ineffectual design bureaux through the kind of ruthless procurement policies pursued by Stalin, his quixotic approach to military affairs held its own potential dangers for the defence sector. The nature of the successor regime led by Brezhnev contrasted markedly in both style and policy content. It was dominated by a cautious style of "committee" leadership[553] that was seen to provide a welcome constancy following Khrushchev's "harebrained scheming". The new leadership was dominated by men who had held close links with the defence industries and whose Party careers and personal contacts had been moulded by the Great Patriotic War. Brezhnev's links to military leaders such as Minister of Defence Malinovsky, his successor Grechko and Gorshkov the head of the Soviet navy dated back to the war. Brezhnev's post-war involvement as a Party official in the embryonic Soviet missile programme[554] had led to his close involvement in the Defence industries, serving from 1957-60 as the Central Committee secretary with responsibility for the defence and space research sectors and heavy industry. Tolubko himself later recounted in his memoirs how Brezhnev's office formed the hub of research and production decisions connected with the development of the Soviet Union's first generations of strategic rockets. Brezhnev seems also to have had an unusually close involvement in the development projects and was a regular visitor at production plants.[555] The leaders of the Soviet defence industries must have regarded Brezhnev as one of their own and viewed his accession and that of his like-minded colleagues as a reassuring development in securing their own institutional interests.[556] They were not to be disappointed.

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[552] For an exhaustive discussion of the internal machinations prevalent in intra-elite relations during Brezhnev's tenure see Parrott, *Politics and Technology in the Soviet Union*, pp.181-294.
[553] Holloway, *The Soviet Union and the Arms Race*, p.113.
[554] Parrott, "Political Change and Civil-Military Relations", p.47, n.6; Cooper, "The Defence Industry and Civil-Military Relations", pp.166-7.
[555] Cooper, "The Defence Industry and Civil-Military Relations", p.166, n.7.
[556] Neither Kosygin nor Podgorny - the principal opponents of the rapid build-up of Soviet strategic forces - had had significant contact with the military in the course of their Party careers. Parrott, "Political Change and Civil-Military Relations", p.48, n.8, n.9. Shelepin was the exception.

> For much of the Brezhnev era there was thus an apparent harmony in the relationship between the military-industrial sector and the political leadership. One dimension of this harmonious relationship was the way in which the activities of the military sector were shrouded in secrecy and were protected from public criticism.....It is possible of course that this shroud of secrecy concealed real differences and conflicts, some of which may yet be exposed in the new era of glasnost. Nonetheless, compared with both the preceding and following years, the first decade of the Brezhnev period is likely to emerge in relative terms as a golden age.[557]

The partial lifting of the shroud of secrecy that has since ensued has had a two-fold effect. The new evidence that has emerged has served to reinforce the notion that the defence sector of the Soviet economy enjoyed unrivalled resource allocation and was endowed with unmatched levels of political influence, due largely to the fact that defence producers succeeded in becoming inextricably "enmeshed" within the weaponry procurement process through direct personal participation and the cultivation of close cliental relationships with the principal decisionmakers. This stands in marked contrast with the fortunes of the military hierarchy whose ability to influence the course of defence decisionmaking wavered during the course of Brezhnev's tenure and had diminished markedly to a particularly low ebb by its conclusion.

The style of defence decisionmaking which was adopted by Brezhnev and his colleagues has been characterised as "technocratic...based on deference to specialised agencies and the resolution of disagreements through bureaucratic compromise".[558] A fundamental "bureaucratic compromise" emerged from the outset and played the

[557] Cooper, "The Defence Industry and Civil-Military Relations", p.170.
[558] Parrott, "Political Change and Civil-Military Relations", p.49.

principal role in determining the nature of future Soviet force structure. This new-found administrative autonomy was devolved upon an administrative elite whose personnel - in marked contrast to their civilian-industry colleagues - had been largely unaffected by the reforms of Khrushchev's later years.[559] The military industrial elite was also spared the politically-inspired upheavals to which their officer-corps counterparts were subjected. Indeed the military-industrial elite displayed a remarkable longevity of tenure which in many cases dated back to the Great Patriotic War or still earlier. They were thus possessed of an impressive structural cohesion and continuity of personnel.[560] The extensive intra-elite contacts developed over time were now complemented by a host of similar and vital links with the new Party leadership. The security of tenure among the military-industrial management elite that was reinforced during the course of the Brezhnev era led to a stability among the leadership cadre that came in time to be replaced by a process of bureaucratic stagnation as they aged together. Thus while the average age of the chairman of the VPK and industrial ministers was fifty-five in 1965, by 1975 it had reached sixty-one and sixty-five by 1982.[561] The continuity displayed by the personnel profile of the military-industrial elite was paralleled by their representation in the Central Committee and the Supreme Soviet.[562] By the end of the 1960s this style of "committee leadership" had taken on a defined and increasingly settled form. Soviet participation in SALT might itself have been the catalyst for its further consolidation as a behavioural norm.

The key figure to emerge from the SALT-associated committee structure was Dmitriy Ustinov. His rise to prominence in the development of the Soviet Union's arms control negotiating position was replicated by his growing influence in the determination of defence policy in general. Ustinov had been appointed a full member

[559] Cooper, "The Defence Industry and Civil-Military Relations", p.167.
[560] Spielman, K.F. "Defence Industrialists in the USSR", in Herspring, D.R. and Volyges, I. (eds.) 1978. *Civil-Military Relations in Communist Systems*. Boulder Co.: Westview Press, pp.106-8.
[561] Cooper, "The Defence Industry and Civil-Military Relations", p.167.
[562] Ibid., p.168.

of the Central Committee in 1952 and was appointed Minister of the Defence Industries in the following year. From 1957-63 he was a deputy chairman, and from 1963-5, First Deputy Chairman of the Council of Ministers with responsibilities for the defence industries. He was appointed Secretary of the Central Committee responsible for the supervision of the defence industries from the outset of the Brezhnev regime. From 1965 he held the status of candidate membership of the Politburo and was elevated to full membership in 1976, immediately prior to his accession as Defence Minister. He held this post until his death in December 1984. It is instructive to note the role played by Ustinov in the *Big Five*, the Politburo commission which played the principal role in determining the Soviet approach to arms control and weaponry procurement policy. While both the Defence and Foreign ministers and the heads of the powerful VPK and KGB participated in its deliberations, it was Ustinov - who was at this point devoid of the status associated with the rank of minister or state committee chairman - who chaired its proceedings and played the dominant role.[563] This in itself was testament to his considerable influence in decisionmaking at the end of the 1960s and held portents for the course of future development. From the early 1970s Ustinov increasingly outflanked Grechko. This led to a diminution of the military's influence as the 1970s progressed. Grechko's subsequent promotion to full membership status of the Politburo in 1973 was largely symbolic, since by that time, few meaningful decisions being taken in that particular forum.

According to Akhromeyev and Korniyenko, Brezhnev's health deteriorated dramatically in the early 1970s.[564] They identified the Vladivostok Summit of November 1974 as the last major event at which Brezhnev was able to function in a statesmanlike manner. Major breaches of etiquette and protocol soon ensued with alarming regularity and by 1975 the General Secretary was effectively no longer

[563] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5. Savel'yev and Detinov, *The Big Five*, pp.16-7, 28.
[564] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

mentally competent. Brezhnev suffered a major heart attack in 1976. Akhromeyev claimed that from 1976 Brezhnev completely ceased to function in a leadership capacity, a situation that remained unchanged until his death in 1982. The ensuing political vacuum was not filled by Brezhnev's Politburo colleagues, many of whom increasingly evinced physical frailties similar to those of the General Secretary himself.[565] Rather the Soviet bureaucracy expanded its already-extensive demarcated areas of competence still wider and effectively assumed control of running the Soviet Union, most notably its defence procurement policies. There emerged a group of Party secretaries and state officials who, working independently or in issue-specific alliances with other functionaries, continued to produce policy proposals which were accredited with Politburo acceptance as a matter of course. Ustinov, Gromyko and Andropov were the principal figures in the determination of defence matters, international relations and law and order. Of all the subgroupings which came to the fore in the latter period of Brezhnev's tenure this one possessed a uniquely authoritative membership and consequently enjoyed untrammelled powers in its direction of Soviet policy. The military hierarchy was notably absent from this *de facto* leadership. While Ustinov, Gromyko and Andropov formed the core of the defence decisionmaking triumvirate, its format was flexible and the number of those in attendance varied in accordance with the particular issue under discussion. Indeed both General-Colonel Illarionov of the Central Committee Defence-Industrial Department and Dr. Tsygichko stated that no *formal* decisionmaking body or structure was discernible at this time.[566] Rather they pointed to the workings of the *pyaterka*[567] as the source of effective decisionmaking authority. Detinov stated that "Ustinov, Gromyko, and Andropov solved all the problems at the time of Ustinov's accession as Minister of Defence, not only in the arms-control decisionmaking sphere,

[565] Akhromeyev, S.F. and Kornienko, G.M. 1992. *Glazami marshala i diplomata.* Moscow: Mezhdunarodnye otnosheniya, pp.15,23,31-2,39-40.
[566] University of Edinburgh, Department of Defence Studies Archive, (limited access only), files 2 & 5.
[567] The membership of the *pyaterka* referred to by this source was composed of Ustinov, Gromyko, Smirnov, Andropov and Brezhnev or his alternate, Keldysh. This matched the composition of Detinov's Big Five committee.

but also throughout the rest of the military-political fields. The reason for this was that Brezhnev had moved away from active duties after his health worsened".[568] In the realm of strategic weapons there also existed another group with responsibilities for overseeing missile development and production. The *Kommissiia pri Politburo*[569] was formed in the late 1960s and was nominally headed by Brezhnev. Customarily however the deputy chairman, Ustinov, presided over its proceedings. The membership of the Commission included Grechko, Vasilii M. Ryabikov,[570] the ministers of the nine defence industries and general designers and members of the Academy of Sciences from the various institutes involved in the work of the defence ministries. This Commission acted as a *de facto* political-military-industrial review committee led by the senior members of the Soviet Defence Council and composed of the leaders of the industries and institutes over which they were to exercise oversight. A member of the Central Committee claimed that the Commission's decisions "were passed for *pro forma* approval by the Defence Council, but were never amended by it. Issues were always debated in the Commission and decisions made by a few individuals".[571] Thus the missile design bureaux gained an invaluable position of influence *within* the decisionmaking structure itself.

The Defence Council[572] functioned throughout the Brezhnev era and customarily met around three times a year. Again the membership of the Big Five formed the core membership[573] which numbered 8-10 individuals. The remaining members included the Chief of the General Staff, the Chairman of the Council of Ministers, the Minister of Internal Affairs and "several major military industrialists."[574] Thus the Defence Council was the only defence decisionmaking group where the professional military

[568] Savel'yev and Detinov, *The Big Five*, p.186.
[569] Literally, "the Commission under the Politburo".
[570] The Deputy Director of GOSPLAN for Defence.
[571] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.
[572] *Sovet Oborony.*
[573] Brezhnev, Ustinov, Andropov, Smirnov and Grechko.
[574] It would seem reasonable to assume that specific experts might also be called to attend meetings which focussed upon their given field.

were themselves represented by a uniformed officer. Following the death of Grechko, this representation was effectively halved and was confined solely to the attendance of the Chief of the General Staff. The new Minister of Defence, Ustinov, was considered to be a "civilian" in unambiguous terms by the officer corps of the professional military.[575] The service branches of the military were evidently denied representation on the Defence Council as a matter of course. On the occasion of an extraordinary meeting of the Defence Council in June 1969 attended by 50-60 people, a number of military leaders were in attendance but they were far outnumbered by the combination of the nine ministers, (at least) six chief designers, heads of the CC and Council of Ministers (possibly 20 in number) and academicians from the Academies of Science whose congruence of interests would have served to nullify the military's influence with some ease. Thus the military wielded marginal influence within the Defence Council - a body which in any case has been adjudged no more than a forum for the "rubber stamping" of previously-agreed decisions in a fashion identical to the Politburo itself.[576] The infrequency with which matters of substance were discussed in the Defence Council is inferred by the ire displayed by Brezhnev on the occasion when such a contentious issue surfaced at a meeting of this body.[577] The real function of the Defence Council was essentially to advance and protect the interests of the military industrialists at the highest levels of the state and Party leadership. Vladimir Rubanov, a former director from the Aviation Ministry, portrayed the Defence Council as having been "an instrument of the VPK"[578], while Tsygichko criticised US analysts' consistent underestimation of the role played by the military-industrial department of the CC which "functioned as a *de facto* sitting Defence Council, setting military policy -

[575] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2. His subsequent promotion to the rank of Marshal, along with Brezhnev, was met with derision among professional military circles. Azrael, *The Soviet Civilian Leadership and the Military High Command*, pp.5-6 & n.4; Parrott, "Political Change and Civil-Military Relations," pp.59-60.
[576] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5. It is instructive to compare this appraisal of the Defence Council with previous Western accounts where a consensual view emerged which stressed its importance in the decisionmaking process. See for example, Parrott, "Political Change and Civil-Military Relations", p.54.
[577] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.
[578] Ibid., file 7.

which governed military doctrine and force development - and supported the formal Defence Council".[579]

An important player was Professor Mstislav Keldysh, the president of the academy of Sciences, who played an ever-increasing role *in lieu* of the General Secretary. Keldysh's role as the General Secretary's designated representative - a role that Keldysh was also called upon to play when Brezhnev was himself *physically* present at the meeting - and the influence that he enjoyed with Ustinov were apparently well understood within the inner circles of the Soviet leadership and he was treated with the respect commensurate with his potential influence.[580] Even prior to the deterioration of his physical health Brezhnev was apparently heavily dependant upon Professor Keldysh's advice on matters of military doctrine and strategy and force posture. Keldysh promoted the notion of seeking to develop a survivable strategic force rather than pursuing the costly and potentially dangerous path of an unconstrained arms race. Illarionov cited Keldysh's pivotal role at an extraordinary meeting of the Defence Council in July 1969. In tandem with Ustinov Keldysh composed what was essentially a new Soviet military doctrine based upon the principle of achieving an assured retaliatory capacity through developing survivable strategic systems. Korniyenko credited Keldysh's influence upon Brezhnev and Ustinov as the principal determinant of the Soviet decision to seek ABM limitations in SALT.[581] He also claimed that even though Brezhnev was *compos mentis* throughout the first years of the 1970s, he relied heavily upon Keldysh's personal advice and accepted it unreservedly.[582] In the wake of Brezhnev's effective incapacitation from 1976 onwards, Keldysh would come to play a still more active role in Soviet defence policy formulation to the extent that one observer described him as the General

[579] Ibid., file 5
[580] It is interesting to contrast this assessment of Keldysh' role in decisionmaking with Detinov's and Savelyev's assertion that Keldysh played but a marginal and short-lived role in the Big Five's deliberations. *The Big Five*, p.20.
[581] This view was supported by Detinov and Savelyev, *Ibid.*, p.22.
[582] Akhromeyev and Kornienko, *Glazami marshala i diplomata*, pp.40-1.

Secretary's "surrogate brain".[583] However by this point Ustinov had firmly established himself as the pre-eminent figure in the formulation of Soviet defence policy in general and weaponry procurement in particular. As his policy preferences increasingly came to serve as the most influential policy determinant, the importance of his personal perceptions of defence requirements and cliental relations with leading members of the ruling elite rose exponentially.

According to General Danilevich Ustinov possessed a sound grasp of the technical aspects of weaponry development, although this was not matched by his understanding of associated military implications.[584] In the realm of weaponry development he was not a conservative *per se* and appreciated and understood the significance of new technologies for force modernisation and C^3 and "ordered many R&D programmes in this regard and facilitated these efforts to a considerable degree".[585] Ustinov exercised considerable influence in the military-industrial complex and knew all the subtleties of its workings. Paradoxically he possessed a fearsome reputation[586] and the industrialists and the OKBs acknowledged his absolute authority, yet he "allowed certain weaknesses in relation to them".[587] While Grechko's or Malinovsky's relations with military producers were predicated solely upon their desire to ensure optimal weaponry delivery for the armed forces, there existed by contrast an ambivalence in Ustinov's relations with the defence sector which stemmed directly from the duality of his role. While Ustinov extended his opprobrium towards those designers whose projects failed to satisfy previously determined requirements, his ire was mild in comparison to that displayed by Grechko. Of greater import was Ustinov's propensity eventually to accept such shortcomings without recourse to

[583] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.
[584] Ibid., file 1.
[585] Ibid., file 1.
[586] Reportedly dating back to his practice of making surprise visits "through the back door" of the various plants under his control as wartime Minister of Armaments.
[587] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.

tangible punitive actions against the offending designer.[588] This dichotomy became increasingly apparent as Ustinov's political aggrandisement endowed him with still greater influence upon the decisionmaking process and reached its ultimate form through his eventual appointment as Minister of Defence. According to Danilevich,

> He acted as the client, the contractor and the customer. In practice his position was such that he was often forced to compromise with himself. He stood on the edge of the blade and waffled in both directions. On the one hand he considered the interests of the military, and one the other hand, those of the military-industrial complex. But more often, since he worked there for thirty years, he sided with the military-industrial complex. But he understood the requirements. It seems that he should have played a tremendous role in military-technical progress - in a quick leap forward in our military-technical capabilities, and there was a certain leap. But it did not turn out to be as great as it could have been if there had been division of responsibilities.[589]

Contrasting accounts of Ustinov's personal dealings with colleagues in the military and defence industry were offered by colleagues and past associates in interviews attended by and reviewed by the author. General Detinov displayed an implicit admiration and loyalty towards Ustinov that might be due - at least in part - to his own institutional background. He emphasised his opinion that Ustinov remained an approachable individual, devoid of airs and graces despite his accession to such an elevated position. His door remained open to colleagues from all fields of government and his actions were predicated upon a steadfast loyalty to his longstanding associates.[590] Danilevich offered a similar observation relating to this latter point, citing Ustinov's preference for continuing the patronage of particular design establishments. In this instance, ease

[588] "Even though he scolded them, in the end he would give up and concede to the industrialists, because they were closer to him than the strategists." Ibid., file 1.
[589] Ibid., file 1.
[590] "He never betrayed his friends... to him it more than just business, it concerned friendship". Detinov interview.

and familiarity with known personnel and practices seem, in Danilevich's view, to have been the implicit determining factors.[591] Danilevich's recollection of Ustinov's receptivity towards views that lay contrary to his own provide a stark relief to those of Detinov[592] and correspond closely with the anecdotal evidence provided by Mozzhorin[593] concerning his own brush with the Ustinov-Grechko axis over the principle of diverting resources from missile production to silo construction.

It is impossible to provide definitive chronological parameters for the zenith of military influence upon weaponry procurement policy and the onset of its diminution. The initiation of the Soviet Union's massive strategic build-up accompanied Brezhnev's coming to power and continued throughout the remainder of the decade. Undisputably there existed a consensus among the political and military leadership that this process should occur on a maximal scale at an accelerated rate. The integration of strategic weapons into the existing Soviet force structure and strategy pre-occupied military planners for the remainder of the decade. The potential for strategic innovation which came to the fore in the late 1960s coincided with the planning stages of the next generation of strategic forces. It was at this point that the congruence of interests between the military leadership and their suppliers in the defence sector came under increasing strain. The eventual outcome of this divergence of interests is instructive. Danilevich referred to the "competition" between the General Staff's operational-strategic perceptions and VPK's military-technical criteria.[594] Illarionov was keen to stress the increasingly frequent vituperative clashes between the General Staff and the VPK from the end of the 1960s onwards. "By 1969, relations between the VPK and the military were hostile. There were continuous battles over weapons systems. This was true even though the Ministry of Defence was represented on the

[591] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.
[592] Danilevich claimed that "if Ustinov did not like what he heard in discussion, he would cut off the speaker or briefer and throw him out of his office". Ibid., file 1.
[593] Ibid., file 3.
[594] Ibid., file 1.

VPK by a First Deputy Minister of Defence."[595] This view was substantiated by Tsygichko who observed that "disagreements between the VPK and General Staff were constant, but the VPK *always* won the decision".[596] As was demonstrated in the previous chapter, the civilian leadership based their eventual decisions upon factors beyond the purely military-technical and would on occasion choose to ignore the military's advice. The leadership's propensity to follow such a course of action was set to increase dramatically as the 1970s progressed.

Through Ustinov's ascendancy and the high level of policy input enjoyed by the defence sector magnates, the defence industry held a powerful position within the process of defence decisionmaking - a position that was to become increasingly dominant throughout the course of the 1970s. This far surpassed the degree of influence exerted by either the Ministry of Defence or the General Staff.[597] Proceedings of the Defence Council were increasingly dominated by the policy input and preferred programmes of the VPK which enjoyed a near-monopolistic status with regard to the supply of technical information to the Soviet leadership. The VPK was responsible for overseeing the entire development programme, from initial technical and strategic evaluation of project proposals to the eventual determination of the size and location of the production run.[598] The Defence Industry Department of the Central Committee was the principal means by which military industrialists sought to influence weaponry production to their own ends. Tsygichko has stated that the Department was dominated by ministers responsible for armaments production, chief designers and political officers.[599] Tsygichko described its role in the development of new programmes and their series production. Furthermore he stated categorically that

[595] Ibid., file 2.
[596] Ibid., file 5.
[597] Ibid., file 5.
[598] Ibid., file 5.
[599] Ibid., file 5

the interests of the defence industry held sway with the Department over those of the General Staff or the Ministry of Defence.[600]

The balance swung still further in favour of the defence industries in the wake of Ustinov's accession to the post of Minister of Defence in 1976. According to Tsygichko Grechko's influence within the leadership diminished markedly as the 1970s progressed.[601] This was followed by significant structural changes in the mid-1970s linked to Ustinov's accession as Minister of Defence which further diminished professional military influence over weapons development and procurement programmes. Prior to 1976 the General Staff Directorate of Armaments Orders played a central role in shaping weapons programmes and funding. This Directorate gave its recommendations both to the General Staff and to the VPK. Based on these recommendations, the Minister of Defence and the General Staff allocated funding to the armed services. The VPK also worked with the Directorate to distribute funds which were allocated to military industry and weapons programmes. The General Staff was in charge of determining how to place orders for military programmes. After 1976 Ustinov reshaped this process to reduce the role of the General Staff and greatly expanded the role and influence of the VPK. The VPK was directly allocated funds and the services could appeal to the VPK for funding as well as to the Ministry of Defence. The Directorate of Armaments was taken out of the General Staff and made an independent Ministry of Defence Directorate headed by deputy minister of defence Shabanov, its *executive* role replaced by a mere *advisory* one.[602]
Detinov was keen to stress that while organisational changes did occur "and the Scientific-Technical Committee's position within the governmental structure may have altered, its influence upon the formulation of procurement policy remained - though in

[600] Ibid., file 5.
[601] Ibid., file 5. Compare this to Warner's discourse on the relative influence of Ustinov and Grechko at this time in MccGwire, Booth, and McDonnell (eds.), *Soviet Naval Policy: Objectives and Constraints*, pp.71-3. See Parrott, "Political Change and Civil-Military Relations", pp.58-9 for examples of the symbolic diminution of Grechko's status.
[602] It is instructive to contrast this with the heavy emphasis placed upon the role played by Shabanov and the Armaments Directorate by the CIA in *The Soviet Weapons Industry: An Overview*, pp.15-16.

a slightly diminished form - in the wake of the reform. The General Staff continued to vet all proposals for new programmes and the Minister for Armaments would only sanction new research work that enjoyed the General Staff's support. The Main Directorate of Operations (*GOU*) also played an influential role in the procurement process, specifically in determining the optimum scale of overall production by vetting service branches' force level requests. Here too however the Chief of the General Staff retained the right of veto. The restructuring process served to diminish the General Staff's influence in determining the future course of weaponry development by precluding its participation in the initial stages of the decisionmaking process. It did however retain a significant degree of influence in the direction of weaponry procurement and possessed considerable authority with regards to the approval for the transition of developmental programmes to full-scale production."[603]

Significantly however, his military counterparts were adamant that these changes were of profound import and effectively unleashed the military-industrial complex by directly allocating funds to the VPK and military industry and effectively circumventing the General Staff's role in the determination of weaponry procurement decisions. Both the VPK and the Central Committee Defence Department represented military industrial interests. The military-industrial complex had broad influence and all civilian ministries were orientated towards the military-industrial complex. Central Committee members and ministries sought the lucrative defence sector contracts.

Even at the height of the General Staff's influence individual service branches had cultivated close links with the VPK, "interacting more closely and concretely" with individual OKBs than did the General Staff.[604] The diminution of the General Staff's authority led to increased collaboration between individual service branches and the VPK as such links came to take on a new importance as the professional military analysts in the General Staff were effectively circumvented in the selection of

[603] Detinov interview.

[604] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.

weaponry programmes.[605] The General Staff and Shabanov's Directorate played mere advisory roles and did not participate in the details of programme selection or the distribution of resources. Tsygichko told of an occasion when his institute (NII-6 - Scientific- Research Institute of the General Staff) was commissioned by Shabanov to provide a system of models with which to adjudge the most efficacious form of weaponry procurement. Although Shabanov was said to have accepted the report's conclusions, "he could not use them because they would seriously run afoul of the prerogatives of the Services and the VPK leaders responsible for production of armaments, missiles and air defence systems".[606]

Tsygichko believed that

> US analysts overestimated the General Staff's influence upon military planning and force development and *grossly* underestimated the importance of the Central Committee and its Military Department (*Voennyi otdel*). At least 60% of the Central Committee's Military Department were themselves defence industrialists, both ministers responsible for arms production and chief designers (*Glavnye konstruktory*). The balance of the Department's membership was composed of political officers whose loyalty lay exclusively with Party interests. Moreover these officers wielded authority that transcended their titular rank. The Defence Minister and chief designers - who virtually controlled military production - were all members of the CC and its Military Department. Neither the Chief of the General Staff nor the heads of the individual service branches were members and thus held but a fraction of the influence enjoyed by the Military Department of the CC, particularly with regard to the determination of military

[605] Tsygichko observed that "General Staff analysis weakened appreciably over time relative to the services working with the VPK". Ibid., file 5.
[606] Ibid., file 5.

policy (*Voennaia politika*) and force development (*Voennoe stroitel'stvo*). The Military Department of the CC functioned as the *de facto* sitting Defence Council, setting military policy (*Voennaia politika*) which governed military doctrine *and* force development, and supported the formal Defence Council which was comprised of the General Secretary, the Minister of Defence, the chiefs of the KGB and MVD, the Minister of Foreign Affairs and several major military industrialists.[607]

Reviewing the interpretations of the implications of Ustinov's accession as Minister of Defence proffered by leading Western analysts serves to confirm the substance of Tsygichko's criticism. The roles assumed by the General Staff organs and the service branches themselves in the latter 1960s were accurately ascribed by Western analyses. They proved remiss however in their failure to recognise this as a brief and transitory high-point of General Staff input into the decisionmaking process, which was to be rapidly undermined in the coming years. They were customarily cautious and seemed unable to credit the true scale of consolidation of defence decisionmaking authority upon a sole member of the Soviet elite. According to one contemporary Western source the appointment of Ustinov as Minister of Defence "raised intriguing questions about the future supervision of the defence-industrial sector and may have been prompted - at least in part - by the political leadership's desire to improve the overall efficiency of the Soviet defence effort".[608] Spielmann posited that it might have created a system of "checks and balances" as Serbin's and Smirnov's well-established positions served to temper Ustinov's authority[609] while Jones pursued a similar theme when she argued for the existence of a "collegial decisionmaking system in both the

[607] Ibid., file 5.
[608] Spielmann in Herspring, D.R. and Volyges, I. (eds.) 1978. *Civil-Military Relations in Communist Systems*, p.113. This view was echoed by Rice, C. 1987. "The Party, The Military and Decision Authority in the Soviet Union", *World Politics*, 40(1):72-4.
[609] Spielmann in Herspring and Volgyes, *Civil-Military Relations in Communist Systems*, pp.112-3.

military and civilian hierarchies, which represents a check on capricious managers".[610] Few analyses sought to avoid the "conflation" of military concerns with those of the defence sector and investigate the potential for conflicts of interest in their institutional relationship.[611] Indeed those which did single out the military in general and General Staff in particular for detailed consideration displayed a consensual view that laid heavy emphasis upon their decisive role in the Soviet weaponry procurement process.[612] Cooper provided an accurate appraisal when he claimed that "real power rested with the Central Committee's Defence Industry Department under Serbin, who had occupied the post since 1958, assisted by his first deputy, Dmitriev." However even this assessment of Ustinov's role erred on the side of caution, ascribing as it does his assumption of the "combined role of Party overlord of the armaments industry with his brief as Defence Minister"[613] to as late a point as 1979.

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[610] Jones, E. *Red Army and Society*, p.24.

[611] Notable exceptions to this included Cooper "The Defence Industry and Civil-Military Relations," p.189; Hough, J. 1985. "Soviet Decisionmaking on Defence," in *Bulletin of the Atomic Scientists*, 23(7):84-8; Spielmann in Herspring and Volgyes, *Civil-Military Relations in Communist Systems*, pp.108-12.

[612] Rice, C. "The Party, The Military and Decision Authority in the Soviet Union", pp.55-6, 61-71; Parrott, B. "Political Change and Civil-Military Relations", p.54; Cooper in McLean, (ed.), *How Nuclear Weapons Decisions are Made*, p.21; Alexander, *Decisionmaking in Soviet Weapons Procurement*, p.18; Jones, *Red Army and Society*, p.24; Jones, "Defence R&D Policymaking in the USSR", in Valenta, J. and Potter, W.C. 1984. *Soviet Decisionmaking for National Security*. London: George Allen and Unwin, pp.124-6; Holloway, D. *The Soviet Union and the Arms Race*, pp.110-1, 142; *The Soviet Weapons Industry: An Overview*, pp.11-2; Frost, H. "Soviet Party-Military Relations in Strategic Decisionmaking", in Currie, K.M. and Varhall, G. 1984. *The Soviet Union: What Lies Ahead?*, pp.65-7; Cochran, T.B., Norris, S. and Bukharin, O.A. 1985. *Making the Russian Bomb: From Stalin to Yeltsin*. Boulder, Co.: Westview, pp.69-70. While Cockburn succeded in delineating the intra-elite rivalries and coalition-building that so dominated defence decisionmaking he credited dominant factions of the military leadership with rather more influence upon policymaking than actually appears to have been the case. Cockburn, *The Threat*, pp.60-76.

[613] Cooper, "The Defence Industry and Civil-Military Relations", p.171.

Missile Design Bureaux

The majority of R&D and proposals for new weaponry systems emanated from the design bureaux and research institutes of the nine defence ministries. A number of different organisational arrangements had evolved within this aspect of the Soviet defence ministries. Some institutes were incorporated into science-production associations while others enjoyed a greater degree of operational independence and in some instances possessed their own research centres and prototype production sites. The latter type was often termed an *OKB* (experimental-design bureau,) and such design bureaux played a vital role in the Soviet defence industry. *OKBs* were particularly prevalent in the development of aviation and missile systems. They were to a large extent built upon the reputations of their principal designers and often came to bear his name.[614] Detinov stated that due to the prestige and perceived importance of the development of the rocket forces, the heads of the missile design bureaux enjoyed a degree of status and an associated level of autonomy denied to their counterparts in other sectors of Soviet weaponry design and production. Indeed they were able to circumvent their nominal superiors and gain direct access to the highest echelons of the Soviet elite, in particular to Ustinov, the lynchpin of the weaponry procurement process and also to Brezhnev himself.[615] Against this backdrop ministers preferred to maintain cordial relations with General Designers of the calibre of Nadiradze, Korolev *et al.* and to resolve problems without resort to "arbitration" of Politburo members. Detinov accepted that while the controversy surrounding the SS-18 and SS-19 was the most high-profile and overt example of intra-elite conflict in Soviet defence decisionmaking, it was not an isolated example. Rather, "there were deeper contradictions which sometimes made things difficult...to some extent, such disputes positively affected Nadiradze's position and helped the development of his

[614] Cockburn provided an account of their role in his own acerbic style, Cockburn, *The Threat*, pp.86-90.

[615] A plethora of anecdotal accounts serve to support the case that such practices were also widespread during Stalin's and Khrushchev's tenures.

systems and the allocation of resources to his Bureau".[616] In Detinov's view, the conflict centred upon Ustinov and Smirnov in opposition to Grechko and Afonyseev. General Belous argued during the course of the interview that Nadiradze did indeed enjoy Ustinov's patronage. However he was keen to stress that this was not exclusive and extended to other missile design bureaux - for example to Yangel[617] and his "heavy" ICBM designs.

The Nadiradze Bureau was effectively created by Ustinov and Detinov accepted that "his" Bureaux benefited from an enhanced position in the process of resource allocation. While Detinov was adamant that Ustinov could not personally divert funds towards particular projects or bureaux of his preference and stressed that specific resource allocation remained within the remit of the ministries themselves, he did concede that ministers were well aware of this situation and concluded that it was in their own interest to, "feed the demands of a General Designer who enjoyed Ustinov's 'patronage.' Former *Minoboronporom* minister Zverev knew this very well."[618]

[616] Detinov interview.
[617] Subsequently headed by Utkin following Yangel's death in 1971.
[618] Detinov interview.

System Replication

To maintain political harmony and the continued existence of key design bureaux and their plethora of associated facilities, Soviet defence procurement policy under Brezhnev rapidly evolved a practice of constructing a remarkably large proportion of technically viable designs and a significant number of marginal viability. This was despite the significant operational deficiencies that many of them possessed and the ensuing inefficiencies of production and complexity of deployment and operational planning caused by system replication. This practice was particularly prevalent in missile production although this may have been exacerbated by a desire during the initial period of rocket development to maintain a diffusion of design centres in this new technological area. Soviet leaders were probably influenced by the notion that such a multiplicity avoided the dangers of over-reliance upon a single or limited number of design paths. Such a notion would itself have accorded with the traditional Soviet preference for mixed forces and an aversion to over-reliance upon a single weapon type. However this does not serve to explain the degree of system replication which emerged in the SRF over the coming two decades. At one point as many as ten different missile systems were deployed to fulfil an identical mission profile. Kalashnikov claimed that his proposal to reduce the number of operational systems to two or three was specifically rejected by Ustinov himself for fear of the downturn in output that it would entail and its consequences for defence producers.[619] Vitaly Kataev of the Defence Industry Department told of how his attempts to increase the efficiency of defence production and overcome wasteful practices met with studied indifference from his superiors.[620] An article in *Krasnaya Zvezda* in 1991 by Efim Liuboshits, an analyst with over thirty years experience in the SRF's main research institute[621], stated that studies conducted in 1979 demonstrated that the number of missiles in storage exceeded by ten-fold the number required for operational alert

[619] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 4.
[620] Ibid., file 7.
[621] NII-4.

status. Additional missiles continued to be supplied by industry - apparently without financial penalty - despite the absence of requisite Ministry of Defence orders.[622] A similar instance was highlighted in the production levels of SLBMs. Soviet submarines customarily carried 0.7 nuclear basic loads on patrol and a total production run which provided each vessel with a final total of 1.5 nuclear basic loads would have been sufficient reserve. However the production runs of the various SLBM systems ran to four, five and, in one instance, eight times the requisite basic nuclear load.[623]

Kataev recounted the instance of Ustinov accepting a consignment of missiles surplus to requirements, simply to maintain production activity following a personal request on the part of a defence ministry chief.[624] This was the result of the *arms race* which occurred *within* the missile production sector of the defence industries and the reluctance - principally for reasons of political expedience and oligarchical nepotism - on the part of governing circles to arbitrate effectively between competing designs.[625] General Belous stated that despite the remarkably high levels of resources devoted to missile production, resource-allocation competition between design bureaux remained fierce. Awards and honours of various types were offered to officials as an inducement to help propagate their design proposals. Belous cited the appointment of Khrushchev's son to a top post within the Korolev Bureau as the most conspicuous example of such nepotism. The end result of such a system was inevitable - a host of different missile systems were deployed in large numbers, often as much in response to domestic political considerations as well as strategic factors.[626]

The Soviet leadership's expedience in the realm of defence procurement policy was manifested most dramatically in the furore which accompanied the proposed

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[622] *Krasnaya Zvezda*, 9 July 1991, translated in JPRS-UMA-91-022, 21 August 1991, p.35.
[623] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.
[624] Ibid., file 7.
[625] Ibid., file 7.
[626] Belous interview.

development of the SS-17 and SS-19 in 1969.[627] Both the Yangel and Chelomei bureaux were commissioned to design a new MIRVed ICBM system possessed of enhanced operational responsiveness. While there exists some confusion as to affiliation of some figures from the second echelon of government the identities of the principal protagonists are clear as was the genuine division which emerged among the leadership on this particular issue. The Chelomei SS-19 paid scant attention to the concept of survivability and was armed with six warheads to the SS-17's four. It was supported by the military, most especially Grechko with his proclivity towards maximising firepower and his disdain for the notion of developing survivable systems.[628] Grechko was allied to Afanasyev, the Minister of General Machine Building[629]. By contrast Yangel's SS-17 laid heavy emphasis on the principle of survivability and received the backing of Ustinov, Keldysh, Serbin, and most of the chief designers. The positions adopted by Afansyev's deputy, Tyulin, and Mozzhorin, the head of TsNIIMash[630], remain unclear. Illarionov provided contradictory accounts of their affiliation.[631] Detinov meanwhile placed Mozzhorin in the Yangel camp while stating that the deputy of TsNIIMash favoured the Chelomei design.[632] The dispute was eventually resolved following an extraordinary meeting of the Defence Council held near Yalta in July 1969. It was attended by a plethora of senior officials including ministers from the defence industries, military leaders, general and chief designers heads of the Central Committee and Council of Ministers apparatuses and academicians and numbered 50-60 people in total.[633] Both chief designers and their

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[627] It is instructive to counterpoise this account with that offered by Cockburn, *The Threat*, pp.86-90.
[628] Mozzhorin's account of the initial reaction of many among the military leadership was testament to their adherence to the traditional concepts of artillery warfare which served as the SRF's first foundations and their implicit reluctance to accept the notion of an assured second-strike capacity. He stressed that for them, throw-weight was the single most important determinant of the operational utility of these new "canons" (sic). University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 3.
[629] *Minobshchemash* or *MOM.*
[630] The Central Research Institute of *Minobshchemash.*
[631] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2. His April 1993 account placed them on Yangel's side, while that of June 1993 described them as backers of Chelomei's cause. The former description is the more detailed so should perhaps be accepted.
[632] Savel'yev and Detinov, *The Big Five*, p.19.
[633] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.

principal supporters addressed the gathering and tensions rose, especially when Afanasyev launched a personal attack upon his long-time mentor, Ustinov, alleging that his personal dislike of Chelomei had prejudiced him against the design from the outset. During a recess in proceedings Brezhnev was overheard berating Ustinov and Grechko for placing him in such a compromising position. A compromise was subsequently agreed by Ustinov, Serbin, Keldysh, Illarionov and Alekseyev and it was decided that both systems should be produced. According to Illarionov a final bizarre twist emerged when Grechko sought to avoid signing the unpalatable agreement by leaving his dacha via the back door upon Serbin's arrival.[634]

While Detinov claimed that this incident was unique in the annals of Soviet defence procurement during the Brezhnev era[635] the weight of evidence suggests that it was not untypical and that such incidents arose with ever-increasing frequency from this time onwards. Dr. Vitaly Tsygichko a senior researcher in the Academy of Sciences with considerable personal experience in Soviet defence analyses during the Brezhnev era recounted an incident which bore all the hallmarks of the SS-17/SS-19 contest. Indeed the incident to which he refers may even have been that of the SS-17/SS-19 imbroglio. If so it serves to highlight the leadership's flagrant disregard of the findings of their own defence analysts when determining weaponry procurement policy. Tsygichko recounted system review meetings chaired by the Deputy Director of the General Staff's Main Operations Directorate which achieved a clear consensus in favour of series production of one system while rejecting its rival in the face of "volumes of documentary evidence" presented by the meeting chairman detailing its technical inadequacies. The ensuing series production of *both* systems led Tsygichko to conclude that "review board meetings were an empty formality designed to mollify the General Staff and others outwith the VPK but which had no real effect upon programme development".[636]

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[634] Ibid., file 2.
[635] Savel'yev and Detinov, *The Big Five*, p.19.
[636] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.

Conclusion

Ensconced as it was in decisionmaking via bureaucratic committees, weaponry procurement policy formulation closely resembled that for SALT. By the time they reached the ruling elite proposals were thought to have been properly "filtered" through the Soviet bureaucratic structure and were customarily accepted on a *pro forma* basis. Control of the bureaucratic process thus determined the course and nature of weaponry procurement. Ustinov came to enjoy untrammelled authority in this realm and effectively became the principal determinant of both the Soviet arms control negotiating stance and procurement policy. His policy enjoyed a fair amount of success in the field of SALT but less so in the long run in the arena of efficacious weaponry production.[637] Indeed as the 1970s progressed promotion of VPK interests undoubtedly became the most influential determining factor in defence production.[638] The practical effect of this was the continued production of obsolete weapons systems of marginal operational utility for the General Staff's evolving strategic precepts against a backdrop of resistance to technological innovation for fear of disruptions to long-established production practices.[639]

The competition between the SS-17 and SS-19 systems and their rival creators came to be something of a *cause celebre* among the upper echelons of the Soviet ruling elite and its eventual outcome must have provided all concerned with a salutary message concerning the most efficacious form of decisionmaking with regard to missile production. Failure to resolve procurement decisions prior to their consideration by

[637] As Tsygichko observed "The process of making methodological decisions was methodologically and organisationally sound. This was shown by years of experience in planning and policymaking. However the dominant political regime did not allow for the full use of the potential capabilities of this decisionmaking mechanism. The inadequacies and negative results in the administrative and decisionmaking sphere reflected the overall crisis of the political system in the country. The contradictions between reality and common sense on the one hand and ageing ideological postulates on the other, sharpened and increased over time. The decisions reached had increasingly tragic consequences." University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.

[638] Ibid., file 5.

[639] For his part Danilevich claimed that "under Ustinov, we had weapons and the strategic objectives were subordinated and built around the weapons." Ibid., file 1.

the Defence Council was liable to draw the ire of the General Secretary who showed little inclination towards adjudicating on such matters. Moreover, where conflict over competing designs arose it seemed that it was most likely to be settled through just such a compromise. This incident must therefore have served to reinforce the tendency towards the issuing and fulfilling of parallel commissions which had already become prevalent in procurement practice by the end of the 1960s.

Most observers failed to appreciate the pre-eminence of military-industrial complex interests in the Soviet defence decisionmaking process and the shift still further in their favour during the second half of the 1970s. Thus the development of the SS-20 was significant as the initiation of its development cycle took place during what was most probably the high point of military influence upon the decisionmaking process. By the time of its production and deployment however the military's input into policymaking had been dramatically reduced and this period did indeed witness fraught Party-military relations. However the conflict which came to be focussed upon Ustinov and Ogarkov concerned more than resource allocation. Their *contretemps* was centred upon the nature of weaponry development required to meet the General Staff's expanded strategic precepts and the extent of military participation in this procurement decisionmaking process. Thus the development of the SS-20 took place as Soviet defence decisionmaking was on the cusp. Professional military input had grown somewhat during the course of the 1960s and was at its height at the time of the initiation of the SS-20's developmental cycle. However the decision to proceed with the development of the SS-20 was accompanied within two years by a rapid and dramatic diminution of the professional military's ability to influence the Soviet defence decisionmaking structure. In many ways the SS-20 was an unusual product of the Soviet defence industry, displaying as it did efficacious operational capabilities which were pertinent to the contemporary strategy favoured by the General Staff[640]

[640] Although one must assume that Grechko would have opposed the eventual mobile status it held as much in an IRBM as he did in ICBMs. He would however have been expected to have approved of its solid fuel propulsion which engendered it with such a rapid response potential.

and providing as it did "an important exception to the usual pattern of the Soviet Union having to play 'catch-up' with the US was the SS-20 which was a strategic and technological breakthrough for the Soviets which gave them a significant advantage in Europe."[641] It was a weapon system whose developmental roots lay in a period when the professional military enjoyed a degree of decisionmaking influence which - while subject to certain constraints and potentially competing interests - was proportionately greater than it had possessed in the early 1960s and was markedly greater than it would hold by the mid-1970s.

[641] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

6 Conclusion

The Development of the SS-20 Reconsidered

Further research into the four factors posited by previous analyses as the principal motivations behind the Soviet Union's development of the SS-20 has served to correct a number of important technical and factual details but has, for the most part, reaffirmed their *prima facie* validity as explanatory rationales for such a course of action. The nature of the operational demands placed upon Soviet TNFs by the evolving theatre nuclear strategy has traditionally been credited as being of prime importance to the development of the SS-20. This development was claimed to have heralded a new era in theatre strategy, because for the first time since the deployment of nuclear forces Soviet strategy accepted the possibility that the onset of a future conflagration with the West might not lead to the immediate use of nuclear weapons. My investigation of this issue has confirmed that while Soviet strategy did indeed evolve to incorporate the *possibility* of a conventional introduction this course remained but one option of many and the shadow of nuclear engagement continued to loom large. Even in the event of a conventional introduction there was little confidence that conflict would remain at this level for any length of time. The relative weakness of NATO conventional forces and the Limited Nuclear Options (LNO) considered in the strategies of Flexible Response and the Schlesinger Doctrine coalesced to engender the belief that NATO would be forced to escalate to the employment of nuclear weapons.

Moreover the process of evolution which served to produce this revision was itself protracted and occurred in the face of considerable opposition emanating from members of the military "old guard". The more detailed consideration of the nature and extent of the strategic revision afforded by recent interviews with former members of the Soviet elite serves to further refine the analysis of its course and nature. It is evident from these interviews that considerable ferment existed within the upper

echelons of the military over the likely nature of a future conflict. In addition it was paralleled by a process of disengagement on the part of the political leadership in the formulation of strategy and doctrine which accelerated during the course of Brezhnev's tenure. It is clear that while generally accurate in their appraisal of the strategic revision, Western scholars were largely unaware of the unrestrained ire displayed by Defence Minister, Marshal Grechko, and his allies towards the concepts of conventional or limited nuclear conflagration with the West and their unwavering adherence to the notion of a pre-emptive nuclear strike when conflict appeared imminent. While Western accounts often portrayed Grechko as possessing a sceptical attitude towards the merits of *détente* and as an advocate of the retention of military expenditure at maximal levels it is now clear that few gauged the true extent of his ideological conservatism.

Grechko stridently attacked the notion of a second strike posture and its attendant ideological and technological ramifications, while the head of the Strategic Rocket Forces, Tolubko, was attested to have maintained a similarly hardline perspective. Nor was Grechko averse to confronting powerful vested interests in the pursuit of the adoption of his favoured strategic principles. His opposition to mobile ICBMs, and the assured retaliation strategy that they might have engendered, placed him at loggerheads with the political leadership and the proponents of strategic innovation within the General Staff, while his attempts to prevent the development of mobile ICBMs placed him in opposition to Ustinov and the Defence Council as a whole. General-Colonel Illarionov highlighted Grechko's continued adherence to a "first-strike" policy long after the adoption of a revised nuclear strategy by the Defence Council in 1969. Illarionov also observed the constraining effect of Grechko's dogged resistance upon the Ministry of Defence as a whole, and the technical analytical specialists in the military industries and military-political staff seeking to improve the technical performance of Soviet missile systems. Such constraints apparently extended to include even the chief of the Strategic Rocket Forces himself.[642] Iu. A.

[642] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.

Mozzhorin's account of the "silo debate" provided eloquent testament both to Grechko's strategic principles and his reluctance to accept opinions which stood in contradiction to his own. In this instance the Defence Minister enjoyed the support of Ustinov, Chelomei and a number of other military industrialists and this powerful alliance of institutional interests and members of the ruling elite deemed the quantitative expansion of missile systems preferable to the qualitative enhancement of strategic survivability engendered by silo basing.[643]

In *The Big Five* Savel'yev and Detinov claimed that no serious research had been undertaken into concepts of strategic parity and mutual deterrence in the Soviet Union prior to the SALT era.[644] Dr Tsygichko offered a slightly different interpretation of events and argued that *de facto* acceptance of the principle of deterrence accompanied the Soviet Union's attainment of a viable ICBM force in the mid-1960s. The repeated Soviet disavowals of the concept of deterrence which followed in the coming years represented mere posturing for propaganda purposes.[645] Illarionov explained the absence of a formal Soviet acceptance of the concept of deterrence through the trenchant opposition which emanated from certain sections of the military leadership and rocket design bureaux towards the concomitant implications for strategic force structure and missile design.

The most authoritative account of the evolution of Soviet nuclear strategy was proffered by General-Colonel Danilevich. Danilevich's career as a General Staff officer spanned more than a quarter of a century and spanned Brezhnev's tenure. He served as an Assistant for Doctrine and Strategy under two Chiefs of the General Staff and was Director of the General Staff authors collective that composed and refined between 1977 and 1986 the top-secret, three-volume *Strategy of Deep Operations.*

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[643] Ibid., file 3.
[644] Savel'yev, A.G. and Detinov, N.N. 1995. *The Big Five: Arms Control Decisionmaking in the Soviet Union*, Westport, Ct.: Praeger, pp.2 & 5.
[645] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 5.

He stood at a unique vantage point from which to survey the development of strategy throughout Brezhnev's tenure of office. While he characterised the Soviet strategy of the early 1960s as a period of "nuclear euphoria",[646] premised upon the mass employment of nuclear forces in pre-emptive strikes, Danilevich contended that a sense of conservatism and realism returned to Soviet strategic analyses with the advent of the Brezhnev regime, accompanied by an appreciation of the likely effects of nuclear conflagration. The development of a Soviet SLBM force and the strengthening of the SRF as a whole interacting with evolving US strategic concepts enabled the development of more sophisticated strategic concepts by Soviet military planners. Danilevich singled out the deployment of the SS-11 in 1970 as a watershed event as its markedly superior response ability, allied to the "over the horizon" radars developed at this time, enabled Soviet planners for the first time to consider an assured second strike option.[647] This chronological framework closely coincided with Illarionov's account which identified Professor Mstislav Keldysh, the President of the Soviet Academy of Sciences, as the principal architect of the revised strategic posture of "launch on warning" (*otvetno-vstrechnyi udar*) which was adopted at an extraordinary meeting of the Defence Council in July 1969.[648]

Danilevich acknowledged the impact that such Western concepts as Flexible Response and the Schlesinger Doctrine had upon the development of Soviet strategy despite their repeated rejection in Soviet public pronouncements. By the mid-1970s the principle of graduated responses was increasingly coming to hold sway within Soviet nuclear strategy.[649] To this was added the growing influence of the concept of a conventional introduction to a future conflict which was "officially documented" in the

[646] Ibid., file 1.
[647] Ibid., file 1. Although Chelomei's SS-11 had originally entered service in 1965 an uprated version, the UR-100K, was tested in July 1969 and entered service in March 1971. It seems likely that it was to this system that Danilevich was referring.
[648] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 2.
[649] It is however interesting to note that a nuclear strike against Soviet territory may well have elicited a strategic strike of similar magnitude upon a specific target on US territory itself rather than a response confined within the European theatre.

1974-6 period. Its possible timespan increased from a matter of hours to 7-8 days, to its final form, the advance to the Rhine, an operation which was anticipated to be of several weeks' duration. While Danilevich expressed his confidence that Soviet forces could prevail in such an exchange he, like the vast majority of his colleagues, anticipated an eventual strategic nuclear escalation.[650]

General Danilevich stressed that the pursuit of a more sophisticated array of strategic options was confined to an elite group *within* the General Staff and neither research institutes outwith the General Staff's direct authority nor the service branches themselves were involved in these rarefied proceedings. The political leadership was still further removed from the process of strategic formulation. Thus dissenters from the revised strategic theory enjoyed considerable latitude in enunciating their opposition, largely due to the *laissez faire* stance adopted by the political leadership in this realm of policy formulation. The establishment of strategic principles was effectively devoid of input on the part of the political leadership as Brezhnev and his colleagues increasingly disengaged from the formulation of military policy. While Danilevich's anecdote detailing Brezhnev's aversion to the prospect of authorising a simulated nuclear release during an exercise in 1972 is laced with irony this should not detract from the portentous implications it heralded for Soviet strategic planning during the remainder of Brezhnev's tenure and beyond. The near-complete withdrawal of the General Secretary from the process of doctrinal formulation proceeded during the remainder of the decade was replicated without exception by his colleagues within the Politburo and had a most deleterious effect upon the cohesion of Soviet military-political policymaking. Both Danilevich and Tsygichko stressed that while Ustinov was undoubtedly the "magnate" of military production and possessed a sound grasp of weaponry's technical aspects he showed little interest in the affairs of military science and made no attempt to avail himself of the direction of strategic development pursued by the General Staff. This policymaking divergence was further

[650] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.

attested to by Danilevich's and Tsygichko's accounts of the manner in which analytical assessments of the likely effects of a nuclear conflagration were purposely ignored by the political leadership and directors of defence enterprises throughout the 1970s. This description provides a refutation of the traditional appraisal of the creation of Soviet strategic precepts in their *classical* form. The depiction of the upper echelons of the Soviet General Staff proceeding with the formulation of strategic planning devoid of oversight from, and accountability to, the political leadership stands in stark relief to the official portrayals of a linear process of doctrinal and strategic formulation via a continual and unconstrained interaction between the military and political hierarchies. General Danilevich's account of the Soviet political leadership bereft of a pre-arranged contingency plan in the event of major conflict with the West was remarkably frank, and even with the passing of time, remains alarming. Against such a background, where the revision process continued apace virtually devoid of direction on the part of the political leadership, opponents of the revision enjoyed considerable latitude in the expression of their scepticism as was reflected in the military press. The ensuing revision was thus gradual in nature and cautious in extent and was associated with a generational transition within the military leadership itself.

> The absence of firm direction from above led to the emergence and persistence of contradictory strategic postures and policies..stated policy, even for domestic consumption, often co-existed with contradictory planning and preparation in several areas, the most noteworthy being a policy of no first use and preparation for pre-emption... here also developed serious inconsistencies between strategy and the force structure created to implement it, leading to a severely overburdened Soviet economy and confusion among Western leaders.[651]

With regard to the SS-20 both strategic conservatives and innovators alike would have been expected to have recognised the gross deficiencies in the existing TNF

[651] Ibid., file 1.

force of SS-4s/SS-5s and the merits of the development of a system possessed of the operational capabilities displayed by the SS-20. Those who expected that any conflict would be nuclear in character from the outset would have been expected to have welcomed a system whose rapidity of response ensured it could meet the requirements of the launch-on-warning strategy that had been adopted in 1969. The vast majority of their colleagues who acknowledged the *possibility* of a conventional introduction anticipated eventual resort to nuclear employment. Rapidity of response was of equal importance to the proponents of such a strategy in the event of such a contingency. During the conventional period the SS-20's mobility and solid-fuel propulsion would have endowed it with the attribute of mobility which would have markedly improved its survivability - essential to preserve TNF potential during the anticipated period of attack by NATO conventional forces.

Thus wherever they stood on the broad spectrum of anticipated nuclear strategy Soviet military planners would be expected to have favoured the development of a new TNF system possessing the type of performance capabilities with which the SS-20 was endowed. Grechko's reported opposition to the development of mobile and solid-fuelled systems was said to have stemmed from his suspicion that possession of them might have tempted the political leadership to forsake a first-strike policy. This would serve as ample testament to the vehemence of Grechko's views on this issue, as the pursuit of such a weaponry procurement policy premised solely upon such a desire would have denied the Soviet Union a valuable enhancement of its strategic potential. One might assume that Grechko's views would have engendered considerable disquiet even among fellow strategic conservatives who would have been expected to have recognised the potentially vital role that a force of SS-20s might play within the European TVD *regardless* of the means and timing of escalation to nuclear employment. Thus while the nature and extent of the revision of Soviet theatre strategy requires reappraisal, the potential importance of the SS-20's role within either strand of operational principles remains undiminished. There was therefore an

apparently strong strategic rationale for the development and deployment of a new generation of TNFs, endowed with attributes of mobility and enhanced responsiveness to meet the operational needs perceived to exist by Soviet strategists of various hues.

The operational deficiencies of existing Soviet TNFs

The SS-4 and SS-5 systems represented the first Soviet theatre systems to enter mass production and largescale operational deployment. While the SS-4/SS-5 force was in theory capable of striking the full array of target groups assigned to it within the European theatre in reality their operational efficacy was fatally undermined by a series of performance deficiencies. Furthermore the operational utility of the SS-4/SS-5 force vis-a-vis its Western counterparts had been undermined almost from the inception of its service career by the United States' deployment of *Polaris*-equipped submarines. In the intervening period a plethora of new systems joined *Polaris* as potential adversaries of the SS-4/SS-5 force and were added to its burgeoning target groups. These included American FBS and *Poseidon*-armed submarines and a host of aircraft and carrier-based forces, British and French nuclear systems and the nascent Chinese nuclear potential. Soviet military planners also expected that the existing disparity in strategic forces within the European theatre of operations was set to be exacerbated by the impending deployment of a new generation of US TNFs. Haslam's claim that Soviet intelligence had derived early warning of the United States' development of a new generation of theatre nuclear forces via an informant within NATO's international secretariat was implicitly supported by the testimony of General Belous. Belous observed that the Soviet Union "received first evidence of the development of the Pershing II in 1969". By 1975 the US was seen to have "allocated a reasonable sum to finalise the Pershing II programme, while the Cruise missile programme was also under way. These forces were seen as forming the cornerstone of US forces in Europe".[652]

There was a firm consensus among Western analysts that both the SS-14 and SS-15 had evolved directly from the SS-13 and that all three systems were products of the

[652] Haslam, J., 1989. *The Soviet Union and the Politics of Nuclear Weapons in Europe, 1969-87: The Problem of the SS-20.* London: Macmillan, p.61 and Belous interview.

Nadiradze Design Bureau. Unanimity prevailed in classifying them as intended TNF systems designed to replace the existing SS-4/SS-5 force and to the fundamental technical deficiencies which they encountered, attested to by their problematic flight-testing programmes and eventual deployment in such low numbers. Against this backdrop Soviet planners were apparently forced to adopt innovative means of galvanising theatre forces while awaiting the development of a new TNF system.

The diversion of the ubiquitous SS-11 ICBMs to a theatre role commenced in 1969 and one hundred and twenty SS-11s were targeted on Western Europe with a further 100 designated for Chinese targets. Due to its initial manifestation as an ICBM the SS-11 was endowed with a range which enabled it to *swing* between theatres of operations, thus endowing Soviet TNFs with significantly enhanced operational flexibility and providing new cross-targeting and strategic manoeuvre opportunities. Unlike the SS-4/SS-5 force all SS-11s deployed in the TNF role were housed within hardened silos. In addition although the SS-11 was liquid fuelled its silo-basing enabled it to utilise a more advanced fuel system which enabled its propellants to be stored within the missile itself for prolonged periods. Attributed by Danilevich with a response time in the region of 1-2 minutes the SS-11 served both as a catalyst for the Soviet Union's adoption of a retaliatory strategic stance and an effective means of its implementation.[653] The redeployment of the SS-11 represented the diversion of a significant proportion of the Soviet ICBM force to a specifically theatre role and was testament both to the perceived importance of the European TVD and a the high level of concern associated with the operational utility of the SS-4/SS-5 force. However the deployment of the SS-11 as a TNF added yet another weapon system to the existing complexities of theatre strategic planning, while its level of accuracy did not match that of new Soviet ICBMs or its American counterpart, the *Minuteman*. In addition it lacked the operational responsiveness and invulnerability of a solid-fuel mobile missile and thus provided only a temporary solution to the Soviet Union's TNF

[653] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.

requirements as it would itself reach the point of operational obsolescence in the foreseeable future. Moreover the numerical limitations upon strategic systems that formed the principal feature of the ongoing SALT process would apply to the SS-11 as its original design format possessed an intercontinental range. Thus the SS-11 could thus provide no more than an interim solution to the Soviet Union's TNF requirements. This served to accentuate still further the perceived requirement for a radical modernisation of Soviet theatre forces and would seem to present a strong rationale for the development of a system possessed of the operational characteristics with which the SS-20 was endowed. Therefore in purely strategic terms it was believed that there existed a strong rationale for Soviet development of a new generation of TNF which would be endowed with enhanced levels of survivability and operational responsiveness through the use of solid fuel and a mobile basing-mode. The SS-20 met these requirements and, at a stroke, transformed the Soviet Union's TNF potential.

The Impact of the SALT Process.

The SALT process in general and the Vladivostok Accords in particular were also perceived by Western experts to have been instrumental in the Soviet Union's decision to develop the SS-20. The limitations placed upon *strategic* systems circumscribed this area of competition while at the same time it accentuated the importance of theatre forces in determining the overall balance of forces. The SS-20 was thus portrayed as both an attempt to achieve parity in Theatre Nuclear Forces as had already been accomplished in the realm of strategic forces and the next play in the "competition" of arms control, and a potential "bargaining chip" for SALT III. Furthermore the decision to proceed with its development was presented as a "sop" to the military leadership, coming as it did in the immediate aftermath of the Vladivostok Summit, the course of whose proceedings had allegedly drawn the ire of the military hierarchy. Others claimed that the SS-20 represented a deliberate attempt on the part of the Soviet Union to circumvent the constraining effects of the SALT limitations upon their ballistic missile forces. The evidence which has subsequently emerged serves to substantiate neither assertion.

The notion that the SS-20 was developed at the behest of the leadership as a potential "bargaining chip" for SALT III is not supported by the available evidence. Indeed it seems, in sharp contrast, that the SS-20's development occurred with minimal regard to its likely impact upon US-Soviet relations and the balance of forces within the European TVD. There seems little doubt that the furore that its deployment later helped to engender came as a genuine surprise to both civilian and military alike among the Soviet leadership. Similarly Garthoff's portrayal of the missile's development as a "sop" to assuage the ire of the military hierarchy in the immediate aftermath of the Vladivostok Summit is not borne out by the available evidence. While General Detinov accepted that the compromise on FBS at Vladivostok had been grudgingly accepted by the Soviet side he was keen to stress that the military as

a whole had accepted the terms of the Vladivostok Accord without demur. Indeed he specifically rejected the implication that the ensuing development of the SS-20 system represented a *quid pro quo* to assuage discontent among military circles. He also highlighted the military's central role in the formulation of the Soviet Union's negotiating stance throughout SALT and the central role played by Kozlov at the Vladivostok Summit itself. The requirement for consensual agreement within the Five and Big Five would in itself have ensured that fundamental military opposition to the omission of FBS could not have been overlooked. Grechko's continued opposition to the terms of the Vladivostok Accord should be viewed within the broader context of his virulent suspicion of the West from which many within the military hierarchy sought to distance themselves.

The discovery that the SS-20 programme was initiated significantly earlier than had previously been assumed also serves to cast the attendant military-political motives of its development in a new light. The programme's inception in 1966 occurred as a wider process of TNF development[654] at a time when the process of *detente* existed as little more than an aspiration for East-West relations. The significant evolution in geopolitical affairs which facilitated the SALT process was a distant prospect at that time and could in no way have been regarded as an inevitable outcome. While the SS-20's flight testing programme did indeed coincide with a pivotal stage in the SALT process, and its ensuing deployment occurred within the Treaties' technical and numerical constraints, the development of the system was driven principally by a dynamic interaction of intra-bureaucratic rivalries and emergent strategic requirements which predated the SALT process and remained largely unaffected by its progress. Ironically it was this very process of development of the SS-20 in apparent isolation from the wider US-Soviet geopolitical relationship and strategic balance which later accentuated the missile's deleterious effect upon East-West relations. The SS-20's development seems more appropriately placed within a wider context of a continuing

[654] Via the SS-14 and SS-15.

process of Soviet weaponry procurement which, while undoubtedly influenced by the course of SALT, was possessed of its own form and characteristics. The decision to proceed with the development of the SS-20 elicited little high-level discussion or angst and proceeded through the various stages of the weaponry procurement decisionmaking process devoid of the high profile that it would later assume in the context of East-West relations. This was reflected by the fact that key members of the political-military leadership who were closely involved in the SALT process remained unaware of the impending development of the new TNF system.[655] Indeed seeking to explain the subsequent development of the SS-20 as having been inextricably linked with the SALT process and intended to influence its future direction seems on the balance of available evidence to have been incorrect. Such a thesis implicitly confers upon the Soviet defence decisionmaking process an unwarranted degree of sophistication. While the SALT process did serve as a catalyst for an enhanced level of institutional interaction it seems likely that the degree of cohesion which ensued was insufficient to facilitate the type of proactive weaponry procurement posited by this theory.

[655] Georgii Korniyenko and General Nikolai Leonov, chief of KGB analysis department, 1973-83. The likely accuracy of Korniyenko's claim was confirmed to me by Dr Savel'yev.

The question of resource utilisation and the true nature of the SS-20's technical *lineage*.

The SS-20 was traditionally portrayed as a leading member of a family of designs which were purported to have emanated from the Nadiradze Design Bureau over the course of three decades and three generations of Soviet rocket development. The three-stage SS-13 was perceived as having been the Soviet Union's first attempt to develop a solid-fuel, mobile ICBM. Almost without exception it was claimed that the original SS-13 design had then been shorn of a booster stage in an attempt to develop parallel TNF replacements for the obsolescent SS-4/SS-5 force. These projects took the tangible form of the SS-14 and SS-15 respectively and their ensuing deployment in token numbers in the far eastern Soviet Union was viewed in the West as clear evidence of insurmountable technical problems encountered during the course of their development. A similar pattern was discerned in the following generation of missile development as the Nadiradze Bureau once again sought to develop a solid-fuel, mobile ICBM. This development effort was accorded the codename SS-16 by US analysts and befell a similar fate to its predecessor the SS-13. Despite repeated denials by the Soviet SALT negotiating team it was thought by the West that token deployment of c.60 units superseding the SS-13 had occurred. Unanimity prevailed however that such desultory efforts towards deployment following a substantial investment in the development of the programme could only serve to indicate fundamental performance inadequacies on the part of the system, especially in the light of the developing Soviet practice of significant levels of parallel and token production of weaponry systems whose combat capabilities fell far short of optimum. On this occasion however the Nadiradze Bureau was credited with salvaging both its reputation and the fate of the project by evolving the technically-impressive SS-20 IRBM system from the ashes of the SS-16 debacle. The final member of the Nadiradze *family* of designs was the SS-25, a mobile, solid-fuel ICBM which was claimed by the Soviet Union to have been developed directly from the SS-13. All of

these missile systems were identified as being powered by solid rocket fuel and a strong consensus existed among eminent Western analysts which identified the Nadiradze Bureau as possessing a designated monopoly on the development of solid fuel and was inextricably linked to the belief that the Nadiradze Bureau had been solely responsible for the development of these three "generations" of missile systems.

In the light of new evidence which has been gleaned from Russian documentary sources and interviews during the course of my research it is now apparent that the SS-20 was not possessed of the lineage accorded to it by past analyses and as such did not represent the fruition of the Nadiradze Bureau's efforts upon the *pyramid* of prior failures represented by the SS-13, SS-14 and SS-15 systems. While the link between the SS-16 and SS-20 has been re-affirmed, close inspection of the chronology of the programmes' development cycles serves to cast doubt upon the traditional interpretation of the SS-20 as a direct derivative of the aborted ICBM programme. The available evidence now points towards a more complex developmental interaction in which the programmes' origins may have run in parallel fashion. Indeed the initial concept for the eventual SS-20 design might well have predated that of the SS-16 in sharp contrast to all existing analyses of their R&D antecedents.

Previous Western analyses were correct in characterising the SS-14 as a technical off-shoot of the SS-13 programme, which utilised two of the ICBM's three stages, although they again failed to discern the institutional origins of either system. Thus the SS-13 ICBM which was thought to have formed the basis of the Nadiradze family of designs emanated from the Korolev Bureau while the SS-14 was developed by a filial design bureau. The evidence uncovered during the course of my research has established that previous Western accounts that attributed the SS-15's development to the Nadiradze Bureau and ascribed to it the status of a "stable mate" of the SS-13 and SS-14 to have been similarly erroneous. While Jane's speculation on the origins of the SS-15 design proved to be partially correct it seems that Zaloga was alone in

accurately identifying its bureau of origin. The missile was a product of the Yangel Bureau and was accorded the description of a "combined, two-stage ICBM" not the three-stage IRBM[656] it was perceived as in the West. It would thus seem reasonable to extrapolate that the principal role envisioned for the SS-15 was not as a potential replacement for the SS-4/SS-5 force but rather as an addition to the intercontinental capabilities of the Strategic Rocket Forces. The fact that the subsequent failure of the SS-15 programme seems likely to have served as a catalyst for the attempted development of the SS-16 ICBM serves to add weight to such an interpretation. Development of the SS-15 did not commence until 1964, a good deal later than posited by Western analyses.[657] It was intended that the SS-15 would be deployed in silos and railway and road-mobile carriers. While the failure of Volkova[658] to list the SS-15's CEP (Circular Error of Probability) may have implied this major deficiency in the system's accuracy as suspected by Western commentators, this remains open to conjecture. More tangible evidence of its fate was provided General-Lieutenant Kravets, a leading light in the design and development of Soviet missile systems for over 30 years. It seems indisputable that it was to the SS-15 that Kravets was referring when he described the massive explosion which engulfed a Yangel longer range mobile missile during a test launch in 1968 and which led to the programme's cancellation. Significantly Kravets also noted that this particular missile employed a combined liquid-fuelled first stage with a solid-fuelled second stage. This provides further corroboration to the belief that it was to the SS-15 he was referring as this particular means of propulsion was apparently unique to the SS-15 design. The SS-15 was a hybrid which sought to use two different types of fuel, the composition of the first stage was described as "blended solid fuel" while the second stage consisted of a

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[656] Wright, B. (assisted by J. Murphy; series editor, R. Forsberg) 1986. *World Weapon Database, Volume I, Soviet Missiles*. Lexington Mass.: D.C. Heath and Company, p.332.
[657] Ibid.; Berman, R.P. and Baker J.C. 1982. *Soviet Strategic Forces: Requirements and Responses*. Washington D.C.: The Brookings Institution posited 1958-61 a the most likely period for the programme's inception, 1962 was the date offered by United States Department of Defence, 1981. *Soviet Military Power* Washington, D.C.: USGPO.
[658] Volkova, Ye.B. *et al.* 1996. *Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA: sozdanie i sokrashenie*, Moscow: Strategic Rocket Forces, pp.328.

NDMG[659] and NO4. While "asymmetric dimetyl hydrazine's" chemical properties and its employment as a propellant by the US have been previously documented, no published Western source has previously identified this Soviet attempt to combine solid and liquid fuel sections within a single missile system. The absence of a "treaty" designation code for the SS-15 and its absence from the table of deployed Soviet systems within authoritative Russian sources seems to support the assertion that production of this system was negligible and may have failed even to meet Western estimates of a token deployment of c.60 units.

In contrast to the brouhaha which surrounded its alleged deployment in the 1970s the SS-16 receives scant attention in contemporary Russian texts. Those that do mention the SS-16 adhere to the traditional Soviet line which denied that the system had proceeded beyond the stage of operational testing. Vitally however, General Detinov acknowledged that the SS-16 was deployed "in small numbers in the early 1970s". Whether Detinov's allusion to this limited deployment refers to a largescale flight testing programme or to the partial replacement of existing silo-based SS-13s by a number of SS-16s - as was so often alleged by contemporary US sources - remains open to conjecture. Were the latter to emerge as accurate, as seems distinctly possible, it would rank alongside the most serious allegations of Soviet non-compliance with the provisions of the SALT Treaties. While General Detinov was unable to pin-point the precise details of the SS-16's technical failings, he did not recall them as having been insurmountable. Its demerits did however diminish the attraction of its further development and against a backdrop of US opposition to the development of mobile ICBMs the SS-16 programme was cancelled. Furthermore it was also considered more desirable to fulfil the Soviet Union's ICBM allocation within SALT I with MIRVed systems alone rather than with single-RV systems such as the SS-16. General Detinov was able to confirm the accuracy of the traditional Western appraisal of the technical commonality of the SS-16 and SS-20 systems. The SS-20's

[659] "Nesimmetrichnyi dimetilrgeedrazin" or "asymmetric dimetyl hydrazine."

two-stage booster rockets were "virtually identical" to the first two stages of the SS-16 and the exceptionally high degree of component commonality that existed between the two systems facilitated the particularly rapid build-up of SS-20 force levels that ensued. This was affirmed by General Belous.[660] The accuracy of the assessments of the SS-20's likely technical lineage and performance characteristics offered by Western analyses compare favourably with those provided for other Soviet systems, most notably those offered for the other members of the supposed *family* of Nadiradze designs. Significantly the high level of operational efficacy and warhead accuracy with which the SS-20 was accorded by Western sources was later confirmed during the series of test flights performed as part of its decommissioning under the terms of the INF Treaty.[661] The accuracy reflected in Western assessments of the SS-20's technical characteristics did not however extend to their consideration of the chronology of the system's development.

The new evidence provided by Russian sources has led to a reappraisal of the relationship between the SS-20 and the SS-16 and the priority of perceived Soviet weaponry requirements. Moreover it portrays something of a symbiotic relationship between the SS-16 and SS-20 programmes which contrasts with the "father and son" metaphor so often employed by Western assessments. While Western analyses were largely accurate in assessing the timing of the initiation of the SS-20's development, their appraisals of the inception of the SS-16 programme were markedly less reliable, dating it as early as 1964 or 1965.[662] By contrast it has emerged that the origins of the SS-20 programme actually *predated* those of the SS-16 by over three years. The SS-20 programme was initiated on 4 March 1966 while the SS-16 programme was not set in motion until 10 July 1969.[663] When this new evidence is allied to confirmation that

[660] Detinov and Belous interviews.
[661] Confirmation of this was volunteered independently by both Detinov and Belous and was subsequently verified by a top-level Western source.
[662] Wright, *World Weapon Database,* p.180 quoted United States Department of Defence, *Soviet Military Power* 1985 and Berman and Baker resectively for these assessments.
[663] Volkova,*et al. Mezhkontinetal'nye ballisticheskie rakety SSSR (RF) i SShA*, pp.336-7.

the SS-13 emanated from the Korolev Bureau it serves to place the Nadiradze Bureau's initial attempt to develop an ICBM system a full decade later than Western accounts have traditionally posited. This would reinforce Detinov's assertion that the Nadiradze Bureau's roots lay in the development of tactical-range missiles and would be further explained by the intended ICBM role for Yangel's SS-15. Kravets' description of the initiation of a new mobile, solid-fuel ICBM programme in the wake of the spectacular demise of the SS-15 programme in 1968[664] coincides closely with the chronology of the SS-16's development. Kravets' account raises the possibility that the Nadiradze Bureau's attentions were diverted from the SS-20 in 1969 towards the pressing demand for a solid-fuel, mobile ICBM. This seems likely to have caused to the *de facto* suspension of the SS-20 programme until the subsequent demise of the SS-16 programme heralded its resurrection. Circumstantial evidence in support of this thesis is provided by the fact that the final throes of the SS-16's flight testing programme in the latter stages of 1974 closely coincided with the commencement of the SS-20's test programme. The chronological profile of the SS-20's development cycle indicated that something of a lull occurred in the process, apparently as the Nadiradze Bureau's attentions were diverted towards the attempted creation of a viable solid-fuel mobile ICBM system in the wake of the demise of Yangel's SS-15 programme. While TNF modernisation was indeed a matter of not inconsiderable importance it is significant that a technical programme to develop a new TNF system clearly seems to have been suspended in favour of the pursuit of a mobile ICBM system.

One detail which remains subject to conjecture is whether the SS-20 programme was initiated in 1966 solely as an IRBM project or as a more general test bed which might spawn the development of a series of missiles in much the same vein as the SS-13. As such the SS-20 might initially have played the role of "stalking horse" as Ustinov and his allies in *Minoboronprom* awaited an opportune moment to openly challenge

[664] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

Minobshchemash's previous monopoly by entering into the development of ICBM systems. While this thesis is supported by some degree of circumstantial evidence, significant anomalies also persist, and the case remains far from conclusive. As such a characterisation of the origins of the SS-20 programme as having been rooted firmly in the realm of intermediate-range missile development must retain equal weight. A definitive assessment of this issue will remain elusive in the foreseeable future as it would require the public disclosure of the Council of Ministers' decree. By contrast it seems incontestable that the dramatic failure of the SS-15 played a vital role as a catalyst in the subsequent development of the SS-16 with its attendant implications for the course of the SS-20 programme. General-Lieutenant Kravets described the way in which "another mobile ICBM programme was initiated in 1968 as Soviet scientists improved their competence with solid fuel"[665] following the SS-15's demise. This chronology of this new project closely corresponds to the SS-16's timescale of development[666] and it thus seems likely that the Nadiradze Bureau's efforts were diverted toward the pressing demand for a solid-fuel, mobile ICBM in 1969 which caused the effective suspension of, or a marked diminution in the rate of, the SS-20 programme. The ensuing failure of the SS-16 programme might well have then led the Nadiradze Bureau to resume its development efforts via the SS-20 project. Significantly this is supported by the fact that the SS-16's flight testing programme was coming to an end in the latter stages of 1974 as the SS-20's test programme was about to commence. Thus the apparently desultory development of the SS-20 and, in particular, the dearth of apparent progress in its development between 1968 and 1974 could thus be attributed either to its secondary role in Ustinov's plans to facilitate *Minoboronprom* production of ICBMs or the pressing nature of the requirement for a mobile ICBM which emerged with both drama and urgency in the wake of the spectacular demise of the SS-15 project. Proponents of the respective interpretations

[665] Ibid., file 7.

[666] If, as seems likely, Kravets was referring to the SS-16 this raises a number of intriguing questions regarding the existence of inter-bureaux interaction and the pooling of technological information. Moreover if such a practice did occur, was it conducted upon a voluntary basis or at the behest of the VPK or some other governing agency?

would thus attribute the ensuing resurrection of the SS-20 programme either to resource utilisation from a redundant ICBM programme or to the reversion, in the wake of the SS-16's abandonment, to the development of theatre forces whose importance - though vital - was secondary to that of strategic-range missiles. Whichever explanation is favoured - and both hold strong elements of common ground - it is clear that the lineal relationship between the SS-16 and SS-20 was symbiotic in nature to a previously unrecognised extent.

The SS-25 ICBM which subsequently emanated from the Nadiradze Bureau bore a striking visual resemblance to its IRBM predecessor the SS-20 and shared much of the technology employed in the SS-20's and SS-16's propulsion and guidance systems. While Zaloga's claim that the SS-25 possessed a throw weight double that of the SS-13 was exaggerated, the increase remained significant and vastly exceeded the 5% convention employed in SALT. However the SS-25's throw weight paralleled that of its immediate predecessor, the SS-16 and was but a fraction of that of its contemporary, the SS-24. The Soviet depiction of the SS-25 as a direct development of the existing SS-13 programme was viewed by Zaloga as disingenuous and an attempt to disguise the development of a new system in contravention of SALT. While relatively little elucidation as to the true nature and extent of the link between the two systems is provided by contemporary Russian sources Zaloga's allegation was tempered somewhat by Detinov's account which described the redistribution of existing Korolev projects among other design bureaux in the wake of Korolev's specialisation in space launch rocket systems. The existing SS-13 programme was devolved upon the Nadiradze Bureau. However while the incorporation of the SS-13 into the Nadiradze *portfolio* might have provided some impetus to the SS-25 programme its tangible effects were likely to have been limited. The results of the SS-13 programme had been unimpressive and it had lain dormant for a number of years prior to the development of the SS-25. Experiences derived from the development of

the SS-16 and SS-20 would have been of far greater significance to the subsequent development of the SS-25. Thus Zaloga's assertion that the development of the SS-25 in tandem with the SS-24 circumvented the SALT II limits would seem to be well-founded. The fact that the deployment of the single-RV SS-25 represented a move away from the massive Soviet MIRVed ICBMs of the 1970s was undoubtedly welcomed by the US and would explain their unusual reticence on an alleged breach of the Treaty's stipulations.

In the light of my research it is clear that the thesis which sought to propound the existence of a *family* of Nadiradze designs which spanned three generations of missile development requires fundamental revision. It is now evident that far fewer tangible results emanated from the Nadiradze Bureau than had previously been assumed. The belief that the parallel and interlinked development of the SS-13, SS-14 and SS-15 formed the foundation of this interpretation. Emergent evidence has however refuted the very basis of this interpretation and has demonstrated the active involvement of both the Korolev and Yangel Bureaux in these development ventures. This fatally undermines the concept of an all-encompassing *family* of Nadiradze designs. The refutation of the established narrative which had formed the parameters for analysing commission awards and resource allocation also requires a fundamental reappraisal of the extent and nature of the resource allocation enjoyed by the Nadiradze Bureau itself. While previous analyses stressed the high levels of support enjoyed by the Nadiradze Bureau[667] the continued patronage it enjoyed was thought to have been attributable to the perceived importance of developing a viable solid-fuel system and the attendant technical problems this entailed. As the Nadiradze Bureau was believed to have held a monopoly upon the attempted development of this form of propulsion, support for the principle of solid fuel necessarily entailed support for the Nadiradze Bureau itself. However the discrediting of the concept of *family* of Nadiradze designs entails a corresponding disavowal of the concept of a Nadiradze Bureau monopoly

[667] Cockburn, A. 1983. *The Threat: Inside the Soviet Military Machine*. London: Hutchinson, p.87.

upon the development of solid fuel propellants. The SS-13's and SS-15's origins prove that the Korolev and Yangel Bureaux sought to develop solid fuel throughout the course of the 1960s and these bureaux' pursuit of this form of propulsion might in fact have predated Nadiradze's activity in this field. It is difficult to deny the logic of allowing a broad range of development in pursuit of mastery of this complex and vital field of technological development. While Western appraisals, almost without exception, failed to discern the involvement of the Korolev and Yangel bureaux in the pursuit of solid fuel development, their assessment of the technical demerits of the missile systems themselves requires no significant revision. While the SS-20 was accurately ascribed the status of the Nadiradze Bureau's first operationally-viable system by Western sources the lineage of prior designs which were thought to have formed the technical basis of its development has been fatally undermined by the new evidence which has since emerged. The number of previous Nadiradze IRBM and ICBM designs which survived to the flight-testing stage has been dramatically diminished and now contains the SS-16 as its sole certain member. Indeed it seems that in practice the development of deficient missile systems to prototype status and beyond was shared among Soviet rocket bureaux on a rather more equitable basis than had been previously thought. The refutation of the premiss of the Nadiradze Bureau *family* of designs and its solid fuel monopoly serve to accentuate the scale of resource munificence that this particular design bureau enjoyed. This persisted over a prolonged period, apparently devoid of the threat of punitive sanctions, despite the persistent failure to develop a system whose technical viability justified progression to flight-testing. The eventual development of the SS-20 represented a significant accomplishment for the Nadiradze Bureau and provided the Strategic Rocket Forces with a significant addition to its burgeoning arsenal. The SS-20's mobility, high level of accuracy and the potential to proceed rapidly towards largescale deployment due to the pre-existing production lines as a legacy of the aborted SS-16 project afforded the new system a significant role in determining the overall strategic balance.

Resource Utilisation

At first sight the notion that utilisation of resources was an important motivating element in Soviet weaponry production might seem to sit ill with the depiction of defence decisionmaking and production offered in the penultimate chapter. According to Detinov, there was "very great pressure" from both the military and the VPK to proceed with the SS-20. The former did not accept that 'parity' existed due to the exclusion of FBS from SALT. Detinov pointed out with no small amount of irony that the Soviet military were all too keen to accept Macnamara's notion of 400MT as being the requisite nuclear arsenal to inflict "unacceptable damage". The SS-20 would aid them in the pursuit of this aim while going some way to establishing a true strategic 'balance'. The VPK were apparently keen to utilise the pre-existing R&D work associated with the SS-16. The SS-20 was constructed at the Votkinsk Machine Building plant in Votkinsk, Udmurt, in a construction hall that had been specifically built to meet the anticipated production of the SS-16. To this significant capital outlay was added the host of associated investments in sub-contracted suppliers. By the time the political leadership decided to pursue the development of the SS-20 a number of sub-systems, ground support equipment and a plethora of related components had already been produced and delivered in anticipation of the SS-16 programme. Thus the development of the SS-20 seems likely to have been motivated by the interaction of a host of motivations. A form of frugality was perceptible in the VPK's desire to maximise resource utilisation. This coincided with the perennial desire on the part of the defence industries - well attested to in the previous chapter - to maintain weaponry production levels at maximal levels and a growing consensus within the Soviet military of the pressing need to galvanise TNFs through system modernisation which was accentuated by their continued exclusion from SALT following the Vladivostok Summit. Thus while the development of the SS-20 may not fit neatly into a convenient or simplistic structure of cost-benefit

analysis the available evidence tends to suggest the a desire to maximise production returns upon pre-existing investment did on this occasion play a role in the decision to proceed with a system's development.

Reconceptualising Soviet Military Decisionmaking

The character of defence decisionmaking and weaponry procurement policy at the height of the Brezhnev era.

In the course of investigating the impact of bureaucratic and intra-elite relations upon the course of defence decisionmaking this study has discovered new evidence which indicates that such machinations and institutional rivalries impinged upon Soviet weaponry procurement policy to an even greater extent than had previously postulated. Moreover this tendency increased in both scale and frequency over the course of time in a process whose chronological parameters closely paralleled the development of the SS-20 itself. Thus the SS-20's development cycle coincided with a vital transitionary period in Soviet intra-elite relations and defence decisionmaking behaviour. Brezhnev's tenure had been marked at the outset by its collegiate style of decisionmaking and the pursuit of such elite consensus was particularly prevalent in the realm of defence policy. This new approach manifested itself in the sphere of strategic formulation through the re-affirmation of the traditional Soviet precept of "mixed forces". The military leadership in particular enjoyed an enhanced status within the Soviet ruling elite in the immediate aftermath of Khrushchev's ouster. The appointment of Marshal Grechko as Minister of Defence in 1967, in preference to Ustinov, served to add still more lustre to the military leadership's status and marked the zenith of its influence upon Soviet defence decisionmaking. The increasing autonomy enjoyed by the military leadership did not facilitate a broad-based consensus on the most efficacious direction of future strategic planning and attendant force structure requirements. The latitude afforded to the higher echelons of the military in the discussion of this subject served only to accentuate the prolonged and divisive nature of the revision process which extended for a decade or more. This is largely attributable to the increasing devolution of decisionmaking authority to Ustinov and his allies within the state bureaucracy by the Party leadership as a whole and Brezhnev

in particular, a practice which became still more prevalent as the 1970s progressed. Apparent attempts by the political leadership to participate in the formulation of military theory occurred in the late 1970s as demonstrated by Brezhnev's proclamation of the Tula Doctrine in 1977. However, as highlighted above, Russian sources now indicate that deliberations on military science remained devoid of involvement of the political hierarchy beyond the rhetorical level both throughout the remainder of Brezhnev's tenure as General Secretary and those of his three successors. The heated dispute between Minister of Defence Ustinov and Chief of the General Staff Ogarkov was fuelled to a large extent by their conflicting appraisals of future weaponry procurement requirements. However Ogarkov's removal from the post served to stifle further discussion of the divergent principles of military science which had underpinned the confrontation.

In terms of resource allocation the first decade of Brezhnev's tenure was justifiably characterised as a "golden age" for the Soviet defence sector. Both the military services and the defence industries benefited from the extraordinary munificence displayed by the Party leadership in the realm of weaponry procurement. Traditional branches of the military continued to enjoy significant levels of patronage while the decade witnessed a remarkable growth in the nuclear arsenal of the Strategic Rocket Forces. The expansion of Soviet strategic forces occurred on such a scale that by the end of the 1960s the Soviet Union had effectively overcome the United States' huge advantage in strategic forces. The Bolshevik state achieved effective strategic parity with all its attendant perquisites in geopolitical affairs, the most tangible of them being the United States' entry into the SALT process.

The military hierarchy's achievement of effective autonomy in the development of military science and the formulation of strategy coalesced with the zenith of their influence upon the weaponry procurement process. This took a tangible form in the role played by the Scientific-Technical Committee of the General Staff. It operated

autonomously within the General Staff until the mid-1960s, overseeing the issuing of contracts for weaponry production by individual service branches and possessing the right to veto on technical grounds. The Scientific-Technical Committee was also responsible for the detailed planning and direction of military research programmes as a whole and the Committee's support was a prerequisite to the sanctioning of new projects by the Chief of the General Staff. Following restructuring in the mid-1960s the Committee was incorporated into the General Staff's Directorate for Armaments and was placed under the authority of the Deputy Defence Minister for Armaments. The Directorate of Armaments continued to play a pivotal role in shaping weapons programmes and funding until the mid-1970s and its recommendations to the General Staff and to the VPK formed the basis of the funding allocation provided to development projects by the Minister of Defence, the General Staff, and the VPK. Thus by the close of the 1960s the General Staff had attained a position of pre-eminence in the determination of military procurement policy and enjoyed *de jure* authority upon this vital aspect of defence decisionmaking.

Ironically while the impressive degree of autonomy in the deliberation of military science was consolidated over the coming decade through Brezhnev's disengagement from the process, so too did the military suffer a dramatic diminution in its ability to influence the course of the weaponry procurement process for much the same reason. In this arena the dominant position was assumed by Dmitry Ustinov and his cohorts within the defence production sector. Ustinov's growing influence in the determination of defence policy was built upon a long association with both the defence sector and Brezhnev himself and was accompanied by his rise to prominence in the development of the Soviet Union's SALT negotiating position. It is instructive to note that although Ustinov at this point possessed neither the status accorded to a minister or state committee chairman, it was he who chaired the *Big Five* despite the membership of both the Defence and Foreign ministers and the heads of the powerful VPK and KGB on this committee. This served as testament to his considerable

influence in defence decisionmaking at the end of the 1960s and was to prove portentous as still more power was assumed by Ustinov throughout the 1970s progressed at the expense of Defence Minister Grechko in particular and the General Staff in general. Indeed Grechko's attainment of full membership status of the Politburo in 1973 was largely devoid of policymaking import as that body had by then relinquished effective control of defence decisionmaking.

The dramatic deterioration in Brezhnev's health in the early 1970s served to accelerate the devolution of decisionmaking authority upon a troika of the governing elite in which the military leadership found itself increasingly marginalised. The Vladivostok Summit of November 1974 was identified as the last major event at which Brezhnev was able to function in a competent manner. Brezhnev's health quickly deteriorated and culminated in the General Secretary's major heart attack in 1976. This effectively signalled the end of Brezhnev's participation in a functioning leadership capacity. From this point onwards Ustinov, Gromyko and Andropov emerged as the principal figures who filled the power vacuum left by Brezhnev's incapacitation. Their associated sections of the Soviet bureaucracy similarly expanded the scope of their activities and assumed responsibility for the determination of defence procurement policies. Emergent policy proposals were accorded Politburo acceptance as a matter of course. While the new leadership quorum possessed effective autonomy in the formulation of Soviet policy the military hierarchy experienced an inexorable diminution in its influence upon the actions of the *de facto* leadership. Professor Mstislav Keldysh, the President of the Academy of Sciences, also played an ever-increasing role in the process of weaponry procurement. Keldysh had served as the General Secretary's principal adviser on matters of military doctrine and strategy and had been instrumental in the formulation of the Soviet Union's revised retaliatory strategy in 1969. His substantial influence upon the General Secretary was well attested and he increasingly acted as a spokesman for Brezhnev as the General Secretary's health declined.

The *Kommissiya pri Politburo*[668] which was formed in the late 1960s was nominally headed by Brezhnev although the deputy chairman, Ustinov, customarily oversaw proceedings. Although Defence Minister Grechko was one of its members, it was dominated by ministers of the nine defence industries and general designers and members of the Academy of Sciences from the various institutes involved in the work of the defence ministries. This Commission acted as a *de facto* political-military-industrial review committee led by the senior members of the Soviet Defence Council and composed of the leaders of the industries and institutes over which they were to exercise oversight. The Commission's decisions were passed for formal ratification by the Defence Council but were never amended by it. Thus the missile design bureaux gained an invaluable position of influence within the decisionmaking structure itself and upon the very committee which was intended to maintain an oversight upon their own activities. The Defence Council's level of participatory policymaking diminished during this period. It customarily met on a mere handful of occasions each year and was increasingly dominated by VPK interests. Its passive role during the debate over the contest between the SS-17 and SS-19 systems is instructive and clearly demonstrated the Defence Council's largely symbolic role. Even within this forum however the influence of the military leadership was subsumed within the wider circle of the Big Five which formed the core membership. The remaining members included the Chief of the General Staff and the Defence Council was thus the only defence decisionmaking group where the professional military were themselves represented by a uniformed officer. However Grechko's death effectively reduced military representation to the attendance of the Chief of the General staff as the new Minister of Defence, Ustinov, was never accepted as a true "military" official by the officer corps itself.

By the time of his accession to the post of Defence Minister in 1976 Ustinov had firmly established himself as the pre-eminent figure in the formulation of Soviet

[668] The Commission under the Politburo.

weaponry procurement policy and consequently his personal policy preferences became the key determinant of the form of defence decisionmaking. Ustinov emerges from the elite interview series as a rather enigmatic figure, possessing a sound grasp of the technical aspects of weaponry development, while generally lacking of an appreciation of their associated military implications; a figure who facilitated the development of a raft of new weaponry technologies while a First Deputy Chairman in the 1960s yet presided over the burgeoning of stifling conservative production practices in the following decade. Paradoxically he retained a fearsome reputation from his wartime activities and his authority was unquestioned by defence industrialists yet at the same time his relation with them contained a certain ambivalence which led to a leniency which led to the acceptance both of systems whose performance fell well short of optimum operational capabilities and the manufacture of surplus stockpiles through additional production runs which were superfluous to requirements. This dichotomy came to the fore as Ustinov's rise endowed him with still greater influence upon the decisionmaking process and reached a critical juncture in the wake of his appointment as Minister of Defence. As General Danilevich succinctly opined, "he acted as the client, the contractor and the customer. In practice his position was such that he was often forced to compromise with himself. He stood on the edge of the blade and waffled in both directions".[669]

While it is impossible to offer a precise timescale of the cyclical fluctuations of military influence upon defence policymaking it is clear that it reached something of a zenith during the Soviet Union's largescale strategic build-up in the mid-to-late 1960s and was accompanied by a consensus among the political and military leadership in support of this policy option. However the strategic revision which emerged at the close of the decade coincided with planning for the next generation of missile systems. At this point there seems to have been a divergence of interests between the military leadership and the defence industrialists. The scale of the ensuing policy conflicts

[669] University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 1.

recounted by a host of well-informed and independent Russian sources is itself instructive as is the extent to which the defence industry's interests prevailed apparently without exception on the occasion of such a *contretemps*. For his part Dr Tsygichko criticised the consistent under-estimation of the role played by the military-industrial department of the Central Committee which functioned as a *de facto* sitting Defence Council, setting military policy - which governed military doctrine and force development - and supporting the formal Defence Council. The Defence Industry Department of the Central Committee was identified as the principal vehicle through which the defence industrialists sought to bend weaponry procurement policy to their own ends. Tsygichko highlighted the fact that it was dominated by ministers responsible for armaments production, chief designers and political officers[670] while a former senior Department official described its role in the development of new programmes and their series production. This official also stated categorically that the interests of the defence industry held sway with the Department over those of the General Staff or the Ministry of Defence without exception.[671]

Ustinov's emerging ascendancy among the defence decisionmaking elite was accompanied by the growing influence of the principal players of the Soviet defence industries. This eclipsed that enjoyed by either the Ministry of Defence or the General Staff, whose reduced station was further evidenced by its increasing domination of policy preferences and the VPK's near-monopolistic supply of technical information to the Soviet leadership. Increasingly the VPK alone oversaw development programmes from their inception through their technical and strategic evaluation to their culmination through the determination of the size and location of the production run. The procedural reforms which emerged in the wake of Ustinov's accession to the post of Minister of Defence in 1976 served to swing the balance of power still further in favour of the defence industries. While Grechko's personal influence within the

[670] Ibid., file 5.
[671] Ibid., file 7.

leadership had diminished markedly in the years prior to his death the General Staff Directorate of Armaments Orders had played a central role in shaping weapons programmes and funding prior to 1976. At this point in time Ustinov introduced a revised process which reduced the General Staff's role and greatly expanded the VPK's influence. Henceforth funds were allocated directly to the VPK and individual service branches applied to the VPK for funding in addition to the traditional source, the Ministry of Defence. The Directorate of Armaments was removed from the General Staff's authority and made an independent Ministry of Defence Directorate headed by deputy minister of defence Shabanov. Significantly however, its *executive* role was removed and replaced by a mere *advisory* one. While General Detinov stressed the continued role played by the Scientific-Technical Committee in the wake of the reorganisation his military counterparts were unswerving in the import they accorded this development. The direct allocation of funds to the VPK unleashed the military-industrial complex and circumvented the General Staff's role in weaponry procurement policymaking. Both the VPK and the Central Committee Defence Department were viewed as having been motivated principally by their desire to represent the interests of the defence sector.

The vested interests of the defence sector had broadly coalesced with those of the military leadership during the rapid build-up of strategic forces during the second half of the 1960s. The adoption of more sophisticated strategic concepts held attendant requirements in terms of strategic force structure and weaponry performance which placed a heavy emphasis upon qualitative advances within the next generation of Soviet missile systems. By this point in time however the design conservatism that was endemic throughout the long-established sections of the Soviet defence sector had also permeated through the ballistic missile sector. The tangible result was that the missile design bureaux mirrored the defence sector as a whole through the production of a host of weapons systems which were often ill-equipped to perform the designated tasks of Soviet strategy. As the 1970s progressed and the sectional

interests of the defence producers became increasingly dominant via Ustinov's associated rise to pre-eminence the practice of weapon system replication became endemic in Soviet defence production. Design conservatism combined with sectional self-advancement to ensure that the defence sector produced numerous units of weapons systems of often dubious operational merit. The preference for quantitative increase over qualitative improvement in Soviet defence production behaviour grew inexorably and reached its culmination by the end of the decade. However Ogarkov's subsequent fate seemed to provide a further indication of the inherent strength of the defence sector's institutional interests.

The course of bureaucratic and intra-elite machinations which formed the backdrop to defence decisionmaking provides an invaluable avenue of investigation in the pursuit of an understanding of Soviet weaponry procurement. In the case of the SS-20 it has for the most part been overshadowed by consideration of the established rationales employed by previous Western analyses. In essence it would seem that while several strong rationales existed which one might have expected to have elicited a response such as the development of the SS-20 they cannot be considered independently of the extraneous exigencies of Soviet intra-elite relations which were coming to dominate defence decisionmaking at this time. The SS-20's development cycle was peculiar, indeed perhaps unique, and sat "on the cusp" of the evolving transition. The programme's inception coincided with the zenith of the military leadership's input into the defence decisionmaking process, while the course of its development through to the point of deployment coincided with a dramatic diminution in military input into the weaponry procurement process. It thus met pertinent operational requirements to an extent that was unrivalled by both its predecessors and successors.

Modelling the SS-20 Decision

The value of the SS-20's development as a case study

I was drawn towards the study of the SS-20's development by my own vivid memories of the pivotal role that its deployment seemed to have played in the dramatic deterioration in East-West relations during the late 1970s and early 1980s. My curiosity into the motivations which underpinned the decision to develop this particular missile system outlived both the controversy surrounding such weapons and indeed the Soviet state itself. At the outset of my research a consensus seemed to emerge from Western accounts that confirmed the essence of Garthoff's assessment of the SS-20's development as "a natural"[672] - a classic example of the Soviet process of defence decisionmaking and weaponry procurement. In now seems that, by contrast, that the SS-20 was a largely *atypical* product of Soviet defence decisionmaking. Despite this the SS-20's development has served as an invaluable catalyst during the course of my research, facilitating the investigation of the much greater, yet far more diffuse, subject of Soviet defence decisionmaking during the Brezhnev era. The controversy which surrounded its deployment remains writ large upon the memories and perceptions of those who participated in these unfolding events and those who study the field of Soviet political history. Moreover, the passage of time has afforded the possibility of a more objective appraisal by both participants and observers alike, while the dramatic political transformation in the intervening period has furnished the latter group with the liberty to discuss the details surrounding these events with a degree of candour that would have been unthinkable until recently and certainly could not have been anticipated during the dark days of East-West relations which accompanied the INF deployments in the late 1970s and early 1980s. The subject retains the potential to seize the attention and curiosity of those involved in both the practice and study of Soviet defence decisionmaking.

[672] Garthoff, R.L. 1983. "The Soviet SS-20 Decision", *Survival*, 15(1):112.

With hindsight the adoption of this particular case study was especially appropriate given the extreme complexity which surrounded the wider scope of my study, Soviet defence decisionmaking. Both in terms of the incremental process of developing my own understanding of the field and when broaching the subject with experts in the field - most especially my contacts in Russia - the SS-20 represented a tangible aspect and a vital "access point" through which to delineate the amorphous nature of Soviet weaponry procurement policy. Approaching this field of research was often a little daunting - without the employment of the SS-20 as a case study, it might have been an insurmountable task.

However the development SS-20 does possess certain limitations when employed as a case study. In a sense the beauty of this case study also presents its principal limitation. While the SS-20 is without doubt the most famous, and arguably the most politically important, Soviet nuclear missile, it is also rather unusual because of its undoubted technical proficiency and its efficacy in meeting the operational requirements of Soviet nuclear strategy of the period. As I have detailed above this is most likely to have been attributable to the unique positioning of the SS-20's development cycle within the evolution of Soviet defence decisionmaking. Its inception and early development coincided with the zenith of General Staff input into weaponry procurement policy, which though circumscribed to an extent by the internal divisions which found personification in Grechko himself, compared favourably with what was to emerge as the 1970s proceeded. Thus to the inherent danger of over-determination which was so often evident in Western analyses of the SS-20's development must be added the additional caveat that the process which led to the development of this particular missile system was increasingly unrepresentative of established practice as it emerged in the coming years as Ustinov and his allies in the defence industries tightened their grip upon Soviet weaponry procurement policy.

Applicability of models

Attributes associated with the action-reaction model were traditionally cited in explanations of the missile's development. The Soviet Union's deployment of a new generation of TNFs could be viewed as the completion of a programme of weaponry procurement which had spanned the decade from the mid-1960s. To the impressive build-up of land-based ICBMs had been added submarine-based systems from the end of the 1960s. A rejuvenated theatre force could be viewed as having completed the Soviet Union's nuclear missile complement and providing it with its own form of "nuclear triad". Deployment of the SS-20 could thus be portrayed as the completion of a process of reactive force development which had originally been inspired by the US strategic build-up, but to which had been added a renewed urgency by the deterioration in Sino-Soviet relations in the late 1960s. Advocates of the technological dynamic variant of the action-reaction model might also have sought support for their beliefs in the SS-20 case study by highlighting Soviet intelligence's cognisance of the impending development of a new generation of US TNFs and the anticipated deployment of a Chinese regional nuclear force. However, upon reflection, the apparent ready applicability of the action-reaction model to the SS-20's development is further testament to its greatest weakness, its indiscriminate acceptance of actions as being potentially reactive in nature, which militated against its employment for detailed consideration of the weaponry acquisition process.

In contrast it seems clear at first sight that the national leadership model can be discounted as a means of explaining Soviet defence decisionmaking practices of the period. The Brezhnev regime was initially founded upon a consensus style of government. While Brezhnev's personal position was galvanised over time and he assumed a position of political pre-eminence, the evidence presented indicates that this was accompanied by an increasing devolution of defence decisionmaking authority and mechanisms upon the Soviet bureaucracy, whose role increased throughout

Brezhnev's tenure. The only semblance of a national leadership model which emerged from investigation of the subject applied not to the General Secretary, but to Dmitry Ustinov. A plausible argument could be offered that Ustinov came closest to donning the mantle of principal defence decisionmaker on the basis of the reforms which occurred in the wake of his appointment as Minister of Defence in 1976. Such a claim would however undoubtedly provoke considerable conjecture and lies beyond the immediate chronological parameters of my study of the SS-20.

The decisionmaking process which led to the development of the SS-20 displays characteristics which transcend two distinct models of weaponry procurement behaviour. The evidence concerning Soviet defence production and the course of its evolution provided by the interviews with former high level members of the Soviet Union's ruling circle undoubtedly portray the VPK and its allies within the defence industry as pursuing their own interests rather than seeking to fulfil the military's stated weaponry requirements. The efforts of the VPK and the weaponry designers to ensure development and production processes stability appear to have been a permanent feature of the Soviet Union's strategic procurement programme which increased over time and became the dominant determinant factor as Ustinov's influence grew. Detailed consideration of the extent and longevity of the defence sector's influence upon Soviet weaponry procurement in the realm of ballistic missiles must concede the apparent applicability value of the interest group model as a means of elucidation. However, within this amorphous process of evolution the SS-20 held a unique chronological position, which serves as a likely explanatory factor for the pertinence of its operational capabilities. The emplacement of the inception of the SS-20 programme "on the cusp" of the evolutionary process, at a point which coincided with the zenith of military influence upon weaponry procurement, most likely engendered the missile with such performance attributes and stands in stark contrast to the rapid diminution in military input which coincided with the initial deployment of the SS-20 itself. Within this context the defining parameters of the military mission

model can be ascribed - exceptionally, perhaps uniquely - to the development of the SS-20.

This study has sought to consider the SS-20's development in its widest possible context, revisiting and testing established rationales, while also detailing the political backdrop to the defence decisionmaking process provided by inter-elite machinations and bureaucratic interaction. The result of this exercise provides a more sophisticated appraisal of the motivating factors which underpinned the SS-20's development and places it astride two apparently conflicting explanatory models. This conclusion can be ascribed to the inherent limitations of seeking to employ a modelling structure to interpret the multi-faceted character of weaponry procurement and accentuated both by the complexity of the Soviet Union and by the SS-20's chronological emplacement within a period characterised by a fluid transformation in Soviet defence decisionmaking practice.

Further areas of research

While this thesis has alluded to and investigated several Soviet missile systems its attentions have, for the most part, been directed towards an investigation of the SS-20. Although it would pose a rather onerous task, a more comprehensive study which sought to consider a wider range of missile systems over a still longer timescale might facilitate a wider perspective of the nature of Soviet defence decisionmaking and weaponry procurement policy and the relative propensity of missile systems to adhere to the stated demands of Soviet military strategy over a given period of time. Many of the insights that I have garnered from experts from both East and West throughout the course of my research lead me to believe that the SS-20 represented an atypical example of Soviet weaponry procurement, associated with the fact that the programme's inception coincided with the high watermark of military influence upon

defence decisionmaking and consequently came closer to meeting the strategic requirements delineated by Soviet military planners of the period than many of its contemporary weapons systems. When this was viewed in conjunction with the indisputable efficacy of the system's operational performance the SS-20 might indeed be seen to represent the exception that proves the rule of Soviet weaponry procurement. While the Strategic Rocket Forces and their nuclear arsenal represented the most high-profile and militarily significant service of the former Soviet Union, studies of a similar nature could in theory be replicated for any given branch of the armed services. Additionally, one could follow the path of research via case study comparison on a international basis. This would serve to test the hypotheses offered by those such as Cockburn who sought to portray a similar, and inter-related, process of interest-group interaction at the heart of Western procurement during the same period.

Specifically the link between the SS-13 and SS-25 is in itself intriguing and serves as a vital postscript to the account of the SS-20 and provides a promising avenue for future research. General Detinov characterised the process of programme redistribution which was applied to existing Korolev projects as the customary practice associated with the voluntary surrender of projects by a design bureau ceasing work in a particular field of weaponry development.[673] This fascinating revelation raises new questions about the extent of inter-agency co-operation in Soviet defence production, specifically the prospect that a degree of inter-bureau co-operation and interchange of design projects might have existed.[674] The existence of such a practice would in itself demand a significant revision of Western analyses of the character of Soviet missile design and development which has traditionally been cast as highly compartmentalised in character. Research which sought to employ wider

[673] Detinov interview.

[674] Kravets alluded to the existence of a degree of pooled research when he referred to the development of solid fuel and implied that it took place on a *supra-bureau* basis. University of Edinburgh, Department of Defence Studies Archive, (limited access only), file 7.

chronological parameters and an enhanced portfolio of bureaux as subjects of investigation would afford the opportunity to pursue such a comprehensive study of this nature.

Appendix A: Soviet Missile Designations

Soviet Designation			Western Designation
operational:	technological:	treaties:	USA/NATO:
R-5M	8K51	_	SS-3/Shyster[675]
R-12	8K63	R-12	SS-4/Sandal
R-12Y	8K63Y	R-12	" "
R-14	8K65	R-14	SS-5/Skean
R-14Y	8K65Y	R-14	" "
UR-100	8K84	-	SS-11/Sego
UR-100M	8K84M	-	" "
UR-100K	15A20	RS-10	" "
UR-100Y	15A20Y	RS-10	" "
RT-2	8K98	RS-12	SS-13/Savage
RT-2P	8K98P	RS-12	" "
RT-15	8K96	-	SS-14/Scapegoat
RT-20	8K99	-	SS-15/Scrooge
"Temp-2C"	15"zh"42	RS-14	SS-16/Sinner
RSD-10	15"zh"45	RSD-10	SS-20/Sabre
[RSD-10 "Pioneer 'YTTX'"]	15"zh"53	RSD-10	SS-20 Mod.2/Sabre
RT-2PM	15"zh"58	RS-12M	SS-25/Sickle

The table above highlights the potential for confusion afforded by the plethora of terms used to identify Soviet missile systems. The multiplicity of Soviet designations

[675] Kolesnikov identified Korolev as the designer responsible for the SS-3. Previous accounts had attributed it to Yangel and had viewed it as having close developmental links with Yangel's subsequent SS-4 and SS-5. Kolesnikov, S.G. 1996. *Strategicheskoe raketno-yadernoe uruzhie*, Moscow: Arsenal Press, p.118.

provides testament to the obsession with preserving military data which so characterised the Soviet approach and led to a style of perennial reticence in their participation in SALT. The operational code was applied to a given system during its development, production and subsequent deployment and was the principal means of system identification within the Soviet military. The technological code was by contrast classified and was known only to a select few. The treaty designation was formulated specifically for use in arms control negotiations with the US,[676] apparently to minimise the perceived risk of compromising the integrity of classified Soviet information.[677] Thus the absence of such a term in the table above indicates that the system in question was not contained within the auspices of SALT or subsequent arms control negotiations thus indicating its failure to reach final deployment or its decommissioning prior to the initiation of the negotiating process. To add still more complexity some Soviet systems were also named, the SS-20 for example was termed *Pioneer* in such parlance.

Western practice did little to minimise the complexity of terminology. NATO chose to designate each Soviet system with an individual codename, starting without exception in the case of ballistic missiles, with the letter "S."[678] The US employed an alphanumeric code where the first letter referred to the launch environment, the second to its designated target,[679] followed by a number referring to the order of this in the sequence of all similar missiles known to have been developed.[680] For the

[676] Savel'yev, A.G. & Detinov, N.N. 1995. *The Big Five: Arms Control Decisionmaking in the Soviet Union.* Westport, Ct.: Praeger, pp.51-2.
[677] Many Soviet tracts sought to avoid potential mishap through the use of the convoluted style "the system known to the Americans as..." when discussing Soviet missile systems. These careful preparations were to no avail however when Brezhnev let slip the name of the *Typhoon* SLBM system during negotiations with the US.
[678] The SS-20 was known as *Sabre* according to NATO designation.
[679] Thus any code which took the form "SS-.." indicated a missile fired from the surface and intended to strike a surface target.
[680] The insertion of "X" within its designation indicated its prototype status, an "N" identified a naval system. Modular upgrades were a common feature of Soviet weaponry production and were indentified by the US by "Mod. 1," etc.

purposes of ease of recognition, the US system of designation has been adopted as the norm during the course of this study. This seemed most fitting as it was in this guise that this particular missile system's reputation grew to take on such fame and notoriety.

Appendix B: The Defence Decisionmaking Process

The Ministries of the Defence Industry.

Most Soviet weapons were produced in one of the nine ministries whose output was almost exclusively devoted to the production of military equipment.[681] They were controlled by the VPK and their activities were supervised by the Defence Production Department of the Central Committee Secretariat.[682]

Medium Machine Building:[683]	nuclear warheads and devices, uranium mining and processing, lasers.
General Machine Building:[684]	strategic and cruise missiles, rockets and space vehicles, SLBM fire-control systems.
Defence Industry:[685]	*tactical* missiles,[686] ground forces equipment - armoured vehicles, artillery, small-arms, optical equipment, SAMs, ASW missiles.
Machine Building:	conventional ammunition, explosives and explosive fuses.
Aviation Industry:	military and civilian fixed-wing aircraft and helicopters.

[681] In addition a number of "civilian" ministries also contributed to military equipment production, most notably the ministries for car and tractor, chemical and instrument production. Alexander, A.J., 1970, *R&D in Soviet Aviation,* Santa Monica, Cal.: RAND, p.22.

[682] For a detailed account of the evolution of the Soviet defence sector, see McDonnell, J. "The Soviet Defence Industry as a Pressure Group", in MccGwire M., Booth, K. and McDonnell, J. (eds.) 1975. *Soviet Naval Policy: Objectives and Constraints.* New York: Praeger Publishers, pp.87-122; Holloway, D. "The Soviet Union," in Ball, N. and Leitenberg, M. (eds.) 1983. *The Structure of the Defence Industry: An International Survey.* London: Croom Helm, pp.51-80. For details of the Central Committee Defence Industry Department, see Wells, D. & Miller, J., 1993. *A Directory of Heads and Deputy Heads of CPSU Central Committees, 1952-91*, Lorton Paper, no.8. Manchester: Lorton House, pp.12-13.

[683] *Minsredmash* .

[684] *Minobshchemash.*

[685] *Minoboronprom.*

[686] As the Nadiradze Bureau initially designed only missiles of a *tactical* range it too was included under the auspices of *Minoboronprom.* When the Bureau transferred its attentions to the design of *strategic* systems it remained within this Ministry.

Shipbuilding Industry:	military and civilian ships.
Electronics Industry:	computers and electronic components.
Radio Industry:	radar and radio equipment and guidance and control systems.
Communications Equipment Industry:	radio, telephone and telegraph communications, satellite communication systems.

The ministries possessed a shared institutional framework led by a designated minister who was supported by a team of six to eight deputy ministers who oversaw the functions of programme development and production. The collegium of the ministry encompassed its highest ranking officials and served as the forum for the consideration of the principal issues pertaining to the work of the ministry. Ministerial departments were delegated the tasks of overseeing administrative questions of project planning, finance, availability of resources and quality assurance. A Scientific and Technical Council would draw together leading designers, scientists and engineers in the ministry's field of specialisation and would seek to formulate the technical parameters of the ministry's development plans and the feasibility of project proposals presented before it.

The Ministry of Medium Machinebuilding (*Minsredmash*) was established in 1953 and from its inception it played a key role in the Soviet Union's development of nuclear weapons.[687] *Minsredmash* was headed by the veteran E.P. Slavsky and was responsible for the entire process of production of nuclear warheads from the mining of the uranium ore to the final manufacture of the devices themselves. *Minsredmash* was joined from 1965 in the production of Soviet nuclear weapons by the Ministry of General Machine Building (*Minobshchemash*) and the Ministry of the Defence Industry (*Minoboronprom*). Agursky characterised the creation of the Ministry of

[687] Prior to this, the nuclear programme was overseen by the First Main Administration of the USSR Council of Ministers under Beria's leadership.

General Machinebuilding in 1965 as predicated by "bureaucratic-political" factors as Ustinov sought to consolidate his new-found powers.[688] The creation of *Minoboronprom* signalled the removal of missiles from the authority of the State Committee on Aviation. *Minoboronprom* was responsible for the development and manufacture of ballistic missiles and space-launch vehicles. Four departments within the new ministry played a key role in the future development and production of Soviet missiles. The Central Design Office was responsible for allocating new orders to the four main design bureaux, whose work was overseen by the Central Missile Engine Design Office, the Missile Engine Design Bureau and the Central Guidance Development Office. The Central Construction Office was charged with the construction of launch control sites and silos. According to the US Department of Defence *Minoboronprom* encompassed more than twenty plants dedicated solely to the production of missile systems and supported by a host of satellite factories supplying requisite components.[689] A number of research institutes were also encompassed within *Minoboronprom* although detailed information on their form and activities was sparse.[690]

[688] Agursky, M. "Nauchno-issedovatel'skii institut tekhnologii Mashinostroeniya kak chast' sovetskogo voenno-promyshlennogo kompleksa", pp.32-44 cited in J.A. McDonnell, "The Soviet Weapons Acquisition System", in Jones, D.R. 1979. *Soviet Armed Forces Review Annual*, volume 3, Gulf Breeze: Academic International Programme.
[689] *Soviet Military Power*, p.97.
[690] Cooper, J. in McLean, S. 1986. *How Nuclear Weapons Decisions Are Made*, London: Macmillan, p.18.

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Restricted Access Collections and Personal Interviews

Interviews with Lieutenant-General Nikolai N. Detinov at his Moscow residence on 19 June 1997 and Dr Vladimir S. Belous (Major-General retd.) at the Institute for National Security & Strategic Studies on 24 June 1997.

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Soviet evidence: select material

Interview records and documentary material relating to: Main Operations Directorate, Soviet General Staff, Military Industrial Commission (VPK), NII-6 (GRU: Main Intelligence Directorate), TsNIIMash (Main Research and Design Institute), Ministry of General Machine Building (MOM), Military-Technical Committee (Ministry of Defence), unpublished studies separately identified.

File 1
Colonel-General (ret) A. Danilevich
Senior Special Assistant to Chief of Main Operations Directorate, General Staff. Assistant for Doctrine and Strategy to Chief of the General Staff, Senior author, 3-volume (Top Secret) study "Strategy of Deep Operations (Global, Continental Theatre)" 1977-86.

File content by topic:
Soviet military assesments to 1970
Soviet military decisions 1970s
Correlation of forces: assesments
Threat analysis: conventional/nuclear
Soviet missiles, performance, targeting 1950-1970

File 2
Colonel-General Igor Illarionov
Aide to Marshal Ustinov/Central Committee Secretariat 1965-76, Assistant to Ustinov, Special Assignments 1976-84

File content by topic:
Military-industrial policy, defining weapons systems
On Grechko, Ustinov, Ogarkov, Akhromeyev
Missile designers Yangel, Chelomei
Disputes, missile systems.
Attitudes of Grechko on missile systems
Main Directorates for Special Technologies: origins

File 3
Yu. Mozzhorin, General Director (30 years) TsNIIMash, Main Research and Design Institute, Ministry of General Machinebuilding (MOM), missile design and production.

File content by topic:
Soviet missile design and production

File 4
A.S. Kalashnikov, Member Military-Technical Committee, Ministry of Defence also Strategic Rocket Forces (SRF)

File content by topic:
Nuclear armaments (warheads)
Nuclear testing
Definitions, missile roles and silo design
NATO threat: analysis
WTO systems
Nuclear war in Europe: analysis
Surprise attacks: protective measures
Deployment of the SS-20
NATO threat: summation

File 5
Colonel Dr. V. Tsygichko, Head NII-6, GRU (Main Intelligence Directorate), Systems analysis, General Staff.

File content by topic:
"Soviet Use of Mathematical Models to Support Strategic Decisionmaking", unpublished , 119pp. Utilised by Main Operational Directorate, General Staff, also Sub-directorate for Strategic Operational Planning.
Review of General Staff weapons programmes
Analysis of personnel, NII6

File 6
Army General Makhmut Gareev

File content:
"Kholodnaya voina i gonka vooruzhenii." Unpublished study, 1993, 36pp.

File 7
Deputy Chief, Strategic Rocket Forces (not named) , Central Committee Defence Department (personnel not named), Mozzhorin, former Director TsNIIMash.

File content by topic:
Launch systems
Command and control, automated launch
Missile communication system: initial designs mid-1960s
Development to late 1970s