AFR 110-14

USAF AIRCRAFT

ACCIDENT

INVESTIGATION

BOARD

24 JUNE 94

FAIRCHILD AFB, WA

B-52H AIRCRAFT S/N 61-0026	VOL 3	92 BW 325 BS

INVESTIGATION OFFICER

MICHAEL G. MCCONNELL, COL, USAF

HQ
12TH AIR FORCE

COPY NUMBER 80 **OF** _____

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USAF AIRCRAFT ACCIDENT
INVESTIGATION REPORT
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AIRCREW BRIEFING LOG (AFR 105-5/AWS Sup 1)

PERIOD OF RECORD — FROM 24 JUN — TO

ACFT TYPE	ACFT IDENT	DEP POINT/ETD	FL	DESTN/ETA	SIGNIFICANT/SEVERE WEATHER BRIEFED		WX BRF (DI/Time)	INIT
					PHENOMENA/LOCATION	BASED ON		
B52	CZAR 52	SKA/1700	060	SKA/1900	NO SIG WX	SFC	24JUN94 1436Z	MF

W-1

FEDERAL METEOROLOGICAL FORM 1-10 SURFACE WEATHER OBSERVATIONS (MF 1-10)
(ABRIDGED FORM FOR MILITARY USE)

LATITUDE	LONGITUDE	STATION ELEVATION (hp) FEET (MSL)	TIME CONVERSION LST to GMT (+)	MAG TO TRUE (Deg)	DAY (LST)	MONTH	YEAR	STATION AND STATE OR COUNTRY
47°37'N	117°39'W	2462	8	9	24	JUNE	1994	FAIRCHILD, AFB WA

TYPE (1)	TIME (GMT) (2)	SKY CONDITION (3)	PVLG VSBY (miles) (4)	WEATHER AND OBSTNS TO VISION (5)	SEA LEVEL PRES (mb) (6)	TEMP (°F) (7)	DEW-POINT (°F) (8)	WIND DRCTN (true) (9)	WIND SPEED (knots) (10)	WIND CHARACTER (knots) (11)	ALSTG (inches) (12)	REMARKS AND SUPPLEMENTARY CODED DATA — DESIRED ORDER OF ENTRY: RVR, SFC based obsc phenomena, remarks elaborating on preceding coded data 3- and 6-hourly additive data, radiosonde data, runway conditions, weather modification (13)	STATION PRESSURE (inches) (17)	TOTAL SKY COV (18)	OBS INIT
SA	0855	60 SCT	15		188	48	41	19	08		011	CB PSIPTD / 115 1100	27.525	2	[illegible]
SA	0955	60 SCT	10		189	47	40	21	12		011	HAZY	27.530	1	[illegible]
SA	1055	60 SCT	15		191	46	39	19	08		012		27.535	1	[illegible]
SA	1155	50 SCT	15		198	44	39	17	10		014	308 1100	27.550	1	[illegible]
SA	1255	50 SCT	30		200	45	40	19	08		014		27.555		
SA	1355	50 SCT	30		204	48	40	18	11		014		27.560	1	
SA	1455	50 SCT	30		206	51	40	21	10		015	307 1100	27.570	1	
SA	1555	50 SCT	30		210	55	40	19	09		016		27.580	1	[illegible]
SA	1655	50 SCT	30		209	57	39	21	10		016	[illegible]	27.575	1	[illegible]
SA	1755	50 SCT	30		239	60	40	20	11	G19	016	102 1100	27.575	2	[illegible]
SA	1855	50 SCT	30		207	63	40	18	15		015		27.565	1	[illegible]
SA	1955	50 SCT	30		204	[illegible]	[illegible]	19	10		014		27.555	1	[illegible]
SA	2055	50 SCT	40		198	66	36	13	08	G15	012	312 1100	27.540	1	[illegible]
L	2117	50 SCT	30		204	67	36	21	08		014	(ACFT mishap)	27.550		[illegible]
SA	2155	50 SCT	30		198	72	37	23	06	G19	010		27.520	1	[illegible]

SYNOPTIC DATA

TIME (GMT) (41)	TIME (LST) (42)	NO (43)	PRECIP (water equiv) (44)	SNOW FALL (45)	SNOW DEPTH (46)
Mid (LST) to: 1150	Mid to:		0	0	
1150		(1)	0	0	0
1750		(2)	0	0	0
2350		(3)			
0550		(4)			
Mid (LST)	Mid (LST)				

STATION PRESSURE COMPUTATION

TIME (GMT) (59)					
ATT THERM (60)					
OBSRVD BAR (61)					
TOTAL CORR (62)					
STA PRESS (63)					
BAROGRAPH (64)					
BAR CORR (65)					

SUMMARY OF THE DAY

24-HR MAX TEMP (°F) (66)	PRECIP (water equiv) (68)	SNOW FALL (69)	SNOW DEPTH (70)
			0

24-HR MIN TEMP (°F) (67)	PEAK WIND SPEED (knots) (71)	PEAK WIND DRCTN (true) (72)	PEAK WIND TIME (GMT) (73)

ACTIVE RNWY AND EQUIP CHANGE

TIME (GMT)	RNWY NO
CONT	23

90 REMARKS, NOTES, AND MISCELLANEOUS PHENOMENA (all times GMT)

45°F AT 1245Z

[illegible]

AF FORM 3802, JAN 92

W+2

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 93D BOMB WING (ACC)
CASTLE AIR FORCE BASE, CALIFORNIA

19 August 1994

MEMORANDUM FOR: Colonel McConnell,
President, AFR 110-14 Board

FROM: 93d Medical Group/SGP (ACC)
Castle AFB, California 95301

SUBJ: Medical Statement — Summary of Conclusions

1. In reference to the B-52H aircraft accident of 24 Jun 94 at Fairchild AFB, Washington, the following conclusions are consistent with the findings at autopsy of the four fatally injured aircrew members:

Col. Wolff was seated in the instructor pilot's seat (not capable of ejection)
Lt. Col. Holland was probably in control of the aircraft at the time of impact, had not initiated ejection and was seated in the left pilot's seat
Lt. Col McGeehan had partially ejected (and was therefore not in control of the aircraft) and was seated in the right pilot's seat
Lt. Col. Huston (by process of elimination) was seated in the radar navigator's seat and had not initiated ejection

2. Although all four crew members sustained injuries that may have been caused by placement of the hands and feet on the controls, their seating arrangement and the ejection sequence status make the above conclusions almost certain. The injuries sustained by the crew members other than Lt. Col. Holland were attributed to impact forces only. Those particular characteristic injuries of Lt Col. Holland were attributed to having his hands on the controls at impact.

KEVIN J. NEHRING, Lt Col, USAF, MC, SFS
Chief, Aeromedical Services

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 93D BOMB WING (ACC)
CASTLE AIR FORCE BASE, CALIFORNIA

19 August 1994

MEMORANDUM FOR: Colonel McConnell,
President, AFR 110-14 Board

FROM: 93d Medical Group/SGP (ACC)
Castle AFB, California 95301

SUBJ: Medical Statement — Lieutenant Colonel Arthur A. Holland

1. A review of the medical records of Lieutenant Colonel Arthur A. Holland reveals that a flying class II (short) physical was accomplished on 16 Dec 93. The exam was within normal limits and medical clearance was granted, valid through 31 Jan 95. His last long physical was accomplished on 15 Dec 92, and he was qualified.

2. Lieutenant Colonel Holland expired due to multiple extreme injuries. Toxicological studies were negative.

3. Because of the pattern of Lt. Col. Holland's injuries and through the process of elimination, the following conclusions are consistent with the findings:

He was in the left pilot's seat
He had his hands on the controls at the time of impact
He had not initiated the ejection sequence
He was in primary control of the aircraft

4. In conclusion, there is no evidence of medical facts in the records, autopsy. or toxicological studies that would have contributed to this accident.

KEVIN J. MEHRING, Lt Col, USAF, MC, SFS
Chief, Aeromedical Services

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 93D BOMB WING (ACC)
CASTLE AIR FORCE BASE, CALIFORNIA

19 August 1994

MEMORANDUM FOR: Colonel McConnell,
President, AFR 110-14 Board

FROM: 93d Medical Group/SGP (ACC)
Castle AFB, California 95301

SUBJ: Medical Statement — Lieutenant Colonel Kenneth S. Huston

1. A review of the medical records of Lieutenant Colonel Kenneth S. Huston reveals that a flying class II (short) physical was accomplished on 15 September 1994. The exam was within normal limits and medical clearance was granted, valid through 30 September 1995. His last long physical was accomplished on 2 September 1992, and he was qualified.

2. Lieutenant Colonel Huston expired due to multiple extreme injuries. Toxicological studies were negative.

3. Because of the pattern of Lt. Col. Huston's injuries and through the process of elimination, the following conclusions are consistent with the findings:

He was in the Radar-Navigator's seat
He had not initiated the ejection sequence
He was not in control of the aircraft

4. In conclusion, there is no evidence of medical facts in the records, autopsy. or toxicological studies that would have contributed to this accident.

KEVIN J. NEHRING, Lt Col, USAF, MC, SFS
Chief, Aeromedical Services

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 93D BOMB WING (ACC)
CASTLE AIR FORCE BASE, CALIFORNIA

19 August 1994

MEMORANDUM FOR: Colonel McConnell,
President, AFR 110-14 Board

FROM: 93d Medical Group/SGP (ACC)
Castle AFB, California 95301

SUBJ: Medical Statement — Lieutenant Colonel Mark C. McGeehan

1. A review of the medical records of Lieutenant Colonel Mark C. McGeehan reveals that a flying class II (short) physical was accomplished on 16 December 1993. The exam was within normal limits and medical clearance was granted, valid through 31 January 1995. His last long physical was accomplished on 15 December 1992, and he was qualified.

2. Lieutenant Colonel McGeehan expired due to multiple extreme injuries. Toxicological studies were negative.

3. The pattern of Lt. Col. McGeehan's injuries are consistent with the following conclusions:

He was in the right pilot's seat
He had initiated ejection and had been partially ejected at the time of impact
He was probably not in control of the aircraft

4. In conclusion, there is no evidence of medical facts in the records, autopsy. or toxicological studies that would have contributed to this accident.

KEVIN J. NEHRING, Lt Col, USAF, MC, SFS
Chief, Aeromedical Services

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 93D BOMB WING (ACC)
CASTLE AIR FORCE BASE, CALIFORNIA

19 August 1994

MEMORANDUM FOR: Colonel McConnell,
President, AFR 110-14 Board

FROM: 93d Medical Group/SGP (ACC)
Castle AFB, California 95301

SUBJ: Medical Statement — Colonel Robert E. Wolff

1. A review of the medical records of Colonel Robert E. Wolff reveals that a flying class II (short) physical was accomplished on 1 July 1993. The exam was within normal limits and medical clearance was granted, valid through 31 August 1995. He was granted a waiver for hypercholesterolemia, controlled with Questran, valid until 31 August 1996. His last long physical was accomplished on 11 July 1992, and he was qualified with the waiver by 1 MG/MGP.

2. Colonel Wolff expired due to multiple extreme injuries. Toxicological studies were negative.

3. The pattern of Col. Wolff's injuries are consistent with the following conclusions:

He was seated in the instructor pilot's (IP) seat at impact
He was probably not in control of the aircraft
(The IP seat does not have ejection capability)

4. In conclusion, there is no evidence of medical facts in the records, autopsy. or toxicological studies that would have contributed to this accident.

KEVIN J. NEHRING, Lt Col, USAF, MC, SFS
Chief, Aeromedical Services

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

30 JUN 1994

MEMORANDUM FOR COLONEL MICHAEL G. MCCONNELL

FROM: 12 AF/CC
5340 E. GAFFORD WAY, SUITE 132
DAVIS-MONTHAN AFB AZ 85707-4250

SUBJECT: Investigation of Aircraft Accident, B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild, AFB, WA

1. You are appointed, under AFR 110-14, to investigate and determine the facts and circumstances surrounding subject aircraft accident.

2. You are authorized to interview personnel, take statements or testimony, and examine records, files, and correspondence relative to the accident which are within the control of the Air Force, after they are released by the Safety Investigation Board as provided by AFR 110-14, paragraphs 2, 3, and 8, and AFR 127-4, paragraphs 1-9a and 1-9c.

3. Your report will contain the originals or certified copies, when specified by AFR 110-14, of all documents relevant to the accident, including pertinent historical maintenance records of the aircraft involved in the accident. Photographic or machine reproductions may be used only if originals are not available. In such a case, the reasons why the originals are not available will be explained in your report. Your report will contain a Summary of Facts as described in Attachment 2, AFR 110-14. If you are able to form an opinion, based on clear and convincing evidence, as to the causes of the accident, your report must include those opinions. You may also include any appropriate conclusions and recommendations. Prepare your report in an original and 10 copies, following AFR 110-14, Attachments 1 and 4, and using AFR 120-3 as a general guide. Do not furnish a copy to any other person or agency and do not debrief the host commander without permission of this headquarters.

4. The 12 AF/JA will provide you with an initial briefing. Major Donald G. Tyson, DSN 361-7163, HQ 12 AF/JA, has been appointed as your legal advisor. The 92 BW/JA will provide local stenographic assistance, a legal office point of contact and other administrative support you may need.

JAMES L. JAMERSON
Lieutenant General, USAF
Commander

cc:
12 AF/DO/SE
92 BW/CC/JA/DO
93 BW/CC

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

19 JUL 1994

MEMORANDUM FOR LIEUTENANT COLONEL KEVIN J. NEHRING

FROM: 12 AF/CC
5340 E. Gafford Way, Suite 132
Davis-Monthan AFB AZ 85707-4250

SUBJECT: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 8d, and with the concurrence of the command involved, you are appointed to assist Colonel Michael G. McConnell, during his investigation of subject aircraft accident.

2. You will review all pertinent medical records pertaining to the air crew of subject aircraft. Your review will include a determination as to whether any medical factors affected performance of the crew, relevant abnormal laboratory test results, and any other relevant medical records as appropriate. You will furnish Colonel McConnell with a written report detailing any irregularities or deficiencies you find. If none, you should so state. If you are able to form an opinion, based on clear and convincing evidence, as to the causes of the accident, your report should include those opinions. You may also include any appropriate conclusions and recommendations. You may also be required to assist Colonel McConnell in taking the testimony of, or propounding questions to witnesses during the course of the investigation.

3. You will submit your written report to Colonel McConnell within five duty days unless an extension is granted by him. Include in your report factual comments on any matters that may have a bearing on the accident or are of sufficient importance as to require examination. Originals of all records reviewed, and ten copies, will be submitted to Colonel McConnell with your report. If originals are not available, submit copies of the records and explain why the originals are not included in your report. Do not debrief anyone without permission of this headquarters.

JAMES E. JAMERSON
Lieutenant General, USAF
Commander

cc: 12 AF/DO/SE
92 ARW/CC/JA/SG
93 OSS/CC
93 BW/CC/SG
HQ ACC/SG/JA

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

19 JUL 1994

MEMORANDUM FOR MAJOR WARREN A. MONTGOMERY

FROM: 12 AF/CC
5340 E. GAFFORD WAY, SUITE 132
DAVIS-MONTHAN AFB AZ 85707-4250

SUBJECT: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 8d, you are appointed to assist Colonel Michael G. McConnell during his investigation of subject aircraft accident.

2. You will ascertain a complete history of the air crew's currency and aircraft qualifications, and should, at a minimum, examine the air crew's training evaluation records and the individual training and flight records. You will furnish Colonel McConnell with a written report detailing any irregularities or deficiencies you find. If none, you should so state. If you are able to form an opinion, based on clear and convincing evidence, as to the causes of the accident, your report should include those opinions. You may also include any appropriate conclusions and recommendations. You should also prepare a complete narrative history of the flight summarizing the events from briefing to accident. You may also be required to assist Colonel McConnell in taking the testimony of, or propounding questions to witnesses during the course of the investigation.

3. You will submit your written report to Colonel McConnell within five duty days unless an extension is granted by him. Include in your report factual comments on any matters that may have a bearing on the accident or are of sufficient importance as to require examination. Originals of all records reviewed, and ten copies, will be submitted to Colonel McConnell with your report. If originals are not available, submit copies of the records and explain why the originals are not included in your report. Do not debrief anyone without permission of this headquarters.

JAMES E. JAMERSON
Lieutenant General, USAF
Commander

cc: 12 AF/DO/SE
92 ARW/CC/JA
93 OSS/CC

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

19 JUL 1994

MEMORANDUM FOR CAPTAIN THOMAS L. WALL

FROM: 12 AF/CC
5340 E. GAFFORD WAY, SUITE 132
DAVIS-MONTHAN AFB AZ 85707-4250

SUBJECT: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 8d, and with the concurrence of the command involved, you are appointed to assist Colonel Michael G. McConnell during his investigation of subject aircraft accident.

2. You will review the maintenance records of subject aircraft covering the 60 day period immediately preceding the accident. You will furnish Colonel McConnell with a written report detailing any irregularities or deficiencies you find. If none, you should so state. If you are able to form an opinion, based on clear and convincing evidence, as to the causes of the accident, your report should include those opinions. You may also include any appropriate conclusions and recommendations. You may also be required to assist Colonel McConnell in taking the testimony of, or propounding questions to witnesses during the course of the investigation.

3. You will submit your written report to Colonel McConnell within five duty days unless an extension is granted by him. Include in your report factual comments on any matters that may have a bearing on the accident or are of sufficient importance as to require examination. Originals of all records reviewed, and ten copies, will be submitted to Colonel McConnell with your report. If originals are not available, submit copies of the records and explain why the originals are not included in your report. Do not debrief anyone without permission of this headquarters.

JAMES L. JAMERSON
Lieutenant General, USAF
Commander

cc: 12 AF/DO/SE
92 ARW/CC/JA
93 OSS/CC
9 RW/CC/DO
99 RS/CC

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

19 JUL 1994

MEMORANDUM FOR MASTER SERGEANT LOREN G. ST. HILAIRE

FROM: 12 AF/CC
5340 E. GAFFORD WAY, SUITE 132
DAVIS-MONTHAN AFB AZ 85707-4250

SUBJ: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 8d, with the concurrence of the command involved, you are appointed to assist Colonel Michael G. McConnell during his investigation of subject aircraft accident.

2. You will review the egress system of subject aircraft covering the 60 day period immediately preceding the accident. You will furnish Colonel McConnell with a written report detailing any irregularities or deficiencies you find. If none, you should so state. If you are able to form an opinion, based on clear and convincing evidence, as to the causes of the accident, your report should include those opinions. You may also include any appropriate conclusions and recommendations. You may also be required to assist Colonel McConnell in taking the testimony of, or propounding questions to witnesses during the course of the investigation.

3. You will submit your written report to Colonel McConnell within five duty days unless an extension is granted by him. Include in your report factual comments on any matters that may have a bearing on the accident or are of sufficient importance as to require examination. Originals of all records reviewed, and ten copies, will be submitted to Colonel McConnell with your report. If originals are not available, submit copies of the records and explain why the originals are not included in your report. Do not debrief anyone without permission of this headquarters.

JAMES E. JAMERSON
Lieutenant General, USAF
Commander

cc: 12 AF/DO/SE
92 ARW/CC/JA
93 OSS/CC
92 MS/CC

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

19 JUL 1994

MEMORANDUM FOR SERGEANT LUIS M. PINIERO

FROM: 12 AF/CC
5340 E. GAFFORD WAY, SUITE 132
DAVIS-MONTHAN AFB AZ 85707-4250

SUBJ: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 8d, and with the concurrence of the command involved, you are appointed to assist Colonel Michael G. McConnell during his investigation of subject aircraft accident.

2. You will review the life support system of subject aircraft covering the 60 day period immediately preceding the accident. You will furnish Colonel McConnell with a written report detailing any irregularities or deficiencies you find. If none, you should so state. If you are able to form an opinion, based on clear and convincing evidence, as to the causes of the accident, your report should include those opinions. You may also include any appropriate conclusions and recommendations. You may also be required to assist Colonel McConnell in taking the testimony of, or propounding questions to witnesses during the course of the investigation.

3. You will submit your written report to Colonel McConnell within five duty days unless an extension is granted by him. Include in your report factual comments on any matters that may have a bearing on the accident or are of sufficient importance as to require examination. Originals of all records reviewed, and ten copies, will be submitted to Colonel McConnell with your report. If originals are not available, submit copies of the records and explain why the originals are not included in your report. Do not debrief anyone without permission of this headquarters.

JAMES E. JAMERSON
Lieutenant General, USAF
Commander

cc: 12 AF/DO/SE
92 ARW/CC/JA
93 OSS/CC
325 BS/CC

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

19 JUL 1994

MEMORANDUM FOR LIEUTENANT COLONEL MICHAEL L. COLOPY

FROM: 12 AF/CC
5340 E. Gafford Way, Suite 132
Davis-Monthan AFB AZ 85707-4250

SUBJECT: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 7b, and with concurrence of the command concerned, you are appointed to provide legal advice as local legal advisor to Colonel Michael G. McConnell, 93 OG/CC, during his investigation of subject aircraft accident.

2. You will perform duties as required by Col McConnell to ensure full and appropriate compliance with AFR 110-14. You will also review all material and information provided by the president of the safety investigation board to ensure compliance with AFR 127-4 safety privilege requirements. You may also be required to assist in taking the testimony of, or propounding questions to witnesses during the course of the investigation. Finally, you will review the compiled report of accident investigation prior to the report being sent to 12 AF/JA for compliance with AFR 110-14 and its reasonable factual sufficiency.

JAMES E. JAMERSON
Lieutenant General, USAF
Commander

cc: HQ 12 AF/DO/SE/JA
92 ARW/CC/JA
15 AF/CC/JA
AMC/CC/JA

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS TWELFTH AIR FORCE (ACC)
DAVIS-MONTHAN AIR FORCE BASE, ARIZONA

9 JUL 1994

MEMORANDUM FOR MAJOR DONALD G. TYSON

FROM: 12 AF/CC
5340 E. Gafford Way, Suite 132
Davis-Monthan AFB AZ 85707-4250

SUBJECT: Investigation of Aircraft Accident: B-52H, SN61-0026, 24 Jun 94, 92 BW, Fairchild AFB, WA

1. Under the provisions of AFR 110-14, paragraph 7b, you are appointed to provide primary legal advice to Colonel Michael G. McConnell, 93 OG/CC, during his investigation of subject aircraft accident.

2. You will perform duties as required by Col McConnell to ensure full and appropriate compliance with AFR 110-14. You will also review all material and information provided by the president of the safety investigation board to ensure compliance with AFR 127-4 safety privilege requirements. You may also be required to assist in taking the testimony of, or propounding questions to witnesses during the course of the investigation. Finally, you will review the compiled report of accident investigation for compliance with AFR 110-14 and its reasonable factual sufficiency.

JAMES L. JAMERSON
Lieutenant General, USAF
Commander

cc: 12 AF/DO/SE/JA
92 ARW/CC/JA
15 AF/CC/JA
AMC/CC/JA

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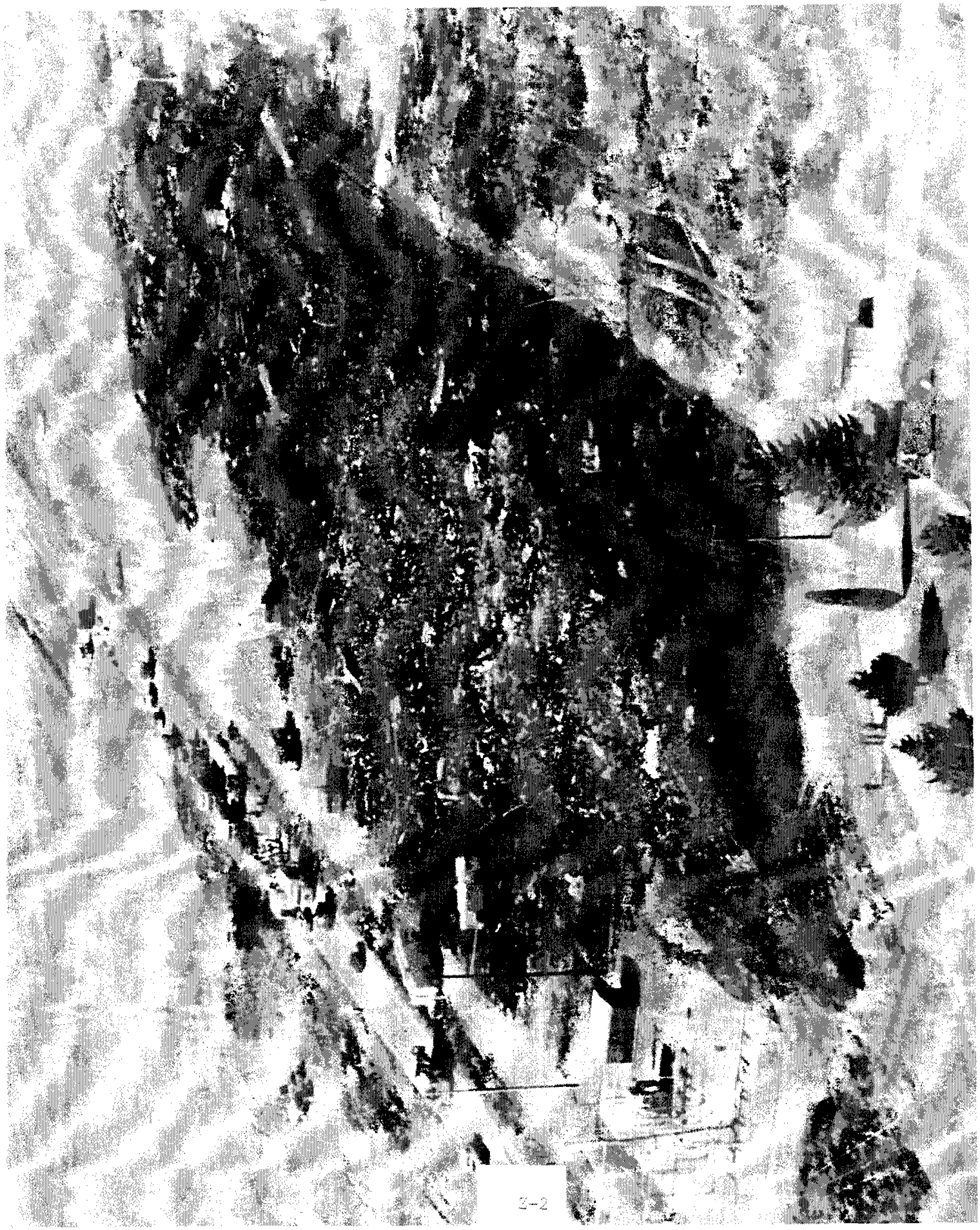

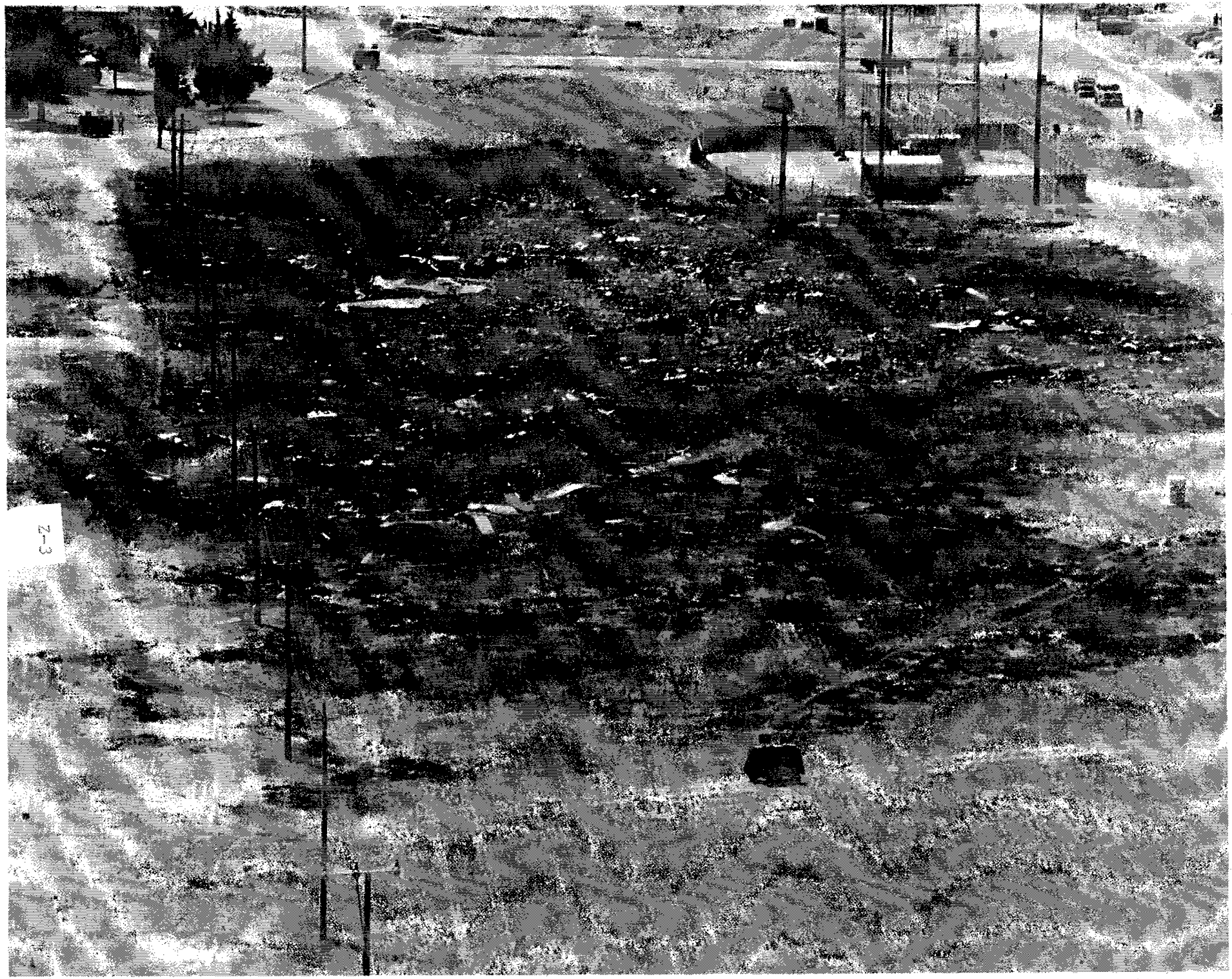

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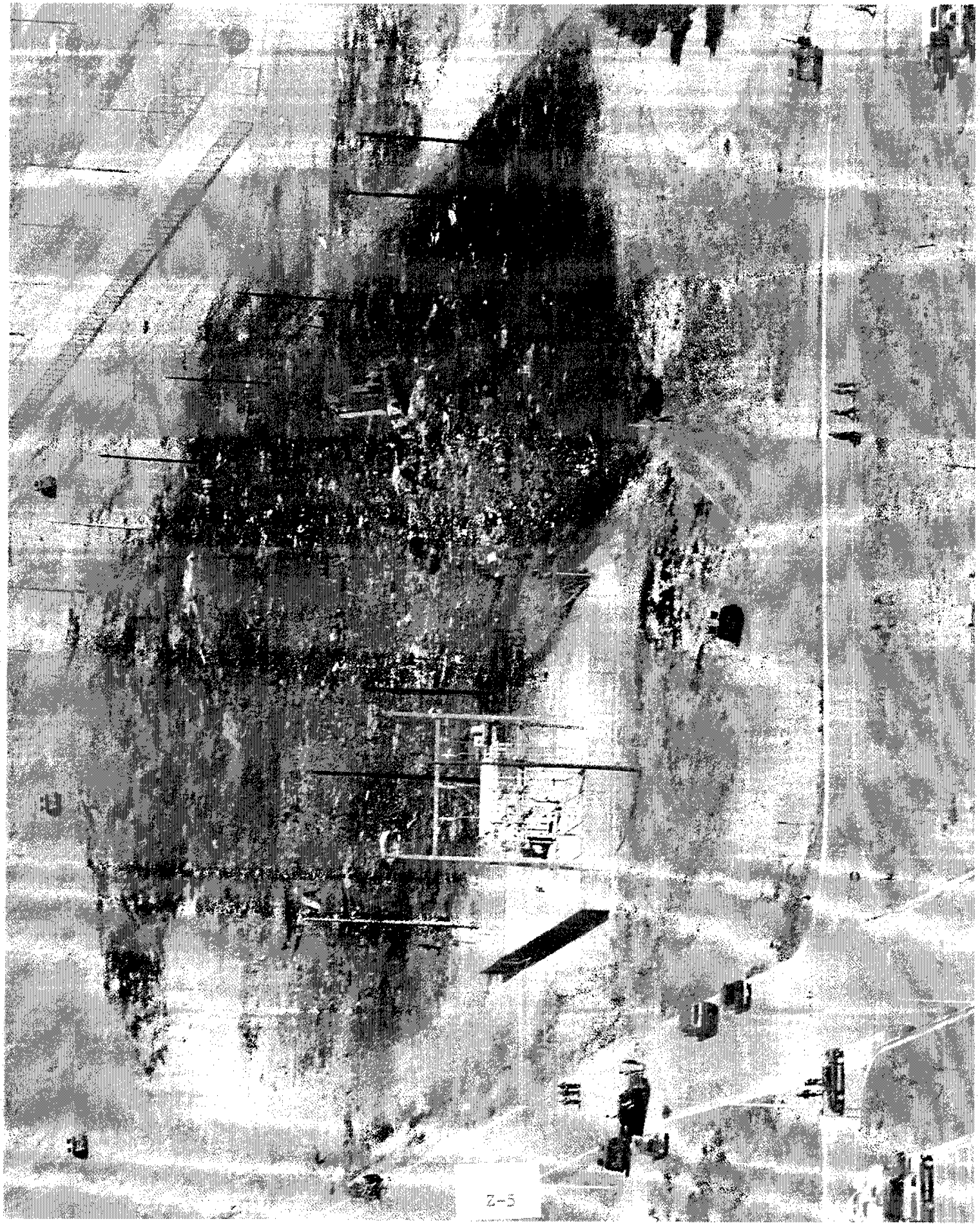

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AA

USAF AIRCRAFT ACCIDENT INVESTIGATION REPORT INDEX TAB FORM

T.O. 1B-52H-1-1

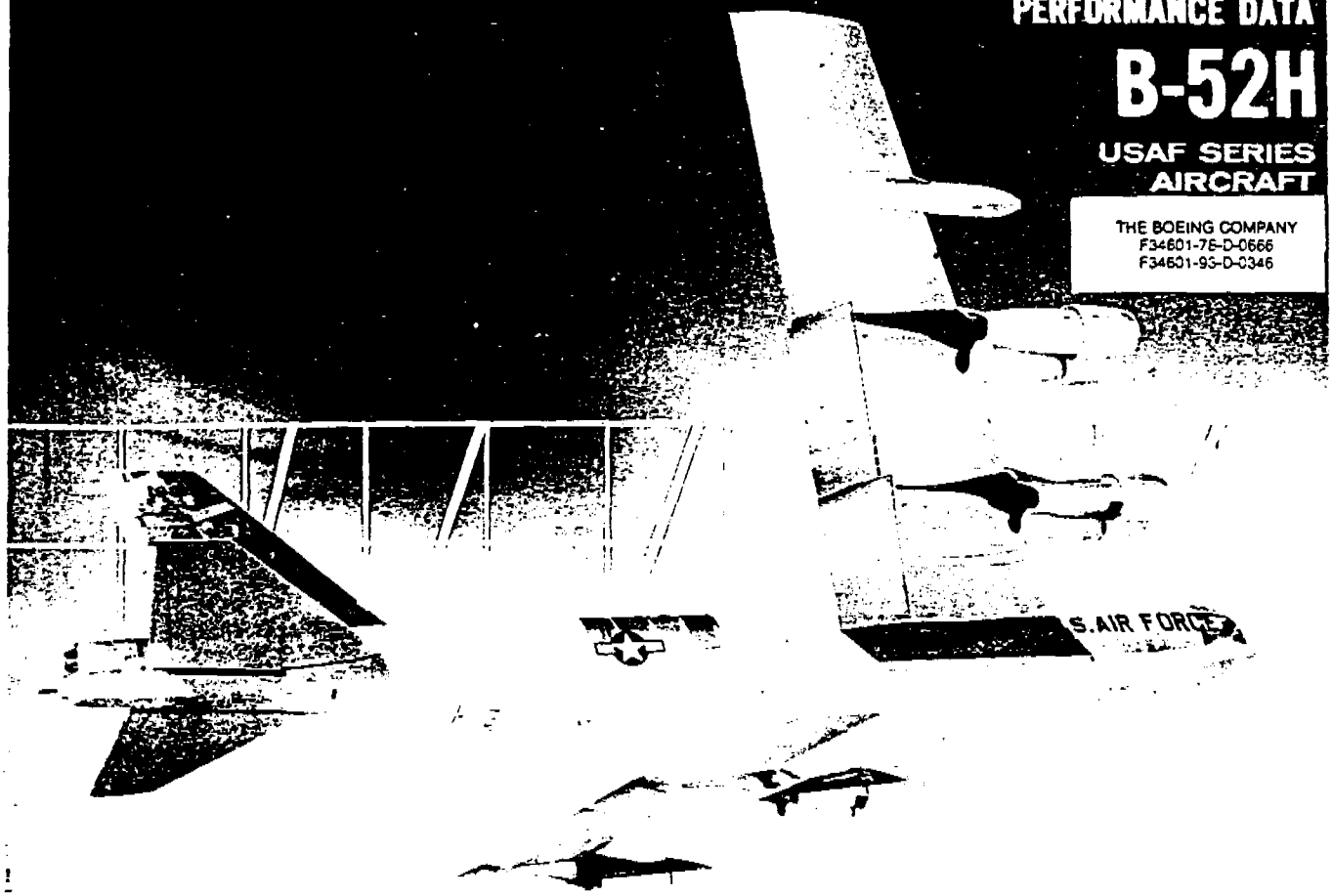
flight manual

APPENDIX 1
PERFORMANCE DATA

B-52H

USAF SERIES AIRCRAFT

THE BOEING COMPANY
F34601-76-D-0666
F34601-93-D-0346



This publication replaces Operational Supplement S-39.

See Technical Order Index T.O. 0-1-1-2 for current status of Flight Manuals, Safety and Operational Supplements, and Flight Crew Checklists.

Commanders are responsible for bringing this publication to the attention of all Air Force personnel cleared for operation of subject aircraft.

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE.

THIS PUBLICATION SUPPLEMENTS T.O. 1B-52G-1-11.

1 FEBRUARY 1961

CHANGE 80 – 15 SEPTEMBER 1993

All data on pages A10-1 and A10-2 (Deleted)

MISSION PLANNING

part 11

table of contents

FLIGHT PREPARATION PROCEDURE

NOTE

For AGM-86C missile carriage, use AGM-86B missile data.

FUEL SERVICING

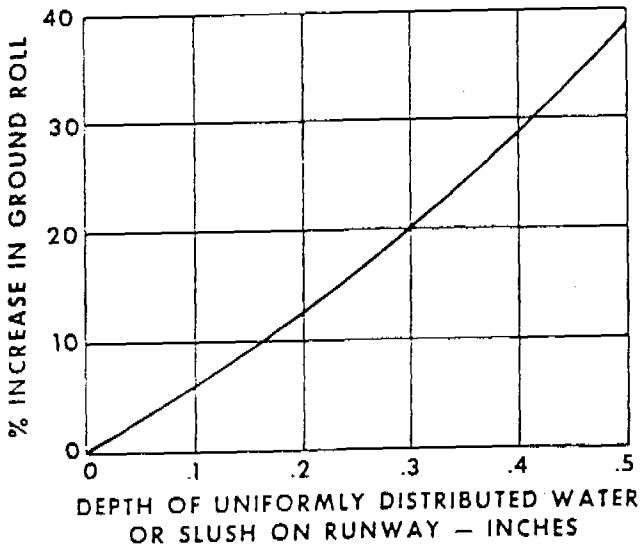
Fuel tank and fuel gage calibration is accurate. Due to their critical location, the aft body, outboard wing, and external fuel tanks are dipped to ensure accuracy. For this reason, dipsticks have been provided for use by the servicing crew.

Refueling and Distribution Log (AFTO Form 6)

Due to the location of the fuel tanks along the longitudinal axis, proper fuel loading is imperative in order to establish a center of gravity within the takeoff limits. Although the cg is calculated on the weight and balance clearance (Form 365-4), it is possible for a large error to exist due to a malfunctioning fuel gage, gages, or totalizer. In order that the pilot may accurately check the fuel loading, a "Refueling and Distribution Log" (figure A11-4) is provided. This log lists the scheduled fuel load, the gage reading after refueling, and the dipstick reading of each tank. The dipstick readings for the aft body, outboard wings, and external tanks will be the only line 3 entries on AFTO Form 6. All other tanks will be void on line 3. These quantities are obtained from the pump flowmeter, the pilot's fuel quantity gages and totalizer, and from a dipstick reading. The difference between totalizer reading (after refueling) and totalizer reading before refueling plus fuel delivered will not exceed 4%. Allowable tolerance between dipstick reading and gage reading is 4% of actual gage reading plus 2% of maximum tank capacity. Allowable tolerance between dipstick (gage reading if not dipped) and planned fuel for any one tank is 1000 pounds. If this tolerance is exceeded, the discrepancy must be investigated and corrective action taken. This log will remain with aircraft Form 781 until it has been checked and signed by the pilot during the Interior Inspection. Prior to flight, this log will be returned to the unit maintenance officer. The log may be destroyed 72 hours after date of flight. Any transfer of fuel, engine runup, fuel system maintenance, etc, which would change the scheduled fuel load prior to flight will require that a new form be filled out and signed. All forms will be kept together until they are returned to the unit maintenance office.

WARNING

- Takeoffs should not be attempted when runway is covered by water and or slush in excess of 0.3-inch depth. If an abort is attempted under such conditions, hydroplaning, which will cause severe control and braking losses, may occur at higher ground roll speeds even though a low RCR reading has not been reported.
- If aborted takeoff considerations are to be disregarded, takeoff should not be attempted if the depth of the water or slush on the runway exceeds 0.4 inch because of extreme performance loss.



effect of water and slush on takeoff performance

Figure A2-1.

THERMAL ANTI-ICING

The use of engine, nacelle, and scoops anti-icing during takeoff will have a negligible effect on takeoff performance. See Section II of the basic flight manual for conditions requiring the use of anti-icing. Space for entering the OAT (runway temperature and dew point, if applicable) is found on the Takeoff Data Card.

BRAKE ENERGY LIMITS

Much of the energy used to bring the airplane to a stop is absorbed in the form of heat by the wheel brakes and surrounding material. There is a definite limit to the amount of heat the wheel brake system can absorb during a stop. If this limit is exceeded, braking effectiveness will be lost and the brakes damaged. Brake energy limits can be exceeded during a refused takeoff for certain conditions of weight, altitude, temperature, and runway available. See Part 9 for brake energy limits chart.

TAKEOFF RATED THRUST

The turbofan engine is flat rated at the lower temperatures; however, the temperature at which the flat rating takes place varies with altitude (figure A2-2). This characteristic explains why some of the performance charts show nonlinear variations with temperature.

BASIS FOR CHARTS

The charts included in this part are based upon the aircraft takeoff performance using the pilot technique and aircraft configuration described in Section II of the basic Flight Manual. Normal aircraft takeoff configuration is with full flaps, correct stabilizer trim setting, and the specified number of engines operating at the charted EPR values. The takeoff ground run distances given in this part are based on normal takeoff procedure using the stabilizer settings specified for the gross weight, cg, and takeoff EPR. The use of different techniques in operating the stabilizer and elevator can result in large departures from the distances shown in the charts.

DEFINITIONS OF TERMS USED

The following are definitions of the terms used in conjunction with takeoff planning. Figure A2-3 is a sketch showing speed-time-distance relationships during the takeoff ground run and is presented as an illustration of the basic definition of minimum runway required.

TAKEOFF GROSS WEIGHT

Takeoff gross weight is the gross weight of the airplane at start of takeoff roll. Takeoff gross weight is computed by subtracting the weight of fuel used for start and taxi (4000 pounds) from the initial gross weight of the airplane.

MINIMUM RUNWAY REQUIRED

Minimum runway required is the runway length required to accelerate the airplane under normal conditions to the decision speed, experience an engine failure, and continue to take off with the remaining engines. It is used during takeoff planning together with the climbout data to determine the maximum gross weight for a safe takeoff and climbout. The minimum runway required must be no greater than the runway available for a safe takeoff.

NOTE

Allowances for lineup distance must be made in takeoff planning. When making a rolling takeoff this allowance may be as great as 500 feet.

EPR FOR TAKEOFF RATED THRUST

The maximum allowable EPR recommended by the engine manufacturer. This EPR is a function of temperature and barometric pressure.

EPR FOR PARTIAL THRUST

The recommended EPR for the most desirable post-takeoff performance. This EPR is a function of gross weight, pressure altitude, and OAT.

TAKEOFF EPR

The takeoff EPR will normally be the EPR for partial thrust unless the minimum runway required exceeds 80% of the runway available, in which case the EPR for takeoff rated thrust will be used. In no case will the EPR for takeoff rated thrust be exceeded.

DECISION DISTANCE

NOTE

When computing decision distances, see "Minimum RCR for Takeoff" to determine if a successful abort can be accomplished at or prior to S_1 speed.

A speed check at this point by means of the calculated decision speed is the only performance check made during the takeoff roll. At this point, the decision to continue or abort the takeoff must be made. The following apply when calculating decision distance:

1. For runways whose total runway available length is less than 10,500 feet, the decision distance is 3,000 feet. For runway available lengths 10,500 feet or more, the decision distance is 4,000 feet.
2. When the computed takeoff distance is 4,000 feet or less, the S_1S_2 procedure will not be used. In lieu of timing acceleration, a check of all engine instruments will be made when 70 knots IAS is reached during the takeoff roll. At this point, the decision will be made to continue or abort the takeoff except the takeoff may be aborted at any time prior to unstick when the aircraft gross weight is 250,000 pounds or less and the runway is dry.
3. If the takeoff distance does not exceed the decision distance by 2000 feet, the decision distance (as dictated by runway length and RCR) will be adjusted to 2000 feet short of the predicted takeoff roll. If the decision distance is less than 2000 feet, the S_1S_2 takeoff procedure will not be used. The decision to abort or take off will be made at 70 knots during the takeoff roll.

WARNING

When the reported RCR is 5 or less, if takeoff is aborted after accelerating to 70 knots IAS, a stop on the remaining runway available is extremely doubtful.

MINIMUM RCR FOR TAKEOFF

When planning a takeoff, there are two problems which need to be considered regarding the runway condition reading (RCR) of the runway. These two considerations are: 1) Can the aircraft be stopped on the available runway when an abort is initiated at or prior to reaching the decision (S_1) speed and 2) can directional control of the aircraft be maintained throughout the ground roll with a crosswind. To determine the minimum allowable RCR without drag chute which would permit a safe abort, sheet 1 of figure A2-14A must be used. The decision distance must first be computed in the normal manner as outlined under "Decision Distance" and then subtracted from the runway available. Enter figure A2-14A with the pressure altitude, S_1 speed, OAT, and the runway available minus decision distance and read the minimum allowable RCR. If a crosswind exists, enter figure A2-14A (sheet 2) with the gross weight and crosswind component to determine the minimum allowable RCR for maintaining control of the aircraft. After computing the minimum allowable RCR without drag chute and with a crosswind, the two computed values should be compared with the reported RCR. One of the following should be accomplished depending on the results of the comparison:

1. If the reported RCR is higher than both computed minimum RCR's, then a safe takeoff or abort can be made.
2. If the reported RCR is lower than the minimum allowable RCR for crosswind, a takeoff should not be made unless urgency of the mission warrants a compromise in takeoff safety.
3. If the reported RCR is lower than the computed minimum allowable RCR without drag chute, subtract 1000 feet from the decision distance and recompute. Repeat this procedure as necessary in 1000-foot increments. Thousand foot increments are recommended for easier use of the applicable charts for this computation. However, smaller increments may be used at the pilot's discretion. The minimum decision distance is 2000 feet. If a 2000 foot decision distance is used and the reported RCR value is still lower than the computed minimum allowable RCR, a takeoff should not be attempted unless urgency of the mission warrants a compromise in takeoff safety.

The inspection decelerometer reading may not give a valid indication of friction coefficient on a fluid covered runway. When the runway condition is reported "Wet Runway," an RCR of 9 is the maximum value which will be used. If an RCR value less than 9 is reported on a wet runway, use the reported value of RCR. Slush coverings are easily determined visually and when evident an RCR of 5 will be used. Reported RCR's will be used for hard surface runway coverings such as snow or ice. Terms used to indicate runway surface conditions are as follows:

P - Patchy
WR - Wet runway
SLR - Slush on runway
LSR - Loose snow on runway
PSR - Packed snow on runway
IR - Ice on runway

A typical report of SLR 14P would indicate slush on the runway, an RCR of 14 and patchy conditions. Stopping distance would thus be computed using the RCR 5 line on the chart. A report of "Wet Runway" would indicate visible moisture on the runway and stopping distance would be computed using an RCR of

PLANNED LANDING GROUND RUN

WITH AIRBRAKES

AIRPLANE: B-52H

ENGINES: TF33-P-3

CONDITIONS:

- FLAPS DOWN
- FULL AIRBRAKES APPLIED AT TOUCHDOWN
- WHEEL BRAKES APPLIED AT TOUCHDOWN SPEED MINUS 20 KNOTS IAS
- NO DRAG CHUTE
- 8 ENGINES IDLE
- NO WIND, NO GRADIENT

REMARKS:

- Refer to figure A8-10 for tire limitations.
- When braking limit is exceeded:
  Delay initial braking 4 knots for each 10,000 lb gross weight above the limit.
  Increase ground run 250 feet for each 10,000 lb gross weight above the limit.

EXAMPLE:

GIVEN:
Gross weight = 250,000 lb
Field pressure altitude = 2000 ft
OAT = 80° F
RCR = 23

FIND:
Landing ground run

SOLUTION:
Landing ground run = 4700 ft

DATE: APRIL 1968

DATA BASIS:
FLIGHT TEST

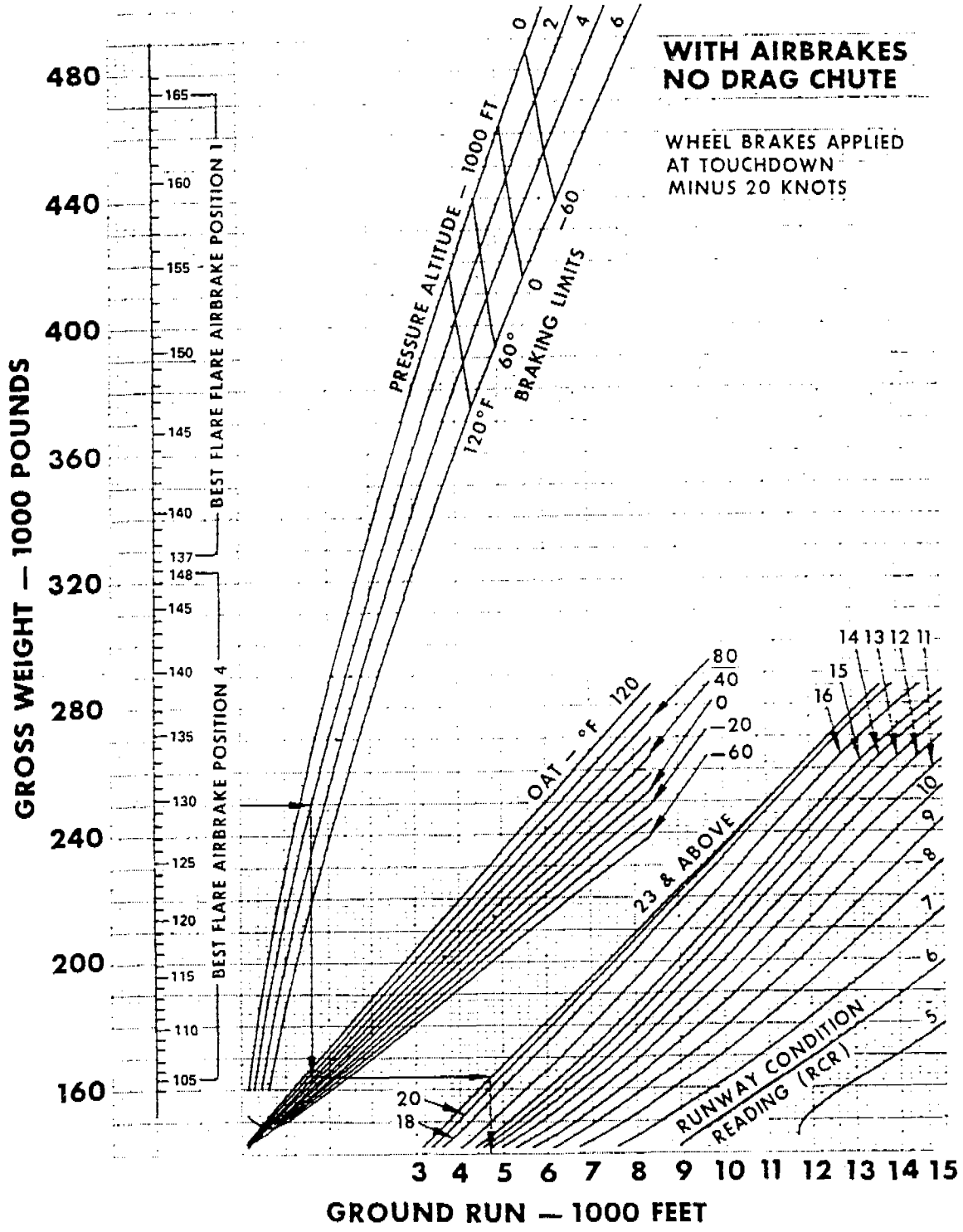


Figure A8-13.

CONDITIONS:

- NO GROUND EFFECT
- FLAPS UP OR DOWN AS SHOWN
- SEA LEVEL TO 10,000 FEET
- LANDING GEAR UP OR DOWN

REMARKS:

- Landing gear extension or retraction has no effect on speeds shown
- Increase chart airspeed by 1% for each 5,000 feet above 10,000 feet pressure altitude

MINIMUM SPEEDS

LOW ALTITUDE

AIRPLANE: B-52H

ENGINES: TF 33 – P – 3

DATE: DECEMBER 1960

DATA BASIS:
ESTIMATED

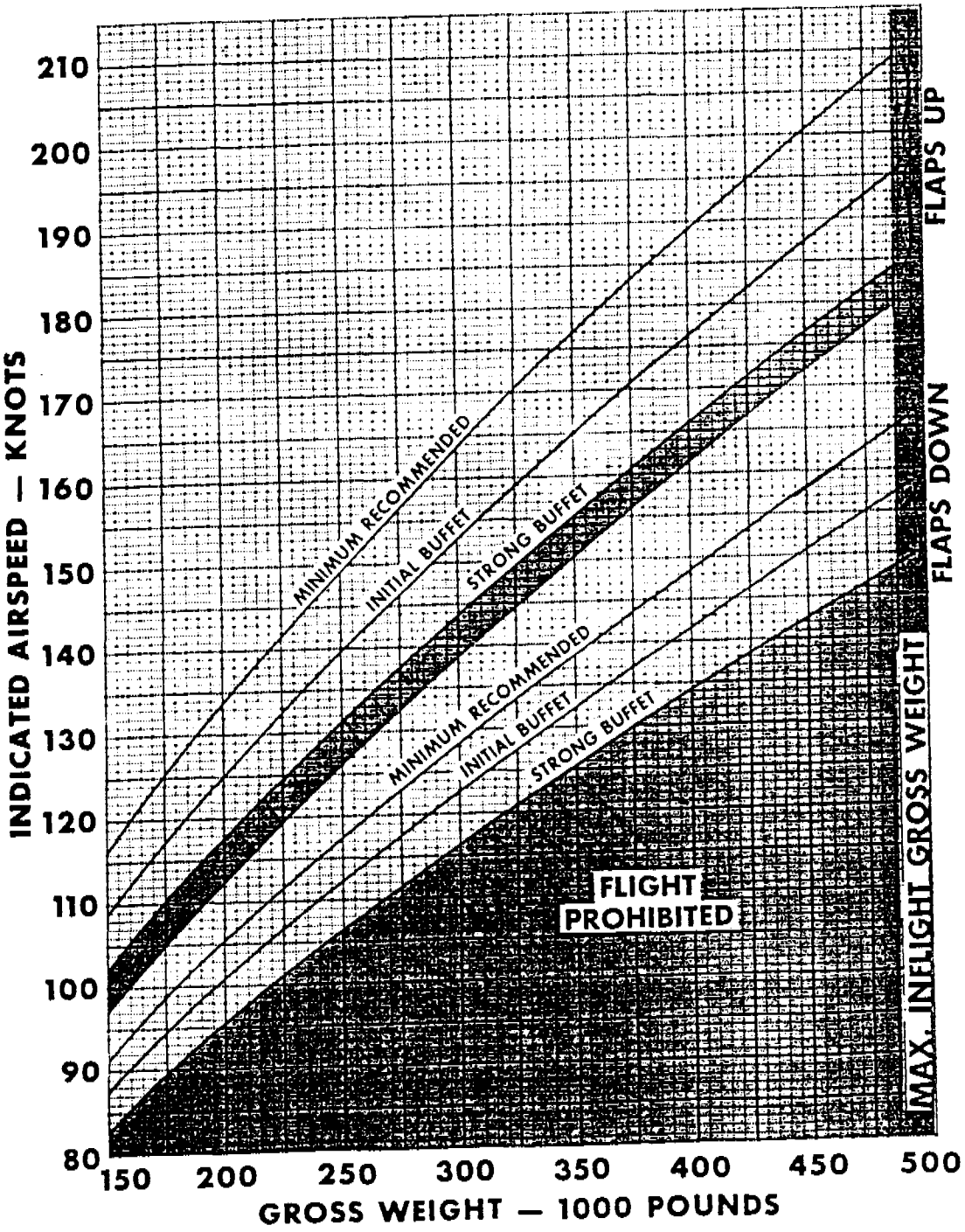


Figure A9-1A.

MANEUVER LIMITS

FLAPS DOWN

AIRPLANE: B-52H

ENGINES: TF33-P-3

DATE: DECEMBER 1960

DATA BASIS:
ESTIMATED

EXAMPLE:

GIVEN:
Gross Weight = 250,000 lb

FIND:
Maneuver limit at recommended final approach speed

SOLUTION:
46° bank angle or 1.45g = Maximum recommended
52° bank angle or 1.62g = Initial stall warning

CONDITIONS:

- FLAPS DOWN
- SEA LEVEL TO 10,000 FEET

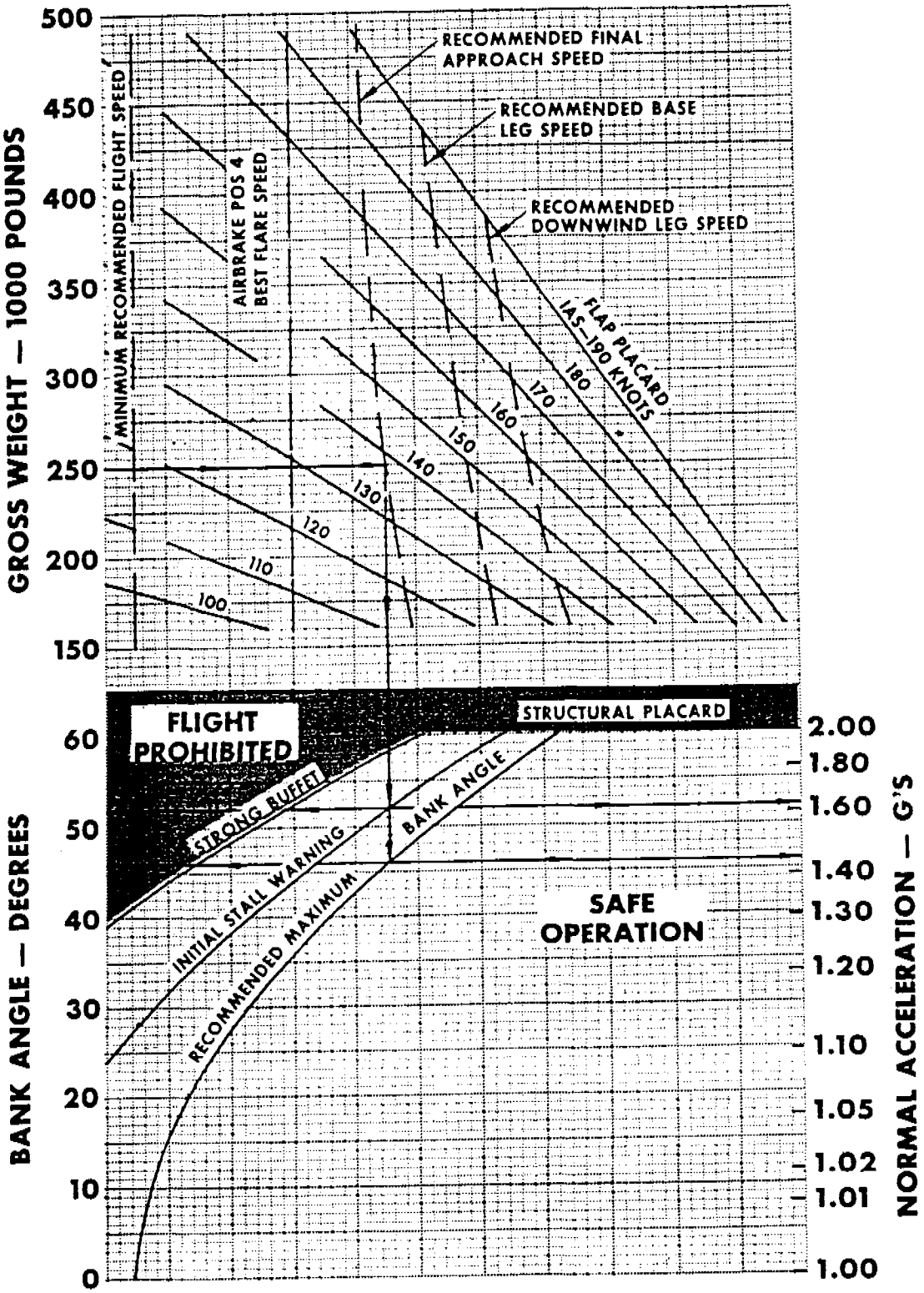
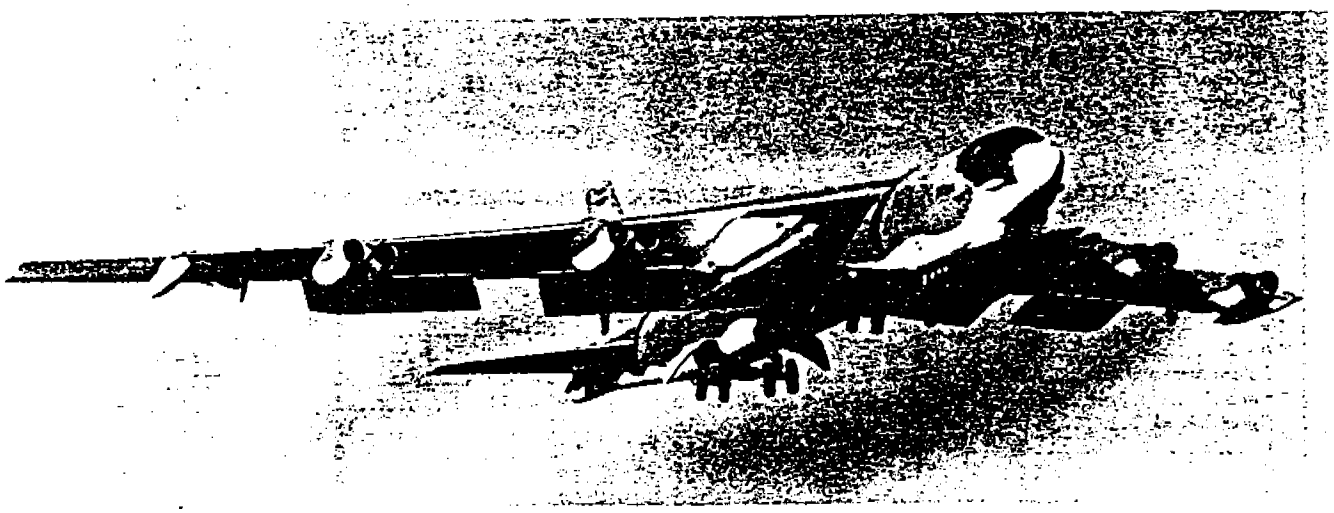


Figure A9-22.

Pilots' Flight Manual

USAF SERIES B-52G and B-52H AIRCRAFT

THE BOEING COMPANY
F33657-79-C-0416
F34601-93-D-0346



SIMULTANEOUS CHANGE TO RELATED MANUALS	T.O. 1B-52G-1-12	YES
	T.O. 1B-52G-1-13	YES

THIS PUBLICATION REPLACES SAFETY SUPPLEMENT SS-80 AND OPERATIONAL SUPPLEMENTS S-77 AND S-81.

THIS PUBLICATION IS INCOMPLETE WITHOUT T.O.'S 1-1C-1 AND 1-1C-1-15 AND IS USED WITH T.O. 1B-52G-1-12 AND T.O. 1B-52G-1-13. SUPPLEMENTARY PUBLICATIONS ARE PROVIDED TO SUPPLY OPERATIONAL COVERAGE IN NONSTANDARD CONFIGURATIONS. SEE T.O. 0-1-1-2 FOR NUMERICAL INDEX OF BOMBER TECHNICAL PUBLICATIONS.

SEE T.O. 0-1-1-2 FOR CURRENT STATUS OF FLIGHT MANUALS, SAFETY SUPPLEMENTS, OPERATIONAL SUPPLEMENTS, AND FLIGHT CREW CHECKLISTS.

COMMANDERS ARE RESPONSIBLE FOR BRINGING THIS PUBLICATION TO THE ATTENTION OF ALL AIR FORCE PERSONNEL CLEARED FOR OPERATION OF SUBJECT AIRCRAFT.

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE

15 JUNE 1987

AIR FORCE 19 NOV 93-1615

CHANGE 23 – 15 SEPTEMBER 1993

FINAL APPROACH

When the glide slope indicator reaches center, adjust power to maintain best flare plus 10 knots IAS. Keeping the bank steering bar centered will automatically correct for wind, and keeping the pitch steering bar centered will establish the pitch attitude necessary to correct to or maintain the glide slope. Continue the approach until visual references are sufficient to land or to published minimums, whichever is higher. At this point, commit to land or follow the missed approach procedures.

WARNING

During an ILS final approach using the Flight Director System (ILS APP mode selected) the loss, or reduction in strength, of the glide slope signal will normally cause the glide slope warning flag to appear. Simultaneously with the warning flag appearance, the glide slope indicator and pitch steering bar may remain at or slowly move toward a centered position. Failure to immediately observe the (red) warning flag under conditions requiring high instrument (red) lighting intensities, coupled with the false "on glide slope" indication, could result in misinterpretation by the pilot. During the ILS final approach phase, a frequent cross-check should be made for the glide slope warning flag and/or unduly stabilized glide slope indicator/pitch steering bar combination. A continuous cross-check of altitude and rate of descent should be made as well as monitoring marker beacons, aural signals, and radar altimeters, whenever possible.

Circling Approach

Generalized procedures for circling approaches are contained in current instrument flight directives. Follow enroute descent or jet penetration procedures; however, reduce airspeed to best flare plus 20 knots prior to the final approach fix. Maintain 20 knots above best flare speed during the circling maneuver until beginning rollout to align with the landing runway. At that time, reduce to best flare speed plus 10 knots until the landing flare point is reached. Bank angle should be limited to 30 degrees throughout the maneuver.

Missed Approach

Missed approaches are accomplished using the same procedures as given for VFR go-arounds. Advance throttles as required, retract airbrakes, establish a positive climb (approximately 1000 feet per minute is appropriate for most missed approaches), trim as required, and check for a positive increase in airspeed. Aircraft acceleration upon executing the missed approach procedure is such that at light weights under instrument conditions flap placard speeds may be rather quickly exceeded.

WARNING

Care should be exercised in applying power at light gross weights due to pitchup developing during acceleration. See GO-AROUND, Section VI, for a detailed discussion of this characteristic.

Retract gear as soon as it is certain that the aircraft will not touch the ground and retract flaps using normal procedures if the published missed approach procedure is to be followed or if proceeding to an alternate airport. During the flap retraction cycle, it is required that the pilot monitor the aircraft attitude indications as closely as possible, keeping the aircraft trimmed to a zero stick force, especially during the last 20% of flap retraction.

NOTE

If a visual approach pattern is to be made, the pilot may, at his discretion, leave the gear and flaps down and maintain airspeeds as specified for a normal radar approach pattern.

3. In the event of failure of the FCI or time-to-go indicator, the same approach may be made utilizing range marks. Under these conditions the radar navigator will direct the aircraft. The 600 feet per minute descent will be started at 5 miles. The standard GCA glidepath closely approximates 250 feet per mile and this may be cross-checked by checking ranges against the altimeter.

4. To prevent conflict with other traffic during simulated radar directed emergency approaches, the pilot will remain in contact with approach control or the tower and will keep them informed on aircraft location.

5. The pilot will evaluate the approach at the point go-around is initiated. The approach will be considered successful if, in his opinion, a safe landing would be accomplished from that point. He will further note the position of the aircraft when the time-to-go indicator reads zero to evaluate the glidepath.

WARNING

All altitudes referred to above, except penetration altitudes, are absolute altitudes above terrain.

APPROACH PROCEDURE (VISUAL PATTERN)

Referring to figure FO-42, the downwind leg is entered at the altitude specified in applicable regulations. The TRAFFIC PATTERN checklist will be completed at this point and the airspeed reduced to 30 knots above computed best flare speed. The turn from the downwind leg will be a descending 90° turn to the base leg with a reduction in airspeed and altitude. Roll out to a wings-level attitude while descending on the base leg for sufficient duration (approximately 10 seconds) to allow for visual clearance of other aircraft in all directions. Maintain 20 knots above computed best flare speed until starting turn to final approach. A 90° descending turn to final approach will then be initiated and, at the completion of rollout on final approach, the airspeed will be 10 knots above computed best flare speed, minimum altitude as specified in applicable directives. A 30° bank will be the maximum allowable in the traffic pattern. The 10 knots above best flare speed will be maintained until the flare point is reached. As the flare point is reached and the aircraft is rotated for landing, the throttles will be retarded so as to cross the end of the landing runway at best flare speed. After touchdown, the airbrakes should be fully extended and the drag chute deployed.

NOTE

- During the approach and landing, the copilot should monitor the altitude and airspeed. Warn the pilot when above or below safe altitude or airspeed, or whenever the angle of bank exceeds recommended values.
- Pitch response of the aircraft becomes more sensitive with aft center of gravity conditions particularly in the landing gross weight range. In lightweight aft cg landings, there may be a tendency to flare high and hold the aircraft off the runway in a higher than normal noseup attitude due to lower stick force characteristics and reduced requirements for stabilizer trim during landing flare.

B-52H

- The pilot should be alert for the condition of forward throttle creep from IDLE position throughout approach and landing to preclude unscheduled power resulting from advanced throttle settings.
- If a crosswind leg is flown, the aircraft will be rolled out to a wings-level attitude on the crosswind leg for sufficient duration to permit visual clearance of other aircraft in all directions.
- The pilot's and/or copilot's sliding window may be opened at normal traffic pattern speeds and maneuvers provided all hatches are in place. If a hatch has been released, the opening of a sliding window should be avoided as inward acting airloads may cause the window to blow into the cabin area.

Emergency Minimum Ejection Altitudes – Level and Diving (Wings Level) Flight

NOTE

- These are emergency minimums above the terrain. Ejection should be started at or above 2000 ft (level flight) or 15,000 ft (diving) if possible.
- These data are based on full automatic operation of seat and parachute – no safety factor for equipment malfunction. Based on time from seat firing, other time delays, i.e., arming lever rotation, are not included. These can add additional large altitude penalties, especially in high speed dives.
- Assumes 0.3 sec. delay to integrated harness release. BA-27A automatic parachute with FXC 11,000 timer (0.75 sec. delay) and improved C-9 canopy.
- For diving turns, clearance requirements from this chart and banked flight chart are additive.

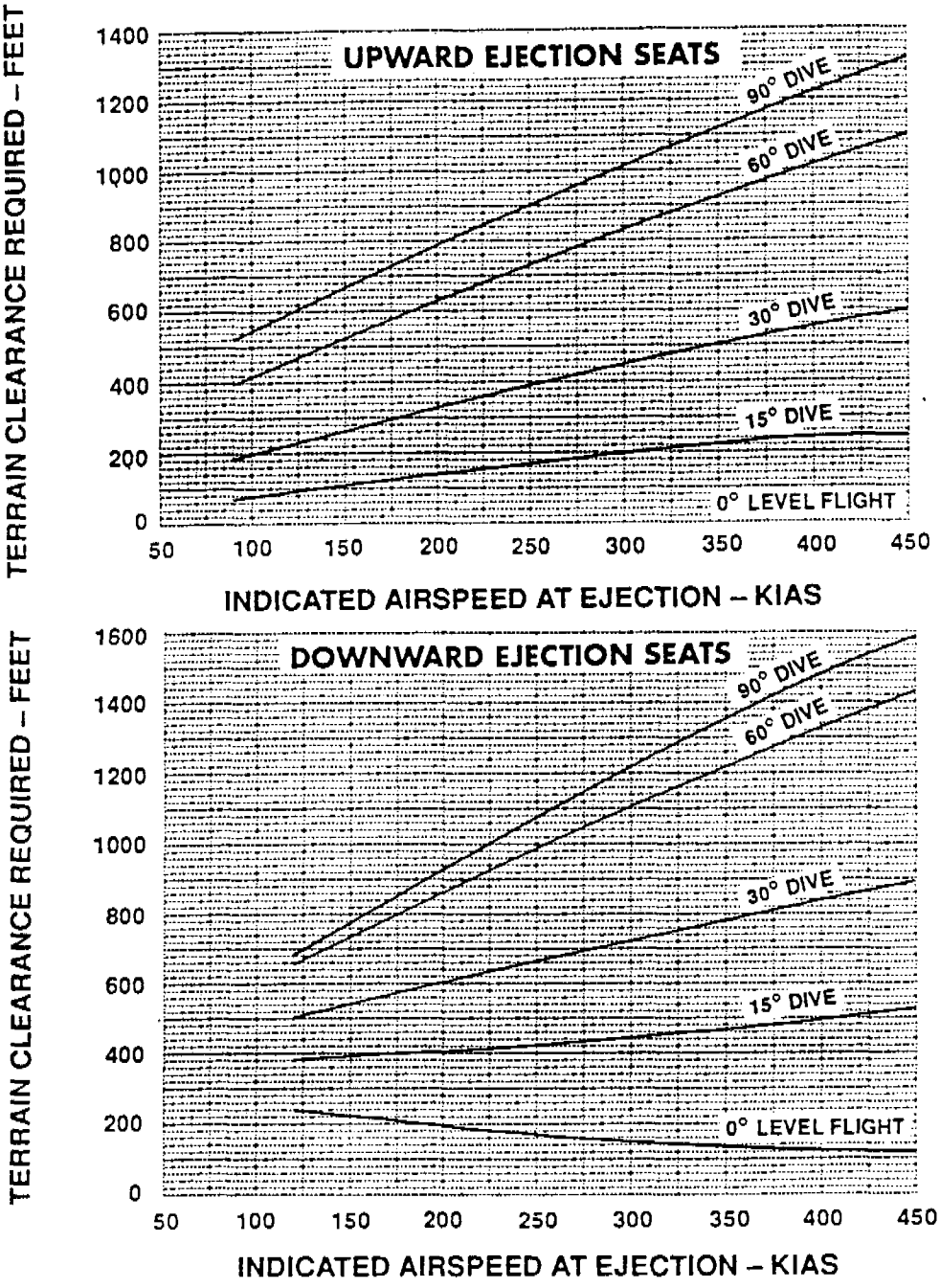
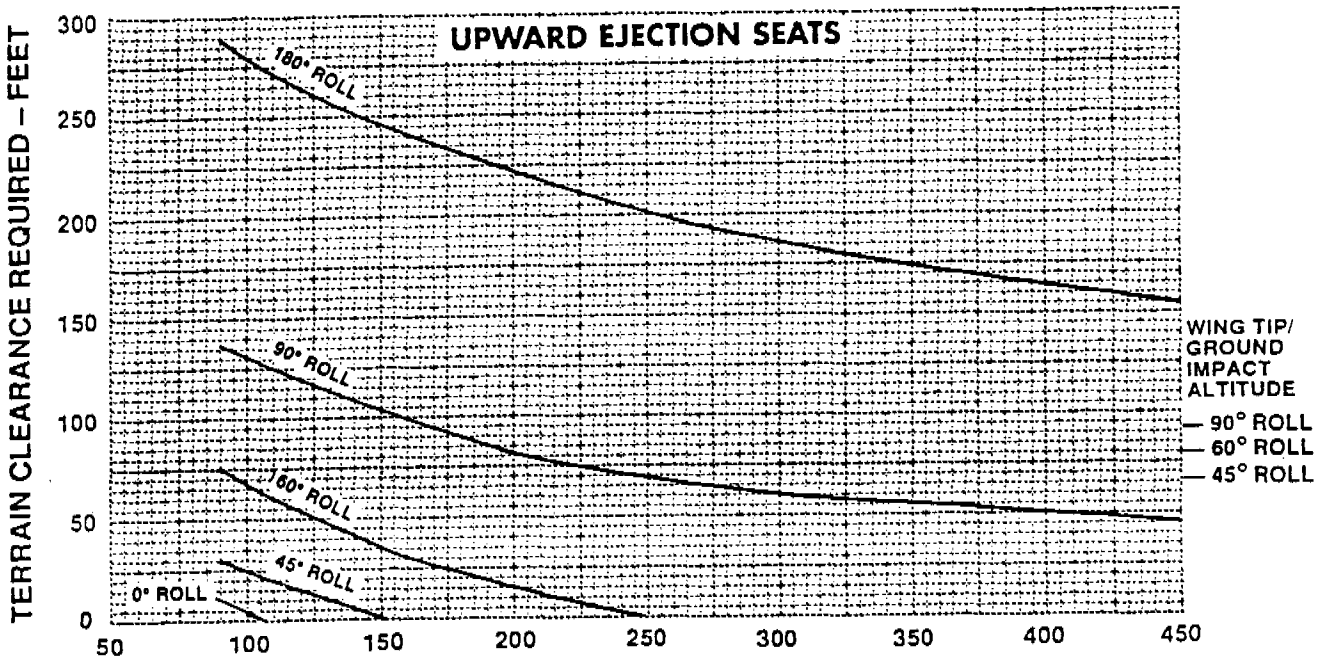


Figure 3-5A

Emergency Minimum Ejection Altitudes – Banked (Constant Altitude) Flight

NOTE

- These are emergency minimums above the terrain. Ejection should be started at or above 2000 ft, if possible.
- These data are based on full automatic operation of seat and parachute – no safety factor for equipment malfunction.
- Assumes 0.3 sec. delay to integrated harness release. Type BA-27A automatic parachute with FXC 11,000 timer (0.75 sec. delay) and improved C-9 canopy.
- For diving turns, clearance requirements from this chart and diving flight chart are additive.
- Banking the aircraft at altitudes below 93 feet may result in the wing tip impacting the ground (see scale on bottom right side of plots for specific altitudes at various aircraft roll angles).



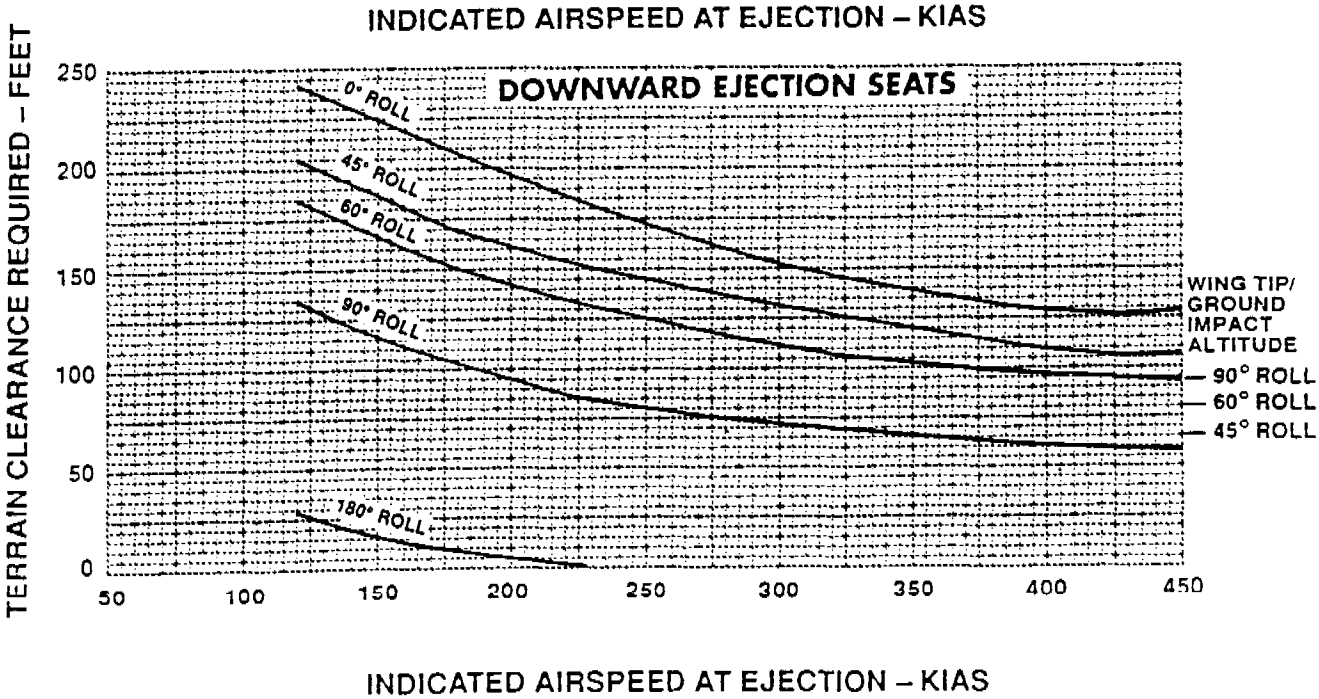


Figure 3-5B

THREE OR FOUR ENGINE FAILURE ON ONE SIDE WITH FLAPS UP

Flight tests have demonstrated that, with three or four engines inoperative on one side, a flaps-up landing provides more positive control of the aircraft during the approach as well as a lower altitude go-around capability than a flaps-down landing. Airbrake position 2 will be used on final approach for all gross weights. The roll response of the aircraft is significantly increased with airbrake position 2 over airbrake position zero or 1. For airbrake position zero, a half-wheel deflection represents 50% lateral control authority; the same lateral control authority for airbrake position 2 is obtained at approximately one-third wheel deflection. This characteristic allows the pilot to obtain a large portion of the spoiler authority with small wheel inputs, thus reducing pilot effort.

There are several factors that should be considered because of possible system failures and multiple emergencies associated with engine failures. Two generators and three engine-driven hydraulic pumps could be rendered inoperative on one side. Standby pumps may or may not be available. These conditions will affect the brakes, steering, crosswind crab setting, stabilizer trim operation, powered rudder/elevator, and landing gear extension and retraction time as well as having a possible effect on the pilots' ability to control the aircraft due to reduced pitch trim and roll rates available or lack of spoiler operation. An emergency with four engines shut down on one side may preclude fuel transfer from the engine-out side; thus, once body fuel is consumed, a lateral fuel unbalance could not be prevented. In this case, the pilot should either land immediately or be aware of lateral control problems if a go-around is attempted. Approximately 20,000-pound fuel unbalance between the total of No. 1 and No. 2 main tanks and the total of No. 3 and No. 4 main tanks will cause a rolling moment which will require an additional one-quarter of the lateral control authority. If the inoperative engines are on the heavy wing, this will leave only one-fourth lateral control authority for maneuvering, etc.

WARNING

Loss of engines will require close attention to fuel panel settings to control lateral balance and desirable cg locations. Required deviations from the aircraft configuration fuel sequence will be planned to maintain the proper differential/balance between paired main/auxiliary tanks whenever possible.

Observe the LANDING WITH THREE OR FOUR ENGINE FAILURE ON ONE SIDE WITH FLAPS UP, procedures and checklist. Also, see LANDING WITH WING FLAPS INOPERATIVE, this section. The higher speeds, larger turning radius, and difficulty in establishing speeds in an unfamiliar configuration require additional maneuvering space and make a long extended final approach desirable. A long straight-in pattern or an extended rectangular pattern should be flown at least 2000 feet above ground level, in the clean configuration, and airbrakes zero. Approach speed plus 30 knots IAS up to 30° of bank in either direction may be used with no adverse effects on handling qualities or performance. However, it is recommended that bank angle be limited, normally to 20°. The speed schedule in the pattern will depend on the availability of hydraulic pressure to the landing gear. If hydraulic pressure is available, fly the normal no-flaps speed schedule. When approaching the glide slope, extend the landing gear, place airbrakes to position 2, and reduce to final approach speed just before glide slope interception. If only standby pump pressure is available for the landing gear, maintain approach speed plus 30 knots IAS (either straight in or rectangular) until 2 minutes from glide slope interception. Extend the landing gear and allow airspeed to decrease so as to intercept the glide slope at approach speed with airbrake position 2. Systems failure may require the use of some emergency gear extension switches. The final approach should be flown with landing gear down, airbrakes position 2, and at approach speed using a precision instrument (PAR ILS) glide slope with a transition to VASI when appropriate. If facilities or equipment are inoperative, the VASI approach lights may be used, or if necessary, a visual final approach may be flown while attempting to maintain a 2.5° glide slope angle. Intercept the glide slope at 2000 feet or more above the runway elevation. Maintain the flaps-up approach speed on the glide slope by using all operating engine throttles together in a staggered setting with the inboard throttles further forward. Rudder trim should be used as necessary throughout the pattern and approach. With full rudder trim and some rudder input by the pilot, zero bank angle can be maintained during the pattern and approach. The approach patterns are illustrated in figure 3-13.

NOTE

Full rudder trim should be used on the approach and should be zeroed when the decision to land is made. Caution will be exercised not to zero the rudder trim too quickly and to carefully compensate with rudder pedal force while doing so.

- Route of flight
- Navigation (to include low altitude)
- Air refueling information
- Bombing
- EW activities
- Normal and emergency communications procedures
- Any special instructions or procedures pertaining to the mission.

NOTE

The pilot, copilot, radar navigator, and navigator will be thoroughly familiar with the penetration, approach, missed approach, landing patterns, altitudes, and obstructions at both destination and alternate airfields. Available aids such as current FLIP terminal and approach charts will be studied. A complete set of current approach charts will be available for inflight use of both of the pilots and the radar navigator. The radar navigator, as well as the pilot not actually flying the aircraft, will closely monitor all penetrations and approaches. The pilot at the controls will be notified immediately of any deviation from published procedures.

It is imperative that positive measures be taken to ensure that safety of personnel and aircraft are not jeopardized. Flight attitude of the aircraft will be carefully monitored by either pilot or copilot at all times. Prior to accomplishment of any of the following, verbal coordination between applicable crewmembers will be required when:

1. Control of aircraft is transferred between pilot and copilot.
2. Control column of either the pilot or copilot is disconnected or reengaged.
3. Changing fuel control settings.
4. A crewmember returns to position, comes back on interphone, and removes his inflight safety pins or unstows downward ejection control trigger ring.
5. A crewmember leaves position or goes off interphone.
6. A crewmember goes off oxygen and when he resumes oxygen use during flight when oxygen is required.
7. Autopilot control of aircraft is transferred between the radar navigator/navigator and pilot.
8. Any electrical power source is changed.
9. It is necessary for the pilot flying the aircraft to transfer control of the aircraft to the other pilot when he is required to do something which will divert his attention from flying, such as checking oxygen, tuning radios, changing fuel control setting, etc.
10. The pilot intends to perform any critical maneuver, at which time all crewmembers will be secured in their respective positions.
11. Changing air outlet knob positions (notify copilot).
12. The inflight safety pins are installed or the downward ejection trigger ring is stowed. Conditions requiring pin installation or trigger ring stowage are:
    a. All ground operations.
    b. Whenever the crewmember leaves his seat in flight.
    c. When the parachute is not worn.
    d. When the safety belt and shoulder straps are not fastened.

All applicable crewmembers will acknowledge that the intended course of action is understood prior to actual accomplishment and will conduct themselves accordingly. All crew positions, when practical, should monitor communications outside the aircraft at all times.

WARNING

- Whenever a change of crew position is necessary, climb to a safe altitude and area before the change is made. The pilots will not exchange seats when only two pilots are aboard the aircraft.

- Any time during critical phases of flight and especially during night and/or instrument conditions, the pilot not flying the aircraft will closely monitor his flight instruments and cross-check them against the instruments of the other pilot. If an apparent error in aircraft attitude is detected, the pilot flying the aircraft will be advised immediately. The pilot not flying the aircraft will also monitor the engine instruments.

- Extreme care will be exercised by the pilots, when leaving seats, to avoid inadvertent operation of switches or controls on the aisle stand or overhead panel.

4. Continue to decelerate the aircraft using back pressure on the wheel. The amount of force and column movement needed to stall the aircraft will vary with cg position. Maintain wings level attitude with lateral control as the stall is approached. Fairly large lateral corrections may be necessary. Caution should be used because lateral control capability decreases rapidly as the stalling speed is approached. Shown in figure 6-2 is the deterioration of the lateral control effectiveness as the speed is reduced below best flare speed. Rudder may be used to maintain heading; however, during low speed flight, a delay in aircraft response after control input of up to 3 seconds may exist before a roll correction develops.

5. With flaps down, there will be a 5 to 10 knot stall warning buffet which increases as speed is reduced. At the stall there will be fairly heavy buffeting.

6. The stall should be terminated by sufficient forward control column movement to lower the nose below the horizon and simultaneously advancing the throttles to MRT until safe and proper airspeed is attained. Trim the aircraft as required.

7. If practice stalls are performed in the flaps-up configuration, procedures are the same as flaps down. There will be a 10 to 15 knot stall warning buffet. Generally, there is a reduced tendency for a wing to drop in the flaps-up configuration as compared to the flaps-down configuration. The stall should be terminated if a wing drops or before heavy buffet is reached.

CAUTION

Under no circumstances should an attempt be made to carry a stall to completion by holding the column back until the nose falls through the horizon. Any such attempt will result in severe buffeting. Severe buffeting has resulted in damage to secondary structure and aircraft equipment.

8. Accelerated stalls can occur at any speed as a result of pulling excessive g's in turns or pullups. Generally they are similar to unaccelerated stalls except that speed and altitude changes occur much faster. An accelerated stall will occur if the aircraft is placed in a stalling angle of attack during a pullup or turn at any speed higher than 1 g stalling speed. As a rule at normal cg's, if the aircraft is trimmed for 1 g flight, sufficient elevator control is available at high altitudes to produce an accelerated stall at any speed. At low altitudes, the elevators will be augmented by stabilizer trim and, in some cases, the wing structural limits are exceeded to obtain an accelerated stall. Approaches to accelerated stalls requiring flight in the strong buffet region can be safely executed and may be necessary in escape

Decay of Lateral Control Effectiveness from Best Flare Speed

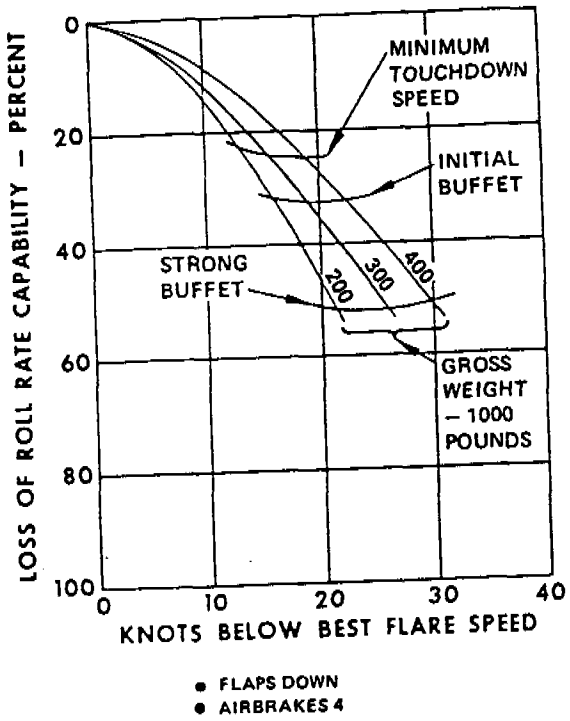


Figure 6-2

manual trim will be applied as rapidly as possible while holding wings level and the control column full forward. Recovery is still possible but will be slower. The airspeed will fall alarmingly low but lateral control will be good. As the nose of the aircraft drops through the horizon, recovery can be made as the descent is begun by use of trim and thrust as required. Do not release forward pressure on the control column until the desired attitude is established and airspeed increases to a safe value. Because of the tendency to overtrim during the recovery from the nose-high condition, prompt opposite trim action will be required after the aircraft assumes a nose-down attitude. Caution will be exercised to avoid an accelerated stall.

Even though a reduction of thrust will decrease the amount of mistrim in the noseup direction, there are definite advantages to be gained by maintaining thrust. When thrust is maintained, the minimum speed encountered in the recovery will be higher, altitude gained will be greater, and the possibility of a secondary stall in the recovery will be decreased. Do not use a steep turn maneuver for recovery from nose-high attitudes, one reason being that dangerous sideslip could occur causing structural failure. If nose-high attitude develops after takeoff, recover straight ahead. Maintain wings level, full takeoff thrust, and full forward control column. Retract airbrakes if extended and apply continuous nosedown trim until recovery is made. the use of a steep bank to control the aircraft can be fatal if at a low airspeed and close to the ground, and should not be attempted.

WARNING

Do not attempt to take off unless trim has been properly set for takeoff and airbrakes are down.

A steep turn as a last resort maneuver will compensate for a considerable amount of noseup mistrim; however, if the mistrim condition is undetected until a high noseup attitude and a low airspeed is reached, there is a danger, when entering a turn, of causing an uncontrollable maneuver which may result in structural failure. Two other factors should be considered: 1) While rolling the aircraft, the spoilers aggravate the mistrim, and 2) the time taken establishing a turn would be better spent trimming manually. Therefore, a steep turn maneuver to compensate for an excess of noseup trim is not recommended even at high altitude except in the case when both electric and manual trim are inoperative. When starting a steep turn under these circumstances, alert the crew to "prepare to abandon the aircraft." If unscheduled noseup trim is encountered while in a turn, the best action will be to continue the turn and use the RUNAWAY OR UNSCHEDULED STABILIZER TRIM checklist, Section III. If nose-down trim is encountered in a turn, roll wings level while using the RUNAWAY OR UNSCHEDULED STABILIZER TRIM checklist, Section III.

Dive Recovery

Dives can result from stabilizer trim in the nosedown direction, autopilot malfunction, unscheduled loss of airbrakes, or instrument misinterpretation or malfunction. Because of its extremely low drag with landing gear and flaps retracted, this aircraft will increase in speed very rapidly any time the nose is dropped. Therefore, during dive recovery, the application of a positive load factor (back stick) should be made immediately up to the structural limit of 2.0 g's or to the point of buffeting, whichever occurs first. In cases where elevator authority alone is found to be insufficient to control the dive or when nosedown mistrim is suspected, airbrake extension should be used as a backup to the elevator for pitch authority. The application of load factor should have precedence over thrust reduction. See figure 6-17 for altitude loss during a dive recovery.

Spiral Dives

If an aircraft reaches too large a bank angle or falls off on one wing, a spiral dive can result. This maneuver is easily entered when visual orientation is not possible or if instrument orientation is momentarily lost because of distraction or vertigo. To recover from a spiral dive, roll out of the bank and hold wings level while holding a constant heading. At the same time, the recommended procedures for dive recovery should be initiated.

GO-AROUND CHECKLIST (Cont)

2. Airbrakes – OFF (P)

   Pilot retracts airbrakes, levels off, and checks for a positive increase of airspeed.

3. Landing Gear – UP , (as required) (P-CP)

   On pilot's command, copilot retracts the gear when it is established that aircraft will not contact the runway.

4. Thrust – Reduced (P)

   Pilot accelerates to desired IAS (best flare speed plus 30 knots IAS or 180 knots IAS) and adjusts thrust to establish a rate of climb of approximately 1000 fpm.

NOTE

- If the flaps are raised to accomplish flaps-up training, or if the pilots' intentions are to remain in the aircraft traffic area/terminal control area, accelerate to approach speed plus 30 knots IAS.
- Accomplish AFTER TAKEOFF – CLIMB checklist or TRAFFIC PATTERN checklist, as applicable.

Airfoil Section

The thickness ratio of a wing has an important bearing on its critical Mach number. When the thickness ratio of an airfoil section is decreased, the critical Mach number increases since the air flowing over the top of the wing travels relatively slower, thereby permitting higher aircraft speeds before the wing critical speed is reached. Wind tunnel tests conducted on models showed that the airfoil section at the root of the wing could be quite thick without reducing the critical Mach number. The aircraft has a relatively thick airfoil section near the root of the wing and tapers down to a very thin section at the tip. The outstanding disadvantages of a thin airfoil section as compared to one with more thickness, are that there is less space in the wing to house fuel and equipment, a heavier structure is required because of the decreased beam depth of the spars, and the maximum lift is lower.

Wing Loading

The design wing loading (weight per square foot of wing area) is an important parameter in the aerodynamic and performance characteristics of the aircraft. The critical Mach number of the wing is strongly dependent on the magnitude of the wing loading. A decrease in the wing loading of the aircraft (increase in the aircraft's wing area) will generally increase the critical Mach number. This effect can be explained from the fact that for a given speed, altitude, and weight, the wing angle of attack is proportionally reduced with a decrease in wing loading. Since the velocity of the airflow over the wing is proportionally less at low angles of attack than at high angles of attack, the aircraft speed corresponding to where the airflow reaches a sonic velocity is increased. This increase in aircraft speed is the change in the critical Mach number of the wing. The increased wing area associated with a reduction in wing loading will improve the takeoff performance but may reduce the range performance of the aircraft due to the additional frictional drag and the heavier structural weight required. A compromised wing loading was necessary in order to achieve an optimum configuration from all design considerations.

STALLS

The stall characteristics of the aircraft will vary with wing flap extension. The following stall characteristics can be expected:

1. With flaps extended, a fair amount of stall warning will exist. The stall is preceded by a mild buffet approximately 5 to 10 knots above the stall, increasing to strong buffeting at the stall.
2. With flaps retracted, the initial buffet occurs at approximately 10 to 15 knots above the stall.
3. There is approximately a 20 to 35 knot difference in the stalling airspeed depending upon whether the flaps are extended or retracted. The use of airbrakes has a negligible effect on the stalling speed but full airbrakes will cause the initial buffet to occur at an airspeed approximately 2 to 4 knots higher than if no airbrakes are used.

PRACTICE STALLS

Practice stalls may be executed without difficulty provided the following procedures are observed:

1. Gross weight does not exceed 300,000 pounds.
2. A minimum altitude of 20,000 feet above the terrain.
3. Extend flaps and adjust thrust to allow the aircraft to decelerate while holding a constant altitude. Engine thrust has a negligible effect on the stall characteristics or stall speed; however, high thrust settings in the stall approach will result initially in a fairly large rate of climb.

NOTE

As the aircraft is decelerated in the stall approach, it is essential that it not be trimmed to speeds below best flare speed (approach speed flaps up). The stall recovery should be made using forward elevator control only. If the aircraft has been trimmed below the best flare speed trim setting, stabilizer trim may be used to augment the elevator as required. The use of stabilizer trim in a normal practice stall recovery may result in overcontrolling the aircraft with a resultant potentially dangerous nosedown attitude developing.

maneuvers at high altitudes. Complete stalls while pulling g's are not recommended for the following reasons:

a. The drag associated with accelerated stalls will result in rapid speed and altitude changes.

b. Loss of accurate orientation due to the extreme attitudes which can occur during and following an accelerated stall may delay recovery or jeopardize control of the aircraft so that considerable altitude will be lost in the maneuver.

c. The strong buffeting encountered will have adverse effects on the aircraft structure and equipment.

d. If the accelerated stall occurs at Mach numbers well above the low speed stall, the aircraft can accelerate beyond the flight placards during recovery. Close monitoring of aircraft attitudes in turns should be observed to avoid pitchup into inadvertent accelerated stalls.

RECOVERY FROM INADVERTENT STALLS

Recovery procedures from any stalled condition are standard: stick forward, add thrust, maintain heading with rudder, level wings, recover to level flight with adequate airspeed. Most common of the inadvertent stalled conditions is maneuvering stall or stall during a turn. Turning flight increases stall speed similar to the effect of increased weight. Both require increased lift for level flight. Any steady level turn requires that the vertical component of lift be equal to the weight, and the horizontal component be equal to the centrifugal force. Stall speeds increase with bank angles and this increase becomes significantly more rapid at bank angles over 30°. See MANEUVER LIMITS charts, Section V. This fact emphasizes the need to avoid steep bank angles at low airspeeds. Approach and entry into a stall is accompanied by mild, moderate, then severe buffeting. Stabilizer trim can be an important factor both in stall entry and stall recovery. An aircraft trimmed into a stall can be difficult or sometimes impossible to recover unless the mistrimmed condition is corrected. The autopilot can cause a mistrimmed condition if a turn is established on autopilot and thrust is not increased to maintain airspeed. An aircraft trimmed to the best flare speed trim setting can be recovered with elevator only and does not require stabilizer trim until the stall recovery has been completed. An aircraft that has been trimmed into the stall will require proper stabilizer trim application to recover from the stall.

STALL OR CONTROLLABILITY CHECKS

Under some unusual aircraft configurations or conditions, it may be desirable to conduct a stall check or controllability check of the aircraft prior to landing. A check of the stalling speed should be made if the accuracy of the pitot-static system is seriously in doubt or if the fuel quantity indicating system becomes inoperative resulting in an unknown landing gross weight. If the aircraft sustains damage or has a control system malfunction which makes its controllability doubtful, its control characteristics should be determined at a safe altitude prior to descent for landing. It is recommended that a minimum altitude of 10,000 feet above the terrain or cloud cover be used for these checks. At these altitudes, the initial buffet speed will be increased, compared with those shown in figure 2-14, by a factor of 1% per 5000 feet for altitudes above 10,000 feet pressure altitude.

WARNING

- When any controllability check is made due to doubtful control characteristics of the aircraft, the airspeed should not be reduced below the estimated minimum touchdown speed for the aircraft configuration in which the check is made. Under these conditions, the check should be discontinued immediately if any buffet or control problem is encountered.

- When the flaps are in a full down or intermediate position and flap damage exists, such as a missing segment, the best flare speed and minimum touchdown speed given in the Appendix may no longer apply. In this case, reduce speed slowly until the estimated minimum touchdown speed is reached or until approximately one-half lateral control authority is required to maintain the wings level. For the controllability check, minimum touchdown speed for intermediate flap settings can be estimated by subtracting 9 knots from the best flare speed at the appropriate flap setting. If one-half lateral control authority is encountered before minimum touchdown speed is reached, add 9 knots to the minimum speed reached to determine the best flare speed.

Determination of Stalling Speed

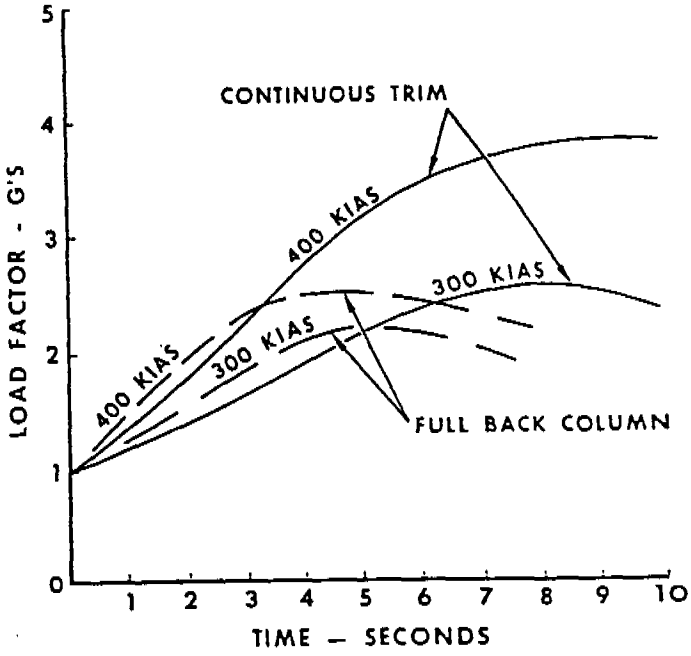
If the airspeed indicators are suspected of giving inaccurate readings or if the fuel quantity gages are inoperative, a check of the initial buffet speed should be made at an altitude of 10,000 feet above the terrain or cloud cover and the resulting speed

AIRCRAFT RESPONSE TO FLIGHT CONTROLS

The most significant problem with which the pilot must familiarize himself at high speed is the aircraft control characteristics while encountering severe turbulence at low altitudes. Aircraft response to use of the elevators only is sluggish, while response to change in stabilizer trim is rapid and positive. However, any change in pitch should be made by leading with the elevators and using stabilizer trim to relieve the physical effort required by the pilot. Fine control is then maintained by use of the elevators. Use of the low level mode of the autopilot will substantially reduce stick forces required and lateral forces will also be lighter than manual. With the yaw SAS engaged, lateral-directional oscillations of the aircraft are sensed and increased positive damping is provided for easier rudder control. The autopilot will also provide automatic stabilizer trim to compensate for any pitch or thrust changes. See AUTOPILOT, Section I. Figure 6-18 compares load factors developed during low altitude pull-ups at high and low airspeeds. See ACCELERATION LIMITATIONS, Section V, for inflight limit load factors. When using the low level mode of the autopilot, a g limiter will automatically disengage the autopilot before the pilot inadvertently exceeds the normal acceleration (load) limits. For additional information, see G LIMITER under AUTOPILOT, Section I. The use of airbrakes is not advisable except in maintaining the necessary EPR for anti-icing, or under other controlled conditions. The upward pitch change associated with the use of airbrakes (or downward when retracted) can have undesirable effects at extremely low altitudes.

The roll-yaw response of a B-52 resulting from a typical asymmetrical thrust condition is shown in figure 6-19. For a particular case where corrective action is applied 4 seconds after thrust loss, the roll rate does not reduce to zero until an additional 3 seconds have elapsed. During this period, the aircraft continues to bank even though full corrective control has been applied. A sensation that the controls are not effective will be felt since the bank angle continues to increase for several seconds when full controls are applied to oppose the roll. The aircraft is, however, in a process of responding by reducing the roll rate. Control inputs must be held in to speed the recovery.

Load Factors During Low Altitude Pullups



SEA LEVEL
STANDARD DAY

CG = 25% MAC
GW = 250,000 LB

Figure 6-18

STABILIZER TRIM FAILURE

See FLIGHT CONTROL SYSTEM EMERGENCY OPERATION, Section III, for detailed instructions pertaining to stabilizer trim failure.

NOTE

A temporary failure may be experienced in the stabilizer trim system under certain conditions of temperature and humidity if the trim followup screw heater elements are inoperative. This condition would result from frost or ice buildup on the followup screws which could jam the followup screw and cause the stabilizer trim system to be inoperative both electrically and manually until the frost or ice had melted.

Lateral Control

Lateral control is provided by seven spoiler segments on each wing. Lateral trim is provided by electrically repositioning the entire lateral control system to a new neutral point of the system centering springs. At normal operating speeds and altitudes, roll rates are quite high (figure 6-6). Care should be exercised that roll corrections during instrument flying are not excessively applied nor in the wrong direction. The highest roll rates at any altitude will occur at approximately 250 knots IAS. Beyond this speed hydraulic pressure is insufficient to obtain full deflection of the spoilers so that roll rates will decrease. However, because of the location of the spoilers, roll rates will not decrease to zero. (Reversal will not occur at any speed.) Use of rudder in the direction of the roll during initiation of the roll at low speeds tends to improve the roll response characteristics.

A loss of lateral control authority will occur in the low speed flight regime as the aircraft approaches a stall. The decay of lateral control, for the flaps-down configuration as the speed is reduced below best flare speed, is shown in figure 6-2. This loss in lateral control results from airflow separation on the wing ahead of the spoilers at the high angles of attack associated with wing stall. In the low speed flight regime where lateral control authority is severely reduced, control inputs in correcting bank angle should be made primarily with the rudder assisted by whatever lateral control is available. The maximum roll rate capability of the flaps-down configuration is slightly higher than that for the flaps-up configuration for the same airspeed and altitude. However, when a landing must be made flaps up, the roll rate capability during the approach will be essentially the same as for a normal flaps-down approach due to the effect of the higher flaps-up airspeed.

LATERAL UNBALANCE

During the landing operation, roll control can be marginal in at least one direction when large amounts of lateral unbalance exist. There is a minimum speed at which roll control can be maintained. As speed decreases below the point where more than 50% lateral control is required, the lateral control is used up rapidly. Lateral control can be augmented during such conditions through use of rudder which will provide a sizeable rolling moment from the sideslip induced. It is not desirable, during normal operations, to deliberately enter regions where more than 50% of lateral control is required for lateral balance. Part 9 B-52G , Part 8 B-52H of the Appendix shows minimum landing weight for various amounts of unbalance. This data is based on the use of not more than 50% lateral control and illustrates the advantage of higher touchdown speeds obtained by flaps-up landings. Additional advantage can be gained through the use of airbrakes which will allow simultaneous contact of the landing gear at higher than normal touchdown speeds. (See figure 6-10.)

SPOILER SYSTEM

Seven spoilers are provided on each wing, each having its own hydraulically operated actuator. The three inboard spoilers are interconnected and operate as one unit and the four outboard spoilers are interconnected and operate as one unit. Wheel travel of 80° will give full extension of the spoilers.

SPOILERS AS A LATERAL CONTROL DEVICE

The extension of spoilers on one wing decreases the lift produced by that wing and also increases the drag. The loss of lift on the wing with the spoilers extended causes it to rotate downward, thereby producing a rolling moment in that direction. The addition of drag causes a slight yawing motion in the direction toward the wing with the spoilers extended which assists the pilot in bringing the wing down or

the B-52 pilot must push on the control column to maintain clearance. As the B-52 wing passes forward of the KC-135 wing, it passes from a region of downwash to a region of upwash and the lift is suddenly increased; therefore, the B-52 pilot will strongly increase the push force at this time to prevent pitching up into the tanker. If the B-52 were to underrun the tanker to one side so that their wings overlapped on one side only, the pitching tendency would not be quite as strong but the aerodynamic interaction is such that less lift is generated on the top wing and more lift is generated on the bottom wing. This causes the two aircraft to bank in the same direction with the two wings tending to collide since one goes down and the other goes up.

LIMITATIONS

Prior to participating in air refueling operations or formation flight, all crews will be properly briefed on information tactics and procedures that will be used and to (1) never fly over or under the other aircraft, and (2) maintain safe separation in all directions as specified in the applicable air refueling flight manuals or the major air command formation flying directives. In the event an emergency requires a chase aircraft for airspeed reference or a visual inspection, the pilot of the chase aircraft will be briefed on command chase aircraft procedures prior to engaging chase operations.

DIVING

At cruising altitude, a considerable increase in speed above the maximum range cruise speed may be made before reaching the buffet boundary. Therefore, a shallow dive may be made without entering the buffet region. However, because of the extremely low drag of the aircraft with the gear and flaps retracted, the speed increases very rapidly at any time the nose is dropped or a dive is started. If the buffet region is entered while in a dive, recovery may be made by immediately retarding the throttles to IDLE and leveling out very slowly. Leveling off too rapidly will cause the load factor to increase to a value considerably greater than 1 g with the result that buffeting will increase. In cases where a rapid descent is to be accomplished, the landing gear and airbrakes should be extended and the procedures followed as outlined under DESCENT, Section II.

FLIGHT WITH ASYMMETRICAL LOADS

See FUEL MANAGEMENT FOR LATERAL TRIM, Section II; and refer to Part 9 B-52G, Part 8 B-52H of the Appendix for information regarding flight with asymmetrical loads.

LOW ALTITUDE FLIGHT CHARACTERISTICS

NOTE

Due to the wide wing span of the B-52, wing tip terrain clearance at extremely low altitudes can become critical as the bank angle increases during turns, e.g., a 20° bank will place the wing tip approximately 25 feet closer to the terrain than the bottom of the fuselage and a 40° bank approximately 55 feet closer. See following table.

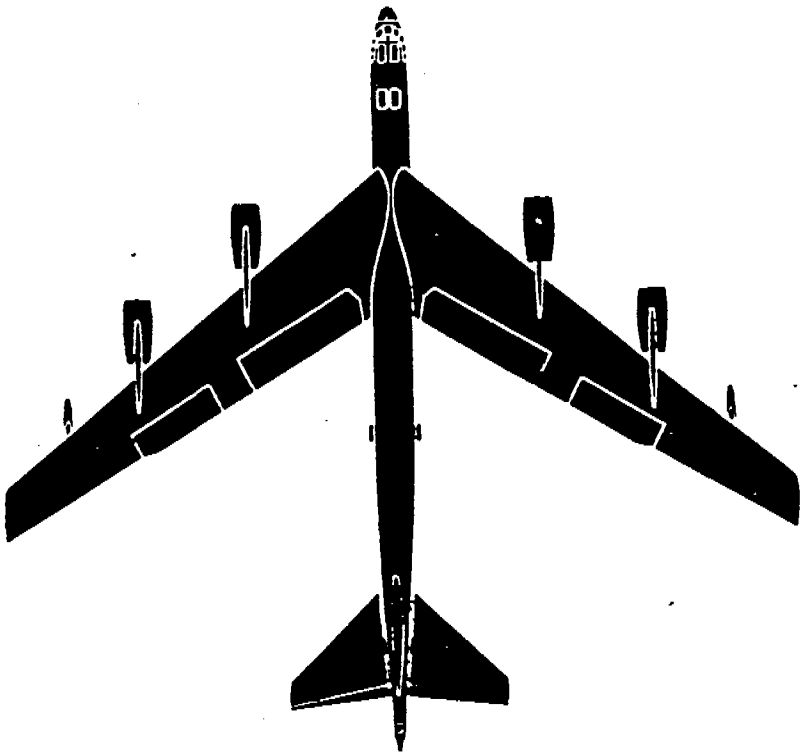
BANK ANGLE - DEGREES	APPROXIMATE DISTANCE - FEET
12	11
15	16
20	25
30	40
40	55

Considerable motion in the lateral plane from the effects of turbulence and strong or gusty surface winds is apparent while flying at low altitude, especially if the airspeed is above 325 knots IAS. Motion in the lateral plane due to horizontal gusts is similar to earlier series B-52's; however, due to a difference in wing construction and fuel distribution, the B-52G/H reacts differently to vertical gusts than earlier models. When a vertical gust is encountered, the initial gust input causes the aircraft to bounce vertically but the vertical motion damps out rapidly as the gust dissipates. The effect is to give relatively long periods of time when the flight is quite smooth. Observation of the wing shows very little up and down motion and nacelles move only occasionally. The normal operating limitations contained in Section V apply to low altitude operation. For further information, see LOW ALTITUDE TACTIC, Section II, and TURBULENCE AND THUNDERSTORMS, Section VII.

B-52 TRAINING PROGRAM

PILOT

"Time for Action" AGAIN



BPAO III

Dec 86

93D BOMBARDMENT WING
CASTLE AFB, CA

AIR FORCE-28-SEPT-87-500

AA-2.13B

An accelerated stall is a stall that occurs when the load factor is greater than 1 g. The figure shows the increase in stall speed as a function of level flight, bank angle, or load factor. The accelerated stall characteristics are more severe than the 1 g case. This means that the buffeting is more severe and the time from stall warning, initial buffet, to full stall is less. Stall in a bank can easily result in an unusual attitude because of reduction in roll control authority.

Accelerated stall is recognizable to the pilot by the onset and increase in buffet level as g's are increased. Recovery can be effected by rolling to wings level and releasing back pressure on the column.

Wind Shear

Wind shear is a complex phenomena that can adversely affect the aircraft in all phases of flight, but is most critical during the approach and landing phase. Wind shear can exist as a rapid change in wind velocity and direction as well as vertical air movement. There are many factors which influence or contribute to a wind shear condition. As a general rule, the amount of wind shear is greater ahead of warm fronts, although the most common occurences follow the passage of cold fronts during periods of gusty surface winds. When a temperature change of 10°F or more is reported across the front, or if the front is moving at 30 knots or more, conditions are excellent for wind shear. In addition, when thunderstorms are present in the area of intended landing or a strong temperature inversion is near the ground, the possibility of encountering wind shear is increased.

1. Wind Shear Effects. The thrust required, vertical velocity, and pitch attitude on final approach, used in conjunction with the wind reported on the ground, provide an indication of potential wind shear. Be alert for:

a. Unusual changes in airspeed and rate of descent followed by corresponding changes in glideslope and pitch attitude.

b. An unusually high or low power setting required to maintain airspeed.

Caution will be exercised in initial reductions of thrust and pitch to avoid a steep glideslope intercept in a low power, high sink condition.

2. Wind Shear Phenomena. The following are two wind shear phenomena that are commonly found during final approach:

a. Decreasing Headwind. Initial reaction of the aircraft when encountering a decreasing headwind (or an increasing tailwind) is a drop in indicated airspeed and a decrease in pitch resulting in a loss of altitude. If the wind shear occurs at low altitude, the pilot will add power and increase pitch to regain the proper glideslope. In severe conditions, higher than normal thrust and higher than normal pitch attitudes may be required to maintain the proper descent profile.

b. Increasing Headwind. The initial aircraft reaction to an increasing headwind (decreasing tailwind) is an increase in indicated airspeed and an increase in pitch resulting in a gain in altitude. The pilot should reduce pitch and power to regain the proper glidepath. Caution will be exercised in initial reductions of thrust and pitch to avoid a steep glide slope intercept in a low power, high sink condition. This could result in the aircraft landing well short of the intended touchdown point.

WARNING

If the aircraft becomes unstable on final approach due to wind shear and the approach profile cannot be promptly reestablished, a go-around should be immediately accomplished.

LANDING

LANDING WITH GUSTY WIND CONDITIONS

It is not necessary to increase the final approach speed for gust velocities up to and including 15 knots. For gust velocities in excess of 15 knots, the final approach speed should be increased two-thirds of the gust velocity in excess of 15 knots. For example, with a wind velocity of 20 knots with gusts to 50 knots, 10 knots would be added to the final approach speed (total gust velocity 30 knots; 30 – 15 = 15 knots; 15 x 2/3 = 10 knots).

TOUCHDOWN

The recommended touchdown is with the rear gear first at minimum touchdown speed. Refer to Part 9 of the Appendix B-52G, Part 8 of Appendix B-52H, for landing speeds. This allows for an adequate flare without a bounce. However, if the forward gear is too high when the rear gear touches, a hard landing may result. Full airbrakes should be applied immediately after touchdown provided there is no bounce. With the antiskid system operative, the wheel brakes may also be applied immediately after touchdown although this decreases brake service life. The runway available will determine when the wheel brakes should be applied. After establishing a stable ground roll, brakes will be checked for proper operation followed by intermittent application of the brakes as required. The normal landing charts in Part 9 of the Appendix B-52G, Part 8 of Appendix B-52H, show the landing ground roll distances with wheel brakes applied at 90 knots IAS. See MINIMUM RUN LANDING, this section, for more details on use of brakes and drag chute.

NOTE

The front gear is well forward of the cg and if allowed to touch down first, a bounce is almost certain to occur. This usually is the result of too much speed.

PROHIBITED MANEUVERS

Acrobatics of any kind are strictly prohibited. This includes intentional spins, vertical stalls, and steep dives, as well as any maneuver resulting in abrupt accelerations. Normal stalls, accidental spins, and shallow dives are discussed in Section VI.

ACCELERATION LIMITATIONS

LIMIT LOAD FACTOR

Figure 5-11 illustrates the structural limits on maneuver load factor. It also shows the limit gust load factors throughout the gross weight range. The chart is for normal fuel loading and sequencing as defined by Section I. The aircraft positive maneuver- ing limit is 2.0 g's at all gross weights up to 450,000 pounds. Above 450,000 pounds, the limit maneuver load factor decreases linearly to 1.8 g's at 488,000 pounds maximum flight weight. At normal loading, strength has been provided for gust encounters (turbulence) which result in load factors above 2.0 g's and up to those shown in figure 5-11. See TURBULENCE AND THUNDERSTORMS, Section VII, for selection of best speed and altitude in turbulence.

NOTE

Limit gross weight to 390,000 pounds for tactical maneuver training. Exceeding maneuver load factor limits is likely at gross weights above 390,000 pounds.

ASYMMETRIC ACCELERATION LIMITATIONS

Asymmetric g Forces occur anytime the aircraft has a roll rate. In steady state banked coordinated flight, (roll rate = 0), g forces are symmetrical. Asymmetrical g limitation is +1.33 and occurs anytime the spoilers are deflected and a roll-rate exists. The asymmetrical g limit is constant for all configurations and gross weights.

ROLL MANEUVER LIMITS

Rapid roll rates such as those induced by full control wheel deflection in 1.5 seconds should not be initiated at altitudes above 30,000 feet when the positive load factor exceeds 1.33 g's. Since 41 degrees bank angle results in a 1.33 g load, a slow entry and exit in performing level, coordinated turns should be planned when bank angles exceed 41 degrees. Structural limit loads can be reached with a 30 degree per second roll rate combined with a 1.33 g positive load factor or with a zero roll rate at the 2.0 g positive limit load factor. At low altitudes, structural limit loads can be reached with a 10 degree per second roll rate combined with the 1.78 g positive load factor resulting for a 55 degree bank angle.

LIMIT LOAD FACTOR COMBINED MANEUVERS

The aircraft maneuver limit load factor (figure 5-11) is based on aircraft maneuvers such as a wings level pull-up or a steady turn with zero roll rate. A combined maneuver involves rotations about two axes such as a rolling pull-up. The maneuver limit load factor decreases with increasing roll rate when performing combined maneuvers. Figure 5-11A depicts the flaps up combined maneuver limit load factor as a function of roll rate. The maximum achievable roll rates for different altitudes are also plotted on the chart. For example, operation of the aircraft at the maximum achievable roll rate of 31 degrees per second at 40,000 feet pressure altitude results in a maneuver limit load factor of 1.33 g's while a maximum achievable roll rate of 16 degrees per second at sea level results in a maneuver limit load factor of 1.82 g's. Since accurate roll rate information is not displayed to the pilot, combined maneuvers should be performed with deliberate caution.

MANEUVER LIMITS - FLAPS DOWN

Figure 5-12 provides curves which may be used to determine the allowable flaps down maneuver limits to avoid stall buffeting, stalls, or exceeding the structural placard limits. This chart is useful in planning the approach.

MANEUVER LIMITS - FLAPS UP

Figure 5-13 depicts the flaps-up maneuvering limits above 10,000 feet. Three reference curves are plotted on the chart to compute minimum recommended speed, initial buffet speed, and strong buffet speed. Strong buffet and maximum recommended buffet are synonymous. The chart may be used to compute high speed initial buffet at a given bank angle by using the top portion of the buffet curve, or the low speed initial buffet at a given bank angle by using the lower portion of the buffet curve. (See example on figure 5-13.) Maximum bank angle for initial buffet may be computed by establishing the point of convergence of the high speed and low speed buffet curves (note asterisk on figure 5-13) and following vertically to the intersection of the bank angle curve developed from the gross weight and altitude conditions. The same process would be used for computing strong buffet-maximum recommended. Acceleration g's may also be computed for any selected condition from the scale on the left side of the bank angle chart.

FEDERAL AVIATION REGULATIONS

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION—WASHINGTON, DC

CHANGE 6

EFFECTIVE: DECEMBER 19, 1993
MAY 12, 1994

Part 91—General Operating and Flight Rules

This change incorporates:

Amendment 91–240, Temporary Restriction of Instrument Approaches and Certain Visual Flight Rules Operations in High Barometric Weather Conditions, issued April 6, 1994, which adds § 91.92 to Subpart A; and

Special Federal Aviation Regulation Amendment 62–1, Alteration of the Denver Class B Airspace Area, issued September 14, 1993, which revises SFAR 62.

The publication of SFAR 64 contained errors in paragraph numbering. Pages S–65 and S–66 show the corrected SFAR 64 as published in 58 FR 62035, November 24, 1993.

Bold brackets indicate the most recently changed or added material.

Page Control Chart

Remove Pages	Dated	Insert Pages	Dated
I through VII	Ch. 2	I through VII	Ch. 6
Subpart A	—	Subpart A	Ch. 6
S–39 through S–63	Ch. 2 & 3	S–39 through S–73	Ch. 6

Suggest filing this transmittal at the beginning of the FAR. It will provide a method for determining that all changes have been received as listed in the current edition of AC 00–44, Status of Federal Aviation Regulations, and a check for determining if the FAR contains the proper pages.

§ 91.111 Operating near other aircraft.

(a) No person may operate an aircraft so close to another aircraft as to create a collision hazard.

(b) No person may operate an aircraft in formation flight except by arrangement with the pilot in command of each aircraft in the formation.

(c) No person may operate an aircraft, carrying passengers for hire, in formation flight.

§ 91.113 Right-of-way rules: Except water operations.

(a) *Inapplicability.* This section does not apply to the operation of an aircraft on water.

(b) *General.* When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

(c) *In distress.* An aircraft in distress has the right-of-way over all other air traffic.

(d) *Converging.* When aircraft of the same category are converging at approximately the same altitude (except head-on, or nearly so), the aircraft to the other's right has the right-of-way. If the aircraft are of different categories—

(1) A balloon has the right-of-way over any other category of aircraft;

(2) A glider has the right-of-way over an airship, airplane, or rotorcraft; and

(3) An airship has the right-of-way over an airplane or rotorcraft.

However, an aircraft towing or refueling other aircraft has the right-of-way over all other engine-driven aircraft.

(e) *Approaching head-on.* When aircraft are approaching each other head-on, or nearly so, each pilot of each aircraft shall alter course to the right.

(f) *Overtaking.* Each aircraft that is being overtaken has the right-of-way and each pilot of an overtaking aircraft shall alter course to the right to pass well clear.

(g) *Landing.* Aircraft, while on final approach to land or while landing, have the right-of-way over other aircraft in flight or operating on the surface, except that they shall not take advantage of this rule to force an aircraft off the runway surface which has already landed and is attempting to make way for an aircraft on final approach. When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

§ 91.115 Right-of-way rules: Water operations.

(a) *General.* Each person operating an aircraft on the water shall, insofar as possible, keep clear of all vessels and avoid impeding their navigation, and shall give way to any vessel or other aircraft that is given the right-of-way by any rule of this section.

(b) *Crossing.* When aircraft, or an aircraft and a vessel, are on crossing courses, the aircraft or vessel to the other's right has the right-of-way.

(c) *Approaching head-on.* When aircraft, or an aircraft and a vessel, are approaching head-on, or nearly so, each shall alter its course to the right to keep well clear.

(d) *Overtaking.* Each aircraft or vessel that is being overtaken has the right-of-way, and the one overtaking shall alter course to keep well clear.

(e) *Special circumstances.* When aircraft, or an aircraft and a vessel, approach so as to involve risk of collision, each aircraft or vessel shall proceed with careful regard to existing circumstances, including the limitations of the respective craft.

§ 91.117 Aircraft speed.

[(a) Unless otherwise authorized by the Administrator, no person may operate an aircraft below 10,000 feet MSL at an indicated airspeed of more than 250 knots (288 m.p.h.).]

[(b) Unless otherwise authorized or required by ATC, no person may operate an aircraft at or below 2,500 feet above the surface within 4 nautical miles of the primary airport of a Class C or Class D airspace area at an indicated airspeed of more than 200 knots (230 mph.). This paragraph (b) does not apply to any operations within a Class B airspace area. Such operations shall comply with paragraph (a) of this section.]

(c) No person may operate an aircraft in the airspace underlying a Class B airspace area designated for an airport or in a VFR corridor designated through such a Class B airspace area, at an indicated airspeed of more than 200 knots (230 mph)

(d) If the minimum safe airspeed for any particular operation is greater than the maximum speed

prescribed in this section, the aircraft may be operated at that minimum speed.

(Amdt. 91–219, Eff. 8/24/90); (Amdt. 91–227, Eff. 9/16/93); (Amdt. 91–227, Corrected, Eff. 9/16/93); ***[(Amdt. 91–233, Eff. 9/16/93)]***

§ 91.119 Minimum safe altitudes: General.

Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) *Anywhere.* An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) *Over congested areas.* Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) *Over other than congested areas.* An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.

(d) *Helicopters.* Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with any routes or altitudes specifically prescribed for helicopters by the Administrator.

§ 91.121 Altimeter settings.

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating—

(1) Below 18,000 feet MSL, to—

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure; or

(2) At or above 18,000 feet MSL, to 29.92" Hg.

(b) The lowest usable flight level is determined by the atmospheric pressure in the area of operation as shown in the following table:

Current altimeter setting	Lowest usable flight level
29.92" (or higher)	180
29.91" through 29.42"	185
29.41" through 28.92"	190
28.91" through 28.42"	195
28.41" through 27.92"	200
27.91" through 27.42"	205
27.41" through 26.92"	210

(c) To convert minimum altitude prescribed under § 91.119 and § 91.177 to the minimum flight level, the pilot shall take the flight level equivalent of the minimum altitude in feet and add the appropriate number of feet specified below, according to the current reported altimeter setting:

Current altimeter setting	Adjustment factor
29.92" (or higher)	None
29.91" through 29.42"	500
29.41" through 28.92"	1,000
28.91" through 28.42"	1,500
28.41" through 27.92"	2,000
27.91" through 27.42"	2,500
27.41" through 26.92"	3,000

§ 91.123 Compliance with ATC clearances and instructions.

[(a) When an ATC clearance has been obtained, a pilot in command may not deviate from that clearance, except in an emergency, unless that pilot obtains an amended clearance. However, except in Class A airspace, this paragraph does not prohibit that pilot from canceling an IFR flight plan if the operation is being conducted in VFR weather conditions. When a pilot is uncertain of an ATC clearance, that pilot must immediately request clarification from ATC.]

(b) Except in an emergency, no person may operate an aircraft contrary to an ATC instruction in an area in which air traffic control is exercised.

(c) Each pilot in command who, in an emergency, deviates from an ATC clearance or instruction shall notify ATC of that deviation as soon as possible.

(d) Each pilot in command who (though not deviating from a rule of this subpart) is given priority by ATC in an emergency, shall submit a

Subpart D—Special Flight Operations

§ 91.301 [Reserved]

§ 91.303 Aerobatic flight.

No person may operate an aircraft in aerobatic flight—

(a) Over any congested area of a city, town, or settlement;

(b) Over an open air assembly of persons;

(c) Within a control zone or Federal airway;

(c) [Within the lateral boundaries of the surface areas of Class B, Class C, Class D, or Class E airspace designated for an airport;]

(d) Below an altitude of 1,500 feet above the surface; or

(d) [Within 4 nautical miles of the center line of any Federal airway;]

(e) When flight visibility is less than 3 statute miles.

(e) [Below an altitude of 1,500 feet above the surface; or]

[(f) When flight visibility is less than 3 statute miles. For the purposes of this section, aerobatic flight means an intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight.]

For the purposes of this section, aerobatic flight means an intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight.

[(Amdt. 91-227, Eff. 9/16/93)]

§ 91.305 Flight test areas.

No person may flight test an aircraft except over open water, or sparsely populated areas, having light air traffic.

§ 91.307 Parachutes and parachuting.

(a) No pilot of a civil aircraft may allow a parachute that is available for emergency use to be carried in that aircraft unless it is an approved type and—

(1) If a chair type (canopy in back), it has been packed by a certificated and appropriately rated parachute rigger within the preceding 120 days; or

(2) If any other type, it has been packed by a certificated and appropriately rated parachute rigger—

(i) Within the preceding 120 days, if its canopy, shrouds, and harness are composed exclusively of nylon, rayon, or other similar synthetic fiber or materials that are substantially resistant to damage from mold, mildew, or other fungi and other rotting agents propagated in a moist environment: or

(ii) Within the preceding 60 days, if any part of the parachute is composed of silk, pongee, or other natural fiber, or materials not specified in paragraph (a)(2)(i) of this section.

(b) Except in an emergency, no pilot in command may allow, and no person may make, a parachute jump from an aircraft within the United States except in accordance with Part 105.

(c) Unless each occupant of the aircraft is wearing an approved parachute, no pilot of a civil aircraft carrying any person (other than a crewmember) may execute any intentional maneuver that exceeds—

(1) A bank of 60 degrees relative to the horizon; or

(2) A nose-up or nose-down attitude of 30 degrees relative to the horizon.

(d) Paragraph (c) of this section does not apply to—

(1) Flight tests for pilot certification or rating; or

(2) Spins and other flight maneuvers required by the regulations for any certificate or rating when given by—

(i) A certificated flight instructor; or

(ii) An airline transport pilot instructing in accordance with 61.169 of this chapter.

(e) For the purposes of this section, "approved parachute" means—

(1) A parachute manufactured under a type certificate or a technical standard order (C-23 series); or

(this possibility should be [redacted]red in the preflight planning). Sinc[redacted]he flig[redacted]could be delayed not only for hours but in so[redacted] cases for days, facility personnel must be adequately briefed to cope with such situations on a spontaneous basis.

3. When the pilot commences a flight line (the actual photographic run), every reasonable effort should be made to permit the flight to continue uninterrupted; i.e,, without change in course or altitude. Should it become necessary to break the aircraft off the flight line, it should be vectored or cleared back into position for another run as soon as possible.

6–76c3 Note.— The Legislative Council for Photogrammetry (LCP) speaks for the photogrammetric flight industry. The agency has emphasized the following points to the LCP:

a. The pilot is expected to make every effort to contact the appropriate ATC facility prior to the mission to explain flight requirements and to avoid "no notice" air/ground telephone requests whenever possible.

b. That firm "hard and fast" approvals cannot be guaranteed due to the rapid changes which can occur in the ATC operational situation, but every reasonable effort will be made by ATC to accommodate pilot requests.

c. The pilot is expected to say "This is a photo survey mission" when contacting the ATC facility via air/ground communications and subsequently to inform the controller when the flight line is commenced.

6–77 CUSTOMS OVERFLIGHT EXEMPTIONS

a. United States regulations require that all private aircraft entering the U.S. from a point south of 30 degrees north latitude land for Customs processing at designated airports unless an exemption has been approved. As a part of their efforts to curtail narcotics smuggling, the U.S. Customs Service has increased the requirements that must be met to [redacted] tion, or repo[redacted]ransponder failure.

d. Facili[redacted]managers [redacted]ll ensure that procedures are established to provide timely notification to U.S. Customs Service, by telephone, of deviations to the specified requirements for customs overflight exempt aircraft. Telephone notification to Customs Service should be made to one of the following offices, both of which operate on a 24–hour basis:

MIAMI (305) 536–6591

RIVERSIDE (714) 351–6674

6–78 AEROBATIC PRACTICE AREAS

Air traffic managers may approve requests to conduct aerobatic practice activity within Class B, C, D, or E airspace, provided the following requirements have been satisfied:

a. The operations are conducted in accordance with a Letter of Agreement (LOA) between the air traffic facility and the aircraft operator, and a waiver has been issued by the appropriate FSDO to the aircraft operator for all applicable Code of Federal Regulations (CFR).

b. The operation shall not adversely affect the safety of the air traffic operation or result in a reduction of service to other users.

c. The facility manager shall evaluate the impact on air traffic controller workload and the service requirements of the airspace where the operation will be conducted before authorizing these operations.

d. A facility directive shall be prepared describing the procedures for conducting these operations. The directive and the LOA shall contain, as a minimum, the controller and aircraft operator responsibilities,

and a diagram that depicts the geographical area in which the activity will take place.

6–78 Note. 1 — The Air Traffic Manager's approval to conduct these operations is not a waiver to CFR's. The issuance of waivers to applicable CFR's is the responsibility of the FSDO.

6–78 Note. 2 — The Class of airspace the operation is conducted in determines what air traffic approval, if any, is required.

6–78 Reference — CFR Part 91, Subpart D, (91.303) Aerobatic flight.

AAH 7210.3K, FACILITY OPERATION AND ADMINISTRATION

U.S. Department of Transportation
Federal Aviation Administration

Flight Standards District Office-02
P.O. Box 11649
Spokane, Wa 99211-1649

July 29, 1994

Col Michael G. McConnell
President, AFR 110-14 Board
Fairchild AFB, WA

Dear Col McConnell:

This letter is to confirm that there was no waiver in effect, either oral or written, during the bomber demonstration/practice on June 17, 1994 or during the bomber/tanker demonstration/practice on June 24, 1994.

Mr. Ronald Peterson, the airfield supervisor at FCAFB, had inquired in to the possibilities of acquiring waived airspace on June 25, 1994 for a couple of hours to accommodate practice and local area familiarization for performers from out of the area. I had advised Mr. Peterson that we could grant such a request orally once the schedule was known and after affecting the appropriate coordination with ATC. However, no such waiver was granted. The only waiver granted to FCAFB was a written waiver, dated June 3, 1994. This waiver was effective from 0900 on June 26, 1994 until 1730 on June 26, 1994.

Please advise me if I can be of any further assistance in this matter.

Sincerely:

David T. Purtill
Principal Aviation Safety Inspector
(Operations)

INSPECTORS STATEMENT

My Name is David T. Purtill. I am employed by the Federal Aviation Administration as an Aviation Safety Inspector (Operations). My present assignment is with the Seattle Flight Standards District Office where I serve as a Principal Aviation Safety Inspector (POI) in the Flight Standards Field Office at Spokane WA. I have served in this position since October 15, 1987.

The purpose of this statement is to confirm that I did not issue a waiver to personnel at Fairchild AFB on July 12, 1991 for the purpose of a low-level fly-by at a change of command ceremony nor for any other purpose on that date. Furthermore, to the best of my knowledge, there have been no waivers issued to personnel at Fairchild AFB, other than for the annual airshow, during my tenure in Spokane.

David T. Purtill
Principal Aviation Safety Inspector
(Operations)

ORDER

8700.1

GENERAL AVIATION OPERATIONS INSPECTOR'S HANDBOOK

October 1, 1988

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Distribution: A-W(FS)-2

Initiated By: AFS-800

CHAPTER 49 ISSUE A CERTIFICATE OF WAIVER OR AUTHORIZATION FOR AN AVIATION EVENT

Section 1 Background

1. PTRS ACTIVITY CODE: 1230

3. OBJECTIVE. The objective of this task is to determine whether to issue a Certificate of Waiver or Authorization, FAA Form 7711-1, to an applicant for an aviation event. Completion of this task results in the issuance of a Certificate of Waiver or Authorization or the disapproval of an application for a Certificate of Waiver or Authorization.

5. GENERAL.

A. *Definitions.* Many terms used in this Chapter are not used elsewhere; therefore, their definitions are provided below.

(1) Aerobatic flight. For airshow purposes, the definition in FAR § 91.303 does not apply. The following guidelines apply in determining what maneuvers are considered aerobatic.

(a) For a waivered airshow, an intentional maneuver in which the aircraft is in sustained inverted flight, is rolled from upright to inverted or from inverted to upright, or when the pitch angle exceeds a positive or negative 90 degree angle is considered aerobatic flight.

(b) All standard airshow aerobatic maneuvers such as slow rolls, snap rolls, loops, Immelmans, cuban eights, spins, hammerhead turns, etc., are considered aerobatic flight and may not be performed over congested areas or over spectators.

(c) Steeply banked (90 degrees or less), level, climbing, or descending turns necessary for maneuvering between aerobatics in an airshow are not considered aerobatic flight.

(d) Positioning turns for high performance aircraft operated by the military, regardless of the angle of bank or pitch attitude, are not considered to be airshow aerobatic maneuvers.

(e) Maneuvers such as steep turns in air racing are not considered aerobatic flight.

(2) An approved maneuver is a maneuver or a series of maneuvers that may include overflight of the designated spectator area(s), or a maneuver that involves "head-on" energy directed at the spectators. The U.S. Armed Forces aerial demonstration teams, the Blue Angels and Thunderbirds, and the Royal Canadian Air Force Snowbirds present a maneuvers package to AFS-800 for approval each year. Other teams, flights, or individual acts may submit a ribbon pictorial of a single maneuver or series of maneuvers to AFS-800 for approval.

(3) An authorization is an official document issued by the FAA to allow activities authorized by the FAR.

(4) Aviation events include airshows, air races, aerobatic contests, parachute demonstration jumps, practice at areas designated for aerobatic proficiency or training, and balloon meets and races. Most events are held at, or immediately adjacent to, an airport. An increasing number, however, are held offshore (within gliding distance of land), in the vicinity of a state fairground, or at other off-airport locations. Aerobatic school activities, use of aerobatic practice areas, or aerobatic meets may occur that are not airshows, contests, or races; a waiver must still be issued. At these school activities or meets, which are not advertised as airshows, it may not be necessary to provide public airshow policing and emergency facilities. Participants at such events are not required to hold a Statement of Aerobatic Competency.

(5) The critical aircraft or critical wingman is that aircraft closest to a spectator area.

(6) A crowd line is a physical barrier or a line marked on the ground that serves as a restraining line. The crowd line is placed at a specified distance from the showline. The restraining line, and any necessary policing, must prevent spectators or other nonparticipating persons from getting too close to the showline.

Considerations for moving showlines are as follows:

(a) If the runway used for a showline is located closer to the spectators than that prescribed for a particular category of aircraft, the showline may be moved. At times, it is more desirable to use a runway as a showline, because a runway is well-defined, rather than using a showline that is not well-defined. If safety is enhanced by using the well-defined showline, the location of the showline may be altered. This alteration is not to be made as a means of increasing the spectator area.

(b) Antennas, windsocks, treelines, and other obstacles that are hazards to the performers often necessitate moving a showline; even in this case, the showline may not be moved any closer to the spectators than the prescribed altered minimums.

(3) The minimum 500-foot showline for Category III aircraft shall not be waived.

C. *Category I Showlines.* The optimum showline distance from the spectator areas for Category I aircraft shall be 1,500 feet or greater (Figure 49-6). If the only well-defined showline is closer than 1,500 feet to a spectator area and it is not possible to move the spectator area, the showline may be approved down to a minimum of 1,200 feet. When there is a reduction in the distance from the showline to the primary spectator area, a similar reduction shall not be permitted for the secondary spectator area side of the showline (Figures 49-7 and 49-8). In no case shall there be less than 2,700 feet between the primary and the secondary spectator areas.

D. *Category II Showlines.* The optimum showline distance from spectator areas for Category II aircraft is 1,000 feet or greater. If the only well-defined showline is closer than 1,000 feet to a spectator area, and it is not possible to move the spectator area, the showline may be approved down to an absolute minimum of 800 feet (Figure 49-9). When there is a reduction in the distance from the showline to the primary spectator area, a similar reduction shall not be permitted for the secondary spectator area side of the showline. In no case shall there be less than 1,800 feet between the primary and secondary spectator areas.

E. *Category III Showlines.* The showline shall not be closer than 500 feet to the primary or the secondary spectator areas (Figure 49-10).

(1) The 500 foot showline may also be used for Category I or II aircraft being flown non-aerobatically and parallel to the primary and/or secondary spectator area.

(2) A circular arc directed away from the crowd, a pass in review maneuver, may be flown provided the aircraft remain at least 500 feet from the primary and secondary spectator areas.

(3) If there is less than 1,000 feet between the primary and secondary spectator areas, the site cannot be considered for an airshow waiver.

(4) If there is less than 500 feet between the showline and the spectators, the site cannot be considered for an airshow waiver.

F. *Formation Flight.* After November 1, 1992, formation aerobatics may be performed only if the following conditions are met:

(1) The members of the aerobatic team must have performed together in 8 aerobatic performances over the preceding 12 months, or

(2) The team members must be able to document 25 aerobatic practice sessions over the preceding 12 months; and

(3) After February 28, 1993, all persons conducting formation aerobatics must have demonstrated or substantiated their skills and have the "Formation" notation placed on their Statement of Aerobatic Competency.

G. *Non-Aerobatic Flight.* For formation flight and airshow flybys (non-aerobatic) conducted under a waiver, an appropriately rated instructor or experienced designated instructor/proficiency pilot shall be on board the aircraft when the pilot does not have previous formation/airshow flying experience. It is incumbent upon the sponsor to determine compliance with either the airman experience

(1) The applicant must specify a date before the show when he or she will provide a schedule of events. The schedule must identify the aircraft and performers in the sequence of appearance. This list becomes a part of the official waiver or authorization package. During the event, the scheduled order of appearance may change because of weather, mechanical problems or other factors.

(2) Any demonstration added to the schedule requires FAA approval, and should be submitted at the earliest opportunity. Cancellation of events does not require advance notice.

TABLE 1

AIRCRAFT SHOWLINE CATEGORY	AIRSPEED	PREFERRED SHOWLINE DISTANCE FROM THE SPECTATOR AREA
I	More than 245 knots (282 mph)	1,500 feet
II	More than 156 knots but 245 knots or less (181-282 mph)	1,000 feet
	Aerobatic helicopters	1,000 feet
III	156 knots or less (180 mph)	500 feet
	Aerobatic gliders (sailplanes)	500 feet
	Non-aerobatic aircraft (any flyby demonstration)	500 feet
	BD-5J Microjet	500 feet

27. **STANDARD LIMITATIONS.** Evaluation of the proposed site determines the actual separation requirements. The following minimum distances and standard limitations apply to all aerobatic demonstrations and must be observed.

A. ***Showlines and Spectator Areas.*** For aerobatic and certain other flight demonstrations, showlines must be established at a prescribed distance from the designated spectator areas. The showline is used as a reference by the performer or, in the case of a formation flight, by the formation's leader. Pilots performing flight demonstrations must maintain minimum showline distances from the spectator areas. These distances are predicated on 75 percent power in straight and level flight for piston aircraft. For turbine aircraft, the distances are based on demonstrated normal cruise speed. Showline categories, speeds and distances are shown in Table 1.

B. ***Establishment of Showlines.*** As described in Table 1, three different showlines might be required when all three categories of aircraft are participating at a show site.

(1) The showlines should be established first, rather than establishing the spectator areas and then determining the showlines.

(2) The optimum situation is when prominent showlines, such as runways, treelines or other geographical features, are 500, 1,000, or 1,500 feet from the spectators. These distances from the showlines to the spectators for each category of aircraft are desirable; however, under some conditions the distances may be altered. Subparagraphs "c" and "d" below define the limitations for these alterations.

BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 11-209
17 FEBRUARY 1994

Flying Operations

AIR FORCE PARTICIPATION IN AERIAL EVENTS

This instruction implements AFPD 11-2, *Flight Rules and Procedures*. It provides guidance and procedures for Air Force participation in aerial events (including static displays). It implements Department of Defense (DoD) Directive 5410.18, *Community Relations*, July 3, 1974, with Change 1; DoD Instruction 5410.19, *Armed Forces Community Relations*, July 19, 1979, and *North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG) 3533*, July 4, 1985. For the purpose of this instruction the Air Force Reserve and Air National Guard are functionally considered to be major commands (MAJCOM).

SUMMARY OF CHANGES

This revision aligns the instruction with AFPD 11-2.

1. **General Guidance.** The Air Force takes part in aerial events to keep the public and military informed of US preparedness, to demonstrate modern weapon systems, and to promote good community and international relations. For guidance on air Force participation in public events and community relations programs, see AFI 35-201, *Air Force Community Relations* (formerly AFR 190-1). Support of approved events must not interfere with operational commitments.
1.1. Each level of command prescribed in paragraph 6 must approve aerial events as defined in attachment 1. any aerial event not described in this instruction must receive MAJCOM, HQ USAF/XOO, SAF/PAC, and/or ASD:PA approval (each level as required) before performance.
1.2. Air Force members must not indicate support or nonsupport to the sponsor of an offbase aerial event until the Office of Assistant Secretary of Defense for Public Affairs (ASD:PA) approves or disapproves that event and their MAJCOMs approve or deny the use of operational resources.
1.3. See AFI 37-139, *Records Disposition--Standards* (formerly AFR 4-20, volume 2) for instructions on maintenance and disposition of records of Air Force participation in aerial events.

2. **HQ USAF Directorate of Operations (HQ USAF/XOO) Duties.** HQ USAF/XOO approves or disapproves any waiver requests to this instruction, unless otherwise designated. Waiver requests must be approved at the MAJCOM level prior to forwarding through HQ USAF/XOOA to HQ USAF/XOO.

3. **MAJCOM Duties.** Each MAJCOM that takes part in or supports an aerial event:
3.1. Evaluates requests for aerial events.
3.2. Coordinates with DoD (ASD:PA), Office of Public Affairs, Community Relations Division (SAF/PAC) and other agencies, as required, to determine the extent of participation authorized.
NOTE: ASD:PA and SAF/PAC approve DoD component and Air Force participation in civilian aerial events and specific military events performed for the public according to DoD Directives 5410.18, DoD Instruction 5410.19, and AFI 35-201.
3.3. Approves operational participation in civilian and military events within the continental United States (CONUS) plus Alaska, Hawaii, Canada, and Mexico according to attachment 2 and AFI 35-201.
3.4. Advises units of ASD:PA and SAF/PAC approved events and solicits unit support.
3.5. Provides resources to complete the mission.
3.6. Ensures that pilots and crews selected to perform aerial events are highly qualified and proficient in the maneuvers or demonstration.
3.7. Provides staging bases and support. The participating command arranges for support that is beyond the capability of the staging base.

Supersedes AFR 60-18, 27 July 1992.
OPR: HQ USAF/XOOA (Lt Col William C. Muir, Jr.)
Certified by: HQ USAF/XO (Lt Gen Buster C. Glosson)
Pages: 9/Distribution: F

6.4. MAJCOM-to-MAJCOM Requests. Requests for support of an aerial event must be sent from requesting unit to its parent MAJCOM and, if approved, from the parent MAJCOM to the MAJCOM owning the requested assets. Include HQ USAF/XOOA as an information addressee on all MAJCOM-to-MAJCOM requests that require Chief of Staff, US Air Force (HQ USAF/CC), HQ USAF Deputy Chief of Staff for Plans and Operations (HQ USAF/XO), HQ USAF/XOO or Office of the Assistant Secretary of the Air Force for Acquisition (SAF/AQ) approval. Requests for support must be sent at least 30 calendar days before the event date. Approval procedures to include US Army, Navy, or Marine Corps assets in an aerial event will follow the MAJCOM-to-MAJCOM request process. (Refer to attachment 2 and AFI 35-201) for event approval procedures.) Requests for support of a military open house may go directly from the requesting base to the owning MAJCOM for approval.

6.5. Foreign Dignitary Requests. SAF/PAC and HQ USAF Office of the Vice Chief of Staff, Foreign Liaison Division (HQ USAF/CVAI) must approve aerial events presented specifically for a foreign dignitary. Submit requests at least 30 calendar days in advance.

6.6. Funeral or Memorial Flyover. Normally the funeral or memorial ceremony flyover consists of three or four aircraft, but may be different at the next-of-kin's request per AFI 34-501, *Mortuary Affairs* (formerly AFR 143-1).

6.7. Retirement or Change of Command Ceremony Flyover. These flyovers will normally only be used for MAJCOM/CC, MAJCOM/CV, and Numbered Air Force (NAF)/CC. A MAJCOM/CC is allowed up to a four-ship flyover. A MAJCOM/CV or NAF/CC is allowed a one-ship flyover. Approval is not required for a flyover performed for one of these individuals. Refer to attachment 2 for approval requirements for any other individual.

6.8. Unique Requests. Send unique requests not specifically covered by this regulation to HQ USAF/XOOA for evaluation and approval by MAJCOM, HQ USAF/XOO, SAF/PAC, and ASD:PA (as required). Submit requests at least 60 calendar days before the event.

7. Safety Standards and General Requirements. Safety must be the prime consideration at all times. Do not perform aerial events and maneuvers that endanger the safety of spectators or property in the event of misjudgment or aircraft malfunction. Consider the following safety standards, along with those in attachment 3 for static displays, in planning and staging each aerial event.

7.1. Showmanship and Professionalism. Perform aerial events for public enjoyment, information, and demonstration of aircraft tactics and capabilities. In developing and performing aerial events, supervisors and participants should remember the objective is to demonstrate Air Force professionalism and competence to the general public, and not to impress peers. Strict compliance to show lines and minimum altitudes reflects both professionalism and good showmanship by providing spectators, including those in the rear of the spectator area, an unobstructed view of the aerial event.

7.2. Weather Minimums. The nature of the event, local terrain, or numerous other factors may require the mission commander to set higher minimums.

7.2.1. Any aerial event, except a flyover, a static display, and a performance by the Thunderbirds, requires at least a 2,500-foot ceiling and 5 miles visibility.

7.2.2. Minimum ceiling and visibility for flyovers is flyover minimum altitude plus 500 feet and 3 miles visibility.

7.3. Altitude. Follow minimum altitudes published in AFI 11-206 and FAA regulations unless the FAA grants a certification of waiver before the event specifying a lower minimum altitude. The following minimum altitudes apply:

7.3.1. Flyovers Over a Congested Area. Single aircraft or formation flyovers over a congested area, city, town or settlement, or open air assembly of persons--1,000 feet above the highest obstacle within 2,000 feet of the aircraft.

7.3.2. Flyovers Over a Noncongested Area. Single aircraft or formation flyovers over noncongested areas--500 feet above ground level (AGL).

7.3.3. Lower Minimum Altitudes (Flyovers). In certain cases, such as demonstration team performances, approved maneuvers packages, and entry and exit into the flyover area, the FAA may specifically waive the altitude requirements above. Even if the FAA authorizes a lower altitude, US Air Force controlled aircraft must not be flown lower than the following minimum altitudes:

- Aircraft Formation Flyovers. 500 feet AGL.
- Single Aircraft Flyovers. 250 feet AGL.

7.3.4. Lower Minimum Altitudes (Demonstrations). Any aerial demonstration by US Air Force aircraft or personnel that is intended to show their combat capabilities may require lower minimum altitudes than those specified in paragraphs 7.3.1 and 7.3.2. Each MAJCOM sets minimum altitudes for safe operations of their assets. All demonstrations must follow MAJCOM approved profiles that specify the minimum altitude for each maneuver.

7.4. Airspeeds. Fixed-wing aircraft must not perform in aerial events at speeds less than stall speed plus 30 percent for the aircraft configuration flown. This is not intended to limit the normal demonstration of employment maneuvers by tactical airlift aircraft. Aircpeed must not exceed .90 MACH under any circumstances.

7.5. Communications. If practical, use discrete frequencies to control aerial events.

7.6. Spectator Area. A designated spectator area is set up for each aerial event (except a static display or flyover).

3.8. Provides an Operational Directorate single point of contact (POC) for all events covered by this instruction. Provide the name of the POC, rank, office symbol, and Defense Switched Network (DSN) number to HQ USAF Directorate of Operations, Airspace and Air Traffic Control Division (HQ USAF/XOOA) and SAF/PAC.

3.9. Submits to HQ USAF/XOOA a copy of the MAJCOM/CC approved demonstration profiles for each type aircraft that the MAJCOM plans to use in an aircraft demonstration involving aerobatic maneuvers. HQ USAF/XOOA retains demonstration profiles until updated or changed by the MAJCOM/CC.

3.10. Ensures a planned flyover profile is tailored to the specific event site. The unit commander or a designated representative must review and approve these profiles. The approving authority must ensure compliance with applicable Air Force policy directives and instructions (such as AFI 11-206, *General Flight Rules* (formerly AFR 60-16), aircraft specific training manuals, and MAJCOM supplements, and all Federal Aviation Administration (FAA) rules and regulations. Deviations from approved flight profiles are not authorized except for safety of flight.

3.11. Ensures aircraft and equipment placed on static display are made safe according to attachment 3 and MAJCOM guidance.

3.12. Selects air and ground crews on the basis of military bearing, ability to communicate with the public, and knowledge of equipment.

3.13. Ensures aircrews are present, in duty or flight uniform, at the aircraft during the time the event is open to the public.

3.14. Provides the mission commander when required.

3.15. Provides a rated officer as deputy mission commander (airborne) when required.

3.16. Coordinates all aerial event activities, identified in attachment 1, with the FAA through the regional Air Force representative. MAJCOMs may delegate coordination to the participating unit.

3.17. Provides administrative and operational support to the US Air Force Aerial Control Team (ACT).

3.18. Provides an ACT for events involving 12 or more aircraft.

3.19. Submits requests for foreign aircraft or foreign military demonstration team participation in unit open houses to SAF/PAC for coordination and approval.

3.20. Responds to demonstration requests from HQ USAF/XOOA.

3.21. Requests waivers to this regulation. MAJCOM/CC is the waiver authority for the minimum weather and altitude requirements of this regulation.

4. Mission Commander Duties. The mission commander must be a highly qualified pilot or navigator. Each mission commander verifies all mission details are operationally feasible and all coordination (including FAA) is obtained. The mission commander is the on-scene commander responsible for the overall safety and conduct of the mission and makes the "go" or "no go" decision.

5. US Air Force Aerial Control Team Duties. An ACT must plan, coordinate, brief, and control an aerial event (excluding a static display) that involves more than 12 aircraft, aircraft from more than one MAJCOM or Service, an aerial event within the Washington DC, National Capital Area, or as directed by HQ USAF/XOO. The ACT:

5.1. Coordinates with participating commands to arrange the event.

5.2. Verifies FAA coordination for the event.

5.3. Acts as the on-scene advisor to the mission commander, or is the mission commander if requested by MAJCOM/CC.

5.4. Is present at the control point during the event.

6. Using Aircraft Resources. In overseas areas (except Alaska, Hawaii, Canada, and Mexico), the Secretary of Defense has delegated the authority for approving DoD component participation in public events to the unified and specified commanders within their geographical areas of responsibilities. The Air Force component commander in these areas has operational approval and the equivalent of MAJCOM waiver authority for the guidance in this instruction.

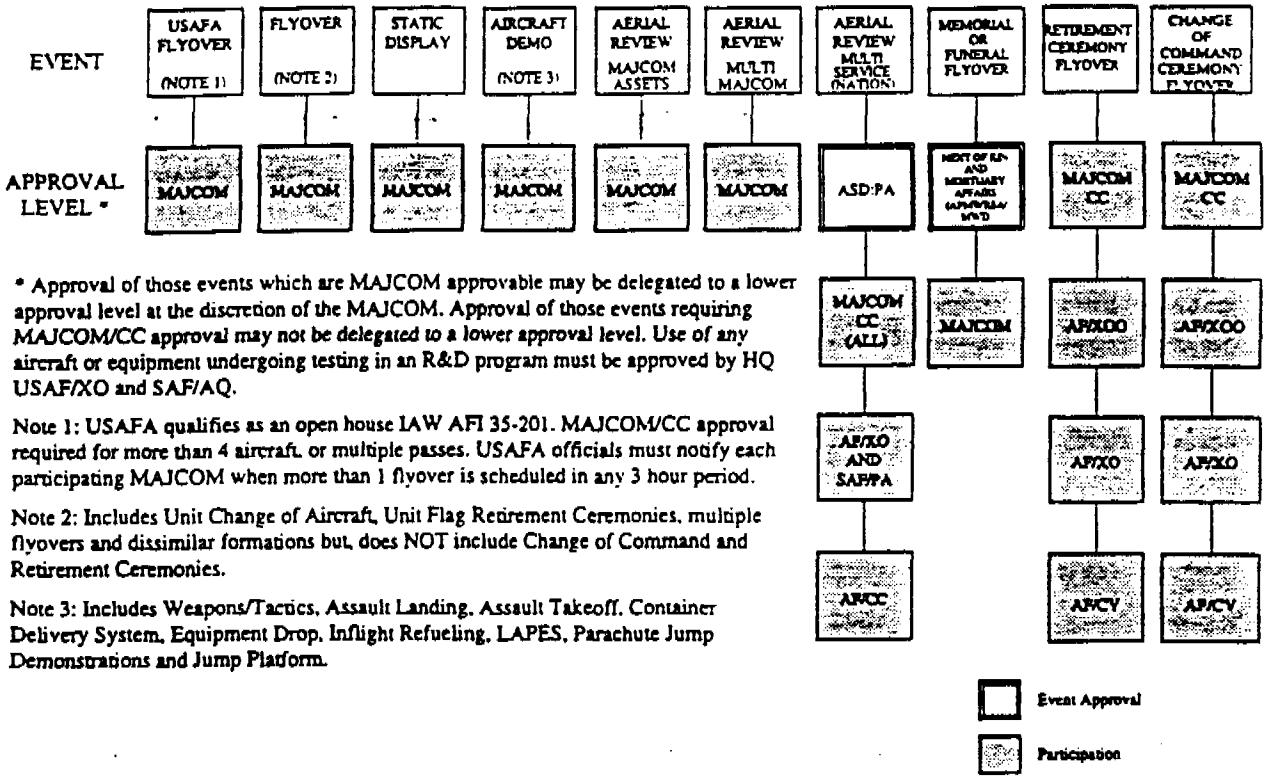
NOTE: This delegation of approval and waiver authority does not relieve the component commands of the requirements of this regulation when participating in change of command and retirement ceremonies and the MAJCOM duties listed in paragraph 3.

6.1. **Static Displays.** Static displays are the preferred method of Air Force participation in public events and community relations programs. Static displays used in conjunction with retirement and/or change of command ceremonies will consist only of aircraft assigned to the base where the ceremony is occurring.

6.2. **Flyovers.** Flyovers are the secondary method of Air Force participation. Each commander must evaluate safety, fuel conservation, flying hours available, training, public relations, and benefits to the Air Force before approving flyover requests. Public flyovers will be approved only for events such as dedications of airports, aviation shows, expositions and air fairs, civic events that contribute to public knowledge of Armed Forces aviation equipment and capabilities, occasions primarily designed to encourage the advancement of aviation, and those national holidays designated in attachment 2.

6.3. **Flight Team Demonstration.** Thunderbirds performances are the primary method used to exhibit the capabilities of modern high performance aircraft and the degree of skill required to operate these aircraft. MAJCOMs may develop demonstration teams to highlight capabilities of their aircraft.

APPROVAL FOR ONBASE AND OFFBASE AERIAL EVENTS



* Approval of those events which are MAJCOM approvable may be delegated to a lower approval level at the discretion of the MAJCOM. Approval of those events requiring MAJCOM/CC approval may not be delegated to a lower approval level. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and SAF/AQ.

Note 1: USAFA qualifies as an open house IAW AFI 35-201. MAJCOM/CC approval required for more than 4 aircraft or multiple passes. USAFA officials must notify each participating MAJCOM when more than 1 flyover is scheduled in any 3 hour period.

Note 2: Includes Unit Change of Aircraft, Unit Flag Retirement Ceremonies, multiple flyovers and dissimilar formations but, does NOT include Change of Command and Retirement Ceremonies.

Note 3: Includes Weapons/Tactics, Assault Landing, Assault Takeoff, Container Delivery System, Equipment Drop, Inflight Refueling, LAPES, Parachute Jump Demonstrations and Jump Platform.

Figure A2.1. Approval for Onbase Aerial Events.

CORRECTED COPY

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330-5000

AF REGULATION 60-18

27 July 1992

Flying

AIR FORCE PARTICIPATION IN AERIAL EVENTS

This regulation sets policy for Air Force participation in aerial events (including static displays). It applies to all major commands (MAJCOM), the US Air Force Reserve (USAFR), the Air National Guard (ANG), and all oversea areas. It also implements Department of Defense (DoD) Directive 5410.18, 3 July 1974, and change 1; DoD Instruction 5410.19, 19 July 1979, and North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG) 3533, 4 July 1985. For the purpose of this regulation USAFR and ANG are considered MAJCOMs.

SUMMARY OF CHANGES

This revision updates the reference to the applicable STANAG (purpose paragraph); adds statement of noninterference with operational mission (paragraph 1a); clarifies numerous terms; revises HQ USAF/XOO duties (paragraph 3); revises MAJCOM duties (paragraph 4); clarifies Aerial Control Team (ACT) requirements (paragraph 5); adds MAJCOMs to the list of possible approval levels for unique requests (paragraph 7f); adds showmanship and professionalism verbiage (paragraph 8a); adjusts weather minimums for flyovers (paragraph 8b(2)); revises the minimum altitudes for flyovers (paragraph 8c); adds requirement for qualified aircrew to be present at all static displays when open to the public (paragraph 8g (2); revises approval levels to allow MAJCOM approval for most DoD approved events (attachment 1); and deletes MAJCOM monthly report and attachment 3.

1. General Policies:

a. The Air Force takes part in aerial events to keep the public and military informed of US preparedness, to demonstrate modern weapons systems, and to promote good community and international relations. For the policy on Air Force participation in public events and community relations programs, see AFR 190-1. Support of approved events must not interfere with operational commitments.

b. It is imperative that Air Force members at the unit level not indicate support or nonsupport to the sponsor of an aerial event until OASD/PA has approved or disapproved Air Force participation in that event, and their MAJCOMs have approved or denied the use of operational resources.

c. AFRs 4-20, volume 2 (formerly AFR 12-50, volume II) and 12-20 apply to the maintenance and disposition of the records accumulated incidental to Air Force participation in aerial events.

2. Terms Explained:

a. Demonstration Pilot or Crew. A highly qualified pilot or crew trained and proficient in the maneuvers or demonstration to be performed.

b. Aerial Event. Any aerial activity, to include a static display, by Air Force aircraft or personnel taking part in military events, public events, or community relations programs. Each level of command prescribed in paragraph 7, attachment 1, and AFR 190-1 must approve aerial events as defined below. Furthermore, only a

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demonstration pilot or crew as defined in a above must perform aerial events.

(1) Aircraft Demonstration. The demonstration of operational capabilities by a single aircraft or group of aircraft (to include hovering), that are not part of an officially designated flight demonstration team.

(2) Aircraft Weapons or Tactics Demonstration. An aerial demonstration of aircraft employing or simulating the employment of munitions, weapons, or combat tactics.

(3) Assault Landing Demonstration. Demonstration of a technique used for landing on short runways. The aircraft is flown at a speed slightly above aircraft stall speed at a steeper than normal approach path. After touchdown, maximum engine reverse thrust and braking are applied to stop the aircraft.

(4) Assault (Max Performance) Takeoff Demonstration. Demonstration of a takeoff technique used for departing short runways and for employing maximum takeoff power and climb rate for the aircraft.

(5) Container Delivery System (CDS) Demonstration. Demonstration of a type of equipment drop using individual canvas and nylon webbing containers mounted on plywood skidboards to deliver supplies of up to 16 bundles weighing up to 2,200 lbs each from approximately 600 feet above ground level (AGL).

(6) Equipment Drop Demonstration. A parachute drop of equipment rigged on platforms, individual containers, or small door bundles.

(7) Helicopter Operational Demonstration. An aerial demonstration of helicopter capabilities to perform any of the rescue or special operations missions (e.g. Hoist, Sling, Repelling, Pararescue Deployment, Formation Flight, Operational Approach, Simulated Ordnance Delivery, etc).

(8) High Altitude Low Opening (HALO) Airdrop Demonstration. Demonstration of personnel delivery by airdrops accomplished at or above 3,000 ft AGL. The jumpers free fall from the aircraft to a predetermined altitude at which time the parachute is deployed to complete the descent.

(9) Inflight Refueling Demonstration. An aerial demonstration of aircraft employing the procedures of inflight refueling up to and including the precontact position.

(10) Low Altitude Parachute Extraction System Demonstration. Demonstration of a cargo delivery method by airdrops from 5 to 10 ft AGL. Large cargo loaded on aluminum cargo platforms are extracted from the aircraft by parachute.

(11) Aerial Review. A flyover of multiple types of aircraft from the same service or aircraft representing more than one of the military services, with elements in trail formation (with less than 1 minute spacing between formations) and not involving precision maneuvers or demonstrations.

(12) Flight Team Demonstration. A demonstration by the US Air Force Air Demonstration Squadron (Thunderbirds) or the US Navy Blue Angels.

NOTE: AFR 20-25 and the Thunderbirds Operational Manual govern Thunderbirds operational control.

(13) Flyover. A straight and level flight, by no more than four aircraft, over a fixed point, and not involving aerobatics or aircraft demonstrations.

(14) Parachute Team Demonstration. A demonstration of free fall or precision landing (or both) techniques by Air Force personnel.

(15) Retirement/Change of Command Ceremony. Any aerial event held for the sole purpose of recognizing individuals who are retiring or for a unit change of command ceremony.

(16) Static Display. The ground display of any aircraft and its related equipment, not involving flight, taxi, or engine start.

(17) Training Static Display. The ground display of any aircraft and it's related equipment used for the sole purpose of training local civilian medical, rescue, fire, or law enforcement personnel, which does not involve flight, taxi, or engine start.

(18) Unit Change of Aircraft Ceremony. A ceremony to recognize the conversion of aircraft type within a unit.

(19) Unit Flag Retirement Ceremony. A dedication ceremony during which an active or air reserve component unit is deactivated and the unit flag retired.

(20) Memorial Flyover. A missing-man formation flyover at a memorial ceremony when the remains of a deceased person are not recovered and are determined to be nonrecoverable.

(21) Funeral Flyover. A missing-man formation flyover at a funeral ceremony when the remains of a deceased person are interred.

NOTE: Normally the memorial and funeral ceremony flyover consists of three or four aircraft, but may be different at the next-of-kin's request.

in public events to the unified and specified commanders within their geographical areas of responsibilities. The Air Force component commander in these areas has operational approval and waiver authority for this regulation.
NOTE: This delegation of approval and waiver authority does not relieve MAJCOMs of the requirements of this regulation when participating in change of command and retirement ceremonies and the requirements of paragraphs 4a, 4f through 4p, and 4w.

a. Static Display. Static displays are the primary method of Air Force participation in public events and community relations programs.

b. Flyovers. Flyovers are the secondary method of Air Force participation. Each commander must evaluate safety, fuel conservation, flying hours available, training, public relations, and benefits to the Air Force before approving flyover requests. Flyovers in the public domain will be approved only for public events, such as dedications of airports, aviation shows, expositions and air fairs, civic events that contribute to public knowledge of Armed Forces aviation equipment and capabilities, occasions primarily designed to encourage the advancement of aviation, and those designated national holidays in attachment 1.

c. Flight Team Demonstration. Thunderbirds performances are the primary method used to exhibit the capabilities of modern high performance aircraft and the degree of skill required to operate these aircraft.

d. MAJCOM-to-MAJCOM Requests. Requests for support must be sent from requesting unit to its parent MAJCOM and, if approved from the parent MAJCOM to the MAJCOM owning the requested assets. HQ USAF/XOOT must be included as an information addressee on all MAJCOM-to-MAJCOM requests that require HQ USAF/CC, XO, XOO or SAF/AQ approval. Requests for support must be sent at least 30 calendar days before the event date. For the purpose of this regulation, a request for an aerial event from the US Army, Navy, or Marine Corps will be considered MAJCOM-to-MAJCOM request for approval authority. (Refer to AFR 190-1 and attachment 1 under the specific event being requested for approval procedures). Requests for support of a military open house may go directly from the requesting base to the owning MAJCOM for approval.

e. Foreign Dignitary Requests. Any aerial event presented specifically for a foreign dignitary must be approved by SAF/PAC, and HQ USAF/CVAII (regardless of location) at least 30 calendar days in advance.

f. Unique Requests. Unique requests not specifically covered by this regulation must be sent to HQ USAF/XOOT for evaluation and approval by MAJCOM, HQ USAF/XOO, SAF/PAC, and OASD/PA (as required). Submit requests at least 60 calendar days before the event.

8. Safety Standards and General Requirements. Safety must be the prime consideration at all times. Aerial events and maneuvers that endanger the safety of spectators or property in the event of misjudgment or aircraft malfunction will not be performed. The following safety standards, with those in attachment 2 for static display must be considered in planning and staging each aerial event.

a. Showmanship and Professionalism. Aerial events are performed for public enjoyment, information and demonstration of aircraft tactics and capabilities, and are not necessarily those maneuvers that are difficult to perform. In developing and performing aerial events, supervisors and participants should remember their objective is to demonstrate Air Force professionalism and competence to the general public, and not to impress their peers. Strict compliance to show lines and minimum altitudes reflects both professionalism and good showmanship by providing spectators, including those in the rear of the spectator area, an unobstructed view of the aerial event.

b. Weather Minimums. The nature of the event, local terrain, or numerous other factors may require the mission commander to set higher minimums.

(1) At least a 2,500-foot ceiling and 5-mile visibility are required for any aerial event, except a flyover, a static display, and a performance by the Thunderbirds.

(2) Minimum ceiling and visibility for flyovers is flyover minimum altitude plus 500 feet and 3 miles visibility.

c. Altitude. Minimum altitudes published in AFR 60-16 and FAA regulations must be followed unless the FAA grants a certification of waiver before the event specifying a lower minimum altitude. The following minimum altitudes apply:

(1) Flyovers Over a Congested Area. Single aircraft or formation flyovers over a congested area, city, town or settlement, or over air assem-

bly of persons—1,000 feet above the highest obstacle within 2,000 feet of the aircraft.

(2) (1) Flyovers Over a Noncongested Area. Single aircraft or formation flyovers over noncongested areas—500 feet AGL.

(3) Lower Minimum Altitudes (Flyovers). In certain cases, such as demonstration teams, approved maneuvers packages and entry and exit into the flyover area, the FAA may specifically waive the altitude requirements above. Even if the FAA authorizes a lower altitude, USAF controlled aircraft must not be flown lower than the following minimum altitudes:

(a) Aircraft formation flyovers: 500 feet AGL.

(b) Single aircraft flyovers: 250 feet AGL.

(4) Lower Minimum Altitudes (Demonstrations). Any aerial demonstration by US Air Force aircraft or personnel that is intended to show the combat capabilities of aircraft or personnel may require lower minimum altitudes than those specified in (1) and (2) above. Each MAJCOM sets minimum altitudes for safe operations of their specifically owned assets. All demonstrations must follow a MAJCOM and HQ USAF approved profile that specifies the minimum altitude for each maneuver.

d. Airspeeds. Fixed-wing aircraft must not perform in aerial events at speeds less than stall speed plus 30 percent, for the aircraft configuration flown. This is not intended to limit the normal demonstration of employment maneuvers by tactical airlift aircraft. Airspeed must not exceed .90 MACH under any circumstance.

e. Communications. If practical, use discrete frequencies to control aerial events.

f. Spectator Area. A designated spectator area is set up for each aerial event (except a static display and flyovers). Official observers and spectators must stay within their designated area. Aircraft participating in aerial events must not overfly the designated spectator area unless specifically granted a waiver by FAA and the parent MAJCOM. Safety must be the primary factor in selecting spectator areas. The following show lines must be established before the performance of an aerial event:

(1) Onbase LAPES Demonstration. Five hundred (500) foot show line minimum.

(2) Onbase Equipment Drop Demonstration, Container Delivery System Demonstration, and Personnel Drops Using Round Canopies. One thousand (1,000) foot spectator distance minimum from the intended impact point or drop zone boundary, whichever is greater.

(3) Onbase or Offbase Helicopter Operational Demonstration, Assault Landing or Take Off Demonstration. Five hundred (500) foot show line minimum.

(4) Parachute Demonstration (Including HALO). When using steerable square main and reserve canopies, spectators must not be closer than 50 feet to the landing target.

NOTE: Except for aerial events identified in paragraph 8f(1) through (4) and those air show sites where FAA has waived and the parent MAJCOM approved the minimum distance to 1,200 feet, all other participating aircraft, on or offbase, will require a 1,500 foot show line minimum distance from the spectator area.

g. Static Display. The following guidelines apply to all aircraft on static display:

(1) Aircraft on static display must be secured (Make Safe) according to attachment 1, applicable technical orders, and MAJCOM supplements.

(2) Qualified aircrew must be present to answer spectator questions at all times the static display is open to the public.

Exception: Safety of flight (e.g. long exposure to sun and high temperature), crew rest, crew duty restrictions will not be compromised in order to comply.

h. Ordnance and Munitions. If an event does not involve munitions expenditures or display, the aircraft must be downloaded of all expendable ordnance. Permanently mounted internal weapons must be secured (Make Safe), according to applicable technical order procedures. Place only inert munitions on public display and secure them (Make Safe) according to applicable technical orders to ensure safety.

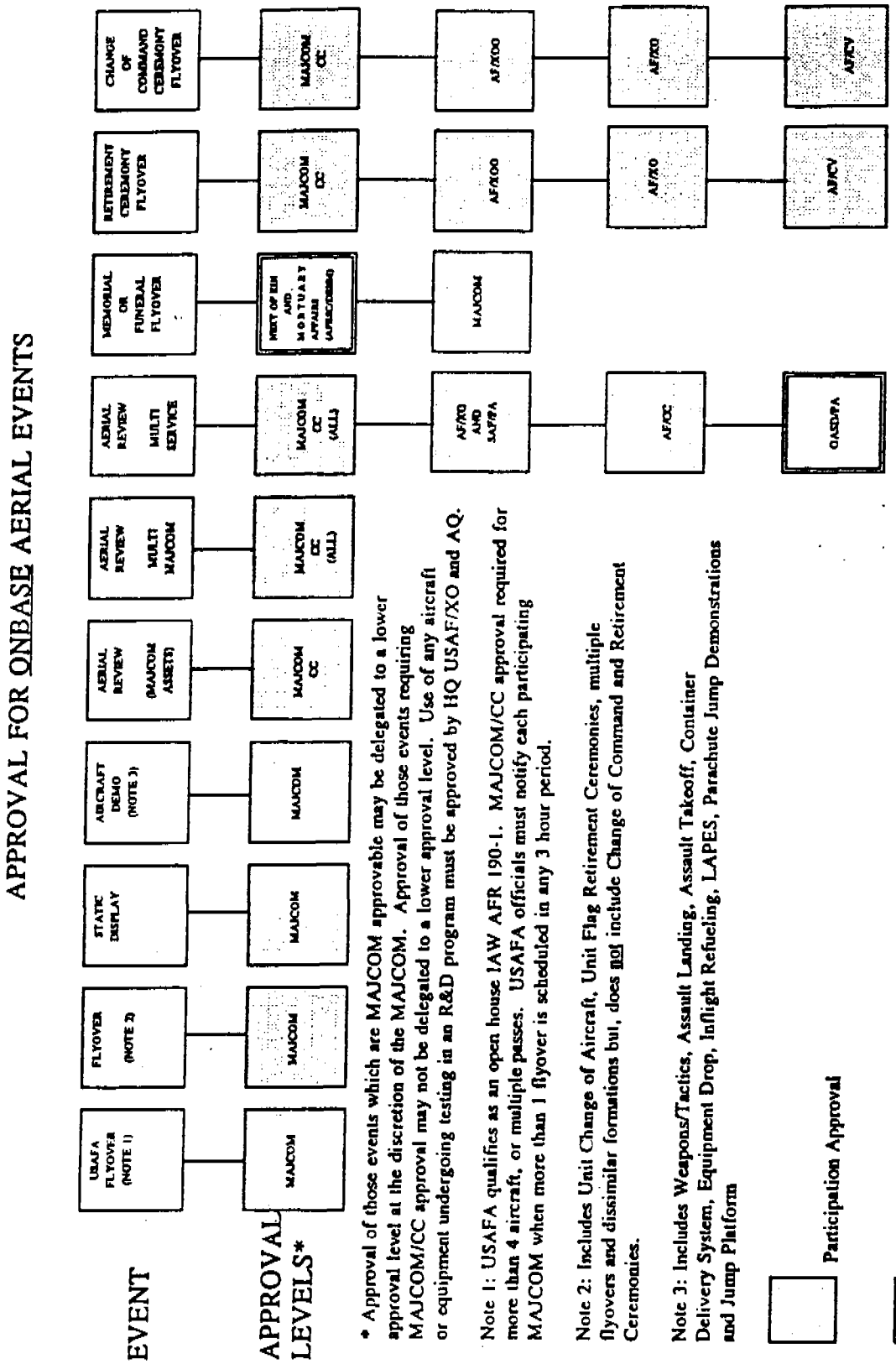
i. Outside CONUS (Not To Include Alaska and Hawaii):

(1) Comply with air rules and procedures set up by the host nation, Air Force 60-series regulations, AFR 8-5, and the USAF Foreign Clearance Guide.

(2) Coordinate with the ATC representative of the host nation before an overflight of, or termination of a flight in, a foreign country.

(3) Comply with NATO STANAG 3533 and (1) and (2) above.

Approval for Onbase and Offbase Aerial Events



* Approval of those events which are MAJCOM approvable may be delegated to a lower approval level at the discretion of the MAJCOM. Approval of those events requiring MAJCOM/CC approval may not be delegated to a lower approval level. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and AQ.

Note 1: USAFA qualifies as an open house IAW AFR 190-1. MAJCOM/CC approval required for more than 4 aircraft, or multiple passes. USAFA officials must notify each participating MAJCOM when more than 1 flyover is scheduled in any 3 hour period.

Note 2: Includes Unit Change of Aircraft, Unit Flag Retirement Ceremonies, multiple flyovers and dissimilar formations but, does not include Change of Command and Retirement Ceremonies.

Note 3: Includes Weapons/Tactics, Assault Landing, Assault Takeoff, Container Delivery System, Equipment Drop, Inflight Refueling, LAPES, Parachute Jump Demonstrations and Jump Platform

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330-5000

AF REGULATION 60-18

30 January 1987

Flying

AIR FORCE PARTICIPATION IN AERIAL EVENTS

This regulation sets procedures for Air Force participation in aerial events (which includes static displays). It applies to all major commands (MAJCOM), the US Air Force Reserve, the Air National Guard, and all overseas areas; it also implements Department of Defense (DOD) Directive 5410.18, 3 July 1974, and change 1; DOD Instruction 5410.19, 19 July 1979; and North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG) 3533, 10 April 1970. For the purpose of this regulation the US Air Force Reserve and Air National Guard are considered MAJCOM.

1. General Policies:

a. The Air Force takes part in aerial events to keep the public and military members informed of US preparedness, demonstrate modern weapon systems, and promote good community and international relations and enhance recruiting and retention efforts. For the policy on Air Force participation in public events and community relations programs, see AFR 190-1. Aircrews, maintenance crews, aerial control team (ACT) members, and other personnel needed to conduct an approved event must be highly qualified for the events in which they perform.

b. It is imperative that Air Force members at the unit level do not indicate support or nonsupport to the sponsor of an aerial event until OASD/PA, SAF/PA, HQ USAF/XOO, and their MAJCOM have approved or disapproved Air Force participation in that event. Additionally, units will not confer with sponsors divulging support or nonsupport until the parent MAJCOM has approved or denied the use of operational resources.

c. AFRs 12-20 and 12-50 apply to the maintenance and disposition of the records accumulated incident to Air Force participation in aerial events.

2. Terms Explained:

a. Demonstration Pilot or Crew. A highly qualified pilot or crew trained and proficient in the maneuvers or demonstration to be performed.

b. Aerial Event. Any aerial activity, to include a static display, by Air Force aircraft or personnel taking part in military events, public events, or community relations programs. Aerial events, as defined below, must be approved by each level of command prescribed in paragraph 7 and attachment 1. Furthermore, events (1) through (10) must be performed by a demonstration pilot or crew as defined in a above.

(1) *Aircraft Demonstration.* The demonstration of operational capabilities by a single aircraft or group of aircraft (to include hovering) which are not part of an officially designated flight demonstration team.

(2) *Aircraft Weapons or Tactics Demonstration.* An aerial demonstration of aircraft employing, or simulating the employment of, munitions or weapons.

(3) *Assault Landing Demonstration.* A technique used for landing on short runways. The aircraft is flown at a speed slightly above aircraft stall speed at a steeper than normal approach path. After touchdown, maximum engine reverse thrust and braking are applied to stop the aircraft.

(4) *Assault (Max Performance) Takeoff Demonstration.* A takeoff technique used for departing short runways and employing maximum takeoff power and climb rate for the associated aircraft.

(5) *Container Delivery System (CDS) Demonstration.* A type of equipment airdrop which uses individual canvas and nylon webbing containers mounted on plywood skidboards to deliver supplies of up to 16 bundles weighing 600 to 2,200 pounds each from approximately 600 feet above ground level (AGL).

(6) *Equipment Drop Demonstration.* A parachute airdrop of equipment rigged on platforms, individual containers, or small door bundles.

(7) *Helicopter Operational Demonstration.* An aerial demonstration of helicopter capabilities to perform any of the rescue or special operations missions (for example Hoist, Sling, Rappelling, Pararescue Deployment, Formation Flight, Operational Approach, Simulated Ordnance Delivery, etc.)

Supersedes AFR 60-18, 31 December 1984. (See signature page for summary of changes.)
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Approved by: Brig Gen George L. Butler
Writer-Editor: R. M. Downey
Distribution: F

(8) *High Altitude Low Opening (HALO) Airdrop Demonstration.* Airdrops accomplished at or above 3,000 feet (AGL). The cargo being delivered free falls from the aircraft to a predetermined altitude at which time the parachute is deployed to complete the descent.

(9) *Inflight Refueling Demonstration.* An aerial demonstration of aircraft employing the procedures of inflight refueling up to and including the precontact position.

(10) *Low Altitude Parachute Extraction System (LAPES) Demonstration.* A method of delivering large loads on aluminum cargo platforms. During a LAPES delivery, the aircraft normally flies at 5 to 10 feet AGL while parachutes extract the load from the aircraft.

(11) *Aerial Review.* A flyover of multiple types of aircraft from the same service or aircraft representing more than one of the military services, with elements in trail formation (with less than 1 minute spacing between formations) and not involving precision maneuvers or demonstrations.

(12) *Flight Team Demonstration.* A demonstration by the US Air Force Air Demonstration Squadron (Thunderbirds) (AFR 20-25), the US Navy Blue Angels, or the US Army Golden Knights.

(13) *Flyover.* A straight and level flight, by no more than four aircraft of the same type, making one pass, over a fixed point at a specified time, and not involving aerobatics or aircraft demonstrations.

(14) *Parachute Team Demonstration.* A demonstration of free fall or precision landing (or both) techniques by Air Force personnel.

(15) *Retirement and Change of Command Ceremony.* Any aerial event held for the sole purpose of recognizing individuals who are retiring or for a unit change of command ceremony.

(16) *Static Display.* The ground display of any aircraft and its related equipment, not involving flight, taxi, or engine start.

(17) *Training Static Display.* The ground display of any aircraft and its related equipment used for the sole purpose of training local civilian medical, rescue, fire, and law enforcement personnel which does not involve flight, taxi, or engine start.

(18) *Unit Change of Aircraft Ceremony.* A ceremony which recognizes the conversion of aircraft type within a unit.

(19) *Unit Flag Retirement Ceremony.* A dedication ceremony during which an active or air reserve force (ARF) or Air National Guard unit is deactivated and the unit flag retired.

(20) *Memorial or Funeral Flyover (Missing-Man Formation).* A missing-man formation normally consists of a four-ship formation with the number three aircraft missing or a four-ship formation with the number three aircraft performing a pull-up maneuver at a specific time in the flight. A memorial flyover normally occurs at a memorial ceremony when the remains of a deceased person are not recovered and are determined to be nonrecoverable. A funeral flyover occurs at a funeral ceremony when the remains of a deceased person are interred.

(21) *Record Flights and Flights of a Spectacular Nature.* A flight, where appropriate, for official world "class" records to achieve speed, distance, altitude, or duration of flight.

(22) *Other Events or Demonstrations.* Any aerial event not explained in (1) through (21) above. Such an event must be requested through HQ USAF/XOOO for approval by HQ USAF/XOO, SAF/PAC, and OASD/PA (as required) prior to it being performed.

c. Jump Platform. Any Air Force aircraft used as a vehicle for a parachute team demonstration in support of a military event, public event, or community relations program.

d. Make Safe (per JCS Publication 1). One or more actions necessary to prevent or interrupt complete function of the system (traditionally synonymous with "dearm," "disarm," and "disable"). Among the necessary actions are:

(1) Install (safety devices such as pins or locks).

(2) Disconnect (hoses, linkages or batteries).

(3) Bleed (accumulators, reservoirs).

(4) Remove (explosive devices such as initiators, fuzes, or detonators).

(5) Intervene (as in welding or lockwiring).

e. Military Event. An activity or ceremony sponsored by a military organization to recognize an individual, or to display Air Force resources or resources capabilities to an individual, select group of individuals, or the general public.

f. On Base. An installation owned, leased, or operated by the DOD or by a DOD component, such as a base, station, post, reservation, camp, fort, terminal facility, ship, school, college, etc.

g. Off Base. Any location other than On Base.

h. US Air Force Aerial Control Team (ACT). A team of highly qualified rated officers and augmentees usually from Tactical Air Command (TAC), Langley AFB, VA, who control aerial events according to paragraph 5 and HQ USAF/XOO directions.

i. Foreign Military Demonstration Team. Any

o. Coordinates with HQ USAF/XOOO and HQ TAC/DOO to obtain an ACT for events involving 12 or more aircraft or for aerial events in the Washington DC, National Capital Area. When an aerial event involves fewer than 12 aircraft, but includes aircraft demonstrations from more than one MAJCOM or service, the requesting agency must obtain HQ USAF/XOO guidance before requesting an ACT. Requests for waiver of ACT requirements must be sent, together with the detailed operations plan, to HQ USAF/XOO (Info HQ USAF/XOOO) for approval at least 60 days before the event date. If a waiver is granted, the requesting command assumes the assigned duties of the ACT in paragraph 5.

p. Submits the MAJCOM Monthly After Action Summary (attachment 3).

q. Submits requests for foreign aircraft (when the base involved is not a border base (AFR 190-1)) participation in their units' open houses to SAF/PAC (Info HQ USAF/XOOO) for coordination and approval.

r. Responds to demonstration requests from HQ USAF/XOOO. Response by message is needed only when a MAJCOM has the assets available and wishes to perform the requested demonstration.

s. Requests HQ USAF/XOO approval for any waiver requests to this regulation. Waiver requests must be approved at the MAJCOM level prior to forwarding to HQ USAF/XOO for approval.

5. US Air Force Aerial Control Team (ACT). The ACT must plan, coordinate, brief, and control an aerial event that involves more than 12 aircraft, an aerial event within the Washington DC, National Capital Area, or as directed by HQ USAF/XOO. The ACT:

a. Coordinates with HQ USAF/XOOO and participating commands to arrange the event.

b. Ensures that the event has been coordinated with the FAA.

c. Acts as on-scene advisor to the mission commander, or is the mission commander, if requested by HQ USAF/XOO.

d. Is present at the control point during the event.

e. Assumes the mission commander's assigned duties if communications are lost between the participating aircraft and both the mission and deputy mission commander.

6. Mission Commander. The mission commander must be a highly qualified pilot or navigator. The mission commander is the on-scene commander responsible for the overall safety and conduct of the mission. This includes:

a. Ensuring:

(1) That all mission details are operationally feasible and all coordination is obtained.

(2) Required FAA coordination and approval is obtained.

b. Making the "go" or "no go" weather decision.

7. Use of Aircraft Resources. The US Air Force takes part in aerial events (which include static displays), according to AFR 190-1 and this regulation. Procedures for requesting approved participation and authorized use of aircraft resources are in attachment 1. In oversea areas (except Alaska and Hawaii), the Secretary of Defense has delegated the authority for approving DOD Component participation in public events to the unified and specified commanders within their geographical areas of responsibility. The Air Force component commander in these areas has operational approval and waiver authority for this regulation.

NOTE: This delegation of authority does not relieve MAJCOM requirements of this regulation when participating in change of command/retirement ceremonies and the requirements of paragraphs 4f (MAJCOM POCs) and 4p (MAJCOM After Actions Summary).

a. **Static Displays.** Static displays are the primary method of Air Force participation in public events and community relations programs.

b. **Flyovers.** Flyovers are the secondary method of Air Force participation. Each commander must evaluate all requests for safety, fuel conservation, flying hour program, training, public relations, and benefits to the Air Force. Flyovers in the public domain will be approved only for public events, such as dedications of airports, aviation shows, expositions and air fairs, civic events that contribute to public knowledge of Armed Forces aviation equipment and capabilities, occasions primarily designed to encourage the advancement of aviation and those designated national holidays in attachment 1 of this regulation.

c. **Flight Team Demonstration.** US Air Force Air Demonstration Squadron (Thunderbirds) performances are the primary method used to exhibit the capabilities of modern high performance aircraft and the high degree of skill required to operate these aircraft.

d. **MAJCOM-to-MAJCOM Requests.** Requests for support must be sent from the requesting unit to its parent MAJCOM and, if approved, from the parent MAJCOM to the owning MAJ-

COM. Requests for support must be sent at least 30 days before the event date. HQ USAF/XOOO must be included as an information addressee on all MAJCOM-to-MAJCOM requests that require HQ USAF/CC, XO, RD, or XOO approval. For the purpose of this regulation, a request for an aerial event from the US Army, Navy, or Marine Corps will be considered a MAJCOM-to-MAJCOM request for approval authority. (Refer to attachment 1 under the specific event being requested for approval procedures).

e. Foreign Dignitary Requests. Any aerial event, or static display, presented specifically for a foreign dignitary must be approved by SAF/PAC, HQ USAF/XOO, and HQ USAF/CVAII (regardless of location) at least 30 days in advance.

f. Unique Requests. Any unique requests not covered by this regulation must be sent through HQ USAF/XOOO, for evaluation and approval by HQ USAF/XOO, SAF/PAC, and OASD/PA (as required). Submit requests at least 60 days before the event.

8. Safety Standards and General Requirements. The following safety standards, along with those in attachment 2 for a static display only, must be considered in planning and staging each aerial event:

a. Weather Minimums. At least a 2,500-foot ceiling and a 5-mile visibility are required for any aerial event, except a static display and a performance by the Thunderbirds. See AFR 20-25 for Thunderbird requirements. The nature of the event, local terrain, or numerous other factors may require the mission commander to set higher minimums. HQ USAF/XOO must issue a waiver authorizing aerial events below these weather minimums. Submit requests for waivers, through channels, to HQ USAF/XOOO at least 30 days before the event.

b. Altitude. Minimum altitudes published in FAA regulations must be followed unless the FAA grants a certificate of waiver before the event specifying a lower minimum altitude. Even if the FAA authorizes a lower altitude, US Air Force controlled aircraft must not be flown below the following minimum altitude above the highest obstruction:

(1) *Aircraft Formation Flyover:*

(a) Over 100,000 pound weight class—1,000 feet AGL.

(b) Under 100,000 pound weight class—500 feet AGL.

(2) *Single Aircraft Flyover:*

(a) Over 100,000 pound weight class—500 feet AGL.

(b) Under 100,000 pound weight class—250 feet AGL.

(3) *Lower Minimum Altitudes (Demonstrations).* Any aerial demonstration by US Air Force aircraft or personnel that is intended to show the combat capabilities of aircraft or personnel may require lower minimum altitudes than those specified in (1) and (2) above. Each MAJCOM sets minimum altitudes for safe operations of their specifically owned assets. All demonstrations must follow a MAJCOM approved profile that specifies the minimum altitude for each maneuver.

c. Airspeeds. Fixed-wing aircraft must not perform in aerial events at speeds less than stall speed plus 30 percent, for the aircraft configuration flown. This is not intended to limit the normal demonstration of employment maneuvers by tactical airlift aircraft.

d. Communications. If practical, use discrete frequencies to control aerial events.

e. Spectator Area. A ~~designated spectator area~~ is set up for each aerial event (except a static display). No part of the spectator area is to be located closer than 1,500 feet from the show line. Aircraft participating in aerial events will not overfly the designated spectator area unless specifically granted a waiver by FAA and the parent MAJCOM. Spectators will be kept within the designated area. Official observers and spectators must occupy only those areas designated for viewing the event. Safety must be the primary factor in selecting spectator areas.

f. Static Display. Aircraft on static display will be secured (Make Safe) according to attachment 2, applicable technical orders, and MAJCOM supplements. This ensures spectator safety and protects classified components of the aircraft.

g. Ordnance and Munitions. If an event does not involve munitions expenditures or display, the aircraft must be downloaded of all expendable ordnance. Permanently mounted internal weapons will be secured (Make Safe), according to applicable technical order procedures. Place only inert munitions on public display and secure them (Make Safe) according to applicable technical orders to ensure safety.

h. Outside Continental United States (not to include Alaska and Hawaii):

(1) Comply with air rules and procedures set up by the host nation, Air Force 60-series regulations, and AFR 8-5, USAF Foreign Clearance Guide (FCG).

(2) Coordinate with air traffic control repre-

EVENT, PARTICIPATION, AND APPROVAL REQUIREMENTS

Type of Event or Participation	*Approval Level**	*Remarks*
Aerial Review (On Base)	OASD/PA, HQ USAF, or MAJCOM	1. Use of any aircraft or equipment undergoing tests in a research and development (R&D) program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) at least 60 days prior to the event date. 2. MAJCOMs may approve aerial reviews by their assigned operational assets on their respective command bases. Notify HQ USAF/XOOO and SAF/PAC at least 10 days prior to the event date. 3. HQ USAF/XOO approves or disapproves proposed aerial reviews that involve operational assets from more than one MAJCOM. If circumstances warrant and justification is provided, exceptions may be authorized. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) with a MAJCOM/CC approved profile at least 60 days prior to the event date. 4. Multi-service aerial reviews require OASD/PA, SAF/PA, HQ USAF/XO, and HQ USAF/CC approval. Submit these requests, through channels, to SAF/PAC (Info HQ USAF/XOOO) 90 days prior to the event date.
Aerial Review (Off Base) Aircraft Demonstration (Off Base) Aircraft Weapons/Tactics Demonstration (Off Base) Assault Landing Demonstration (Off Base) Assault (Max Performance) Take Off Demonstration (Off Base) CDS Demonstration (Off Base) Equipment Drop Demonstration (Off Base) Helicopter Operational Demonstration (Off Base) HALO Airdrop Demonstration (Off Base) Inflight Refueling Demonstration (Off Base) LAPES Demonstration (Off Base) Parachute Jump Demonstration (Off Base)	OASD/PA, HQ USAF MAJCOM IMC 89-2	1. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) 60 days prior to the event date. 2. When a ~~military~~ unit is making the initial request, submit these requests, through channels, to SAF/PAC (Info HQ USAF/XOOO) at least 90 days prior to the event date in accordance with AFR 190-1. SAF/PAC coordinates all DOD-approved events with HQ USAF/XOO to determine the extent of operational participation authorized. 3. ~~HQ USAF/XOOO~~ will notify MAJCOMs of DOD-~~approved~~ events that did not originate from a ~~military~~ organization. The MAJCOM desiring to perform ~~one of~~ these specific events will request final approval from ~~HQ~~ USAF/XOO. Submit a teletype message to HQ USAF/XOO (Info HQ USAF/XOOO) requesting approval to ~~perform the specific~~ event at least 15 days prior to the ~~event date~~. 4. Multi-service aerial reviews require OASD/PA, SAF/PA, HQ USAF/XO, and HQ USAF/CC approval. Submit these requests, through channels, to SAF/PAC (Info HQ USAF/XOOO) 90 days prior to the event date.
Aircraft Demonstration (On Base) Aircraft Weapons/Tactics Demonstration (On Base) Assault Landing Demonstration (On Base) Assault (Max Performance) Take Off Demonstration (On Base) CDS Demonstration (On Base) Equipment Drop Demonstration (On Base) Helicopter Operational Demonstration (On Base) HALO Airdrop Demonstration (On Base) Inflight Refueling Demonstration (On Base) LAPES Demonstration (On Base) Parachute Jump Demonstration (On Base)	HQ USAF or MAJCOM	1. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) at least 60 days prior to the event date. 2. MAJCOMs may approve these aerial events by their assigned operational assets on their respective command bases. Notify HQ USAF/XOOO and SAF/PAC at least 10 days prior to the event date. 3. MAJCOM-to-MAJCOM requests for these aerial events are approvable by the MAJCOM owning the requested assets. Notify HQ USAF/XOOO and SAF/PAC 10 days prior to the event date.
Flyover (On Base) Unit Change of Aircraft Ceremony (On Base)	HQ USAF or MAJCOM	1. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ

This does not include static disp. of unit-assigned ac at home station

Type of Event or Participation	Approval Level*	Remarks
Retirement and Changes of Command Ceremonies (Any Aerial Event) (On Base)	CSAF	1. Any aerial events for the sole purpose of recognizing individuals who are retiring, or for change of command ceremonies, are prohibited without the consent of the Vice Chief of Staff, USAF. HQ USAF/CV will consider approval on a case-by-case basis. Primary consideration for approval will be bonafide training, fuel expenditure, and the involvement of the public in an open house program that would demonstrate Air Force capabilities. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) at least 90 days prior to the event date. 2. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. 3. Aerial events for retirement or change of command ceremonies are not authorized at any offbase locations.
Static Display (On Base)	HQ USAF or MAJCOM including unit-assigned ac at home station	1. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) at least 60 days prior to the event date. 2. MAJCOMs may approve on base static displays for their assigned operational resources not in conjunction with a retirement or change of command ceremony.
Static Display (Off Base)	OASD/PA, HQ USAF or MAJCOM	1. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) at least 60 days prior to the event date. 2. Authorized only at airfields, heliports, and landing sites that meet the qualifications prescribed in AFR 60-16 as supplemented by MAJCOMs. DOD may approve an exception to this policy if the proposed display area meets operational safety requirements. If a DOD exception to policy is required, submit these requests, through channels, to SAF/PAC (Info HQ USAF/XOOO) for OASD/PA approval at least 60 days prior to the event date. 3. MAJCOMs may approve offbase static displays for their assigned operational resources according to remark 2. 4. Qualified Air Force personnel will be available to answer questions from spectators at all static display aircraft or equipment.
Training Static Display (Off Base)	HQ USAF or MAJCOM	1. Use of any aircraft or equipment undergoing testing in an R&D program must be approved by HQ USAF/XO and RD. Submit these requests, through channels, to HQ USAF/XOO (Info HQ USAF/XOOO) at least 60 days prior to the event date. 2. Authorized where Air Force assets are used to train local civilian medical, rescue, fire, and law enforcement personnel. Use only those landing sites that have been surveyed and determined safe by competent MAJCOM personnel. 3. Spectators will not be allowed in the training area. Allow only those personnel with a need to be trained into the training site.

*Those events that are MAJCOM approvable may be delegated to a lower approval level at the discretion of the MAJCOM.

DEPARTMENT OF THE AIR FORCE
Headquarters Air Combat Command
Langley Air Force Base, Virginia 23665-2788

ACC REGULATION 55-18

1 April 1993

Operations

ACC PARTICIPATION IN AERIAL EVENTS

This regulation establishes procedures and prescribes policy for ACC participation in aerial events. It does not apply to US Air Force Reserve (AFRES) and Air National Guard (NGB) units and their members. COMACC approval is required to change this publication.

SUMMARY OF CHANGES

Reorganizes the regulation contents to make it more logical, more concise, and more customer friendly. Standardizes chapter formats. Eliminates references to dated and unused information such as employment of FAC aircraft and AC-130 Gunships, live munitions, special operations teams and tactical air control parties, and live weapons demonstrations. Expands upon static display requirements when an ACC base is the host. Expands upon requirements for static display placards. Adds bombers to the units providing static munitions packages. Adds a new chapter on dry weapons demonstrations at air shows. Lowers the approval level for flyovers at DOD approved off base locations to the wing commander.

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Chapter 2

FLYOVERS

2-1. Introduction. Flyovers may be requested by a variety of sources for many different events. The most common types of flyovers are those in support of open houses or air shows, memorial flyovers, celebration of specific holidays, and associated with retirement/change of command ceremonies.

2-2. Flight Limitations.

a. Airspeed. All flyovers will be flown at an appropriate 55-series publication airspeed.

b. Altitude. Unless otherwise noted, the minimum altitude will depend upon specific location and obstacle clearance and will be no lower than 500 feet AGL

c. Weather. Unless otherwise noted, the minimum weather to perform a flyover will be 2,500 feet AGL and visibility at least 5 miles in the viewing area. For a maneuvering (pull-up) missing man flyover, the weather must be at least 4,000 feet AGL and 5 miles visibility in the viewing area.

d. Standard Formation. Fingertip formation is the approved formation to be used for ACC fighter aircraft flyovers. Dissimilar or other formations (not including missing-man) require HQ ACC/DO approval and will be practiced prior to the event. Heavy aircraft will not participate in formation flight unless approved by HQ ACC/DO.

e. Darkness. Flyovers before sunrise or after sunset are prohibited unless approved by HQ ACC/DO.

f. Spectator Area. Aircraft participating in aerial events will not fly over the designated spectator area unless specifically granted a waiver by the FAA and HQ ACC/DO.

2-3. Ground Liaison Officer. A UHF radio equipped ground liaison officer will be deployed to the flyover site prior to the TOT to assist the flight leader and act as a safety observer. The ground liaison officer will be a qualified rated officer who will normally be appointed by the commander of the unit providing the flying aircraft. Exceptions to this policy will be made by HQ ACC/DO on a case-by-case basis.

2-4. Washington D.C. Area. For flyovers in the Washington D.C. area involving ACC aircraft, HQ ACC/DOXO will normally provide the aerial control team.

2-5. GO/NO-GO/AIR ABORT Decisions. Although the ground liaison officer/aerial control team will be provided to assist the flyover flight leader, the ultimate responsibility for the GO/NO-GO/AIR ABORT decision rests with the flight leader.

2-6. Flyovers at Open Houses/Air Shows—General. Civilian and military organizations frequently request ACC aircraft and aircrews for flyovers at civilian and military functions. Units are encouraged to support these requests on a volunteer basis as a means of fostering a better understanding of the mission of airpower and to promote good will.

2-7. Approval Authority.

a. On-Base. The approval level for a flyover (except for retirement or change of command ceremonies) on-base is the ACC wing commander. OASD/PA approval is not required.

b. Off-Base. The interim approval level is the ACC wing commander. Any off-base flyover must first be approved by OASD/PA.

c. OCONUS Flyovers. The theater commander may approve a flyover using assets that have transferred to the commander's area of responsibility, if the HQ ACC/DO has been notified. Assets that have not transferred require approval of both the theater commander and HQ ACC/DO. A request that requires an asset to travel from the United States specifically to support a flyover requires the additional approval of OASD/PA.

d. Patriotic Holidays. HQ ACC/DO has approval authority for off-base flyovers supporting Armed Forces Day, Memorial Day, Independence Day, National POW/MIA Recognition Day, and Veterans Day activities. Units volunteering to support a flyover on one of these five holidays will submit their request to the appropriate staff agency. ACC units may submit their requests via phone directly to HQ ACC/DOXO for approval.

2-8. Funeral or Memorial Flyovers—General. A funeral flyover may be authorized for the funeral of a dignitary of the Armed Forces or the Federal Government as provided by AFR 60-18, AFR 190-1, and Air Force Mortuary Affairs directives. A

Chapter 3

AERIAL REVIEWS AND AERIAL EVENTS IN SUPPORT OF CHANGE OF COMMAND CEREMONIES

3-1. Aerial Review—General. An aerial review is a ceremonial flyover, straight and level, of multiple types of aircraft from the same service or aircraft representing more than one of the military services, with elements in trail formation (with less than 1minute spacing between formations).

3-2. Mission Commander.

a. A mission commander will normally be appointed for a major (12 or more aircraft) aerial event and will normally be a colonel or as directed. The mission commander represents ACC and as the on-the-scene commander is responsible for the overall conduct of the mission.

b. The mission commander assumes responsibility for all participating forces upon their arrival at the staging base and ensures all mission details are operationally feasible, all necessary FAA waivers and coordination have been obtained, and makes the final "GO" or "NO-GO" decision.

3-3. Washington D.C. Area. For flyovers in the Washington D.C. area involving ACC aircraft, HQ ACC/DOXO will normally provide the aerial control team.

3-4. Approval Levels.

a. **On-Base.** When an aerial review will occur on an ACC base and uses only MAJCOM assets, approval is COMACC. Aerial reviews involving more than one MAJCOM asset require multiple MAJCOM/CC approval. Multiservice aerial reviews require OASD/PA, CSAF, and MAJCOM/CC approval.

b. **Off-Base.** The approval level for an aerial review off-base, including multiple command events, is OASD/PA and the MAJCOM/CC of the participating units. Multiservice aerial reviews also require CSAF approval.

c. **Washington D.C. Area.** HQ USAF/XOO will provide necessary tasking. COMACC ACT PLAN WASHINGTON FLYOVER applies.

3-5. Airspeeds. If airspeeds are incompatible, then other means of deconflicting and synchronizing aircraft, such as altitude, timing, or flight path separation, will be utilized.

3-6. Weather. To perform an aerial review, the cloud bases will be no lower than 4,000 feet AGL and visibility must be at least 5 miles in the viewing area. Weather minimums for launch of aircraft participating in aerial reviews will be IAW AFR 60-16 unless higher minimums are specified by the mission commander.

3-7 Command and Control. For aerial reviews of 12 or more aircraft or aircraft from more than one major command/service, or as directed by HQ USAF, HQ ACC will:

a. Supervise the planning, coordination, briefing, and control.

b. Appoint an overall mission commander.

c. Provide a project officer to serve as a focal point for aerial review planning, briefing, and coordination.

d. Provide the USAF Aerial Control Team.

e. Coordinate with HQ USAF/XOO, participating commands, and event sponsors as necessary to arrange the event.

f. Provide sufficient resources to meet the force requirement.

g. Prepare and distribute OpOrd(s) or tasking message(s), if required.

h. Select a staging base, if required, and notify the proposed staging base commander as early as possible of requirements for logistical support.

3-8. Retirement and Change of Command—General. Any aerial event, except certain static displays, for the sole purpose of recognizing individuals who are retiring, or for change of command ceremonies, are prohibited without the consent of the VCSAF.

3-9. Approval Level. The interim approval level for aerial events in support of retirement or change of command ceremonies is HQ ACC/DO. An additional approval level is VCSAF. VCSAF will consider approval on a case-by-case basis; however, it is Air Staff policy to approve flyovers in support of retirement or change of command ceremonies for MAJCOM vice commanders or their equivalent and above.

NOTE: This does not include a static display of unit-assigned aircraft at home station, which can be approved by the wing or unit equivalent commander.

APPROVAL LEVELS FOR PARTICIPATION IN AERIAL EVENTS (NOTE 1)

TYPE EVENT/ PARTICIPATION	AFR 60-18 APPROVAL LEVEL	ACC APPROVAL LEVEL	SUSPENSE (NOTE 2)
Static Displays (On Base)	MAJCOM	Wing or Unit Equivalent CC	N/A
Static Display (Off Base)	MAJCOM	Wing or Unit Equivalent CC	N/A
Static Display (OCONUS) (NOTE 3)	Theater Commander and/or OASD/PA and MAJCOM	ACC/DO	15 Days
Flyovers (On Base) (NOTE 4)	MAJCOM	Wing or Unit Equivalent CC	N/A
Flyovers (Off Base) (NOTES 4,5)	OASD/PA and MAJCOM	Wing or Unit Equivalent CC	N/A
Flyover (OCONUS) (NOTES 3,4)	Theater Commander and/or OASD/PA and MAJCOM	ACC/DO	15 Days
Memorial Flyover (On Base) (NOTE 4)	MAJCOM	Wing or Unit Equivalent CC	N/A
Memorial Flyover (Off Base) (NOTE 4)	OASD/PA, HQ USAF and MAJCOM	ACC/DO	15 Days
Dry Weapons Demonstration (On Base)	MAJCOM	ACC/DO	15 Days
Dry Weapons Demonstration (Off Base)	OASD/PA and MAJCOM	ACC/DO	15 Days
Aerial Review - MAJCOM assets only (On-Base) (NOTE 4)	MAJCOM	ACC/DO	15 Days
Aerial Review - MAJCOM assets only (Off-Base) (NOTE 4)	OASD/PA and MAJCOM	ACC/DO	30 Days
Aerial Review - Multi-Command (On-Base)	MAJCOM (All)	COMACC	30 Days
Aerial Review - Multi-Service (On-Base)	OASD/PA,CSAF, and MAJCOM/CC (All)	COMACC	30 Days
Aerial Review - Multi-Command or Multi-Service(Off-Base) (NOTE 4)	OASD/PA, CSAF, and MAJCOM/CC (All)	COMACC	15 Days
Retirement/Change of Command Ceremonies (Any Aerial Event) (On and Off Base) (NOTES 6,7)	VCSAF and MAJCOM	ACC/DO	15 Days
Unit Change of Aircraft/Flag Retirement Ceremonies (Flyover or Static Display) (On-Base only) (NOTE 6)	MAJCOM	Wing or Unit Equivalent CC	15 Days

NOTES:

1. AFR 60-18 aerial events not listed above require a minimum of HQ ACC/DO approval. Refer to AFR 60-18, AFR 60-16, and AFR 190-1 for other aerial event information or guidance.

2. Suspenses indicate the minimum number of days prior to the event date that a request must arrive at HQ ACC to permit coordination on events that do not require HHQ approval. If further approval is required, a written request must be submitted to HQ ACC/DOX, at least 15 days before the appropriate AFR 60-18 suspense. Information contained in paragraph 1-3 will be provided.

3. Theater commanders may approve static displays and flyovers of stateside assets under their operational control and should inform the owning MAJCOM. Stateside aircraft that are deployed overseas for the sole purpose of supporting a static display or flyover require additional approval from both OASD/PA and the owning MAJCOM.

4. Flyovers involving dissimilar aircraft in the same formation, or formations other than fingertip/missing man will be forwarded to HQ ACC for HQ ACC/DO approval.

5. MAJCOMs are authorized to approve off-base flyovers supporting Armed Forces Day, Memorial Day, Independence Day, National POW/MIA Recognition Day, and Veterans Day activities IAW AFR 60-18.

6. Wing or Unit Equivalent Commanders may approve on-base static displays for unit-assigned aircraft at home station in conjunction with a retirement ceremony, change of command ceremony, or unit change of aircraft/flag retirement ceremony. Static displays of off-station aircraft for the sole purpose of recognizing individuals who are retiring or for change of command ceremonies require VCSAF approval as well as HQ ACC/DO approval.

7. Off-base static displays and aerial events for change of command and retirement ceremonies are not authorized.

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330-5000

AF REGULATION 60-1

9 February 1990

Flying

FLIGHT MANAGEMENT

This regulation sets policy for managing Air Force flying resources and gives guidance that applies to administering flight management, aircrew training, and aircrew evaluation programs. This regulation implements DOD Directive 1340.4, 17 July 1972. It applies to all US Air Force flight managers, commanders of flying units, and aircrew personnel, including US Air Force Reserve (USAFR) and Air National Guard (ANG).

This regulation requires the collection and or maintenance of information protected by the Privacy Act of 1974. The authorities to collect and maintain the records prescribed in this regulation are in 10 U.S.C. 8013 and 37 U.S.C. 301a. Privacy Act Statements required by AFR 12-35 are in AF Forms 922, 1520, 1521, and 1522. System of records notice F060 AF A, Air Force Operations Resource Management Systems (AFORMS), applies.

Supersedes AFRs 60-1, 28 May 1985, and 60-190, 3 August 1983. (See signature page for summary of changes.)
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Approved by: Brig Gen Philip W. Nuber
Writer-Editor: L. J. Mazulewicz
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h. Make sure that aircrew members comply with crew rest procedures and flight duty limitations in this regulation (chapter 7).

i. Set up an FCIF for aircrew members to ensure adequate preparation for safe flight. Make sure the FCIF is in a place readily accessible to both assigned and attached aircrews before flight.

j. Review the records of each individual who has not completed requirements for the preceding training period and if desired, assign the proper PQI (paragraph 4-5e).

(1) If requirements are not complete because of circumstances beyond the individual's control, assign qualification status code 3. No further action is required unless thought necessary by the MAJCOM.

(2) If requirements are not complete because the individual did not take advantage of available opportunities or demonstrated a lack of flying aptitude that makes his or her flying status questionable, assign qualification status code 4. The individual must then appear before a flying evaluation board as directed in AFR 60-13.

(3) If a flight surgeon fails to complete requirements, send a memorandum through the Command Surgeon to HQ AF/SGPA noting the action taken.

1-5. Responsibilities of Flying Personnel. Flying personnel must:

a. Comply with the minimum requirements of this regulation.

b. Safely and effectively use flying resources made available to them.

c. Validate their record of flying accomplishments.

d. Make sure that the Hose Operations Systems Management (HOSM) Office maintaining their Flight Records Folder (FRF) is aware of any impending permanent change of station (PCS) move. The HOSM must know the proposed departure date, date of last flight before departure, and date the individual will pick up the FRF.

e. Pick up their FRF before departure.

f. Turn in their FRF to the proper HOSM as soon as possible after arriving at a new duty station. This also applies to aircrew members assigned to inactive flying positions.

g. Maintain medical qualification and certification, and may participate in aviation duties only when properly cleared by a flight surgeon who has full knowledge of their medical status.

1-6. Flying Obligations:

a. In Time of War. Air Force members on active duty may be ordered to make flights in any aircraft. They are not entitled to incentive pay unless placed on aeronautical orders that require taking part in frequent and regular flights. Members are not entitled to such pay if suspended by the President 37 U.S.C. 301(d) or 301a(c).

b. In Time of Peace:

(1) Air Force members on active duty may be ordered to make official flights when in the best interest of the Air Force. They are not entitled to incentive pay unless placed on aeronautical orders that require them to perform specific inflight duties on a frequent and regular basis, i.e., fly a minimum of four hours per month.

(a) Members who are properly qualified and directed to perform specific inflight duties, not on a frequent and regular basis, may be ordered to do so using a flight authorization.

(b) Members not ordered to perform inflight duties must fly only in passenger status on commercial or military aircraft with adequate facilities for transporting passengers.

(2) A commander may detail (by written orders) personnel of the command to take part in aircraft flights operated by any foreign government accredited by the United States, provided flights do not add more expense to the government, and provided personnel are on orders that require them to take part in frequent and regular flights.

1-7. Waiver Due to Combat Mission or National Emergency. MAJCOM commanders may waive any requirements of this regulation when necessary to carry out a combat mission or during a state of national emergency.

Section B—Flight Authorization

1-8 Aircraft Flight Authorizations. Commanders issue written authorizations documenting Air Force aircraft flights, using the format selected by the MAJCOMs. MAJCOM commanders may approve the use of local forms that have at least the essential elements prescribed below.

a. As a minimum, flight authorizations:

(1) Designate the pilot in command or formation flight leader of each flight or flight element. The pilot so designated, regardless of rank or aeronautical rating, commands all persons aboard the aircraft or other members of the formation.

NOTE: MAJCOMs must set procedures for the assumption of command by a flight examiner, should performance by the examinee so warrant.

(2) Make known, in advance, the pilot responsible for a formation flight in the event of an abort by the primary flight leader.

(3) Must have:

(a) The name, grade, SSN, and crew position of each aircrew member and the inflight duty of each support flier.

NOTE: If the authorization concerns Reserve personnel not on extended active duty, it must carry the following statement: "Person's name, or word 'Personnel,' (is) (are) subject to provisions of the Uniform Code of Military Justice while performing this duty."

(b) The type and, when practical, serial number and call sign of the aircraft or formation.

(c) Place from which the flight will start plus "on-or-about" departure date.

(d) The itinerary, and the phrase "Variations in itinerary authorized."

(e) Mission (include proper mission symbol).

(f) The PEID, indicating the program element against which the flying hour resources were allocated for the flight.

(4) Direct the return to the place of origin and the "on-or-about" return date.

(b) Verbal authorization may direct an aircraft flight only when time or administrative procedures prevent written authorization. Issue written confirmation of verbal authorization as soon as possible according to the above.

1-9. Authorization for Using US Air Force Aircraft. Commanders may authorize a flight if it is essential to support command operations. Commanders must not, however, exceed flying hour allocations without specific approval.

a. Commanders must also make sure that each flight is in the direct interest of Government business. Flights for personal convenience or recreation are not authorized.

b. The transportation of passengers and cargo will be in accordance with DOD Regulation 4515.13-R. Orientation flights may be approved as provided in DOD Regulation 4515.13-R and related correspondence.

c. Commanders may use Air Force aircraft under their control to:

(1) Perform tactical and combat operations.

(2) Train aircrew personnel.

(3) Allow aircrews to meet the flying requirements of this regulation.

(4) Evaluate aircrew performance.

(5) Further national health, safety, or interest.

(6) Save human life if a medical officer indicates the situation involves possible loss of life, limb, or sight (DOD Regulation 4515.13-R).

(7) Cooperate with foreign governments as directed by HQ USAF.

(8) Perform other official missions as required.

1-10 Authorization to Perform Inflight Duties in Air Force Aircraft:

a. A person may not perform duties in Air Force aircraft unless specifically authorized and physically and physiologically qualified. Unit commanders may restrict individuals from performing inflight duties in the unit aircraft when such performance may adversely impact safety, morale, or mission accomplishment. Commanders may authorize the following to perform aircrew and operational support duties in Air Force aircraft:

(1) Qualified members of the US Air Force, Army, Navy, Marine Corps, Air Force Reserve, Air National Guard, or Coast Guard of the United States who hold a current aeronautical rating, and are on aeronautical orders to take part in frequent and regular flights.

(2) Nonrated officers and enlisted members of US military services on aeronautical orders required to perform mission essential inflight duties on a full time basis as an aircrew member.

(3) Operational support members on aeronautical orders required to perform essential specific inflight duties on an occasional basis, that cannot be accomplished by regularly assigned crew members.

(4) Personnel authorized by competent authority to receive instruction in aircrew duties at Air Force schools.

(5) Professionally qualified civilian employees of the US government. MAJCOM commanders determine individual qualifications.

(6) Qualified employees or prospective employees of a Government contractor according to the terms and conditions of a current Government contract.

(7) Foreign nationals according to section C.

Chapter 7

CREW REST AND FLIGHT DUTY LIMITATIONS

7-1. Background Information. This chapter explains how rest periods and maximum flying hours for aircrew members in Air Force aircraft are prescribed. It applies to all personnel who operate US Air Force aircraft.

7-2. Air Force Policy:

a. Aircrew members must receive adequate rest. The prime factors in determining adequate rest are: the total duty period, the amount of sleep before the day's activity, and the number of hours flown during the current month. The number and type of additional duties, planned free time, and adequacy of crew rest facilities are additional factors.

b. This chapter gives both the minimum and maximum restrictions allowable. MAJCOM commanders determine whether flight duty time or flying time should be restricted further or whether crew rest periods should be extended. In determining this, they must consider the fatiguing effects of weather, extremes of temperature, complexity of mission requirements, types of aircraft flown, impaired crew rest, circadian rhythm effect (jet lag), mission delays, and restrictive personal equipment.

7-3. Main Objectives. The main goals of restrictions are to specify:

a. Maximum allowable flight duty periods for basic and augmented crews.

b. Maximum monthly and quarterly flying hours for aircrews.

c. Minimum crew rest periods.

d. Conditions requisite to waiver requirements.

7-4. Terms Explained:

a. Aircrew or Crew. The full complement of officers and enlisted members required to operate an aircraft and to complete an assigned mission. AFR 173-13 lists authorized aircrew composition.

b. Aircrew Member. An individual who meets all the following standards:

(1) Is an aircrew member as explained in AFR 60-13.

(2) Is assigned to a position listed in AFR 173-13;

(3) Is designated on orders to fulfill specific aeronautical tasks.

c. Augmented Aircrew. A basic aircrew supplemented by additional aircrew members to permit inflight rest periods. As a minimum, an augmented crew provides for inflight rest for pilots, navigators, and flight engineers if these aircrew members are authorized and required for the aircraft or mission being performed.

d. Basic Aircrew. Aircrew positions as explained in the technical order for the aircraft concerned.

★e. Crew Rest Period. The crew rest period is the non-duty period before the flight duty period begins. Its purpose is to allow aircrews the opportunity to get adequate rest before performing in-flight duties. Crew rest is free time, which includes time for meals, transportation, and rest. Rest is defined as the condition which allows an individual the opportunity to sleep. Air Force aircrews require at least eight hours of uninterrupted rest during the twelve hours immediately prior to the beginning of the flight duty period. These eight hours of uninterrupted rest must be continuous. When an aircrew member remains at the airfield after flying duties to perform official duties, the crew rest period begins after termination of these duties.

(1) Crew Rest Interruptions:

(a) Official: Any official business required of an aircrew member interrupts the crew rest period. This includes official business conducted on the telephone. If, during the twelve hour period, crew rest is interrupted so that an individual cannot get eight hours of uninterrupted rest, the individual must be afforded eight more hours of uninterrupted rest, plus reasonable time to dress, eat, travel, etc. It is not the intent of the crew rest policy to authorize routine interruptions of the crew rest period. Any interruption must be made only under the most exceptional circumstances.

(b) Unofficial: Interruptions that are unofficial must be considered by the individual so that the intent of crew rest is met.

(2) Responsibilities. All USAF aircrews are subject to crew rest requirements, regardless of rank or duty position. When crew rest is violated for an individual, it is the member's responsibility to inform his/her supervisor and remove themselves from the flight schedule until the above conditions are satisfied.

f. Flight Duty Period. A period that starts when an aircrew reports for a mission or briefing and ends when engines are stopped at the end of a mission or a series of missions.

(1) When an aircrew member performs official duties before a mission, compute the flight duty period from the time the member reports to work or reports for an assigned mission, whichever is earlier.

(2) For crew rest purposes, deadhead time is computed as flight duty time. If inflight duties are performed by the deadhead aircrew member before entering crew rest, paragraph c above applies.

★(3) Crew rest is required to start and taxi aircraft.

g. Sleeping Provisions. Provisions available when crew bunks or suitable substitute rest facilities are aboard the aircraft.

7-5. Alert Duty. MAJCOMs establish alert and compensatory periods in keeping with mission requirements.

7-6. Minimum Crew Rest Period. The minimum crew rest period is 12 hours. This may be reduced to 8 hours if required by the curriculum of aircrew training courses in AFM 50-5.

7-7. Maximum Flying Time. One hundred twenty-five hours logged flight time per 30 consecutive days and 330 hours per 90 consecutive days.

7-8. Maximum Flight Duty Periods (Table 7-1):

a. In all aircraft, when only one pilot is aboard, a 12 hour maximum flight duty period applies.

b. Flight publications describe procedures for loss of pressurization, loss of oxygen, loss of control of cockpit temperature, inoperative autopilot, and other inflight malfunctions or emergencies that restrict flight duration and contribute to aircrew fatigue. Such limitations in flight publication that apply take precedence over less restrictive standards in this regulation.

c. Aircraft commanders must end a flight if safety may be compromised by fatigue factors, regardless of authorized flight duty periods.

7-9. Scheduling Restrictions:

a. Aircrews will not perform flight duty until the requirements of paragraph 7-6 have been met.

b. Do not schedule aircrews for augmented crew flight duty periods requiring sleeping provisions unless such provisions are actually available in the aircraft. EXCEPTION: See table 7-1.

c. Aircrew members who have received medical care or who have engaged in activities that may reduce crew efficiency are scheduled to fly only with the concurrence of a flight surgeon.

★d. Aircrew members will not fly:

(1) Within 24 hours of compressed gas diving (including scuba, surface supplied diving, or hyperbaric (compression) chamber exposure) and aircraft pressurization checks that exceed 10 minutes duration.

(2) Within 12 hours after completion of a hypobaric (altitude) chamber flight above 25,000 feet. Personnel may fly as passengers in aircraft during this period, providing the planned mission will maintain a cabin altitude of 10,000 feet MSL or less.

(3) Within 72 hours after donating blood. The flying unit commander must approve the donation of blood by crewmembers in a mobility assignment or who are subject to flying duties within this 72 hour period. Restrict all other active fliers who donate blood from flying until cleared by a flight surgeon.

(4) Within 12 hours after consuming alcoholic beverages.

7-10. Waiver Authority. Procedures in this chapter may be waived by the:

a. MAJCOM commander, Chief of the US Air Force Reserve (USAFR), or Director of Air National Guard (ANG), if the mission priority justifies the increased risk. At the discretion of the MAJCOM commander, Chief of the USAFR, or Director of ANG, this may be delegated to commanders who have the authority to execute the mission.

b. Theater commander during impending or actual hostilities.

★Table 7-1. Maximum Flight Duty Periods (Hours).

Type Aircraft	Basic Aircrew	Augmented Aircrew
Fighter, Attack or Reconnaissance		
Single Control	12	
Dual Control	12	16*
Bomber or Reconnaissance		
Single Control	12	
Dual Control	24	30

DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington DC 20330-5000

AF REGULATION 60-16

27 January 1992

Flying

GENERAL FLIGHT RULES

This regulation prescribes general flight rules which govern the operation of Air Force aircraft flown by Air Force pilots, pilots of other services, foreign pilots, and civilian pilots. It applies to Air Force activities operating aircraft on loan or lease, to the extent stipulated in the loan or lease agreement, and to Air National Guard (ANG) and US Air Force Reserve (USAFR) units and members. Address questions concerning this regulation to the US Air Force Instrument Flight Center, Instrument Standards Division (USAF IFC/IS), Randolph AFB TX 78150-5001. See attachment 1 for a list of terms and abbreviations.

NOTE: The reports in this directive are exempt from licensing according to AFR 4-38, paragraph 2-3.

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Chapter 1

GENERAL INFORMATION

1-1. General Concepts:

a. US Air Force aircraft are operated worldwide under rules and procedures that may involve many standards and conflicting requirements.

b. Although the International Civil Aviation Organization (ICAO), an affiliate of the United Nations, helps to standardize and regulate international civil aviation, ICAO members are not compelled to conform to its standards and recommended practices (SARP).

(1) Each member nation, however, must make known any ICAO procedure it takes an exception to and publish its alternate procedure. What that member does to modify, reject, or conform to ICAO standards constitutes that nation's rules of the air.

(2) The Air Force supports the activities of ICAO and, military mission permitting, complies with ICAO SARPs in international airspace over the high seas.

c. Each nation prescribes the rules that apply to operating aircraft in its sovereign airspace. The Federal Aviation Administration (FAA) prescribes these rules for the United States and issues them as Federal Aviation Regulations (FAR). FARs apply to both civil and military aircraft operations unless the FAA grants the military service an exemption or the FAR specifically excludes military operations.

d. The FARs govern Air Force pilots, and nothing in this regulation relieves the pilot of the responsibility to follow them. To provide a common reference source, this regulation combines often used ICAO SARPs, FARs, and those military directives that apply to operating Air Force aircraft.

e. For specific information on the requirements of a single ICAO member that are more restrictive than the procedures outlined here, refer to the appropriate section of the flight information publication (FLIP) planning documents.

1-2. Compliance With This Regulation:

a. This regulation, as supplemented by major commands (MAJCOM), governs the operation of Air Force aircraft:

(1) In the United States, its territories, and possessions.

(2) In international airspace over the high seas.

(3) Over the sovereign territory of any foreign nation as modified by special notices and procedures published in FLIP. Theater commanders ensure the contents of FLIP show the rules of each nation within their area of responsibility if those rules differ from this regulation.

b. Operations of US Air Force aircraft are also governed by procedures and special notices in FLIP, the USAF Foreign Clearance Guide (FCG), Notices to Airmen (NOTAM), aircraft flight manuals, Air Force directives and technical orders (TO), MAJCOM directives, and air traffic control (ATC) instructions. (See attachment 2 for related publications.)

c. A MAJCOM may supplement this regulation by publishing restrictions that apply only to pilots or aircraft assigned or attached to that command. Send one copy of the supplement to USAF IFC/IS, Randolph AFB TX 78150-5001.

d. ANG units should refer to ANGR 0-2 for specific guidance concerning the applicability of this regulation and MAJCOM supplements. The National Guard Bureau performs functions for ANG units.

1-3. Energy Conservation. It is Air Force policy to conserve aviation fuel when it does not adversely affect training, flight safety, or operational readiness. Each MAJCOM must establish an energy awareness and conservation program to conserve energy consistent with mission requirements.

1-4. Deviations and Waivers. USAF IFC/IS will authorize deviations from this regulation only when:

NOTE: An ATC clearance is not authority to deviate from this regulation.

a. An emergency or special circumstance exists or for the protection of lives.

b. Necessary to comply with a MAJCOM training directive.

(1) Send the MAJCOM waiver request to USAF IFC/IS, Randolph AFB TX 78150-5001.

(2) If an operation requires a deviation from a FAR, send the original and three copies of FAA Form 7711-2, Application for Certificate of Waiver or Authorization, through military command channels to USAF IFC/IS, who forwards the form to the FAA.

Chapter 5

GENERAL FLIGHT RULES

5-1. Operational Standards. Pilots must not operate Air Force aircraft in a careless or reckless manner or endanger life or property.

a. A person must not act as a crewmember of an aircraft:

(1) While under the influence of alcohol or its aftereffects. Additionally, no person may consume alcoholic beverages during a 12-hour period prior to takeoff or while flying as a crewmember.

(2) While under the influence of or using a drug that affects his or her ability to safely perform assigned duties.

(3) If his or her physical condition is suspect or known to be detrimental to safety.

b. Any person who is obviously under the influence of intoxicants or narcotics must not board an Air Force aircraft except:

(1) In an emergency.

(2) When in patient status under proper care or when exceptional circumstances exist and no compromise of safety is anticipated.

c. Crewmembers must occupy their assigned duty stations from takeoff to landing, unless absence is normal in the performance of crew duties.

5-2. See and Avoid. When weather conditions permit, regardless of whether an operation is under IFR or VFR, use the "see and avoid" concept.

5-3. Proximity of Aircraft. Pilots must not fly an aircraft so close to another that it creates a collision hazard. Use 500 ft of separation (well clear) as an approximate guide except for:

a. Authorized formation flights.

b. Command-approved maneuvers in which each participant is fully aware of the nature of the maneuver and qualified to conduct it safely (for example, interceptor attack training).

NOTE: If an emergency requires visual checks of an aircraft in distress, it is extremely important to ensure this action does not increase the overall hazard (see paragraph 1-4a). The pilot must carefully consider the capabilities of the distressed aircraft and the intentions of the crews involved before operating near another aircraft in flight.

5-4. Formation Flight:

a. Nonstandard Formation Flight. Pilots may conduct nonstandard formation flights as specified in attachment 1 or when operating under VFR.

b. Transponder Operations During Formation Flight. Unless otherwise specified in Allied Communications Publication 160, US Supplement 1:

(1) During a standard formation flight, one aircraft (normally the lead) squawks the proper code while all others squawk standby.

(2) All aircraft within a nonstandard formation flight will squawk the ATC-assigned Mode 3A/C beacon code until established within the assigned altitude block and closed to the proper en route interval. Unless otherwise directed by ATC, when aircraft interval exceeds 3 NMs, both the formation leader and the last aircraft will squawk the assigned Mode 3A/C beacon code.

(3) During refueling, when the receiver formation is within 3 NMs of the tanker aircraft, the receiver formation squawks standby unless the flight manual specifies different distances.

5-5. Right-of-Way Rules. Usually, right-of-way is given to the aircraft least able to maneuver, which normally permits that aircraft to maintain course and speed. However, visibility permitting, each pilot must take whatever action is necessary to avoid collision, regardless of who has the right-of-way. When another aircraft has the right-of-way, the yielding aircraft must not pass over, under, abeam, or ahead of the other aircraft until well clear.

a. Distress. Aircraft in distress have the right-of-way over all other air traffic.

b. Converging. When converging at approximately the same altitude (except head-on or approximately so), the aircraft to the other's right has the right-of-way. Aircraft of different categories have the right-of-way in the following order of priority:

(1) Balloons.
(2) Gliders.
(3) Aircraft towing or refueling other aircraft.
(4) Airships.
(5) Rotary or fixed-wing aircraft.

c. Approaching Head-On. If aircraft are approaching each other head-on or approximately so, each alters its course to the right.

d. **Overtaking Aircraft.** An overtaken aircraft has the right-of-way. The overtaking aircraft must alter its course to the right.

e. **Landing.** Once on final approach, an aircraft has the right-of-way over other aircraft on the ground or in the air, except when two or more aircraft are approaching to land. In this case, the aircraft at the lower altitude has the right-of-way if it does not use this advantage to cut in front of or overtake the other.

f. **Water Operations.** Rules for operating aircraft on or from the surface of water conform to marine rules for operating vessels. Right-of-way rules in paragraphs b, c, and d above apply equally to water operation without regard to the category of the aircraft. If possible, aircraft operating on the surface of the water should keep clear of all vessels and not impede their navigation.

5-6. Communication in Flight:

a. Pilots should establish and maintain two-way radio communications with the proper ATC facility or FSS if possible.

b. Pilots are responsible for ensuring emergency frequencies are monitored at all times.

c. If radio communications fail in flight, the control tower will use ATC light signals to control radio-out aircraft approaching the airport for landing (see the Flight Information Handbook).

5-7. Aircraft Speed. Pilots must:

a. Not operate at or above Mach 1 except as specified in AFR 55-34. They must complete AF Form 121, Sonic Boom Log, for each supersonic sortie according to AFR 55-34.

b. When operating in US sovereign airspace, not exceed 250 knots indicated airspeed (KIAS) below 10,000 ft mean sea level (MSL), unless the MAJCOM has approved a higher speed according to the FAR 91.117(a) exemption. (See attachment 3 for Air Force aircraft speed authorizations.) Be aware that this is a maximum speed unless established in a military operations area (MOA), restricted area, approved military training route (MTR), or during precoordinated exercises or special missions.

c. Not exceed 250 KIAS below 10,000 ft MSL when operating outside US sovereign airspace unless:

(1) Mission requirements dictate speeds exceeding 250 KIAS and operations are in international airspace.

(2) ICAO or host nation rules permit aircraft speeds over 250 KIAS.

(3) Necessary to maintain the minimum safe airspeed as specified in the aircraft flight manual.

(4) Required by ATC and permitted by host nation rules.

d. Not exceed 200 KIAS in an airport traffic area unless authorized by ATC, the airport traffic area is within a terminal control area (TCA), or required to maintain the minimum safe maneuvering airspeed specified in the aircraft flight manual.

e. Maintain a speed of 200 KIAS or less in the airspace underlying a TCA or in a VFR corridor designated through a TCA, unless required to maintain the minimum safe maneuvering airspeed specified in the aircraft flight manual.

f. Conduct holding at airspeeds prescribed in FLIP General Planning, chapter 5.

5-8. Area Navigation (RNAV). MAJCOMs may approve the use of RNAV systems that meet the accuracy tolerances in FAA Advisory Circular 90-45. The MAJCOM will notify USAF IFC/IS of the type of aircraft and system approved for RNAV.

5-9. Landing Area Rules. Pilots must not operate aircraft in an airport traffic area, except for takeoff and landing, unless specifically authorized or directed by the controlling agency.

a. **Takeoff and Landing.** If the airport has an operating control tower:

(1) The pilot must receive clearance from ATC before taxiing, takeoff, or landing.

(2) The control tower normally determines takeoff and landing direction (see AFR 60-5). When a no-wind condition exists, the pilot may request the runway favored by shorter taxi distances (or other local considerations). When no tower is available, the pilot may take off or land on the runway most nearly aligned into the wind.

(3) Unless specific restrictions are given, a clearance to taxi to a specific runway means the aircraft may taxi across all other runways and taxiways, but it must not taxi across or on the assigned runway.

(4) After landing, the pilot must not use a runway to taxi unless specific clearance is received. NOTE: This does not prevent aircraft rollout to the end of the landing runway.

b. **Turns After Takeoff, Low Approaches, or Closed Patterns.** Pilots must not turn aircraft after a takeoff, touch and go, or low approach until at least 400 ft above ground level (AGL), at a safe airspeed, and past the departure end of the runway (if visible) unless:

(1) Specifically cleared by the controlling agency.

(2) Safety dictates otherwise.

(3) Required by local procedures.

NOTE: The 400-ft AGL restriction does not apply to closed patterns.

c. **Traffic Pattern Procedures.** Pilots must:

(1) At Air Force installations, fly the traffic pattern prescribed in AFR 55-48 or published in FLIP, unless otherwise directed.

(2) At other than Air Force installations, fly traffic patterns as directed by the control tower or published in FLIP.

(3) At airports with no control tower, follow the standard light signals or visual indicators that prescribe the direction of traffic and landing runway. Departures must comply with the appropriate route for the airports. (See "Visual Indicators at Uncontrolled Airports" in the Airman's Information Manual for detailed description.)

(4) When flying helicopters, avoid the flow of fixed-wing aircraft. Helicopters that have a compatible airspeed may fly in the rectangular pattern.

d. **Helicopter Landing Areas.** Helicopters may operate from other than established landing areas (fields, highways, parks, etc.) if:

(1) A military requirement exists, the user receives permission to use the area for landing, safeguards exist to permit operations without hazard to persons or property, and no legal objections are apparent.

(2) The pilot uses a helicopter in rescue operations.

e. **Night operations.** A pilot must not conduct flight operations between the hours of official sunset and official sunrise unless the runway is outlined with lights and clearly discernible. In Alaska and other areas located north of 60° latitude, the pilot may operate the aircraft to unlighted airports during the period of civil twilight, as published in the Air Almanac.

NOTE: MAJCOMs set illumination requirements for helicopter landing areas not already established in other directives.

f. **Landing Gear Reporting Procedures.** Pilots must report "gear down" to the ATC agency or runway supervisory unit after extending the landing gear. They must make this report before crossing the runway threshold. This is mandatory for any approach to an airport. Pilots flying aircraft with fixed landing gear are not required to make a "gear down" report.

5-10. Altitude Requirements. Except for takeoff or landing, pilots must not operate aircraft:

a. Below a safe altitude, except when making an emergency landing (for example, an engine failure or other mechanical malfunction) without undue hazard to persons or property on the surface.

b. Under VFR above 3,000 ft AGL at altitudes or flight levels other than those specified in FLIP, except while turning or holding in a holding pattern of 2 minutes or less.

c. Over congested areas (cities, towns, settlements) or groups of people if the altitude does not ensure at least 1,000 ft above the highest obstacle within a 2,000-ft radius of the aircraft.

d. Over noncongested areas at an altitude of less than 500 ft above the surface except over open water, in MTRs, or in sparsely populated areas. Under such exceptions, pilots must not operate aircraft closer than 500 ft to any person, vessel, vehicle, or structure.

(1) The FAA requests pilots maintain a minimum of 2,000 ft above the terrain of the following areas: national parks, monuments, seashores, lakeshores, recreation areas, and scenic riverways administered by the National Park Service; national wildlife refuges, big game refuges, game ranges, and wildlife refuges administered by the US Fish and Wildlife Service; and wilderness and primitive areas administered by the US Forest Service. This restriction is not applicable to special-use airspace, low-altitude tactical navigation areas, and MTRs. Higher altitudes may exist for specific areas. (See AP/1B, FAA Advisory Circular 90-36, and sectional aeronautical charts.)

(2) Helicopters or aircraft used to conduct approved aircraft flight tests may operate at lower altitudes than the minimums in paragraphs c and d above if they do not create a hazard to persons or property on the surface. During test, acceptance, or research flights conducted below 1,500 ft AGL, single engine helicopters must remain within autorotation distance of a clear area.

e. Within a designated disaster area. Disaster areas are listed in NOTAMs. Exceptions are permitted when an aircraft is:

(1) Aiding in airborne relief for the area.

(2) Going to or from an airport in the area, but does not hamper or endanger relief activities.

(3) On a flight that has been specifically cleared by ATC.

5-11. Low Altitude Operations. Fixed-wing aircraft flying point to point above 250 KIAS below 10,000 ft MSL must adhere to paragraph 5-7.

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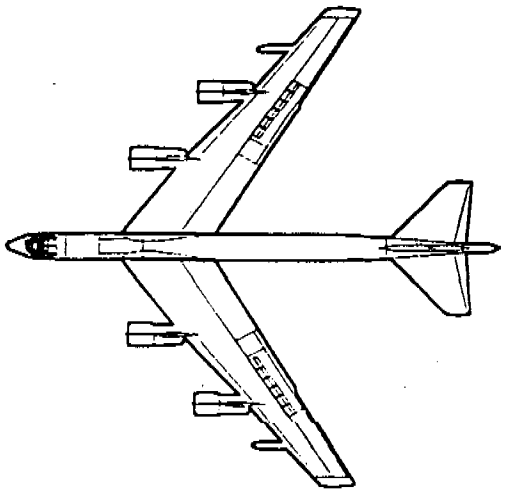
B-52 AIRCREW TRAINING

By
HQ ACC/DOTO-B



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criteria). Remarks are required for any deviation from scheduled activity. The instructor must sign the completed TAR. The flight training TAR is reviewed at the unit mission review panel or training flight to validate the information and to ensure it has been completed properly.

(3) For qualification and continuation training, remarks are mandatory if a grade of 3.0 or below is given for any event. TARs will contain sufficient comments to enable the gaining unit to identify strengths, weaknesses, or trends. Instructors' comments should enable the mission review panel members and training flight instructors to identify additional training required and ensure continuity. The individual receiving the training signs the TAR concurring with the credited activity.

(4) After completion of qualification training requirements, the closeout TAR will be certified by the chief of training flight or squadron commander, who will include a written synopsis of the training to include strengths and weaknesses. A copy of the TAR will be used to establish event currency due dates.

(5) FTU will establish procedures for scheduling, documenting, reviewing, and filing TARs. The procedures will be published in the CCTSS.

c. AFORMS:

(1) AF Form 3526, AFORMS Optical Mark Reader Event Accomplishment Report (OMAR) is used to annotate continuation training accomplished. OMARs are reviewed by the mission review panel.

(2) The AF Form 1522, AFORMS Additional Training Accomplishment Input (GTAR), or other approved product, is used to document ground training ("G" events) activity, and training devices.

(3) Units are not required to load specific training events into AFORMS if the unit is not tasked for that specific mission (e.g., Harpoon, Have Nap, etc.) or does not possess the equipment (e.g., Secure Voice, Have Quick, PAR, etc.) required to accomplish the event.

(4) Units may replace AFORMS "NO DATES" with either the date of the last FTU, CFIC, or FTC course equivalent accomplishment, or the Unit Mission Certification (G340 or G360) for those courses not listed.

(5) Unless otherwise specified, units may replace "NO DATES" for newly levied CT requirements with the date the new requirement is effective.

Table 1-1. GRADING CRITERIA.

Grade	Description
1.0	The student was unable to perform any of the required behaviors stated in the objective. Made major errors and omissions that made accomplishing the task impossible. Has very limited task knowledge. Instructor had to explain and demonstrate the task.
1.5	The student performed very few required behaviors stated in the objective without errors or omissions. Has limited knowledge about the task. Can begin the task but performance deteriorates quickly and extensive instructor interaction is required to maintain safe task accomplishment.
2.0	The student performed some required behaviors stated in the objective with significant errors or deviations that were not corrected. Has a basic understanding of the task. Instructor intervention was required to maintain safe task accomplishment even under ideal conditions.
2.5	The student performed most behaviors stated in the objective with errors and deviations. Has sufficient knowledge about the task. Can perform the task safely with limited assistance and frequent instructor coaching.
3.0	The student performed all behaviors stated in the objective with some errors and deviations that were not corrected. Instructor provided coaching for smooth performance but not for safety requirements. The student can perform under ideal conditions but would have difficulty under adverse conditions.
3.5	The student performed all behaviors stated in the objective with minor errors and deviations that were corrected. Can perform task safely with no instructor assistance. Considered Proficient (P).
4.0	The student performed all behaviors stated in the objective without errors or deviations and exceeded required proficiency. Performs the task safely with no instructor intervention. Can perform under adverse conditions.

formal board a satisfactory knowledge of the squadron's assigned mission. Board composition will be established by the SQ/CC. Desired composition is SQ/CC or Ops Officer (chairman), weapons, electronic combat, intelligence, and plans representatives.

(2) Continuation verification updates crewmembers on their squadron's wartime mission. Each crewmember will participate in a squadron initial or continuation verification every 18 months as a briefer, board member, or seminar participant.

g. Certification: Crewmembers assigned to nuclear tasked units will certify per appropriate regulations. Crewmembers who certify are exempt from verification requirements.

4-4. Recurrency and Regression:

a. Recurrency:

(1) Individuals failing to complete recurring academic requirements are delinquent in those events until accomplished. Nuclear Surety training, G300/NST must be accomplished once every 12 months per AFR 122-1 (example: training accomplished on 10 Aug must be repeated before 1 Sep the following year). Individuals delinquent in Nuclear Surety Training (G300/NST) will not nuclear generate, perform alert duty, or have access to nuclear weapons. Report individuals delinquent in academics (over 30 days) in the unit TRP.

(2) Individuals delinquent in one or more MR flight currency events are placed in supervised status for that event and declared NMR. If the noncurrent item is one that is normally accomplished during a recurring evaluation, a flight check by a flight examiner may be required per (b) or (c) below. Regaining currency is based on time elapsed from the date the individual became noncurrent:

(a) Up to 60 days. Training as directed by the squadron commander and a proficiency demonstration of the noncurrent event to a like-specialty instructor

(b) 60 days to 365 days. Training as directed by the squadron commander. Individuals need to requalify only in events required by their training level. Flight check by an evaluator is required only for noncurrent items that would be evaluated during an initial evaluation.

(c) Over 365 days. Individuals noncurrent over twelve months will be requalified per Chapter 2.

b. Regression:

★ (1) Deficiencies in GCC Level A event requirements at the end of a annual training period will result in regression to NMR status and will be reported through the TRP to HQ ACC/DOTO. For MR crewmembers regressed to NMR status, the squadron commander will approve a program to bring the crewmember up to MR standards that will include training in delinquent areas (see paragraph 4-7b).

★ (2) Deficiencies in GCC Level B or C event requirements at the end of the training cycle will result in regression to a GCC Level for which all requirements were met. Individuals will maintain the GCC Level to which they regress for a minimum of 30 days. At the end of 30 days, the squadron commander will accomplish a "lookback," an examination of the individual's training for the previous six months. If he determines that the training accomplished during the past six months is proportional to that required for the original GCC Level during a six month period, the individual may be restored to the original GCC Level (B or C).

4-5. Prorating Training Requirements:

★ a. One hundred percent of prorated GCC flight requirements for assigned GCC Level must be completed at the end of the training period. GCC Level C requirements are based on a fully funded training program and may not be achievable at lower program funding levels. The annual flying hour program (published by HQ ACC/DOSB) contains the current percentage of GCC Level C program funding.

b. Individual and crew training event requirements may be prorated due to nonflying TDY, DNIF or DNIA, emergency leave, qualification training completion, CFIC or WS attendance, changing to the SI or BQ training level, moving between "I" and "E" status, or moving from the SI level to GCC Level A. TRP minutes should include the individual's name, items prorated, and reason for non-completion. Periods of 5 days or less are not prorated. To determine prorated requirements, first determine the number of months available at each training level per Table 4-1. Then, multiply the number of months available by the event requirement and divide by 6. Always round down to the nearest whole number but not less than one (5.6 rounds to 5).

Table 4-1. PRORATION.

Days Available	Months Available
30 or less	0
31 - 44	1
45 - 74	2
75 - 104	3
105 - 134	4
135 - 164	5
165 - remaining days	6

AIRCREW AND AIRCRAFT OPERATIONAL LIMITATIONS AND RESTRICTIONS

A5-1. New or Modified Aircraft Equipment. Aircrew members who are not qualified in the operation of new or modified aircraft equipment (e.g., ALCM, Harpoon, Have Nap, etc.) are restricted in the performance of aircrew duties as follows:

a. They will not be placed on alert with an aircraft so equipped or modified.

b. They will not operate that equipment on any flight unless under the supervision of a qualified instructor of like specialty.

A5-2. Number of Personnel Authorized Aboard B-52 Aircraft. When the number of crewmembers required aboard a tactical aircraft exceeds the number of basic crew positions in the aircraft, provide each additional crewmember with appropriate safety, communications, and survival equipment.

A5-3. Authorized Full Fuel Loads and Sequences. Aircraft will be loaded with fuel in accordance with requirements of the 1B-52G/H-5 (Basic Weight Checklist and Loading Data). Fuel usage sequences contained in the flight manual were designed to be used in conjunction with proper fuel loading procedures to realize maximum aircraft service life. Fuel loads specified in the B-52 technical orders will be adhered to for all peacetime missions. Requests for waiver of this policy will be submitted by joint unit OG/CC and LG/CC message to HQ ACC/DOTV and HQ ACC/LGFB with informational copies to NAF/DOV and OC-ALC/LAHR. Only HQ ACC/DOTV, in coordination with HQ ACC/LGFB, can authorize deviations to normal fuel loads.

A5-4. Performance Planning Criteria. A minimum of 1,000 feet overrun must be available in addition to the minimum runway required (MRR). When 1,000 feet of overrun are not available, a portion of the runway must be reserved to satisfy minimum overrun requirements. Runway available for takeoff planning must be actual runway length less any portion of the runway used to satisfy overrun requirements at the liftoff end of the runway.

A5-5. Steep Turns. Limit the maximum target bank angle to 45 degrees (not to exceed 50 degrees). The aircraft must remain clear of clouds throughout the maneuver. This does not restrict combat breakaway maneuvers defined in the flight manual. For steep turns at or below 5,000 feet AGL/ASL, the following restrictions apply:

a. Weather must be day VFR.

b. Maneuver must be accomplished at or above 1,000 feet AGL/ASL.

c. ACCR 51-18 restrictions apply when on IR routes.

A5-6. Unusual Attitudes and Stalls. Prohibited inflight.

A5-7. Initial Buffet:

a. All inflight initial buffet practice must be done as prescribed in the flight manual and under instructor pilot supervision.

b. All pilots must review and discuss the correct recovery procedures and limitations for accomplishment of initial buffet during mission planning.

c. Practice recovery from initial buffet at a minimum altitude of 20,000 feet above the terrain. If clouds exist between the aircraft and the terrain, the aircraft must be at least 10,000 feet above the tops of the clouds. Do not practice recovery from initial buffet above FL 300 or at gross weights above 300,000 pounds.

d. Perform entire initial buffet maneuver with wings level.

e. Do not practice initial buffet with weapons or missiles loaded aboard the aircraft.

A5-8. Chase Operations. When B-52 pilots are required to participate in chase operations, the following restrictions apply:

a. Prior to each chase sortie, supervisory personnel will ensure the lead and chase pilots are briefed on the mission content, restrictions, and responsibilities.

b. The lead and chase aircraft must maintain radio contact throughout the chase operation.

c. It is unsafe to fly in close vertical proximity to another aircraft due to the interrelated aerodynamic effects. Never fly directly over or under another aircraft. The chase position will maintain the following minimum safe operating distance while in formation.

(1) Wings level position - at least 150 feet between wing tips.

(2) Stern position - approximately 1/4 mile behind and 100' below lead.

d. The normal chase position will be on the right wing of the lead.

Table A7-2. ANNUAL FLIGHT TRAINING REQUIREMENTS FOR STAFF INSTRUCTORS (SI).

Generic Events

Code	Event	Position	#/A	Curr
B001	Bomb Run *	P/RN	12	1/60
E001	ECM Threat Activity *	EW	12	1/60
E010	MUTES ECM Activity	EW	4	
E034	Proficiency Exercise	EW	16	1/60
F016	AFSATCOM Exercise	EW	4	
I001	Instrument Approach *	P	12	1/45
I010	Missed Approach	P	4	
I026	Approach (Monitored)	RN	8	1/120
N015	Low Altitude Navigation Leg *	P/RN	12	1/60
P008	Takeoff *	P	8	1/45
P013	Landing *	P	12	1/45
P015	Simulated Engine Loss on Takeoff	P	2	
P016	Night Landing	P	4	1/120
P021	Flaps Up Approach	P	2	
P022	Formation	P/RN	4	
P036	Visual Pattern	P	2	
P063	Simulated Six-Engine Approach and Go-Around (Asymmetric)	P	2	
P070	Pilot Proficiency Exercise	P		1/180
P097	Touch-and-Go Landing	P		1/45
R001	Air Refueling	P	8	1/45
R005	Night Air Refueling	P		1/120

Conventional Events

★	B002	High Altitude Conventional Bomb Run	P/RN	3	
★	B003	Medium Altitude Conventional Bomb Run	P/RN	1	
	B026	Low Altitude Mine Run	P/RN	1	
	B034	Low Altitude Conventional Bomb Run	P/RN	2	
	C026	AGM-86C Low Altitude Procedures **	P/RN	4	1/180
	C027	AGM-86C High/Medium Altitude Procedures **	P/RN	4	1/180
	C028	AGM-86C Manual SAIR Exercise **	RN	2	
	E025	Formation ECM	EW	2	
	E035	Defensive Equipment Status Check	EW	2	
	P007	Have Quick	P	4	
★	T002	Formation Bombing Procedures	P/RN	2	
★	T101	NVG Exercise	P		1/90

Nuclear Events **

	B008	High/Medium Altitude Nuclear Bomb Run	P/RN		
	B035	Low Altitude Nuclear Bomb Run	P/RN	2	
★	B038	CSRL Bombing Exercise	RN	2	
	C013	AGM-86/129 High/Medium Altitude Procedures	RN	4	
	C014	AGM-69 Procedures Low Altitude Procedures	RN	4	
	P024	MITO	P		1/365
	P106	Wear of PLZT Goggles Inflight	P		1/365

NOTES: * Indicates currency **required for mission ready status.**

** Items are applicable only to units specifically tasked with mission or weapon.

Table A7-3. ANNUAL FLIGHT TRAINING REQUIREMENTS FOR BASIC QUALIFICATION (BQ).

This table also applies to FPI-8 flyers at other than wing level.

Code	Event	Position	#/A	Curr
E034	Proficiency Exercise	EW	12	1/60
I001	Instrument Approach	P		1/45
I009	Nonprecision Approach	P	8	
I010	Missed Approach	P	4	
I023	Precision Approach	P	8	
I026	Approach (Monitored)	RN	12	1/120
N090	Programming/Navigation Exercise	RN	12	
P008	Takeoff	P	8	1/45
P013	Landing	P	16	1/45
P015	Simulated Engine Loss on Takeoff	P	2	
P016	Night Landing	P	4	1/120
P021	Flaps Up Approach	P	2	
P036	Visual Pattern	P	4	
P063	Six-Engine Approach and Go-Around (Asymmetric)	P	2	
P070	Pilot Proficiency Exercise	P		1/180

Table A7-4. CONTINUATION GROUND TRAINING REQUIREMENTS.

1. The following are the continuation ground training requirements for all crewmembers. Course descriptions are contained in Attachment 8. Accomplish all aircrew life support and chemical defense training courses per ACCR 55-2. G112 course description is in AFR 355-1.

2. Academic and ground training is required to be accomplished at regular intervals. The following definitions will be used to determine the frequency of training:

a. B - Biennial. Must be accomplished not later than the end of the 24th month from the month last accomplished.

b. A - Annual. Accomplish once each training period. Time between accomplishments may be more than 12 months (except G300 - must be accomplished NLT the end of the 12th month from the month last accomplished).

(1) A-1 - Annual training that will be scheduled from July through September.

(2) A-2 - Annual training that will be scheduled from October through December.

(3) A-3 - Annual training that will be scheduled from January through March.

(4) A-4 - Annual training that will be scheduled from April through June.

NOTE: A-1, A-2, A-3, and A-4 training accomplished in the recommended quarterly flow or per the wing monthly operations plan is considered to have been taught annually though the time between events may be longer than 12 months but less than 15 months.

c. SA - Semiannual. Training that must be accomplished twice each training period. Not later than the end of the 6th month from the month last accomplished.

d. Q - Quarterly. Training that will be accomplished four times each training period, once in each period A-1 to A-4.

e. M - Monthly. Must be accomplished each calendar month.

f. AR - As Required. As required by other applicable regulations or associated directives.

3. BQ column is for non-crew assigned non-instructors training at the Basic Qualification level.

4. GCC column applies to crew members training at GCC Levels A, B, or C.

5. SI will accomplish GCC ground training and SI ATD requirements.

6. Annual training allocated to a specific training quarter (A-1, A-2, A-3, A-4) in this chapter presents a desired quarterly flow. When unique taskings dictate a more appropriate flow, the unit may reallocate the training and incorporate the new flow into its monthly operations training plan.

NOTE: S - These ground training events are required to be accomplished at the designated intervals to be mission ready. Failure to maintain the proper frequency will result in the individual being declared NMR. For CCP (G312), all missed training must be accomplished prior to regaining MR status.

Generic Events

Code	Event	Position	Freq	BQ	GCC
G112	CWD S	All	A	X	X
G124	Recurring Crew Resource Management (CRM)	All	A	X	X
G209	Aircraft Servicing	All	A		X
G221	EVS/TA Procedures	P/CP	A		X
G330	Unit Mission Briefing S	All	AR	X	X
G350	ORI Preparation for Certification	All	AR		X
G406	OAP Selection and Computation	RN/N	A		X
G501	Airborne Threats (EWP-1)	EW	A-4		X
G502	Tactical SAM Threats (EWP-2)	EW	A-3		X
G503	Strategic SAM/AAA Threats (EWP-3)	EW	A-3		X

Table A7-4. CONTINUATION GROUND TRAINING REQUIREMENTS (generic events continued).

Code	Event	Position	Freq	BQ	GCC
G504	Naval Threats (EWP-4)	EW	A-1		X
G505	Electronic Combat Systems Management (EWP-5)	EW	SA	X	X
G506	Blue/Grey Threats (EWP-6)	EW	A-2		X
G508	Basic Radar Principles/ECM Techniques	EW	A-2		X
G511	CTT-1	All	A-4		X
G512	CTT-2	All	A-3		X
G513	CTT-3	All	A-3		X
G514	CTT-4	All	A-1		X
G515	CTT-5	All	A-1		X
G516	CTT-6	All	A-2		X
G517	CTT-7	All	A-1		X
G601	Communications Procedures	All	A		X
G604	Instrument Refresher Course	P/CP	AR	X	X
G605	Navigator Instrument Refresher Course	RN/N	AR	X	X
G607	Supervised FLIP Study and ICAO Procedures	P/CP	AR		
G640	Airport Qualification Program	P/CP	AR		X
LS01	Local Area Survival $	All	AR	X	X
LS02	Combat Survival Training (CST) $	All	AR	X	X
LS03	Water Survival Refresher Training $	All	AR	X	X
LS04	Aircrew Chemical Defense Training $	All	AR	X	X
LS05	Aircrew Chemical Defense Procedures/Egress/Hanging Harness $	All	AR	X	X
LS06	Life Support Equipment Training $	All	AR	X	X
LS07	Egress Ejection Training $	All	AR	X	X
LS09	Hanging Harness Training $	All	AR	X	X

NOTE: G511 through G517 may be credited to an individual upon successful completion of Weapons School. The individual must complete all 7 CTT courses within 365 days of this Q012 or Q015 date to remain mission ready. Units should make every effort to get a newly qualified crewmember all seven CTT courses as soon as possible after MQT.

Conventional Events

Code	Event	Position	Freq	BQ	GCC
G302	Conventional Air Weapons Refresher S	P/CP/RN/N	A		X
G304	Conventional Strike Seminar (AWR-4)	P/CP/RN/N	A		X
G360	Conventional Preparation for Certification	All	AR		X
G518	CTT-8	All	A		X
Q015	Conventional Mission Certification S	All	AR		X

Nuclear Events **

Code	Event	Position	Freq	BQ	GCC
G102	Flashblindness Protection	P/CP	B		X
G300	Nuclear Surety Training S	All	A	X	X
G301	Nuclear Air Weapons Refresher (AWR-1) S	P/CP/RN/N	A		X
G303	Nuclear Strike Seminar (AWR-3)	All	A		X
G310	EWO Study S	All	Q		X
G312	Command and Control Procedures (CCP) S	All	M		X
G340	EWO Preparation for Certification	All	AR		X
Q012	Unit Nuclear Mission Certification S	All	AR		X

NOTE. ** Items are applicable only to units specifically tasked with mission or weapon.

Table A7-5. CONTINUATION TRAINING ATD REQUIREMENTS.

(See Table A7-4 for notes and definition of scheduling frequency)

Code	Event	Position	Freq	BQ	SI	GCC
G90X	Nuclear Integrated WST Missions	All	SA			1
G91X	Conventional Integrated WST	All	SA			2
G91X	Conventional Integrated WST (Conventional only units)	All	SA			3
G920	Basic Equipment Independent ATD	EW	SA	2		
G921	Hydraulic Systems Independent ATD	P/CP	A-1	1		1
G921	Hydraulic Systems Independent ATD	P	B		1	
G921	OAS Systems and Techniques Independent ATD	RN/N	A-1		1	1
G921	EWP-1 Airborne Threats Independent ATD	EW	A-4		1	1
G922	Flight Controls Independent ATD	P/CP	A-2	1		1
G922	Flight Controls Independent ATD	P	B		1	
G922	Missile Systems and Techniques Independent ATD	RN/N	A-3		1	1
G922	EWP-2 Tactical SAM Threats Independent ATD	EW	A-3		1	1
G923	Engines Independent ATD	P/CP	A-3	1		1
G923	Engines Independent ATD	P	B		1	
G923	EWP-3 Strategic SAM/AAA Independent ATD	EW	A-3		1	1
G924	Electric Systems Independent ATD	P/CP	A-4	1		1
G924	Electric Systems Independent ATD	P	B		1	
G924	EWP-4 Naval Threats Independent ATD	EW	A-1		1	1
G925	Instruments Independent ATD	P/CP	A	1	1	1
G925	Independent Nuclear or Conventional Mission	EW	A-3			1
G926	Fuel Systems Independent ATD	P/CP	A-1	1		1
G926	Fuel Systems Independent ATD	P	B		1	
G926	EWP-6 Blue/Grey Threats Independent ATD	EW	A-2		1	1
G927	Pneumatic Systems Independent ATD	P/CP	A-3	1		1
G927	Pneumatic Systems Independent ATD	P	B		1	
G927	Independent Nuclear or Conventional Mission	EW	A-4			1
G928	Independent Nuclear or Conventional Mission	EW	A-1			1
G929	NTD Mission *	N	SA			2
G929	Independent Nuclear or Conventional Mission	EW	A-2			1
G930	AGM-142 Simulator	RN	Q		1	1
G938	Independent ATD (Individual or unit choice)	P/CP/RN/N	AR		AR	AR
G938	Independent ATD (Individual or unit choice)	EW	A			3
G97X	CWD Integrated WST Conventional Mission	All	A			1
G99X	Independent Conventional ATD (Additional training)	All	AR			AR

NOTE: * Credit may be logged without an instructor of like specialty present.

FPFIS SUPP 1

DEPARTMENT OF THE AIR FORCE
Headquarters Air Combat Command
Langley Air Force Base, Virginia 23665-2788

ACC REGULATION 55-2

1 June 1992

Operations

LIFE SUPPORT PROGRAM

This regulation establishes objectives, responsibilities, training requirements, and life support equipment configurations and maintenance requirements. It applies to all ACC aircrews and personnel when flying in aircraft assigned or attached to organizations of this command. This regulation applies to all ACC-gained Air National Guard (ANG) units when published in the National Guard Regulation (Air Force) (NGR (AF)) 0-2. In addition, this regulation applies to all ACC-gained United States Air Force Reserve (USAFR) units. Supplements to this regulation must be approved in accordance with paragraph 1-8.

The use of a name of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

This publication is affected by the Privacy Act of 1974. AF Form 623, On-The-Job Training Record, contains a Privacy Act Statement on the form. The authority for maintenance of the system is 10 U.S.C. 8013, Secretary of the Air Force; powers and duties; delegation by. The information to be collected and maintained is covered by Privacy Act System No. F035 AF MPO, Unit Assigned Personnel Information.

Supersedes TACR 55-6, 28 February 1990; and SACR 55-51, 21 June 1991.
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OPR: DOSL (SMSgt Bush)
Approved by: Brig Gen Michael C. Short
Editor: Marty Muir
Distribution: F; X: HQ USAF/XOOW...1

over wing/group allocations and will manage them accordingly. Wing initiated substitutions will be accomplished by local CBPOs up to 30 days prior to class start date. If slots are not required, contact HQ ACC/DOSTL for redistribution 30 days prior to class start date. USAFR units will route cancellation requests through HQ AFRES/DOTS.

d. To obtain slots for course S-V8G-A, Aircrew Life Support Officer Course; or C3AZR12250-001, Aircrew Life Support Supervisor Course; forward the name, rank, SSAN, and organization of personnel requiring training to HQ ACC/DOSTL. HQ ACC will confirm selectees not later than 60 days prior to class start date. USAFR/ANG will request slots IAW USAFR/ANG procedures.

e. Student aircrew members should not begin Basic Fighter Training (BFT) or Initial Qualification Training (IQT) until formal combat survival and water survival training requirements are accomplished as outlined in AFR 50-5 and AFR 50-3.

(f) Initial life support training will be conducted prior to the first flight to familiarize aircrew members with equipment requirements and local rescue procedures. A local area lesson should be developed to include all aspects of survival and rescue within the local area. The minimum training requirements are included at attachment 14.

g. Combat Survival Training (CST). CST should be designed to allow aircrew members the opportunity to demonstrate their ability to operate and use assigned life support equipment under field conditions. The training should be accomplished in a logical sequence, stressing hands-on use of equipment, survival, and rescue principles. Reference attachment 15 for the minimum training requirements. Aircrew members will demonstrate their ability to perform the following tasks:

(1) Survival principles and techniques for personal protection, preventing and treating injuries and illnesses, and combating psychological problems.

(2) Evasion principles and techniques on use of combat survival equipment; movement in enemy territory; effective use of camouflage, concealment and cover; noise and light discipline; and evasion living.

(3) Recovery principles and techniques on signaling and communicating procedures, recovery site selection, pickup devices, and authentication.

h. Egress/Hanging Harness.

(1) Egress and hanging harness training should be conducted concurrently when practical. Situational awareness (dive angles, sink rate, cockpit stresses) training will be accomplished during egress/ejection training.

(2) Aircrew members arriving PCS or visiting aircrews, such as IG team members, are not required to accomplish egress and hanging harness training if source documentation of the aircrew's currency can be obtained (i.e. AFORMS) and aircrews are current in the assigned aircraft); however, training on unique local equipment and survival/rescue requirements will be accomplished.

i. Continuation Training Frequencies:

(1) Egress/hanging harness:

(a) Ejection seat/module equipped aircraft training requirements:

1. MR/MQ/MS aircrews: 180 days.

2. Student aircrews (Fighter Training Unit (FTU), BFT, IQT): 60 days. Unit commanders may waive this requirement up to 90 days based on the recommendation of the unit LSO for those students who demonstrate proficiency in UE aircraft.

(3) Flight Surgeons: every 60 days. Unit commanders may waive this requirement up to 180 days on the recommendation of the unit life support officer for those flight surgeons who demonstrate proficiency in the UE aircraft. Flight surgeons flying in other than normally assigned weapon systems will receive this training prior to flight (not to exceed 72 hours).

4. Passengers: prior to each flight not to exceed 72 hours.

5. Other aircrew: Passenger requirements apply for those aircrew members not otherwise assigned; however, unit commanders may waive this requirement up to 180 days based on proficiency and the recommendation of unit LSOs.

6. Aircrew members previously mission ready/qualified in a given ejection seat/module equipped aircraft, who are currently in transition to a different model of the aircraft or undergoing upgrade training in the same type of aircraft, may receive egress/ejection training every 180 days if the escape systems and procedures are the same in both aircraft models.

(b) Non-ejection seat/non-module equipped aircraft training requirements. Egress training for aircrew members of non-ejection seat/non-module aircraft will be accomplished using the aircraft and aircraft diagram as training aids.

1. Student aircrew members: emergency egress training will be conducted every 180 days.

2. Mission ready, qualification, support, or flight surgeons: emergency egress drill annually. Flight Examiners (FE) and Instructor Pilots (IP) may certify training.

(2) Life support equipment training, Local/Deployed Area Survival and CST: annually (for USAFR—as specified by AFR 55-27, AFRES Sup 1).

(3) Water survival refresher training: annually (biennially for F-111 and non-ejection seat aircraft). The training frequency for water survival may be extended to 14 months to allow units to schedule training during the warmer months of the year. USAFR units will conduct water survival training as specified by AFR 55-27, AFRES Sup 1.

(a) When possible, open water should be used in lieu of swimming pools. Ensure all safety precautions are considered when preparing training exercises.

(b) F-111 and RC-135 aircrew members will don the CWU-16/P (quick-donning anti-exposure flying coveralls) and life preservers in the egress trainer. This training is a one-time requirement and will be documented as outlined in paragraph 3-6.

(c) Aircrew members arriving at a new station who require annual water survival refresher training after that installation has completed training for the year are not considered delinquent until the next annual training period; however, individuals will be scheduled to attend an academic session at the earliest possible time.

(4) Aircrew Chemical Defense Training Program:

(a) Equipment Familiarization Training. Initial equipment familiarization training must be accomplished prior to first flight in the Aircrew Chemical Defense Equipment (ACDE) Annual recertification will be conducted in conjunction with any scheduled chemical defense training exercise.

(b) Egress/Hanging Harness Training is accomplished annually while wearing the aircrew chemical defense ensemble.

(c) Water Survival Training:

1. Initial certification will be conducted for aircrew members of ejection seat aircraft prior to first overwater flight. Aircrews of non-ejection seat aircraft are not required to accomplish ACDE water survival training prior to the first overwater flight. USAFR units will follow guidance in AFR 55-27, AFRES Sup 1.

2. Annually conduct drag portion of training while wearing the aircrew hood, helmet, mask, gloves, and filter pack with element removed. The faceplate of the mask will be removed for safety (N/A for F-111 and other non-parachute carrying aircraft).

3. If all aspects of annual water survival training were conducted during initial ACDE certification, then credit for the annual requirement may be documented.

4. HQ AFRES will determine frequency of water survival wet drill training.

j. Individuals requiring training are not considered delinquent until the first day of the month following the month training was due. If an aircrew member is delinquent in egress/ejection, hanging harness/personnel lowering devices (PLD) training, or water survival refresher training, the training must be accomplished prior to the next flight. If an aircrew member is TDY, training will be accomplished upon return to home station.

3–4. Combined Training. Training sessions may be combined to satisfy all requirements (i.e. life support equipment training may be conducted during water survival and combat survival sessions) as long as all objectives are fully accomplished.

3–5. Passenger Training.

a. Passengers (those individuals either non-rated or rated and not currently qualified in the aircraft) in ejection seat/module equipped aircraft will receive egress/ejection seat training from a qualified life support officer. Procedures will be demonstrated using hanging harness trainer and egress procedures trainer, if available. EXCEPTION: For deployed units, if the unit LSO is not available, only experienced aircrew members (preferably IPs) may give passenger orientation egress training provided they are trained and certified IAW paragraph

and MIL-series goggles as specified in applicable aircraft training manuals.

6–7. Uploading and Equipping Alert Aircraft.

(a) Rations and water are placed aboard alert aircraft as a source of subsistence for aircrews during Emergency War Order (EWO) commitments. Responsibility for aircraft installed subsistence rations and water is a shared responsibility among wing services, life support and the wing war readiness review board IAW AFR 400-24, HHQ directives and unit memorandum of understanding (MOU).

(b) In addition to alert commitments, life support also may be tasked to load rations, water, and flashblindness devices to support generated force sortie aircraft during EWO operations and when required by specific OpOrds. Due to the sensitivity to temperature fluctuations and associated workload, uploading these items will be simulated for all exercises; however, units will demonstrate this capability during all major IG inspections. Units should establish procedures to upload and download the items and ensure availability of an aircraft storage location.

6–8. Equipment Issue, Control and Accountability for KC-10 and -135 Aircraft. Life support officers, superintendents, and supervisors must ensure equipment accountability is maintained per AFR 67-23 and be familiar with the applicable Table of Allowances (TA). To enhance mission effectiveness and reduce excessive handling and damage, LSE will be prepositioned on aircraft to the maximum extent possible.

a. Life support specialists are the only individuals authorized to remove or install aircraft-installed LSE. Life support will develop procedures to coordinate flight line taskings with Flying Squadron Maintenance (FSM) scheduling. This coordination is required to ensure life support taskings are included in the weekly and monthly maintenance plans and programmed generations. Life support specialists will use the Core Automated Maintenance System (CAMS) to document completion of related flight line task.

b. All aircraft prepositioned LSE will be annotated on the AFTO Form 46, Prepositioned Life Support Equipment. LSFM must ensure all applicable entries are accurately reflected and that the unit of assignment and telephone number are entered in the remarks section of the form. The AFTO Form 46 will be prepared in duplicate. The original copy of the form is maintained in the life support facility for record purposes and the duplicate copy remains with the aircraft in the AFTO Form 781F aircraft forms binder or attached to the life support (LS) storage container.

c. Life support specialists will complete the form and sign the issuing agency block of the AFTO Form 46. Prior to each takeoff, aircraft commander's designated representative will ensure that all prepositioned LSE is properly inventoried, that equipment is serviceable, and will sign and date the certification block of the AFTO Form 46. For alert aircraft, equipment inventories and certification of the AFTO Form 46 will be annotated at the time of crew changeover. All unserviceable or missing equipment will be replaced. NOTE: Crew members will perform preflight of parachutes as required by AFR 60-16 and applicable aircraft Dash-1-series flight manuals.

d. When new or returning aircraft arrives on the base with installed survival kits and personal parachutes, equipment acceptance checks will be performed IAW paragraph 5-5b of this regulation.

e. Following the final mission of the day or upon return to home station, TDY commitments, etc., life support personnel will perform a mission termination inventory (MTI) of each aircraft for equipment accountability and serviceability. In the event equipment discrepancies are discovered, proper corrective actions must be taken prior to the next flight. If LSE is suspected of misuse or abuse, or if shortages exist, the life support officer or LSFM will notify the applicable squadron commander to take necessary corrective actions. Life support supervision will maintain copies of MTIs, by aircraft tail number, for at least 90 days (N/A for ANG and USAFR).

f. When aircraft deploy in excess of 29 days, prepare the AFTO Form 46 in triplicate. The original copy of the form is retained by the owning life support section. The second copy is placed with the aircraft AFTO Form 781 forms binder or attached to the LSE storage container. The third copy will be placed in an envelope and will accompany the aircraft forms delivered to or picked up by life support at the TDY location.

g. If unique circumstances arise that require the removal of LSE from an aircraft at en route

TECHNICAL MANUAL

OPERATION AND MAINTENANCE INSTRUCTIONS WITH ILLUSTRATED PARTS BREAKDOWN

HGU-55/P FLYER'S HELMET

MEDIUM-81D5330-4
LARGE-81D5330-5
EXTRA-LARGE-81D5330-6
with
NEUTRAL GRAY LIGHTWEIGHT VISOR ASSEMBLY-81D5189-4
and
BAYONET RECEIVER KIT-82A5614-10
and
LASER EYE PROTECTIVE VISORS P/N 283101-1001-6

GENTEX CORPORATION

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cord into loop end and pull free ends of cord tight, forming a half-hitch knot. Tack half-hitch knot using one-turn single strand waxed 8/4 cotton cord and sear ends of five inch nylon pull tab. Do not tie the pigtails together under any circumstances. The leather pull tab will be stitched down the center using Type I, Size E, Specification V-T-295 nylon thread to close loop.

NOTE

Utilization of the leather chin strap pull tab and/or replacement nylon cord is a major command option.

5-26. PREFLIGHT INSPECTION. Prior to each flight, the user shall inspect the helmet to determine that it is in serviceable condition. This inspection shall assure that:

a. The helmet, earcups and oxygen mask are properly fitted.

b. Chin and nape straps are properly adjusted and screws are securely attached to the helmet shell.

c. Prior to installing new chin or nape strap, inspect strap per Paragraph 5-28e, f, and g.

d. Visor lens is free from cracks, scratches, dust and smears.

e. All communications components are securely attached and the headset and microphones operate properly. Checkout may be performed by plugging the microphone cable and plug assembly into the MQ-1/MQ-1A tester. Speak into the microphone. The microphone and earphones are operating properly when the voice is transmitted from the microphone through the amplifier and heard in the headset.

5-27. POSTFLIGHT INSPECTION. (Determination as to who will perform this inspection is a majcom option) Following last flight of the day helmets will be stored in a command designated area, normally the life support shop. Postflight inspection will be performed as follows:

a. Helmet Shell.

(1) Check the shell for evidence of damage such as cracks, warping, or chipped paint.

(2) Inspect the edge roll for unbonded edge or damage such as cuts, tears, or holes.

(3) Check for loose screws.

b. Inspect chin and nape straps in accordance with paragraph 5-28e, f, and g.

c. Inspect visor assembly in accordance with paragraph 5-28k.

d. Inspect communication components in accordance with paragraphs 5-28i and j.

e. Inspect custom fit liner in accordance with paragraph 5-28d.

BY ORDER OF THE COMMANDER
AIR COMBAT COMMAND

ACC REGULATION 55-152
11 MARCH 1994

Operations

B-52 AIRCREW OPERATIONAL PROCEDURES

This regulation prescribes standard operational and weapons employment procedures for use by all ACC aircrews who operate USAF B-52 aircraft. Forward draft Chapter 8 for coordination through channels to HQ ACC/DOTV, 205 Dodd Blvd., Suite 101, Langley AFB VA 23665-2789. Also forward a copy of the published Chapter 8. HQ ACC/DOTV must approve all other supplements. This publication does not apply to Air National Guard (ANG) and United States Air Force Reserve (USAFR) members or units. Each B-52 aircrew member is authorized a copy of this regulation.

SUMMARY OF CHANGES

This revision aligns B-52 operational procedures into a single-source regulation.

Supersedes portions of ACCR 50-12, 1 Jun 93; portions of ACCR 55-11, 3 May 93; & Attachment 5 to ACCR 51-50, Volume 22, 1 January 1993.
OPR: DOTV (Maj Samuel R. Hicks)

Approved by: Col Ronald N. Braunhardt
Pages: 38/Distribution: F; X:
HQ USAF/XOOT . . . 2

points, communications plan, EMCON, etc.) pertaining to the formation portion of the mission.

2.5.2.3. The aircrew commander is ultimately responsible for the accuracy and completeness of all mission data. The aircrew commander must ensure crew substitutions are made in sufficient time for the substitute crew member(s) to be thoroughly briefed and be familiar with the applicable mission data. The aircrew commander must ensure all possible action is taken to enable the staff and/or a qualified crew member to check the accuracy of the applicable mission data before takeoff.

2.5.2.4. If using unit prepared mission packages, the preparing staff agency must provide complete and accurate data. Annotate these packages to indicate preparing individual(s). Brief aircrews on these packages and accomplish staff supervised study and mission planning. Accomplish all requirements of 2.5.2.1. above.

2.5.3. **Aircrew Mission Briefing.** The aircraft commander will conduct a formal aircrew mission briefing for all missions. A crew member excused from the briefing, or substituted following the briefing, must receive a detailed briefing by the aircrew commander covering all requirements of para 2.5.3.1. below. If, due to mission requirements or as a result of being excused or substituted, the aircrew mission briefing must be accomplished or reaccomplished on the day of the flight, provide adequate time for this briefing before the pretakeoff meeting.

2.5.3.1. The briefing includes all scheduled activities and required items in attachment 1 in order of accomplishment from takeoff through mission termination. Review the pilot's and navigators' low altitude charts for compatibility and accuracy if not previously accomplished in target study. The aircraft commander must brief recovery base and planned alternate location, radio aids, approach lighting, runway markings and lights. Review procedures and crew coordination required to identify runway environment and transition from instrument to visual landing cues. Brief the descent, approach, and landing phase in sufficient detail that only a short review is required in-flight during the pre-descent phase. The aircraft commander will review applicable radio navigation aids, Terminal Instrument Approach Procedures Charts (high and low altitude), approach lighting, and aerodrome remarks for planned landing and probable alternate bases. Brief alternate mission activity.

2.5.3.2. Aircraft commanders designated in writing by the squadron commander may certify their own aircrew briefing.

2.5.3.3. All crew members in the formation require a formation briefing. Mission briefing guides are in attachment 1. Units may augment these guides as necessary. Pending development by higher headquarters, units flying missions not covered by this regulation or its supplements (for example, OT&E weapons delivery profiles) will develop and maintain briefing guides for those missions, and submit to ACC/DO for review.

2.5.4. **Staff Review.** A squadron-designated representative must review the mission forms for accuracy and completeness.

2.5.5. **Pretakeoff Meeting.** The aircraft commander will conduct a pretakeoff meeting in accordance with the procedures defined in the local Chapter 8 to this regulation. All crew members must attend weather briefings conducted by base weather station personnel. The aircrew commander will review with the crew any changes to the mission to ensure complete knowledge of all scheduled activity including changes to the arrival and approach procedures for the first destination.

2.5.5.1. If the interval from initial aircrew briefing to mission takeoff exceeds 72 hours, the aircrew commander must personally review/re-brief the entire flight mission again with the aircrew. This does not apply to off duty station training missions where the crew has planned and briefed to fly several missions in a 3-4 day period. For missions of this type, the crew will review the planned route to be flown during the pretakeoff meeting prior to each individual mission.

2.5.5.2. The aircraft commander's signature on the DD Form 175 indicates all the items in the briefing guide were briefed/accomplished.

2.5.6. **Chart/map preparation:**

2.5.6.1. Local Area Charts. A local area chart is not required if aircrew aids include jettison areas and divert information, and provide sufficient detail of the local area to remain in local MOAs or other assigned areas.

2.5.6.2. Low Altitude Charts. Prepare charts for low level navigation IAW ACCR 55-7, Volume 2; ACCR 51-18; this regulation; and as directed locally. Update charts from the chart update manual (CHUM), and highlight all man-made obstacles at or above the planned flight altitude. Additionally, annotate all noise sensitive areas along the route of flight. OSTW will provide the EWs a low altitude chart with expected threats, terrain features, and turn points.

7.4.2. As a general rule, normal peacetime performance criteria and the provisions of para 7.4.1 apply to conventional operations and must be observed in the interest of safety and economy.

7.5. Steep Turns. Limit the maximum target bank angle to 45 degrees (not to exceed 50 degrees). The aircraft must remain clear of clouds throughout the maneuver. This does not restrict combat breakaway maneuvers defined in the flight manual. For steep turns at or below 5,000 feet AGL/ASL, the following restrictions apply:

7.5.1. Weather must be day VFR.

7.5.2. Maneuver must be accomplished at or above 1,000 feet AGL/ASL.

7.5.3. ACCR 51-18 restrictions apply when on IR routes.

7.6. Unusual Attitudes and Stalls. Prohibited.

7.7. Initial Buffet:

7.7.1. Perform all in-flight initial buffet practice as prescribed in the flight manual and under instructor pilot supervision.

7.7.2. All pilots must review and discuss the correct recovery procedures and limitations for accomplishing initial buffet during mission planning.

7.7.3. Practice recovery from initial buffet at a minimum altitude of 20,000 feet above the terrain. If clouds exist between the aircraft and the terrain, the aircraft must be at least 10,000 feet above the tops of the clouds. Do not practice recovery from initial buffet above FL 300 or at gross weights above 300,000 pounds.

7.7.4. Perform the entire initial buffet maneuver with wings level.

7.7.5. Do not practice initial buffet with weapons or missiles loaded.

7.8. Chase Operations. When B52 pilots participate in chase operations the following restrictions apply:

7.8.1. Prior to each chase sortie, supervisory personnel will ensure the lead and chase pilots are briefed on the mission content, restrictions, and responsibilities.

7.8.2. The lead and chase aircraft must maintain radio contact throughout the chase operation.

7.8.3. It is unsafe to fly in close vertical proximity to another aircraft due to the interrelated aerodynamic effects. Never fly directly over or under another aircraft. The chase position will maintain the following minimum safe operating distance while in formation.

7.8.3.1. Wings level position at least 150 feet between wing tips.

7.8.3.2. Stern position approximately 1/4 mile behind and 100 feet below lead.

7.8.4. The normal chase position will be on the right wing of lead.

7.8.5. The lead aircraft must inform the chase aircraft and receive acknowledgment prior to initiating any of the following:

7.8.5.1. Turns.

7.8.5.2. Climbs and descents.

7.8.5.3. Airspeed change.

7.8.5.4. Configuration change (e.g. flaps, gear, airbrakes, etc.)

7.9. Fuel Minimums:

7.9.1. The fuel reserve requirements of AFR 60-16 (AFI 11-206) apply except as outlined below.

7.9.1.1. Plan missions to accomplish final landing with a minimum of 20,000 pounds.

7.9.1.2. Plan the mission so the usable fuel over the alternate, if required, is a minimum of 24,000 pounds.

7.9.1.3. Fuel reserves for conventional operations will be as designated in the operations order.

7.9.1.4. The minimum fuel reserve for remote or island destination is 34,000 pounds. If weather conditions are such that an alternate airfield is required in accordance with AFR 60-16 (AFI 11-206), then minimum fuel reserve is 54,000 pounds. The definition of a remote or island airfield is contained in ACC Supplement 1 to AFR 60-16 (AFI 11-206).

7.9.2. Certain safety of flight conditions such as emergencies, go-arounds, etc., may occasionally necessitate final landing with less fuel than specified above.

7.10. Air Refueling Limitations and Restrictions:

7.10.1. Instruction in air refueling procedures, excluding rendezvous, is prohibited when the receiver aircraft is loaded externally or internally with nuclear weapons.

7.10.2. Do not attempt emission option rendezvous or refueling training unless at least 1,000 feet vertical separation is assured between tanker and receiver. Except for actual nuclear operations, critical fuel shortage, as directed in governing operations orders, or during Emission Option 2, 3, or 4 training, participating tanker and receiver aircraft will not close to less than 1,000 feet vertical separation unless reliable radio communications are established. Brief Emission Option 2, 3, or 4 procedures before flight.

7.10.3. Do not accomplish air refueling during training missions when any of the following conditions exist:

7.10.3.1. When encountering turbulence which, in the opinion of the pilot or boom operator, denies a safe margin of control of either aircraft or boom.

SACR 55-12
VOLUME I

STRATEGIC AIR COMMAND REGULATION

OPERATIONS

AIR OPERATIONS

OPR: HQ SAC/DONO

20 NOVEMBER 1989

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS STRATEGIC AIR COMMAND

AA-9.1

CHAPTER 6

SAC PARTICIPATION IN STATIC DISPLAYS AND AERIAL EVENTS (DON/PAC)

SECTION A—GENERAL

6-1. USAF POLICY. Headquarters USAF considers participation in public events an effective method of demonstrating Air Force weapons systems and capabilities, promoting community and international relations, and enhancing recruiting and retention efforts. Static displays are the primary means of display in these events; flyovers may be authorized when operational considerations make static display impractical or impossible.

6-2. SAC POLICY. SAC supports HQ USAF policy, by displaying aircraft, equipment, and personnel before the public. Participation of public events will be authorized on a selective basis in view of limited airframe/flying hour availability, operational/training commitments, and cost considerations. SAC considers static display the primary method of participation. Flyovers may be authorized when operational restrictions or other limitations preclude static display. Under no circumstances will SAC aircraft be committed to participate in any event without prior approval by HQ SAC/DON. (See paragraphs 6-6k and 6-7 for exceptions.)

6-3. GOVERNING DIRECTIVES. The provisions of this chapter and the requirements cited in AFR 190-1 and SAC Sup 1 thereto, and AFR 60-18 govern SAC participation in aerial events.

SECTION B—OPERATIONAL POLICIES AND PLANNING CONSIDERATIONS

6-4. FLYING SAFETY. SAC flying safety policies and procedures will be maintained in planning, executing and controlling the public event/open house flight activity.

6-5. SUPERVISION. SAC participation in aerial events will require on-scene ground supervision. This may be provided by a SAC supervisor or designated flyby coordinator. The following definitions apply:

a. SAC supervision—SAC rated officer certified qualified by unit DO.

b. Flyby coordinator—Individual with rated military service and sufficient experience to insure safe operations. In all cases, the SAC unit parent NAF supporting the event is responsible for insuring proper supervision and radio communication. For overseas events, the 3AD or 7AD will coordinate with appropriate NAF to insure proper supervision and ground-air radio communications. When participating in an approved event, the flyover mission must be briefed to, and approved by, the unit commander.

NOTE 1: Straight and level, single ship, flyover requests at locations that cause significant difficulty in providing a USAF ground supervisor must be evaluated on a case-by-case basis by the NAF/DO.

NOTE 2: Flyby of USAF Academy will be performed in accordance with USAFA guidance and/or DOD FLIP AP/1. A USAFA supervisor may substitute for a SAC supervisor during USAFA flyovers.

NOTE 3: Commanders are encouraged to video tape air show activity. However, this activity must not interfere with the primary duties of the supervisory individual.

6-6. AIRCRAFT FLYOVERS:

a. SAC flyover profiles will normally be straight and level single ship passes conducted as follows:

(1) Three passes maximum.

(2) Within flight manual procedures and limitations.

(3) According to published traffic pattern procedures.

(4) Within published operational plans, FAA, military, and airfield regulations.

(5) Approved by NAF/DO.

b. Low Altitude Air Refueling Formations, multiple aircraft formations, or any flyovers other than straight and level must be approved by the SAC/DO after unit commander and parent NAF/DO approval.

c. The minimum altitude above the highest terrain for flyovers must be:

(1) Single aircraft—500 feet.

(2) Multiple aircraft—1000 feet.

(3) Single aircraft under 100,000 lb. weight class—250 feet.

d. The axis of aircraft approach and departure must be along a designated show line at least 1500 feet from the nearest spectator area. Flyovers will normally be planned over the active runway if available. Any deviation must be approved by NAF/DO.

e. For multiple aircraft flyovers, aircraft must:

(1) Not be closer than 2 NM in trail of other flyover aircraft.

(2) Be under radar control/monitor.

f. FB-111s and SAC T-38s may perform formation flybys IAW SACR 55-11 and SACR 51-38, respectively.

g. Aircraft may perform maximum climb departures when accomplished within flight manual procedures, FAA rules, and authorized by NAF/DO.

h. All units will confirm with airshow points of contact that applicable federal aviation regulation waivers (speed and altitude) have been obtained from the local Flight Standards District Office (FSDO) before accomplishing any flybys at less than 1,000 ft. above the highest obstacle (IAW AFR 60-16) and at airspeeds greater than traffic pattern/arrival/departure airspeeds.

i. Practice flights of approved profiles may be conducted with NAF/DO approval.

j. Weather Minimums: IAW AFR 60-18, at least 2,500 foot ceiling and a 5-mile visibility are required for flyovers.

k. Wing commanders may authorize flyovers of their unit assigned aircraft for their annual base open house and base retreat ceremonies. Profiles and supervision must be IAW NAF guidance. Retirement/Change-of-Command flyovers are not authorized without HQ USAF approval.

6-7. STATIC DISPLAYS:

a. Unit commanders may authorize the static display of unit assigned aircraft (except for retirement/change-of-command ceremonies) when no flight is required to position the aircraft for static display.

UNCLASSIFIED

01 02 281152Z FEB 94 RR RR UUUU DOTV 7713

NO

HQ ACC LANGLEY AFB VA//DOT//

7 OG DYESS AFB TX//CC/OGV//

8 AF BARKSDALE AFB LA//DO/DOV//

10 TS TINKER AFB OK//CC//

28 OG ELLSWORTH AFB SD//CC/OGV//

99 OG ELLSWORTH AFB SD//CC/OGV//

319 OG GRAND FORKS AFB ND//CC/OGV//

384 OG MCCONNELL AFB KS//CC/OGV//

6510 TW EDWARDS AFB CA//DO//

USAFWS DET 1 ELLSWORTH AFB SD//CC/OG//

DCMDW ROSKWELL PALMDALE CA//GVDF//

AIG 7397

INFO HQ ACC LANGLEY AFB VA//DOEA/DOT/DOTV/DOTO-B/SEF//

UNCLAS

SUBJ: FCIF ITEM: BOMBER VISUAL FORMATION

REF: HQ SAC/DO 052015Z MAY 92(NOTAL)

1. EFFECTIVE UPON RECEIPT, B-1B UNITS ARE PERMITTED TO CONDUCT VISUAL FORMATION IN ACCORDANCE WITH THE ACC APPROVED VISUAL FORMATION TRAINING PROGRAM.

2. B-52 UNITS ARE RESTRICTED FROM CONDUCTING VISUAL FORMATION

AIG 7397-

LT COL CURTIS
DOTV 47713

CRC: 24588

Quincy L. Berry

UNCLASSIFIED FEB94

02 02 FEB 94 RR RR UUUU DOTV 7713

NO

PENDING DEVELOPMENT OF A FORMAL TRAINING PROGRAM.

3. THIS MESSAGE REPLACES REFERENCE MESSAGE.

4. THIS MESSAGE WILL BE BROUGHT TO THE ATTENTION OF ALL AIRCREWS AND WILL BE PLACED IN VOLUME 1, PART B, OF THE FCIF. THIS FCIF WILL REMAIN IN EFFECT UNTIL RESCINDED BY HQ ACC/DO.

5. ACC UNIT OGV'S WILL ACKNOWLEDGE RECEIPT OF THIS FCIF BY MESSAGE OR TELECON TO POINT OF CONTACT AND ENSURE IT IS POSTED WITHIN TWO WORKING DAYS OF RECEIPT.

6. HQ ACC/DO POINTS OF CONTACT ARE LT COL RAY ORTIZ AND LT COL PAUL CURTIS, DOTV, DSN 574-7713/7714.

LT COL CURTIS
DOTV 47713

CRC: 24588

United States Air Force

92nd Air Refueling Wing (AMC)
Public Affairs Division

Fairchild AFB, WA 99011-9588
(509) 247-5704 FAX: (509) 247-2000

NEWS RELEASE

94-06-12

24 June 94

FAIRCHILD AIR FORCE BASE, Wash., -- An Air Force B-52H Bomber crashed about 2:16 p.m. today south of the airtraffic control tower on base. The aircraft was on a local transition sortie. The plane was assigned to Fairchild AFB, WA as a B-52 trainer. It carried four people on board. There are no survivors. Names will not be released until next of kin have been notified.

A board of officers will invesitigate the accident.

Additional details will be provided as soon as they become available.

Notice to media: Please assist us in notifying the general public that the Aerospace Day scheduled for Sunday, June 26, has been cancelled at Fairchild Air Force Base.

United States Air Force

92nd Air Refueling Wing (AMC)
Public Affairs Division

Fairchild AFB, WA 99011-9588
(509) 247-5704 FAX: (509) 247-2080

NEWS RELEASE

94-06-12

24 June 94

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A board of officers will invesitigate the accident.

Additional details will be provided as soon as they become available.

United States Air Force

92nd Air Refueling Wing (AMC)
Public Affairs Division

Fairchild AFB, WA 99011-9588
(509) 247-5704 FAX: (509) 247-2000

NEWS RELEASE

94-06-13

25 June 94

FAIRCHILD AIR FORCE BASE, Wash., -- An Air Force B-52H Bomber assigned to the 92nd Bomb Wing here crashed about 2:16 p.m. Friday northeast of the air traffic control tower on base. The B-52H was on a local training mission. The aircraft carried a crew of four, there were no survivors.

Aircrew members killed in the crash were: Col. Robert E. Wolff, Vice Commander, 92nd Bomb Wing, Pilot; Lt. Col. Mark C. McGeehan, Commander, 325th Bomb Squadron, Instructor Pilot; Lt. Col. Kenneth S. Huston, Operations Officer, 325th Bomb Squadron, Instructor Radar Navigator; and Lt. Col. Arthur A. Holland, 92nd Operations Group, Instructor Pilot.

A board of officers has been appointed to investigate the accident.

A crisis hotline is available for counseling at 1-800-725-1406.

Additional details will be provided as they become available.

Notice to media: Please assist us in notifying the general public that the Aerospace Day at Fairchild Air Force Base scheduled for Sunday, June 26, has been cancelled.

-30-

[redacted]

General Michael Loh
Commander, Air Combat Command
Langley AFB, VA 23665-5000

General Loh,

I am writing in regard to the B-52 accident at Fairchild AFB, WA on 24 June 94. The deceased Lt. Col. Mark McGeehan was a close friend and classmate of mine through UPT and initial B-52 CCTS. I knew him as a very level-headed, pragmatic individual, and a very fine officer. When I attended the Memorial Service at Fairchild AFB, his widow disclosed information to me that I believe needs the attention of your staff as well as the Safety Investigation Board at Fairchild AFB.

Since assuming command of the 325th Bomb Squadron on 24 Feb 94, Lt. Col. McGeehan received several complaints from his aircrews alleging pressure from the Chief of Stan/Eval, Lt. Col. Arthur "Bud" Holland, to fly the airplane to limits beyond the scope of training regulations. Lt. Col. McGeehan, after consulting with his Ops Officers, took those complaints to his superior, Col. William Pellerin, Ops Group Commander. McGeehan's request was to remove Lt. Col. Holland from flying orders in advance of the squadron deactivation. When this request was not honored, McGeehan's solution was to fly with Lt. Col. Holland himself, disallowing anyone else in the 325th to do so. I imagine this situation fostered considerable tension between Holland and McGeehan; a situation that begged to be defused by a senior officer.

The maneuver being practiced for the airshow at Fairchild is highly questionable. I understand the intent was to create an image of the B-52 wingspan reaching from "ground to sky." Lt. Col. Holland flew to achieve this image during previous airshows in 1992 and 1993, and was intent on a repeat performance this year. I realize that in his career, "Bud" Holland has distinguished himself as a very excellent bomber pilot. He was the #1 Stan/Eval pilot at K. I. Sawyer AFB when I was arriving on station as a new, inexperienced lieutenant. However, my years as a B-52 pilot tell me that anyone who banks a heavy bomber in the pattern as if it were a fighter, has totally left his judgement on the ground. I'm sure that Lt. Col. McGeehan thought he could exert some control over this situation by being in the airplane. In the end, he could not. I am very concerned that no senior officer on the base was willing or able to look back at Lt. Col. Holland's flying record and insure against any repeat of unsafe, unwarranted flying maneuvers.

Now the most positive effort that can be made is to insure against any recurrence of this type of needless peacetime accident. To that end, I believe Col. Brooks, Wing CC, Col. Pellerin, OG, and Col. Harper, Asst. OG (now on the IG Team at Langely AFB) should be offered the opportunity to explain this continued irresponsible flying activity within the 92nd Bomb Wing.

Sir, I believe this information is best handled within the Air Force. I would prefer not to present it to a Congressman, given the probability of negative publicity for the Air Force and possibly the widows of the four deceased airmen. Please reply within 7 days.

Sincerely yours,

Kenneth C. Pearce

Kenneth C. Pearce

cc: Maj. General Running, USAF/SE
Colonel Cristol, ACC/SE
Safety Investigation Board President,
Fairchild AFB, WA

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA

18 July 1994

MEMORANDUM FOR Colonel Michael G. McConnell
President, Accident Investigation Board
c/o 92 ARW/JA
1 East Bong Street, Suite 235
Fairchild AFB WA 99011-8517

FROM: HQ ACC/JA
114 Douglas St, Suite 114
Langley AFB VA 23266-2774

SUBJECT: Letter From Mr. Kenneth C. Pearce

At General Loh's specific request, the attached letter from Mr. Kenneth C. Pearce is forwarded to you for your consideration and action in connection with your duties as President of the current AFR 110-14 Accident Investigation into the events surrounding the recent B-52 crash at Fairchild AFB WA. General Loh is most concerned that the allegations and facts raised in this letter be addressed in your investigation.

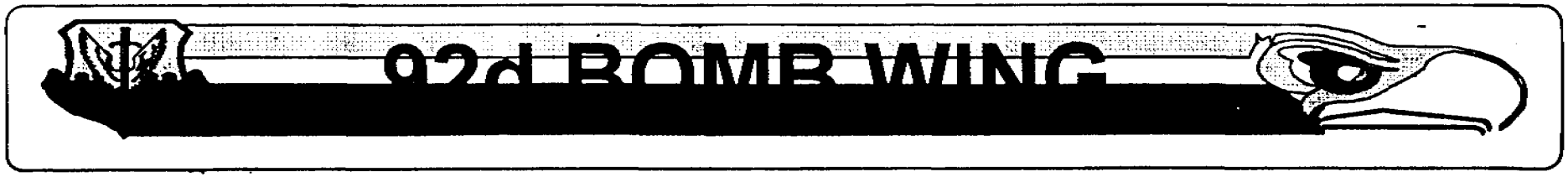
Bryan M. Caldwell

BRYAN M. CALDWELL, Colonel, USAF
Acting Staff Judge Advocate

Attachment:
K. C. Pearce Ltr, 8 July 1994

cc:
12AF/JA w/Atch

Global Power For America



B - 52 FLIGHT PROFILE

- Maximum Performance Takeoff and Climbout to 5000' AGL - (Unstick + 10 Kts)
- Wingover
- High Speed Pass with Climbout to 12000' MSL
- Overhead Pattern (Landing Attitude Demo)

  Approach with Pitchout to Landing

AA-13.1

KC-135 FLIGHT PROFILE

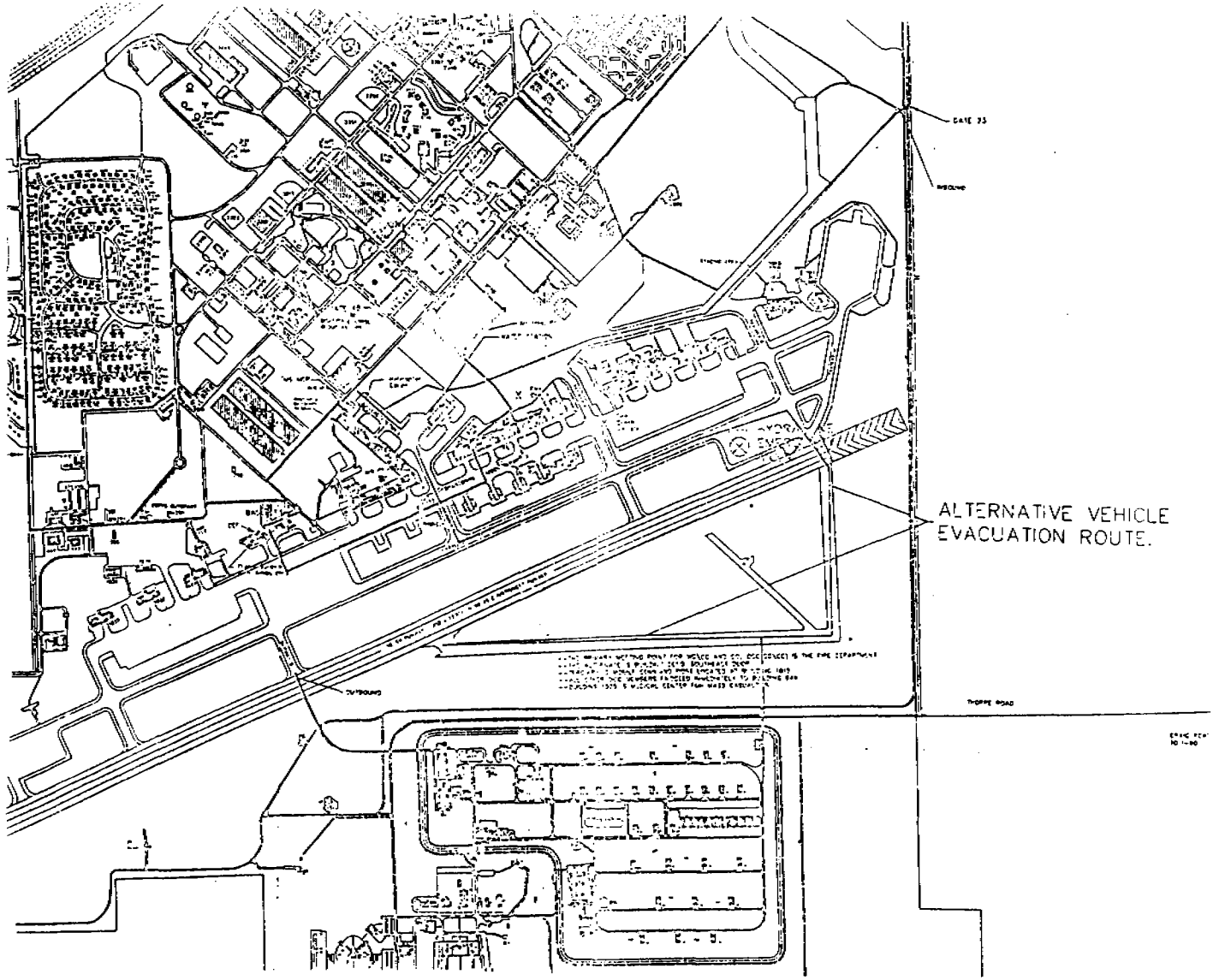
- Maximum Performance T/O and Climbout to 6000' MSL
- Medium Speed Pass with Boom Extended
- High Speed Pass with Climbout to 12000' MSL
- Landing Attitude Demo (Gear and Flaps) Approach with Pitchout for Landing

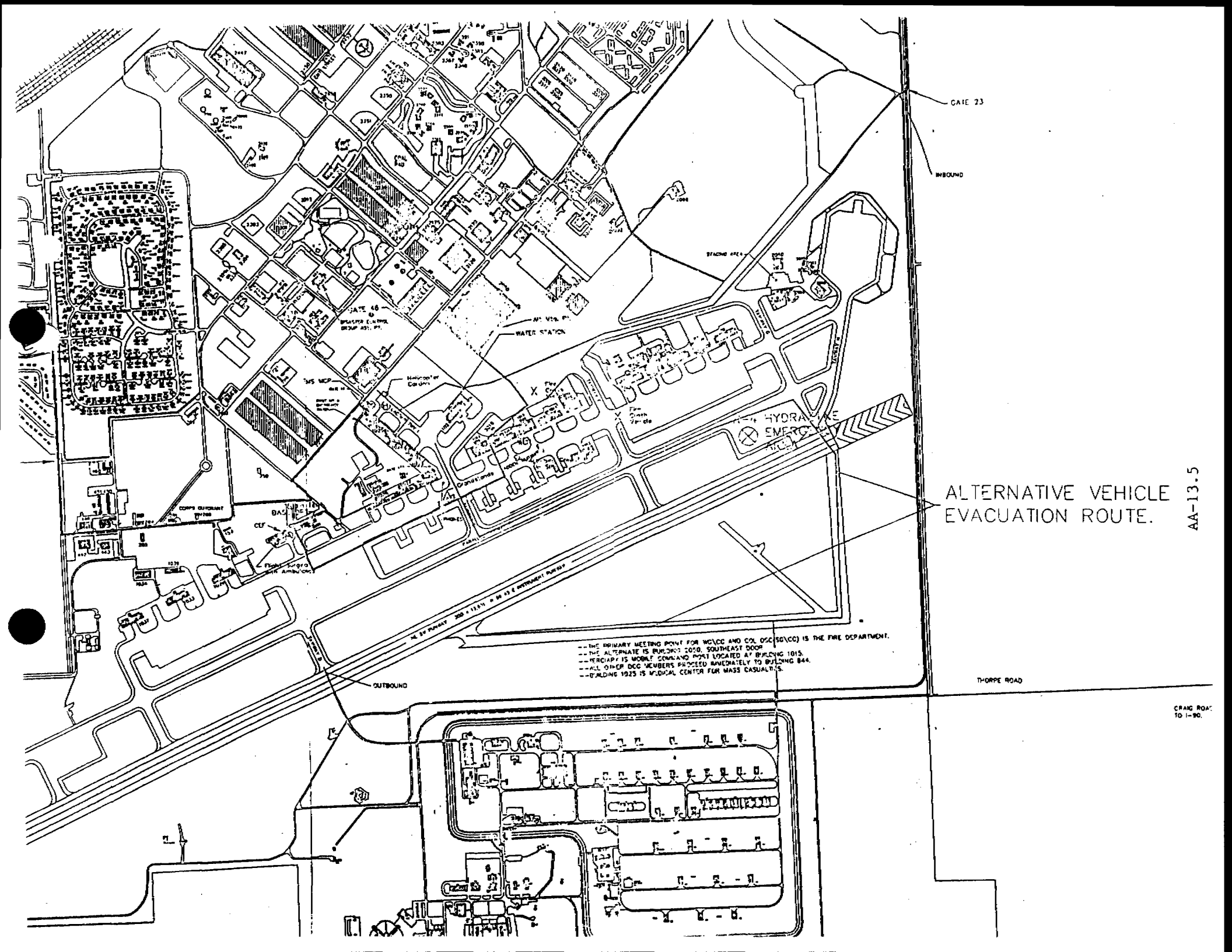
AA-13.2

OVERVIEW

- AIRFIELD
- FLIGHT PROFILES
- STAGING
- ROUTES
- KEY PLAYERS

92d BOMB WING




GATE 23
INBOUND
BEACON AREA
GATE 46
WATER STATION
HYDRANT
EMERGENCY
ALTERNATIVE VEHICLE EVACUATION ROUTE.
AA-13.5
--THE PRIMARY MEETING POINT FOR WG\CC AND COL OSC(SG\CC) IS THE FIRE DEPARTMENT.
--THE ALTERNATE IS BUILDING 2050, SOUTHEAST DOOR.
--TERCIARY IS MOBILE COMMAND POST LOCATED AT BUILDING 1015.
--ALL OTHER DCC MEMBERS PROCEED IMMEDIATELY TO BUILDING 844.
--BUILDING 1025 IS MEDICAL CENTER FOR MASS CASUALTIES.
OUTBOUND
THORPE ROAD
CRAIG ROAD TO I-90.

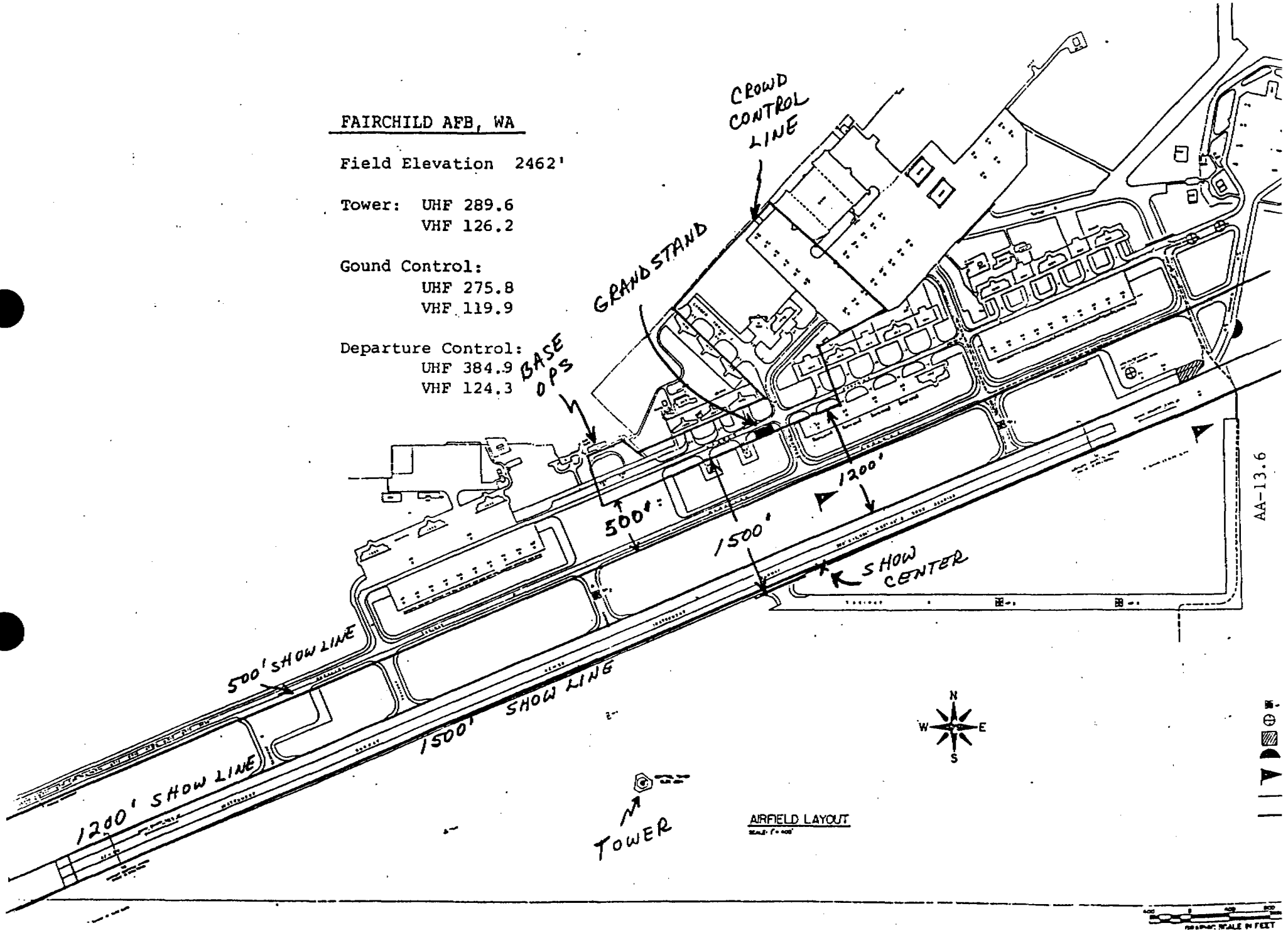
FAIRCHILD AFB, WA

Field Elevation 2462'

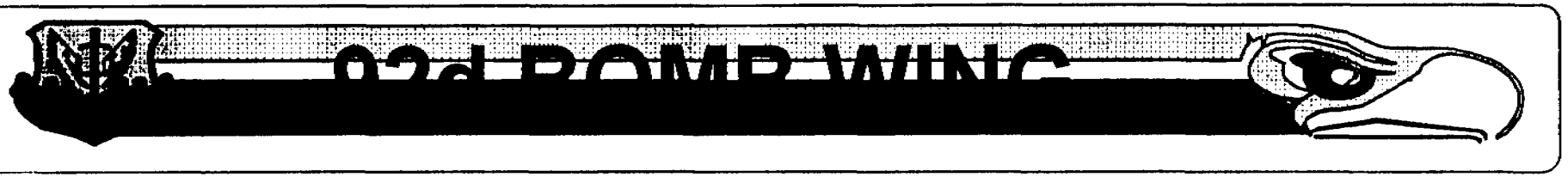
Tower: UHF 289.6
VHF 126.2

Gound Control:
UHF 275.8
VHF 119.9

Departure Control:
UHF 384.9
VHF 124.3



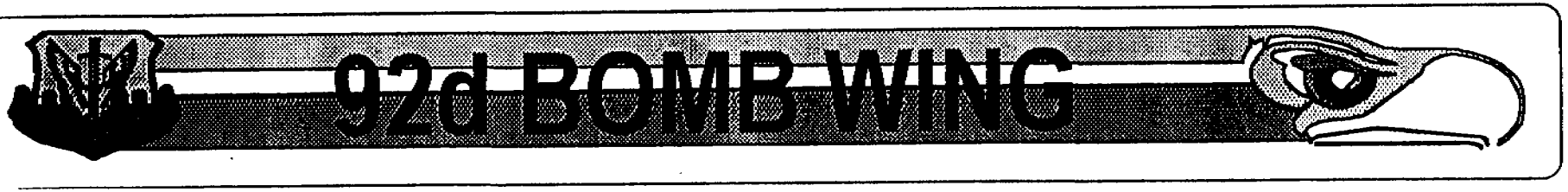
AIRFIELD LAYOUT



AEROSPACE DAY 94

FLIGHT PROFILES

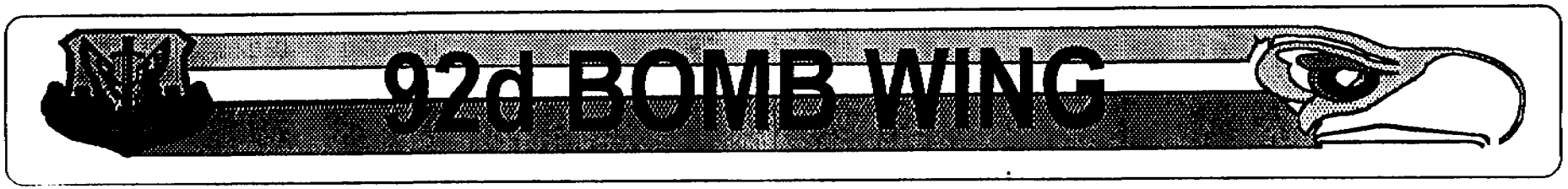
DISASTER PREP



AEROSPACE DAY 94

FLIGHT PROFILES

AA-13.8



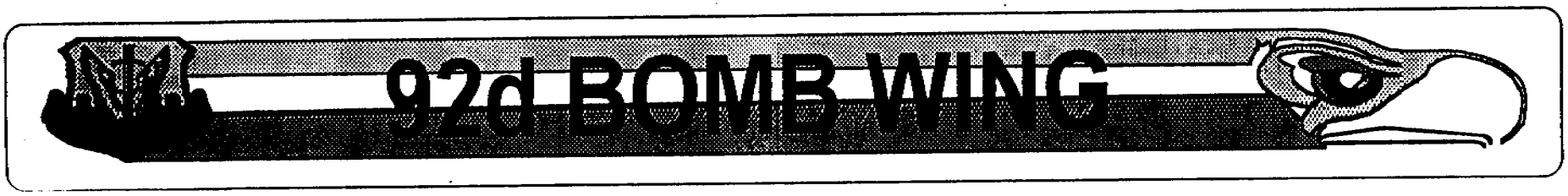
B - 52 FLIGHT PROFILE

- Maximum Performance Takeoff and Climbout to 5000' AGL - (Unstick + 10 Kts)
- Wingover
- High Speed Pass with Climbout to 12000' MSL
- Overhead Pattern (Landing Attitude Demo)
- Formation Approach with Pitchout to Landing

AA-13.9

B - 52 FLIGHT PROFILE

- **Taxi to Parking - Sign Autographs and Take Pictures with Fans**



KC-135 FLIGHT PROFILE

- Maximum Performance T/O and Climbout to 6000' MSL
- Medium Speed Pass with Boom Extended
- High Speed Pass with Climbout to 12000' MSL
- Landing Attitude Demo (Gear, Flaps and Boom)
- Formation Approch with Pitchout for Landing

AA-13.11

TAIL#		SCH T.O.	ACT T.O.	AR AREA	ALT	ON LOAD	TANK UNIT	JUT ENTRY	HI SITE	MISSION CODES	FLYING TIME 1.0
CALL SIGN	B-52H AIRCREW	SCH DUR	ACT DUR	TYPE RZ	ARCT	AREX	TANK TCS	SMA	IPs	PROFILE TYPES	SPARE AIRCRAFT: A & E LOAD:
CREW #		SCH LAND	ACT LAND	FUEL LOAD	A & E					TRANS TIME	SCHEDULER: WARD

OS: ~~PELLERIN~~ GEORGE

MONDAY 20 JUNE: NO FLYING

OS: HOLLAND

TUESDAY 21 JUNE: NO FLYING

OS: GEORGE

WEDNESDAY 22 JUNE: NO FLYING

CHILL 23 FROM MINOT IAF: 1550 LDG: 1730 (L) FUEL LOAD: 140

OS: BARBER

THURSDAY 23 JUNE: NO FLYING

CHILL 19 FROM MINOT IAF: 1615 LDG 1730 (L) FUEL LOAD: 160

1026	IP1: HOLLAND ~~FP~~: PELLERIN (OG/CC) IP2: MCGEEHAN(325/CC)	1000L									FRIDAY 24 JUNE
CZAR 52	IR: ~~UTLEY~~ HUSTON	1.0									OS: WARD
4X		1100L								0.7	WEEKEND: OS: RUSSELL

FRIDAY: CHILL 23 T/O: 1100 IAF: 1405 LDG 1515 FUEL LOAD: 160

AA-14.1

FLIGHT ORDER

(If more space is require ontinue used portion of Block 13C or on reverse, iden items b mber.)

PERSONNEL LISTED BELOW WILL PROCEED IN DESIGNATED AIRCRAFT UPON COMPLETION OF FLIGHT WILL RETURN TO PROPER STATIONS.

2. PROCEED O/A (Date): 24 Jun 94

3. APPROX NO. DAYS TDY (Include travel time): 0

4. ACFT TYPE	5. ACFT SERIAL NO.	6. CALL SIGN	7. FROM (Flight origin)
B052H	1026	CZAR 52	FAIRCHILD AFB WA

8. TAKEOFF TIME	9. AUTHORIZED FLIGHT TIME	10. TO (Itinerary - List airfield names)
10 00	01 00	FAIRCHILD AFB WA

11. MISSION SYMBOL AND MISSION STATEMENT
HOLLAND WILL ASSUME COMMAND OF THE ACFT
ING THAT PORTION OF THE MISSION IN WHICH
ERVISED TRNG/EVAL IS CONDUCTED IAW ACCRs
/ T3M

12. SPECIAL INSTRUCTIONS

RESERVE PERSONNEL NOT ON EXTENDED ACTIVE DUTY ARE SUBJECT TO PROVISIONS OF THE UNIFORM CODE OF MILITARY JUSTICE WHILE PERFORMING THIS DUTY.

VARIATIONS IN ITINERARY AUTHORIZED: X

13. AIRCREW POSITION (See AFR 60-1 for codes)	B. ONLY THOSE INDIVIDUALS NAMED BELOW ARE AUTHORIZED TO PERFORM IN-FLIGHT DUTIES DURING THIS FLIGHT. LAST NAME - FIRST NAME - MIDDLE INITIAL - GRADE AND ID Number (Designate Pilot-in-command by asterisk in front of Individual's name. Indicate security clearance, if required. If individual is not assigned or attached for flying to issuing unit, indicate individual's unit of assignment.)
~~FP~~	~~PELLERIN, WILLIAM E. COL, 0097 92OG/ACC~~
IP	MCGEEHAN, MARK C., LTC 2158 325BS/ACC
IP	HOLLAND, ARTHUR A. LTC, 0756 92OG/ACC
MR	HUSTON, KENNETH S. LTC, 1702 325BS/ACC
	WOLFF, ROBERT COL 92BW/CV

SUBMIT A TRAVEL VOUCHER WITHIN 5 WORKDAYS AFTER COMPLETION OF TRAVEL.

14. ACCOUNTING CITATION

15. APPROVING OFFICIAL (Title and signature): N/A

16. DATE: 23 Jun 94

TDN: FOR THE COMMANDER

17. AUTHORITY: N/A

18. DESIGNATION AND LOCATION OF HEADQUARTERS
DEPARTMENT OF THE AIR FORCE

19. DISTRIBUTION
N/A

20. ORDER AUTHORIZING OFFICIAL (Title and Signature) OR AUTHENTICATION
Kenneth S. Huston
NNETH S. HUSTON, LTC, USAF
ERATIONS OFFICER

21. DATE ISSUED: 23 Jun 94

22. TRAVEL ORDER NO.: B-01

ACC FORM 50, FEB 93
F)

(THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974 - SEE REVERSE)

I. MISSION DATA

1. DATE (Yr-Mo-Day)	2. MDS	3. SERIAL NO.	4. UNIT CHARGED FOR FLY HOURS/HOSM CODE	5. LOCATION
94 06 17	KC-135R	61-0026	FAIRCHILD AFB WA / GJKZ	FAFB WA 99011

FLT NO	MISSION NUMBER 6.	MISSION SYMBOL 7.	PEID 8.	FROM (ICAO) 9.	TO (ICAO) 10.	TAKE OFF TIME (Z) 11.	LAND TIME (Z) 12.	FLIGHT TIME 13.	14. LANDINGS TOUCH AND GO	14. LANDINGS FULL STOP	14. LANDINGS TOTAL	SORTIES 15.	SPECIAL USE 16.
1		R3M	A	GJKZ	GJKZ	1559	1701	1.0	3	1	4	1	~~10~~
2								.					
3								.					
4								.					
5								.					
6								.					
17. OPERATING UNIT							TOTALS	1.0	3	1	4	1	

II. AIRCREW DATA

FLYING ORGN	SSAN	LAST NAME	FLT AUTH DUTY CODE	FLIGHT TIME PRIMARY	FLIGHT TIME SECONDARY	FLIGHT TIME INSTRUCTOR	FLIGHT TIME EVALUATOR	FLIGHT TIME OTHER	FLIGHT TIME TOTAL	SORTIES	FLT CONDITIONS PRIMARY NIGHT	FLT CONDITIONS PRIMARY INSTM	FLT CONDITIONS PRIMARY SIM INSTM	RESERVE STATUS
18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.
325RS	[redacted]	PELLERIN	GP	1.0	.	.	.	.	1.0	1	- extracted	.		
	[redacted]	HOLLAND	IP	.	.5	.5	.	.	1.0	1	.	.	.	
	[redacted]	MCGEEHAN	IP	.	.5	.5	.	.	1.0	1	.	.	.	
	[redacted]	HUSTON	MR	1.0	.	.	.	.	1.0	1	.	.	.	
				.	.	.	.	.	.		.	.	.	
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33. MAINT REVIEW	34. MMICS IDENTIFIER	35. PILOT REVIEW	36. OPS REVIEW	37. AFORMS PROCESSING COMPLETED DATE AND TIME	SIGNATURE	DEVICE IDENT
				940620/1004		

AFTO FORM 781 SEP 85 PREVIOUS EDITION IS OBSOLETE

AFORMS AIRCREW/MISSION FLIGHT DATA DOCUMENT

AUTHORITY: 10 U.S.C. 8012; 44 U.S.C. 3101; and EO 9397.
PRINCIPAL PURPOSES: Source document for recording individual flying time, sorties and or events for input into the Air Force Operations Resource Management System (AFORMS) and Flying Hour Reporting System.
ROUTINE USES: Validation of accomplishment of flying requirements needed to attain or maintain professional standards. Validation of hourly flying accomplishments where necessary to authorize payment of flying incentive pay. Provide basic record of each flight of USAF aircraft, reason for mission, duration, crewmembers and duty positions. Used as a source document for determining number of hours of operating time on airframes and power plants. The SSAN is used for identification of individuals and records.
DISCLOSURE IS MANDATORY: Individuals must furnish the information to meet qualification and incentive pay standards. Failure to provide the information and SSAN could result in loss of records with consequent loss of professional qualification and incentive pay entitlement.

AIRCREW DATA (*Continued*)

FLYING ORGN	SSAN	LAST NAME	FLT AUTH DUTY CODE	FLIGHT TIME						SOR-TIES	FLT CONDITIONS			CR STATU
				PRIMARY	SECOND-ARY	INSTRUC-TOR	EVALUA-TOR	OTHER	TOTAL		PRIMARY NIGHT	PRIMARY INSTM	PRIMARY SIM INSTM	
18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.
	[redacted]													
	[redacted]													
	[redacted]													
	[redacted]													

REMARKS OTHER THAN FLIGHT DISCREPANCIES

HOURS AND MINS TO HOUR AND TENTH CONVERSION TABLE
1 OR 2 MIN - .0 HR.
3 THRU 8 MIN - .1 HR.
9 THRU 14 MIN - .2 HR.
15 THRU 20 MIN - .3 HR.
21 THRU 26 MIN - .4 HR.
27 THRU 33 MIN - .5 HR.
34 THRU 39 MIN - .6 HR.
40 THRU 45 MIN - .7 HR.
46 THRU 51 MIN - .8 HR.
52 THRU 57 MIN - .9 HR.
58 THRU 60 MIN - NEXT WHOLE HOUR

30 Aug 94

MEMORANDUM FOR COLONEL MICHAEL G. McCONNELL

FROM: Capt Thomas L. Wall (Maintenance Board Member)

SUBJECT: Aircraft 61-0026 Accident Investigation

1. This review of the B-52H aircraft mishap is respectfully submitted in accordance with the guidance set forth in paragraph 3 of HQ Twelfth Air Force letter dated 19 Jul. 94:

Mishap aircraft--B-52H, SN 61-0026, 24 Jun. 94, 92d Bomb Wing, Fairchild AFB, WA.

2. I found no significant irregularities or deficiencies in the life support system or maintenance records dating back 60 days. The following documentation was reviewed:

Current AFT Form 781s
Core Automated Maintenance System Records
Aircraft Jacket Files
Life Support Records on Personal Equipment
Engine Records
Number 3 Phase completed 11 Aug 93
Testimony of Lt Col Day and SrA Garcia

3. Of relative significance was Col Wolff's treatment of his life support equipment. The helmet and mask ,temporarily issued to him, were not properly fitted to him in accordance with Technical Order 14P3-4-151 paragraph 5-26a.(TAB AA-7.6)

4. The Air Force Technical Order Form 46 was not signed by the aircraft commander or designated representative in accordance with ACCR 55-2 paragraph 6-8.c.(TAB AA-7.4)

5. Throughout the testimony and review of documentation, there were no maintenance or logistics discrepancies that were a factor in this mishap. There are attached to this document copies of Technical Order 14P3-4-151, paragraph 5-26a and ACCR 55-2 paragraph 6-8c.

Thomas L Wall

THOMAS L. WALL, Capt, USAF
Maintenance Officer AFR 110-14
Investigation Board

JL94

ACCR 51-18

AIR COMBAT COMMAND REGULATION

TRAINING

BOMBING / NAVIGATION / AGM TRAINING

1 MARCH 1993

OPR: HQ ACC/DOTW

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR COMBAT COMMAND

during low level operations in lieu of a fix symbol and required information on the chart:

3.14.9.1. Record ATAs for each entry on the flight plan that has an ETA (not including rollout points). A check mark will suffice if the ATA is within one minute of the ETA.

3.14.9.2. During deviations from route corridor, information will be recorded on the flight plan/chart so that aircraft planned flight path and profile can be fully reconstructed.

3.14.10. On a low altitude training mission, pilots will monitor the aircraft position using visual fixing and/or radio aids. Fixes need not be recorded during this monitoring.

3.15. Weather Information.

3.15.1. The local weather unit will provide weather support IAW ACCR 105-1 and ACCR 55-1, Volume 1.

3.15.2. The aircrew will plan Pilot to Metro Service (PMSV) contacts in advance. Prior to penetration to the low altitude route/training airspace, they will attempt to contact one of the weather flight PMSV stations designated during the pretakeoff briefing for latest information of significant enroute weather. This contact will be as near to penetration time as possible to ensure receipt of the latest significant weather information available at the PMSV station for the low altitude route.

NOTE: The requirement to obtain updated weather information in flight may be waived at the aircrew's option for missions which enter low level within 1½ hours after takeoff.

3.15.3. When communications range limitations are exceeded or contact cannot be established over normal PMSV channels, the following options are available in priority order:

3.15.3.1. Request a GIANT TALK (HF SSB) phone patch directly to the designated PMSV. The PMSV geographical identifier (e.g., Castle Metro) will be used for all transmissions.

3.15.3.2. Contact the 2 WG/CP and request a phone patch with 2 WS/WSU.

3.15.3.3. Contact any PMSV on an ACC base.

3.15.4. Without updated in-flight weather information from any source, the decision to enter will be based on crew judgment, considering such factors as forecast weather, altimeter settings and "D" values, and observed weather.

3.15.5. After exiting the low altitude route or training airspace each individual sortie or the last aircraft in a stream (or as specified in the OPORD) flying low altitude routes will forward a PIREP to one of the designated PMSV contacts for the route or 2 WS/WSU. If significant weather was present, the crew will report the extent, degree, magnitude, pertinent limiting weather factors and whether the route was usable.

3.16. Low Altitude Clearance Plane Settings.

99 ECRG/RDR will be responsible for establishing clearance plane settings for training routes/MOAs and restricted areas. 99 ECRG/RDR will send the consolidated list to all bomber units, NAF/DOVs, and applicable HQ ACC agencies. Agencies aware of requirements for changes in clearance plane settings will forward this information to 99 ECRG/RBD with information copy to NAF/DOVs.

MINIMUM CLEARANCE PLANE SETTINGS

	DAY		NIGHT/B-1 IMC	
	Non-Mountainous	Mountainous	Non-Mountainous	Mountainous
B-52	400	600	500	700
Basic NVG Qual			500	700
Advanced NVG Qual			400	600
GCC Level B/C	300	500	400	600
B-1	400	500	400	500
GCC Level B/C	300	400	400	500

NOTES:

1. MINIMUM TA/TF ALTITUDES FOR MILITARY TRAINING ROUTES IN FLIP AP/1B and AP/3 AND THOSE PUBLISHED IN 99 ECRG CLEARANCE PLANE LETTER WILL TAKE PRECEDENCE, IF HIGHER THAN THE ABOVE LISTED ALTITUDES.
2. FLY VISUAL CONTOUR DURING DAY TA/TF VISUAL CONDITIONS ONLY. THE VISUAL CONTOUR ALTITUDE WILL BE NO LOWER THAN THE MINIMUM TA/TF DAY CLEARANCE PLANE SETTING FOR THE TERRAIN OR THE MINIMUM ALTITUDE FOR THE ROUTE SEGMENT/AREA, WHICHEVER IS HIGHER. MAN-MADE OBSTRUCTIONS MUST BE TAKEN INTO ACCOUNT WHEN DETERMINING THE CLEARANCE PLANE AND THE ALTITUDE TO BE FLOWN.
3. CPS LOWER THAN 300 FEET WILL NOT BE USED FOR ANY TRAINING OR EXERCISE MISSIONS.
4. DO NOT VIOLATE FEDERAL AVIATION AGENCY REGULATION 91-79 FOR ANY REASON (for example, do not fly within 500 feet of any person, vessel, vehicle, or structure).
5. All crew members must be GCC Level B or C to use Level B/C CPS unless accompanied by an instructor.
6. These are the minimum altitudes authorized under prevailing conditions. Units will plan and train towards these minimum altitudes, but the actual altitude flown may be anywhere between the minimum TA/TF altitude and the published IFR altitude. The determining factor will be crew judgment, based on evaluations of aircraft equipment, weather conditions, aircrew capabilities, proficiency, and fatigue.
7. Do not conduct low altitude bomb/ECM runs against scoring sites at an altitude below the minimum tracking altitude for any target being attacked unless accomplishing a Defensive Action Bomb Run.
8. B-1 crews not Night/IMC TF qualified must remain in VMC (5 NM visibility and 1500 foot ceiling).
9. Aircrews must be constantly aware of weather conditions. Crews not IMC TF qualified that encounter IMC will immediately climb to IFR altitude. Climb to IFR altitude under visual conditions whenever possible.

Figure 3.1 Minimum Clearance Plane Settings.

Changes require at least two hours and fifteen minutes advance notification. Include as information addressees designated Pilot to Metro Service (PMSV) contacts, Air Force Global Weather Central (AFGWC/WFO), and HQ ACC/DOWR (changes only).

3.13.1.2. For ORI missions, HQ ACC/IGIO will notify MASMS and unit schedulers of the first and last scheduled entry times into the ORI route, as well as separation between aircraft.

3.13.1.3. When notified of an ORI mission, MASMS will preempt all scheduled training on the ORI route in support of the bomber ALTRV. In addition, MASMS will ensure non-interference at any participating fixed scoring site by preempting previously scheduled training. Units undergoing an ORI will delete unused times from MASMS.

3.13.1.4. Units will be responsible for scheduling IR flights so aircraft reach the entry point at intervals of 10 to 15 minutes. Entry times should ensure a minimum of 10 minutes separation between aircraft at each low level scoring site to ensure scoring capability. AIRCRAFT WILL ENTER ONLY AT SCHEDULED TIME, ±2½ MINUTES. If the scheduled entry cannot be made within ±2½ minutes, the use of subsequent primary or alternate entry points/times is authorized provided the aircrew has been so scheduled and briefed. Bomber stream missions will normally have 15 minutes separation from other aircraft/flights, and all bombers in a stream must enter within ±2½ minutes of the MASMS entry time for the stream. Unit schedulers are responsible for ensuring enroute separation of aircraft within a stream by timing.

3.13.1.5. MASMS will provide route allocations which will ensure spacing is maintained by all aircraft conducting activity on bomber IRs. The daily TTR schedule will reflect all assigned route times.

3.13.1.6. Safe separation of aircraft on low level routes must be the primary concern of aircrews and schedulers. All schedulers will devote their full attention to TTR Entry Time/SMA time requests from airborne aircrews. No information will be passed to an aircrew until the unit scheduler confirms the Entry/SMA times through MASMS or route scheduling authority. When possible, a phone patch will be established between the unit scheduler, the command post controller, and the requesting crew. Once established, the unit scheduler will pass the information or listen while the controller relays the information to the requesting crew. Exchange of Entry/SMA times between units must be accomplished through MASMS.

3.13.1.7. AFTER ROUTE ENTRY AIRCREWS MUST MAINTAIN SCHEDULED ENROUTE POINT TIME ±2½ MINUTES. AIRCREWS UNABLE TO MAINTAIN THESE TOLERANCES MUST ABORT THE ROUTE.

3.13.1.8. WHEN A MISSION IS CHANGED AND NEW ENTRY TIME(S) ARE ASSIGNED, THE AIRCREW WILL NOT USE PREVIOUSLY SCHEDULED ENTRY/SMA TIME(S).

3.13.2. Non-bomber IFR Military Training Routes (IRs).

3.13.2.1. Units desiring to fly non-bomber IRs will schedule such training with the appropriate scheduling activity listed in the FLIP AP/1B route description. Comply with the scheduling requirements of the route originating/scheduling activity. In the absence of such requirements, schedule flights so as to reach the route entry points on the hour or at 20-minute intervals thereafter, for example, 0100, 0120, 0140, 0200, etc. AIRCRAFT WILL ENTER ONLY AT SCHEDULED TIME, ±5 MINUTES. If the scheduled entry cannot be made within the above tolerance, the use of subsequent primary or alternate entry points/times is authorized provided the aircrew has been so briefed and will maintain route timing.

3.13.2.2. When scheduling a non-bomber IR, units will coordinate with the route scheduling activity to ensure sufficient sterile time is provided to prevent conflict (overrun/overtake) with other route traffic. Units will also coordinate weather support with the local weather squadron.

3.13.2.3. HQ ACC/DOSR must approve a non-bomber IR for use prior to unit activity. 99 ECRG/RD will evaluate non-bomber IRs upon request from HQ ACC/DOSR. Approval will be based on review of the route to ensure it meets the route criteria specified in this chapter, it is surveyed IAW ACCR 55-34 or a survey has identified uncharted obstructions and other hazards to low altitude flight within the route, and environmental requirements for bomber operations on the route have been met.

3.13.2.4. VFR Military Training Routes (VRs).

3.13.2.5. Units may fly VRs if the provisions applicable to non-bomber IRs are met.

3.13.2.6. Aircraft will enter VRs only at designated route points. Aircraft will exit only at designated route points unless weather conditions or an emergency situation dictates otherwise.

3.14. In-flight Crew Procedures.

3.14.1. During TA/TF or visual contour operations, aircrews are encouraged to deviate from

B-52 AIRCRAFT REFUELING AND DISTRIBUTION LOG

AIRCRAFT SERIAL NUMBER	DATE OF REFUEL / DEFUEL	NAME OF REFUELING SUPERVISOR	PIT / TRUCK NUMBER
	23/06/14		

BLOCK I

FORWARD BODY	
1	0
2	0
3	

LEFT OUTBOARD	NO. 1 MAIN	NO. 2 MAIN	CENTER WING	NO. 3 MAIN	NO. 4 MAIN	RIGHT OUTBOARD
1 2600	1 9700	1 21900	1 0	1 21900	1 9700	1 7400
2 7000	2 9700	2 21,900	2 0	2 21900	2 9700	2 7000
3 7400F	3	3	3	3	3	3 7400F

MID BODY	
1	0
2	0
3	

AFT BODY	
1	3000
2	3000
3	3125

LEFT DROP	
1	4560
2	4400
3	4400F

RIGHT DROP	
1	4500
2	4400
3	4400F

BLOCK II

POL SOURCE FLOWMETER READING	
GALLONS AFTER REFUELING	3232
GALLONS BEFORE REFUELING	0
DIFFERENCE	3232
MULTIPLY BY FUEL DENSITY	6.4
POUNDS FUEL DELIVERED	-20,685
AIRCRAFT TOTALIZER READING BEFORE SERVICE	109 200
TOTAL POUNDS IN TANKS	89,685
TOTALIZER READING AFTER SERVICE	89 500
DIFFERENCE	+125

INSTRUCTIONS

1. This form shall be properly filled in and verified as accurate by the fuel servicing crew for each refueling - defueling and when adjusting fuel in partially filled tanks.
2. Keep with AFTO Form 781 until Aircraft Commander signs.
3. After Aircraft Commander signs, this form will be retained on file for 72 hours after date of flight.
4. Maximum allowable difference between totalizer reading (*after refueling*) and totalizer reading before refueling plus fuel delivered will not exceed 3% for B-F and 4% for G and H.
5. G/H models after T.O. 1B-52-2305 only outboard wings, aft body and external tanks are required for fuel load distribution by dipstick. All other tanks are optional.

LEGEND

1 - SCHEDULED FUEL LOAD 2 - GAGE READING AFTER REFUELING 3 - DIPSTICK / VISUALLY CHECKED POUNDS ON BOARD

SIGNATURE OF REFUELING / DEFUELING SUPERVISOR (*Serviced*)	DATE	SIGNATURE OF LAUNCH CREW SUPERVISOR (*Verified*)	DATE	SIGNATURE OF AIRCRAFT COMMANDER (*Approved*)	DATE
	23/6/14				

AFTO FORM 6, AUG 91 PREVIOUS EDITION WILL BE USED

*U.S. Government Printing Office: 1991 — 548-197/40719

PREPOSITIONED LIFE SUPPORT EQUIPMENT	1 ORIGINATING STATION 92d BOMB WING FAIRCHILD AFB, WA. 99011	2 TY. AIRCRAFT B-52

3 AIRCRAFT NO	4 LOCATION	5 MISSION NO /CONFIG	6 ETD	7 ETR	8 DATE / TIME (GMT)
1020	FAFB, WA	ROUTINE MISSION	N/A	N/A	27 May 94

EQUIPMENT INSTALLED A	QUANTITY B	LOCAL SERIAL NUMBER C	DUE INSPECTION D	DATE INSTALLED E
PARACHUTE, BA-21 (3/4 Sec.)	7 ea	Set: G	30 Day: [illegible] 120 Day: 20SEP94	Date: 27May94
PARACHUTE, BA-18 (5 Sec.)	16 ea	Set: G	30 Day: [illegible] 120 Day: 20 SEP 94	
CNU-129 SURVIVAL KIT	6 ea	Set: G	Due: 20SEP94	
LPU-10/P LIFE PRESERVERS	~~10~~ ea	Set: B	Due: 9Aug94	
(OR)				
LPU-9/P LIFE PRESERVERS	~~9~~ ea	Set: N/A	Due: N/A	Date: 27May94

NOTE:
AIRCRAFT COMMANDER or DESIGNATED REPRESENTATIVE

PLEASE SIGN BACK OF THIS FORM PRIOR TO DEPARTURE.

ISSUING AGENCY	*I certify that the life support equipment listed on this form is prepositioned on this aircraft on the date indicated*		
DATE	GRADE	NAME	SIGNATURE
27 MAY 94	Sgt.	LUIS M. PINEIRO	

CERTIFICATION

(To be completed by aircraft commander or designated representative prior to departure.)

I certify that the items listed on this form are on board and in apparent serviceable condition on the date indicated by my signature

NAME AND DATE	NAME AND DATE	NAME AND DATE	NAME AND DATE
[illegible] 6-17-94			

REMARKS

325 BS/OPOOL, AIRCREW LIFE SUPPORT
FAIRCHILD AFB, WA 99011-5000
DSN: 657-2487 or 657-2214

*U.S. GPO: 1989-648-174/83168

This is a printout from the [illegible]ld Centre [illegible]rdonal Track Analysis Program. The first colu[illegible]n is a symbol generated for each aircraft. T[illegible]econd is the IFF code. (0320 is Czar 52) The third is the altitude in hu[illegible]ds of feet. Fourth is the time. Five and six are radar screen coordinates. Seven and eight are the coordinates of the aircraft.

+		2104 27	518.2500	522.5625	47	35	16N	117	43	22W	•		2104 27	520.0000	521.7500	47	34	27N	117	40	49W
A	0320	2104 27	521.1250	524.8750	47	37	33N	117	39	02W	A	0320 028	2104 27	521.1875	524.3125	47	36	57N	117	39	05W
+		2104 27	524.2500	522.8125	47	35	22N	117	34	30W	/		2104 27	524.3750	528.1250	47	40	43N	117	34	06W
N		2104 27	524.3750	528.1250	47	40	43N	117	34	06W	+		2104 27	525.5625	524.0000	47	36	33N	117	32	37W
Y	5163 025	2104 27	526.0000	524.9375	47	37	26N	117	31	50W	+		2104 27	526.2500	525.5625	47	38	03N	117	31	26W
/		2104 27	526.8125	525.8750	47	38	24N	117	30	42W	N	027	2104 27	526.8125	525.8750	47	38	24N	117	30	42W
•		2104 27	531.5000	526.8125	47	39	09N	117	23	37W	+		2104 27	533.1875	527.0625	47	39	21N	117	21	14W
+		2104 27	535.4375	523.6250	47	35	53N	117	18	03W	+		2104 28	528.1875	538.0625	47	50	29N	117	28	09W
•		2104 28	529.9375	539.3125	47	51	41N	117	25	30W	+		2104 28	532.6875	537.8750	47	50	13N	117	21	29W
+		2104 28	534.5625	527.6250	47	39	55N	117	19	10W	+		2104 28	535.6875	528.1875	47	40	24N	117	17	29W
T		2104 30	522.4375	521.6875	47	34	17N	117	37	20W	G		2104 30	525.4375	524.5000	47	37	04N	117	32	47W
J		2104 30	528.5625	530.3125	47	42	44N	117	27	55W	T		2104 36	522.4375	521.6875	47	34	17N	117	37	20W
+		2104 37	531.8750	511.5625	47	23	54N	117	23	44W	+		2104 37	531.8750	512.8750	47	25	15N	117	23	41W
+		2104 37	531.9375	510.7500	47	23	08N	117	23	47W	K	0316 055	2104 37	534.3125	511.2500	47	23	34N	117	20	16W
+		2104 38	512.7500	510.3125	47	23	10N	117	51	56W	•		2104 38	513.5625	511.3125	47	24	09N	117	50	48W
•		2104 38	514.1875	510.7500	47	23	37N	117	49	54W	+		2104 38	517.6875	518.1875	47	30	55N	117	44	29W
+		2104 38	523.7500	516.3750	47	28	59N	117	35	30W	+		2104 38	525.6875	519.9375	47	32	27N	117	32	36W
+		2104 38	529.4375	520.6875	47	33	05N	117	27	03W	•		2104 38	531.4375	518.8125	47	31	09N	117	24	10W
+		2104 38	532.0000	514.3125	47	26	39N	117	23	26W	V	1200 054	2104 39	509.3750	525.3125	47	38	14N	117	56	23W
+		2104 39	512.8750	527.2500	47	40	08N	117	51	09W	+		2104 39	513.5625	524.0625	47	36	53N	117	50	21W
•		2104 39	515.6875	525.7500	47	38	34N	117	47	09W	•		2104 39	518.1250	522.5000	47	35	15N	117	43	33W
A	0320 063	2104 39	520.3750	525.8750	47	36	34N	117	40	11W	•		2104 39	524.3750	523.0000	47	35	35N	117	34	19W
+		2104 39	524.6875	526.0625	47	38	36N	117	33	50W	B	0311 033	2104 39	524.9375	527.1875	47	39	43N	117	33	25W
Y	5163 025	2104 39	525.8750	524.7500	47	37	18N	117	32	01W	E	0307 028	2104 39	526.6250	525.6875	47	38	10N	117	30	53W
+		2104 39	532.1250	527.1250	47	39	29N	117	22	41W	+		2104 39	535.4375	523.5625	47	35	47N	117	18	03W
•		2104 39	535.4375	524.8750	47	37	03N	117	18	00W	+		2104 40	525.3125	532.4375	47	44	57N	117	32	39W
+		2104 40	528.1875	537.9375	47	50	22N	117	28	09W	+		2104 40	531.2500	532.8125	47	45	09N	117	23	44W
+		2104 40	531.3125	531.3750	47	43	46N	117	23	48W	+		2104 40	532.6875	537.8750	47	50	13N	117	21	29W
+		2104 40	533.6250	528.1875	47	40	27N	117	20	25W	V	1200 023	2104 40	533.8125	528.4375	47	40	42N	117	20	14W
•		2104 40	534.6250	527.9375	47	40	11N	117	18	57W	+		2104 40	535.6250	531.3125	47	43	31N	117	17	19W
T		2104 42	522.1250	521.4375	47	34	03N	117	37	42W	G		2104 42	524.7500	524.5625	47	37	06N	117	33	42W
J		2104 42	528.8125	529.7500	47	42	13N	117	27	55W	T		2104 48	522.1250	521.4375	47	34	03N	117	37	42W
+		2104 49	531.8750	511.0000	47	23	23N	117	23	46W	K	0316 055	2104 49	534.4375	511.0000	47	23	18N	117	20	06W
+		2104 50	513.1250	510.1250	47	23	01N	117	51	23W	+		2104 50	513.9375	511.5000	47	24	22N	117	50	15W
+		2104 50	515.6875	513.6250	47	26	27N	117	47	35W	V	1200 054	2104 51	509.7500	525.6875	47	38	36N	117	55	49W
+		2104 51	512.8125	527.1250	47	40	01N	117	51	21W	A	0320 105	2104 51	520.0000	523.6875	47	36	21N	117	40	45W
•		2104 51	520.0000	524.9375	47	37	36N	117	40	42W	•		2104 51	522.3750	527.8750	47	40	31N	117	37	04W
+		2104 51	522.6250	523.8750	47	33	30N	117	36	47W	•		2104 51	524.0000	522.2500	47	34	51N	117	34	54W
•		2104 51	524.2500	522.9375	47	35	29N	117	34	30W	B	0311 032	2104 51	524.7500	526.2500	47	38	50N	117	33	37W
+		2104 51	524.8750	523.4375	47	35	58N	117	33	33W	Y	5163 026	2104 51	525.5625	524.4375	47	36	57N	117	32	36W
+		2104 51	525.6875	524.0625	47	36	34N	117	32	26W	E	0307 027	2104 51	526.5000	525.4375	47	37	55N	117	31	04W
+		2104 51	529.4375	520.6875	47	33	05N	117	27	03W	•		2104 51	532.1875	525.4375	47	37	49N	117	22	47W
+		2104 51	533.1875	527.0000	47	39	20N	117	21	14W	•		2104 51	535.3125	524.9375	47	37	10N	117	18	11W
•		2104 51	535.4375	525.5000	47	35	46N	117	18	03W	+		2104 52	529.3750	530.7500	47	43	11N	117	26	39W
+		2104 52	530.0000	538.7500	47	51	10N	117	25	19W	+		2104 52	531.3750	531.5000	47	43	53N	117	23	36W
+		2104 52	534.3750	528.3125	47	40	34N	117	19	13W	•		2104 52	535.5000	528.3125	47	40	32N	117	17	38W
•		2104 52	535.6250	531.3125	47	43	31N	117	17	19W	+		2104 53	532.8750	537.6875	47	49	58N	117	21	06W
T		2104 54	522.0000	521.1875	47	33	48N	117	37	53W	U		2104 54	524.5000	524.5625	47	37	06N	117	34	04W
J		2104 54	529.0000	529.1875	47	41	36N	117	27	13W	T		2105 00	522.0000	521.1875	47	33	48N	117	37	53W
+		2105 01	532.0000	512.9375	47	25	16N	117	23	30W	K	0316 055	2105 01	534.6250	510.8125	47	23	04N	117	19	43W
+		2105 01	535.6875	513.8125	47	26	02N	117	18	08W	+		2105 02	512.7500	510.0000	47	22	54N	117	51	56W
+		2105 02	513.8750	511.3125	47	24	08N	117	50	14W	•		2105 02	515.8750	513.5625	47	26	20N	117	47	13W
•		2105 02	517.8125	516.1250	47	30	54N	117	44	16W	+		2105 02	525.3125	519.7500	47	32	19N	117	33	10W
+		2105 02	528.1875	510.9375	47	23	23N	117	29	18W	+		2105 02	531.4375	518.8125	47	31	09N	117	24	10W
V	1200 054	2105 03	510.0625	526.3125	47	39	13N	117	55	27W	+		2105 03	512.6875	527.1875	47	40	02N	117	51	32W
+		2105 03	513.7500	524.0625	47	35	33N	117	49	53W	+		2105 03	516.5625	525.8750	47	38	40N	117	45	51W
+		2105 03	517.5625	525.8750	47	38	39N	117	44	22W	A	0320 101	2105 03	519.3750	523.3750	47	36	06N	117	41	41W
•		2105 03	521.6250	522.6875	47	35	19N	117	38	23W	+		2105 03	522.2500	521.6875	47	34	17N	117	37	30W
•		2105 03	524.2500	522.9375	47	35	29N	117	34	30W	+		2105 03	525.2500	522.0000	47	34	34N	117	33	03W
Y	5163 026	2105 03	525.3125	524.1875	47	36	42N	117	32	59W	E	0307 027	2105 03	526.1875	525.1875	47	37	41N	117	31	39W
+		2105 03	526.6375	524.3750	47	36	54N	117	30	57W	+		2105 03	529.3125	520.6875	47	33	06N	117	27	14W
		[illegible]	[illegible]	[illegible]	47	37	02N	117	17	59W	+		2105 03	535.5000	521.9375	47	34	09N	117	17	56W

Report on the Videogrammetry Analysis of the B-52H Accident

Prepared for AFR 110-14
Mishap Investigation Board

Principal Video Investigators:

Mr. Stephen C. Jensen
Dr. Leonid I. Rudin

30 August 1994

Cognitech, Inc.
2800 28th Street, Suite 101
Santa Monica, CA 90405

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1. Situation

On June 24th, 1994, a B-52H bomber crashed while rehearsing for an Air Show at Fairchild Air Force Base, Spokane, Washington. The aircraft made a pass over the runway and then performed a tight turn around the base control tower. After traversing approximately 180° of turn, the aircraft banked over almost 90° and struck the ground. There were no survivors, and the aircraft was completely destroyed. That evening, the crash was reported on the evening news, and a small portion of a video depicting the crash was shown. In early July, Cognitech volunteered its services to aid the Air Force in its investigation of the crash. On July 19th, 1994, Cognitech was contacted by Col. Michael McConnell of the AFR 110-14 Investigation Board at Fairchild AFB and asked to assist in the investigation. Specifically, we were asked to analyze video recordings of the accident and derive as much information as possible on the motion of the aircraft, especially during the last 20-30 seconds of flight.

Over the course of the next few weeks, new motion analysis software was configured using Cognitech's proprietary image processing tools and applied to the accident video. On August 29, 1994, final results were faxed to Major Warren Montgomery of the Accident Investigation board.

2. Material

2.1 Video Recordings

At the time of the accident, several individuals were recording the aircraft's flight on tape. Copies of four video tapes were sent to Cognitech by the Accident Investigation Board for analysis. Two of these tapes were filmed by individuals standing near the runway, one was filmed by an individual standing off the runway behind several parked aircraft, and one was filmed by an individual standing in a driveway off base. All the videos show all of the final turn leading up to the crash, and two show the crash itself. Each video has both an audio and video portion. All tapes were marked with the name of the individual who recorded it. To respect their privacy, however, we will not use those names in this report. Instead, the tapes will be referred to as video 1, video 2, video 3, and video 4. All were copies of the originals, supplied to us on standard VHS format. The first three tapes were sent to Cognitech on July 22, 1994, while the final tape was sent on August 8, 1994.

2.1.1 Video 1:

2.1.1 Video 1:

This video was taken by an individual standing near the edge of the runway, 3300 feet bearing 341° from the control tower, and 4600 feet bearing 349° from the crash site. This video was quite long, showing more than 10 minutes of the flight, ending in the crash.

2.1.2 Video 2:

This video was taken from atop a set of bleachers, erected in preparation for the air show the following day. The location was 3100 feet bearing 011° from the control tower, and 4200 feet bearing 356° from the crash site. The copy of the tape we received shows the only the last few minutes of the flight. The crash is plainly visible.

2.1.3 Video 3

This video was taken from a driveway off base, 5700 feet bearing 329° from the control tower, and 7100 feet bearing 328° from the crash site. The tape shows approximately 10 minutes of the flight, ending in the crash. Just before impact, the aircraft disappears behind a hanger, and the video camera is lowered or dropped and is no longer pointing at the aircraft. The voice of the individual recording the tape can be heard several times both before and after the accident.

2.1.4 Video 4

This tape was taken from behind a row of parked aircraft on the base, 8100 feet bearing 042° from the control tower and 8400 feet bearing 033° from the crash site. It shows several minutes of the flight, but does not show the moment of impact.

2.2 Collateral Information

2.2.1 Data

In addition to the above tapes, several other pieces of information were supplied to Cognitech. These include detailed measurements of several structures seen in the video as well as their positions relative to each of the cameras. Also, a map of the area was provided. Schematics of a B-52H bomber were provided, from which computer measurements were taken at Cognitech.

2.2.2 Photographs

Three photographs of the aircraft taken during the final turn were supplied to Cognitech. These

photographs were taken from a position similar to that of video 1, above, and aided the identification of objects not clear in the videos.

3. Activities

Cognitech, Inc. is a scientific image processing company, located in Santa Monica, California. Cognitech's researchers are well recognized for their contributions in the field of image processing (see Appendix 1). Cognitech has developed several algorithms and software tools relevant to motion analysis from video. These include:

- Multiscale frame matching and apparent velocity field calculations from video
- Nonlinear PDE filters for morphological analysis and restoration of motion video
- Multiframe fusion algorithm for combining video into superresolved frames

While the above algorithms deal with apparent motion calculations, we concluded that a photogrammetric approach would deliver a more stable result, particularly due to the availability of highly accurate measurements from the scene of the accident. An existing Cognitech proprietary single frame measurement tool was therefore integrated with new kinematic code developed just for this application.

This single frame measuring tool has been validated in many Cognitech forensic imaging applications. We consider this new kinematic photogrammetric tool experimental until it can be validated and calibrated using data from controlled experiments. We hope that such data will be provided to us by the Air Force in the near future.

3.1 Tool Development

Code was written that would take data points taken directly from the video, and from this generate the needed flight parameters. After reviewing our initial results, the program was modified to take into account the aspect ratio of the digitized video image.

3.2 Obtaining Data

To obtain the data necessary for this analysis, the first three videos were taken to an off site video studio, where they were transferred on to BetaSP recording stock for digitizing. Due to the large amounts of data involved (digitizing just the final 30 seconds of the flight from one tape would produce over 600 MB of data), only the final 25 seconds of flight from video 2 was

digitized. From this, every 20th field was actually used (59.94 fields per second, for a sampling rate of 3 samples/second). From these fields, critical points both on and off the aircraft were identified their exact screen coordinates measured.

3.3 Processing Data

Data obtained from the video images was input into our motion analysis software, and run on a Hewlett Packard 735 UNIX workstation. Data was then sent to a Power Macintosh 8100/80 computer where it was plotted and printed.

3.4 Material Produced

Final output from this analysis consisted of this report and a series of graphs displaying calculated parameters. These graphs were faxed to the Investigation Board on August 26, 1994, and this report was sent soon afterward.

4. Algorithm

4.1 Statement of Problem

In order to characterize the position of a point in space, one needs three parameters. The choice of these parameters depends on which coordinate system is used. Although any coordinate system could be chosen, a spherical system was the most convenient in this case, with the camera defined as the origin. The three position parameters needed, then, are r, which is the distance from the center point; θ, which is the object's angular position along the horizon; and ϕ, which is the object's angular position above the horizon (see figure 1). These three parameters uniquely describe the position of a point in space. Velocity of the point can then be calculated as the rate of change of the point's position through time.

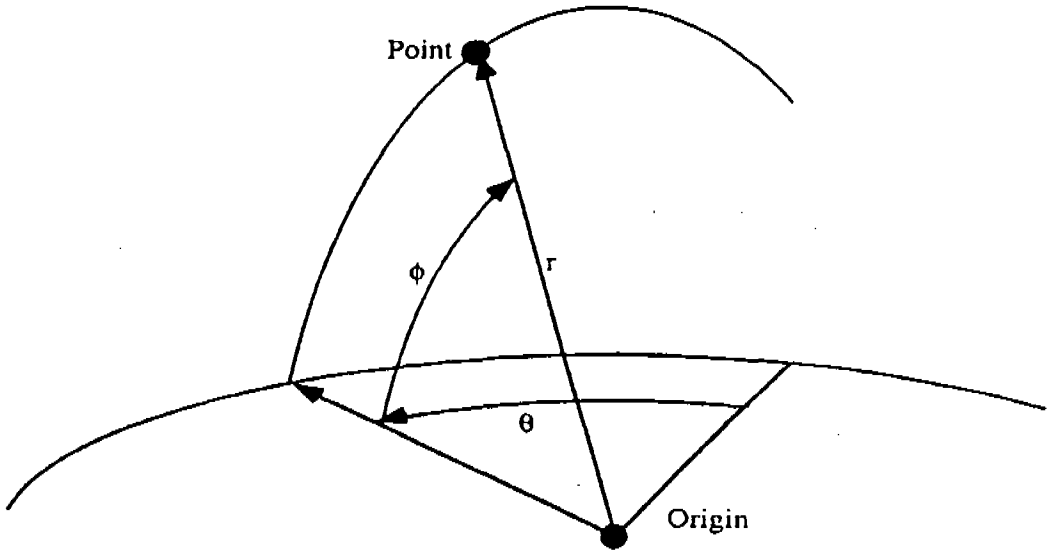


Figure 1

To characterize the position of an object in space, as opposed to a point, six parameters are needed. As before, the first three parameters determine the position of a point inside the object. The final three parameters are angles which determine the rotation of the object around this point (figure 2). If our object is an aircraft, the first three parameters will determine the location of the center of gravity (CG) of the aircraft, and the last three parameters determine the rotation of the aircraft around the CG. For convenience, the orientation of the aircraft is defined by a set of vectors along its pitch, roll and yaw axis.(figure 3). Thus, determining the velocity of the CG gives the velocity of the aircraft, and computing the aircraft's rotation around the CG gives the orientation of the aircraft in space. To compute angle of attack and bank angle, one needs only to compare the directions of the axis of the aircraft with the direction of it's velocity vector. The key to solving the problem, then, is determining the six position vectors of the aircraft in each frame. Once these are known, the motion is easily characterized.

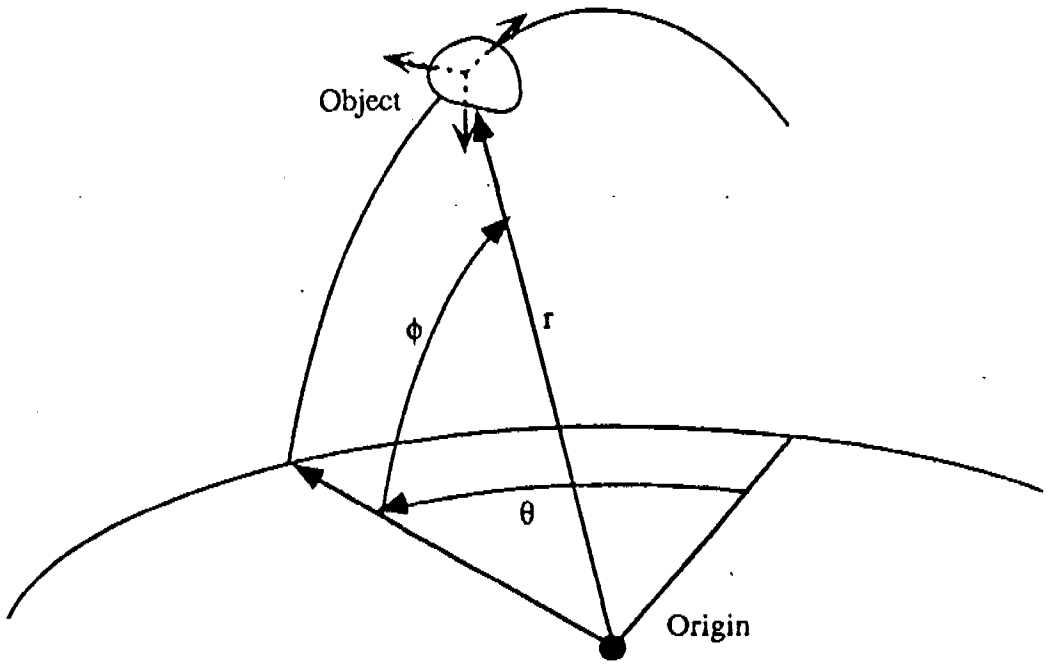


Figure 2

4.2 Measuring The Aircraft

The first step in solving this problem is measuring the apparent position and orientation of the aircraft on the screen for each frame. Since there are four unknown parameters (three rotations and a scale), at least four known points on the aircraft must be located. For this analysis, the chosen points were the center of gravity (point 0), the point on the X axis 100 feet ahead of the CG (point 1), the point on the Y axis 100 feet from the CG (point 2), and the point on the Z axis 100 feet above the CG (point 3). To determine the positions of these points, Cognitech's Measure program was used. This program, developed for the precise measurement of crime scenes, takes the coordinates of a set of known points in an image, and from them computes the complete perspective transformation of that particular scene. With this information, the screen coordinates of unknown points can be computed with ease. For this application, a schematic of the aircraft was used to measure the position of several easily-spotted points (i.e. wing tips, nose, tail, etc.) relative to the center of gravity. Once these known points were entered and located on the image, the screen coordinates of points 0-3 were computed (figure 4).

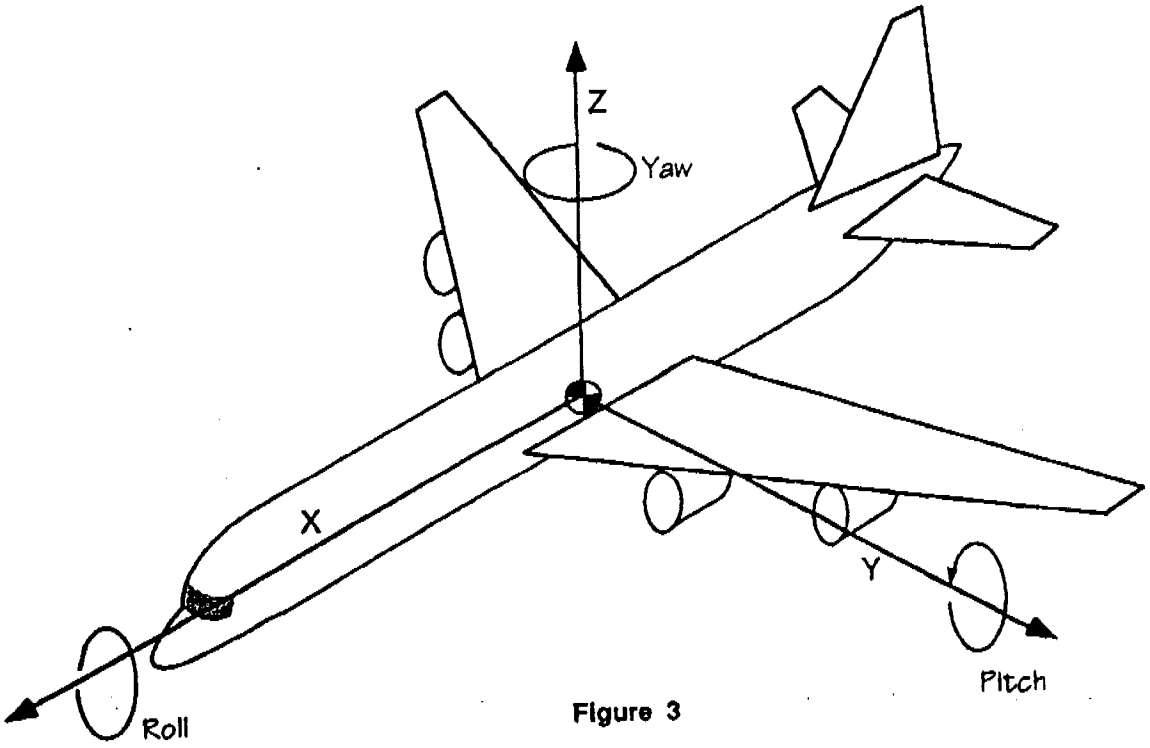


Figure 3

4.3 Camera Effects

So far, all of the calculations have been done in screen coordinates. Unfortunately, as the camera is zoomed, panned, tilted, or moved, these coordinates change. To determine the absolute screen coordinates, the camera motion must be determined and subtracted from the relative screen coordinates. This motion is determined by tracking fixed points on the horizon from frame to frame. Zoom and other transformations are computed by Cognitech's multiscale matching software. One other important consideration is the aspect ratio of the image. The recording and digitization processes produce an image whose aspect ratio is not 1. It is usually stretched by some amount in the horizontal direction, and compressed in the vertical direction. This ratio must be determined experimentally by observing the distortion of objects in the video with known dimensions.

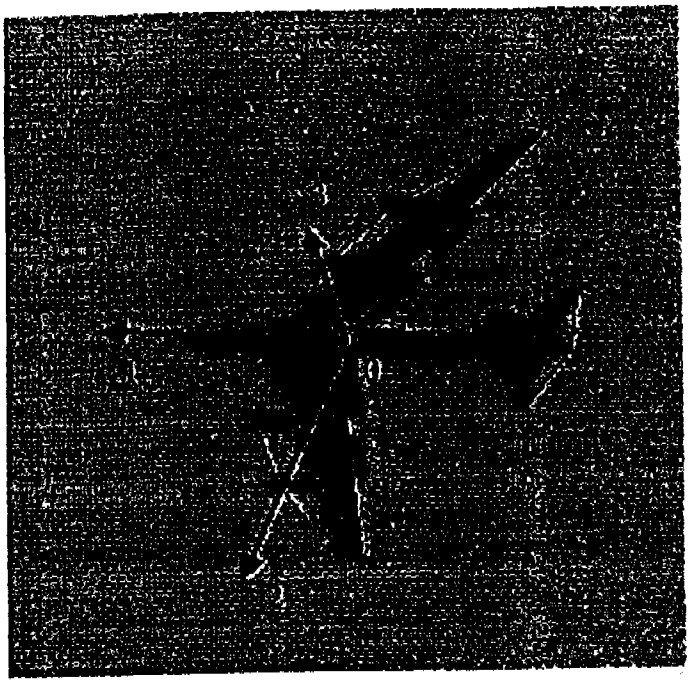


Figure 4

4.4 Solution

Given the absolute screen coordinates of the four points calculated above, all six position parameters can be calculated. The coordinates θ and ϕ, both independent of the distance between the camera and the aircraft, can be calculated directly from the horizontal and vertical screen coordinates, respectively. Given the coordinates of points 1-3 relative to point 0, the angles and scale of the plane coordinate system can be determined. The angles lead directly to the 3 rotation parameters. The scale can be used to calculate the distance r, by comparing it with the scales of objects (buildings, roads, etc.) of both known size and distance.

Having calculated all six position parameters for each frame, the velocity vector of the aircraft can be found by computing the change of position over time. Speed of the aircraft is given by the amplitude of this vector. Angle of attack is given by computing the angle between the velocity vector and the X axis of the aircraft. Bank angle is found by computing the angle between the Y axis of the aircraft and the horizon. Altitude is determined by multiplying ϕ by r.

5. Conclusions

Our conclusions are presented in the following graphs, which plot various flight parameters versus time to impact (Data obtained from the last 3 seconds of flight before impact were not plotted, due to fact that the data was generally unreliable. The almost head-on orientation of the aircraft made the acquisition of accurate 3-dimensional data impossible).

Appendix 1

Company Information

Cognitech, Inc. is a scientific image processing company, located in Santa Monica, California. Cognitech's researchers are well recognized for their contributions in the field of image processing. In particular, Cognitech's principals pioneered the Nonlinear Partial Differential approach to such imaging tasks as image/video restoration, video frame fusion, multi-scale segmentation, image compression, and pattern analysis. Cognitech's researchers are routinely invited to contribute papers and chair professional meetings.

Cognitech has also been recognized by the press and national television for successfully applying its image processing and photometric technology to criminal investigations for law enforcement and prosecution/defense trial usage. Business Week magazine has called Cognitech's technology remarkable and worthy of the attention of the business community. (BW, August 22, 1994).

Cognitech's principals are:

Dr. Leonid I. Rudin, Director of Research & Development, Co-CEO of Cognitech, Inc. Dr. Rudin has pioneered Shock Filters, the Total Variation based approach to ill-posed problems, nonlinear PDE filters for image restoration, and multichannel variational clutter removal. He routinely chairs SPIE image processing sessions, and has been invited to chair SPIE's First International Conference on Investigative and Trial Image Processing. He publishes regularly in prestigious scientific journals. The American Association for Advancement of Science has invited Dr. Rudin to give a lecture on recent advances in nonlinear image processing.

Dr. Rudin is a Specialist Reserve police officer with the Scientific Investigation Division of LAPD. He has received commendations from the Los Angeles Sheriff's and District Attorney's offices for his contributions to criminal justice investigations.

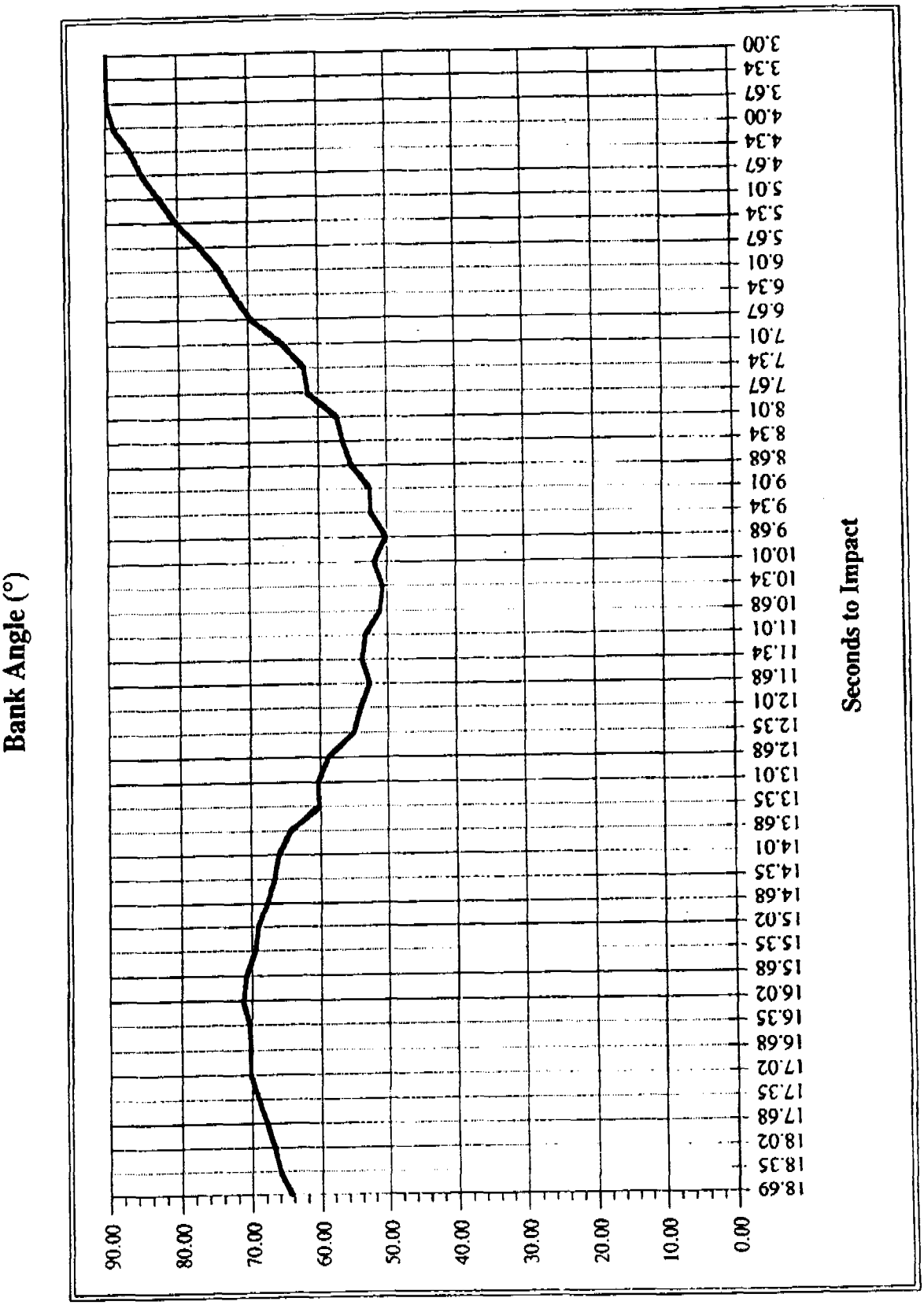
Dr. Stanley Osher is a Co-CEO of Cognitech, Inc. He is recognized as a world expert in the field of nonlinear numerical analysis, numerical solutions to singular hyperbolic PDE problems, and nonlinear interface propagation computations. Since co-founding Cognitech, Inc., Dr. Osher

has been collaborating with Dr. Rudin in the design and development of state-of-the-art nonlinear PDE based image processing algorithms. His expertise in the design of accurate, non-oscillatory, finite difference schemes for nonsmooth problems sets Cognitech's algorithms apart from the rest of the competition, even when problems with the same analytical models are solved. Dr. Osher has published extensively in the computational mathematics field and he serves as an editor to the most prestigious journals in applied mathematics. Dr. Osher is a senior professor of applied mathematics at UCLA. He has recently been invited to address the International Congress of Mathematicians.

Consultants:

Prof. Pierre-Louis Lions is a co-director at CEREMADE and a professor of applied mathematics at the University of Paris IX. He has more than three hundred publications in diverse fields of applied and computational mathematics. He has been actively working and publishing in the field of mathematical image processing. He has been a principal consultant of Cognitech, Inc. for the last five years. In 1994, Professor Lions was the first applied mathematician to receive the Field's medal, an equivalent to the Nobel Prize in mathematics.

Prof. Jean-Michel Morel is a senior professor of computational applied mathematics at the University of Paris IX. He is a director at CEREMADE, along with Professor Lions. Professor Morel has also been a principal consultant of Cognitech, Inc. for the last five years. He has pioneered pyramidal multiscale segmentation theory, PDE based morphological image processing, and affine invariant shape recognition. Professor Morel and his CEREMADE group have emerged in the academic world as leaders in image processing. He is the first image processing specialist to join the editorial board of the SIAM Journal. He has been recognized by many prestigious European prizes in science and technology.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DAILY RECORD OF FACILITY OPERATION

LOCATION:	FACILITY:	DATE:	Page
FAIRCHILD AFB, WA	TOWER	24 JUN 94	Page 1 of 12 Pages

REVIEWED BY: EJT

I CERTIFY that entries are correct; that all scheduled operations have been accomplished, except as noted, and that all abnormal occurrences and conditions have been recorded.

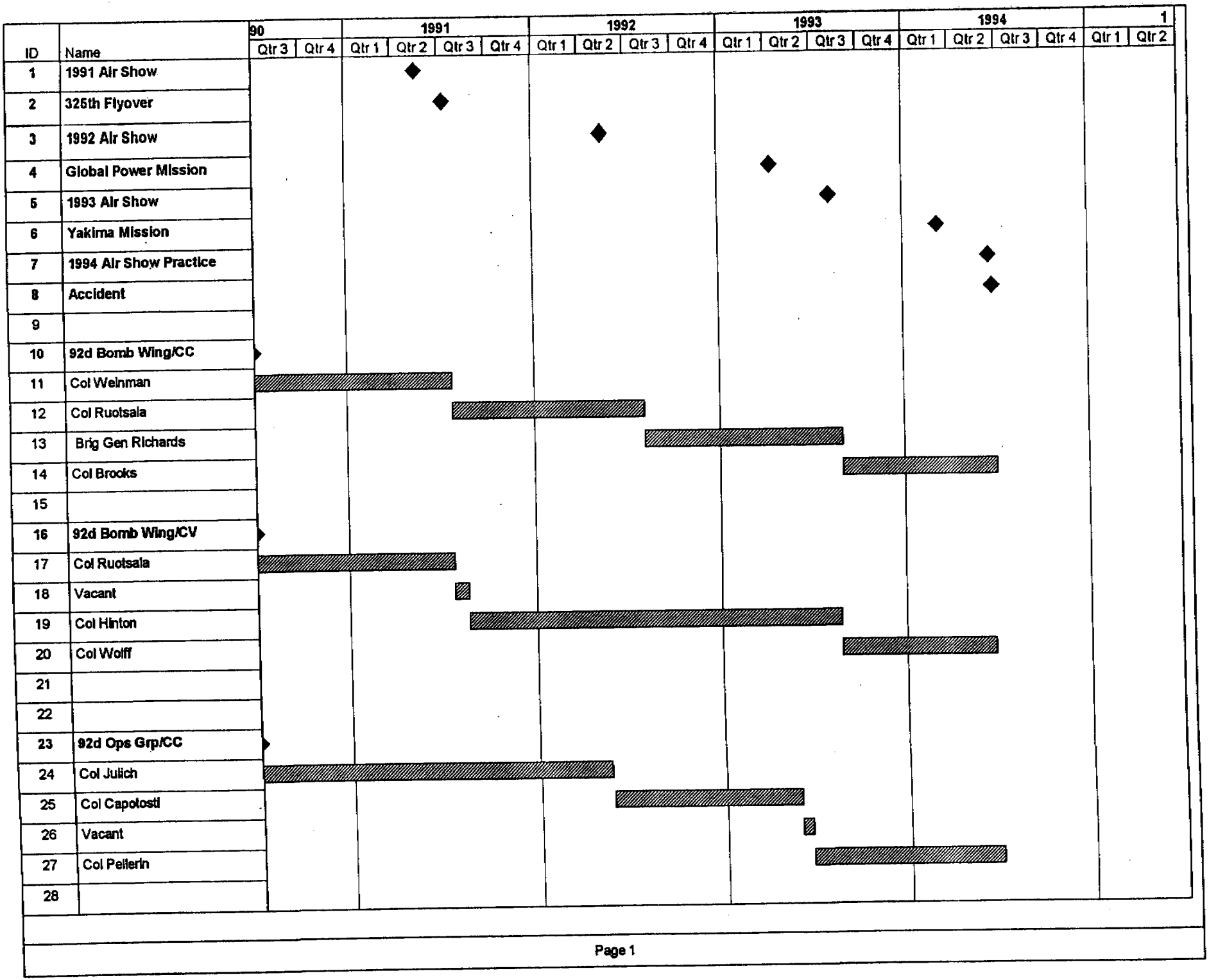
SIGNATURE OF SUPERVISOR(S)

Richard Wright

TIME UTC	REMARKS
0530	A CREW ON DUTY, RW ON AS SCTLR, CMAF, RWY 23 AND RWY 23 ILS IN USE, NOTAMS: PPR 1 JUL 0900L - 1200L, PPR 24 JUN 1200L - 26 JUN 1700L, ARPT ADVYS: TWY H LIGHTS OUT UFN, MEN AND EQUIPMENT PERFORMING TWY SURFACE REPAIR VARIOUS LOCATIONS ON THE PARALLEL TWY UFN, STUBS 59 AND 60 CLSD FOR REPAIR 19 MAY - 1 JULY, NEW VHF GROUND CONTROL FREQUENCY 121.8, QUIET HOURS 1 JULY FROM 0900L - 1200L, NO ENGINE RUNS.
0532	INACTIVE ILS RWY 05 ACTIVATED, ACN.
0536	RWY 05 ILS MONITORING NORMAL, RWY 23 ILS IN USE, ACN.
0619	TAPES CHG/CKD, REPRO SATFY, B DECK IN USE, CHANGED LATE DUE TO TRAFFIC, FCLC.
1230	RK IN FACILITY TO WORK FOR XX, XX RELEASED.
1330	121.5 AND 243.0 CKD, REPRO SATFY.
1340	B CREW ON DUTY. DW ON AS WSUPVR. CMAF. RH RLSD TO WORK SWING SHIFT. SN RLSD FOR PERSONNEL AFFAIRS. SI RLSD BY CCTLR.
1352	FCLC.
1525	CPA DAILY CHECK, REPRO SATFY.
1900	ILS RLSD TO MAINT FOR PMI'S. ACN.
1955	NOTAMS: 25 Jun 94 CLASS D SURFACE AREA CLSD 1ØØ 1100-1130L AND 1400-1530L FOR F-18 AND PITTS AEROBATIC PRACTICE FROM A 5 NM RADIUS UP TO 5000 AGL AND 26 JUN FROM 0900-1700L. BASE OPS..CG.
2115	CPA: INFLIGHT EMERGENCY CZAR52, H/B-52, AIRCRAFT CRASH IN SOUTH TRAINING AREA, POB'S 3 , UNKNOWN FUEL UNKNOWN, ACN.
2149	SA ON AS WSUPVR, RWY23 ILS IN USE.
2210	C CREW ON DUTY, RC ON AS WSUPVR. MM RELEASED FOR TDY. LATE ENTRY 2120, RUNWAY OPERATIONS SUSPENDED, ACN.
2232	FCLC. NOTAM: AIRFIELD CLOSED UFN, #M0038, GC.
2340	LATE ENTRIES: 2113 COMMERCIAL POWER FAILURE, FACILITY ON GENERATOR POWER. 2252 GENERATOR POWER FAILURE, FACILITY ON BATTERY BACKUP POWER, ACN. 2330 FACILITY ON COMMERCIAL POWER, ACN. 2338 FCLC.
2345	LATE ENTRY, 2235, REQUESTED THAT GEG SECURE A 5NM RADIUS UPTO 8000 FEET FROM NEWS MEDIA.
0020	NOTAM: AEROSPACE DAY 94 CANCELLED, #M0039, DD.

MFR: ILS returned to service at or about 2118. PY

AF FORM 3616, MAR 92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Qtr 4
Qtr 1
Qtr 2
Qtr 3
Qtr 4
Qtr 1
Qtr 2
1 1991 Air Show
2 325th Flyover
3 1992 Air Show
4 Global Power Mission
5 1993 Air Show
6 Yakima Mission
7 1994 Air Show Practice
8 Accident
9
10 92d Bomb Wing/CC
11 Col Weinman
12 Col Ruotsala
13 Brig Gen Richards
14 Col Brooks
15
16 92d Bomb Wing/CV
17 Col Ruotsala
18 Vacant
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23 92d Ops Grp/CC
24 Col Julich
25 Col Capotosti
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27 Col Pellerin
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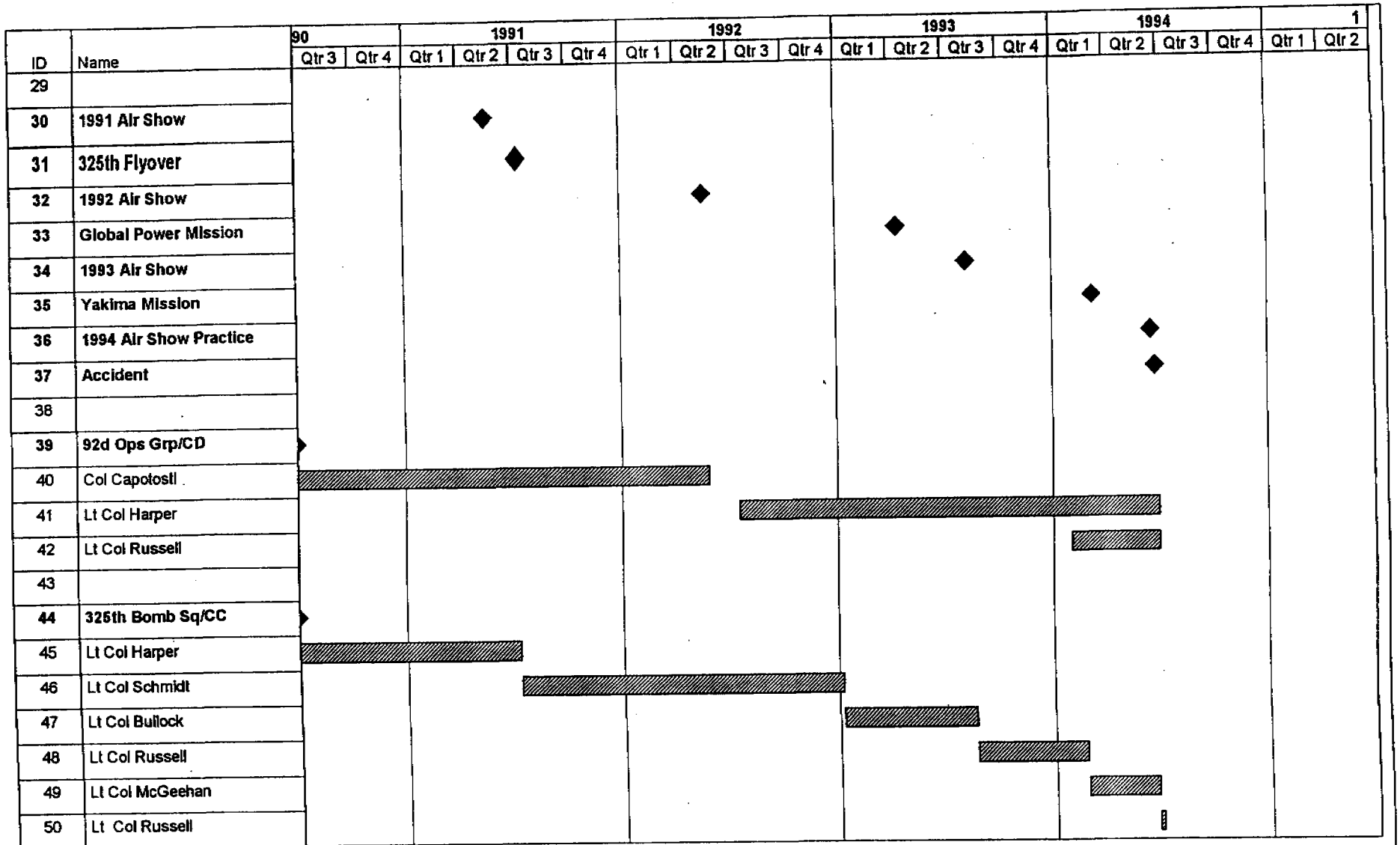
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Qtr 2
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30 1991 Air Show
31 325th Flyover
32 1992 Air Show
33 Global Power Mission
34 1993 Air Show
35 Yakima Mission
36 1994 Air Show Practice
37 Accident
38
39 92d Ops Grp/CD
40 Col Capotosti
41 Lt Col Harper
42 Lt Col Russell
43
44 325th Bomb Sq/CC
45 Lt Col Harper
46 Lt Col Schmidt
47 Lt Col Bullock
48 Lt Col Russell
49 Lt Col McGeehan
50 Lt Col Russell

AA-24.2

TAB AA-25

LISTING OF VIDEOTAPE CONTENTS

Tab AA-25.1	Tape of 19 May 1991 Fairchild AFB Air Show B-52 Exhibition secured from Derek B. Riggan
Tab AA-25.2	Tape of 12 July 1991 325th Change of Command Flyover secured from Shawn R. Fleming
Tab AA-25.3	Tape of 17 May 1992 Fairchild AFB Air Show B-52 Exhibition secured from Derek B. Riggan
Tab AA-25.4	Tape of 17 June 1994 B-52 Exhibition Practice secured from Allan J. Geisler
Tab AA-25.5	Tape of 24 June 1994 B-52 Accident Sequence secured from Robin L. Keiser
Tab AA-25.6	Tape of 24 June 1994 B-52 Accident Sequence secured from Ronald L. Petersen

ADMINISTRATIVE NOTES

1. **General Witness Advisement.** All witnesses, including those whose testimony was summarized or not transcribed, were provided the advice contained at paragraph 1 and sworn using the oath contained at paragraph 3 of Attachment 3, AFR 110-14. At the conclusion of their respective interviews, all persons were advised against discussing their testimony with others in order to preserve the individual recollections of the witnesses.

2. **Redaction From Witness Testimony.** Portions of individual testimony were redacted to preclude release of personal information protected by the Privacy Act of 1974. In the case of redaction made at Tab V-33.6, certain portions of testimony invasive of the personal privacy of the witness, or her family, were redacted and replaced with bracketed words that were necessary to continue understanding of the witness's train of thought.

3. **Witness Testimony.** Unless otherwise indicated in the Witness Listing at Tab AA-26, all witness interviews were conducted by personal interview. Locations of interviews are indicated.

4. **Testimony of Major Cochran.** The misstatement of Lt Col Nehring to Maj Cochran regarding the release authority of the AFR 110-14 Investigation Report being Col McConnell, was identified and corrected. Major Cochran was contacted by telephone and informed that the proper release authority was the appointing authority, 12 AF/CC, and that no further contact with her would be necessary prior to a release date.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

MEMORANDUM FOR HQ 12 AF/JA

FROM: 92 ARW/JA
1 E Bong Street, Suite 134
Fairchild AFB, WA 99011-8517

SUBJECT: Certification of Transcribing Staff

1. The following personnel were apponted by me to support the AFR 110-14, Aircraft Accident Investigation Board, and provided transcription support for testimony provided by witnesses.

Msgt Frank Custer, 92 ARW/JA
Tsgt Ronald J. Duckworth, 92 ARW,JA.
A1C Maria D.L. Cachola, 92 ARW/JA
Mrs. Lisa Aguon, 92 ARW/JA
TSgt Daniel J Nelson, 92 ARW/JA
SrA Josh A. Morrison, 92 ARW/JA
Ms. Barbara Bishop, 92 ARW/JA
Mrs. Trudy Farr, 92 CPTS/CCS

2. All personnel assigned to the transcribing staff provided dirctly to the completion of all witness testimony provided to the board. The following interviews were received and transcribed by my staff:

Brig Gen James Richards
Col William Brooks
Col David Capotosti
Col Richard Fitzhugh Jr.
Col Stephen Harper
Col Michael Ruotsala
Col Arnold Julich
Col William Pellerin
Col Dennis Ballog
Col Richard Wirth
Lt Col David Bullock
Lt Col Samuel Cunningham
Lt Col Richard Day
Lt Col Robert Grant
Lt Col Dennis Huntsinger
HQ ACC/DOT/DOTV/DOTO
Lt Col Raymond Ortiz
Lt Col Michaerl McCullough
Maj Theresa Cochran
419 Flight Test Squadron Pilots
Maj Donald Thompson
Capt Brian Anderson
Capt Steven Carlson
Capt Stephen Coppi
Capt Clem Countess
Capt Peter Donnelly
Capt Brett Dugue'
Capt Eric Jones
Capt David Laur
Tsgt Wayne Wimset
SrA Antonio Garcia Jr
Mr Alexander Brown
Mrs Jodi McGeehan
Fire Chief Robert Mirasol
Mr Kennith Pearce
Mr Leland White
Maj Jay Slaugenhoupt
Mr Derrick Riggan
Capt Shawn Flemming
Capt Jesse Ward, IV

3. I have attached to this letter, a Certification of Transcription for each staff member who supported the investigation team.

FRANK L. CUSTER, MSgt, USAF
Law Office Manager

8 Atchs
Certificates of Transcription

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

MEMORANDUM FOR 12 AF/JA

FROM: 92 ARW/JA
1 E Bong Street, Suite 134
Fairchild AFB, WA 99011-8517

SUBJECT: Certification of Transcription

I hereby swear and affirm that the transcription conducted by me for the AFR 110-14, Aircraft Accident Investigation Board, investigating the 24 Jun 94, B-52 crash, is a true and accurate transcription of the testimony provided by the witnesses.

FRANK C. CUSHER, MSgt, USAF
Transcription Staff Supervisor

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

MEMORANDUM FOR 12 AF/JA

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SUBJECT: Certification of Transcription

I hereby swear and affirm that the transcription conducted by me for the AFR 110-14, Aircraft Accident Investigation Board, investigating the 24 Jun 94, B-52 crash, is a true and accurate transcription of the testimony provided by the witnesses.

RONALD J. DUCKWORTH, TSgt, USAF
Transcription Staff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

MEMORANDUM FOR 12 AF/JA

FROM: 92 ARW/JA
1 E Bong Street, Suite 134
Fairchild AFB, WA 99011-8517

SUBJECT: Certification of Transcription

I hereby swear and affirm that the transcription conducted by me for the AFR 110-14, Aircraft Accident Investigation Board, investigating the 24 Jun 94, B-52 crash, is a true and accurate transcription of the testimony provided by the witnesses.

Maria del L Cachola
MARIA D.L. CACHOLA, A1C, USAF
Transcription Staff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

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SUBJECT: Certification of Transcription

I hereby swear and affirm that the transcription conducted by me for the AFR 110-14, Aircraft Accident Investigation Board, investigating the 24 Jun 94, B-52 crash, is a true and accurate transcription of the testimony provided by the witnesses.

LISA S. AGUON, GS-8, DAFC
Transcription Staff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

MEMORANDUM FOR 12 AF/JA

FROM: 92 ARW/JA
1 E Bong Street, Suite 134
Fairchild AFB, WA 99011-8517

SUBJECT: Certification of Transcription

I hereby swear and affirm that the transcription conducted by me for the AFR 110-14, Aircraft Accident Investigation Board, investigating the 24 Jun 94, B-52 crash, is a true and accurate transcription of the testimony provided by the witnesses.

DANIEL J. NELSON, TSgt, USAF
Transcription Staff

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 92D AIR REFUELING WING (AMC)
FAIRCHILD AIR FORCE BASE WASHINGTON

31 August 1994

MEMORANDUM FOR 12 AF/JA

FROM: 92 ARW/JA
1 E Bong Street, Suite 134
Fairchild AFB, WA 99011-8517

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JOSH A. MORRISON, SrA, USAF
Transcription Staff

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Barbara A. Bishop

BARBARA A. BISHOP, GS-6, DAFC
Transcription Staff

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TRUDY I. FARR, GS-5, DAFC
Transcription Staff

INTERVIEW LISTING

NAME	DATE INTERVIEWED	LOCATION INTERVIEWED
Brig Gen James M. Richards	22 August 1994	Pentagon, Washington ,DC
Col William C. Brooks	12 and 24 August 1994	Davis-Monthan AFB, AZ
Col David Capotosti	12 August 1994	Davis-Monthan AFB, AZ
Col Richard E. Fitzhugh, Jr.	14 August 1994	Fairchild AFB, WA
Col Stephen D. Harper	4 August 1994	K.I Sawyer AFB, MI (telephone)
Col Michael G. Ruotsala	19 August 1994	Det 105, Univ. of CO (telephone)
Col Arnold L. Julich	17 and 30 August 1994	Plattsburg AFB (telephone)
Col William E. Pellerin	10 and 23 August 1994	Fairchild AFB, WA
Col Dennis F. Ballog	20 August 1994	Ramstein AB, GE (telephone)
Col Richard C. Wirth	16 August 1994	Fairchild AFB, WA
Lt Col David E. Bullock	17 August 1994	Maxwell AFB, AL (telephone)
Lt Col Samuel J. Cunningham	25 July 1994	Langley AFB, VA (telephone)
Lt Col Richard L. Day	26 July 1994	Fairchild AFB, WA
Lt Col Robert J. Grant	22 July 1994	Fairchild AFB, WA
Lt Col Dennis A. Hunsinger	18 August 1994	Fairchild AFB, WA
HQ ACC	25 July 1994	Langley AFB, VA (telephone)
Lt Col Raymond Ortiz	9 August 1994	Langley AFB, VA (telephone)
Lt Col Michael E. McCullough	25 August 1994	Fairchild AFB, WA
Maj Theresa L. Cochran	1 August 1994	Fairchild AFB, WA
419 Flight Test Squadron Pilots	9 August 1994	Edwards AFB
Maj Donald W. Thompson	28 July 1994	Wright-Patterson AFB, OH(telephone)
Capt Brian D. Anderson	22 July 1994	Minot AFB, ND (telephone)
Capt Steven R. Carlson	2 August 1994	Fairchild AFB, WA
Capt Stephen A. Coppi	8 August 1994	Papillion ,NE (telephone)
Capt Clem Countess	28 July 1994	Minot AFB, ND (telephone)
Capt Peter A. Donnelly	3 August 1994	USAF Academy, CO (telephone)
Capt Brett A. Dugue'	22 July 1994	Whiteman AFB, MO (telephone)
Capt Eric M. Jones	29 July 1994	Barksdale AFB, LA (telephone)
Capt David J. Laur	11 August 1994	Minot AFB, ND (telephone)
TSgt Wayne D. Wimsett	29 July 1994	Fairchild AFB, WA
SrA Antonio Garcia Jr.	27 July 1994	Fairchild AFB, WA
Mr. Alexander P. Brown	25 July 1994	Fairchild AFB, WA
Mrs. Jodi A. McGeehan	1 August 1994	New Cumberland, WV (telephone)
Fire Chief Robert Mirasole	26 July 1994	Fairchild AFB, WA
Mr. Kenneth C. Pearce	25 July 1994	Lake Geneva, WI (telephone)
Mr. Leland White	15 August 1994	Gresham, OR (telephone)
Maj Jay P. Slaugenhoupt	26 July 1994	Fairchild AFB, WA
Mr. Derrick B. Riggan	11 August 1994	Fairchild AFB, WA
Capt Shawn R. Fleming	1 August 1994	Minot AFB, ND (telephone)
Capt Jesse E. Ward, IV	23 August 1994	San Antonio, TX (telephone)
Lt Col Doyle W. Isaak	25 July 1994	Fairchild AFB, WA
1Lt Thomas M. Anderson	21 July 1994	Fairchild AFB, WA
TSgt Russell E. Shue	21 July 1994	Fairchild AFB, WA
TSgt Renee A. Teston	3 August 1994	Cheney, WA (telephone)
SrA Scott A. Harrington	1 August 1994	Fairchild AFB, WA
SrA Peter E. Kana	27 July 1994	Fairchild AFB, WA
SrA Vincent B. Smits	1 August 1994	Fairchild AFB, WA
A1C Jason L. White	21 July 1994	Fairchild AFB, WA
GS-11 Ronald L. Petersen	22 July 1994	Fairchild AFB, WA

31 August 1994

MEMORANDUM FOR THE RECORD

SUBJ: Second Interviews with Col Pellerin and Col Brooks

1. The first interview with Col Pellerin occurred on 10 August 1993. He was represented and accompanied by Captain Donny W. Bethel, Area Defense Counsel.

a. At the time of the interview, I informed both Col Pellerin and Capt Bethel that a subsequent interview might be necessary. By the third week, I determined that a subsequent interview would be necessary to clear up a few points, but because of other short-term commitments, I did not immediately inform Col Pellerin of the fact.

b. By chance encounter, I met Col Pellerin on approximately 18 August, in front of the Fairchild BOQs. He asked how the investigation was going, whether he would be needed any more for an interview, and if he could continue to plan his PCS departure date for 26 August. I told him to continue with his plans, but that an additional interview would be necessary. He offered to come in at any time, but I told him the interview was not urgent, and that with my schedule, I would have to check my availability and negotiate a time with him. Later that day we spoke on the phone; I cannot recall who initiated the contact. He again offered to come in anytime I wanted. I told him, I was swamped with my current schedule, and would have to delay the interview until early the following week. We scheduled the interview for 0800 hours on 22 August. I told him this would allow me to catch up on my work and give him sufficient time to again consult his attorney

c. The second interview occurred on the morning of the 22nd, as pre-arranged. He was reminded of his previous oath and rights advisement, and was asked if he needed clarification of any points. Upon declining my offer, we conducted the interview.

2. The initial interview I conducted with Col Brooks occurred on 12 August . Col Brooks had consulted with an attorney by telephone, but voluntarily attended the interview without being accompanied. The interview was recorded by Col Brooks, ostensibly at the urging of his attorney.

a. At some point after my initial interview of Col Brooks, I determined that a second interview with him would also be necessary. Before I had the opportunity to call and negotiate a second interview date, he called me to discuss his first interview. At that time we informed him of our desire to interview him again. He stated he would let his attorney know, and requested a

copy of his interview. We telefaxed a copy of the transcribed testimony to him as soon as it was available. After having the chance to review it, we arranged a mutually agreeable time on 24 August to conduct the second interview, a telephone interview. Like the first, Col Brooks tape recorded the interview for his attorney to review.

MICHAEL G.MCCONNELL, Colonel, USAF
AFR 110-14 Investigating Officer

CERTIFICATION OF AUTHENTICITY

I, John F. Armour, hereby swear and affirm, that the videotape recording attached to the foregoing AFR 110-14 Investigation Report as Tab AA-25, is an accurate and complete compilation of the original videotapes represented to me as follows:

1. Tape of 19 May 1991 Fairchild AFB Air Show B-52 Exhibition sequence secured from Derek B. Riggan

2. Tape of 12 July 1991 325th Change of Command Flyover sequence secured from Shawn R. Fleming

3. Tape of 17 May 1992 Fairchild AFB Air Show B-52 Exhibition sequence secured from Derek B. Riggan

4. Tape of 17 June 1994 B-52 Exhibition Practice sequence secured from Allan J. Geisler

5. Tape of 24 June 1994 B-52 Accident sequence sequence secured from Robin L. Keiser

6. Tape of 24 June 1994 B-52 Accident sequence secured from Ronald L.Petersen

Dated: 2 Sep 94

JOHN F. ARMOUR, Sgt, USAF
Graphics Specialists