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Non-Strategic Nuclear Weapons

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<https://fas.org/issues/nuclear-weapons/>

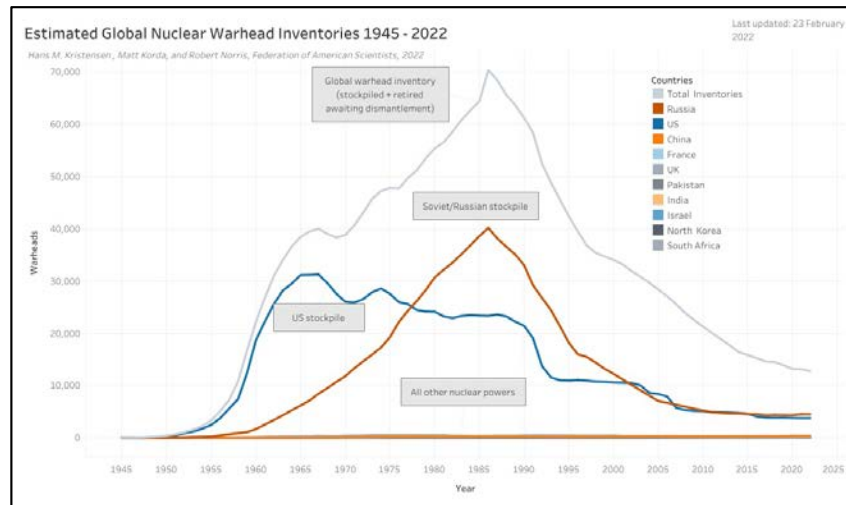
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Overview

1. Status and history
2. Definitions
3. Country profile: United States
4. Country profile: Russia
5. Country profile: Pakistan
6. Country profile: North Korea
7. Summary and conclusions

Note: Briefing only includes countries that say they have non-strategic nuclear weapons

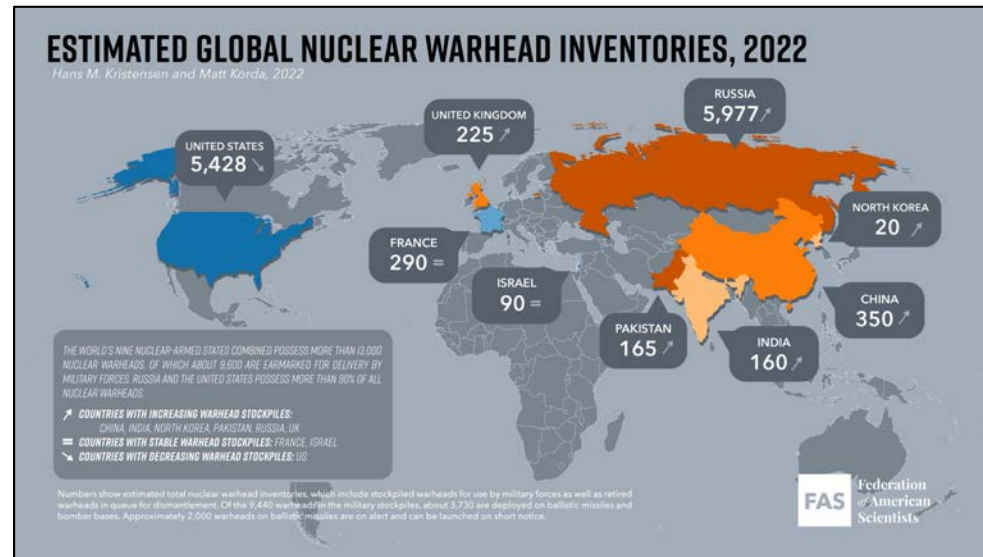
1. Status and history



Enormous reductions since 1986 peak of 64,500 stockpiled warheads in 1986 (70,300 if including retired warheads):

- 51,800 warhead stockpile reduction
- 57,600 warheads dismantled
- 4,000 retired warheads currently awaiting dismantlement

Trend: pace of reductions slowed, everyone is modernizing, new types, increasing role, reaffirmation of importance, indefinite possession



Today: 9,440 warheads in stockpiles (12,700 if also counting retired warheads awaiting dismantlement)

US and Russia possess 90% of global inventory; **each has more than 4 times more warheads than the rest of the world combined**: 11-13 times more than third-largest (China)

Decreasing: US

Increasing: Britain, China, Russia(?), Pakistan, India, North Korea

Steady: France, Israel

1. Status and history

Three countries (clue) today officially operate non-strategic nuclear weapons

Many others have forces with non-strategic characteristics but characterize them as strategic weapons

Non-Strategic Nuclear Weapons Users Then And Now*			
Country	Cold War	Current	Remarks
China	(no)	(no)	Several missiles do not have intercontinental range.
France	yes	(no)	Fighter jets do not have intercontinental range.
India	n.a.	(no)	Several missiles and fighters do not have intercontinental range.
Israel	(no)	(no)	Several missiles and fighters do not have intercontinental range.
North Korea	n.a.	(no)	Several missiles do not have intercontinental range.
Pakistan	n.a.	yes	Several missiles and fighters do not have intercontinental range.
South Africa	(yes)	n.a.	Fighters did not have intercontinental range.
USSR/Russia	yes	yes	Compensate for conventional weapons inferiority
United Kingdom	yes	no	
United States	yes	yes	Nearly all eliminated; only a few hundred gravity bombs remain
10	4	3	
* Non-strategic forces are designed as weapons with less than intercontinental range that are formally used as non-strategic weapons. Some countries operate weapons that have non-strategic characteristics but officially serve a strategic role.			

2. Definitions

There is no universal definition of what a non-strategic nuclear weapon is

- Non-strategic: not counted as strategic
- Tactical: tailored limited use
- Battlefield: local warfighting

Name result of history and arms control

Until 2018, US had pretty much moved away from “non-strategic” and considered all nuclear weapons to be strategic

More about how weapon is used than what it is



B61-12: strategic or non-strategic?



Now it's strategic



Now it's non-strategic

2. Definitions

Common misperception that low-yield means non-strategic and that all strategic weapons are high-yield

In reality, there is significant mix of yields

Many tactical have high-yield option

Many strategic have low-yield option

Warhead	Low-yield option	Remarks
B61-3	Yes	Tactical bomb
B61-4	Yes	Tactical bomb
B61-7	Yes	Strategic bomb
B61-11	No	Strategic bomb
B61-12	Yes	Strategic/tactical bomb
W76-1	No	Strategic warhead
W76-2	Yes	Strategic/tactical warhead
W78	No	Strategic warhead
W80-1	Yes	Strategic cruise missile
B83-1	Yes	Strategic bomb
W87	No	Strategic warhead
W88	No	Strategic warhead

3. US non-strategic weapons

Of 3,700 stockpiled warheads, roughly 200 are officially described as non-strategic

All are gravity bombs for delivery by fighter-bombers

About 100 are deployed in Europe for use by US and allied dual-capable fighter-bombers

Table 1: United States nuclear forces, 2022

Type/Designation	No.	Year deployed	Warheads x yield (kilotons)	Warheads (total available) ¹
ICBMs				
LGM-30G Minuteman III				
Mk-12A	200	1979	1-3 W78 x 335 (MIRV)	600 ²
Mk-21/SERV	<u>200</u>	2006 ³	1 W87 x 300	<u>200</u> ⁴
Total	400⁵			800⁶
SLBMs				
UGM-133A Trident II D5/LE 14/280 ⁷				
Mk-4A		2008 ⁸	1-8 W76-1 x 90 (MIRV)	1,511 ⁹
Mk-4A		2019	1-2 W76-2 x 8 (MIRV) ¹⁰	25 ¹¹
Mk-5		1990	1-8 W88 x 455 (MIRV)	384
Total	14/280			1,920¹²
Bombers				
B-52H Stratofortress	87/46 ¹³	1961	ALCM/W80-1 x 5–150	500
B-2A Spirit	20/20	1994	B61-7 x 10-360/-11 x 400	288
			B83-1 x low-1,200	
Total	107/66¹⁴			788¹⁵
Total strategic forces				3,508
Nonstrategic forces				
F-15E, F-16C/D, DCA	n/a	1979	1-5 B61-3/-4 bombs x 0.3–170 ¹⁶	<u>200</u>
Total				<u>200</u>¹⁷
Total stockpile				3,708
Deployed				1,744 ¹⁸
Reserve (hedge and spares)				1,964
Retired, awaiting dismantlement				1,720

3. US non-strategic weapons

Six bases in five countries have nuclear weapons today

~100 weapons remain

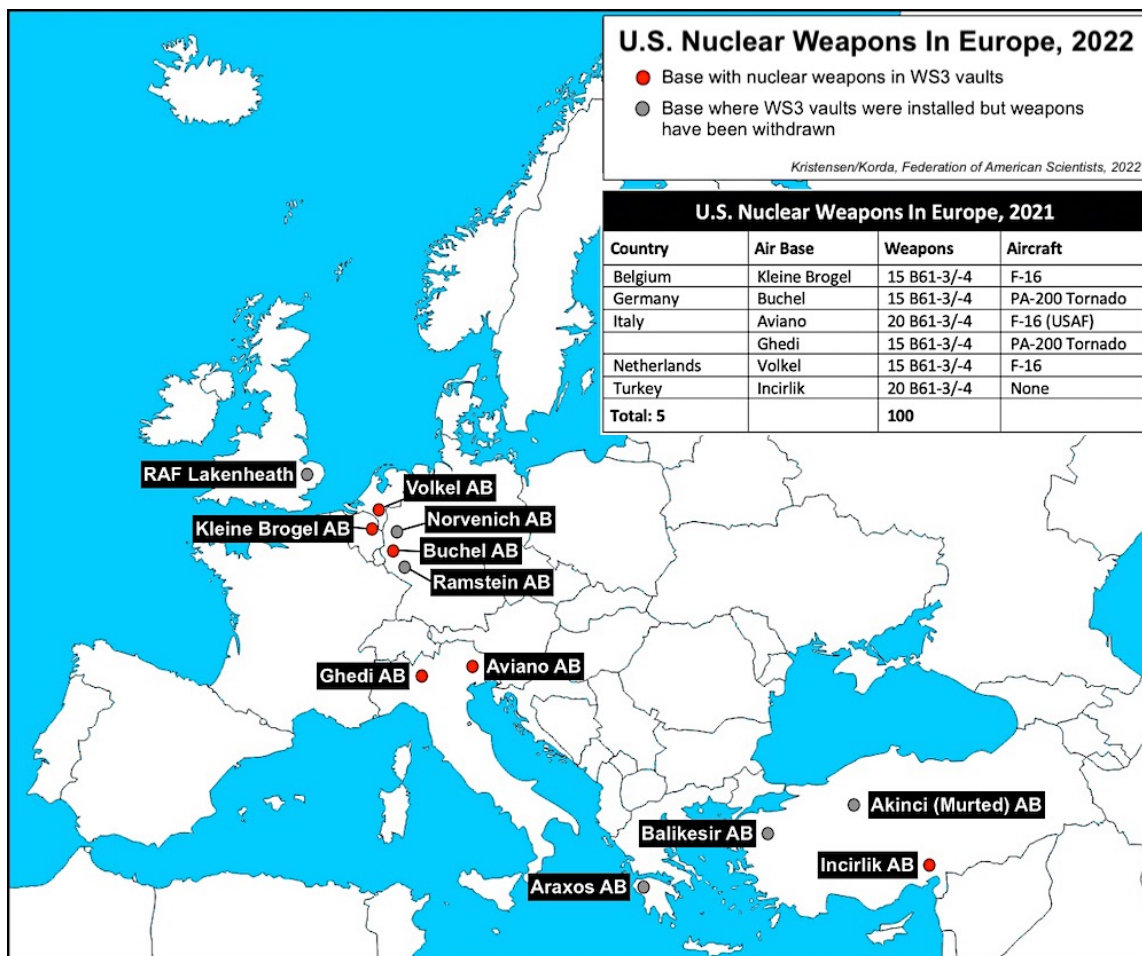
All stored in underground vaults (WS3) inside shelters

Six other bases have empty vaults

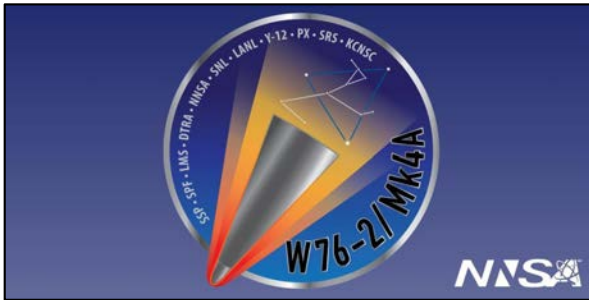
Weapons are B61-3/4 gravity bombs

Yields: 0.3 kt – 170 kt (B61-3)
0.3 kt – 50 kt (B61-4)

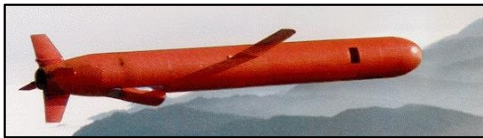
For delivery by US F-15E/-16 and NATO F-16, PA-200



2. US non-strategic weapons



W76-2 low-yield Trident warhead: “ensure a prompt response option that is able to penetrate adversary defenses [to] help counter any mistaken perception of an exploitable ‘gap’ in U.S. regional deterrence capabilities.”



Nuclear sea-launched cruise missile: “provide a needed non-strategic regional presence, an assured response capability...an arms control compliant response to Russia’s non-compliance with the Intermediate-range Nuclear Forces Treaty, its non-strategic nuclear arsenal, and its other destabilizing behaviors.”

Trump NPR recommends acquiring two nuclear “supplements” to the arsenal to “provide a diverse set of characteristics enhancing our ability to tailor deterrence and assurance; expand the range of credible U.S. options for responding to nuclear or non-nuclear strategic attack; and, enhance deterrence by signaling to potential adversaries that their limited nuclear escalation offers no exploitable advantage.”

- No evidence current capabilities can’t do that
- US already has low-yield (~1,000 warheads)
- US already has prompt option to penetrate defenses
- No evidence adversaries believe US would be self-deterred by yield
- Russia began INF violation when US had SLCM in arsenal
- SSC-8 (9M279) does not give Russia military advantage in Europe
- Russia has had non-strategic advantage for three decades
- Signals US return to tactical nuclear thinking; mimics Russian thinking
- Undermines justification and credibility of DCA posture

On already existing flexibility: “Our force structure now actually has a number of capabilities that provide the president of the United States a variety of options to any numbers of threats.”

Gen John Hyten, March 2017

2. US non-strategic weapons

W76-2 new phase of using strategic fast-flying missiles as tactical nuclear weapons

Increased accuracy and reduced yield are part of plan to give President more useable nuclear strike options

“...we are trying to pursue weapons that actually are reducing in yield because we’re concerned about maintaining weapons that would have less collateral effect if the President ever had to use them.”

Gen. Robert Kehler, October 2013

Weapons with increased accuracy and lower yield are more useable and could influence military recommendations to use nuclear weapons

Does the relatively low yield and increased accuracy of the B61-12 change the way the military thinks about how to use the weapon?

“Without a doubt. Improved accuracy and lower yield is a desired military capability.”

Would it result in a different target set or just make the weapon better?

“It would have both effects.”

Gen. Norton Schwartz, January 2014

“If I can drive down the yield, drive down, therefore, the likelihood of fallout, et cetera, does that make it more usable in the eyes of some — some president or national security decision-making process? And the answer is, **it likely could be more usable.**”

Gen. James Cartwright, November 2015

4. Russian non-strategic weapons

Out of stockpile of an estimated 4,477 nuclear warheads, non-strategic weapons make up about 43%, or ~1,912 warheads

2018 Nuclear Posture Review said Russia has “up to 2,000” non-strategic nuclear weapons

US Intel now says: 1,000-2,000 warheads

Reduced by at least 75% since 1991

Inventory reduced by over 1/3 since 2009

Many are still leftover Soviet-era weapons

Very diverse arsenal: bombs, cruise missiles, interceptors, torpedoes, mines, coastal defense

Table 1. Russian nuclear forces, 2022.

Russian	Year	Warheads	Total
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Estimated Russian and US Non-Strategic Nuclear Warheads

Hans Kristensen/Matt Korda/Robert Norris, Federation of American Scientists 2022

Subtotal	68 ¹²	2021	ALCM, bombs	580 ¹³
Subtotal strategic offensive forces	559 ¹⁴			~2,565 ¹⁵
Nonstrategic and defensive weapons				
ABM/Air/Coastal defense				
S-300/S-400 (SA-20/SA-21)	~750	1992/2007	1 x low	~290
53T6 Gazelle	68	1986	1 x 10	68 ¹⁶
SSC-1B Sepal (Redut)	8 ¹⁷	1973	1 x 350	4
SSC-5 Stoooge (SS-N-26) (K-300P/3M-55)	60	2015	(1 x 10) ¹⁸	25
Land-based air				
Bombers/fighters (Tu-22M3(M3M)/Su-24M/ Su-34/MiG-31K)	~300	1974–2018	ASMs, ALBM, bombs	~500
Ground-based				
SS-26 Stone SSM (9K720, Iskander-M)	144	2005	1 x 10–100	70 ¹⁹
SSC-7 Southpaw GLCM (R-500/9M728, Iskander-M) ²⁰				
SSC-8 Screwdriver GLCM (9M729) ²¹	20 ²²	2017	1 x 10–100	20
Naval				
Submarines/surface ships/air			LACM, SLCM, ASW, SAM, DB, torpedoes	~935
Subtotal nonstrategic and defensive forces				~1,912 ²³
TOTAL				~4,477
Deployed				1,588
Reserve				2,889
Retired warheads awaiting dismantlement				1,500
Total inventory				5,977

4. Russian non-strategic weapons

- Dispersed across Russia but focused on Western and Southern military districts
- Navy is largest user, including with introduction of Kalibr LACM on ships and submarines
- Air Force upgrading fighter-bombers, replacing Su-24 with Su-34. Recently added MiG-31K with Kinzal ALBM. Su-57 PAK-FA in production
- SRBM upgraded from SS-21 to SS-26 Iskander and fielding INF-violating SSC-8 (9M729) GLCM
- Defense forces: ABM, SAM, coastal



4. Russian non-strategic weapons

DOD says inventory increasing both in types and numbers

DIA projects “significant” increase of strategic nuclear weapons over next decade (DIA projections tend to be worst-case)

Most seem to be replacing older types

“Increase” might be due to fielding of dual-capable launchers, but not necessarily more warheads assigned to each category

“The general-purpose forces – to include dual-use nonstrategic nuclear forces – will continue to acquire new equipment for the near-term, but deliveries will be small and largely consist of modernized Soviet-era weapons.”

US Defense Intelligence Agency, 2013

Weapons System	Remarks
Air Force	
AS-4 (Kh-22) ASM	1967: 47 years old. For Tu-22M3
Kh-32 ASM	2019?: Replacing AS-4
Bombs	For Tu-22M3, Su-24M, Su-34
Kinzhal ALBM	New for MiG-31K
Navy	
SS-N-9 (Malakhit)	1969: 45 years old. For ships.
SS-N-12 (Bazalt)	1976: 38 years old. For subs.
SS-N-15 (Vyuga)	1969: 47 years old. For subs/ships.
SS-N-16 (Vodopad)	1981: 33 years old. For subs.
SS-N-19 (Granit)	1980: 34 years old. For ships.
SS-N-21 (Granat)	1987: 27 years old. For subs.
SS-N-22 (Moskit)	1981: 22 years old. For ships.
SS-N-26 (Yakhont)	2014: Replacing SS-N-9/12/19/22
SS-N-30 (Kalibr)	(2015). For subs, ships?. Replacing SS-N-19/21
Zircon	2022?: Hypersonic (nuclear possible)
Torpedoes (550/650 mm)	For subs.
Depth Bombs	For ASW aircraft and helicopters.
Army	
SS-26 (Iskander-K)	2005: Replacing SS-21.
SSC-8 GLCM	2011: Nuclear possible
SSC-8 GLCM	2017: New type (INF violation)
Defense	
S-300, A-135, coastal	S-400/500, A-235, Bastion

4. Russian non-strategic weapons

Russia has said for years that all its non-strategic warheads are in central storage

Recent upgrade of nuclear weapons storage site in Kaliningrad

Work not complete

Contingency forward storage site; warheads not present



Recent image: 10 March 2022

@ Maxar Technologies 2022

4. Russian non-strategic weapons

US 2018 Nuclear Posture Review accused Russia of having an “escalate to de-escalate” doctrine:

“Most concerning are Russia’s national security policies, strategy, and doctrine that include an emphasis on the threat of limited nuclear escalation, and its continuing development and fielding of increasingly diverse and expanding nuclear capabilities. Moscow threatens and exercises limited nuclear first use, suggesting a mistaken expectation that coercive nuclear threats or limited first use could paralyze the United States and NATO and thereby end a conflict on terms favorable to Russia. Some in the United States refer to this as Russia’s “escalate to de-escalate” doctrine. “De-escalation” in this sense follows from Moscow’s mistaken assumption of Western capitulation on terms favorable to Moscow.”

“I’ve looked at the Russian doctrine. I’ve looked at Russian writings. It’s not escalate to deescalate, it’s escalate to win. Everybody needs to understand that.”

STRATCOM Commander Gen John Hyten, 2017

“There is compelling evidence that at least one of our potential competitors...believes they can get away with striking us with a low-yield weapon. We cannot allow that perception to persist.”

VCJCS Gen Paul Selva, 2018

Russian officials and independent military analysts dispute this characterization of Russian nuclear strategy

US nuclear strategy also includes escalation to win

6. Pakistani non-strategic weapons

Pakistan operates at least one type of nuclear-capable missile that serves pre-strategic missions

HASR has a range of only 70 km

Part of shift from “minimum deterrent” concept to “full spectrum” deterrent

Several other weapons (fighter-bombers and missiles) also have characteristics similar to Russian and US non-strategic forces

Table 10.8. Pakistani nuclear forces, January 2020

Type (US/Pakistani designation)	Launchers deployed	Year first deployed	Range (km) ^a	Warheads x yield ^b	No. of warheads ^c
<i>Aircraft</i>	36				36
F-16A/B ^d	..	1998	1 600	1 x bomb	..
Mirage III/V	36	1998	2 100	1 x bomb or Ra'ad ALCM ^e	36
<i>Land-based missiles</i>	120 ^f				120
Abdali (Hatf-2)	10	2015	200	1 x 5–12 kt	10
Ghaznavi (Hatf-3)	16	2004	300	1 x 5–12 kt	16
Shaheen-I (Hatf-4)	16	2003	750	1 x 5–12 kt	16
Shaheen-IA (Hatf-4) ^g	..	[2020]	900	1 x 5–12 kt	..
Shaheen-II (Hatf-6)	18	2014	2 000	1 x 10–40 kt	18
Shaheen-III (Hatf-. .) ^h	..	[2022]	2 750	1 x 10–40 kt	..
Ghauri (Hatf-5)	24	2003	1 250	1 x 10–40 kt	24
Nasr (Hatf-9)	24	2013	70	1 x 5–12 kt	24
Ababeel (Hatf-. .)	2 200	MIRV or MRV	.. ⁱ
Babur GLCM (Hatf-7)	12	2014	350 ^j	1 x 5–12 kt	12
Babur-2 GLCM (Hatf-. .) ^k	700	1 x 5–12 kt	..
<i>Sea-based missiles</i>					
Babur-3 SLCM (Hatf-. .)	0	.. ^l	450	1 x 5–12 kt	0
<i>Other stored warheads^m</i>					4
Total	156				160^m

7. North Korean non-strategic weapons

North Korea has several medium-range ballistic missiles that could be considered tactical

Recently, North Korea has described efforts to develop “tactical” nuclear weapons. Test launch on 17 April 2022 was officially described as tactical weapon:

"great significance in drastically improving the firepower of the frontline long-range artillery units, enhancing the efficiency in the operation of [North Korea's] tactical nukes of and diversification of their firepower missions."



8. Summery and conclusions

- Massive reduction since Cold War. Despite claim of Russian increase, estimates have dropped over past decade
- Significant modernization underway of Russian, US, and Pakistani non-strategic nuclear weapons
- New non-strategic nuclear weapons introduced and in development. North Korea also says it is developing “tactical” nuclear weapons
- Several other countries operate weapons with non-strategic characteristics but they don’t call them so
- Increased rhetoric about value of tactical use of nuclear weapons
- Reinvigoration of role and salience of non-strategic weapons
- Dual-capable non-strategic weapons pose special stability challenge

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QUESTIONS?