

UNCLASSIFIED

407378

CENTRAL INTELLIGENCE AGENCY
Washington, D.C.

16 March 1958

APPENDIX E

IMPACT OF A SEPTEMBER 1959 NUCLEAR TEST MORATORIUM

ON
SOVIET NUCLEAR WEAPONS CAPABILITIES

-Prepared for the Ad Hoc Panel on
Nuclear Test Limitations-

DECLASSIFIED WITH DELETIONS
DAE 8249845
Agency Case CIA 85-0236
NLE Case 85-33141
By 210 NLE Date 2/12/88



Office of Scientific Intelligence

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS
DEFINED BY THE ATOMIC ENERGY ACT OF 1954~~

US Control No. 117348

UNCLASSIFIED 40 Copies

K-1192

BEST COPY AVAILABLE

~~UNCLASSIFIED~~

TABLE OF CONTENTS

	<u>Page</u>
A. CURRENT SOVIET NUCLEAR WEAPONS CAPABILITIES	
1. Thermonuclear Weapons	1
a. Chart	4
2. Fission Weapons	5
a. Chart	9
B. FUTURE SOVIET NUCLEAR WEAPONS CAPABILITIES	
1. By 1 September 1958	10
a. Chart	12
2. Following 1 September 1953	14



IS No. 11743
Sine B

~~RESTRICTED DATA~~
THIS DOCUMENT CONTAINS RESTRICTED DATA AS
DEFINED BY THE ATOMIC ENERGY ACT OF 1954

~~UNCLASSIFIED~~

~~TOP SECRET~~
~~UNCLASSIFIED~~

CURRENT SOVIET NUCLEAR WEAPONS CAPABILITIES

Thermonuclear Weapons

The Soviet Union through 28 February 1956 has conducted a total of 11 thermonuclear tests, [redacted] In these tests they have utilized successfully the techniques [redacted] The first Soviet thermonuclear device [redacted] was tested on 22 November 1955. In four subsequent tests through 16 April 1957, [redacted] the estimated yield-to-weight ratio of Soviet thermonuclear designs was rather [redacted] However, beginning with [redacted] on 22 August 1957, [redacted] total weight in [redacted] tested on 24 September and 6 October 1957.

Likewise, beginning with [redacted] there was [redacted]

Where prior to [redacted] the [redacted]



RESTRICTED DATA

THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED BY THE ATOMIC ENERGY ACT OF 1954

~~TOP SECRET~~
~~UNCLASSIFIED~~

TS No. 117343
Final 6

~~TOP SECRET~~

[REDACTED]

We are as yet unable to evaluate the design progress demonstrated in the three [REDACTED] thermonuclear tests conducted during the last week in February 1953 [REDACTED]

[REDACTED] However, these tests are further evidence of a concerted effort by the Soviet Union to improve their thermonuclear weapon designs and capabilities.

In the chart entitled "Estimated Current Soviet Nuclear Weapons Capabilities (Thermonuclear)" these developments have been translated into warhead configurations which we estimate the Soviet Union could be stockpiling as of 1 January 1958. We believe that configuration "A" has been stockpiled only in limited quantities and now has been replaced by other designs. Configuration "B" is a high-yield device which, though not tested by the Soviet Union, we estimate is within its capability to design and produce. However, we believe that at least one mock-up or full scale test would be required before stockpiling on other than an emergency basis.

RESTRICTED DATA

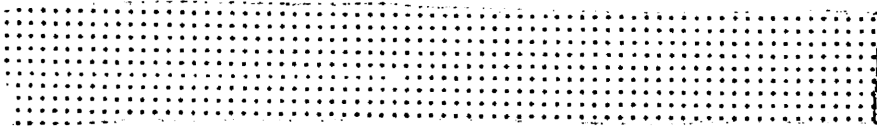
THIS DOCUMENT CONTAINS RESTRICTED DATA AS DEFINED BY THE ATOMIC ENERGY ACT OF 1954

UNCLASSIFIED



~~TOP SECRET~~
UNCLASSIFIED

The possible relationship of warheads to delivery vehicles is shown on the chart in the column entitled "applications". Comparing these current warhead capabilities with estimated payloads of the Soviet intercontinental ballistic missile (ICBM) the intermediate range ballistic missile (IRBM), and missiles in the 700 nautical mile (NM) range, and less, it is apparent that the Soviet Union is now capable of having an ICBM warhead yielding



RESTRICTED DATA

THIS CONTAINS RESTRICTED DATA AS
BY THE ATOMIC ENERGY ACT OF 1954

Page 3 of 14 Pages

TS No. 117343
Final B

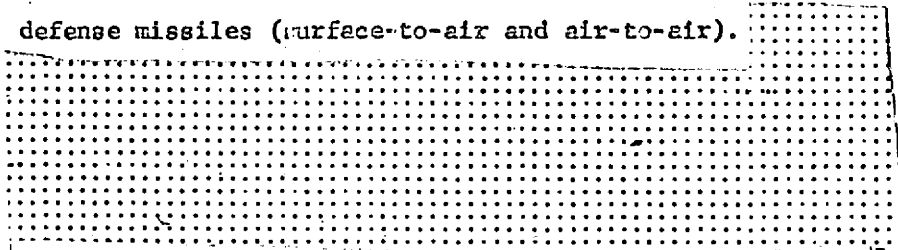
~~TOP SECRET~~
UNCLASSIFIED

Pages 4-6 exempted in full NLE 85-331 #1

~~TOP SECRET~~
~~UNCLASSIFIED~~

In the chart entitled "estimated Current Soviet Nuclear Weapon Capabilities (Fission)" these developments are translated into specific weapons based, in all but two cases (H-4 and L-2), on tested devices. The untested configurations are believed to be well within current Soviet capabilities. The possible relationship of these achievements to specific classes of available delivery vehicles is shown on the chart in the column entitled "application".

Available intelligence has disclosed that at least three Soviet tests were associated with naval applications (two [redacted] underwater and one [redacted] surface burst), one test was conducted in conjunction with Army maneuvers, and two tests probably involved warheads in a surface-to-surface missile (SSM) and in an air-to-surface missile (ASM), respectively. As noted on the chart, certain of the tested configurations are compatible with available air defense missiles (surface-to-air and air-to-air).



RESTRICTED DATA

DOCUMENT CONTAINS RESTRICTED DATA AS
ED BY THE ATOMIC ENERGY ACT OF 1954

Page 7 of 14 Pages

TS No. 117343

Final B

~~TOP SECRET~~
~~UNCLASSIFIED~~

~~TOP SECRET~~
UNCLASSIFIED

We have no evidence that the Soviet Union has conducted the environmental effects tests using warheads compatible with air defense applications. Such tests would appear to be desirable before production of such warheads. We also do not believe that very high or ultra-high altitude tests leading to anti-ICEM applications have been conducted.



Page 8 of 14 Pages

TS No. 117343
Final B

~~RESTRICTED DATA~~
THIS DOCUMENT CONTAINS RESTRICTED DATA AS
DEFINED BY THE EXECUTIVE ORDER OF 1954

~~TOP SECRET~~
UNCLASSIFIED

Page 9 exempted in full NLE 85-331 #1

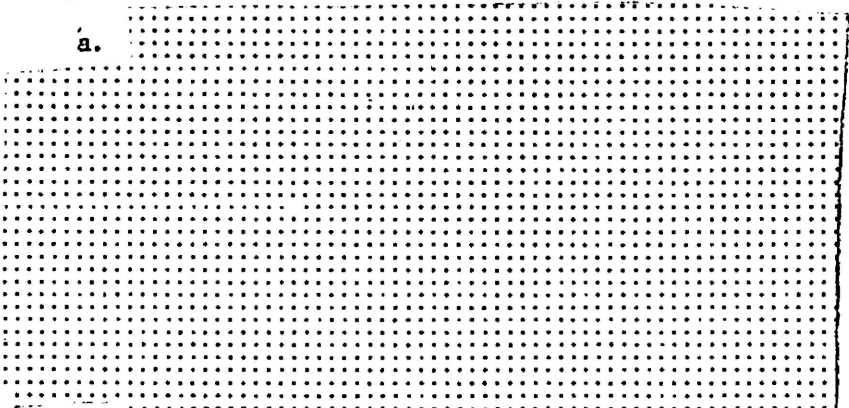
TOP SECRET
UNCLASSIFIED

FUTURE SOVIET NUCLEAR WEAPONS CAPABILITIES

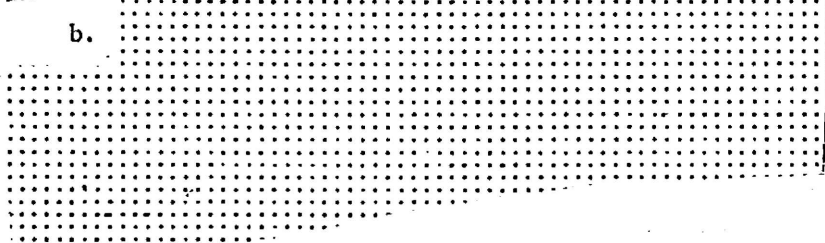
By 1 September 1958

During its 1958 series of nuclear tests, some of which have already occurred but have not been analysed, we anticipate that the Soviet Union probably will seek the following:

a.



b.



c. The acquisition of data on effects of nuclear explosions at altitudes compatible with air defense and anti-ICEM missions.

RESTRICTED DATA

THIS DOCUMENT CONTAINS RESTRICTED DATA AS
DEFINED BY THE ATOMIC ENERGY ACT OF 1954

Page 10 of 14 Pages

TS 117343
Final B



TOP SECRET
UNCLASSIFIED

~~TOP SECRET~~
UNCLASSIFIED

We estimate that such a program would involve a minimum of from ten to 12 additional tests and that it is well within Soviet capabilities to complete such a program in nine months. If accomplished, we estimate that as of 1 January 1959 the thermonuclear and fission weapon capabilities listed on the charts entitled "Estimated Current Soviet Nuclear Weapon Capabilities" could be augmented by the following designs.



TS No. 117343
Final B

Page 11 of 14 Pages

~~TOP SECRET~~
UNCLASSIFIED

~~RESTRICTED DATA~~

~~THIS DOCUMENT CONTAINS RESTRICTED DATA AS
DEFINED BY THE ATOMIC ENERGY ACT OF 1954~~

Pages 12-13 exempted in full NLE 85-331 #1

UNCLASSIFIED
TOP SECRET

Following 1 September 1958

We believe that the 1958 nuclear test program, though permitting the Soviet Union to satisfy its most immediate military requirements for nuclear weapons, will not permit it to produce and stockpile the following classes and types of weapons thereafter without further testing:

a.

b.

c.

d.

e. Obtain the necessary fundamental effects data and develop weapons maximizing selected effects phenomena at very high and ultra-high altitudes.

RESTRICTED DATA
THIS DOCUMENT CONTAINS RESTRICTED DATA AS
DEFINED BY THE ATOMIC ENERGY ACT OF 1954

Page

UNCLASSIFIED
TOP SECRET

US 117343
Final B

