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FOREIGN BALLISTIC MISSILE AND SPACE DEVELOPMENTS IN 1969

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August 1970

CENTRAL INTELLIGENCE AGENCY
DIRECTORATE OF SCIENCE AND TECHNOLOGY

Foreign Missile and Space Analysis Center

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FOREIGN BALLISTIC MISSILE AND SPACE DEVELOPMENTS IN 1969

PURPOSE

To present significant developments in major foreign missile and space systems during 1969 on the basis of test range activities.

SUMMARY

The most significant development in Soviet ballistic missile weaponry during 1969 was the flight test of a long-range naval ballistic missile system which is probably intended for submarine use.

[] of this system were conducted from a naval test center to a distance of more than 3,000 nautical miles.

Other strategic missile system developments involved the continuation of existing R&D programs or newly initiated programs for currently operational systems. Work on a multiple reentry vehicle (MRV) subsystem for the SS-9 ICBM had advanced

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The operational ballistic missile systems (SS-7, SS-8, SS-9 Mods 1 and 2, the standard SS-11, and SS-13 ICBMs; SS-5 IRBM; SS-4 MRBM; SS-12 SRBM; and the SS-N-6, SS-N-5, and SS-N-4 SLBMs) were launched at a reduced rate and primarily for operational training purposes. The SS-4, the most frequently launched Soviet system, was also fired for a number of other purposes including RV R&D and ABM development.

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Clearly, 1969 was a very bad year for the Soviet space program. Failures of important space ventures were prevalent.

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The most favorable developments of the Soviets emerged from the manned near-space program. Two manned space operations were conducted, the first involving two manned vehicles and the second involving three manned vehicles. The main purpose of these operations probably was to develop space station techniques. The first operation was apparently entirely successful, but the success of the more complex second operation was limited because two of the vehicles failed to dock.

The unmanned lunar program included two launches but only one mission success in 1969. Zond 7, a probable precursor of a manned circum-lunar flight, successfully circled the moon and was recovered in the USSR. Luna 15, launched shortly before Apollo 12, failed when it apparently crashed-landed on the moon during a soft landing attempt.

The only interplanetary probes, Venus 5 and 6, did not survive to reach the venusian surface intact. However, a substantial amount of scientific information relative to the venusian atmosphere was transmitted by the probes.

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In the scientific satellite program, the first two scientific satellites designated "Intercosmos" were launched. The Intercosmos program represents a joint scientific venture by the Soviet Bloc nations.

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In the non-Soviet ballistic missile field during 1969, Communist China continued to test its MREM. Tenuous evidence indicated the system is now being fired by troops. Thus, the missile may have been ready for deployment by the end of the year.

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There were no important non-Soviet space developments in 1969. Two attempts to orbit a satellite were made, one by the European Launcher Development Organization (ELDO) at Australia's Woomera facility and the other by Japan at its Kagoshima facility.

During 1969, the U.S. successfully orbited four foreign earth satellites from U.S. test ranges. Three of them were launched from the Western Test Range (WTR) while the fourth satellite was orbited from Cape Kennedy.

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DISCUSSION

MISSILE AND SPACE PROGRAMS

Soviet Ballistic Missile Systems

ICBM PROGRAM—The Soviet ICBM flight test program in 1969 showed a decrease [redacted] in 1968 [redacted]

[redacted]. The program was characterized by the continued firing, although at a reduced rate, of the SS-7 and SS-8 for troop training or quality/reliability control and the continuation of SS-13 operational firings begun in late 1968.

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The flight test program to develop a multiple re-entry vehicle (MRV) system for the SS-9 continued at a steady pace.

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No completely new ICBM systems were flown in 1969. The SS-11 modification series was the only important developmental program initiated.

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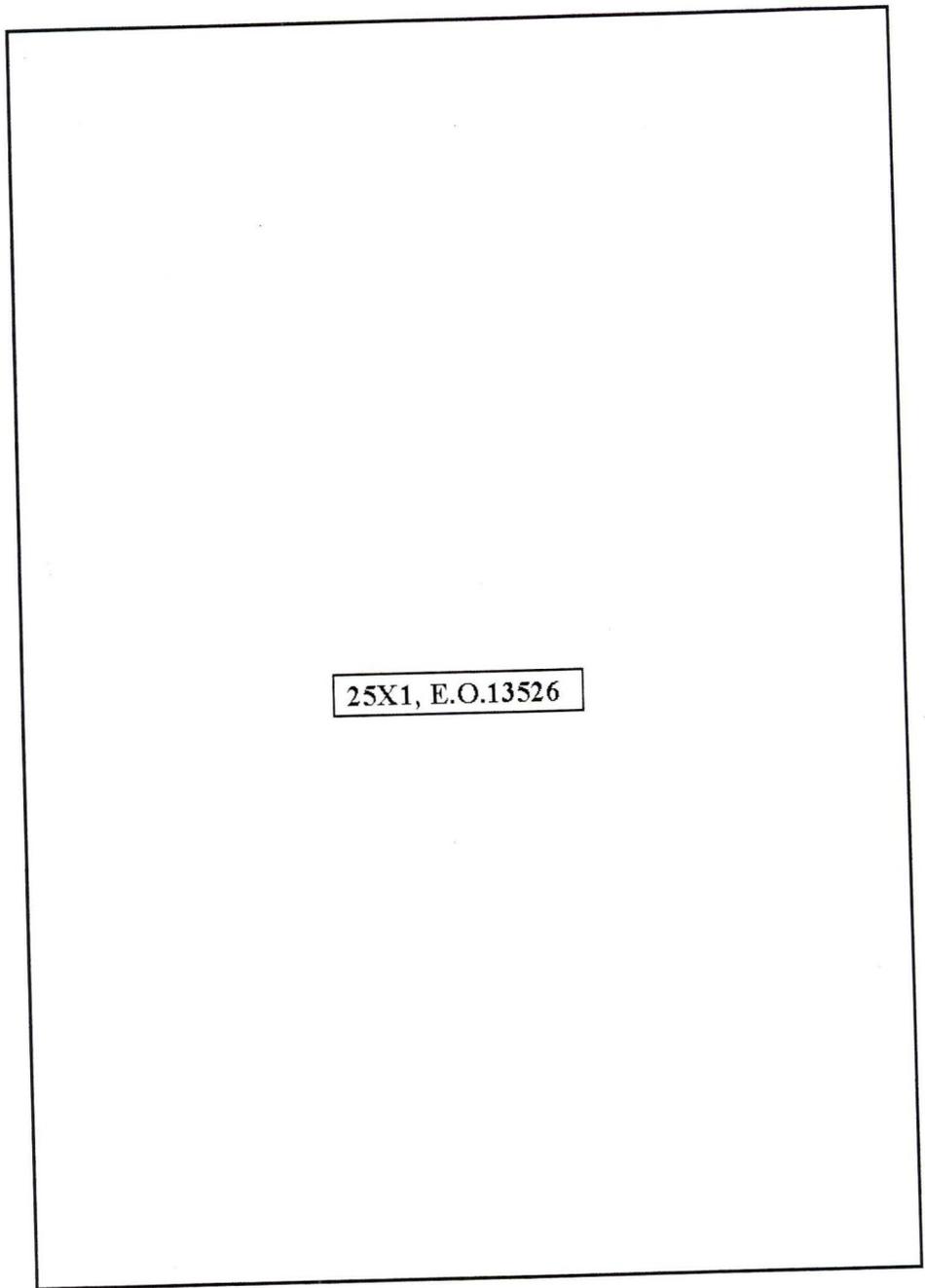
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~~SS-7 ICBM~~

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~~SS-13 ICBM~~

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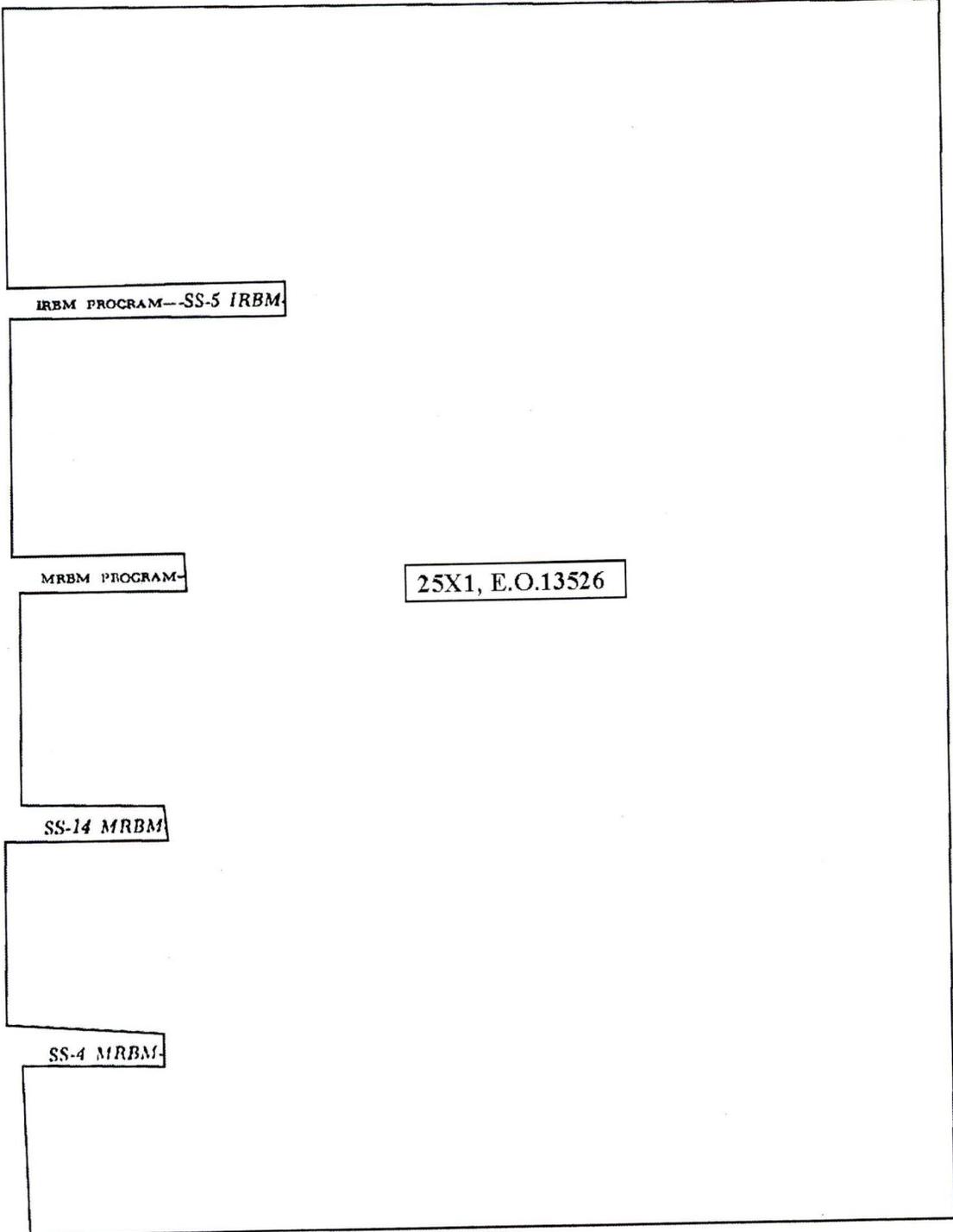
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IRBM PROGRAM--SS-5 IRBM

MRBM PROGRAM

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SS-14 MRBM

SS-4 MRBM

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[redacted]

SRBM PROGRAM—SS-12 SRBM [redacted]

[redacted]

SLBM PROGRAM [redacted]

[redacted]

SS-NX-5 SLBM [redacted]

[redacted]

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SS-N-5 SLBM [redacted]

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[redacted]

SS-N-4 SLBM [redacted]

[redacted]

Soviet Space Programs 25X1, E.O.13526 [redacted]

Space vehicle launchings in the USSR during 1969 increased slightly over the 1968 [redacted] [redacted] launched at a pace roughly comparable to that of 1968, there were [redacted] manned Soyuz flights in 1969 in contrast to [redacted] manned and [redacted] unmanned Soyuz flights in 1968. The number of lunar and planetary probes launched or attempted was [redacted] what it had been in 1968 (planetary launch opportunities were not as plentiful).

[redacted]

MANNED NEAR-SPACE PROGRAM—The manned space program consisted of two operations, a near space involving [redacted] manned Soyuz vehicles and [redacted]

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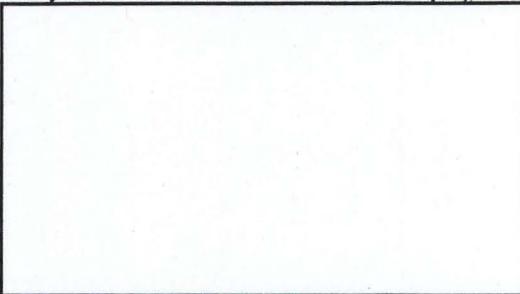
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the SL-4 launch system. Soyuz-4 was launched on 14 January with a single crew member (Shatalov) and a day later, Soyuz-5 was orbited with a three-man crew (Volynov, Yeliseyev, and Khrunov). After a number of orbital corrections, the two spacecraft rendezvoused on 16 January using the automatic rendezvous system and, when they had come within television range of the USSR, were successfully docked manually. In referring to the "manual link-up," TASS described the joined vehicles as "the world's first experimental space station." During the period the vehicles were docked, two crew members (Khrunov and Yeliseyev) from Soyuz-5 left the spacecraft, spent about an hour in space carrying out a number of scientific experiments and observations, and then entered Soyuz-4. Both spacecraft were successfully deorbited and recovered after about three days—Soyuz-4 on 17 January, about 22 miles northwest of Karaganda, and Soyuz-5 on 18 January, about 100 miles southwest of Kustanay.

failures. The SL-12 was used [redacted] times during the year for launches related to the lunar program.



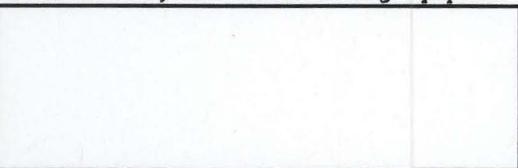
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The second manned mission occurred in October when the most complex manned space mission ever undertaken by the USSR was attempted. Soyuz-6 with a two-man crew (Shonin and Kubasov) was launched on 11 October. Soyuz-7 with a crew consisting of Filipchenko, Volkov, and Gorbatko, was launched on 12 October. Soyuz-8, carrying Shatalov and Yeliseyev, was launched on 13 October. Soyuz-6 did not carry the normal docking equipment.

Luna 15, with the announced mission of "carrying out further research of the moon and near-lunar space," probably crashed on the lunar surface on 21 July when a soft landing was attempted. Zond-7 successfully circled the moon on 11 August and reentered the earth's atmosphere on the 14th. The skip-glide reentry profile, previously demonstrated by Zond-8, was used to accomplish a soft landing in the USSR.

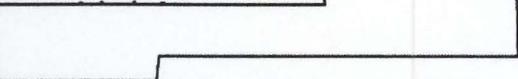


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On the following days there was extensive rendezvous and approach activity, with Soyuz-6 and Soyuz-8 participating as the active vehicles and Soyuz-7 as the passive one. The activity concentrated on manual approach using autonomous navigation techniques. All three spacecraft remained in orbit about five days and were recovered on 16, 17, and 18 January. The overall objective of the mission was never announced, [redacted]

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UNMANNED LUNAR PROGRAM—The unmanned lunar program was characterized by a series of

INTERPLANETARY PROGRAM—Two interplanetary probes, Venus 5 and 6, were successfully launched in January. The probes entered the cytherean atmosphere on 16 and 17 May, respectively. They were not intended to survive long enough to reach the surface intact.

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Both were equipped with an improved radar altimeter and a smaller parachute for more rapid descent. The announced weight for Venus 5 and Venus 6 was 2,488 lb, slightly higher than the announced weight of 2,440 lb for Venus 4.

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The SL-12 can probably place about 10,000 lb into an interplanetary trajectory. The SL-6, which was used on previous interplanetary missions, can place about 2,000 lb into a similar trajectory. Although the precise mission is not known, the increased payload size suggests that an orbiter/lander was intended.

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Meteorological Satellites—Two meteorological satellites were successfully placed in orbit [redacted] in 1969. In contrast to all previous meteorological satellites these [redacted] were termed "Meteor" rather than "Cosmos", suggesting that the Soviets consider the system operational.

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Scientific Satellites—Two purely scientific satellites were launched from Kapustin Yar in 1969—

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Intercosmos 1 on 14 October, and Intercosmos 2 on 25 December. Intercosmos 1, with an orbital lifetime of less than three months, had a solar monitoring mission. Intercosmos 2 had a mission of ionospheric research. Although described as the first satellites developed as joint scientific ventures by the nations of the Soviet Block, the spacecraft were essentially the same as the former Cosmos scientific satellites.

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Non-Soviet Space Developments

Two foreign satellite launch attempts were made, [] The European Launcher Development Organization (ELDO) conducted a satellite launch attempt in July while Japan made an [] attempt to orbit their first satellite in September. Four foreign payloads were successfully orbited by US launchers from US test ranges during 1969.

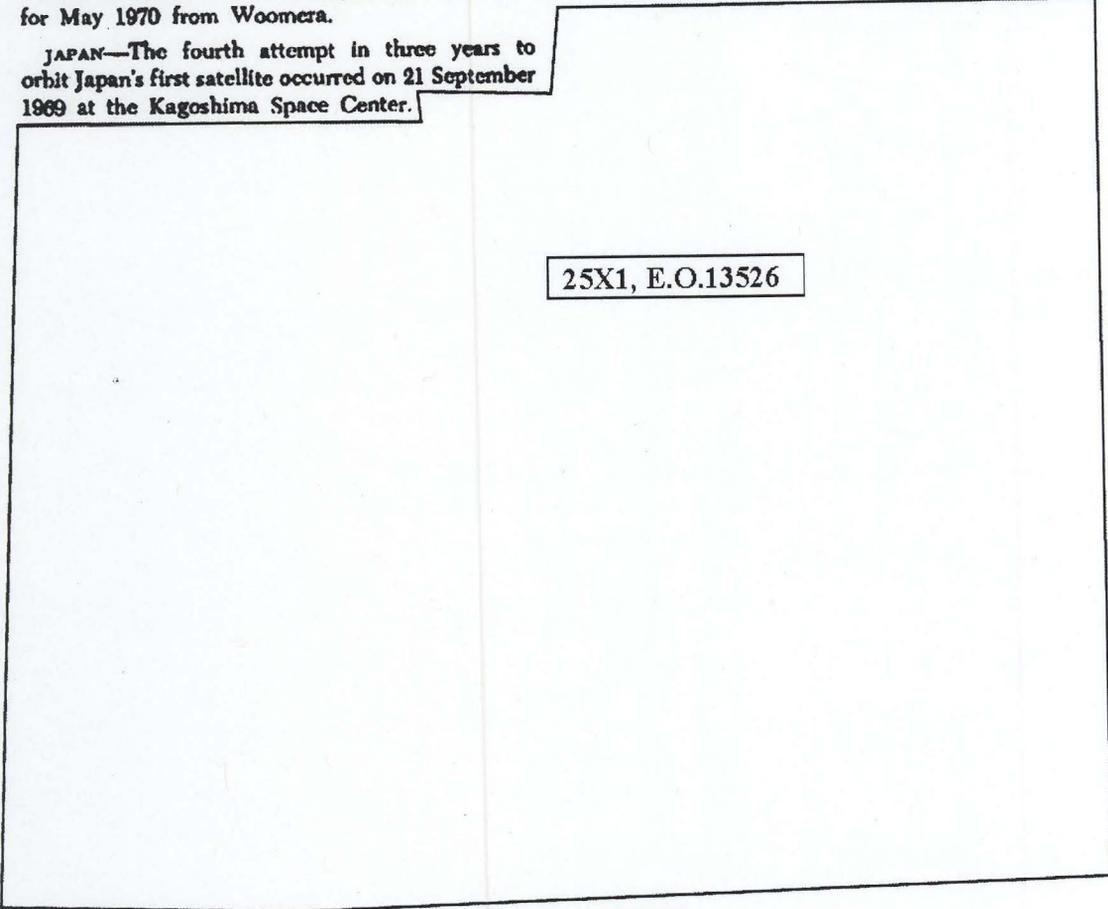
EUROPEAN LAUNCHER DEVELOPMENT ORGANIZATION—On 3 July 1969 an attempt was made by ELDO at Australia's Woomera Weapons Research Establishment to orbit an Italian-built payload, using the Europa-I three-stage satellite launch vehicle. []

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[] Another satellite launch attempt with the Europa-I SLV was scheduled for November 1969 but was subsequently rescheduled for May 1970 from Woomera.

JAPAN—The fourth attempt in three years to orbit Japan's first satellite occurred on 21 September 1969 at the Kagoshima Space Center. []

FOREIGN PAYLOADS ORBITED BY US—ISIS-1, a Canadian satellite containing Canadian and US ionospheric experiments, was launched from the Western Test Range (WTR) on 29 January 1969. On 1 October, the ESRO 1-B satellite was launched at the WTR but went into faulty orbit that resulted in the satellite's premature decay on 29 November. The first West German satellite, designated "AZUR", was successfully placed in orbit from the WTR on 7 November and is expected to have a useful life of about one year. This satellite carried eight scientific experiments to measure variations in the earth's inner radiation belt and polar aurora, and to investigate solar eruptions. Also in November 1969, a British Skynet satellite, which was built by a US company, was successfully launched from the Eastern Test Range at Cape Kennedy. It was subsequently put into a synchronous equatorial orbit over the Indian Ocean.



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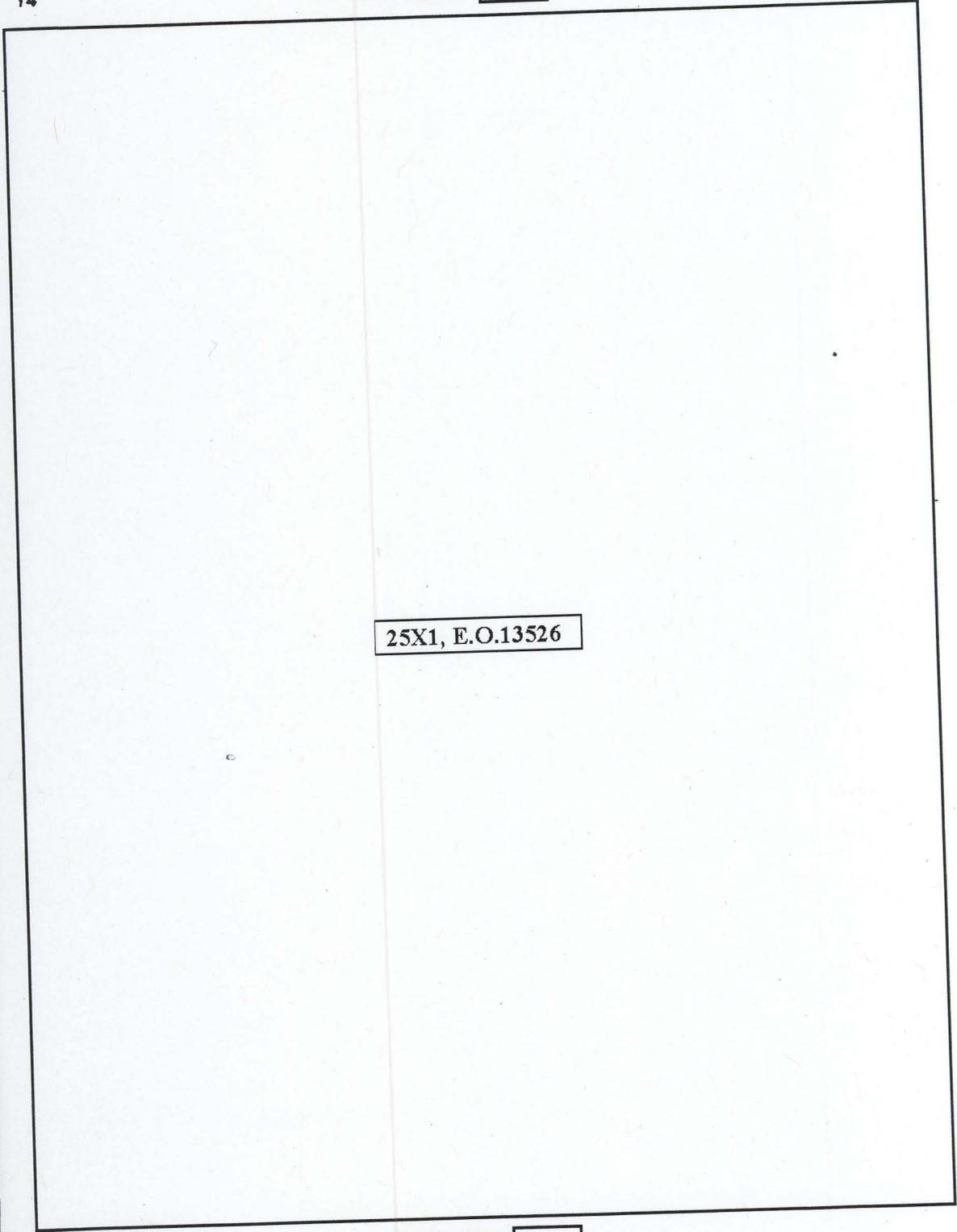
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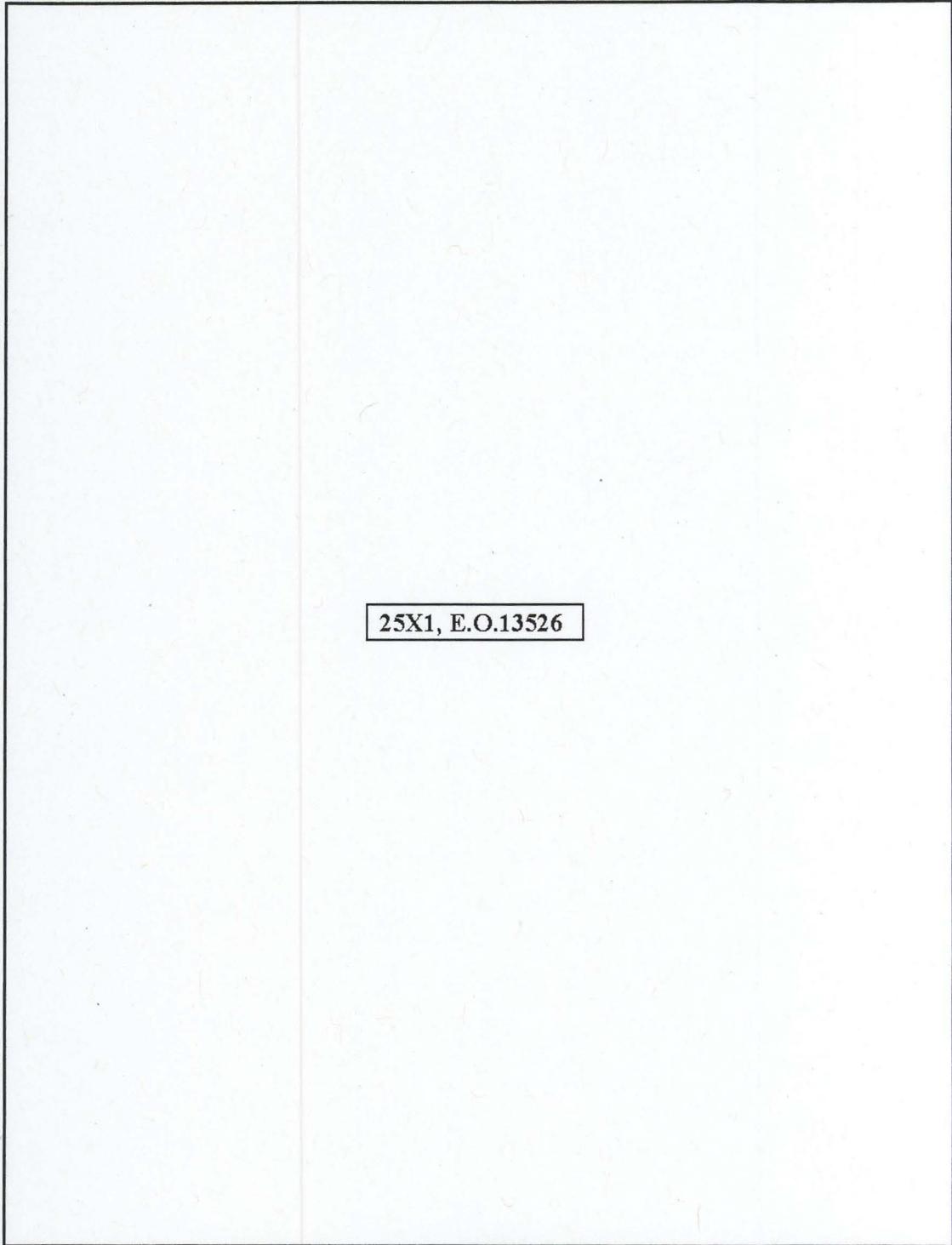
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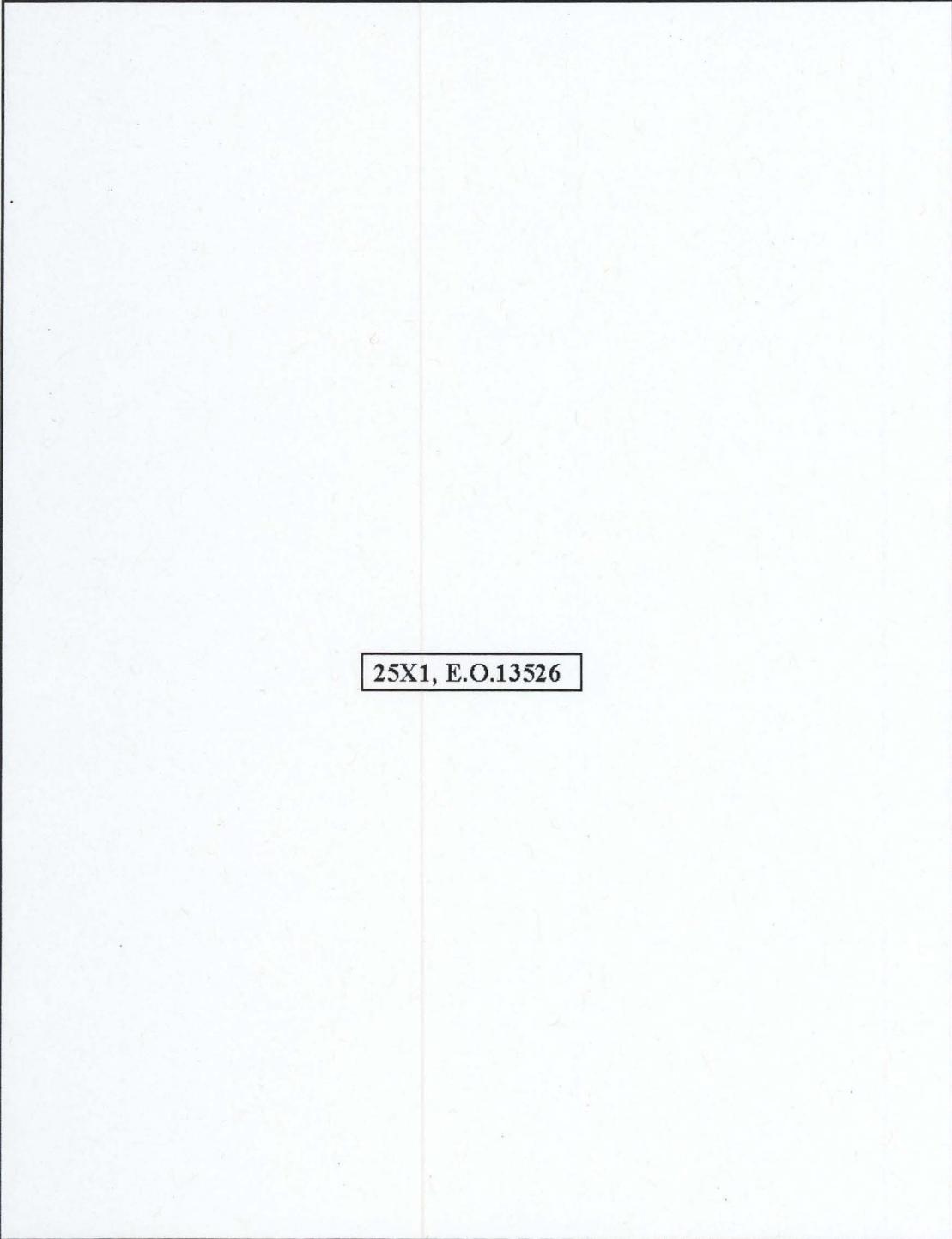
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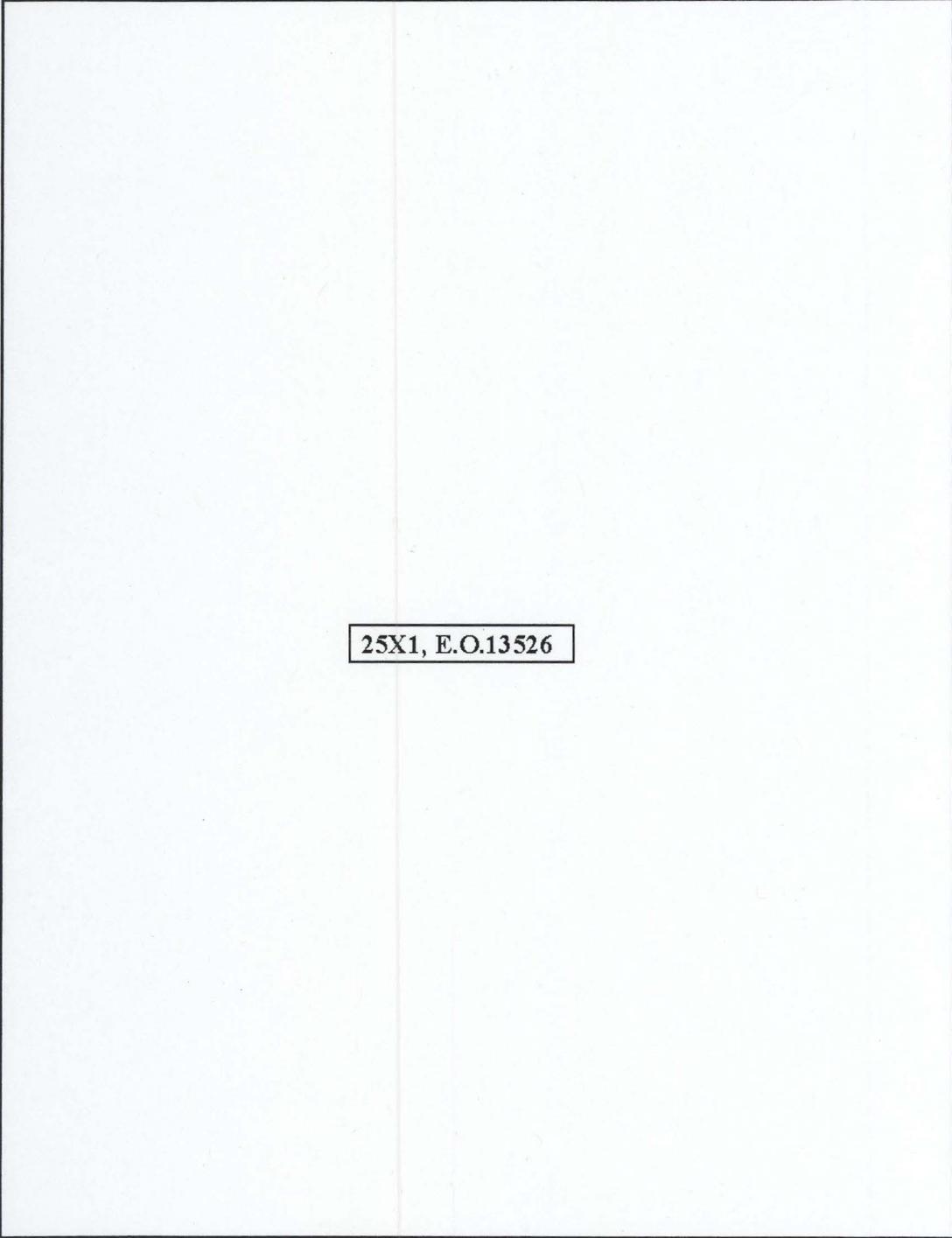
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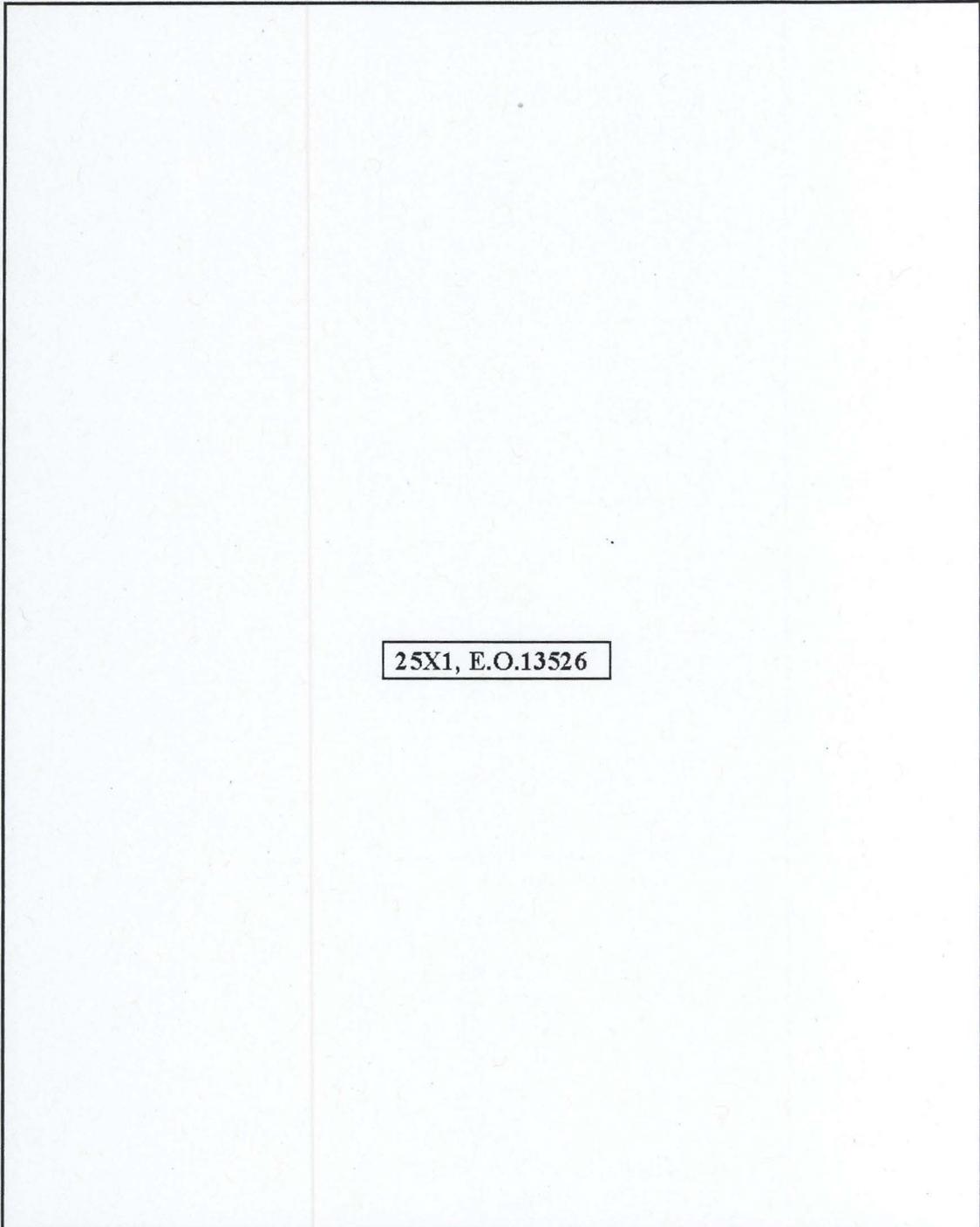
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served [] an ap-
parently valid missile launch operation was de-
tected with undetermined results. The launch may
have been delayed, postponed, or cancelled at the
last moment and no further launch activity was
noted.

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APPENDIX
NON-SOVIET TEST RANGE FIRINGS IN 1969*

Country/Range	Date	Vehicle Type	Results	Remarks
COMMUNIST CHINA Shuang-chi'ang-tau Missile Test Range.	14 Jan	Possible MRBM	Undetermined	Launch at approximately 0800Z indicated by Comint.
	28 May	Possible MRBM	Undetermined	Possible launch to mid-range impact area occurred at 2300Z, according to Comint.
	6 Jun	Possible MRBM	Undetermined	Possible firing to mid-range impact area indicated by Comint.
	16 Sep	Possible MRBM	Undetermined	Possible launch at 0900Z, according to Comint.
	11 Oct	Possible MRBM	Undetermined	Possible launch at 1000Z indicated by Comint.
	16 Nov	Possible MRBM	Undetermined	Activity apparently involved a launch operation which may have been delayed, postponed, or cancelled at the last moment.

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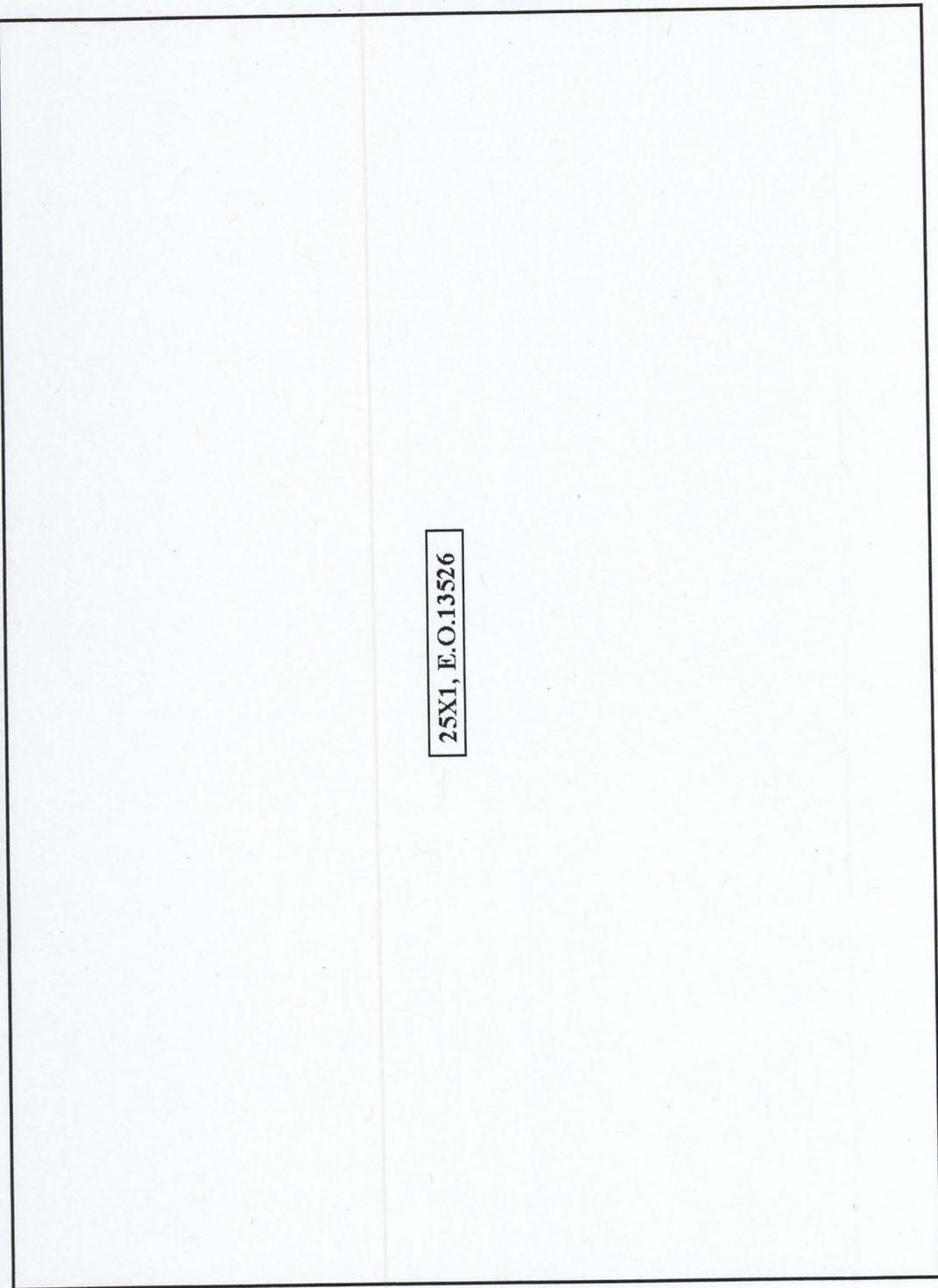
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NON-SOVIET TEST RANGE FIRINGS IN 1969* (Continued)



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NON-SOVIET TEST RANGE FIRINGS IN 1969* (Continued)

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NON-SOVIET TEST RANGE FIRINGS IN 1969* (Continued)

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NON-SOVIET TEST RANGE FIRINGS IN 1969* (Continued)

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