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 E.O. 13526, SECTION 5.3(b)(3)
 ISCAP APPEAL NO. 2009-068, document no. 197
 DECLASSIFICATION DATE: May 14, 2015

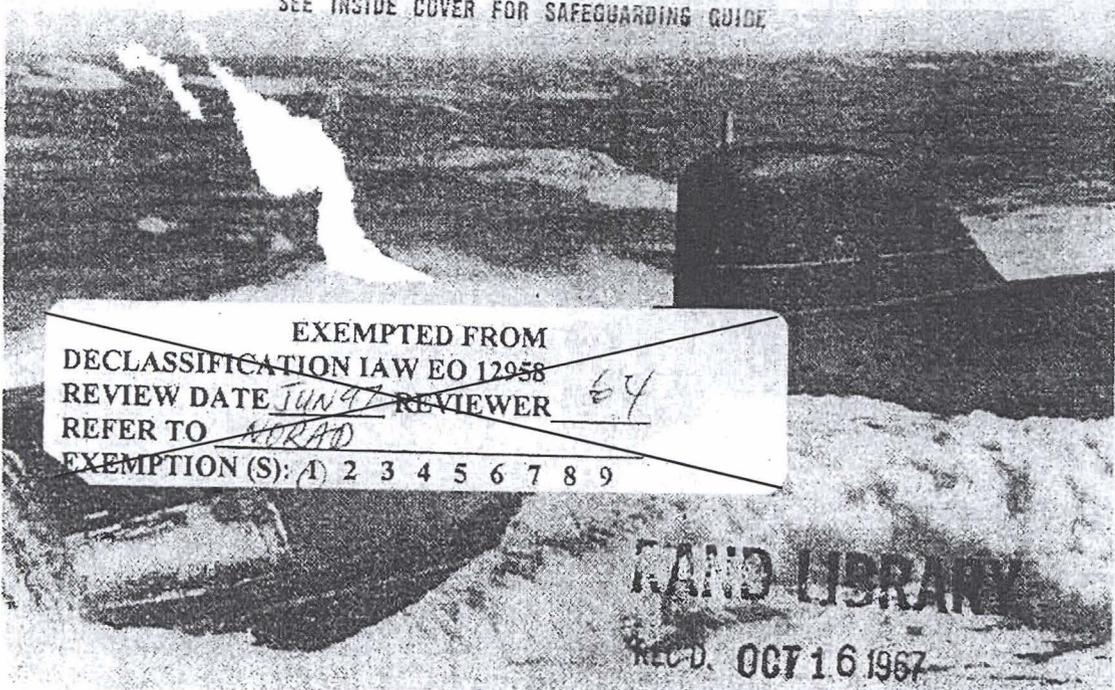
NORTH AMERICAN AIR DEFENSE COMMAND

W O R

WEEKLY INTELLIGENCE REVIEW (U)

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WIR 41/67
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Issue No. 41/67, 13 October 1967

Weekly
Intelligence
Review

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The WIR in Brief

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Space

SIGNALS FROM VENUS 4 DETECTED AGAIN;
DUE TO REACH VENUS 18 OCTOBER

Previously had been silent for short period,
SPACE-EVENT SUPPORT SHIP MAY CARRY
MINIATURE SUBSTITUTE FOR BIG PHASED
ARRAY

Would be a significant advance in electronics.
SOVIET ABILITY TO PREDICT FLARES;
DANGEROUS TO MANNED SPACEFLIGHT,
ABOUT ON PAR WITH U.S.'s

Believed able to forecast solar flares for
period of up to 3-5 days.

Portion identified as non-responsive to the appeal

COVER: Soviet submarine (from Soviet press)
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NOTE: Pages 32, 33, 36, 37, 40, 41, and 44 of
this issue are blank.

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significant
intelligence
on space
developments
and trends

50X1 and 3, E.O.13526

Signals from Venus 4 Detected Again; Due to Reach Venus 18 October

[REDACTED] Venus 4, Soviet Venus probe, on 30 September, following a period of about two weeks during which no signals were received.

This probe is due to reach the vicinity of Venus on 18 October, one day before the US's Mariner 5. The exact mission of Venus 4 has not been announced. The Soviets have said only that it has been sterilized, a fact which opens the possibility that it may land or impact on the target planet.

(Various)

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Space-Event Support Ship May Carry Miniature Substitute for Big Phased Array

A pair of spherical objects on the SSESS (Soviet space-event support ship) Komarov may be Luneberg lenses -- extremely small devices which can substitute for very large phase-array beam-forming antennas.

The development of Luneberg lenses for an operational use such as space communications would represent a significant advance in electronics for the Soviets. Much research has been conducted on such lenses but, for the most part, they have been only laboratory curiosities because of their complexity. Extreme engineering difficulties are involved in their construction, which requires extremely precise 3-dimensional variation of the dielectric constant within the lens material.

The small size of the Luneberg-lens antenna is made possible by the unique property of the lens: because of its spherical symmetry, its focusing does not depend upon the direction of the incident electromagnetic wave. Thus, the lens might be used where a rapidly scanned antenna, covering a wide angle, is required. It can also generate a

-8-

WIR 41/67 13 Oct 1967

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number of fixed beams and is competitive with many applications of beam-forming phased-array antennas. The lens could be used where small size is required on an unstable platform, such as a ship. Beam stabilization might be achieved by adjusting the feed to compensate for the ship's motion.

Preliminary measurements indicate that the spheres on the Komarov are about 36 inches in diameter. One is located on each side of the ship, and each is provided with a unique weather cover which looks like a sea shell and can telescope against the deck.

NORAD Comment: Until additional information is received here, we cannot be sure these spheres are in fact Luneberg lenses. They may be optical stations or coverings for optical equipment.

(DIA; NORAD)

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Soviet Ability to Predict Solar Flares, Dangerous to Manned Spaceflight, About on Par with US's

Soviet ability to forecast solar flares for manned space flights is about equal to that of the US. The fact that all Soviet manned space flights have been made at times of relative solar inactivity suggests an ability to avoid solar flares for periods of up to 3-5 days.

The Soviets have an established net of 15 well-equipped solar observatories and solar patrol stations and a major observatory under construction. The Crimean Astrophysical Observatory, the key link in this net, has some of the world's most advanced solar-observatory equipment. The Soviets appear to lack some of the more elaborate real-time communications facilities (see page 8, last week's WIR) but they can and do use telephone, telegraph, and radio.

The Soviets regularly exchange solar-activity data with the US and other nations, but not on a real-time basis. Increased exchange of real-time data with the US and other nations would be desirable for the Soviets, in view of their plans for prolonged manned flights (space stations and lunar flights) at a time when peak solar-flare activity is expected during and after the 1968-1969 peak period.

The only practical approach at present to the radiation hazard posed by solar flares is avoidance, which is contingent upon forecasting the appearance of flares. The Soviets claim to have developed efficacious protective drugs, and they are said to have designed special shielding or protective "boxes" for spacecraft crews. However, drug prophylaxis is risky and limited in utility, while the use of shielding methods imposes either greater thrust requirements or a reduction in support equipment carried.

(CIA)

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Soviet Missile &
Space Launches,
September 1967

<u>Launch Date & Time</u>	<u>Vehicle</u>	<u>Launch Site</u>
01 Sep 1031Z	ESV Failure (SL-4)	Plesetsk
01 Sep 1308Z	SS-4 MRBM	Kapustin Yar
02 Sep 0359Z	SS-11L ICBM	Tyuratam
04 Sep 0205Z	SS-9 ICBM	Tyuratam
06 Sep 1406Z	SS-4 MRBM	Kapustin Yar
07 Sep 0837Z	SS-12 SRBM	Kapustin Yar
08 Sep 0210Z	SS-9 ICBM	Tyuratam
11 Sep 1030Z	Cosmos 175 (SL-4)	Plesetsk
12 Sep 0605Z	SS-5 IRBM	Kapustin Yar
12 Sep 1701Z	Cosmos 176 (SL-7)	Plesetsk
15 Sep 1317Z	SS-4 MRBM	Kapustin Yar
16 Sep 0607Z	Cosmos 177 (SL-4)	Tyuratam
19 Sep 1445Z	Cosmos 178 (OB-1)	Tyuratam
20 Sep 0433Z	SS-11 ICBM	Tyuratam
20 Sep 0732Z	SS-4 MRBM	Kapustin Yar
21 Sep 0522Z	SS-9 ICBM	Tyuratam
21 Sep 1230Z	SS-11L ICBM	Tyuratam
22 Sep 0737Z	SS-4 MRBM	Kapustin Yar
22 Sep 1406Z	Cosmos 179 (OB-1)	Tyuratam
22 Sep 1901Z	SS-12 SRBM	Kapustin Yar
23 Sep 0742Z	SS-4 MRBM	Kapustin Yar
26 Sep 1020Z	Cosmos 180 (SL-6)	Plesetsk
26 Sep 1525Z	SS-12 SRBM	Kapustin Yar
27 Sep 0735Z	SS-4 MRBM	Kapustin Yar
29 Sep 1407Z	SS-5 IRBM	Kapustin Yar
29 Sep 1530Z	SS-12 SRBM	Kapustin Yar
30 Sep 0534Z	SS-11 ICBM	Tyuratam

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-31-

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WIR 41/67
13 Oct 1967

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