DECLASSIFIED UNDER AUTHORITY OF THE
INTERAGENCY SECURITY CLASSIFICATION APPEALS PANEL,
E.O. 13526, SECTION 5.3(b)(3)

ISCAP APPEAL NO. 2009-068, document no. 220
DECLASSIFICATION DATE: May 14, 2015

[redacted]

NORTH AMERICAN AIR DEFENSE COMMAND

WIR

PRIVILEGED INFORMATION

FOR SAFEGUARDING GUIDE

WEEKLY INTELLIGENCE REVIEW (U)

K410.607-360

LIBRARY
REC'D. MAY 27 1968

SCANNED BY ACD
2008

0088824

FOR OFFICIAL USE ONLY

[redacted]

SPECIAL HANDLING REQUIRED
This document is releasable only to U.S. and Canadian Nationals

~~EXCLUDED FROM AUTOMATIC REGRADING, DOD DIRECTIVE 5200.10 DOES NOT APPLY~~

Group 1

WIR 21/68
24 May 68

NORAD—ADC Field Printing Plant
Ent AFB, Colorado

MAY 27 1968
Postal Registry No. 253707

[redacted]

[redacted]

NORAD

[redacted]

Weekly Intelligence Review

Issue No. 21/68, 24 May 1968

K410.607-360
RETURN TO
HQ USAFHC
MAXWELL AFB AL 36112

The WIR in Brief

Portion identified as non-responsive to the appeal 2 2 3 4

Space

NO RECCE SATELLITES LAUNCHED IN 30 DAYS; SPACE ACTIVITY LIGHT SO FAR THIS MONTH (S) 5
Only 1 satellite launched so far this month.

DOCKING OF COSMOS 212 & 213 COMPLETED 47 MINUTES AFTER LAUNCH OF COSMOS 213 (U) 6
Pravda translation describing the operation summarized.

SSESS KEGOSTROV, WHICH WAS TO SUPPORT LUNAR EVENT, STILL DETAINED IN BRAZIL (S) 10
Soviet apology of "inadvertent" violation not acceptable. Press says it was a spy ship.

Portion identified as non-responsive to the appeal 11 15 17 17

Portion identified as non-responsive to the appeal 19 21 21 23 24 25 25

* COVER: Full-pressure suits worn by pilots of an undisclosed Soviet AF squadron (from Red Star) (OFFICIAL USE ONLY)

NOTE: Pages 28, 29, 32, 33, 36, 37, 40, 41, 44 of this issue are blank.

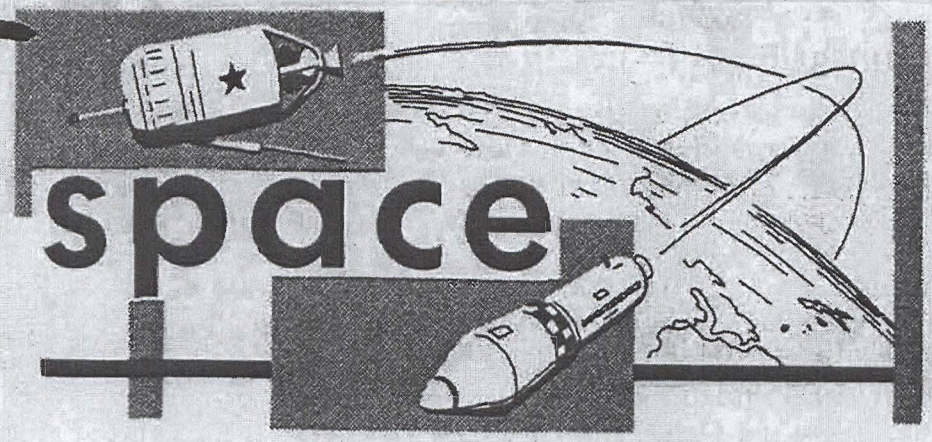
00880824

[redacted]

DECLASSIFIED BY NDM

[redacted]

SECRET



significant intelligence on space developments and trends

No Recce Satellites Launched in 30 Days; Space Activity Light so Far This Month (S)

A full 30 days had elapsed at 1030Z, 20 May, since the Soviets had launched a reconnaissance satellite. This is the longest pause in this program since the 55-day standdown of 11 January-7 March 1965. This inactivity is unusual, since April and May are favorable months from every standpoint for reconnaissance from space. These have never been slack months in the Soviet recce satellite program since it became operational in early 1964. Up through the 20 April launch of Cosmos 216, the Soviets this year had been maintaining the standard pace of 1966 and 1967 by launching recce satellites at the rate of about two per month.

The reason for the pause is not known. It can only be surmised that it is connected with the advent of a new type of reconnaissance craft or new equipment for existing craft. Two recent events suggest that such a change or changes may be pending, in the interests of a more economical program:

- The record 12-day mission of Cosmos 208 (21 Mar-2 April), in contrast with the normal mission time of 8 days for Soviet recce satellites.
- The discovery of a piggyback payload in association with Cosmos 208; this payload separated from the main payload 8 days after launch and decayed 4 days after de-orbit of the main payload.

This pause in recce space launches seems to be part of a generally low period of Soviet space activity of the past several weeks. Between 27 April and 20 May there was only one Soviet space launch (Cosmos 220, a navaid satellite launched 7 May). This general lull followed a record 14 launches (including 1 failure) during the 29-day period 28 March-26 April 1968. It is not concluded that the Soviets are out of breath from this effort. It is, however, possible, that they have "caught up" -- have launched all the payloads that have been ready for launch. They have, for example, their full "quota" of operating weather and communications satellites.

One of the next Soviet missions is likely to be a third attempt to send a payload around the Moon and back to Earth for recovery; all the preparations for the two previous attempts (deployment of support ships) are still in evidence.
(NORAD)
~~(SECRET)~~

Docking of Cosmos 212 & 213 Completed 47 Minutes After Launch of Cosmos 213 (U)

Following is a NORAD summary translation of a TASS release published in Pravda, 21 April 1968, describing the rendezvous/docking operation by Cosmoses 212 and 213. (Graphics on pp. 30-34.)

The automatic docking of Soviet satellites Cosmoses 212 and 213 was completed at about 1321 hours, Moscow time, 15 April -- 47 minutes after the launch of Cosmos 213.

Methodology. There are three techniques for launching two satellites into orbits close enough to each other for executing automatic rendezvous:

1) Simultaneous launch from two pads, with automatic rendezvous beginning immediately after both satellites are in orbit.
2) Successive launches into coplanar orbits, followed by several orbital corrections which bring the satellites close together.
3) Successive launches, with the orbit of the first spacecraft programmed to pass over the launch point of the second, the latter to be launched at a precisely chosen time so that it will, when injected into orbit, be close to the first spacecraft.

The third type was chosen because it permits the second satellite to be injected into the correct orbit with great precision.

It was planned that both satellites would be launched a day apart from the same cosmodrome. The first satellite, Cosmos 212, was to be the "active" satellite, Cosmos 213, launched the next day, to be the "passive" satellite. The active satellite is the one which executes the maneuvers in the process of automatic rendezvous and making contact; the passive satellite executes only a tracking function at this time.

The basic steps in the operation consisted of:

1) Injection of both craft into orbits close enough for them to locate each other by electronic means and execute lock-on.
2) Automatic rendezvous -- approaching to within 300-400 meters (330-440 yards) of each other.

3) Automatic "mooring" -- approach to the point where the two ships make contact by small changes of speed.
4) Automatic docking -- mechanical junction of the spacecraft and link-up of their electrical circuits.

Chronology. Cosmos 212 was launched at 1300 hours, Moscow time, 14 April into an orbit with parameters of:

Inclination	51.7 degrees
Period	88.75 minutes
Apogee	239 km (128 n.m.)
Perigee	210 km (113 n.m.)

Checks were then made of the satellite's main flight systems, next of its orbital parameters, with a view to making any necessary corrections prior to launch of the second satellite, to insure that it would pass over the launch point of the second satellite at a predetermined orbital altitude. This check of parameters was necessitated by the fact that during the first orbit the parameters are gradually changed by such factors as the braking action of the Earth's atmosphere and the nonsphericity of the Earth, which could change, in particular, the altitude of the first satellite in the area where rendezvous is to be executed.

Corrections of orbital parameters were made during the satellite's fourth orbit. Commands were sent from the ground, telling the satellite to stabilize and orient itself and to execute the necessary orbital maneuvers.

Cosmos 213, was launched the next day at 1234 hours, Moscow time. This was done with a special apparatus which would insure launch at the precise time, thereby assuring that the distance between the two satellites along their orbital flight paths would be as programmed. The carrier rocket of Cosmos 213 was able to change the injection program in order to obtain the orbital altitude desired. Orbital parameters of Cosmos 213 were:

Inclination	51.4 degrees
Period	89.16 minutes
Apogee	291 km (156 n.m.)
Perigee	205 km (110 n.m.)

The two satellites were about 5 kilometers apart when Cosmos 213 separated from the carrier rocket; their speed differential was 30 meters (33 yards) per second, or 108 kilometers per hour (58 knots).

The attitudes of the satellites were then adjusted in space relative to line of sight, whereupon the spacecraft began to search for each other by electronic means. When they found each other they locked-on and began the automatic rendezvous. Radar computing devices obtained data about the distance

between the two satellites, their speed relative to each other, their angular speed along their lines of sight, the angles between their lines of sight and their longitudinal axes, and their angular speeds of rotation. These data were required for the active satellite to get into required position relative to the passive satellite.

Automatic rendezvous continued until the distance between the satellites reached 350 meters (385 yards). Their relative speed at this time was about 2 meters (6.5 feet) per second.

For the automatic "mooring" operation, the two satellites were stabilized relative to line of sight, in order that the docking gear of the two would be facing each other and that their mutual angles of tilt would be held within the desired limits. "Mooring" ended when the two touched. At the moment of contact, the relative displacement of the axes of the docking junctions did not exceed 0.4 meters, (158 inches), and their relative speed was 0.1-0.2 meters per second. Shock absorbers on the docking junctions assured soft mechanical docking. After the satellites were properly aligned, they were joined firmly together with their junctions matching. Connector plugs were also docked, joining the electrical circuits of the two satellites and providing communication between their equipments.

Docking was completed over the Pacific 47 minutes after launch of Cosmos 213. The automatic search, lock-on, rendezvous, and mooring operations occurred over the USSR, immediately after Cosmos 213's injection into orbit.

When the two satellites made their first pass together over the USSR, Cosmos 212 transmitted to the ground a TV image of Cosmos 213 docked to it.

Joined flight continued for 3 hours and 50 minutes, during which time the systems and components of the two satellites were tested.

Unlocking was performed on command from the ground at 1711 hours, Moscow time, 15 April, over the USSR. This operation was witnessed on the ground through a TV transmission from Cosmos 212. The docking locks of the two satellites were opened, and springs caused the two craft to separate. They were then injected into slightly different orbits, in which they continued to fly "together" for 4 more orbits. Again on command from the ground, the two satellites changed their orbits with maneuvers in space. They then conducted scientific experiments, later returning to Earth separately, Cosmos 212 on 19 April, Cosmos 213 on 20 April.

All the equipment operated normally during the mission. Both spacecraft continuously transmitted telemetry to ground stations on the progress of the operation.

Equipment. The systems for orientation and control of satellite motion were essential to the mission: they damped the rotary motion of the satellite after separation from the rocket carrier, oriented the solar batteries to the Sun, oriented the longitudinal axis of the satellite along the flight path, and corrected

the orbit. They enabled the satellites to find each other, rendezvous, and "moor," execute the braking for de-orbit, and keep it stabilized during the descent.

The system included accelerator-converter and computing devices, sensing elements, and command devices.

The sensing elements included:

1) Angular-speed sensors -- gyroscopic devices to send damping and controlling signals.
2) Photoelectric sensors -- to locate the Sun and lock onto it.
3) Free gyros -- to generate signals necessary for stabilizing the satellite during orbital correction and de-orbit.
4) Linear-speed integrators -- to form commands to switch off the engines when closing speed reached a given value.
5) Radar -- to help the satellites find and track each other, to orient themselves to each other, and to measure distance apart, closing speed, angular speed along line of sight, and angle of mutual orientation.

Two types of engines were used:

1) Rendezvous-orbital correction engines of comparatively large thrust, able to switch on and off several times. They were used in making orbital corrections during rendezvous, and for retro-fire and de-orbit.
2) "Mooring" and orientation engines of comparatively small thrust, working in a two-position regime. These were used for stabilization, orientation, and "mooring."

Uses of Automatic Rendezvous and Docking. Automatic rendezvous and docking have a number of important future uses:

1) Providing space stations with relief crews, life-support materials, fuel, and scientific equipment and supplies.
2) Assembly of large spaceships under weightless conditions -- thus avoiding the size limitations of spacecraft imposed by the limited size of available carrier rockets. These large ships could be space stations or interplanetary craft.
3) Exploration of planets of the solar system, in which the craft will consist of two parts -- one to orbit the planet, the other to land on the planet and collect data and then to rendezvous and dock again with the other, following which interplanetary flight is resumed.
4) Rescue of spacecraft crews in trouble.
5) Reception and repair by space stations of craft returning from

interplanetary flight.

(Pravda)
(UNCLASSIFIED)

NORAD Comments: The Cosmos 212/213 automatic docking was accomplished in a somewhat shorter time than Cosmos 186/188 operation of last October -- the former taking 47 minutes, the latter 66 minutes, according to TASS announcements.

In both Soviet rendezvous and docking operations, the active satellite was launched first, obviously so that its systems could be checked out prior to launch of the passive satellite; the latter, of course, would not be launched if the systems of the first craft were not operating properly.

Shuttle spacecraft which reprovision orbiting space stations could also evacuate sensor records (film, tape) and waste material as well as the spacemen being returned to Earth.

Soviet references to "interplanetary" flight should also be taken to include, where appropriate, lunar flight.
(NORAD)
(UNCLASSIFIED)

SSESS Kegostrov, Which Was to Support Lunar Event, Still Detained in Brazil (S)

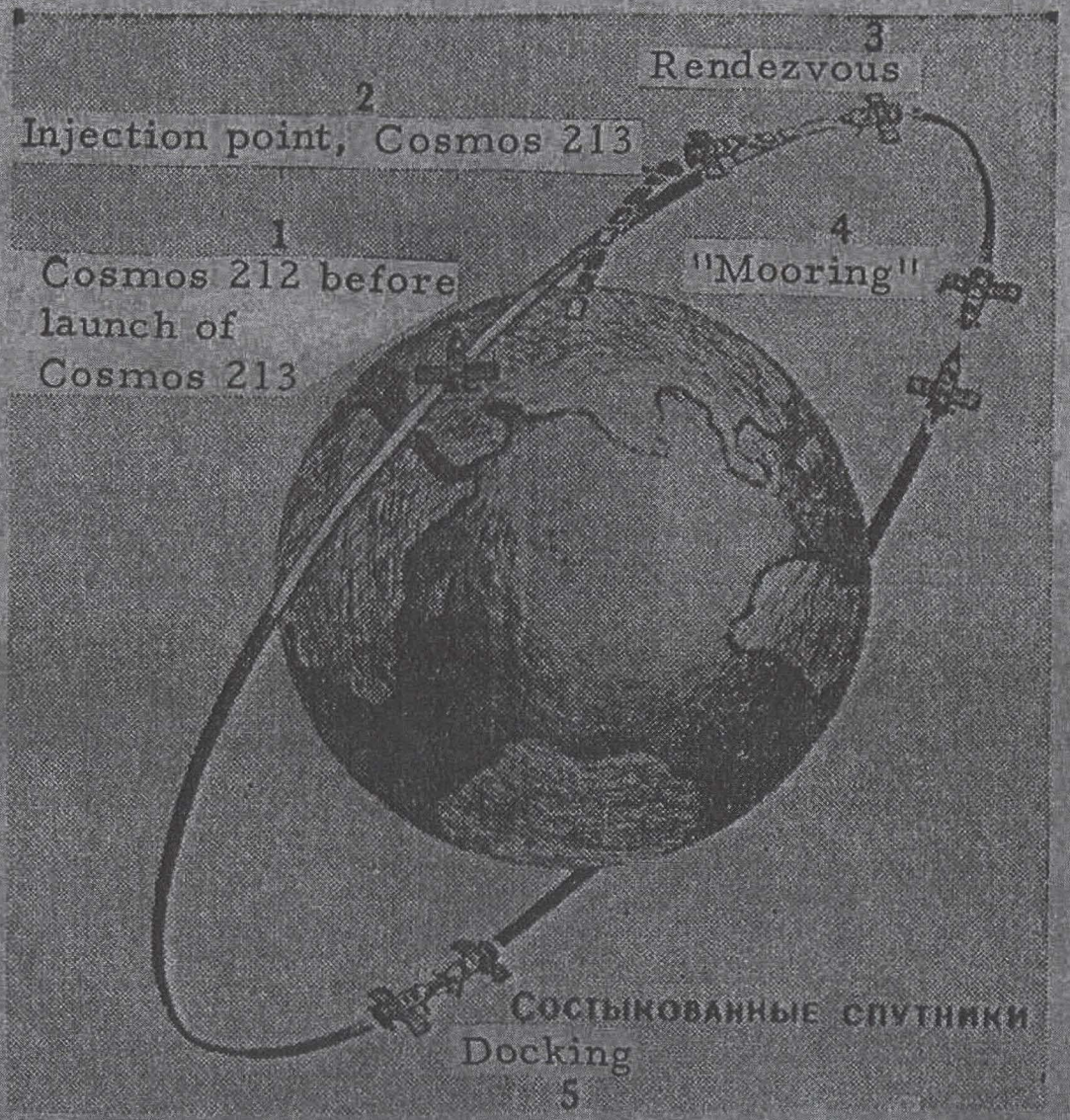
The Kegostrov, a Soviet space-event support ship (SSESS) which was detained on 4 May by the Brazilian Navy for intruding into Brazilian waters (page 26, last week's WIR), was still held in the port of Santos as of 20 May.

A Soviet note of apology for "inadvertent" violation of Brazilian waters apparently has failed to satisfy the Brazilian Navy Minister, who probably feels that the violation was deliberate. A Brazilian maritime official has refuted statements by Soviet ship commander Nikolay Tregubenko that the Kegostrov was without food and water supplies when it was detained, according to a Brazilian newspaper. The paper charged that the Kegostrov is a spy ship.

Brazil has been increasingly touchy about frequent intrusions of Brazilian waters by Soviet ships, particularly fishing trawlers.

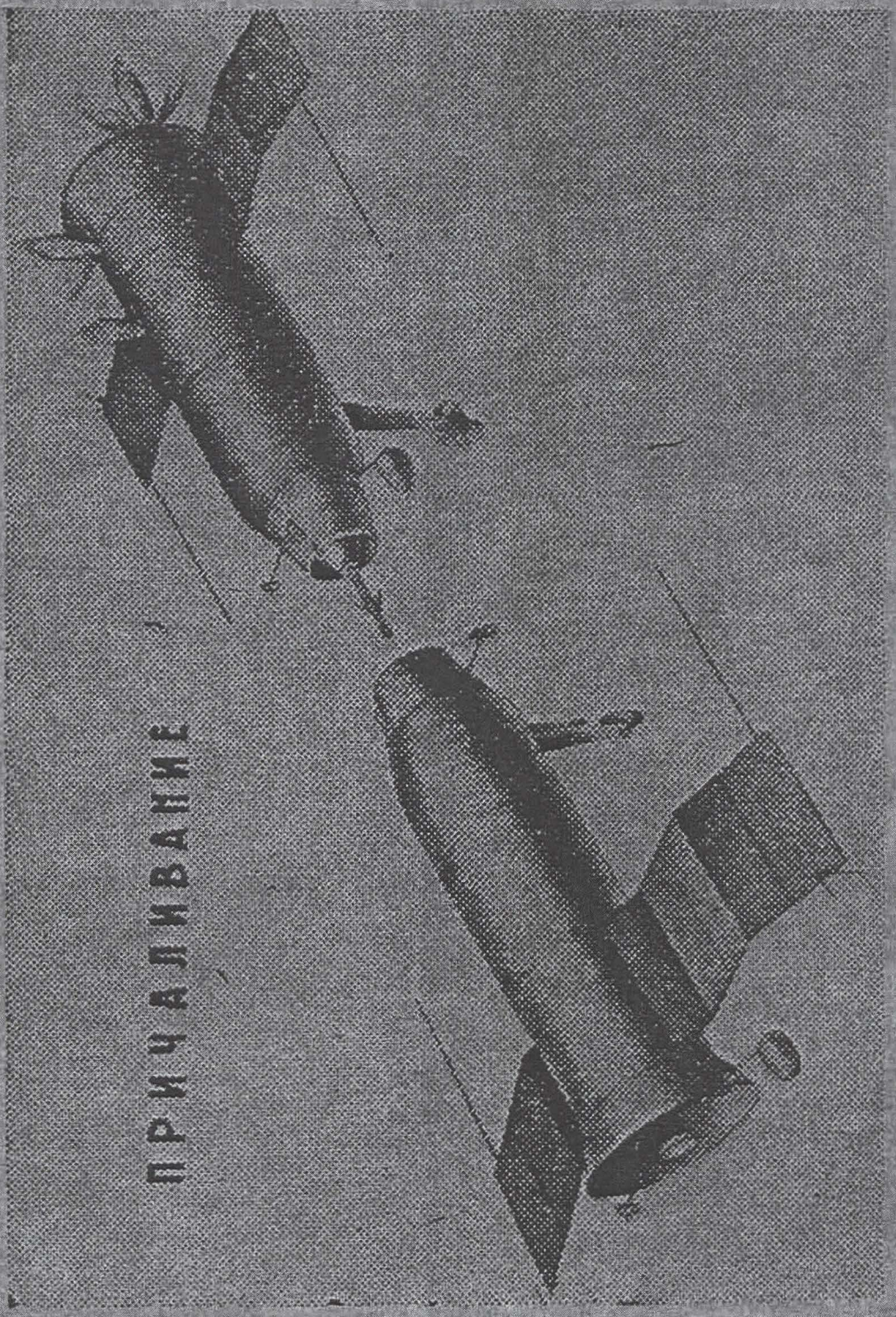
The Kegostrov is believed to have been dispatched to the South Atlantic to help monitor an expected flight of a Soviet spacecraft around the Moon and back to the Earth for recovery. Two launch "windows" for such an event have come and gone since the detention of the Kegostrov -- 5-7 May and 19-21 May. Other ships remain deployed in the Atlantic and Indian Oceans for this event.
(CIA; DIA; NORAD)
~~(SECRET)~~

The Cosmos 212-213 Operation (U)



WIR 21/68
24 May 68

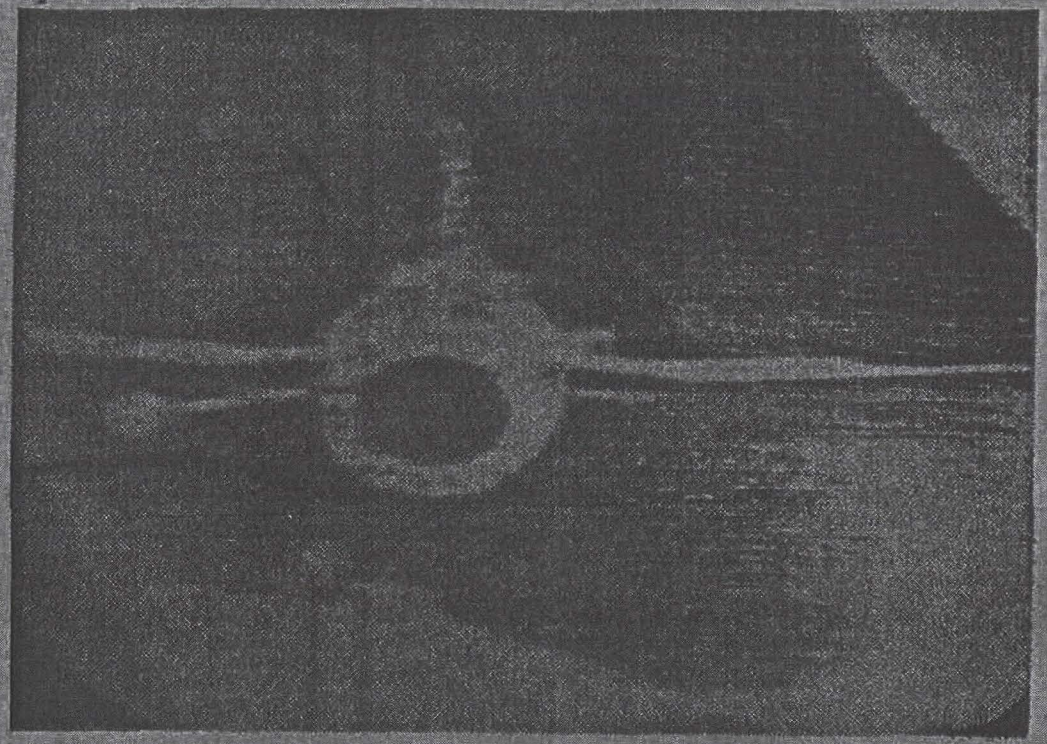
OFFICIAL USE ONLY



OFFICIAL
USE ONLY

ZOKA
WIR 21/68
24 May 68

TV Image of Cosmos 213
Sent to Ground Station
by Cosmos 212 (U)



NORAD
WIR 21/68
24 May 68

OFFICIAL
USE ONLY