~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

THE NRO STAFF

July 10, 1972

MEMORANDUM FOR DR. McLUCAS

SUBJECT: SAFSP Quarterly Program Review

The report on the right is the SAFSP Quarterly Program Review for the period 1 January through 31 March 1972. Some of the notable highlights of the report are listed below.

The Overall General Summary in Section I provides the operational status of the satellite systems.

Analysis of the HEXAGON Mission 1202 ACS thruster deterioration which caused an early termination of the mission continued through this quarter. Once the cause of failure was isolated, corrective action on the 1203 vehicle would be (and has been) accomplished. (Section III)

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This is for your information. No action is required.

KEITH S. PEYTON
Captain, USAF

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BYE-19000-72
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1 page

DEPARTMENT OF THE AIR FORCE
OFFICE OF SPECIAL PROJECTS (OSAF)
AF UNIT POST OFFICE, LOS ANGELES, CALIFORNIA 90045

REPLY TO ATTN OF: SP-2

22 May 1972

SUBJECT: Quarterly Program Review

TO: DNRO (Dr. McLucas)

The attached report is a review of SAFSP programs for the period 1 January through 31 March 1972.

FRANK S. BUZARD, Col, USAF
Vice Director

1 Atch
Quarterly Program Review (TS/BYE)

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Atch 1
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Page 1 of 79

QUARTERLY PROGRAM REVIEW

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QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Brig Gen Lew Allen, Jr.
Vice Director: Col F. S. Buzard

1. Quarterly Summary of Operations.

a. No CORONA missions were flown during this period. As of 31 March 1972 two systems were in a reserve status of R-38 or less. These vehicles are now scheduled for flight in April and May 1972.

b. The second launch of Project HEXAGON occurred 20 January 1972. Reentry capsules were recovered on 26 January and 8, 17, and 28 February 1972.

c. Project GAMBIT, Mission 4334, was successfully launched on 17 March 1972. The first reentry vehicle was air recovered 28 March 1972 with the second one scheduled for 10 April 1972.

[redacted] 50X1

e. Project SIGINT successfully launched a P-11 vehicle on the HEXAGON satellite on 20 January 1972.

f. The following vehicles launched in previous periods were still operating as of 31 March 1972:

Vehicle	Payload	Purpose	Operational Life
2736	STRAWMAN III	TI/EOB	17.6 Months (Terminated 7 Feb 1972)
2737	STRAWMAN IV	TI/EOB	8.5 Months
[redacted]			50X1
4421	TRIPOS IV/ SOUSEA III	General Search & EOB, ABM Pulsed & CW Emitters	22 Months

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Vehicle	Payload	Purpose	Operational Life
4423	TOPHAT I	Map and copy tropospheric scatter&comm-unications links	16 Months
4424	MABELI	Precision power polarization measurements on ABM radars	2 Months

2. Briefings During Quarter.

Personnel & Job Titles	Dates
Dr. John L. McLucas Dr. F. Robert Naka Mr. Harry Davis	16 Feb 1972
Mr. John Hughes, DIA	29 Feb 1972
R/Adm Tazewell T. Shepard, Jr., JSIPS	3 Mar 1972
Mr. Andrew Marshall, Director, NSC	24 Mar 1972

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as of 31 Mar 1972

QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Brig Gen Lew Allen, Jr.
Project Director: Col H. B. Stelling, Jr.

1. Overview.

a. Three Project 989 spacecraft are currently being tasked. They are:

FV/MSN	NAME	PURPOSE	FREQUENCY	MONTHS IN ORBIT
4421/7332 7333	TRIPOS IV/ SOUSEA III	General Search and EOB, pulsed and CW emitters	4,000 - 12,000	22
4423/7334	TOPHAT I	Map and copy tropospheric scatter communications links	~~50~~ - 1,000	15
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	2

b. Vehicles in Process.

(1) FV 4425 URSALA I. Fabrication and final acceptance testing of the payload were completed at the Motorola, Scottsdale, Arizona, facility on 10 February 1972. The payload has since been delivered to LMSC and has undergone anechoic and compatibility testing with the spacecraft. System testing is scheduled to begin 5 April 1972 with a launch availability date of June 1972 in a HEXAGON configuration.

(2) FV 4426 URSALA II. Payload delivery from Motorola is scheduled for 5 May 1972. The payload and spacecraft test flow will continue through the initial integrated systems test. A system flight availability date as early as September 1972 could be implemented if required.

(3) FV 4428 TOPHAT II. Fabrication of the payload is continuing at the LTV-E facility in Garland, Texas. Payload delivery is scheduled for December with a flight availability date in June 1973. Milestone events occurring during this period were concept review for the payload, antenna and spacecraft systems and a payload design review.

(4) FV 4429 RAQUEL. Payload proposals were received 16 February 1972. Detailed proposal evaluation and source selection were completed 27 March 1972 when LMSC selected LTV-E at Garland, Texas, as the RAQUEL payload subcontractor. A flight-ready system will be available for launch in early 1974.

(5) FV 4430 URSALA III. Approval for URSALA III was received 28 February 1972. LMSC is presently performing a systems analysis of mission requirements versus spacecraft configuration. The study is designed to make practical trade offs between operational requirements and engineering design to minimize technical risk and stay within time and cost constraints. The study will be complete 15 May 1972.

c. Programmed Launches.

FV/MSN	NAME	PURPOSE	FREQUENCY	LAUNCH DATE	HOST
4425/7338	URSALA I	General Search and EOB	2,000 - 12,000	Jun 72	HEX SV-3
4426/7342	URSALA II	General Search and EOB	2,000 - 12,000	None	HEX (Block I)
4428/7340	TOPHAT II	Map and Identify Tropospheric Scatter Communications Links	450 - 1,000	Jul 73	HEX
4429/7341	RAQUEL	General Search and Technical Intelligence	4,000 - 18,000	Early 1974	HEX
4430/TBD	URSALA III	General Search and EOB	2,000 - 12,000 (Exact frequency range to be determined.)	Mid-1974	HEX

2. Program Direction.

During the period program direction increased from $20.548 million to $21.800 million owing to the release of Undefined funds and realignment of line items to conform to the latest long term program schedule approved in WHIG 0321. This schedule anticipated continuation of the URSALA program at one vehicle each 8 months together with a COMINT-TELINT developed and launched at a rate of approximately one per year.

3. Technical Status.

a. On-Orbit Vehicles.

(1) FV 4421 TRIPOS/SOUSEA. This system is now in its twenty-third month of operation establishing a new operational record for P-989 spacecraft having a design life of 9 months. Over 3,300 mission data readouts have been successfully completed.

(2) FV 4423 TOPHAT I. Over 5,700 readouts have been accomplished by TOPHAT I, which is in its seventeenth month of operation. Although system tasking is very heavy, the spacecraft's performance remains flawless, and the data quality is excellent.

(3) FV 4427 ARROYO. All efforts have failed to correct or alter the payload anomaly which terminated data collection. On 1 February 1972 the spacecraft was deleted from the NRO operational inventory and vehicle responsibility was transferred to the STC-FTFD for engineering tests and tracking station (RTS) hardware/software checkout.

(4) FV 4424 MABELI. The MABELI system was successfully launched 20 January 1972 on a HEXAGON vehicle. This was the first P-989 spacecraft launch and separation from the new host vehicle and begins a new era of available payload capability for this project. The launch, separation, and orbit sequences exceeded performance expectations as indicated below:

FV 4424	PERFORMANCE AGREEMENT	PREDICTED	ACTUAL
Apogee (NM)	275.1 to 304.1	299.2	298.6
Perigee (NM)	246.0 to 271.8	258.9	254.3
Period (Min)	93.85 to 95.75	95.0	94.9

On 26 January 1972 the spacecraft was formally declared operational and ready for normal mission tasking. Over 800 mission data readouts have been successfully completed, and the overall data quality is excellent.

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BYE-15891-72
as of 30 June 1972

QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Maj Gen Lew Allen, Jr.
Project Director: Col H. B. Stelling, Jr.

1. Overview.

a. Three Project 989 spacecraft are currently being tasked. They are:

FV/MSN	NAME	PURPOSE	FREQUENCY	MONTHS IN ORBIT
4421/7332 7333	TRIPOS 4/ SOUSEA III	General Search and EOB, pulsed and CW emitters	4,000-12,000	25
4423/7334	TOPHAT I	Map and copy tropospheric scatter communications links	450 - 1,000	19
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	5

b. Vehicles in Process.

(1) FV 4425 URSALA 1. The system test sequence has been completed, and on 10 June 1972 the spacecraft was mated to the HEXAGON (SV-3) host vehicle. An early July 1972 launch date is anticipated.

(2) FV 4426 URSALA 2. Payload delivery from Motorola, Inc., is scheduled for 1 July 1972. If required, the system test sequence can be conducted on an accelerated basis thus allowing the system to be ready for flight in early October 1972.

(3) FV 4428 TOPHAT 2. Fabrication of the payload is continuing on schedule at the E-Systems facility in Garland, Texas. The system will be ready for flight in September 1973.

(4) FV 4429 RAQUEL. Preliminary design of the payload is being completed with the Payload Concept Review scheduled for late July 1972 at the contractor (E-Systems) facility in Garland, Texas. The system will be ready for launch in early 1974.

(5) FV 4430 URSALA 3. The URSALA 3 payload will be essentially a repeat of the first two URSALA systems. The spacecraft will, however, differ somewhat from its predecessors in that a larger power system will be used, and several items within the spacecraft will be made redundant. This system is being developed on an accelerated basis with flight availability in January 1974. The contractor was authorized to start work effective 2 May 1972.

(6) FV 4431 URSALA 4. Contractual coverage has been given to Motorola, Inc. for fabrication of the fourth URSALA payload. It will be identical to URSALA 3. A January 1975 launch date is projected for URSALA 4.

c. Programmed Launches.

FV/MSN	NAME	PURPOSE	FREQUENCY	LAUNCH DATE	HOST
4425/7338	URSALA 1	General Search and EOB	2,000-12,000	Jul 72	HEX SV-3
4426/7342	URSALA 2	General Search and EOB	2,000-12,000	To be determined	HEX
4428/7340	TOPHAT 2	Map and Identify Tropospheric Scatter Communications Links	450-1,000	Sep 73	HEX
4429/7341	RAQUEL	General Search and Technical Intelligence	4,000-18,000	Early 1974	HEX
4430/TBD	URSALA 3	General Search and EOB	2,000-12,000	Jan 74	HEX
4431/TBD	URSALA 4	General Search and EOB	2,000-12,000	Jan 75	HEX

2. Program Direction.

Authority to proceed on Vehicles 4430 and 4431 and selection of FY 1973 budget Option 4 within a $22 million per year limit was provided on 17 May. Program direction for Project 989 remained at $21.800 million in total; however, $ .368 million was transferred from [redacted] to the Spacecraft and Payloads account. 50X1

3. Technical Status.

a. On-Orbit Vehicles.

(1) FV 4421 TRIPOS/SOUSEA. This system is now in its twenty-fifth month of operation establishing a new operational record for P-989 spacecraft which have a design life of 9 months. Over 3,500 mission data readouts have been successfully completed.

(2) FV 4423 TOPHAT 1. Over 6,600 readouts have been accomplished by TOPHAT 1, which is in its nineteenth month of operation. Although system tasking is very heavy, the spacecraft's performance remains flawless, and the data quality is excellent.

(3) FV 4424/MABELI. The MABELI system was successfully launched in January 1972 on a HEXAGON vehicle. Over 1,800 mission data readouts have been successfully completed, and the overall data quality is excellent.

~~TST~~ NATIONAL RECONNAISSANCE OFFICE
WASHINGTON, D.C.

THE NRO STAFF

November 16, 1972

MEMORANDUM FOR DR. McLUCAS

SUBJECT: SAFSP Quarterly Program Review
1 July through 30 September 1972

The SAFSP Quarterly Program Review for the First Quarter FY 73 is attached for your review. The Overal General Summary (Section I) provides an overview of the satellite operations and key briefings conducted during the quarter. Further comments are as follows:

The Reaction Control System (RCS) anomoly experienced in Mission 1203 (Section II) was traced to a chemical reaction of the propellant with a rubber diaphragm in the RCS tanks. Corrective actions have been taken in subsequent vehicles to preclude the reoccurrence of the anomoly.

The minor malfunctions (Section III) which occurred in the GAMBIT Mission 4336 Satellite Control section (a gas valve monitor failure in the ACS, an oscillator intermittent failure in the Extended Command System, and an intermittent high temperature and current drain in the Minimal Command System wake-up circuit) are under investigation. Also, the focus drift in the Photographic Payload Section, which was thought to be thermal-mechanical in origin, prompted a hardware change for Mission 4337 in order to further isolate the optical system from the external structure.

The operational constraints on the STRAWMAN payloads required to prolong the system lifetimes are discussed in Section IV.

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[redacted]

Keith S. Peyton

KEITH S. PEYTON
Captain, USAF

DEPARTMENT OF THE AIR FORCE
OFFICE OF SPECIAL PROJECTS (OSAF)
PO BOX 92960, WORLDWAY POSTAL CENTER
LOS ANGELES, CALIFORNIA 90009

REPLY TO ATTN OF: SAF/SP-1

31 OCT 1972

SUBJECT: Quarterly Program Review

TO: DNRO (Dr. McLucas)

Attached is the Quarterly Program Review for the period 1 July through 30 September 1972.

LEW ALLEN, JR.
Major General, USAF
Director

1 Atch
Quarterly Program Review

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PRIDE IN THE PAST FAITH IN THE FUTURE

Atch #1
BYE-16289-72
as of 30 Sep 1972
Cy 1 of 3
Page 1 of 36

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QUARTERLY PROGRAM REVIEW

C O N T E N T S

 of 30 Sep 1972

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QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Maj Gen Lew Allen, Jr.
Vice Director: Colonel F. S. Buzard

1. Quarterly Summary of Operations.

a. HEXAGON Mission 1203 was launched successfully 7 July with aerial recoveries made as follows: 15 and 29 July, 12 August, and 2 September. Deboost was accomplished 13 September or 69 days after launch.

b. GAMBIT Mission 4336 was launched 1 September after a 3-day delay on the pad. Both reentry vehicles were air recovered 15 and 28 September. The best CORN ground resolution observed by the "Quick-Look" team was [redacted] 50X1

c. Project SIGINT launched a P-11 satellite (URSALA 1) on HEXAGON Mission 1203 on 7 July. Spin-up, orbital transfer, injection into final orbit, and antenna deployment were executed successfully. No anomalies have appeared.

d. The following non-photo vehicles launched in previous periods were still operating as of 30 Sep 1972:

Vehicle No.	Name	Purpose	Operational Life
2737	STRAWMAN 4	TI/EOB	14.5 Months
[redacted]			50X1
4421	TRIPOS IV/ SOUSEA III	General Search and EOB, ABM Pulsed and CW Emitters	28.0 Months
4423	TOPHAT 1	Map and copy tropospheric scatter communi-cations links	22.0 Months
4424	MABELI	Precision power and polarization measurements on Soviet ABM Radars	8.0 Months

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as of 30 Sep 1972

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QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Maj Gen Lew Allen, Jr.
Project Director: Col Jack Simonton

1. Overview.

a. Four Project 989 spacecraft are currently being tasked. They are:

FV/MSN	NAME	PURPOSE	FREQUENCY	MONTHS IN ORBIT
4421/7332	TRIPOS 4/ SOUSEA 3	General Search and EOB, pulsed and CW emitters	4,000 - 12,000	28
4423/7334	TOPHAT 1	Map and copy tropospheric scatter communications links	450 - 1,000	22
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 417 - 424 862 - 960 1,500 - 2,500	9
4425/7338	URSALA 1	General Search and EOB	2,000 - 12,000	2

b. Vehicles in Process.

(1) FV 4426 URSALA 2. Development and manufacturing of the system have been completed, and the integrated system test sequence has started. It is proceeding through these tests on schedule without difficulty and will be available for launch as early as mid-December 1972.

(2) FV 4428 TOPHAT 2. The contractor has been directed to modify the payload to include the special FSK recognizer capability. This change will result in a 4-month slip of the flight availability date. Fabrication of the spacecraft and the antennas is proceeding on schedule and without incident.

(3) FV 4429 RAQUEL. Design and early fabrication of the payload, antenna, and spacecraft systems are proceeding on schedule.

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(4) FV 4430 URSALA 3. The Concept Review milestone in the system development sequence, at which time the system design is frozen, has been completed.

(5) FV 4431 URSALA 4. Contractual coverage has been issued for development of URSALA 4 which will be identical to URSALA 3.

c. Programmed Launches.

FV/MSN	NAME	PURPOSE	FREQUENCY	FLIGHT AVAILABILITY DATE
4426/7342	URSALA 2	General Search and EOB	2,000 - 12,000	Dec 1972
4428/7340	TOPHAT 2	Map and Identify Tropospheric Scatter Communications Links	450 - 1,000	Jan 1974
4429/7341	RAQUEL	General Search and Technical Intelligence	4,000 - 18,000	May 1974
4430/TBD	URSALA 3	General Search and EOB	2,000 - 12,000	Jan 1974
4431/TBD	URSALA 4	General Search and EOB	2,000 - 12,000	Jan 1975

2. Program Direction.

The program continues to remain within the approved initial funding approval of $21.200 million.

3. Technical Status.

a. FV 4421 TRIPOS/SOUSEA. This system is now in its 28th month of operation establishing a new record for P-989 systems which have a design life of 9 months. By the first week in September the spin rate had decreased, and the spacecraft attitude had decayed to a point where digital processed geopositioning was no longer an economical undertaking, particularly in view of the success of the URSALA 1 mission. Accordingly, digital processing of TRIPOS/SOUSEA data was terminated and an analog only mission initiated against several special targets.

b. FV 4423 TOPHAT 1. Over 7,000 SCF station readouts have been accomplished by TOPHAT 1, which is in its 22nd month of operation. Although system tasking is very heavy, the spacecraft's performance remains flawless, and the data quality is excellent.

c. FV 4424 MABELI. Two minor anomalies have occurred to this system which is now in its eighth month. First, within the payload an electronic failure has resulted in an inability to tune the system to approximately one-fourth of one of its four RF bands. Fortunately, there are no target signals in the now inaccessible frequencies, and no degradation to mission accomplishment has resulted. Secondly, a spin angle related anomaly has been observed in the band 2 data. The difficulty is most probably caused by a minor mechanical failure in the band 2 antenna feed structure. On each spin of the spacecraft, a small portion of the data is not correct. Fortunately, these incorrect data, being essentially redundant, may be excised from the good data without degradation to the quantity or quality of the final processed output product.

d. FV 4425 URSALA 1. The URSALA 1 system was launched 8 Jul 1972 from a HEXAGON host vehicle which had been launched the previous day. Spin-up, orbital transfer, injection into final orbit, and antenna deployment were completely successful. All spacecraft and payload subsystems have performed in a flawless manner since launch. The spacecraft spin axis orientation and spin rate have been successfully adjusted for optimum performance of the intercept system. Payload data quality has exceeded expectation. Geopositioning accuracies on known emitters have frequently been in the 1- to 2-mile range. The MSORTM routine for expeditious data transfer from the SCF remote tracking stations to the STC Sunnyvale, Calif, facility was implemented without difficulty and is now being used routinely.

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as of 31 Dec 1972
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DEPARTMENT OF THE AIR FORCE
OFFICE OF SPECIAL PROJECTS (OSAF)
PO BOX 92960, WORLDWAY POSTAL CENTER
LOS ANGELES, CALIFORNIA 90009

REPLY TO ATTN OF: SAF/SP-1 5 FEB 1973

SUBJECT: Quarterly Program Review

TO: DNRO (Dr. McLucas)

Attached is the Quarterly Program Review for the period 1 October through 31 December 1972.

David P. Parrish, COL USAF
for DAVID D. BRADBURN
Brig Gen, USAF
Director

1 Atch
Quarterly Program Review

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QUARTERLY PROGRAM REVIEW

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BYE-15606-73
as of 31 Dec 1972

QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Maj Gen Lew Allen, Jr.
Vice Director: Colonel Davis P. Parrish

1. Quarterly Summary of Operations

a. HEXAGON Mission 1204 was launched 10 October with aerial recoveries made as follows: 21 Oct, 5 & 23 Nov, and 17 Dec. Deboost is planned for 8 January after 93 days total time on orbit.

b. GAMBIT Mission 4337 was launched 21 Dec after a 1-day delay. Recovery events are planned for 5 & 22 January.

[redacted]

d. The following nonphoto vehicles launched in previous periods were still operating as of 31 December:

Vehicle Number	Name	(Months) Operational Life
2737	STRAWMAN	17.5
[redacted]		
4421	TRIPOS IV/ SOUSEA III	31.0
4423	TOPHAT I	25.0
4424	MABELI	11.0
4425	URSALA I	5.7

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QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Maj Gen Lew Allen, Jr.
Project Director: Col Jack Simonton

1. Overview

a. During this reporting period over 3,000 successful P-989 spacecraft readouts to the SCF tracking stations were accomplished. Four spacecraft are currently being tasked. They are:

FV/MSN	NAME	PURPOSE	MHZ FREQUENCY	MONTHS IN ORBIT
4421/7332 7333	TRIPOS IV/ SOUSEA III	General Search and EOB, pulsed and CW emitters	4,000-12,000	31
4423/7334	TOPHAT I	Map and copy tropospheric scatter communications links	450 - 1,000	25
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	11
4425/7338	URSALA I	General Search and EOB	2,000 - 12,000	5

b. Five P-989 systems are under development. They are:

FV/MSN	NAME	PURPOSE	MHZ FREQUENCY	FLIGHT AVAIL. DATE
4426/7342	URSALA II	General Search & EOB	2,000-12,000	Feb 73
4428/7340	TOPHAT II	Map and Identify Tropospheric Scatter Communications Links	450 - 1,000	Jan 74
4429/7341	RAQUEL	General Search & Technical Intelligence	4,000-18,000	May 74

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FV/MSN	NAME	PURPOSE	MHZ FREQUENCY	FLIGHT AVAIL. DATE
4430/TBD	URSALA III	General Search and EOB	2,000-12,000	Jan 74
4431/TBD	URSALA IV	General Search and EOB	2,000-12,000	Jan 75

2. Program Direction

a. No changes have occurred nor are any anticipated in the approved program.

b. Changes in availability dates shown in paragraph 1.b. versus the original FY 1973 Financial Plan are as follows:

NAME	FIN. PLAN	CURRENT STATUS	CAUSE
URSALA II	May 1973	Feb 1973	Ready now. Availability based on P-467 host vehicle. May or August launch also possible.
TOPHAT II	Aug 1973	Jan 1974	FSK recognizer caused 4-month slip in availability; 1-month slip results from host launch schedule.
RAQUEL	Feb 1974	May 1974	Pulse capability and linear VCO caused change in availability.

3. Technical Status

a. Systems On-Orbit

(1) FV 4421 TRIPOS/SOUSEA. This system is in its thirty-first, and most probably final, month of operation. As reported previously, the spacecraft's spin rate and attitude have decayed to a point where digital processing of geoposition data is no longer practical. For the past 90 days the system has been operated at a reduced tasking rate. At the end of this reporting period discussions will be held with the SCF and [redacted] regarding turning the spacecraft over to the SCF as a TACO (Training and Checkout) system. 50X1

However, since TRIPOS/SOUSEA does not have a PCM data format and does not have an Attitude Control System, Spin Rate Control System, or Inertial Control System, it is not representative of current P-989 spacecraft. A possibly better candidate for TACO usage would be FV 4427/ARROYO which, in response to [redacted] has been completely passive since 29 September. 25X1 25X1

(2) FV 4423 TOPHAT I. Tasking of this system, now in its twenty-fifth month, remains very heavy. Over 900 readouts were accomplished during this reporting period and over 8,000 to date. Data quality from the system remains excellent. In mid-December one of the three transmitters, transmitter number one, a Watkins-Johnson unit, became excessively noisy. Transmitter number two, also a Watkins-Johnson, has been noisy for some time. Transmitter number three, a solid state CONIC unit, remains in perfect health. Although the system requires only one transmitter, it has been customary throughout the life of TOPHAT to fill two tape recorders and read them back simultaneously by using two transmitters. If we are limited in the future to one transmitter, some tasking capability will be lost unless additional SCF station contacts can be scheduled.

(3) FV 4424 MABELI. The MABELI system is in its eleventh month of operation. Over 1,100 readouts were accomplished during the reporting period with 111 (a P-989 record) occuring during the first week in November. Data quality is excellent. In mid-December tape recorder two failed to respond to a readout command. It is most probable that the recorder has suffered a mechanical failure of the tape transport, and it is very doubtful that it could respond to future attempts to free it. Though MABELI has three 1 MHz recorders, only one is required for full operation and dual readout.

(4) FV 4425 URSALA I. System operation, spacecraft, and payload remains flawless through the first 5 months of operation. A substantial decrease in tasking was implemented in mid-October. This, in conjunction with improvements in the processing software, has overcome the [redacted] processing backlog experienced during the early months of operation. 50X1

b. Vehicles in Process

(1) FV 4426 URSALA II. The system test sequence has been completed successfully, and the vehicle is ready for launch. In consonnance with WHIG direction the earliest launch option on Mission 1205 in mid-February will not be exercised unless there is dramatic change in the health of URSALA I.

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(2) FV 4428 TOPHAT II. Fabrication of the payload, spacecraft, and antennas is proceeding smoothly. As noted previously the special FSK recognizer capability is being incorporated into the payload.

(3) FV 4429 RAQUEL. The spacecraft and antenna configuration freeze milestones have been accomplished. Three minor modifications are being incorporated into the payload. These are:

(a) A change of the data PCM bit rate to provide bit synchronization during SCF RTS acquisition and data readouts.

(b) An improvement in the sweep linearity of the swept VCO in the TI receiver. This will allow the use of dispersive filter during ground analog data processing to recover 13 MHz of predetection band width data which have been "compressed" in the payload into 750 KHz of band width and subsequently recorded on a 1 MHz tape recorder.

(c) Incorporation of pulsed emitter reception over the 4-12 GHz region. Initially, the design included CW only in the 4-12 GHZ region, with CW and pulse in the 12-18 GHz region. As reconfigured the system will have CW and pulse intercept capability over the entire 4-18 GHz region.

(4) FV 4430 URSALA III. The configuration freeze milestones for the system payload, antennas, and spacecraft have all been accomplished. Due to the extremely high volume of data being collected by URSALA I, a modification is being added to the URSALA III payload to allow a command selectable option for rejecting 374 pps [redacted] and BIG MESH) data. Judicial use of this option will allow rejection of redundant and superfluous EOB data. 25X1

(5) FV 4431 URSALA IV. Contractual coverage for URSALA IV has been issued. Some initial fabrication of payload subassemblies has been started.

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