TOP SECRET

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

REPLY TO ATTN OF: SAFSP-1

24 May 1974

SUBJECT: Quarterly Program Review

TO: DNRO (Mr. Plummer)

Attached is the Quarterly Program Review for the period 1 January 1974 through 31 March 1974.

Davis P. Parrish

DAVIS P. PARRISH
Colonel, USAF
Vice Director

1 Atch
Quarterly Program Review

Handle Via
BYEMAN

QUARTERLY PROGRAM REVIEW

C O N T E N T S

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QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Brig Gen David D. Bradburn
Vice Director: Colonel Davis P. Parrish

1. Quarterly Summary of Operations

a. HEXAGON Satellite Vehicle 7 (SV-7), launched on 10 November 1973, was deboosted on 13 March 1974 after 124 days of operation (active and solo). Re-entry Vehicles (RVs) were recovered on 7 January (RV-5, Mapping Camera), 13 January (RV-3) and 20 February (RV-4).

b. GAMBIT Mission 4341 was launched on 13 February 1974. Recoveries were successfully accomplished on 28 February and 15 March.

c. The following SIGINT vehicles, launched in prior periods, were still operational on 31 March 1974:

Vehicle	Mean Mission Duration (Months)	Operating Life To Date (Months)
TOPHAT 1	9	40
[redacted]		
MABELI	9	26
URSALA 1	15.5	20
[redacted]		
URSALA 2	15.5	4

25X1

as of 31 March 1974

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QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Brig Gen David Bradburn
Project Director: Col Jack Simonton

1. Overview:

a. During this reporting period, the four active Program 989 satellites were tasked over 5,000 times and provided over 27,000 minutes of SIGINT collection. The MABELI system provided [redacted] URSALAs I and II have participated in several Time Critical Reporting (TCR) operations and were used to provide area surveillance around the U.S.S. Kitty Hawk during its transit to a station off the coast of Iran. The active Program 989 on-orbit spacecraft are:

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FV/MSN	NAME	PURPOSE	FREQUENCY (MHZ)	MONTHS IN ORBIT
4423/7334	TOPHAT I	Map and copy tropospheric scatter communications links	450 - 1,000	40
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	26
4425/7338	URSALA I	General Search and EOB	2,000 - 12,000	20
4426/7342	URSALA II	General Search and EOB	2,000 - 12,000	4

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b. Four Program 989 systems are under development. They are:

FV/MSN	NAME	PURPOSE	FREQUENCY (MHZ)	AVAILABILITY DATE
4428/7340	TOPHAT II	Map and Identify tropospheric scatter communications links	450 - 1,000	Mated to HEXAGON MSN 1208 on 15 Feb 74
4429/7341	RAQUEL I	General Search and Technical Intelligence	4,000 - 18,000	Aug 74
4430/7343	URSALA III	General Search and EOB	2,000 - 12,000	Aug 74
4431/7344	URSALA IV	General Search and EOB	2,000 - 12,000	Jan 75

2. Program Direction:

Program approval at the end of the last quarter was $21.514M ($1.045M White and $20.469M Black). During the quarter, WHIG 0191 approved an increase of $.253M in the FY74 program (3080 Black). This was for NRO change of on-orbit support identified in CHARGE 0497.

3. Technical Status:

a. Systems On-Orbit

(1) FV 4427 ARROYO. ARROYO has completed its function as a Training and Check Out (TACO) vehicle for the Satellite Control Facility (SCF). It is currently being held in caretaker status pending the outcome of discussions involving the use of this satellite to characterize [redacted] 25X1 25X1

(2) FV 4423 TOPHAT I. The data from this system, now in its 40th month of operation, is still of excellent quality and

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there have been no payload failures. The spin rate of TOPHAT I has now decayed to eight rpm. Since there is no spin make-up system on this spacecraft, spin decay will soon limit its useful life. Predictions of spin axis or attitude stability at very low spin rates are reliable for only four to six weeks. Therefore, TOPHAT I's useful life can be projected only through mid-May 1974, but may be months longer. Once TOPHAT II becomes fully operational in late April, consideration will be given to the termination of TOPHAT I.

(3) FV 4424 MABELI. MABELI continues to collect [redacted] 25X1
25X1

during this reporting period. MABELI has incurred no new payload anomalies during this quarter. On 24 March 1974, a second tape recorder failed. Only one operable tape recorder remains, which has accumulated more operating cycles than any other 1 MHz recorder flown to date.

(4) FV 4425 URSALA I. Since February 1974 URSALA I has been tasked in a non-polar attitude to optimize its ability to collect the new family of COMINT targets previously identified by this system. Substantial ELINT tasking is also being accomplished in addition to the COMINT collection. On revolution 9542, 24 March 1974, downlink modulation (telemetry data) failed to appear after the tracking station had locked onto the carrier frequency of the vehicle's downlink transmitters. This anomaly reappeared six times at sporadic intervals and its cause is under investigation. Should this intermittent condition persist and permanent failure result, it would be catastrophic to the mission. The frequency response degradation of the tape recorders noted previously appears to have stabilized and the data from all three recorders continues to be machine processed.

(5) FV 4426 URSALA II. URSALA II remains fully operational. Since the last reporting period, special tests were run to assess the extent to which the telemetry downlinks interfere with the payload receivers during transpond operations. These tests showed that while the downlink signal can be observed in the payload CW receiver, it does not degrade the performance of the pulse receivers. The system has been certified as fully operational for transpond operations against pulsed target emitters. The attitude sensing subsystem continues to operate normally with the alternate horizon sensor enabled. The spacecraft's spin axis remains polar oriented to optimize for Time Critical Reporting (TCR) and Electronic Order of Battle (EOB) coverage.

b. Systems in Process

(1) FV 4428 TOPHAT II. All ground testing of TOPHAT II has been successfully completed. This spacecraft was mated to its host launch vehicle, HEXAGON mission 1208, on 15 February 1974 and is now awaiting launch.

(2) FV 4429 RAQUEL I. Payload acceptance testing started on 10 March 1974 at the payload subcontractor facility. Approximately 30% of the tests are complete and no significant problems have been encountered. All payload antennas have completed their acceptance tests. However, on one antenna, a deployment actuator problem remains to be resolved. Assembly of the spacecraft is nearly complete Payload delivery to the prime contractor and start of integrated systems testing of the spacecraft will occur in May 1974. Although the system test span is somewhat shorter than desired, adequate time is available to prepare FV 4429 for launch on HEXAGON mission 1209 as planned.

(3) FV 4430 URSALA III. The URSALA III payload was delivered to the prime contractor on 16 February 1974. Anechoic chamber testing of the payload and flight model intercept antennas has been completed. During vehicle integration and test at the contractor facility, a payload modification will be accomplished to eliminate the multi-frequency false alarm problem experienced on URSALA II. The spacecraft flight availability date remains August 1974; however, RAQUEL I is considered the prime candidate for the October 1974 launch.

(4) FV 4431 URSALA IV. The URSALA IV payload will enter acceptance testing in April 1974. Delivery to the prime contractor is scheduled for mid-May 1974. This payload has already been modified to eliminate the multi-frequency false alarm problem. Flight availability of the spacecraft system is January 1975.

(5) FV 4432 RAQUEL II. (Proposed) During this reporting period a redefinition of the DIANNE concept was completed. The resulting system, designated RAQUEL II, was proposed to the NRO staff via CHARGE 2204 on 21 March 1974. RAQUEL II as currently proposed will have several refinements beyond the capability of RAQUEL I including a power measurement capability.

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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: SAFSP-1

30 July 1974

SUBJECT: Quarterly Program Review

TO: DNRO (Mr. Plummer)

Attached is the Quarterly Program Review for the period 1 April 1974 through 30 June 1974.

ORIGINAL
SIGNED BY

DAVIS P. PARRISH
Colonel, USAF
Vice Director

1 Atch
Quarterly Program Review

Handle Via
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Control System Only

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QUARTERLY PROGRAM REVIEW

C O N T E N T S

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RYEMAN

QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Brig Gen David D. Bradburn
Vice Director: Colonel Davis P. Parrish

1. Quarterly Summary of Operations

a. HEXAGON Satellite Vehicle 8 was successfully launched on 10 April 1974. Reentry Vehicles (RVs) were recovered on 24 April (RV-1), 22 May (RV-2), 9 June (RV-5 Mapping Camera), and 18 June 74 (RV-3).

b. GAMBIT Mission 4342 was launched on 6 June 1974 with recovery of Satellite Recovery Vehicle 1 on 23 June.

c. Previously launched SIGINT vehicles still operational on 30 June 1974 include:

Vehicle	Mean Mission Duration (Months)	Operating Life To Date (Months)
TOPHAT 1	9	43*
[redacted]		
MABELI	9	29
URSALA 1	15.5	23
[redacted]		
URSALA 2	15.5	7

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* Non-operational on 21 June 74

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QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Brig Gen David Bradburn
Project Director: Col Jack Simonton

1. Overview:

a. During this reporting period, TOPHAT II was launched and four other Program 989 satellites were operational. The intelligence collection mission of TOPHAT I was terminated on 21 June 1974 by direction of the Satellite Operations Center. MABELI continued to collect information on the Soviet ABM radars. URSALAs I and II supported Time Critical Reporting operations, the continued [redacted] 25X1
[redacted] and again provided area surveillance around 25X1
the U.S.S. Kitty Hawk. Initial results from TOPHAT II indicated successful collection against the [redacted] and the 25X1
discovery of several new Frequency Shift Keyed (FSK) communications signals. The active Program 989 on-orbit spacecraft were:

FV/MSN	NAME	PURPOSE	FREQUENCY (MHz)	MONTHS IN ORBIT
4423/7334	TOPHAT I	Map and copy tropospheric scatter communications links	450 - 1,000	43
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	29
4425/7338	URSALA I	General Search and EOB	2,000 - 12,000	23
4426/7342	URSALA II	General Search and EOB	2,000 - 12,000	7
4428/7340	TOPHAT II	Map and copy communications links. Special [redacted]	450 - 1,000	2

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b. Three Program 989 systems are under development. They are:

FV/MSN	NAME	PURPOSE	FREQUENCY (MHz)	AVAILABILITY DATE
4429/7341	RAQUEL I	General Search and Technical Intelligence	4,000 - 18,000	Sep 74
4430/7343	URSALA III	General Search and EOB	2,000 - 12,000	Jan 75
4431/7344	URSALA IV	General Search and EOB	2,000 - 12,000	Sep 75

2. Program Direction:

The approved program at the beginning of the quarter was $21.767M. WHIG 0691 approved $.033M for previously undefined [redacted] contractual growth, resulting in a final approved program for this quarter and the fiscal year of $21.800M ($20.755M BLACK and $1.045M WHITE). 25X1

3. Technical Status

a. Systems On-Orbit

(1) FV 4427/ARROYO. ARROYO has completed its function as a Training and Check Out (TACO) vehicle for the Satellite Control Facility (SCF). It is currently being held in caretaker status pending the outcome of discussions involving the use of this satellite [redacted] 25X1 25X1

(2) FV 4423/TOPHAT I. The intelligence collection mission of TOPHAT I was terminated on 21 June 1974. Launched on 18 November 1970, TOPHAT I was operational longer than any other Program 989 mission. Although there were no payload failures and one tape recorder remained operational, the slow spin rate had degraded the accuracy of the data. The successful launch of TOPHAT II with a more timely data handling capability made continued operation of TOPHAT I unnecessary. TOPHAT I is now in caretaker status pending the outcome of the EMCON discussions.

(3) FV 4424/MABELI. MABELI continues to collect signals [redacted] 25X1

Early [redacted] 25X1

in May, the one remaining operational tape recorder on MABELI experienced several late starts and failures to read in or out. However, the tape recorder was successfully restarted, operation restricted to full readin/readout, and collection limited to 20 minutes per day to maximize the remaining life. This recorder has already accumulated more operational cycles than any other 1 MHz recorder flown to date. The outlook for continued successful operation is uncertain.

(4) FV 4425/URSALA I. This system continues to be tasked in a non-polar attitude, optimizing its ability to map COMINT targets. Substantial ELINT tasking also continues. During this reporting period, the loss of downlink modulation reappeared, battery telemetry indicated a possible catastrophic failure, and one of the three tape recorders aboard failed to start. The attitude control system was used to adjust the temperature profile of the spacecraft and the telemetry downlink is now functioning properly. The vehicle tasking level was also adjusted and recovery of battery health is nearly complete. Investigation continues. Efforts to restart the failed tape recorder continues but without success. In summary, in spite of these and previously reported spacecraft anomalies, URSALA I is currently providing an average of 75 minutes per day of collection, or approximately 80% of normal requirements.

(5) FV 4426/URSALA II. URSALA II remains fully operational and in excellent health providing over 120 minutes per day of collection.

(6) FV 4428/TOPHAT II. TOPHAT II was launched on 10 April 1974 aboard HEXAGON Mission 1208. System health and data quality are excellent. Tasking on TOPHAT II has been very heavy, averaging close to 100% of the available minutes per day. A large portion of the effort has been devoted to [redacted] which has been very successful. 25X1

b. Systems in Process

(1) FV 4429/RAQUEL I. Payload acceptance testing was completed and delivery to the prime contractor occurred on 12 June 1974. Additional payload testing is now in progress. Systems testing will begin in July. Mate to HEXAGON Mission 1209 is planned for 31 August 1974 in anticipation of a late September launch.

(2) FV 4430/URSALA III. The URSALA III payload was modified at the subcontractor's facility to eliminate a multi-frequency false alarm problem and has now been returned to the prime contractor. Integrated system tests can begin as soon as testing is completed on FV 4429/RAQUEL I. URSALA III could be available for launch on HEXAGON Mission 1210 in the spring of 1975. However, assuming continued good health of URSALA II, flight is not anticipated before HEXAGON Mission 1211 in the fall of 1975.

(3) FV 4431/URSALA IV. Completion of URSALA IV by the payload subcontractor was delayed until August 1974 so that the modifications to URSALA III could be accomplished. URSALA IV will be made available for flight within six months of the URSALA III launch.

(4) FV 4432/RAQUEL II. (Proposed) During the week of 17 June 1974, the proposed RAQUEL II system was briefed at the NRO and NSA. A study effort will be contracted for with our prime contractor in July 1974 and a hardware go-ahead is anticipated for December 1974.

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CONTROL SYSTEM

Mr. Plummer has seen.

~~(S)~~ NATIONAL RECONNAISSANCE OFFICE

WASHINGTON, D.C.

THE NRO STAFF

9 December 1974

MEMORANDUM FOR MR. PLUMMER

SUBJECT: SAFSP Quarterly Program Review

At the right is the SAFSP Quarterly Program Review covering the period of 1 July 1974 through 30 September 1974. As usual SAFSP has done an outstanding job of summarizing their activities during the period. It is recommended that you review the entire report. You may wish to pay particular attention to Sections I-V which summarize and discuss the on-orbit programs, also Sections X-XIII which discuss the [redacted] the AR/AT and Advanced Development and the [redacted] In addition, Section XVI on BYEMAN Policy and Security is noteworthy. 25X1

KEITH S. PEYTON
Captain, USAF

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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: SAFSP-1

20 NOV 1974

SUBJECT: Quarterly Program Review

Mr. Plummer has seen.

TO: DNRO (Mr. Plummer)

Attached is the Quarterly Program Review for the period 1 July 1974 through 30 September 1974.

DAVIS P. PARRISH
Colonel, USAF
Vice Director

1 Atch
Quarterly Program Review

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QUARTERLY PROGRAM REVIEW

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QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Maj Gen David D. Bradburn
Vice Director: Colonel Davis P. Parrish

1. Quarterly Summary of Operations

a. HEXAGON Satellite Vehicle (SV) 8 was deboosted on 27 July 1974 after 110 days in orbit. Reentry Vehicle 4 was recovered on 24 July 1974.

b. GAMBIT Satellite Recovery Vehicle (SRV) #2 from Mission 4342 was recovered on 21 July 1974. The satellite vehicle was deboosted on 22 July 1974 following a total photographic mission of forty-five days.

c. Previously launched SIGINT vehicles still operational on 30 September 1974 include:

Vehicle	Mean Mission Duration (Months)	Operating Life To Date (Months)
MABELI	9	32
URSALA I	15.5	26
URSALA II	15.5	10
TOPHAT II	23.2	5
TOPHAT I	9	45*

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* Non-operational on 13 August 1974.

2. Briefings During Quarter

Personnel

Gen Bernard Schriever (Ret), Advisor to SAMSO Advisory Group	8 Jul 74

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QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Maj Gen David D. Bradburn
Project Director: Col Philip N. Papaccio

1. Overview:

a. During this reporting period four P-989 satellites were operational. MABELI continued to collect information on Soviet ABM radars. URSALAs I and II supported Time Critical Reporting (TCR) operations, primarily the U.S. Navy GRANADA series tasks, [redacted] 25X1
[redacted] TOPHAT II collection against the 25X1
[redacted] TOPHAT I, after 45 25X1
months of successful operation, was killed 13 August 1974. ARROYO, which had been used as a training and checkout (TACO) satellite by the Satellite Control Facility (SCF), was also killed on 7 August 1974. System testing on RAQUEL I was completed 29 September 1974 and mate to HEXAGON Vehicle FV 1209 is scheduled for 2 October 1974. Approval for the RAQUEL II mission (technical intelligence/power measurement, 1.5 to 10 GHz) was received on 8 August 1974. The active Program 989 on-orbit spacecraft were:

FV/MSN	NAME	PURPOSE	FREQUENCY (MHz)	MONTHS IN ORBIT
4424/7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	32
4425/7338	URSALA I	General Search and EOB	2,000 - 12,000	26
4426/7342	URSALA II	General Search and EOB	2,000 - 12,000	10
4428/7340	TOPHAT II	Map and copy communications links. Special [redacted]	450 - 1,000	5

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b. Four Program 989 systems are under development. They are:

FY/NSN	NAME	PURPOSE	FREQUENCY (MHz)	AVAILABILITY DATE
4429/7341	RAQUEL I	General Search and Technical Intelligence	4,000 - 18,000	Awaiting mate
4430/7343	URSALA III	General Search and EOB	2,000 - 12,000	Jan 75
4431/7344	URSALA IV	General Search and EOB	2,000 - 12,000	Sep 75
4432/7345	RAQUEL II	Power Measurement and Technical Intelligence	1,500 - 10,000	Mar 77

2. Program Direction:

The FY 75 Financial Program was based on July 1974 EXCOM Option I, one new start per year. Initial funding approved was $13.352M with an additional $.083M set aside for Undefined effort. There were no changes to the financial program during this quarter.

3. Technical Status:

a. Systems On-Orbit

(1) Mission 7334/TOPHAT I. TOPHAT I, which had been in caretaker status since its intelligence collection mission was terminated on 21 June 1974, was irreversibly terminated on 13 August 1974 after NSA stated that it was not needed to [redacted] 25X1

(2) Mission 7337/ARROYO. ARROYO, which had also been in caretaker status pending consideration of its use [redacted] 25X1 purposes, was irreversibly terminated on 7 August 1974.

(3) Mission 7339/MABELI. MABELI continues to collect signals from [redacted] Early in July 1974, another of the stalled tape recorders was

successfully restarted. Attempts to restart the third recorder continue. With two tape recorders again operational, the 20 minutes per day collection restriction imposed in May to maximize remaining mission life was lifted. The current low percent sun condition and the mission attitude of MABELI now limit its collection capability to an average of 60 minutes per day. The outlook for continued successful operation is cautious optimism.

(4) Mission 7338/URSALA I. This system continues to be tasked in a non-polar attitude, optimizing its ability to map COMINT targets. Substantial ELINT tasking also continues. The "No Modulation" problem continues and has resulted in 36 contacts in which modulation did not come on during the entire pass, 66 contacts in which modulation came on during the pass, and approximately 800 normal contacts. The previously reported possible catastrophic battery failure has now been determined to be a single degraded battery cell. The vehicle tasking level was adjusted to allow for the reduced power available. URSALA I is currently providing an average of 57 minutes per day of collection, or approximately 60% of normal requirements.

(5) Mission 7342/URSALA II. URSALA II remains fully operational and in excellent health providing over 114 minutes per day of collection.

(6) Mission 7340/TOPHAT II. System health and data quality on TOPHAT II remain excellent. Tasking is still very heavy, averaging close to 100% of the available minutes per day. TOPHAT II has located several new communication sites and links,

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b. Systems in Process

(1) Mission 7341/RAQUEL I. System testing of the RAQUEL I spacecraft started on 12 July 1974 and was completed on 29 September 1974. A number of problems occurred during thermal vacuum testing of the spacecraft which extended the testing time span. Mate to HEXAGON Vehicle 1209 will be accomplished on 2 October 1974 in anticipation of a 29 October launch.

(2) Mission 7343/URSALA III. The URSALA III payload is at the prime contractor's facility. System integration and testing will be started as soon as testing is completed on FV 4429/RAQUEL I. URSALA III could be available for launch on HEXAGON Vehicle 1210 in the spring of 1975. However, assuming the continued good health and the present projected lifetime of URSALA II, the flight is not anticipated before HEXAGON Vehicle 1211 in the fall of 1975.

(3) Mission 7344/URSALA IV. The URSALA IV payload was delivered to the prime contractor's facility in September 1974. URSALA IV will be available for flight within six months of the URSALA III launch. The anticipated flight is on HEXAGON Vehicle 1215 in the fall of 1977.

(4) Mission 7345/RAQUEL II. Approval of the RAQUEL II Power Measurement and Technical Intelligence collection system was received from the NRO on 8 August 1974. A hardware and software definition study by our prime contractor began on 6 September 1974 with a requirement for a technical, schedule, and cost proposal submission by 3 February 1975. We anticipate awarding the hardware contract in May 1975 with a projected system availability of Spring 1977.

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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: SAFSP-1

01 JUL 75

SUBJECT: Quarterly Program Review

TO: DNRO (Mr. Plummer)

Attached is the Quarterly Program Review for the period 1 October 1974 through 31 December 1974.

DAVIS P. PARRISH
Colonel, USAF
Vice Director

1 Atch
Quarterly Program Review

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QUARTERLY PROGRAM REVIEW

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QUARTERLY PROGRAM REVIEW

Overall General Summary

Program Director: Maj Gen David D. Bradburn
Vice Director: Colonel Davis P. Parrish

1. Quarterly Summary of Management Actions

The NRP Executive Committee met 22 November 1974 and made the following decisions which affect SAFSP:

[redacted]

b. Concurred with the no-engineering change policy proposed for the GAMBIT and HEXAGON systems.

[redacted]

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d. NRP out-year funding projections for upgraded Imaging and SIGINT systems should concentrate on developing system ideas that would enhance COMINT collection. Outputs should be available for review before the EXCOM meeting scheduled for April 1975.

e. The Director, NSA, will consider and recommend to the ASD/I alternatives to maintain the APS as a separate program, including the transfer of APS resources into the NRP and/or the CCP.

2. Quarterly Summary of Operations

a. HEXAGON Mission 1209 was successfully launched on 29 October 1974. Reentry Vehicles (RVs) were recovered on 17 November (RV-1), 23 December (RV-2), and 27 December (RV-5).

b. No GAMBIT mission activity was scheduled or conducted during this period.

c. Previously launched SIGINT vehicles still operational on 31 December 1974 include:

Vehicle	Mean Mission Duration (Months)	Operating Life To Date (Months)
MABELI	9	35
URSALA I	15.5	29
URSALA II	15.5	13
TOPHAT II	23.2	8
RAQUEL I	24	2*

25X1

* Launched 29 October 1974

3. Briefings During Quarter

a. On 3 October 1974 Mr. Bernard B. Lynn, Director, Defense Contract Audit Agency (DCAA), and Mr. Gilbert G. Olin, Assistant for Review and Analysis, DCAA, were briefed on SAFSP Program and Organizational Overview, Procurement Methods and Techniques and Security.

b. On 8-10 October 1974 Maj Gen John E. Morrison, Jr. (Ret), Chairman, SIGINT Committee; Mr. John E. Dickey, Executive Secretary, SIGINT Committee; Mrs. Dorothy L. Richards, Deputy Executive Secretary, SIGINT Committee; and Mr Charles L. Murphy, Deputy Director for Satellite Operations (SAFSS), were briefed on SAFSP SIGINT Programs.

c. On 17 October 1974 RADM Robert K. Geiger, Director of NRO Program C, was briefed on Program A matters.

d. On 24 October 1974 Dr. John Foster, Member of the President's Foreign Intelligence Advisory Board and Vice President for Energy Systems at TRW, was briefed on Synthetic Aperture Radar.

e. On 29 October 1974 Maj Gen Abraham J Dreiseszun, Commander, AFCMD, received the SAFSP Overview briefing.

QUARTERLY PROGRAM REVIEW

Program 989

Program Director: Maj Gen David D. Bradburn
Project Director: Col Philip N. Papaccio

1. Overview

a. For calendar year 1974, P-989 satellites were tasked against 22,295 target areas collecting 1,856 hours of SIGINT data. For comparison, the total hours collected in calendar years 1972 and 1973 were 859 hours and 1,321 hours respectively.

b. During this reporting period five P-989 satellites were operational. MABELI continued to collect information on Soviet ABM radars. URSALAs I and II supported Time Critical Reporting (TCR) operations primarily in the Middle East, Project Flavor, and the U.S. Navy GRANADA series tasks. Successful collection of the [redacted] by TOPHAT II continued. RAQUEL I was successfully launched on 29 October 1974 and was initially dedicated to general search in the 12 to 18 GHz frequency range. The active Program 989 on-orbit spacecraft were: 25X1

MISSION	NAME	PURPOSE	FREQUENCY (MHz)	MONTHS IN ORBIT
7339	MABELI	Precision power and polarization measurements on Soviet ABM/ AES Radars	151 - 165 387 - 426 862 - 964 1,500 - 2,500	35
7338	URSALA I	General Search and EOB	2,000 - 12,000	29
7342	URSALA II	General Search and EOB	2,000 - 12,000	13

MISSION	NAME	PURPOSE	FREQUENCY (MHz)	MONTHS IN ORBIT
7340	TOPHAT II	Map and copy communications links. Special [redacted]	450 - 1,000	8
7341	RAQUEL I	General Search and Technical Intelligence	4,000 - 18,000	2

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c. Three Program 989 systems are under development. They are:

MISSION	NAME	PURPOSE	FREQUENCY (MHz)	AVAILABILITY DATE
7343	URSALA III	General Search and EOB	2,000 - 12,000	Apr 75
7344	URSALA IV	General Search and EOB	2,000 - 12,000	Oct 75
7345	RAQUEL II	Power Measurement and Technical Intelligence	1,500 - 10,000	Oct 77

2. Program Direction

There were no changes in the FY75 Financial Program during this reporting period.

3. Technical Status

a. Systems On-Orbit

(1) Mission 7339/MABELI. In late November an intermittent loss of pre-detection data was experienced throughout bands 1, 2, and 3 (151 - 165 MHz, 387 - 426 MHz, 862 - 964 MHz). Evaluation continues in an effort to isolate the failure and develop corrective action. Caution will be exercised in any attempts to recover this capability since the digital data are unaffected by this failure and the main mission requirements of power measurement of Sino-Soviet radars continue to be satisfied. During the year 1974, MABELI provided over 155 hours of collection, which is only about 50% of

that available because operational restrictions were imposed to prolong mission life. Now in its 35th month of active mission life, MABELI is the second oldest operating P-989 spacecraft, surpassed only by TOPHAT I, whose mission was terminated in its 43rd month.

(2) Mission 7338/URSALA I. The tasking of this system in the non-polar attitude, which optimized its ability to map certain COMINT targets, was terminated in mid-November. Further, because of the increased occurrence of the "No Modulation" problem, tasking has been limited to approximately 25 minutes per day. This limitation was imposed to reduce the buildup of a data readout que which was delaying both the collection and recovery of time critical intelligence data. Even so, URSALA I provided over 391 hours of collection during 1974.

(3) Mission 7342/URSALA II. URSALA II continues in excellent health. This system was tasked for over 659 hours during 1974. Tasking during this quarter averaged 110 minutes per day, which is about 75% of the total power available for collection.

(4) Mission 7340/TOPHAT II. TOPHAT II continues in excellent health. During its eight and one-half months on orbit this year, it provided over 373 hours of collection and averaged 16.6 readins per day. Its primary contribution is geolocation of the [redacted] the only overhead collector able to do so. It also provides substantial copy of this high interest, [redacted] TOPHAT II contributed to the COMINT collection mission [redacted] by providing geolocations, frequencies, and activity indicators for sustained collection of emitters of interest. For example, TOPHAT II located [redacted] This technical [redacted] Similar support results from TOPHAT II [redacted]

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(5) Mission 7341/RAQUEL I. RAQUEL I was launched into orbit on 29 October 1974 and successfully separated from HEXAGON Mission 1209 on 30 October 1974. During the six day engineering evaluation phase, all spacecraft, payload, and data processing functions were verified to be operating properly with one exception. Payload band 5 (10 to 12 GHz) sensitivity had decreased by approximately 21 db in the pulse receiver and 23 db in the

CW/Technical Intelligence receivers. The cause of this problem has been traced to either a bad microwave switch or coaxial cable connector in the local oscillator output for band 5. A study of the signal environment has shown that the only known emitter in this frequency range is our Hawk system, which has sufficient Effective Radiated Power to be intercepted. Since completion of the engineering evaluation, the RAQUEL I system has been dedicated to general search in the 12 to 18 GHz frequency range. In its two months on orbit, the system has provided 172 hours of collection. During the month of December tasking averaged 185 minutes/day, which is 92% of the total available for collection.

b. Systems in Process

(1) Mission 7343/URSALA III. The URSALA III spacecraft has been assembled and will undergo various system tests up to and including the Thermal Vacuum tests in preparation for an April 1975 launch on HEXAGON Mission 1210. The decision to launch may be made as late as launch minus 40 days (21 March 1975). However, assuming the continued good health and the present projected lifetime of URSALA II, the flight is not anticipated before the fall of 1975 on HEXAGON Mission 1211.

(2) Mission 7344/URSALA IV. The URSALA IV payload was delivered to the prime contractor's facility in September 1974. The current launch strategy is to maintain the URSALA IV system available for flight within six months of the URSALA III launch. The anticipated flight is on HEXAGON Mission 1215 in the fall of 1977.

(3) Mission 7345/RAQUEL II. Approval of the RAQUEL II Power Measurement and Technical Intelligence collection system was received from the NRO on 8 August 1974. A hardware and software definition study by our prime contractor began on 6 September 1974 with a requirement for a technical, schedule, and cost proposal submission by 3 February 1975. We anticipate awarding the hardware contract in May 1975 with a projected system availability of Fall 1977.