

S A F S P
QUARTERLY PROGRAM REPORT
AS OF 31 MARCH 1978

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as of 31 March 1978
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20 Apr 78

MEMORANDUM FOR THE DIRECTOR, NATIONAL RECONNAISSANCE
OFFICE

SUBJECT: Quarterly Program Report

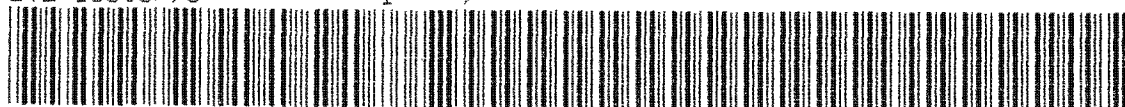
Attached is the Program A Quarterly Program Report for
the period 1 January 1978 through 31 March 1978. Also
attached is an Annex detailing Applied Research/Advanced
Technology and Advanced Development contractual
information.

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JOHN E. KULPA, JR.
Major General, USAF
Director

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QUARTERLY PROGRAM REPORT

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QUARTERLY PROGRAM REPORT

Program 989 (P989)

Program Director:

Col John H. Dean

1. Summary

a. Seven P989 satellites were active during the previous quarter. RAQUEL IA was successfully launched on 16 March 1978, and all subsystems are working properly. RAQUEL I and URSALA III remain in good to fair health and are being tasked heavily. URSALA II and TOPHAT continue to collect Continuous Wave (CW) signals. MABELI, now more than six years old, and URSALA I, nearly six years old, both have significant operational limitations but are being tasked at a low level and are collecting unique and valuable data.

b. The URSALA IV payload subcontractor Motorola, Inc., has been modifying the payload at their Scottsdale, Arizona, plant. The spacecraft contractor, Lockheed Missile and Space Co., has begun modification of the spacecraft. LORRI system development continues on schedule in anticipation of an early 1980 launch.

c. The FARRAH I System Design Review was conducted in early March 1978. Analysis and design work is proceeding on schedule.

2. Specific Statusa. On-Orbit Spacecraft

(1) Mission 7338/URSALA I. URSALA I has been on orbit since July 1972 and, consequently, has several significant collection limitations. However, the system operates satisfactorily in the transpond mode and will operate in the tape-record mode if not used frequently. It has been used for

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as of 31 March 1978

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some normal tasking to augment URSALA III, and it is used in support of the RTIP Van. URSALA I will re-enter the earth's atmosphere sometime this summer.

(2) Mission 7339/MABELI. MABELI, launched in January 1972, reached six years of orbital operation during the previous quarter. The system has several limitations but is still capable of collecting unique intelligence information. Intermittent tape recorder operation continues to limit data retrieval to about ten percent of planned collection. Increasing temperatures due to changing sun angles have been accompanied by a return to operation of the pre-detection collection capability which has not been operational since 1975. MABELI will re-enter the earth's atmosphere late this year.

(3) Mission 7340/TOPHAT II. TOPHAT II has been on orbit since April 1974. The system continues to operate nominally except for the failure of two of the three tape recorders. Collection continues against [] troposcatter, other communication, and some special radar signals.

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(4) Mission 7341/RAQUEL I. RAQUEL I, on orbit since October 1974, continues in fair health. The Technical Intelligence Receiver remains inoperative, but the pulse receiver system is working nominally. RAQUEL I is satisfying operational, search, and some Technical Intelligence missions.

(5) Mission 7342/URSALA II. URSALA II, on orbit since November 1973, is in poor health with the main limitation being the continued loss of the pulse receiver. The CW collection capability continues to be nominal and the system is tasked against communication signals, CW radars, and jammers. The ability to use URSALA II to look for []

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as of 31 March 1978

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(6) Mission 7343/URSALA III. URSALA III has been on orbit since July 1976 and is in good health. The only significant problem has been the intermittent and varying receiver attenuation which was reported in the previous report and which has neither degraded nor improved since that time. Only a small percentage of the collected data is being affected by this problem.

(7) Mission 7345/RAQUEL IA. RAQUEL IA was launched at 1840Z on 16 March 1978. Launch, separation, spin-up, deployment of extendables, system check-out, and initial operations were all nominal. Power, command, communication, data storage, attitude, and payload subsystems are all functioning properly. The quality of the data from the new Type 38 recorders and associated Digital Interface Units (DIU) is considerably improved over previous units. The Technical Intelligence receiver is being tasked heavily and is operating as expected.

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b. Vehicles Under Development and Test.

(1) Mission 7344/URSALA IV. Modification and refurbishment continued. The Critical Design Review for the payload modifications was held. The project remains on schedule. URSALA IV is planned for launch on Space Vehicle (SV) 15 of the host program, currently scheduled for launch in March 1979.

(2) Mission 7250/LOERI. Hardware development continued on schedule. Development of the software began in January 1978.

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(3) Mission 7346/FARRAH I. Work continues on preliminary design, system definition, and long-lead procurement items. The most important product of this effort has been the General System Specification which has been extensively reviewed by the government and appropriately revised where applicable. Other documents also produced include a detailed Statement of Work, an Incentive Plan, and the Contract Data Requirements List. A System Design Review was held on 4 March 1978. Factfinding for the basic FARRAH contract has been completed, and negotiations and contract signing will be accomplished within the next 30 days.

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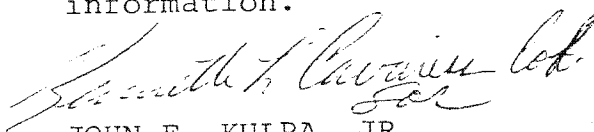
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20 JUL 1978

MEMORANDUM FOR THE DIRECTOR, NATIONAL RECONNAISSANCE
OFFICE

SUBJECT: Quarterly Program Report

Attached is the Program A Quarterly Program Report for
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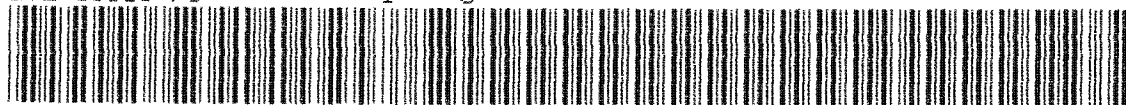


JOHN E. KULPA, JR.
Major General, USAF
Director

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QUARTERLY PROGRAM REPORT

Program 989 (P989)

Program Manager: Col John H. Dean

1. Summary

a. Seven P989 satellites were active during the previous quarter. RAQUEL IA performed flawlessly. RAQUEL I and URSALA III remained in good to fair health and were tasked heavily. URSALA II and TOPHAT continued to collect Continuous Wave (CW) signals. MABELI, now more than six years old, has significant operational limitations. It continued to be tasked at a low level and to collect unique and valuable data. URSALA I re-entered the atmosphere on 6 May 1978.

b. The URSALA IV payload subcontractor, Motorola, Inc., has completed modifying the payload at their Scottsdale, Arizona, plant. The spacecraft contractor, Lockheed Missile and Space Co., has continued modification of the spacecraft. LORRI system development continued on schedule in anticipation of an early 1980 launch.

c. The FARRAH I design work proceeded on schedule.

2. Specific Statusa. On-Orbit Spacecraft

(1) Mission 7332/URSALA I. URSALA I re-entered the earth's atmosphere on 6 May 1978 at about 1728Z. Re-entry point was approximately 83°N, 10°E. The system had supported as follows:

Days on orbit:	2,130
Number of read-ins programmed:	20,095
Number of tape recorder read-outs:	9,499
Number of read-in minutes:	105,304

The last tasking was on rev 32,704 on 5 May 1978.

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(2) Mission 7339/MABELI. MABELI, launched in January 1972, began its seventh year of orbital operation. The system has several limitations but is still capable of collecting unique intelligence information. Intermittent tape recorder operation continued to limit data retrieval to about ten percent of planned collection. About three minutes per day of read-in was retrieved. The pre-detection collection capability continued to operate. MABELI will re-enter the earth's atmosphere in the spring of 1979.

(3) Mission 7340/TOPHAT II. TOPHAT II has been on orbit since April 1974. The payload continued to operate nominally. Tape recorder performance, however, has deteriorated. On 1 June tape recorder number three exhibited anomalous performance. On 2 June the tape recorder failed to read out. All attempts to operate the recorder subsequent to 2 June have been unsuccessful. On 28 June an attempt was made to resume operations using tape recorder number one. The recorder operated properly. (Use of the recorder had been terminated in September 1975 because the recorder was not properly responding to turnoff commands.) Tape recorder number one has operated properly on all subsequent uses. Tape recorder number two was periodically tested but remained inoperative.

(4) Mission 7341/RAQUEL I. RAQUEL I, on orbit since October 1974, continued in fair health. The Technical Intelligence receiver remained inoperative, but the pulse receiver system continued to work nominally. On two occasions the spacecraft failed to respond to a turnoff command which telemetry showed that the spacecraft had correctly received and decoded. RAQUEL I is satisfying operational, search, and some Technical Intelligence missions.

(5) Mission 7342/URSALA II. URSALA II, on orbit since November 1973, is in poor health

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with the main limitation being the continued loss of the pulse receiver. The CW collection capability continued to be nominal and the system was tasked against communication signals, CW radars, and jammers. URSALA II will re-enter the earth's atmosphere during November 1978.

(6) Mission 7343/URSALA III. URSALA III has been on orbit since July 1976 and is in good health. The only significant problem has been the intermittent and varying receiver attenuation which has been previously reported. Only a small percentage of the collected data was affected by this problem.

(7) Mission 7345/RAQUEL IA. RAQUEL IA was launched on 16 March 1978. Performance has been flawless. [REDACTED]

[REDACTED] Routine shipment of processed data began on 11 April 1978.

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b. Vehicles Under Development and Test

(1) Mission 7344/URSALA IV. Modification and refurbishment continued. The Critical Design Review for the ground data processing was held and the project remains on schedule. URSALA IV is planned for launch on Space Vehicle (SV) 15 of the host program currently scheduled for launch in March 1979.

(2) Mission 7250/LORRI. Hardware development continued. Electrical tests of the high gain antenna showed that performance of the reflector meets specification. Assembly of the high gain and omni antennas was completed. Testing of the high gain antenna mechanical performance at ambient conditions began. The project remains on schedule for launch in March 1980.

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(3) Mission 7346/FARRAH I. The FARRAH I contract was negotiated and signed during this reporting period. Most long lead items have been initiated, both at the prime and subcontract levels. Most preliminary designs have been completed with Preliminary Design Reviews held for the On-Board Processor, tape recorder and data interface unit, solar array panel, stored command sequencer, and antenna subsystems. The remaining subsystem PDR's will be held during July with a complete system PDR scheduled for September. A steering group was formed to determine the use of the On-Board Processing System. The first meeting was held and a concept document is being written to define how this system will be used on orbit and how it will interface with ground systems such as the Real Time Interactive Processor (RTIP) and the Tactical ELINT Processor (TEP).

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31 October 1978

MEMORANDUM FOR THE DIRECTOR, NATIONAL RECONNAISSANCE
OFFICE

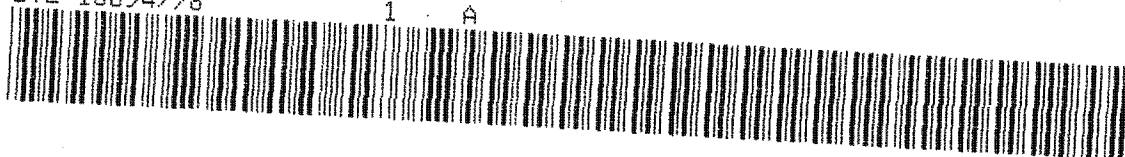
SUBJECT: Quarterly Program Report

Attached is the Program A Quarterly Program Report for
the period 1 July 1978 through 30 September 1978. Also
attached is an Annex detailing Applied Research/Advanced
Technology and Advanced Development contractual
information.

John E. Kulpa
JOHN E. KULPA, JR.
Major General, USAF
Director

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QUARTERLY PROGRAM REPORT

Program 989 (P989)

Program Manager:

Col John H. Dean

1. Summary

a. Six P989 satellites were active during the previous quarter. RAQUEL IA performed flawlessly. RAQUEL I and URSALA III remained in good to fair health and were tasked heavily. URSALA II and TOPHAT continued to collect Continuous Wave (CW) signals. MABELI, now more than six years old, has significant operational limitations. It continued to be tasked at a low level and to collect unique and valuable data.

b. Assembly of the URSALA IV payload and spacecraft neared completion.

c. The FARRAH I design work proceeded on schedule.

2. Specific Statusa. On-Orbit Spacecraft

(1) Mission 7339/MABELI. MABELI, which has been on orbit since January 1972, has several limitations but is still capable of collecting unique intelligence information. Intermittent tape recorder operation continued to limit data retrieval to about twenty percent of planned collection. About three minutes per day of read-in was retrieved. The pre-detection collection capability continued to operate. MABELI will re-enter the earth's atmosphere in the spring of 1979.

(2) Mission 7340/TOPHAT II. TOPHAT II has been on orbit since April 1974. The payload continued to operate nominally. Tape recorders numbers two and three remain inoperative. Tape recorder number one occasionally did not properly

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respond to turnoff commands. (Use of the recorder had been terminated in September 1975 because of that anomalous response to commands).

(3) Mission 7341/RAQUEL I. RAQUEL I, on orbit since October 1974, continued in fair health. The Technical Intelligence receiver remained in-operative, but the pulse receiver system continued to work nominally. The spacecraft has encountered interference on the command uplink during some of the passes at the New Hampshire tracking station. The source of the interference has not yet been established. RAQUEL I is satisfying operational, search, and some Technical Intelligence missions.

(4) Mission 7342/URSALA II. URSALA II, on orbit since November 1973, is in poor health with the main limitation being the continued loss of the pulse receiver. The CW collection capability continued to be nominal and the system was tasked against communication signals, CW radars, and jammers. URSALA II will re-enter the earth's atmosphere during November 1978.

(5) Mission 7343/URSALA III. URSALA III has been on orbit since July 1976 and is in good health. The only significant problem has been the intermittent and varying receiver attenuation which has been previously reported. Only a small percentage of the collected data was affected by this problem.

(6) Mission 7345/RAQUEL IA. Payload performance has been flawless. One anomaly with commanding has occurred, however. The primary command to stop tape recorder number two failed on 28 August. The alternate command functioned properly, and operations with tape recorder number two have resumed.

b. Vehicles Under Development and Test.

(1) Mission 7344/URSALA IV. Modification and refurbishment was completed. Assembly of the

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spacecraft subsystems and payload into the completed spacecraft was in the final stages of work. The project remains on schedule. URSALA IV is planned for launch on Space Vehicle (SV) 15 of the host program currently scheduled for launch in March 1979.

(2) Mission 7350/LORRI. Integrated testing of the payload began at the Argo Systems plant in Sunnyvale, California. Environmental testing of the high gain and omni antennas was completed. Post environmental performance tests of the antennas began. The project remained on schedule for launch in March 1980.

(3) Mission 7346/FARRAH I. The FARRAH I system is progressing on schedule. During this quarter, the remaining subsystem Preliminary Design Reviews (PDR's) were held with an overall system PDR held on 19 September 1978. At this time, the design and initial breadboard testing indicate the system meets or exceeds the requirements as specified in the General System Specification. The subsystem Critical Design Reviews (CRD's) begin during the next quarter. FARRAH I is scheduled to launch in March 1981.

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as of 31 December 1978

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MEMORANDUM FOR THE DIRECTOR, NATIONAL RECONNAISSANCE
OFFICE

SUBJECT: Quarterly Program Report

Attached is the Program A Quarterly Program Report for
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JOHN E. KULPA, JR.
Major General, USAF
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QUARTERLY PROGRAM REPORT

PROGRAM 989 (P989)

Program Manager:

Col John H. Dean

1. Summary

Six P989 satellites were active during the quarter. URSALA II re-entered the atmosphere on 26 December 1978 leaving five satellites on orbit. RAQUEL IA continued to perform excellently; RAQUEL I and URSALA III remained in good to fair health and were tasked heavily during this period. TOPHAT continued to collect Continuous Wave (CW) signals. Although it is considerably beyond its design life, MABELI continued to be tasked and to collect unique and valuable data.

The URSALA IV payload and spacecraft completed assembly and system test in preparation for a March 1979 launch. The LORRI experimental pallet continued through its testing program. The design effort for FARRAH I proceeded on schedule.

2. Specific Statusa. On-Orbit Spacecraft

(1) Mission 7339/MABELI. MABELI, which has been on orbit since January 1972, has several limitations but is still capable of collecting unique intelligence information. Data retrieval is limited by intermittent tape recorder operation; during this period the tape recorders operated more frequently than during the previous period resulting in a significant increase in the successful retrieval of data. The pre-detection collection capability has not operated since 8 November 1978; this capability had been intermittent since it resumed functioning in late January 1978.

(2) Mission 7340/TOPHAT. On 28 December 1978, TOPHAT exceeded 100,000 minutes of data collection since it was launched in April 1974. The payload continued to operate nominally; however, system utility

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is constrained by the tape recorders which exceeded their design life a long time ago. TOPHAT is predicted to re-enter the atmosphere in May 1980.

(3) Mission 7341/RAQUEL I. RAQUEL I, which has been on orbit since October 1974, remained in fair health. The pulse receiver system continued to work normally but the technical intelligence (TI) receiver remained inoperative. The interference on the command uplink, that was previously reported, occasionally recurred but it poses no threat to the satellite; the exact source of the interference has not been established. RAQUEL I continues to satisfy operational, search, and some TI missions; it is predicted that it will re-enter the atmosphere in August 1980.

(4) Mission 7342/URSALA II. On 26 December 1978, URSALA II re-entered the earth's atmosphere; the re-entry location was approximately 97° west longitude, 63° north latitude. During its lifetime which began with launch on 10 November 1973, URSALA II averaged better than 100 minutes of data collection per day.

(5) Mission 7343/URSALA III. URSALA III has been on orbit since July 1976 and it continued in good health. A small percentage of collected data continued to be affected by the intermittent and varying receiver attenuation that was previously reported.

(6) Mission 7345/RAQUEL IA. The system has continued to operate excellently. Tasking of the satellite has been heavy and on 26 December RAQUEL IA exceeded 50,000 minutes of collected data since its launch on 16 March 1978. One anomaly occurred during the reporting period: on three occasions data was missing from a readout; the cause is under investigation.

b. Vehicles under Development and Test

(1) Mission 7344/URSALA IV. Thermal vacuum testing at the system level was completed. The encrypted downlinks performed properly and the [redacted] processed encrypted [redacted]

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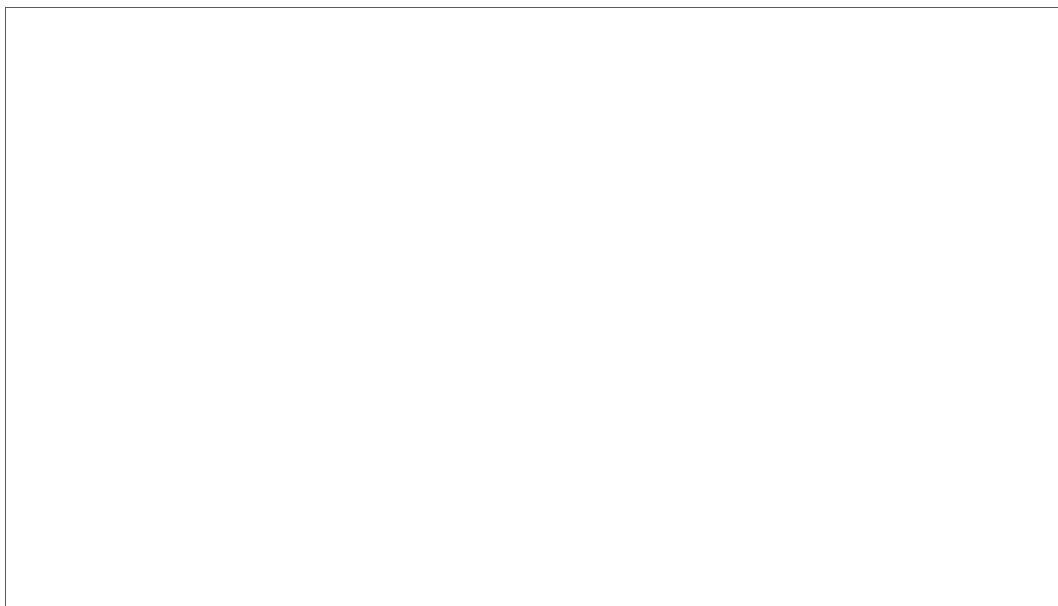
payload data. Two anomalies were found in the payload, both in band 2 (4 to 6 Gigahertz); an oscillation in the difference channel and a 5 to 9 db loss of gain in one of the two omni channels. The former is intermittent; the latter occurred only at high temperature. Only geopositioning accuracy in band 2 is affected by these problems. Because there is insufficient time to correct the problems and still launch aboard Space Vehicle (SV) 15 of the host program, the decision has been made to maintain the schedule and launch URSALA IV aboard SV-15 in March 1979.

(2) Mission 73450/LORRI. Testing of the payload at Argo Systems and the antennas at Lockheed has confirmed that performance meets or exceeds the specifications. Testing of the payload also revealed that parts from two lots needed to be replaced. Replacement of one lot (NAND gates) was completed and parts for replacing the second lot (diode detectors) are on order. The project remained on schedule for launch on SV-16 of the host program in March 1980.

(3) Mission 7346/FARRAH I. The FARRAH I system is progressing on schedule. The sub-system critical design reviews started with the onboard processing computer CDR on 5 October. The payload CDR (Phase 1 of 3) was held on 16 November. The portion of the payload reviewed at that time met or exceeded the specifications given in the General System Specification. Other subsystems with designs critical to meeting system specifications are progressing as planned with CDR's scheduled during the first half of CY79. FARRAH I is scheduled to launch in March 1981.

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