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VOL IV OF VII  
COPY 5 OF 6

# SAFSP SIGINT PROGRAMS P-989



REVISED SUBMISSION

FY 1986 FINANCIAL PROGRAM  
FY 1987 BUDGET ESTIMATE  
FY 1988-1991 PLANNING GUIDANCE

14 MARCH 1986

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CY 005 OF 006 CYS  
PG 001 OF 033 PGS

P-989

REVISED BUDGET SUBMISSION

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PG 002 OF 033 PGS

INDEX

	PAGE
SECTION I - Current Approved Program.....	03
SECTION II - Budget Line Item Descriptions.....	22

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PG 003 OF 033 PGS

P-989

SECTION I

CURRENT APPROVED PROGRAM

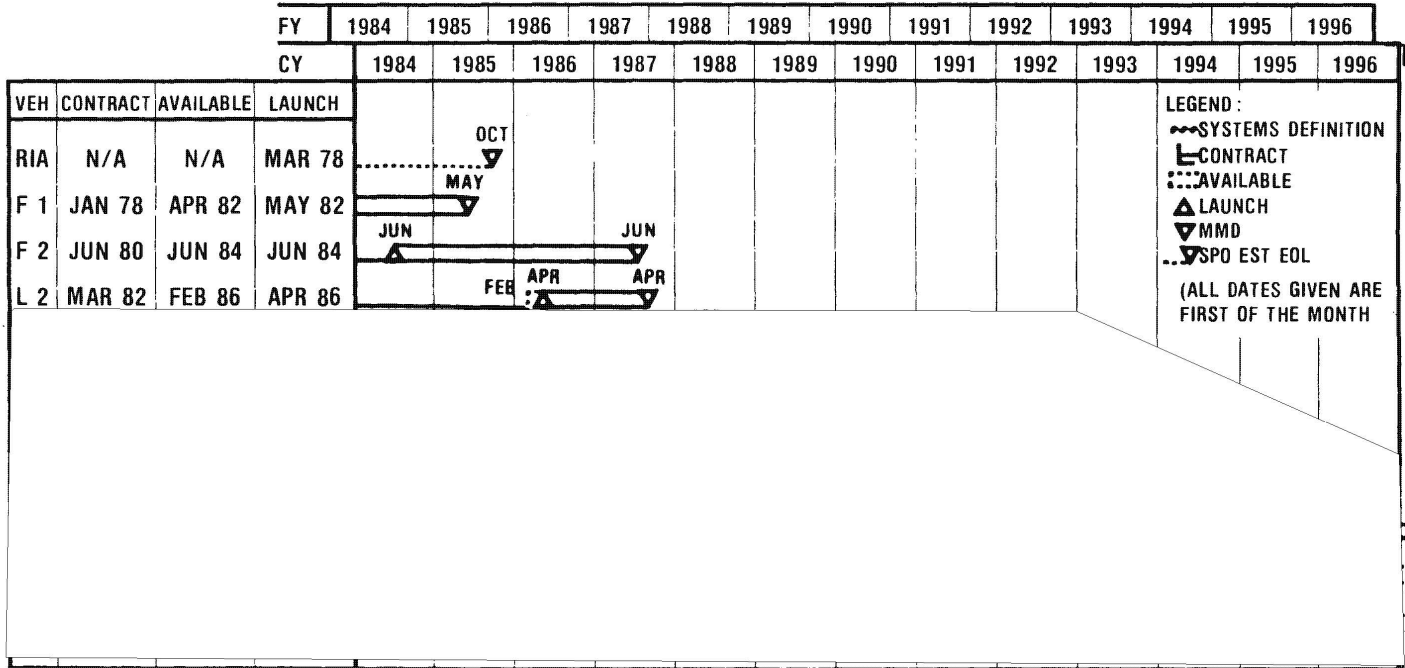
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# P-989 BASELINE F3 AND SUBSEQUENT ON ELVs DUAL IOC MAY 1989



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P-989

FARRAH 3 and Subsequent on TITAN II's

The Baseline P-989 Program continues of the multi-mission FARRAH low altitude SIGINT collection system. It includes evolutionary capability



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Baseline Program also includes the development, launch, and operation of LORRI 2. LORRI 2 is a pallet containing special-purpose payloads for Extremely High Frequency (EHF) general search and Very High Frequency (VHF) directed search/mainbeam technical intelligence.

FARRAH 1 was launched in May 1982. It combines the best collection features of URSALA and RAQUEL with improved parametric measurement accuracy. FARRAH 1 continues to satisfy those aspects of the technical intelligence, search, and operational ELINT missions most effectively accomplished by low-altitude ELINT satellites. This satellite has a 36 month Mean Mission Duration (MMD).

FARRAH 2 was launched in June 1984, and is effectively the same as FARRAH 1.



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LORRI 2 will be launched with its host vehicle in April 1986. It will include special purpose payloads for EHF search and VHF directed search/mainbeam technical intelligence. The EHF search payload will include a 70 to 74 GHz and a 92 to 96 GHz mainbeam pulse collection capability, in addition to the basic LORRI 1 EHF search payload which will cover the 26 to 42 GHz RF range with high gain and omni antennas using a 4 GHz instantaneous receiver search bandwidth. The basic LORRI 2 EHF Search payload will detect both CW and pulsed signals. The VHF directed search/mainbeam technical intelligence payload will cover the 130 to 180 MHz RF range and provide for precision mainbeam power and polarization measurement on specific signals of interest originating from



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data from these payloads will be encrypted.

Added to the Baseline Program is the TMPS/TMGS, which will allow for survivable mission planning and commanding in the FARRAH 3 timeframe.

The major issue affecting the P-989 Program is the robustness of its ground support architecture. Currently, the program depends upon the AFSCF for all its C3 support including tracking and commanding from the RTS. The MGS and the AFSCF central node are colocated and subject to damage from natural disaster or hostile action. A more robust architecture including backup capabilities for mission planning and tracking and commanding, is needed.

14 MAR 1986

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PG 008 OF 033 PGS

Another issue affecting the P-989 Program is the need to develop additional special purpose collection systems for COMINT mapping below 2 GHz and the need for sustained [redacted] The current LORRI 2 pallet will only provide an interim [redacted] collection programmed for the 1986 time frame.

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FY86-91 ESTIMATES  
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FY 1986 FINANCIAL PROGRAM  
FY 1987 BUDGET,  
AND FY 1988-1991 PLANNING GUIDANCE

Copy 5 of 6  
Page 9 of 33

P989 MAR 86 REVISION

----- CUM TD FY1986 FY1987 FY1988 FY1989 FY1990 FY1991 TO COMPL UNDEF -----

BSE#RD F-3+ ON TII B/L(MAR 86)

BASE BASE PROGRAM

A SPACE SEGMENT

2000 L-2/F-3

B3600

200 LORRI 2 40.1 3.2 .0 .0 .0 .0 .0 3.2 .0

[Redacted Table Content]										
--------------------------	--	--	--	--	--	--	--	--	--	--

4000 SPACE SEGMENT SUPPORT

B3080

400 PROGRAM SUPPORT 11.8 3.7 4.2 7.5 8.2 8.7 10.3 42.6 .0

410 AEROSPACE SUPPORT 5.5 3.3 3.6 4.1 4.6 5.1 5.4 26.1 .0

B3080 Subtotal 17.3 7.0 7.8 11.6 12.8 13.8 15.7 68.7 .0

4000 Subtotal 17.3 7.0 7.8 11.6 12.8 13.8 15.7 68.7 .0

A Subtotal 348.4 168.7 130.9 48.5 18.4 13.8 15.7 396.0 .0

14 MARCH 1986

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FY86-91 ESTIMATES  
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FY 1987 BUDGET,  
AND FY 1988-1991 PLANNING GUIDANCE

Copy 5 of 6  
Page 10 of 33

P989 MAR 86 REVISION

CUM TD FY1986 FY1987 FY1988 FY1989 FY1990 FY1991 TO COMPL UNDEF

B GROUND SEGMENT

[Redacted Table Content]										
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B3600										
100	OBPS DEVELOPMENT	.0	18.3	4.8	.0	.0	.0	.0	23.1	.0
110	GROUND DEVELOPMENT	.0	3.1	2.2	.6	.0	.0	.0	5.9	.0
B3600	Subtotal	.0	21.4	7.0	.6	.0	.0	.0	29.0	.0
2000	Subtotal	6.9	32.8	14.6	3.2	.3	.0	.0	50.9	.0

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FY 1986 FINANCIAL PROGRAM  
FY 1987 BUDGET,  
AND FY 1988-1991 PLANNING GUIDANCE

Copy 5 of 6  
Page 11 of 33

P989 MAR 86 REVISION

	CUM TD	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	TO COMPL	UNDEF
-----									
C LAUNCH SEGMENT									
1000 LAUNCH SEGMENT INTEGRATION									
B3080									
100 ELV LSI	.0	6.5	6.4	6.7	5.5	.4	.0	25.5	.0
B3080 Subtotal	.0	6.5	6.4	6.7	5.5	.4	.0	25.5	.0
1000 Subtotal	.0	6.5	6.4	6.7	5.5	.4	.0	25.5	.0
2000 ELV HARDWARE & LAUNCH SUPPORT									
B3020									
200 REFURB TITAN II W/FAIR	.0	2.7	22.3	27.8	22.5	10.9	20.9	107.1	.0
B3020 Subtotal	.0	2.7	22.3	27.8	22.5	10.9	20.9	107.1	.0
B3080									
210 LAUNCH SUPPORT	.0	4.5	3.3	9.3	8.1	.0	.0	25.2	.0
220 SD LAUNCH SERVICES	.0	.0	7.0	26.0	22.0	.0	.0	55.0	.0
B3080 Subtotal	.0	4.5	10.3	35.3	30.1	.0	.0	80.2	.0
B3600									
200 SD NON-REC ACCELERATIO	.0	14.3	6.0	.0	.0	.0	.0	20.3	.0
B3600 Subtotal	.0	14.3	6.0	.0	.0	.0	.0	20.3	.0
2000 Subtotal	.0	21.5	38.6	63.1	52.6	10.9	20.9	207.6	.0
C Subtotal	.0	28.0	45.0	69.8	58.1	11.3	20.9	233.1	.0

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14 MARCH 1986

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FY86-91 ESTIMATES  
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FY 1986 FINANCIAL PROGRAM  
FY 1987 BUDGET,  
AND FY 1988-1991 PLANNING GUIDANCE

Copy 5 of 6  
Page 16 of 33

P989 MAR 86 REVISION

	CUM TD	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	TO COMPL	UNDEF
F MISSION PLANNING VAN									
1000 SPACE SEGMENT									
03600									
100 TMPS VAN	3.0	5.0	1.2	.0	.0	.0	.0	6.2	.0
110 T/MGS & TMPS VAN	.0	1.0	.2	.0	.0	.0	.0	1.2	.0
03600 Subtotal	3.0	6.0	1.4	.0	.0	.0	.0	7.4	.0
1000 Subtotal	3.0	6.0	1.4	.0	.0	.0	.0	7.4	.0
F Subtotal	3.0	6.0	1.4	.0	.0	.0	.0	7.4	.0

14 MARCH 1986

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FY86-91 ESTIMATES  
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FY 1986 FINANCIAL PROGRAM  
FY 1987 BUDGET,  
AND FY 1988-1991 PLANNING GUIDANCE

Copy 5 of 6  
Page 20 of 33

P989 MAR 86 REVISION

	CUM TD	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	TO COMPL	UNDEF
-----									
sort60 NRP PORTION OF BSE#RD									
BASE									
BASE PROGRAM									
B3020	.0	3.9	49.3	46.1	28.0	7.7	15.1	150.1	.0
B3080	.0	32.2	41.6	73.0	72.7	27.4	30.6	277.5	.0
B3600	.0	112.4	77.5	17.6	.0	1.0	3.1	211.6	.0
BASE Subtotal	.0	148.5	168.4	136.7	100.7	36.1	48.8	639.2	.0
ONGO									
ON-GOING INITIATIVES									
O3020	.0	6.9	40.3	96.9	130.6	147.2	172.6	594.5	.0
O3080	.0	.0	.0	9.9	14.6	18.8	21.5	64.8	.0
O3600	.0	3.1	20.9	9.9	14.0	1.3	.1	49.3	.0
ONGO Subtotal	.0	10.0	61.2	116.7	159.2	167.3	194.2	708.6	.0
sort60 Grand total	.0	158.5	229.6	253.4	259.9	203.4	243.0	1347.8	.0

14 MARCH 1986

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FY86-91 ESTIMATES  
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FY 1987 BUDGET,  
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Copy 5 of 6  
Page 24 of 33

P989 MAR 86 REVISION

	CUM TD	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	T0 COMPL	UNDEF
sort60 DRSP PORTION OF BSE#RD									
BASE BASE PROGRAM									
B3020	.0	78.2	34.5	5.3	.4	3.2	5.8	127.4	.0
B3080	.0	.0	.0	.0	1.4	13.6	15.3	30.3	.0
B3600	57.3	28.5	10.4	1.3	.9	.5	1.6	43.2	.0
BASE Subtotal	57.3	106.7	44.9	6.6	2.7	17.3	22.7	200.9	.0
ONGO ON-GOING INITIATIVES									
03020	.0	1.0	33.1	34.2	77.7	76.6	87.7	310.3	.0
03080	.0	.0	.0	.0	.0	4.3	6.5	10.8	.0
03600	8.0	8.6	5.5	1.9	.2	.7	.0	16.9	.0
ONGO Subtotal	8.0	9.6	38.6	36.1	77.9	81.6	94.2	338.0	.0
sort60 Grand total	65.3	116.3	83.5	42.7	80.6	98.9	116.9	538.9	.0

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PG 022 OF 033 PGS

P-989

SECTION II

BUDGET LINE ITEM DESCRIPTIONS

14 MAR 1986

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PG 023 OF 033 PGS

P-989

SECTION II

BUDGET LINE ITEM DESCRIPTIONS

1. LORRI 2

This line item funds the design, manufacture, assembly, test, and on-orbit checkout of the LORRI 2 pallet. This vehicle differs from its predecessor, LORRI 1, by the addition of a VHF MBTI capability, a 92 to 96 GHz and 70 to 74 GHz [redacted] and the encryption of payload mission data.

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(a) FY86

Complete pallet integration and test and mate to host vehicle. Launch and perform initial on-orbit calibration and performance verification.

14 MAR 1986

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PG 025 OF 033 PGS

#### 4. Program Support Level

This line item provides for a cadre of program office personnel to provide general support to P-989 and the palletized missions. Some of the non-vehicle specific tasks which are addressed by these individuals are analysis of on-orbit malfunctions, analysis of spacecraft attitude control, orbit analysis, document control, program safety, and some cost control functions. This line item also includes systems level engineering and analytical services. Tasks addressed include threat analysis, investigation of development and operational problems, and definition of spacecraft and ground system improvements.

14 MAR 1986

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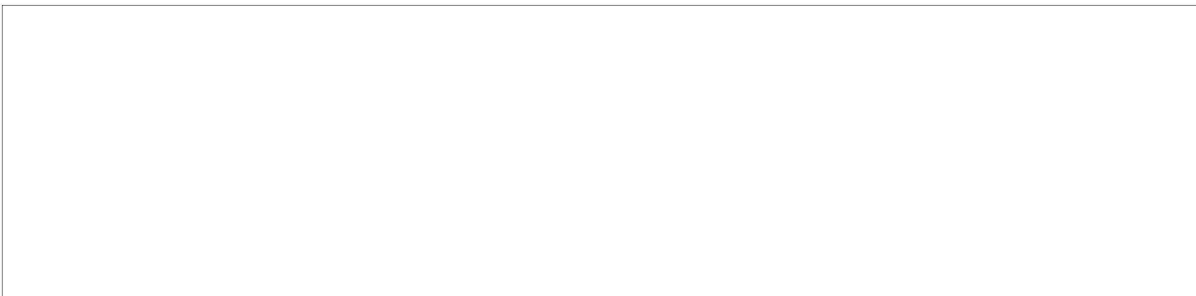
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PG 026 OF 033 PGS

5. Aerospace MTS

Funds in this line are provided to the Aerospace Corporation for Members of the Technical Staff (MTS) who are allocated to SAFSP for support of the P-989 Program. The Aerospace Corporation is tasked to provide general systems engineering and integration to support SAFSP. The support provided consists of resolution of specific design problems; problem analysis resulting from testing; development of test programs to include detailed requirements, procedures, and resultant analysis; independent design and performance reviews; ground station software development; and operational planning.



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7. TMPS/TMGS - Operations & Maintenance

This line funds the costs associated with maintaining a trained standby crew to operate and maintain the equipment.

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PG 028 OF 033 PGS

10. NOS-BE Conversion to NOS

Provides the NRO share of the costs for the conversion of the current "NOS/BE" operating system used at the [redacted] to "NOS" as requested formally by NSA. This effort represents a phased conversion approach which will be completed in 1987-1988 to support FARRAH 3 operations. The NOS operating system will provide compatibility with future CDC operating system product improvements and ensure continued maintenance by CDC. The NRO share is based upon conversion of off-line vehicle support software which runs on the CYBER.

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PG 029 OF 033 PGS

11. Follow-on Ground Development

Provides for future modifications as necessary to make the  compatible with future FARRAH operations. Changes are expected since technology upgrades will call for FARRAH improvements in the future.

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CY OF 006 CYS  
PG 033 OF 033 PGS



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23. MCC Manning

Funds contractor personnel costs associated with the P-989 MCC.

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