

~~SECRET~~

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D.C.



REPLY TO
ATTN OF:

AFOAC-S/O

SUBJECT:

Satellite to Ground Encryption

12 APR 1960

TO:

AFDRD-ER

1. The attached correspondence has been held in AFDAT without action. Confirming conversations between Major White of this office and Major Giraud, AFCIN, and between Major Giraud and Major Bensey of your office, it appears that if action is to be taken on this correspondence, it should come from your office.
2. Major Floyd, AFDAT Project Officer, is not available for consultation at this time, but he has expressed the fact that AFDAT does not want to establish a file on this subject.
3. This letter is unclassified when removed from attachments.

for *Robert W. Paulson*

ROBERT W. PAULSON
Colonel, USAF
Chief, Communications Systems Division
Directorate of Communications-Electronics

10 Atchs:

1. AF IN 50209 fm USAFSS (C)
2. AF OUT 64224 fm AFCIN-1C1 (S)
3. AF IN 15720 fm USAFSS (S)
4. AF IN 1414 fm AFBMD (U)
5. Ltr fm AFORQ-RN to AFDAT (S)
6. Ltr fm AFORQ-RN to AFCIN (S)
7. 1st Ind fm AFCIN-1C (S)
8. Ltr fm ECD to AFDRQ (S)
9. Ltr fm AFCIN-1C1 to AFORQ (S)
10. Ltr fm Sys Eng to W. Fromm (S)

~~SECRET~~

5129

#8

AT 7-352

CONFIDENTIAL

DEPARTMENT OF THE AIR FORCE
STAFF MESSAGE DIVISION

50209 (22 Jan 60) T/R/hph

ORQ CHANGED TO DAT (Maj Floyd) (5 Feb 60)

INFO AFOAC

NO PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTION
PHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE TIME GROUP PRIOR
TO DECLASSIFICATION-NO UNCLASSIFIED REFERENCE IF THE DTG IS QUOTED

DE RJWFKW

R 212304Z

FM USAFSS

TO COPS USAF

BT

~~CONFIDENTIAL~~ FROM ECD/21-1-0212.

ACTION AFDRQ. PLEASE PASS TO AFOAC-S/C FOR INFO. REFERENCE

USAFSS LETTER, SUBJECT: (C) QUALITATIVE OPERATIONAL

REQUIREMENT FOR A SATELLITE-TO-GROUND ENCRYPTING DEVICE,

DATED 10 SEPTEMBER 1959. REQUEST THIS HEADQUARTERS BE

ADVISED OF STATUS OF ABOVE REFERENCED LTR.

BT

AFOAC 0-309a

CONFIDENTIAL

5129

3307 ATT 3523
ATC 11

CONT MESSAGE

SECRET

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| | | | | |
|-----------------------------|----|------|------|------|
| CLASSIFICATION OF REFERENCE | TO | FROM | DATE | TIME |
| | | | | |

FROM: AFSD, LOS ANGELES, CALIF.

SPECIAL INSTRUCTIONS

INFO: COMNAVFOR
AFSD FT MEADE, MD. AFSDAT (M. Floyd)

AFSD FOR OCEP, AFSD FOR OCB. USAFSS PROVIDES CERTAIN RADAR SUPPORT FOR DISCOVERY. ASSUMING OTHER AFSD SATELLITE PROJECTS FOR 1960 WILL entail similar requirements for AFSD RADAR SUPPORT, THE FOLLOWING INFORMATION IS REQUESTED: (A) PROJECTED SCHEDULE OF SATELLITE LAUNCHES. (B) FREQUENCIES FOR MONITORING INTEREST. (C) PROJECTED ORBITS. (D) ADDRESSES FOR REPORTING AND REPORTING FREQUENCY. (E) TYPE OF DATA REQUIRED FROM RADAR. RECEIPT OF THIS INFO WILL PERMIT ADVANCE PLANNING FOR SEARCH AND REPORTING PROCEDURES, PREPARING NECESSARY DIRECTIVES AND ESTIMATING ACTUAL SUPPORT AFSD CAN PROVIDE.

INT DISTRIBUTION

64224

AC - PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTION - PHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE-TIME GROUP PRIOR TO DECLASSIFICATION - NO UNCLASSIFIED REFERENCE IF THE DATE-TIME GROUP IS QUOTED

2016 5 12

| | |
|-------|------|
| DATE | TIME |
| MONTH | YEAR |
| JAN | 60 |

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[Handwritten Signature]

| | | | |
|--|----------|---|--|
| SYMBOL AFSD-101 | | SIGNATURE <i>[Handwritten Signature]</i> | |
| TYPED NAME AND TITLE (Signature, if required) GILBERT L. BRANDON, CAPT, USAF/ma3 | | TYPED (or stamped) NAME AND TITLE Col, USAF | |
| PHONE | PAGE NO. | NO. OF PAGES | |
| | 2 | 5 | |
| SECURITY CLASSIFICATION SECRET | | COY 2 OF 3 CTS | |

INCOMING

ACTION: DAT
INFO : CIN, CGM
SMD A 061

HQD0*6ZCQJB167

PP [REDACTED]
DE [REDACTED]

P 302326Z

FM AFEMD LOSA CALIF

TO COFS HQUSAF

BT

UNCLAS FROM [REDACTED] 11-6-E FOR AFDAT AND AFCIN BASED ON THE VICE CHIEF OF STAFF LETTER CMM DATED 5 AUG 59 CMM SUBJECT CLN ASSIGNMENT OF OPERATIONAL PLANNING RESPONSIBILITY WE HAVE DETERMINED THAT CMM WITH THE FOLLOWING EXCEPTIONS CMM ALL SAMOS INFORMATION IS SECRET. THESE EXCEPTIONS CMM WHICH WOULD CONTINUE TO BE TOP SECRET ARE /1/ SPECIFIC DATE OF LAUNCH/SPECIFIC PAYLOAD CONFIGURATION AND MISSION ASSIGNMENT CMM WHEN IDENTIFIED TOGETHER /2/ RESULTS AND EFFECTIVENESS OF RECONNAISSANCE SATELLITE DATA WHEN PROCESSED AND REDUCED TO USEABLE FORMAT. REQUEST CONFORMATION OR CORRECTION TO THIS INTERPRETATION

BT

01/0042Z DEC [REDACTED]

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Atch 4
ATD-352

~~SECRET~~

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D.C.



REPLY TO
ATTN OF:

AFORQ-RN

OCT 23 1959

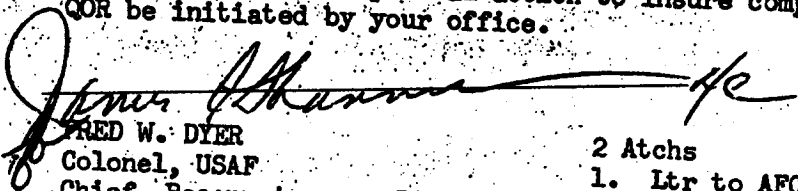
SUBJECT:

(U) SAMOS

TO:

AFDAT

1. References:
 - a. GOR 80-2, paragraph K.l.a.
 - b. QOR for Satellite-to-Ground Encrypting Device, USAFSS, dtd 11 Sep 59, with indorsement by AFCIN, dtd 16 Oct 59. (Atch #1)
 - c. Letter from AFCIN, Encryption Device for SAMOS, dtd 16 Oct 59, with attachment. (Atch #2)
2. The requirement for secure transmission of data from the electromagnetic version of SAMOS is concurred in by this office and was included in paragraph K.l.a. of GOR 80-2 on 26 Sep 58.
3. Since the GOR already states the basic requirement covered by USAFSS in their QOR, no amendment to the GOR is deemed necessary.
4. Recommend developmental action to insure compliance with the QOR be initiated by your office.


FRED W. DYER
Colonel, USAF
Chief, Reconnaissance Division
D/Operational Requirements

- 2 Atchs
1. Ltr to AFCIN, 17 Sep 59, QOR for a Satellite-to-Ground Encrypting Device, and 1st Ind fr AFCIN, 16 Oct 59, same subj (SS: 8271) Orig & 1 cc, 1 pg ea; w/USAFSS Ltr, 11 Sep 59, same subj, Orig & 1 cc, 2 pgs ea (SS: 7172)
 2. Ltr fr AFCIN-1C1, 16 Oct 59, Encryption Device for SAMOS, Orig & 1 cc, 1 pg ea; w/Memo dtd 14 Oct 59, Orig & 1 cc, 3 pgs ea (SS: 8272)

Copy to: AFCIN-1C

~~SECRET~~

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3310 HTD-352

Atch 5

SECRET

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D.C.



REPLY TO
ATTN OF: AFORQ-RN

SEP 17 1959

SUBJECT: (C) Qualitative Operational Requirement for a Satellite-to-Ground Encrypting Device

TO: AFCIN

Request your comments on the attached letter per routing by originator.

James A. Shannon

JAMES A. SHANNON
Lt Col, USAF
Deputy Chief, Reconnaissance Group
D/of Operational Requirements

1 Atch
USAFSS Ltr, dtd 11 Sep 59,
subj as abv, Orig & 2 cc,
2 pgs (S)

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SECRET

915 417-5 5700
Atch 6

~~SECRET~~

Ltr, AFMOC-3/O, Subject: (U) Satellite to Ground Encryption

JUL 14 1960

Ltr Ind (AFIRT-ER)

TO: AFORQ-RN



Cloyd H. Drey
CLOYD H. DREY, Colonel, USAF
Directorate of Research & Technology

10 Atchs
n/c

*Any further correspondence on
this matter should be addressed to AFDSD.*
CHD

RN
SS 5751

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when separated from
classified enclosures

~~SECRET~~

Doc-7-298

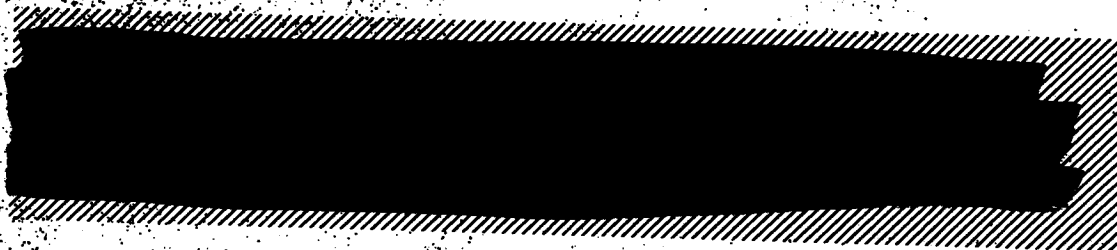
~~SECRET~~

Ltr, AFOAC-S/O, Subject: (U) Satellite to Ground Encryption

1st Ind (AFIRT-ER)

001 14 1960

TO: AFORQ-RH



CLOYD H. DEREY, Colonel, USAF
Directorate of Research & Technology

10 Atns
n/c

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classified enclosures

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AT 7-352

SECRET

AFORQ-RN ltr dtd 17 Sep 59, subj: (C) Qualitative Operational Requirement for a Satellite-to-Ground Encrypting Device.

1st Lt (AFCIN-1C)

Headquarters USAF, Washington 25, D.C.

1 6 OCT 1959

TO: AFORQ-RN

[REDACTED]

Harold Watson

HAROLD E. WATSON
MAJOR GENERAL, USAF
DEPUTY ASSISTANT CHIEF OF STAFF,
INTELLIGENCE

1 Atch
n/c except 1 cy w/d

RN
SS 8271

5129

CIN 1235

SECRET

Atch 7

AJ 7-352

~~SECRET~~

R-0-1888-3

BT-J-1-331

[REDACTED]

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~~SECRET~~

AT 7-352 Atch 10

~~SECRET~~

[REDACTED]

~~SECRET~~

SECRET

[REDACTED]

101

FT/GS/jhs

F. Tenenbaum

cc: F. Tenenbaum (6 copies)
J. P. Thompson

SECRET

HT7-352

SECRET

AFDSD-AT/Maj Howard/sas/71791/8 Aug 60

AFDSD-AT

Encryption Device for SAMOS

AUG 10 1960

Commander, ARDC, Andrews AFB, Maryland

1. Reference USAFSS QOR, dated 11 September 1959, USAFSS message ECD 19-7-241, dated 20 July 1960, and related correspondence (attached).
2. It is requested that ARDC analyze these requirements and inform this headquarters as soon as practicable the scope of the development effort required, schedule, and estimate of the cost to provide this capability in the SAMOS program.

FOR THE CHIEF OF STAFF

- 4 Atch
1. QOR, dtd 11 Sept 59
 2. Ltr fr AFCIN to AFORQ, dtd 16 Oct 59.
 3. AF IN 15720, dtd 15 Dec 59
 4. AF IN 53464, dtd 20 Jul 60

JOHN L. MARTIN, JR.
Colonel, USAF
Deputy Assistant for Advanced
Technology, DCS/Development

COORDINATION: AFDSD-AT AFORQ-RN AFCIN-1C1
 Maj Howard

[Handwritten signatures and initials]

Copies sent to: AFEMD, Dir, NSA, USAFSS

→ AFDSD Coord
AFORQ-RN
AFCIN-1c1

UPON REMOVAL OF ATTACHMENT(S)
THIS DOCUMENT IS DOWNGRADED TO UNCL

SECRET

~~SECRET~~

HEADQUARTERS
UNITED STATES AIR FORCE SECURITY SERVICE
SAN ANTONIO, TEXAS



11 September 1959

~~(CONFIDENTIAL)~~ Qualitative Operational Requirement for a Satellite-to-ground Encrypting Device

Hq USAF (AFDRQ)
WASH, D. C.

THRU: Hq USAF (AFGIN)

1. ~~(CONFIDENTIAL)~~ Introduction: This qualitative operational requirement pertains to the operational support of WS-117L and is being submitted in accordance with Air Force Regulation 57-3, dated 15 May 1956.
2. ~~(SECRET)~~ Activity of Originating Organization Affected by the Proposed Equipment: In support of this headquarters' intelligence gathering mission, a requirement exists for a satellite-to-ground encrypting device(s) to be used on proposed modification of SAMOS (previously ~~SENTRY~~) Subsystem F. The proposed modifications were discussed at a meeting on 13 August 1959 at Wright-Patterson AFB by Hq USAF (AFGIN), ATIC, SAC, and USAFSS. Subject of the meeting was redirection of the SAMOS program to include a COMINT collection capability. It was agreed by all parties that a satellite COMINT collection capability would be highly desirable, however, a definite decision as to when the COMINT integration will be accomplished or the degree of the integration has not been reached as of the date of this QOR.
3. ~~(CONFIDENTIAL)~~ Present Capability to Accomplish the Function: This headquarters is not aware of any existing device which can accomplish a satellite-to-ground encrypting function. To our knowledge, no formal requirements have been placed on the National Security Agency to develop such a device, however, available information indicates NSA is working on the development of a satellite encrypting device as an internal NSA project. It is not known whether or not the National Security Agency device will fulfill the WS-117L requirement.
4. ~~(SECRET)~~ Effect of Equipment Deficiency: An operational capability of a satellite-ground encrypting device is desired by October 1960. Integration of COMINT capability into the SAMOS program is totally dependent upon the ability to secure transmission of the intelligence information from the satellite to the ground tracking and acquisition stations. Until an encryption capability is obtained, the COMINT function cannot be integrated into the Subsystem F program.
5. ~~(SECRET)~~ Employment: If such a device can be developed by October 1960, it is probable that the device or modifications thereof would be used on all F series vehicles launched after that date. Present

~~SECRET~~

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ATTN-352

Atch 1²

~~SECRET~~

intentions are to integrate a COMINT function into the SAMOS program gradually, so it appears that the COMINT system will utilize the existing ELINT collection and transmission system with minor modifications. Under such conditions, the encryption device would serve a dual purpose in that it would be able to encrypt the ELINT information from the vehicle also. To date, no provisions have been made to encrypt the ELINT information for transmission from satellite to ground.

6. (SECRET) Performance Capabilities Required: The encryption device must be compatible with the existing WS-117L SAMOS Subsystem F collection-transmission system. It must also be compatible with the eventual modifications induced by integration of a COMINT collection capability. Since a decision on the degree of integration to be performed on any specific SAMOS vehicle has not yet been reached, USAFSS will supply NSA with information on specific performance capabilities required of the encryption device as the project develops and exact requirements become known.

7. (SECRET) Additional Performance Capabilities Desired: To provide maximum flexibility, the encryption device should be developed on a modular construction basis and be multipurpose rather than specialized, if such versatility can be obtained without a serious time sacrifice. The modular construction characteristic is desirable as the SAMOS program will have an encryption requirement for different rates of signal encryption as the program progresses and additional reconnaissance capabilities are developed. Although the initial encryption requirement is for a digital type signal, an eventual analog encryption capability is also desired.

FOR THE COMMANDER:

CORNELIUS E. McBRAYER
Colonel, USAF
DCS/Communications-Electronics

~~SECRET~~

1977-352

~~SECRET~~

16 OCT 1959

AFCIN-101

Encryption Device for SAMOS

AFCORQ (Maj Spence)

1. In accordance with telephone conversation of 14 October, forwarded herewith is Digital and Analogue Output for Subsystem F SAMOS.
2. It is believed that this information will be valuable in determining the definitive requirements for the QOR submitted by USAFSS for an encryption device for Subsystem F. SAMOS.

JOHN E. POE
Lt Colonel, USAF
Directorate of Collections
✓ ACS/Intelligence

1 Atch
Ref paper (2 cys)

~~SECRET~~

AT 7-352

AT 7-92

SECRET

AFM, AF010-3/0, 12 Apr 60, (U) Satellite to Ground Encryption

27 JUL 1960

2nd LIA (AF010-EN)

TO: AF010-AT

1. Do not concur that this requirement has been overtaken by events. Although the F system launch schedule has been reduced, this office knows of no current guidance which implies cessation of R&D to meet the specified (SOR 80-2) ELINT and COMINT objectives.

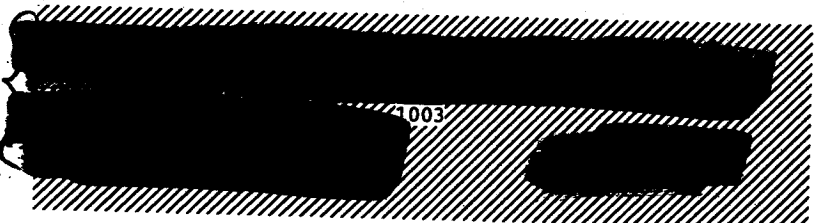
2. Request you proceed to include the capability covered in the USAFSS QOR in the development program, since this capability is already stated as a requirement in SOR 80-2.

3. Your attention is invited to the attached secret message from USAFSS, cite 19-7-241, dated 20 July. Request you take action on this message for the reasons stated in paragraph 2 above.

Fred W. Dyer
FRED W. DYER

Colonel, USAF
Chief, Reconnaissance Division
D/Operational Requirements

11 Atch
1 - 10 n/c
Added 1 atch
11. AF IN 53464 USAFSS 20 Jul 60



Info by Dir NSA

SECRET

SECRET

DEPARTMENT OF THE AIR FORCE

[REDACTED]

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**DEPARTMENT OF THE AIR FORCE
STAFF MESSAGE DIVISION**

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Page 2 of 3

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22 JUN 54

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