

#142



RESEARCH AND
ENGINEERING

THE DEPARTMENT OF DEFENSE

WASHINGTON, D.C. 20301

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DECLASSIFIED IN PART
Authority: EO 13526
Chief, Records & Declass Div, WHS
Date: 12 FEB 2016

10 JUN 1981

MEMORANDUM FOR SECRETARY OF DEFENSE
DEPUTY SECRETARY OF DEFENSE

SUBJECT: Availability of Launch Vehicles for Military Payloads -
INFORMATION MEMORANDUM (U)

(S) This is in response to your four questions on my 13 May 1981
Information Memorandum (TAB A), "Retention of Titan IIIC Launch
Capability."

a. Question: (U) Don't we have any other, different launch
vehicles? - at NASA?

Answer: (U) No. The DSCS and DSP satellites require the
Titan IIIC or Titan III(34)D/Inertial Upper Stage (IUS) vehicles
for launch due to the weight of the satellites. NASA has no
expendable launch vehicles available today nor could they make any
available in a timely manner that would meet the requirements of
these satellites.

b. Question: (U) Why did our inventory get so low?

Answer: (S) The Titan (34)D/IUS development was initiated
to replace the Titan IIIC and serve as DoD's primary launch vehicle
during transition to the Space Shuttle and also act as backup launch
vehicle for critical DoD Space Shuttle missions. At the inception
of the Titan III(34)D/IUS development, the inventory of Titan IIIC
launch vehicles was sufficient for planned launches until Titan III
(34)D/IUS availability. However, successive IUS developmental
problems delayed the Initial Launch Capability for the Titan III(34)D/
IUS from July 1980 until about June 1982. This two year delay in
availability eliminated any overlapping launch capability coverage
with the Titan IIIC. During this developmental period, the planned
use of Titan IIICs for the DSCS, DSP, and classified users, reduced
the Titan IIIC inventory to only two.

OSD 3.3(b)(1)
NRO 33CBX17

Classified by: FRUSOR&E
Declassify on: 10 June 2001
Authority: FRUSOR&E

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EO 3.3(b)(1)
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[REDACTED]

This year, the Titan IIIC launch vehicle in the inventory with both the DSCS and DSP competing for it.

c. Question: (U) Why was it (the IUS) delayed? Who is building it?

Answer: (U) Boeing Aerospace Company, the prime contractor, has encountered a series of technical and management problems in developing the IUS since full scale development began in 1977. The most recent delay in flight hardware from July 1981 to April 1982 is attributed to late deliveries of electronic piece parts, and delays in qualification testing, software development, and independent software validation and verification. Since 1977 the total delay has been 21 months. However, at this point, the IUS is meeting or exceeding its performance, reliability, and accuracy goals. If the IUS completes development in April 1982, it would be available to launch a satellite in June 1982.

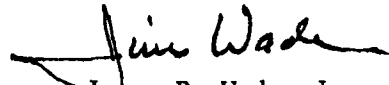
d. Question: (U) I need to know much more about this problem.

Answer: ~~(S)~~ Enclosed is a Background Paper (TAB B) that was prepared by the Air Force for the JCS when it recommended delaying the DSCS launch. The paper addresses the launch vehicle situation, the DSCS and DSP operational satellite status, and launch alternatives. The JCS concurred with the Air Force recommendation to postpone the scheduled June 81 DSCS launch and to retain the Titan IIIC in standby status.

~~(S)~~ As I pointed out in my 13 May 81 memorandum to you, this decision requires the expenditure in FY 81 and FY 82 of \$57 million to \$70 million for the storage and retesting of the DSCS satellites. We must make sure that those funds are budgeted by the Air Force.

(U) The responses to these questions are based on inputs from the Air Force and DCA and have been coordinated with the ODUSD (Policy).

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James P. Wade, Jr.
Principal Deputy

Enclosures - TAB A (~~SECRET~~)
TAB B (~~SECRET~~)

Prepared by A. Hartigan, 155083

~~SECRET~~



OFFICE OF THE SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

22 May 1981

NOTE FOR THE UNDER SECRETARY OF DEFENSE (RESEARCH AND ENGINEERING)

Please see SecDef's questions/comments on your 13 May memorandum concerning retention of TITAN IIIC launch capability. They are reproduced below for readability.

1. Don't we have any other, different launch vehicle? - at NASA?
2. Why did our inventory get so low?
3. Why was it delayed? - Who is building it?
4. I need to know much more about this problem.

R. L. Bovey
Robert L. Bovey
Captain, USN,
Military Assistant to the
Secretary of Defense

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Chief, Records & Declass Div, WHS
Date: 12 FEB 2016



RESEARCH AND
ENGINEERING

THE UNDER SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

① *Director for Security
Army, Air Force, Defense
13 MAY 1981*

MEMORANDUM FOR THE SECRETARY OF DEFENSE

SUBJECT: Retention of TITAN IIIC Launch Capability - INFORMATION
MEMORANDUM (U)

② *Working draft
initially
Solo*

(S) On 5 May 1981, the Director of the Joint Staff forwarded a memorandum to you stating that the Joint Chiefs of Staff have concurred in an Air Force recommendation to slip the planned June 1981 launch of the Defense Satellite Communications System (DSCS) satellite. The attached memorandum from Gen. Hilsman informs you of the consequence of delaying the launch, from his perspective. The rationale for slipping the launch is that there is only one TITAN IIIC launch vehicle left in our inventory and if it is used for the DSCS launch in June, the Defense Support Program (DSP) would not be able to replenish any of their satellites until the Inertial Upper Stage (IUS) becomes available in late 1982.

(S) I have reviewed the launch vehicle requirements for the DSP and DSCS programs, and while I consider both programs critical to national defense, I must accept reluctantly the JCS position of maintaining the last TITAN IIIC launch vehicle as a national asset. This vehicle will be maintained on a call-up basis until an alternate means of launching these critical satellites exists (TITAN 34D/IUS in late 1982) or until an absolute need for launching either DSCS or DSP satellites is determined. The delay of the DSCS launch, which is now ready to go, will have a programmatic impact of \$57 to \$70 million (depending on length of delay) and Congress will have to be notified of this issue. Nevertheless, it is still the most prudent thing to do -- that is, hold the launch vehicle until it is absolutely essential to launch it.

(C) We have been placed in this unfortunate position not because of either the DSP or DSCS programs, but because of a delay in the availability of the IUS from April 1981 to late 1982. *Why was it delayed? - Who is contributing to it?*

③

(C) In conclusion, I must agree with the Air Force recommendation, which has been concurred in by the Joint Chiefs of Staff, that the DSCS launch vehicle be held in reserve until it is absolutely essential to launch either the DSP or DSCS satellite.

④ *I need to know what work
about this problem*

Jim Wade

USDREF 31-0295

Enclosure (SECRET)

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Classified by ACTING NUSD(C-1)

Declassify on 30 APRIL 2001

Extended to USDREF

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Date: 12 FEB 2016

BACKGROUND PAPER
ON
TITAN IIIC AND THE TITAN III(34)D/IUS/TRANSTAGE GAP

PROBLEM

~~(S)~~ Only two Titan IIICs remain and they are all scheduled to launch in 1981 in support of the following programs:

- Defense Satellite Communications System (DSCS) - Jun-Jul 81

[REDACTED]

- A requirement to provide a backup launch capability for the Defense Support Program (DSP) cannot be supported if the above schedule is maintained, until Titan III(34)D/IUS or Titan III (34)D/Transtage vehicles become available in mid to late CY 1982.

OSD 3.3(b)(1)
NRO 33(b)(1)

BACKGROUND

- (U) Titan III(34)D/IUS is to replace the Titan IIIC and serve as the DOD's primary launch vehicle during transition to the Space Shuttle and act as backup launch vehicle for critical DOD Space Shuttle missions.
- (U) In 1977, when Titan III(34)D/IUS integration program was started, Initial Launch Capability (ILC) for the Titan III(34)D/IUS was established as Jul 80. This ILC provided significant overlap in launch coverage with the Titan IIIC.
- (U) In early 1980, the ILC for the Titan III(34)D/IUS was delayed until Jul 81 as a result of delays in completing IUS development. Sufficient overlap in launch coverage with the Titan IIIC remained after this delay.
- (U) On 7 Oct 80, Boeing formally notified the Air Force that they could not support ILC of the Titan III(34)D/IUS until Nov 81 due to problems with propellant cracking, delays in completing system level qualification testing, and delayed software deliveries. Because of the late software deliveries, the software independent verification and validation by Martin-Marietta would only be about 60% complete in Nov 81. Full IV&V would not be completed until approximately Apr 82.
- ~~(S)~~ This latest delay in availability of the Titan III(34)D/IUS eliminated any overlapping launch capability coverage with the Titan IIIC. A gap of [REDACTED] now exists in that coverage based upon the last Titan IIIC being launched in [REDACTED] and the ILC of the Titan III(34)D/IUS being delayed until Apr 82.

~~CLASSIFIED BY: SRF/US MEMO, 17 JULY 72~~
~~REVIEW ON: 22 FEBRUARY 2001~~

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(U) The continued delays in completing the IUS development coupled with the Boeing cost overrun raised serious doubts about the sufficiency of the DOD expendable launch capability at Cape Canaveral AFS.

(U) The Air Force Council was briefed on this subject on 25 Nov 80 and approved Air Force Systems Command (AFSC) recommendation to integrate the Transtage on the Titan III(34)D and to procure two Transtages with an option for three additional Transtages. While there appeared to be no way to prevent the delay in Titan III(34)D/IUS ILC to Apr 82, integration of the Transtage (the Titan IIIC upper stage) onto the Titan III(34)D could provide "insurance" against further delays in the IUS development or major IUS flight problems which might cause the IUS to be grounded for an extended period.

~~(S)~~ Current planning is for a Jul 81 contract go-ahead which would enable an initial Titan III(34)D/Transtage launch in Dec 82. Based on the Jul and [redacted] launch dates for the last Titan IIICs, the Apr 82 ILC for the Titan III(34)D/IUS, and the Dec 82 first launch date for the Titan III(34)D/Transtage, no backup launch capability will exist for DSP from now until the Titan III(34)D/ IUS is available.

CURRENT STATUS

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~~(S)~~ DSP is currently operational with three primary satellites. Due to minor problems with the recently launched Flight 9, it was returned to AFSC for troubleshooting and the degraded Flight 6 was providing coverage in its place. AFSC was able to identify a software fix for one of the Flight 9 problems, and the other problem ("flare and glare" internal to the satellite) is a seasonal one that will not reoccur for another five months. Based on this, ADCOM accepted the handback of Flight 9 from AFSC on 25 April. Currently, [redacted]

Flight

6 has been returned to spare status [redacted]

Two

other DSP satellites are currently functioning, but are too degraded to be considered as viable backups.

~~(S)~~ Current DSP projections based on the gradual degradation resulting from the increase in sensor focal plane temperature indicate that Flight 7 may need to be replaced in the Mar 82 to Sep 82 time frame. The Generalized Availability Program (GAP) analysis indicated a ten percent probability of need in Nov 81 and a 50 percent probability of need by Oct 82.

~~(S)~~ The only remaining star sensor on DSP Flight 8 [redacted] has been experiencing anomalies. If this situation continues, satellite pointing accuracy will degrade,

perhaps to the point where CINCAD may request the launch of another DSP satellite.

(S) The DSCS constellation is meeting current communications needs. Four primary satellites are in operation but with only one spare. Two spares are nominal. Three of the operational satellites are using key redundant systems and two have exceeded their mean mission duration. Two additional DSCS satellites are not considered operational because they lack a narrow coverage capability, but their earth coverage capabilities could be used in an emergency.

(S) [redacted] satellites are required to provide world-wide service. The probability that [redacted] satellites will be operational is approximately 30 percent by Dec 81, 60 percent by Jun 82 and 80 percent by Dec 82 according to GAP analysis.

(S) The Air Force is currently developing a detailed call-up launch strategy which will be designed to minimize the time required to provide a contingency launch capability for either DSCS or DSP using the DSCS Titan IIIC.

ALTERNATIVES

(S) There are three primary alternatives available:

- Maintain current schedule
- Slip DSCS

OSD 3.3(b)(1)
NR0 3.3(b)(1)

(S) If the current schedule is maintained, no capability to launch DSP will exist after the planned launches of DSCS [redacted] until Jun 82 at the earliest. Additionally, DSP Flight 9 launched 16 Mar 81 is still within a critical period when infant mortality problems normally manifest themselves. Other than for unexpected on-orbit failures, the primary concern is for the gradual degradation of the DSP focal plane due to normal temperature increases with time. If problems continue with the Titan III(34)D/IUS schedule, the normal replacement launch needed in the Mar-Sep 82 time frame will be jeopardized.

(S) If the DSCS launch is slipped to provide a backup launch capability to either DSP or DSCS there will be significant programmatic impacts. Also, there would be operational consequences if the existing satellite constellation degrades.

- Delay of this launch will also delay the launch of the first DSCS III satellite with its inherent improvements in anti-jam, nuclear hardening, and reliability.

- The potential for satellite outages is serious, impacting DOD and such other agencies and programs as the National Security Agency (NSA), the Defense Dissemination Program, and the Diplomatic Telecommunications Service.
- The programmatic effects include the \$57M-70M potentially required to maintain the DSCS satellites on standby in ground storage. Reprogramming thresholds will be exceeded so Congressional notification will be required. The DSCS III satellite IOT&E which would provide information for the DSCS III DSARC decision on production will also be impacted.
- Delay of the DSCS launch in June would preclude any replenishment launch until the Dec 81-Jan 82 time frame at the earliest.
- Although the NATO III satellite could be used in an emergency to augment DSCS, it does not meet DSCS requirements. It provides Northern Hemisphere coverage only, has approximately one-half the bandwidth/power of DSCS, and has no steerable spot coverage antennas. Additionally, the US already owes approximately two years of payback for NATO satellite services previously rendered.
- The DSCS III (and the DSP) satellites in question are compatible with either the Titan IIIC or the Titan III (34)D/IUS, but the DSCS II-15 satellite is compatible with the Titan IIIC only and the DSCS II-16 is only compatible with the Titan III(34)D/IUS without additional analysis/modification. Additional analyses/modifications would also be required to allow launch of these satellites on the Titan III(34)D/Transtage.

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NRO33(b)(1)

(S)

CONCLUSIONS

- (S) The delay of DSCS will have serious programmatic impacts and potentially serious operational consequences especially if DSP were to utilize the Titan IIIC launch vehicle. On the other hand, while entailing no programmatic impact, lack of a backup on-call capability for DSP could jeopardize the impor-

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tant contribution of DSP to NCA and SIOP alert force survival. Launch of the DSCS satellites will eliminate the capability to replace a DSP satellite lost through premature on-orbit failure. In addition the unsettled launch vehicle upper stage situation may even prevent replacing DSP during its normal replenishment period.

AIR FORCE RECOMMENDATION

(S) On 14 Apr 31, the Air Force Council agreed to recommend to the Joint Staff that the DSCS Titan IIIC launch vehicle be retained and a standby launch capability be maintained using this launch vehicle until Titan III(34)D/IUS or Titan III (34)D/Transtage vehicles are available or an absolute need for launching either DSP or DSCS is determined.

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12 FEB 2016

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WASHINGTON, D.C. 20301



RESEARCH AND
ENGINEERING

COVERING BRIEF

TO: PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE (RESEARCH AND
ENGINEERING)
THRU: ACTING DEPUTY UNDER SECRETARY OF DEFENSE (C³I) G 6/8
FROM: DIRECTOR, COMMUNICATIONS SYSTEMS

ACTIONS REQUIRED: To respond to the Secretary of Defense's questions on
satellite launch vehicle problems.

BACKGROUND: In response to your 13 May 1981 Information Memorandum to the
Secretary of Defense, he asked four specific questions relating to this
problem. The proposed memo answers the Secretary's questions.

RECOMMENDATION: That you sign the proposed memorandum to the Secretary of
Defense.

COORDINATION: The proposed memo has been prepared in coordination with ODUSD
(Strategic and Space Systems) and ADUSD (Intelligence). The memo has also
been shown to Air Force and DCA who provided us with inputs to answer the
Secretary of Defense's questions.

OUSD(P)

Peter L. Olson 6/8

George L. Salton
Director, Communications Systems

Enclosure

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Chief, Records & Declass Div, WHS
Date: 12 FEB 2016

Prepared by: A. Hartigan/jag/55091/5Jun81

OSD CONTROL #14482

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Chief, RDD, ESD, WHS
Date: 12 Feb 2016 Authority: EO 13526
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Declassify in Part: X
Reason: 3.3Cb2Cd, C47, C52
MDR: 13 -M- 4741