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30 March 70

[redacted]

1. MISSION 7106 launched 30 Sept 69 provided four primary spacecraft in nested orbital configuration and with orbital planes near 180° out of phase from the older Mission 7105.

The Operational capability of 7106 originally was to provide duplicate frequency coverage from 153 to 10,000 MHz and 14.6 to 15.1 GHz with the portions of the highest priority covered in all 4 birds. Now with the loss of one [redacted] These geo-positioning bands still represent the Highest priority portions of the spectrum and therefore significant location capability still remains.

Parametric Measurement Capability:

SLX/PWX still available in total frequency band as before.

High Sensitivity Option 550 to 1000 MHz still OK.

Ku coverage 14.6 to 14.97 GHz still OK.

ELINT coverage which remains with 7106 still covers the wide spectrum but not in duplicate fassion to provide measurement of Delta-time. 7105 geo positioning covers the ABM band as it was devined in 1966 (155-3300Mhz) and in addition the 5 GC± 50MHz, the high C-Band and X-Band regions. SLX in 7105B [redacted] in 7105A which is Daylight only.....

2. The Approved Concept for Mission 7107 was submitted by NRL last May 69 and approval requested by July 69 prior to Launch of 7106 so that the momentum of the sub-system design and developmental team could have had a significant Running-Start on the effort during the Launch and Evaluation phases following the flight of 7106. This would have allowed a 24 month development cycle (24 months after 7106)....However this approval was not forthcoming until 27 Feb 70 a month ago, thus the 24 month development cycle is no longer feasible due to loss of lead time and definition of either the effort or the Booster. The ELINT areas of this proposal and it alternative Quick Reaction Concept (QRC) 7107 I shall discuss and the other aspects of schedule and space craft will be handled in detail by my colleggues....

Mission 7107 (Approved on 27 Feb 70) ELINT Coverage Table and Chart... [redacted] 154 to 10,500 MHz with General Search from VIC to 18 GHz(except for the overlap at 14.6 to 15 GHz) and one slice about 400 MHz around 34.9 to 35.3 GHz, and a dual coverage from 103 to 125. The aspect of 4-way commonality has not been emphasized perhaps as much as the history of 7106 indicate desirable. However the implications of the loss of part of the 7106 capability are precisely what we a studying.

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30 Mar 70

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The first portion of our presentation will be to discuss the facts and events of the loss of the ~~xxxxxxxxxxxxxx~~ Command Capability with two of the 7106 Spacedraft.

Following this we shall consider some of the consequents of the alternatives leading toward replenishment of the operational capability.

The Impact of the loss

The Approved concept for 7107

An Accelerated concept for 7107

From the ELINT standpoint first and then from the spacecraft, Cost and time schedule standpoint

What is the impact of the loss of these two birds????1st What is 7106???

Since one of each of the two sets of Duplicate birds was lost it impacts very widely in the geopositioning capability due to loss of Dual coverage. Only those portions in the spectrum where 4-way commonality had been designed into 7106 remain now to provide geopositioning ability in Mission 7106

First Slide Please This shows for background the 7105 ELINT Coverage... These four birds are 34 months old now and are remarkably healthy with only band being consistently unproductive and being retired....Geopositioning has been actively used through the major portions of the spectrum. It is reasonable to believe that this capability will not last two more years.

Slide #2 shows Mission 7106 during its first five months of operations. Note the completeness of dual-coverage and the areas where 4-way commonality was provided at the portions in the spectrum where the highest priority signals were known to exist.

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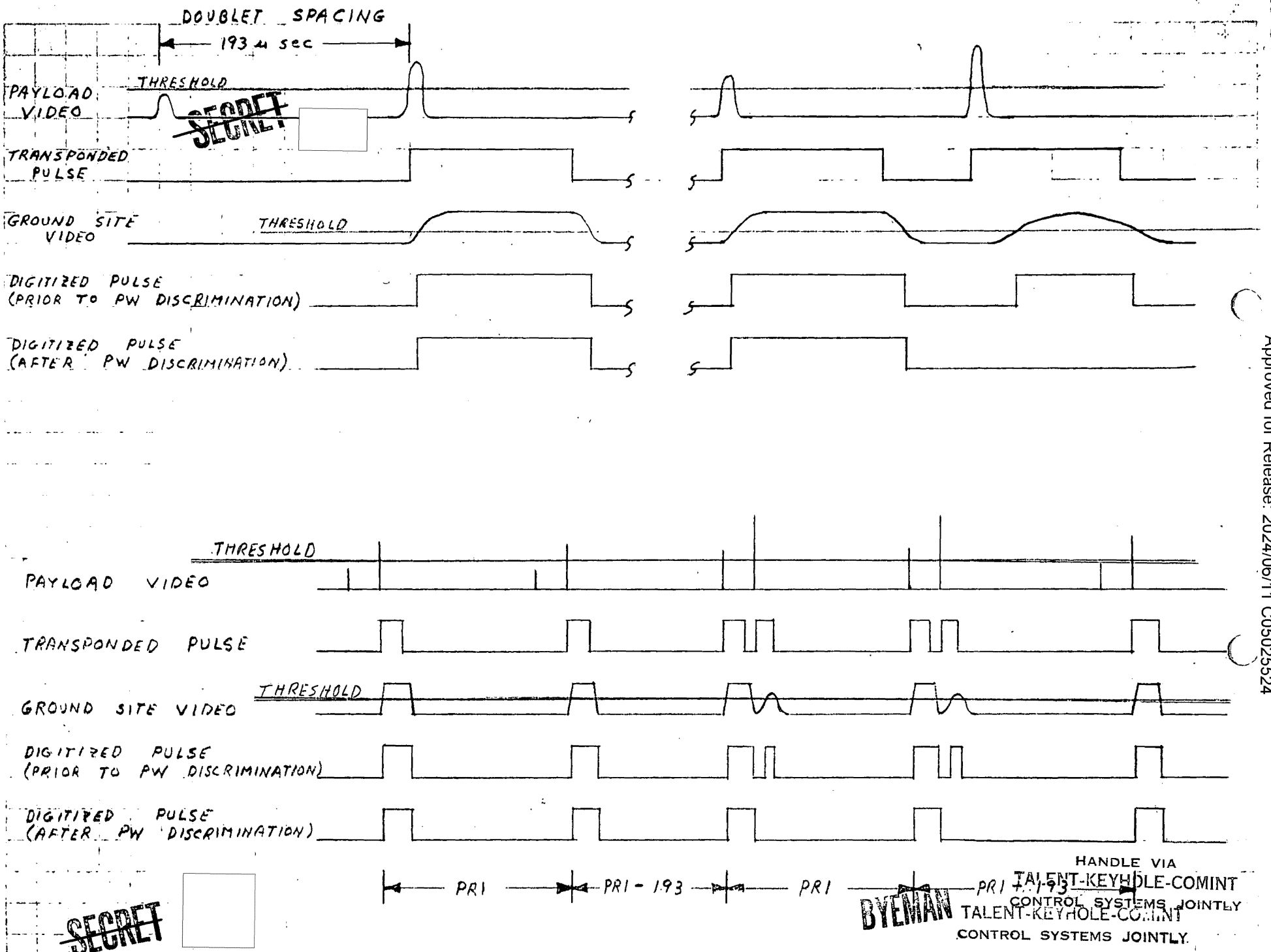
BYEMAN

HANDLE VIA
TALENT-KEYHOLE-COMINT
CONTROL SYSTEMS JOINTLY



HANDLE VIA
TALENT-KEYHOLE-COMINT
CONTROL SYSTEMS JOINTLY

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TALENT-KEYHOLE-COMINT
CONTROL SYSTEMS JOINTLY

SYSTEM RESPONSE TO SHORT DOUBLET SPACING

1/16/70 R.L.W.

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BY DATE
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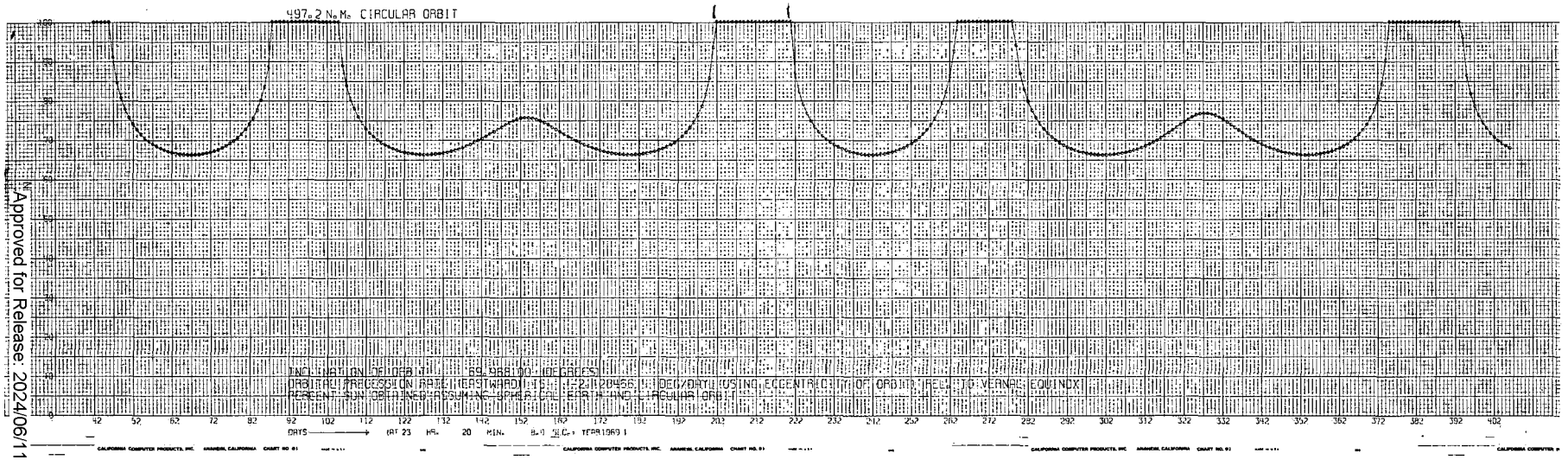

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COST-TIME COMPARISON FOR MISSION -7107

ACCELERATED:		APPROVED:
18 Months. . . .	SCHEDULE. . .	30 Months.
2nd ¼ FY-72 . .	LAUNCH DATE . .	1st ¼ FY-73

- - -HARDWARE SYSTEM DIFFERENCES- -

1. Existing Spacecraft. . . New Spacecraft.
2. Prototype ELINT. . . . . Extended ELINT.
3. Prototype Stored Command..Oper.Stored Command.

- - - - - SUMMARY TABLE - - - - - -

1. TIME; 12 Months. . . = $ $2\frac{1}{3}$ Million
2. HARDWARE DIFFERENCE. = $ $1\frac{2}{3}$ Million

TOTAL (NRL) = $4.0 Million

BOOSTER MODS. = ??

* = ASSUMES APPROVAL BY 15 APRIL 1970

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CONTROL SYSTEMS JOINTLY

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FACTORS IMPACTING ON PREVIOUS NRL BUDGET SUBMISSION FOR FY-71

1. INFLATION @ 9%
2. Further Unanticipated Development items.
3. Additional Redundancy.
4. DELAYS in Vehicle and Concept Approval.

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COMPARISON OF CONCEPTS FOR MISSION 7107

ACCELERATED		APPROVED
1. 18 Months	SCHEDULE	30 Months
2. FOUR PRIME ONE R & D 250 lbs. Multiface	SPACECRAFT Weight Shape	FOUR PRIME ONE R & D 365 lbs. Cylindrical
3. As 7106	GRAVITY GRADIENT STABILIZATION	As 7106
4. Improved 7106	Command System	Stored Command

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R & D SPACECRAFT PROPOSED FOR ACCELERATED MISSION 7107

ADVANCE POPPY "STATE-OF-THE-ART" IN:

1. ELINT COLLECTION
2. STORED COMMAND
3. GRAVITY GRADIENT STABILIZATION
4. ORBITAL STATION KEEPING

HANDLE VIA
TALENT-KEYHOLE-COMINT
CONTROL SYSTEMS JOINTLY

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COMPARISON OF CONCEPTS FOR MISSION 7107

ACCELERATED		APPROVED
1. 16-18 months	SCHEDULE	26-30 months
2.	SPACECRAFT:	
Four (4)	Number	Four (4)
250 lbs.	Weight	365 lbs.
Multiface	Shape	Cylindrical
3. As 7106B	GRAVITY GRADIENT STABILIZATION	As 7106B
4. Improved 7106	COMMAND SYSTEM	Stored Command

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C05025524

NOTE TO FILE.. .. .. 24Mar70

1. Staffing Plan drawn up after a vigerous 6 hour session between Lee, Mark and Fred...Their unamious recommendation was submitted and discussed in a 30 minute session which I would like repeated now that I have studied their work, It is far and away the best effort of this type that has been done for our effort to-date.

The major areas of concern lie with the widdom of coordinators and the necessity for this degree of liasson. The kinds of information that we have needed in the past was either very easily available or not available with any ammount of effort and little variation in between. With the liasson being provided in the past between Vince and Ed Becke, there has builtup a mutual respect and cooperative spirit between the two groups that is very delicate...not that this need be sacrificed but the real exchange has been between Vince and [redacted] during the pre-assembly phases and then between Ed Becke and the Mechanics like Roy Harding during assembly and then it shifts to an exchange between Vince and the Payload coordinator during the system tests. I do not propose that this is the best nor the only way to do it but the coordinators must be capable ofgenerating a high degree of sustaining professional respect and confidence at many delicate interfaces...it takes an enormous ammount of tact and statesman-ship to carry this off.

If one extrapolates to the day when our efforts in the Flight systems area are much more parallel than serial in approach, this staff makes more logic and it may take a good deal of time before it is built up to this extent in any case.

2. The architicture for Lees Section has a heavy similarity to the State College structure on #4913. In fact it seems that about10 men from State College are suggested as being transferred to NRL GS status. Include 7 men at NRL makes this about 17 men...quite a raid if we can bring it off. This team is certainly Ideal as configured but is it realistically attainable or just wishful thinking???