Secret

SECRET HEXAGON

BYE-111572-82
Cy 8 of 9
Pg 1 of 2

WORKING PAPER

19 Nov 82

MEMO FOR RECORD

SUBJECT: OPERATIONS WORKING GROUP MINUTES

TO:

(b)(3) 10 USC 424

1. Attached are the materials presented at the Operations Working Group held on 19 Nov 82 at LMSC.

2. LMSC presented the current vehicle drawings. The forward ASE configuration contained in this package is not updated in accordance with current design concepts. LMSC took an action item to supply the vehicle CG location.

3. The Program Office presented a summary of Aerospace Corporation's proximity operations simulation capabilities. The SPO also presented a summary of NASA's plans for the rendezvous and proximity operations tests with the 4000 lb SPAS-01 payload on STS-7.

4. The SPO then presented the very preliminary 12-hour summary timeline produced by Aerospace. Many inconsistencies in the timeline were pointed out by the attendees and /Aerospace accepted an action item to resolve the inconsistencies and refine the summary.

(b)(3) 10 USC 424

5. LMSC reported that they had been unable to locate any case studies that had been run on orbits with a Q=16.0. S. Sligar accepted an action item to have a case study run with the following parameters:

Launch: Jan 86, 1830Z
Q = 16.0
Circular orbit

6. LMSC reported that /Aerospace has performed a significant amount of work on spacecraft fuel margins and came to the conclusion that vehicle 19 or 20 has adequate fuel to complete a 290 day mission and store in orbit for six months.

(b)(3) 10 USC 424

7. The Program Office presented the memo written by of Aerospace "End Effector Qualification Concerns" dated 4 Nov 82. This memo was written to summarize the USAF and Aerospace concerns about the RMS end effector and does not reflect the actions planned or in work to correct the deficiencies.

(b)(3) 10 USC 424

WORKING PAPER

SECRET HEXAGON

Handle Via
BYEMAN
Control System Only

Secret

Secret

~~BYE 111572-82~~

SECRET/EXCON

8. The mission scenario was brainstormed at great length. The final result is included in this package and will be the basis around which the operations group will organize future efforts.

9. The list of studies or reports which must be completed prior to the 1 Mar 83 deadline were discussed, and the OPR's for each subject were determined.

10. The agenda for the meeting at JSC on 1 and 2 December, and the draft copy is attached.

11. The output of this working group will be a report printed either by LMSC or the SPO which will summarize all the analysis, timelines, and scenarios produced during this study period. The schedule for the report is as follows:

Outline due from SPO	- 7 Jan 83
Draft inputs due from OPRs	- 15 Feb 83
Final inputs due from OPRs	- 28 Feb 83

12. The next meeting of this group will occur in January.

[redacted]

(b)(3) 10 USC 424

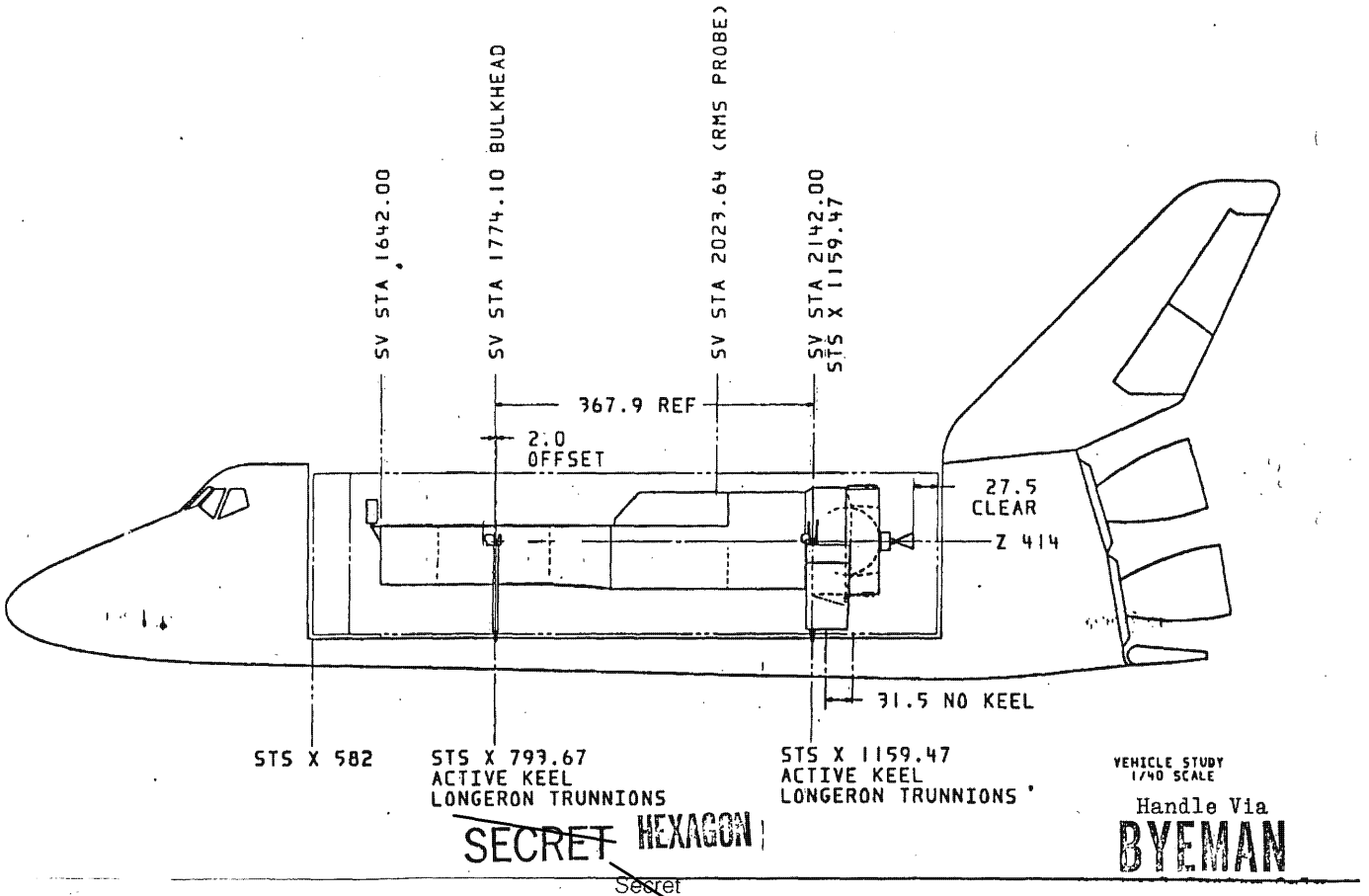
Flight Operations

SECRET/EXCON

Handle Via
BYEMAN
Control System Only

Secret

P950A SV/STS INTERFACE
SV TRUNNIONS 2142
SV KEEL PIN 2180



Handle Via
BYEMAN

SECRET HEXAGON

Secret

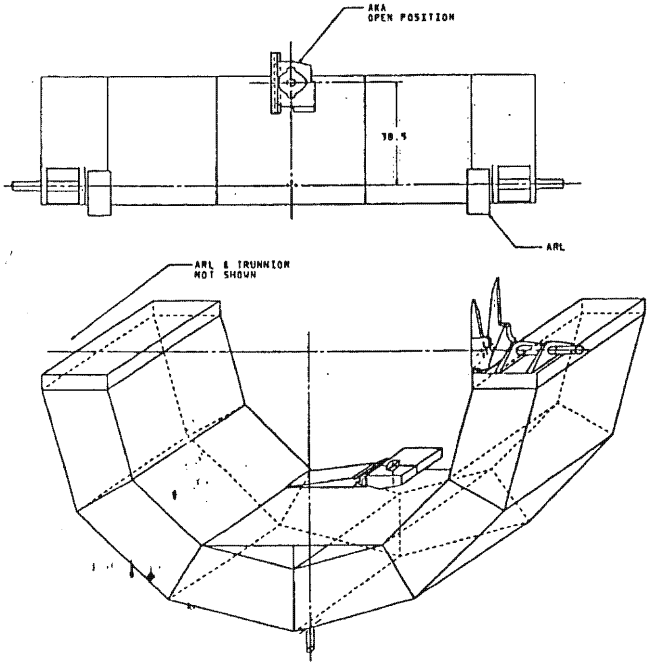
~~SECRET~~ ~~HEXAGON~~

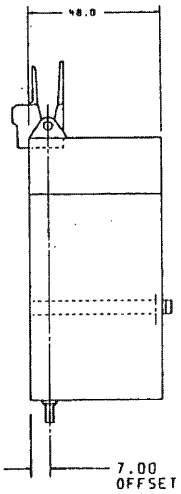
2

SSPS,SIRCT2
11-16-82

AFT CRADLE

ACTIVE KEEL LATCH



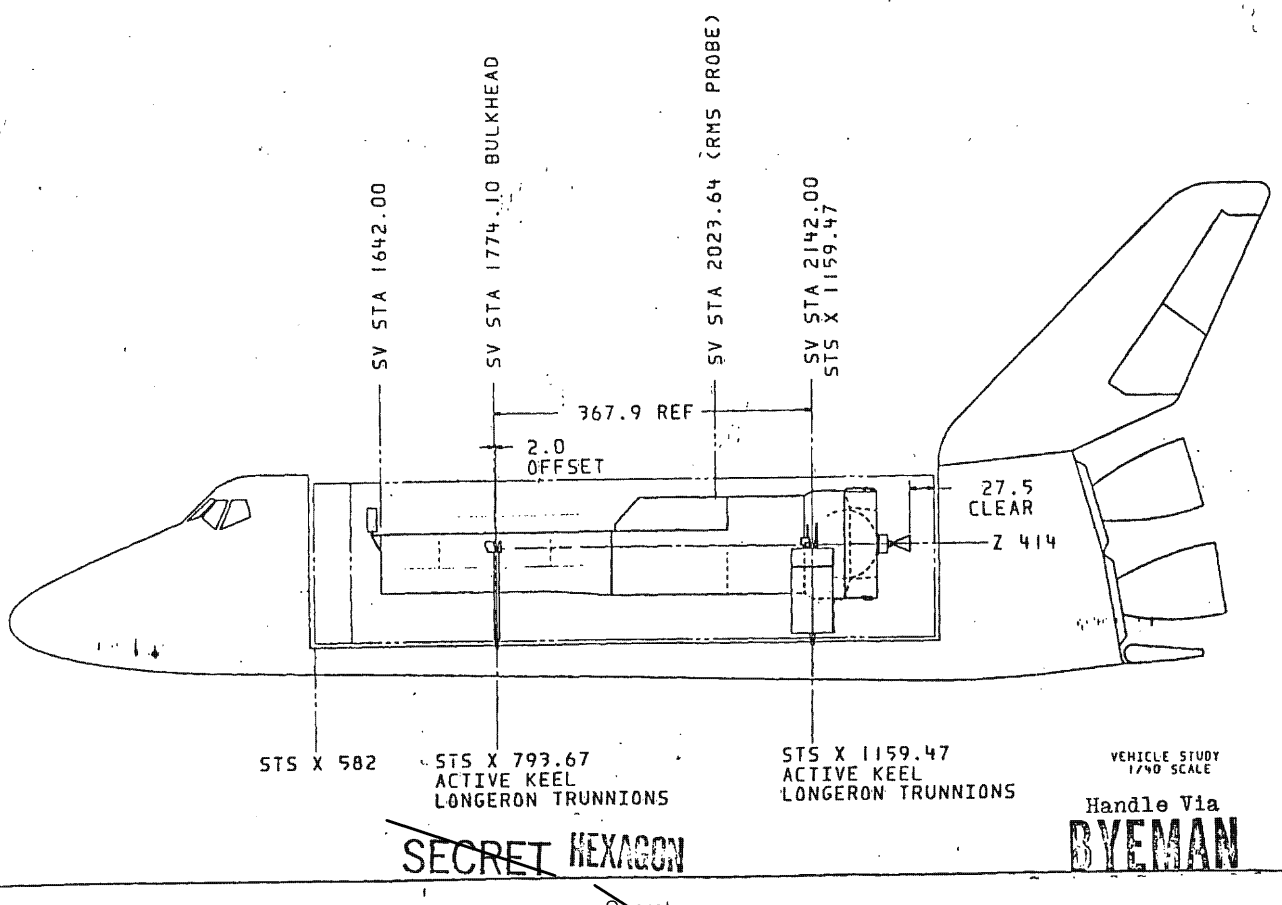


BYEMAN
Control System Only
Handle Via

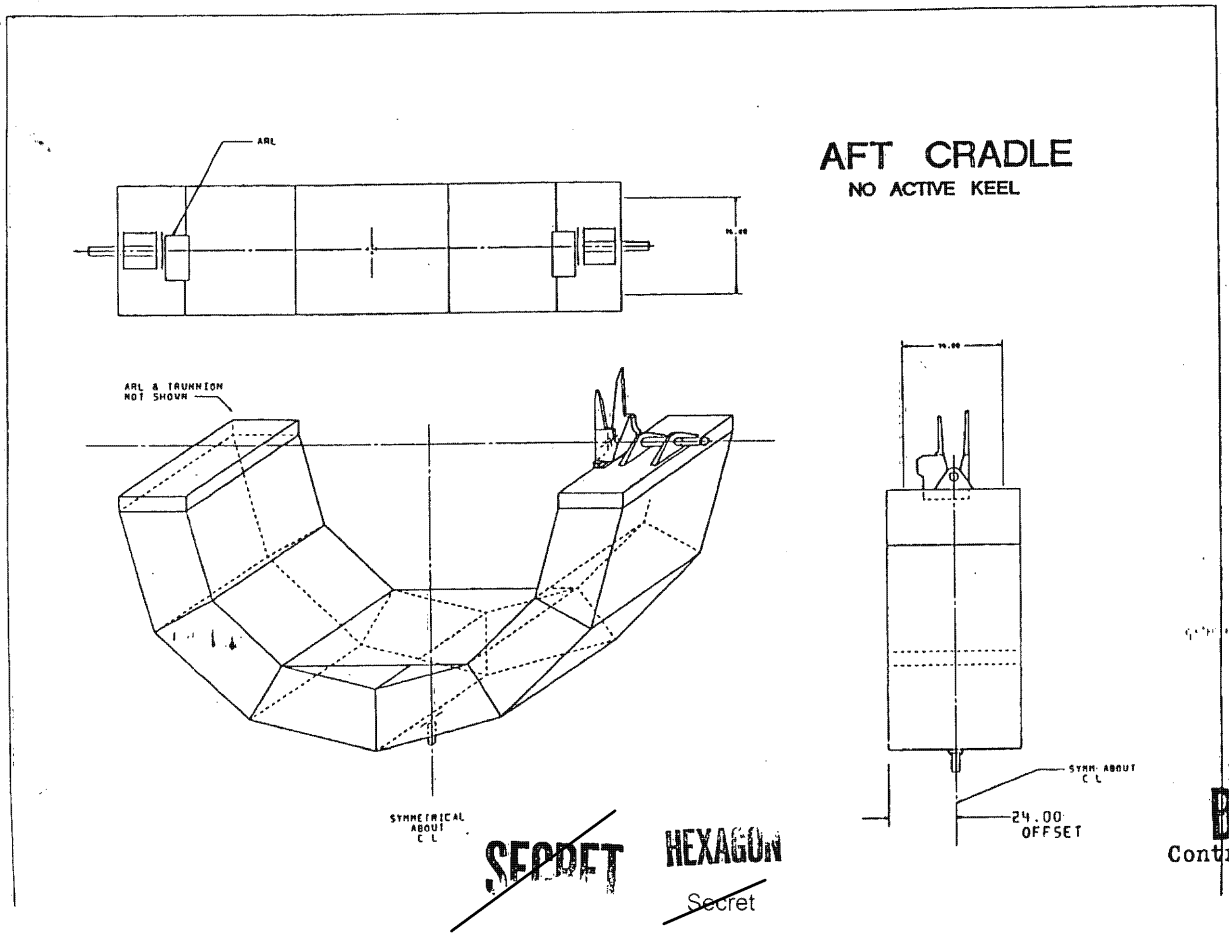
~~SECRET~~ HEXAGON

~~Secret~~

P950A SV/STS INTERFACE
SV TRUNNIONS 2142
NO SV KEEL PIN



SECRET HEXAGON

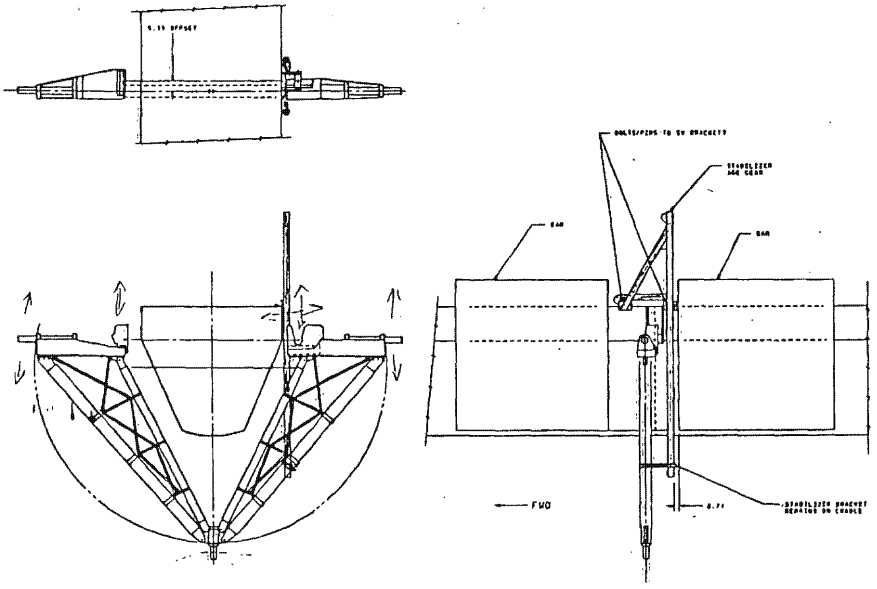


SECRET HEXAGON
Secret

Handle Via
BYEMAN
Control System Only

~~SECRET~~ HEXAGON

FWD CRADLE ASSY



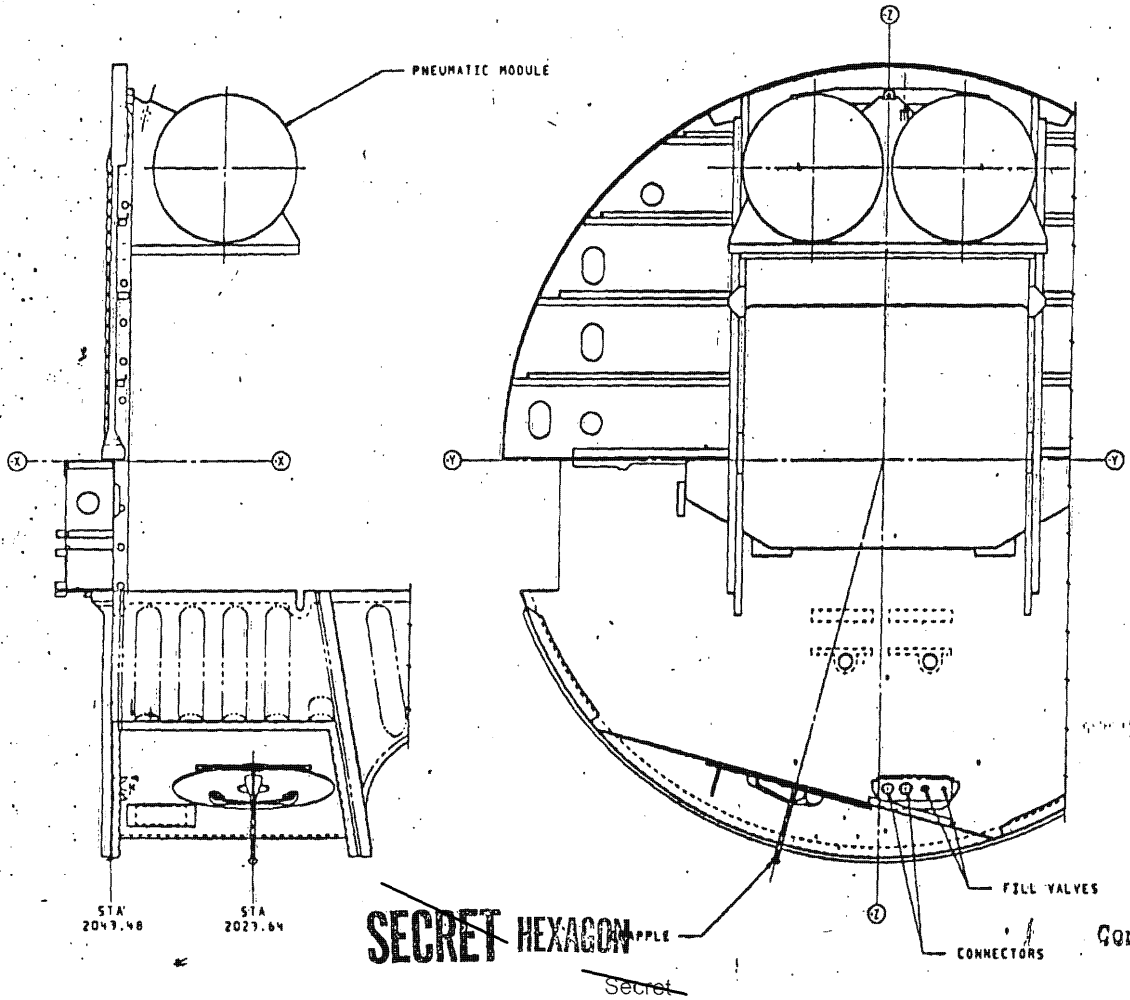
~~SECRET~~ HEXAGON

~~Secret~~

Handle Via
BYEMAN

~~SECRET~~ ~~HEXAGON~~

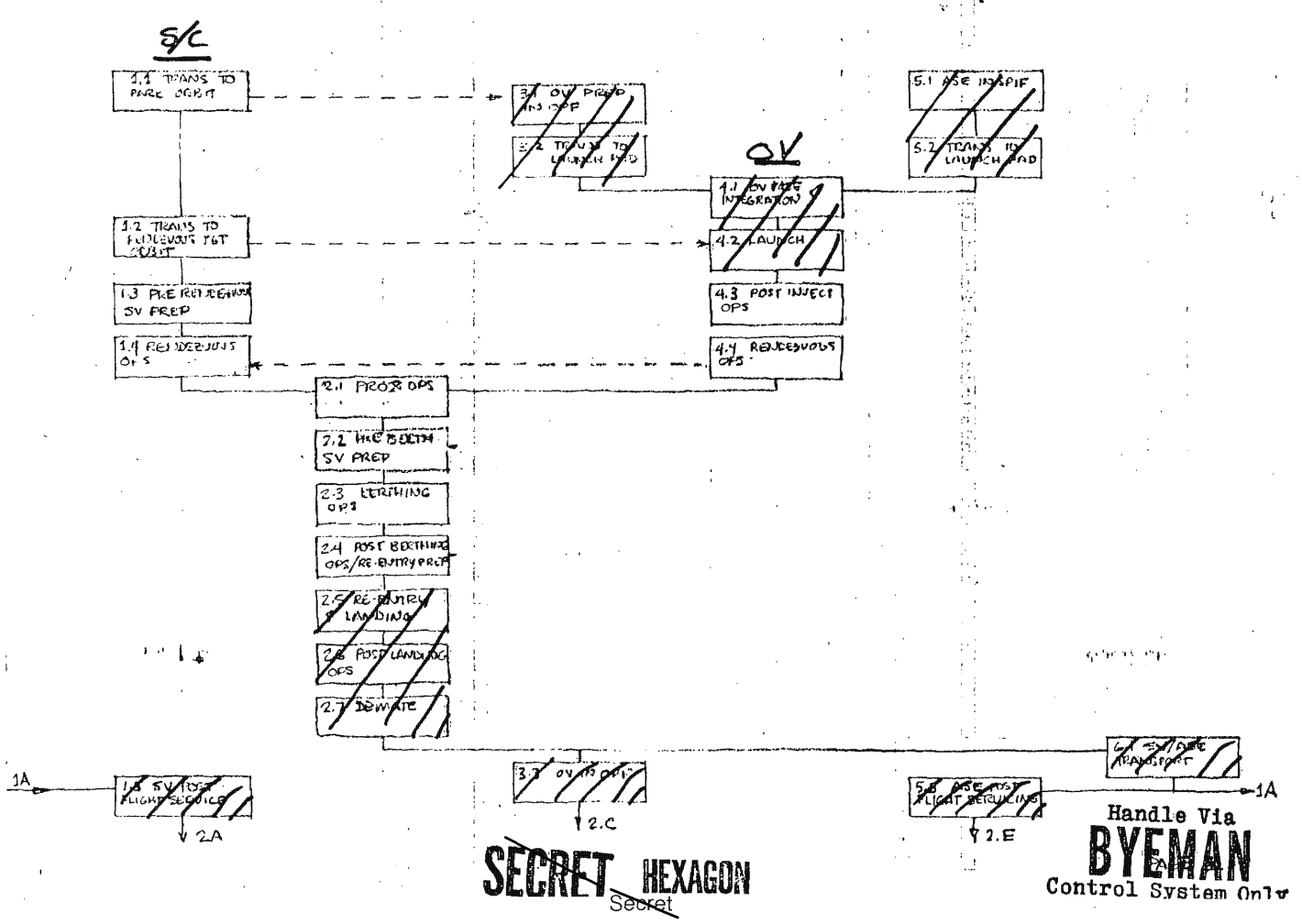
PNEUMATIC MODULE / GRAPPLE INSTL



~~SECRET~~ ~~HEXAGON~~ Secret

Handle Via
BYEMAN
Control System Only

RETRIEVAL MISSION SCENARIO



OPERATIONS SCENARIO

1.1 TRANSFER TO PARK ORBIT

- Post 4th RV
- Eject all non-EVA compatible appendages
- Maintain two failure tolerant deboost capability

1.2 TRANSFER TO TARGET ORBIT

- Prior to STS launch (TBD days)
- Major review of spacecraft systems prior to transfer to establish readiness/safety to retrieve
- Establish POCC/JSC interface

1.3 PRE RENDEZVOUS SPACECRAFT

- Once STS inserts, safe OAS
- Safe redundant RCM
- Power down to minimum
- Batteries to full charge
- Repress
- Load safing macro

1.4 RENDEZVOUS OPERATIONS

- Phase begins with NC-4
- Late CIE checkout
- Determine go for CIE timeline or RTS timeline
- Activate docking aids
- Go to retrieval attitude (NSR)

2.1 PROXIMITY OPERATIONS

- Begins at 1000' separation
- At 40', execute safing macro (RCS vales closed)
- Verify go for grapple
- Grapple

2.2 PRE BERTH

- Charge to K-2 (last attempt)
- Go to remove solar arrays
- Perform remaining appendage management (EVA or auto)

2.3 BERTH

- Latch vehicle
- Power down to minimum (MCS and ECS?, X ponder)
- Stow RMS

2.4 POST BERTH

- Evaluate S/C health (occasional RTS CTX)
- Load reentry commands
- Close orbiter doors
- Power spacecraft off

4.3 STS POST INJECTION

- Early CIE checkout (open loop)

4.4 STS RENDEZVOUS OPERATIONS

- EVA preparation starts
- Late CIE checkout (closed loop with S/C)
- Go for RTS or CIE timeline

OPERATIONS REPORTS AND STUDIES

SCENARIO	TITLE	OPR
1.1	Parking Orbit Analysis	(b)(3) 10 USC § 424
1.2	Rendezvous Orbit Case Study	
1.4	Spacecraft Rendezvous Attitude - CIE Link Margins - S/C Ku Radar Profile - Grapple Fixture Access - Ease of Visual Acquisition	
2.1	Rendezvous System Validation Prox Ops Analysis - Fuel Useage - Plume Impingement Effects	
2.2	RMS Validation	
2.4	Battery Power Assessment (Berth to Entry Power Needs)	
	Crew Activity Plans	

Secret

SECRET [redacted]

DRAFT AGENDA

SUBJECT	OPR
Operations Scenario Review	USAF
Draft Timeline Review	USAF
Spacecraft Configuration Review	USAF
Rendezvous Techniques Presentation	NASA
Rendezvous System Validation Plans	NASA
RMS Validation Plans	NASA
Conceptual Flight Plan	All

- Required Inputs
- Schedule

SECRET [redacted]

Handle Via
BYEMAN
Control System Only

Secret