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From: Director, U. S. Naval Research Laboratory, Washington, D. C.
To: Chief of Naval Operations (OP 922Y--[redacted])

Subj: Vehicle Requirements for 2354 (U)

1. The U. S. Naval Research Laboratory is preparing payloads for launch on Agena Vehicle 2354 even though the performance record on vehicles 2351 and 2353 is extremely poor. Both vehicles failed to restart, resulting in orbits with low perigee. The requirement for a circular orbit is emphatically restated. The two and one half month lifetime of the recent payloads is quite unsatisfactory. To improve this situation, a change in the vehicle trajectory is required to provide a perigee of 125 nautical miles even if the restart fails again.

2. The time of day of launch required is between 3 p.m. and 11 p.m. Pacific Standard Time.

3. In compliance with the request from Air Force Space Systems Division, payloads will be designed to provide command turn off of all equipment except the command receivers. This will permit a 24 hour "turn around" in the event of a scrub for failure of a vehicle item if payload 124 detectors present no special moisture problems. Special detectors requiring replacement may necessitate removal of a payload after each attempt to launch.

4. The following table describes payload parameters:

Payload Number	135	124	134
Diameter	20"	24"	20"
Weight	65 lbs.	85 lbs	75 lbs.
Radiating Frequency	136.500 mc	136.890 mc	136.320 mc
Power	60 mw	100 mw	60 mw
Spin Rate	0	60 rpm	1 rev/orbit
Separation Time	Inj.+ 300 sec	Inj.+ 300 sec	Orbit #8
Separation Initiation	D Timer	D Timer	Vehicle command
Separation Velocity	1.15 fps	1.00 fps	.1 fps
Separation Velocity	38 miles/day	33 miles/day	
Separation Direction	Fwd along flite line	Fwd along [illegible] line	Downward toward earth

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Allowable Vehicle Rotation at Separation	2 deg/sec	2 deg/sec	.5 deg/sec
Center of Gravity (in.)*	13 ±1	15½ ±1	15 ±1
Moment of Inertia			
Longitudinal (slug-ft^2)	0.7 ±.3	1.4 ±.5	0.8 ±.3
Lateral & Normal (slug-ft^2)	1.1 ±.3	1.2 ±.5	1.6 ±.3
Separation Velocity (ft/sec)	1.15	1.0	0.1

*Centers of gravity are measured parallel to the Agena Z axis from the LMSC-NRL interface. All centers of gravity are along payload center line ±½ inch.

5. Payload 134 will contain an extendable boom for gravity stabilization. Orbit number 8 should be northbound pass within sight of Point Arguello, and the vehicle should be in the nose down configuration. A payload command will be sent to extend the gravity stabilizing boom. When payload telemetry indicates full extension, a vehicle command will be required to initiate payload separation from the vehicle. The separation velocity will be low and it is expected that the payload will remain stabilized in the boom down configuration for the one year useful life. Close coordination of telemetry and commands between the Vandenberg telemetry site and Point Arguello building 517 will be required for this pass.

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