

OPERATIONS PLAN
LAUNCH OF SCOUT V-137R
SAN MARCO SATELLITE 1
15 DECEMBER 1964

OR PLAN

S137-R

INDEX

15/12/1964

	<u>PAGE</u>
References - - - - -	2
1. General - - - - -	3
2. Objectives - - - - -	4
3. Test Description - - - - -	5
4. Vehicle Data - - - - -	7
5. Master Countdown - - - - -	9
6. Support Requirements - - - - -	14
7. Post Operation Data Requirements - - - - -	22
8. Tables - - - - -	24
9. Motor Exposure Criteria - - - - -	30
10. Allowable Peak Wind Speed Criteria - - - - -	31
11. Launch Operations Areas and ISC Personnel Location - - -	32
12. ISC Personnel Telephone Directory for the Launch Operation -	37
13. Intercom Channels Assignment During S-137R Launch Operation -	38
14. ISC Wallops Organization - - - - -	39

REFERENCES

- 1) Statement of Work for Scout Vehicle Processing and Launch Operations. Wallops Island, Virginia, L.R.C. January 1964, Appendix A NAS1-3615.
- 2) Scout Users Manual - Enclosure (1) to LTV Letter No. 3-15000/4L-3063-LTV December 1963..
- 3) Pre-Flight Planning Report for Scout S-137R. LTV -3-30000/4R-112 1 November 1964.
- 4) Scout S-137R Ignition and Destruct System Letter - ISC-QT0/1139/OC, 23 November 1964.
- 5) Vehicle Data Log, S-137R - Contract NAS1-3589.
- 6) Payload Description Document for San Marco-A Satellite, ISC, August 1964.
- 7) Scout Vehicle S-137R "Master Countdown Manual."
- 8) Wallops Station Handbook, Chapter III, "Safety", dated 6 April 1964.
- 9) Wallops Station Memo - Photographic Coverage for Scout S-137R.
- 10) Wallops Memo - Photographic Support of F4-1625 (Scout, S-137R), T. W. Perry, 3 November 1964.
- 11) Scout S-137R San Marco-A. Pre-Flight Predicted Trajectory Data 23-DIR-3-54100/4-45, 9 October 1965.
- 12) Ground Safety Plan for Scout S-137R. ISC - NASA/WI - 23 November 1964.
- 13) Flight Safety Plan for Scout S-137R. ISC - NASA/WI - 23 November 1964.

1.0 GENERAL

The information contained herein, which is submitted in compliance with Appendix A of Reference (1), presents the operational data required to conduct the Scout Research Vehicle S-137R mission.

The mission will be conducted in accordance with References (2) and (3). In the event there is any inconsistency between the Operational Plan and Reference (2) and (3) the Operational Plan shall be the controlling factor.

All details of the payload operational requirements, description etc., are presented in Reference (6). The payload information presented herein is that which affects vehicle operation and general information for a ready reference, such as telemetry frequencies, power, etc.

1.1 OPERATIONAL INFORMATION

- | | |
|------------------------------------|------------------------------------------------------------------------------------------------------|
| a) Launch Station: | Wallops Island, Virginia |
| b) Launch Site: | Launch Area No. 3
Pad No. 3A (Mark II)
Lat. 37° 50' 52.47"
Long. 75° 28' 26.12" |
| c) Launch Vehicle: | Scout S-137R
(Wallops No. F4-1625) |
| d) Launch Time (T-Zero) | 1500 EST |
| e) Launch Window: | 1500R - 1900R |
| f) Blockhouse Manning Time: | T-8.0 hours |
| g) RCC Manning Time: | T-7.5 hours |
| h) Master Countdown Starting Time: | T-7.5 hours |
| i) FEC Manning Time: | T-2.0 hours |
| j) Weather Limitations: | |
| Cloud Coverage: | 5000' Minimum Ceiling,
Broken Overcast. |
| Surface Winds: | 35 Knots maximum |
| Precipitation: | None |
| Upper Winds: | The upper wind limits will
be based on an .001 probability
on the wind curves in Reference (2) |
| k) Mission Type: | Orbital |
| l) Mission Payload: | San Marco -A Satellite |
| | 1. Upper Atmosphere Density
measurement |
| | 2. Ionospheric Characteristics
exploration |

1.2 BRIEFING AND CRITIQUE

A pre-mission briefing and a post dress rehearsal critique will be conducted. The briefing will include all personnel, while the critique will only involve the blockhouse operating personnel.

All Agencies will be notified concerning the briefing.

2.0 OBJECTIVES

2.1 VEHICLE PRIMARY OBJECTIVES

To provide the necessary boost for placing the San Marco -A Satellite into an elliptical orbit.

2.2 PAYLOAD OBJECTIVES

- a) To perform a continuous measurement of the air density.
- b) To explore the ionospheric characteristics of the atmosphere.

2.3 OPERATIONS OBJECTIVES

- a) To train the Italian Launching and Range Instrumentation Crews for the equatorial operations from the San Marco mobile range.
- b) To qualify the San Marco orbital payload.

3.0 TEST DESCRIPTION

3.1 FLIGHT PLAN

The Flight Plan and nominal trajectory information for the S-137R mission, with a time history from launch to insertion into orbit, are presented in Reference (3). Briefly the payload will be launched at an elevation angle of 90° and pitched to an azimuth of 88° . At fourth stage burnout the payload will be inserted into orbit at an inclination angle of 37.691° . Insertion will occur at approximately $T+ 407.13$ seconds. This is at a range of 787.01 nautical miles. Relative velocity of the payload and fourth stage at that time will be 24,718 feet per second. The payload will be separated from the fourth stage at $T+ 1999$ seconds (33.33 minutes).

The following table presents the vehicle trajectory at event times.

<u>EVENT</u>		<u>TIME (SEC)</u>	<u>RANGE (N. MI.)</u>	<u>GEODETTIC ALTITUDE (FT)</u>	<u>RELATIVE VELOCITY (FPS)</u>
STG. I	B.O.	77.34	21.69	119,219	3,649
STG. II	IGN.	86.40	26.29	135,319	3,501
STG. II	B.O.	133.37	77.76.	252,266	9,507
STG. III	IGN.	156.40	111.76	308,835	9,319
STG. III	B.O.	189.20	179.29	391,547	17,491
STG. IV	IGN.	383.13	708.67	707,727	16,939
STG. IV	B.O.	407.13	787.01	703,311	24,718

3.2 TIME HISTORY

For information and as a ready reference, a time history of the sequence of events and commanded pitch rates is presented below.

<u>TIME (SEC.)</u>	<u>EVENT</u>	<u>PITCH RATE COMMAND (DEB/SEC)</u>	<u>HOW ACCOMPLISHED</u>
00.00	Stage I Ignition		
00.20	Start Timer	0.00000	Ground Fired
02.50	Pitch Rate No. 1		Flyaway
09.00	Pitch Rate No. 2	-3.63020	Timer Function
34.00	Pitch Rate No. 3	-0.72114	Timer Function
41.00	Pitch Rate No. 4	-0.51111	Timer Function
77.34	Stage I B.O.	-0.39312	Timer Function
86.40	Stage II Ignition		
	Activate "B" Controls		Timer Function
	Stage I Separation		Timer Function
	Remove Stage I Controls		Stage II Ignition
	Switch in Body Bending Filter		Stage I Separation
93.00	Pitch Rate No. 5	-0.30000	Timer Function
111.00	Pitch Rate No. 6	-0.17895	Timer Function
133.37	Stage II B.O.		Timer Function
154.70	Separate Payload Heat Shield		
	Activate "C" Burn Controls		Timer Function
	Stage III Squib Ignition		Timer Function
156.40	Stage III Ignition		Timer Function
	Stage II Separation		Squib Delay
	Remove Stage II Controls		Stage III Ignition
168.00	Pitch Rate No. 7	-0.11781	Stage II Separation
189.20	Stage III B.O.		Timer Function
194.20	Activate "C" Coast Controls		
	Switch out body Bending Filter		Timer Function
200.00	Pitch Rate No. 8	-1.26000	Timer Function
214.79	Pitch Rate No. 9	0.00000	Timer Function
377.13	Spin Motor Ignition		Timer Function
	Stage IV Squib Ignition Command		Timer Function
378.63	Explosive Bolt Ignition		Timer Function
	Stage III Separation		Timer Function
	Start Mechanical Timer		Expl. Bolt Ign.
379.63	Retro Force Command		Stage III Separation
383.13	Stage IV Ignition		Timer Function
407.13	Stage IV B.O.		Squib Delay
1878.63	Yoyo Despin		
1998.63	Payload Separation		Mech. Timer Function
			Mech. Timer Function

4.0 VEHICLE DATA

4.1 VEHICLE DESCRIPTION

A detailed description of the basic vehicle configuration is presented in References (2) and (3). The Ignition and destruct detailed circuitry is presented in Reference (4). Information concerning field changes, actual vehicle mass characteristics and control system settings are presented in Reference (5). The Auto Destruct System described in Reference (2) will be installed and utilized. The San Marco -A Satellite is described in Reference (6).

4.2 PYROTECHNICS DEVICES ABOARD VEHICLE

4.2.1 MAIN MOTORS AND IGNITERS

<u>STAGE</u>	<u>MOTOR TYPE</u>	<u>MOTOR S/N</u>	<u>IGNITER TYPE</u>	<u>MOTOR LOADED WEIGHT (LBS)</u>	<u>SQUIB DELAY (SEC.)</u>	<u>ACTUATOR</u>
I	Algol IIB	34	3184 (Holex)	23,805	0	Ground Fired
II	E 5 (Castor)	161	M 125 Mod 1 (McCormick Selph)	8,869	0	Timer
III	X-259 (Antares)	HPC 167	SD55A1 (Hercules)	2,809	1.6 (NOM.)	Timer
IV	X-258-C1 (Altair)	RH-75	SD38A0 (Hercules)	576.9	6.00 (NOM.)	Timer

4.2.2 OTHER PYROTECHNIC DEVICES

- a) First Stage One (1) electromechanical SAFE/ARM Explosive Initiator, Beckman and Whitley Model 2253D-02. Each Unit has dual electrical primers, detonators and booster pellets.
- Two (2) parallel linear shaped charges on the right-hand side of the engine case CV23-002040.
- b) Second Stage One (1) electromechanical SAFE/ARM Explosive Initiator, Beckman and Whitley Model 2253D-02.
- Two (2) linear shaped charges, on the right-hand side of the engine case, CV23-002040.
- c) Third Stage One (1) electromechanical SAFE/ARM Explosive Initiator, Beckman and Whitley Model 2253D-02.
- Two (2) linear shaped charges, on the left-hand side of the engine cone, CV23-002040.
- Two (2) activators for the two (2) ignition destruct battery - Eagle Pitcher GAP4023-9 Universal Match 950 UNG 1042 located in Upper "C" transition section.
- d) Fourth Stage Two (2) ballistics cartridges for 34 inch heat-shield, Hollex EX 38 Mod. 3/Lot 9803M.
- Four (4) TSK 4-23074-2 (1KS40HA) spin motors Atlantic Research Corporation.
- Four (4) spin motor igniters U.S. Flare 908A.
- Four (4) explosive bolts HOLEX 3252 for the separation system Marman Clamp, CV23-002435-1.
- Two (2) dimple motors for the "E" section mechanical timer release Hercules DM 2914.
- Two (2) cutters for the yoyo despin mechanism Ordinance Assoc. C168-29.
- Two (2) Payload release nut HISHEAR PC-24.

5.0 MASTER COUNTDOWN

The detailed Master Countdown for the S-137R mission is presented in Reference (7), which includes procedures for checkout, vehicle recovery, etc.

5.1 SCHEDULES

The first and second dress rehearsals and the operational countdown, which are T-2, T-1 and T-0 days respectively are organized in functional blocks with time allotted for each block. If required, a HOLD will be made to keep the T-1 hour to the schedule herein.

5.1.1 FIRST DRESS REHEARSAL

<u>COUNTDOWN TIME</u>	<u>E.S.T.</u>	<u>ZULU TIME</u>	<u>DELTA TIME</u>	<u>FUNCTION</u>
T-5.5 hr.	0900	1400	0.5 hr	Vehicle Preparation
T-5.0 hr	0930	1430	3.0 hr	Electronic Checkout
T-2.0 hr	1230	1730	0.5 hr	Final Launcher/Vehicle Prep.
T-1.5 hr	1300	1800	1.0 hr	Remove Vehicle Env. Cont.
T-0.5 hr	1400	1900	0.5 hr	Terminal Countdown
	1428	1928		Start Sequencer
				Start Launcher Programmer
T-0	1430	1930		LIFT OFF
			4.5	Controlled Recovery
	1900	2400		Recovery complete

5.1.2 SECOND DRESS REHEARSAL

<u>COUNTDOWN TIME</u>	<u>E.S.T.</u>	<u>ZULU TIME</u>	<u>DELTA TIME</u>	<u>FUNCTION</u>
T-5.0 hr	0900	1400	0.5 hr	Vehicle Preparation
T-4.5 hr	0930	1430	2.5 hr	Electronic Checkout
T-2.0 hr	1200	1700	0.5 hr	Final Launcher/Vehicle Prep.
T-1.5 hr	1230	1730	1.0 hr	Remove Vehicle Env. Cont.
	1330	1830	0.5 hr	Terminal Countdown
	1358	1858		Start Sequencer
				Start Launcher Program
T-0	1400	1900		LIFT OFF
			4.5 hr	Controlled Recovery
	1830	2330		Recovery Complete

5.1.3 OPERATIONAL COUNTDOWN

<u>COUNTDOWN TIME (HR.)</u>	<u>E.S.T.</u>	<u>TIME</u>	<u>DELTA TIME</u>	<u>FUNCTION</u>
T-7.5	0730	1230	.5 hr	Vehicle Preparation
T-7.0	0800	1300	2.5 hr	Electronic Checkout
T-4.5	1030	1530	1.0 hr	Final Vehicle/Launcher Prep.
T-3.5	1130	1630	2.0 hr	Fueling
T-1.5	1330	1830	1.0 hr	Remove Vehicle Environment Cont. and Final Camera Adjustments
T-0.5	1430	1930	0.5 hr	Terminal Countdown
	1458	1958		Start Sequencer
				Start Launcher Programmer
T-0	1500	2000		LIFT OFF

5.1.4 OPERATIONAL COUNT-UP

COUNT-UP TIME

T+
Min. Sec.

0	00	Announce LIFT-OFF.
0	00	Start Counting at 1 second intervals.
0	10	Start Counting at 10 second intervals.
1	15	Start Counting at 1 second intervals.
1	18	Stage I B.O.
1	27	Stage II Ignition.
1	30	Start Counting at 10 second intervals.
2	10	Start counting at 1 second intervals.
2	14	Stage II B.O.
2	37	Stage III Ignition.
2	40	Start Counting at 10 second intervals.
3	10	Stage III B.O.
6	10	Start Counting at 1 second intervals.
6	18	Spin motors ignition.
6	19	Separation of Stage IV.
6	20	Retro rockets ignition.
6	24	Stage IV Ignition.
6	48	Stage IV B.O.
7	00	Start counting at 1 minute intervals.
10	00	Start counting at 5 minute intervals.
32	00	Start counting at 10 second intervals.
33	10	Separation of the payload.
35	00	Stop Count

5.1.5 ABORT PROCEDURE

The abort procedure will be in concordance with Reference (7) for both the Dress Rehearsal and Operational Countdown.

5.1.6 OPERATIONAL SCHEDULE AND PROCEDURES

A chart summarizing the final three days operational schedule, with specific group participation included, is presented below. Activity within each time block will be controlled by the ISC engineering supervisor in charge of the current phase and the ISC Operations engineer. The ISC Test Conductor will be kept regularly advised of progress at the pad, and in particular of any anticipated delays. The ISC Test Conductor will advise the ISC Assistant Test Director of any deviations from the planned schedule so that he may effectively coordinate range support. The vehicle preparation for launching will be controlled by the ISC Test Director or his assistant with concurrence of the ISC Test Conductor. Requests for "Hold" will be made through the ISC Test Director, or the ISC Assistant Test Director. The Test Director or his Assistant will announce "Hold" giving the reason, the estimated duration, and the estimated time of resumption of the count.

DAY	TIME EST	FUNCTION	GUIDANCE	INSTRUMENTATION	PYROTECHNICS	INSPECTION	FUELING	VEHICLE TWR	PAYLOAD	WALLOPS RANGE
T-2	0900	Vehicle Preparation				X		X		Pyro
	0930	Electronic Checkout	X	X	X	X	X	X	X	Pyro - T/M - Radars-FRW2
	1300	Final Launcher/Vehicle Prep.				X		X		Pyro
	1330	Remove Vehicle Environment			X	X		X		Pyro
	1400	Terminal Countdown	X	X	X	X	X	X	X	Practice Support
	1430	Recovery	X	X	X	X		X	X	None
T-1	0900	Vehicle Preparation				X		X		Pyro
	0930	Electronic Checkout	X	X	X	X	X	X	X	Pyro - T/M - Radars-FRW2
	1300	Final Launcher/Vehicle Prep.				X		X		Pyro
	1330	Remove Vehicle Environment			X	X		X		Pyro
	1400	Terminal Countdown	X	X	X	X	X	X	X	Practice Support
	1430	Recovery	X	X	X	X		X	X	None
T-0	0900	Vehicle Preparation				X		X		Pyro
	0930	Electronic Checkout	X	X	X	X	X	X	X	Pyro - T/M - Radar-FRW2
	1200	Final Launcher/Vehicle Prep.				X		X		Pyro
	1300	Fueling				X	X	X		Damage Control
	1500	Remove Vehicle Environment			X	X	X	X		Pyro
	1530	Terminal Countdown	X	X	X	X	X	X	X	Operational Support

5.2 MISSION PERSONNEL

		<u>AFFILIATION</u>	<u>LOCATION</u>
a)	ISC Test Director	Prof. L. Broglio	ISC RCC
b)	NASA Test Director	R. Duffy	WI RCC
c)	ISC Assistant Test Director	M. Sirinian	ISC RCC
d)	NASA Assistant Test Director	T. W. Perry	WI RCC
e)	Range Instrumentation Engineer	R. Solimena	ISC RCC
f)	Range Safety Officer	L. C. Parker	WI RCC
g)	ISC Range Safety Officer	A. Berlese	ISC RCC
h)	SPO Project Manager	R. D. English	LRC RCC
i)	ISC Project Engineer	M. Sirinian	ISC RCC
j)	LTV Field Manager	J. D. Pottinger	LTV BH
k)	Test Conductor	G. Spampinato	ISC BH
l)	Pad Supervisor	B. Bernabei	ISC BH
m)	WI Pad Supervisor	B. J. Flowers	WI BH
n)	P/L Project Manager	G. Ravelli	ISC BH
o)	P/L Consultant	C. Buongiorno	ISC RCC
p)	P/L Engineers:	G. Pellegrineschi	ISC T/M G.S.
		C. Arduini	ISC BH
		G. Barresi	ISC T/M G.S.
q)	BH Console Operators:		
1)	Guidance	G. Carpinelli	ISC
2)	Controls	V. Michelutti	ISC
3)	Tower	N. Esposito	ISC
4)	Vehicle Switching	A. Rapuano	ISC
5)	P/L Controls	C. Bucciarelli	ISC
6)	Arming	S. Andreolini	ISC
r)	BH Monitor Consoles:		
1)	Communications	M. Casciola	ISC
		L. P. Tosti	LRC
2)	Guidance	G. Manarini	ISC
3)	Controls	A. Fantoni	ISC
4)	Test Conductor	G. Spampinato	ISC
5)	Instrumentation	A. Maggiore	ISC
6)	P/L Engineer	G. Ravelli	ISC
7)	Arming	R. Virno-Lamberti	ISC
8)	Pad Supervisor	B. Bernabei	ISC
s)	Meteo Consultant	N. Mattana	ISC RCC
t)	Aerospace Controller	F. Fausti	ISC RCC
u)	Range Coordinator	F. Brunelleschi	ISC RCC

The location of ISC personnel prior to and during launch operation of S-137R is shown in paragraph 11.0.

6.0 SUPPORT REQUIREMENT DETAILS

6.1 FLIGHT SAFETY REQUIREMENTS

The Flight Safety requirements and Ground Safety Plan for Scout S-137R have been promulgated by ISC and NASA/WI Range Safety Sections and are defined in References (10), (11), and (12).

6.2 VEHICLE RANGE SUPPORT REQUIREMENTS

In order to conduct the Scout countdown, launch and flight, and to define the performance of the Scout Vehicle during these periods, Wallops Station Ground Support is required in various areas. The following subsections define these requirements.

6.2.1 DATA ACQUISITION

6.2.1.1 TELEMETRY

The telemetry contained aboard the Scout Vehicle S-137R is composed of the vehicle performance telemetry. The payload telemetry is presented in Reference (6). The requirements for these systems are given below.

6.2.1.1.1 VEHICLE PERFORMANCE TELEMETRY

Modulation	PAM/FM/FM 18 Channels
Frequency	244.3 mc
Power Output	10 watts
Channel Assignment	(see table 1)

Data required and Period:

- a) A magnetic tape of the composite signal is required during certain portions of the countdown and from T-0 to maximum range. In addition to the normal Wallops 1" tape for ISC, a 1" tape for LTV/Wallops and a 1/2" tape for LTV/Dallas is required to contain the following tracks:

D Telemetry
Voice Count
100 KC 'wow' compensation
Timing Code

- b) Five (5) real time records are required from the vehicle telemetry system from T-0 to loss of signal. All five (5) records will be delivered to FEC as soon as possible after loss of signal. Record 1, 2, 3 and 4 will be monitored in the Telemetry Building by Range Safety during flight. The setup for these records is as follows:

6.2.1.1.1 VEHICLE PERFORMANCE TELEMTRY (CONTINUED)

The following are needed for real time readout on Range Safety networks.

*RECORD NO. 1 (Data Flash)

<u>GALV. POS.</u>	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM. CH.</u>	<u>DEFLECTION</u>
Ref. Line					
Timing					
Track A	450 cps	Roll Displ.	40.00 kc	4,8,12,16,20	0.5" to 3.5"
Track B	450 cps	Pitch Displ.	40.00 kc	5,9,13,17,21	4.0" to 7.0"
Track C	450 cps	Yaw Displ.	40.00 kc	3,7,15,19,24	7.5" to 10.5"
Timing					
Ref. Line					

*RECORD NO. 2 (Data Flash)

<u>GALV. POS.</u>	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM. CH.</u>	<u>DEFLECTION</u>
Ref. Line					
Timing					
Track A	110 cps	A1	14.5 kc		0 to 3" (+only)
*Track B	450 cps	Events	40.0 kc	1,11,23	0 to 3" (+only)
Track C	25 cps	P.P Volts	1.7 kc		0 to 3" (+only)
Timing					

*RECORD NO. 3 (Data Flash)

<u>GALV. POS.</u>	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM. CH.</u>	<u>DEFLECTION</u>
Ref. Line					
Timing					
Track A	450 cps	Pitch Displ.	40 kc	5,9,13,17,21	0.5" to 3.5"
Track B	450 cps	Yaw Displ.	40 kc	3,7,15,19,24	3.7" to 6.7"
Track C	110 cps	A1	14.5 kc		6.9" to 9.9"
Timing					

*RECORD NO. 4 (Data Flash)

<u>GALV. POS.</u>	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM. CH.</u>	<u>DEFLECTION</u>
Ref. Line					
Timing					
Track A	450 cps	Roll Displ.	40 kc	4,8,12,16,20	0.5" to 3.5"
Track B	25 cps	Pitch Program	1.7 kc		3.7" to 5.7"
Track C	110 cps	Aw	10.5 kc		5.9" to 7.9"
Track D	110 cps	At	7.35 kc		8.1" to 10.1"
*Track E	450 cps	Events	40 kc	1,11,23	10.3" to 11.3"

*All tracks of Records No. 1 to No. 4 to have zero references.

**NOTE: % Bandwidth Heatshield 14%, C/D Rec #1-55%, C/D Rec #2-27.7%
All events 96.7%.

Record No. 1 and No. 2 shall be run at .4 ips.

Record No. 3 and No. 4 shall be run at 1 ips.

6.2.1.1.1 VEHICLE PERFORMANCE TELEMETRY CONTINUED

RECORD NO. 5 (Data Rite)

<u>GALV. POS.</u> Ref. Line	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM. CH.</u>	<u>DEFLECTION</u>
Timing					
Track A	25 cps	Fin Posn. #3 2nd & 3rd Lower Roll Motors	3.0 kc		.5" to 1.5"
Track B	14 cps	Fin Posn. #2 2nd & 3rd Yaw Motors	0.96 kc		1.6" to 2.6"
Track C	11 cps	Fin Posn. #4 2nd & 3rd Large & Small Pitch Motors	0.73 kc		2.7" to 3.7"
Track D	20 cps	Fin Posn. #2 2nd & 3rd Upper Roll Motors	1.3 kc		3.8" to 4.8"
Track E	110 cps	Normal Accel- eration.	10.5 kc		5.0" to 8.0"
Track F	110 cps	Long Accel- eration.	14.5 kc		8.0" to 10.0"
Track G	80 cps	Transverse Acceleration	7.35 kc		10.1" to 11.9"
Timing Ref. Line					

6.2.1.1.2 PAYLOAD PERFORMANCE TELEMETRY

Modulation PM 5 Channels
Frequency 136.53 MC/sec.
Power Output 250 Milliwatts
Channel Assignment See Table III

Data Required and Period:

- a) Two (2) 1" magnetic tape of the composite signal are required by ISC during certain portion of the count-down and from T-0 to maximum range. The tapes should contain the following tracks:

Payload Telemetry
100 KC "wow" compensation
Timing Code

- b) One real time recorder is required from the payload telemetry system from T-10 sec. to signal loss. The CEC should be set up for making a "quick look" of the x,y,z, channels and the entire frame of the PAM subcommutated channel at 1.6 inch/sec.

6.2.1.1.2 PAYLOAD PERFORMANCE TELEMETRY (CONTINUED)

RECORD NO. 6 (Data Flash)

<u>GALV. POS.</u>	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>DEFLECTION</u>
Timing				
Reference Line				
Track A				
Track B	IRIG STANDARD FILTERS	Balance X Axis		
Track C		Balance Y Axis	.73 kc	0.5" to 3.0"
Track D		Balance Z Axis	.96 kc	3.3" to 5.8"
Track E			1.3 kc	6.1" to 8.6"
Track F				
Reference Line		Commutated Frame	5.4 kc	8.9" to 11.4"
Timing				

- c) According to the above paragraph 6.2.1.1.1 the recorders (Data Flash) No. 1,2,3, and 4 will not be needed any longer by Range Safety after the signal drop out. It is therefore requested that one of them will be made available for Telemetry Payload starting at T+ 60 minutes.

This recorder is to be used in conjunction with Recorder No. 5 (full time P/L T/M) will allow the acquisition of the following information.

RECORD NO. 7 (Data Flash)

<u>GALV. POS.</u>	<u>FILTER</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>DEFLECTION</u>
Timing				
Reference Line				
Track A				
Track B	IRIG STANDARD FILTERS	Commutator Frame	5.4 kc	1" to 3.5"
Track C		Total Force	1.7 kc	4.5" to 7.0"
Reference Line		AGC		8" to 10.5"
Timing				

6.2.1.2

RADARS

- a) Type FPS-16.
 Mode of Operation Beacon-track. Switch to skintrack if beacon fails.
 Frequency (Beacon) Receive 5486.5 mc; Transmit 5800.0 mc.
 Beacon Type CVRT 61B C-Band
 Beacon Pwr Output 500 watts
 Data Period From target acquisition after Launch to maximum tracking range.
 Data Requirements 1) Plotboard. Display analog output in the ground and vertical planes in RCC for monitoring by Range Safety Officer.
 2) Scope film (35mm).
 3) Nixie film (35mm).
 4) Magnetic Tape.
- b) Type FPQ-6.
 Mode of Operation Beacon-track. Switch to skintrack if beacon fails.
 Frequency (Beacon) Receive 5486.5 mc; Transmit 5800.0 mc.
 Beacon Type CVRT 61B C-Band.
 Beacon Pwr Output 500 watts
 Data Period From target acquisition after launch to maximum tracking range.
 Data Requirements 1) Plotboard. Display analog output in the ground and vertical planes.
 2) Magnetic Tape
- c) Type MPS-19.(ISC RADAR 1)
 Mode of Operation Skin-track
 Data Period From target acquisition after launch to maximum tracking range.
 Data Requirements Plotboard. Display analog output in the ground and vertical planes in RCC for monitoring by ISC Range Safety Officer.
- d) Type MPS-19.(ISC RADAR 6)
 Mode of Operation Skin-track
 Data Period From target acquisition after launch to maximum tracking range.
 Data Requirements Plotboard. Display analog output in the ground and vertical planes in Computer Van for monitoring by ISC Radar Crew.
- e) Type Mod 11.
 Mode of Operation Skin-track.
 Data Period From target acquisition after launch to maximum tracking range.
 Data Requirements 1) Plotboard. Display analog output in the ground and vertical planes in RCC for monitoring by Range Safety Officer.
 2) Range, azimuth, elevation film.
 3) Magnetic tape.

6.2.1.2 RADARS (CONTINUED)

- f) Type
Mode of Operation
Data Period
Data Requirements

SPANDAR.

Skin-track.

From target acquisition after launch to maximum tracking range.

- 1) Plotboard. Display analog output in the ground and vertical planes in RC for monitoring by Range Safety Officer.
- 2) Magnetic tape.

- g) Type
Mode of Operation
Data Period
Data Requirements

MIT, MAINLAND.

Skin-track.

From target acquisition after launch to maximum tracking range.

- 1) Magnetic tape.
- 2) Film (35mm).
- 3) V-T Curve

- h) Type
Mode of Operation
Data Period
Data Requirements

DOPPLER.

Skin-track.

From target acquisition after launch thru first 30 seconds of flight.

- 1) Magnetic tape
- 2) Film (35mm).
- 3) V-T Curve

- i) Type
Mode of Operation
Frequency (Vehicle)
Beacon Type
Beacon Pwr. Output
Data Period
Data Requirements

FPS-16 BERMUDA.

Vehicle beacon or skin-track if beacon fails.

Receives -54865 mc, Transmit 5800.0 mc.
CVRT 61B C-Band
500 watts.

From target acquisition to LOS.
Display analog output in ground and vertical planes in Mercury Central Control at Bermuda.

6.2.2

PHOTOGRAPHIC COVERAGE

Photographic coverage for S-137R will include both fixed and tracking cameras at the various camera stations. A summary of the proposed photographic coverage for this mission is presented in Reference (9). The pre-launch documentation should cover the receiving, assembly, and checkout operations.

6.2.3

METEOROLOGICAL DATA

Meteorological information is required to define the wind disturbances aloft before and after launch to provide supporting data for trajectory analysis. The meteorological requirement will be as follows:

- | | | |
|----|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) | Type | Rawinsonde. |
| | Data Period | T-1½ hr and T+30 min. |
| | Data Requirements | To maximum altitude. |
| | | 1) Temperature, Pressure and Humidity. |
| | | 2) Wind direction and velocity. |
| b) | Type | Pibal. |
| | Data Period | 1) Every 10 minutes from T-30 minutes to T+30 minutes (up to 5,000 feet). |
| | Data Requirement | 1) Wind Profile. |
| c) | Type | Aerovane. |
| | Data Period | Aerovane readings every 5 minutes and at significant changes from T-45 minutes to T-5 Minutes and thereafter every one minute until T+5 minutes. These readings to be taken at the 50, 100, 150, 200 and 250 foot levels. |
| d) | Type | Radar Balloons. |
| | Data Period | T-4 hr (Maximum altitude) and T-2 hr (Maximum altitude) on request. |

6.2.4 COMMUNICATIONS

Three modes of communications will be employed; intercom, radio, and telephone. The type of communication required for each position at the various locations are listed below:

POSITION	LOCATION	INTERCOM	TELEPHONE
Test Director	RCC	X	253 & SCAMA
Range Safety Officer	RCC	X	272 & SCAMA
Ass't Test Director	RCC	X	258
ISC Test Conductor	BH	X	828
ISC Communications	BH	X	834 - 823
Op. Console Pers.	BH	X	829 - 834
Mon. Console Pers.	BH	X	829 - 842
Pad Positions	TWR, ETC.	X	759 - 840
Range Positions (local)	RADAR, ETC.	X	549

"Hot lines" with tracking stations other than Wallops Range will be established by telephone by Range personnel at the scheduled times. P/L communications network requirements are as defined in Reference (6).

A complete telephone directory of ISC personnel during launch operation is shown in paragraph 12.0.

6.2.5 COMMAND-DESTRUCT TRANSMITTERS

A dual FRW-2 transmitter is required to maintain ground control of the vehicle after liftoff, in order that the flight termination command may be sent by the Range Safety Officer at any time during the flight prior to fourth stage ignition.

Type	FRW-2 (Dual Set-up)
Mode of Operation	Continuous Modulation.
Period Required	During countdown checks, the final countdown, and throughout the flight.
Destruct Capability	
Location	RCC Range Safety Officer.

NOTE: Bermuda FRW-2 is part of this system.

6.2.6 POST-OPERATION SUPPORT

Post-operation data requirement support is discussed separately in section 7.0 of this plan.

6.2.7 STATION CONTROL

Damage control and first aid availability will be maximum during the countdown and launching period.

7.0

POST-OPERATION DATA REQUIREMENTS

During the Scout S-137R countdown and flight, Wallops Instrumentation stations will acquire the telemetry, radar, photographic, and meteorological data as specified in Section 6.0 of this plan. Detailed vehicle and payload telemetry oscillograph playback requirements including channel groupings, channel assignments, filters, deflection, and paper speed, are presented in Tables I, II, and III. Immediately after completion of the operation, when station commitments on S-137R flight are completed, vehicle performance data required by ISC, the Contractor and Langley Research Center will be gathered and distributed as early as possible by the Wallops Scout Project Engineer to the various agencies. A listing of the performance data requirements is presented below.

DATE SOURCE	DATA FOR LTV/WALLOPS	DATA FOR ISC	DATA FOR LRC
Radars FPS-16	1 Copy Plotboard	3 Copies	1 Copy Plotboard
MOD 11	1 Copy Plotboard	3 Copies	1 Copy Plotboard
MPS-19/R	1 Copy Plotboard	Original	1 Copy Plotboard
MIT/M/L	1 Copy Plotboard	3 Copies	1 Copy Plotboard
SPANDAR	1 Copy Plotboard	3 Copies	1 Copy Plotboard
FPQ-6	1 Copy Plotboard	3 Copies	1 Copy Plotboard
MAS-19/R.6	1 Copy Plotboard	Original	1 Copy Plotboard
DOPPLER	1 Reduced Data	3 Reduced Data	Orig. Magnetic Tape
Telemeter	1 Copy of each record per Table II	2 copies of each record per Table II	1 copy of each record per Table II
	1 Wallops Orig. $\frac{1}{2}$ " magnetic tape	2 Copies Wallops $\frac{1}{2}$ " magnetic tape	1 Wallops Orig. $\frac{1}{2}$ " magnetic tape
	1 $\frac{1}{2}$ " Copy Bermuda magnetic tape	1 Copy Bermuda $\frac{1}{2}$ " magnetic tape	1" Orig. Bermuda magnetic tape
	1 1" Copy Wallops magnetic tape	1" Copy Wallops magnetic tape	

Photo

In accordance with References (9) and (10):

1 Copy 16mm Color from a tracking camera	1 Copy 16mm Color from a tracking camera	Orig. 16 & 35mm Color
1 Copy 35mm B&W from a fixed camera	1 Copy 35mm B&W from a fixed camera	Orig. 16 & 35mm B&W

POST-OPERATION DATA REQUIREMENTS (CONTINUED)

DATE SOURCE	DATA FOR LTV/WALLOPS	DATA FOR ISC	DATA FOR LRC
Meteorological	1 copy reduced Pre-Launch Rawinsonde & Wind Profile.*	2 copies reduced Pre-Launch Rawinsonde & Wind Profile.	1 Copy reduced Pre-Launch Rawinsonde & Wind Profile.
	1 copy reduced Post-Launch Rawinsonde & Wind Profile.*	2 copies reduced Post-Launch Rawinsonde & Wind Profile.	1 copy reduced Post-Launch Rawinsonde & Wind Profile.
	1 copy Aerovane Data at time of launch.	2 copies reduced Pre-Launch Radar balloons Plotboard Charts & Wind Profile.	
	The following at time of launch:	2 copies Aerovane data at time of launch.	
	a) Cloud Cover b) Surface Temp. (F) c) Relat. Humidity (%) d) Atmosph. Pressure (In. Hg.) e) Visibility (S. Mil) f) Ceiling (feet) g) Surface Winds (Kts & degrees).	The following at time of launch: a) Cloud Cover b) Surface Temp. (F) c) Relat. Humid. (%) d) Atmosph. Pressure e) Visibility (S. Mil) f) Ceiling (feet) g) Surface Winds (Kts & degrees).	

*Reduction and evaluation of data will be performed by Wallops Station. Data will be reduced in 5,000 foot increments with temperature and humidity data being reduced at intermediate altitudes as changes occur.

8.0 TABLES

TABLE I

8.1 TELEMETRY CHANNEL ASSIGNMENT

A. Continuous Measurements

<u>CHANNEL (KC)</u>	<u>FUNCTION</u>	<u>RANGE</u>
0.56	Yaw Rate	± 5 deg/sec
0.73	Fin Position #4 & 2nd & 3rd Large Pitch Motor	ON-OFF
0.96	Fin Position #1 & 2nd & 3rd Stage Yaw Motors	ON-OFF
1.30	Fin Position #2 & 2nd & 3rd Stage Upper Roll Motors	ON-OFF
1.70	Pitch Program Voltage	0 to 1247 mv
2.30	3rd Stage Small Pitch Motors/Base "a" Hyd. Pressure	ON-OFF
3.00	Fin Position #3 & 2nd & 3rd Stage Lower Roll Motors	ON-OFF
3.90	Roll Rate	± 10 deg/sec
5.40	Pitch Rate	± 5 deg/sec
7.35	Transverse Accelerometer	± 10 g's
10.50	Normal Accelerometer	± 10 g's
14.50	Longitudinal Accelerometer	-4 to +20 g's
22.00	Guidance Voltage 400 cycle reg.	15 Vrms. 400 cps
30.00	Commutator Deck B	
40.00	Commutator Deck A	
52.50	Castor Aft Shoulder Transv. Axis	± 10 g's
70.00	Castor Aft Shoulder Long. Axis	± 15 g's

B. Commutator Measurements - Deck "B" - 30 KC

<u>CHANNEL</u>	<u>FUNCTION</u>	<u>RANGE</u>
1.	C/D Receiver #2 Signal Strength	
2.	2nd Stage H2O2 Pressure	600 psi
3.	3rd Stage H2O2 Pressure	600 psi
4.	Trans. "B" Nozzle Insul. Temp.	350 F.
5.	Guidance Temp.	350 F.
6.	Trans. "D" Ambient	350 F.
7.	3rd Stage N2 Line Temp.	350 F.
8.	Rate Gyro Shield Temp.	350 F.
9.	X259 Nozzle	800 F.
10.	X259 Nozzle Shroud	800 F.
11.	Auto Destruct Battery (CL)	350 F.
12.	3rd Stage J40 Disconnect Bracket	350 F.
13.	3rd Stage "C" Lower Skin	350 F.
14.	3rd Stage Tunnel Aft Hat Support	350 F.
15.	Base "A" Nozzle Insul. Temp.	350 F.

TABLE 1 (CONT'D)

TELEMETRY CHANNEL ASSIGNMENT - VEHICLE

<u>CHANNEL</u>	<u>FUNCTION</u>	<u>RANGE</u>
16.	N2 Tank Assembly (2nd Stage)	350 F.
17.	C/D Receiver #1 Signal Strength	
18.	2nd Stage H2O2 Pressure	600 psi
19.	3rd Stage H2O2 Pressure	600 psi
20.	1st Stage Inboard Bearing Block	350 F.
21.	2nd Stage N2 Line Pressure	3500 psi
22.	3rd Stage N2 Line Pressure	3500 psi
23.	1st Stage Low Pressure Relief Valve Temp.	350 F.
24.	1st Stage Head Cap Pressure	800 psi
25.	3rd Stage N2 Pressure Transducer Temp.	350 F.
26.	50% 2.5 VDC	
27.	0% 0 VDC	
28.	100%	
29.	100% 5.0 VDC Sync.	
30.	100%	
C.	Commutator Measurements - Deck 'A' - 40 KC	

<u>CHANNEL</u>	<u>FUNCTION</u>	<u>RANGE</u>
1.	Events	
2.	2nd Stage Head Cap Pressure	800 psi
3.	Yaw Displacement	± 5 deg.
4.	Roll Displacement	± 5 deg.
5.	Pitch Displacement	± 5 deg.
6.	3rd Stage Head Cap Pressure	400 psi
7.	Yaw Displacement	± 5 deg.
8.	Roll Displacement	± 5 deg.
9.	Pitch Displacement	± 5 deg.
10.	2nd Stage Head Cap Pressure	800 psi
11.	Events	
12.	Roll Displacement	± 5 deg.
13.	Pitch Displacement	± 5 deg.
14.	3rd Stage Head Cap Pressure	400 psi
15.	Yaw Displacement	± 5 deg.
16.	Roll Displacement	± 5 deg.
17.	Pitch Displacement	± 5 deg.
18.	2nd Stage Head Cap Pressure	800 psi
19.	Yaw Displacement	± 5 deg.
20.	Roll Displacement	± 5 deg.
21.	Pitch Displacement	± 5 deg.
22.	3rd Stage Head Cap Pressure	400 psi
23.	Events	
24.	Yaw Displacement	± 5 deg.
25.	'B' Lower Skin Near S/A Unit	350 F.
26.	50% 2.5 VDC	
27.	Spare, 0%	
28.	100%	
29.	100% 5.0 VDC Sync.	
30.	100%	

8.2

TABLE II
SCOUT S-137R PERFORMANCE TELEMETRY - VEHICLE
OSCILLOGRAPH PLAYBACK SET-UP

1. Permanent paper records (oscillograph) are required by LTV, ISC, LRC, and WI.
 The chart defines the records required by these agencies:

RECORD NUMBER	LTV 0.4"/Sec.	LRC 4"/Sec.	ISC 0.4"/Sec.	LRC 0.4"/Sec.	WI 0.4"/Sec.
1	2 copies	1 copy	1 copy	1 copy	1 copy
2	2 copies	1 copy	1 copy	1 copy	1 copy
3	2 copies	1 copy	1 copy	1 copy	1 copy
4	2 copies	1 copy	1 copy	1 copy	1 copy
5	2 copies	1 copy	1 copy	1 copy	1 copy
6	2 copies	1 copy	1 copy	1 copy	1 copy
7	2 copies	1 copy	1 copy	1 copy	1 copy
8	2 copies	1 copy	1 copy	1 copy	1 copy
9	2 copies	1 copy	1 copy	1 copy	1 copy
10	2 copies	1 copy	1 copy	1 copy	1 copy

2. Reference lines will be located at top, center and bottom of each record.
 Binary timing will be located at the top and bottom of each record.

RECORD #1 TRACK	FILTERS	QUANTITY	SCO	CHANNEL	FULL SCALE PEN DEFL.
A	330 cps	Roll Disp.	40.0 KC	4,8,12,16,20	.5" to 2.0"
B	14 cps	Roll Rate	3.90 KC	---	2.25" to 3.75"
C	14 cps	Fin Pos #3 & 2nd & 3rd Lwr Roll	3.00 KC	---	4.0" to 5.5"
D	14 cps	Fin Pos #2 & 2nd & 3rd Up'r Roll	1.30 KC	---	6.5" to 8.0"
E	330 cps	Events (C.D. & H.S.)	40.0 KC	1,11,23	8.25" to 9.75"
F	110 cps	Longitudinal Acc- eleration	14.50 KC	---	10.0" to 11.5"

RECORD #2	FILTERS	QUANTITY	SCO	CHANNEL	FULL SCALE PEN DEFL.
A	330 cps	Pitch Displ.	40.0 KC	5,9,13,17,21	0.5" to 2.0"
B	14 cps	Pitch Rate	5.40 KC	---	2.25" to 3.75"
C	14 cps	Pitch Program Voltage	1.70 KC	---	4.0" to 5.5"
D	14 cps	Fin Pos #4 & 2nd & 3rd Large Pitch	0.73 KC	---	6.5" to 8.0"
E	14 cps	Hyd Press & 3rd Small Pitch	2.30 KC	---	8.25" to 9.75"
F	110 cps	Longitudinal Acc- eleration	14.5 KC	---	10.0" to 11.5"

TABLE II (CONTINUED)
SCOUT S-137R PERFORMANCE TELEMETRY - VEHICLE
OSCILLOGRAPH PLAYBACK SET-UP

<u>RECORD #3</u>						
<u>TRACK</u>	<u>FILTERS</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM.</u> <u>CHANNEL</u>	<u>FULL SCALE</u> <u>PEN. DEFL.</u>	
A	330 cps	Yaw Displ.	40.0 KC	3,7,15,19,24	0.5" to 2.0"	
B	14 cps	Yaw Rate	0.56 KC	---	2.25" to 3.75"	
C	14 cps	Fin Pos #1. & 2nd & 3rd Yaw Mtr.	0.96 KC	---	4.0" to 5.5"	
D	14 cps	Fin Pos #3 & 2nd & 3rd Lwr Roll	3.00 KC	---	6.5" to 8.0"	
E	14 cps	Fin Pos #2 & 2nd & 3rd Up'r Roll	1.30 KC	---	8.25" to 9.75"	
F	110 cps	Longitudinal Acc- eleration	14.5 KC	---	10.0" to 11.5"	
<u>RECORD #4</u>						
A	110 cps	Transverse Accel.	7.35 KC	---	0.5" to 2.0"	
B	110 cps	Normal Accel.	10.5 KC	---	2.25" to 3.75"	
C	110 cps	Longitudinal Acc.	14.5 KC	---	4.0" to 5.5"	
D	330 cps	2nd Stage N2 line pressure	30.0 KC	21	6.5" to 8.0"	
E	330 cps	3rd Stage N2 Line pressure	30.0 KC	22	8.25" to 9.75"	
F	330 cps	3rd Stage N2 Line Temp. (deg.)	30.0 KC	7	10.0" to 11.5"	
<u>RECORD #5</u>						
A	330 cps	2nd Stage H202 pressure	30.0 KC	2,18	0.5" to 2.0"	
B	330 cps	3rd Stage H202 pressure	30.0 KC	3,19	2.25" to 3.75"	
C	330 cps	X259 Nozzle Shroud Range Side	30.0 KC	10	4.0" to 5.5"	
D	330 cps	X259 Nozzle	30.0 KC	9	6.5" to 8.0"	
E	330 cps	1st Stage Inboard Bearing Block	30.0 KC	20	8.25" to 9.75"	
F	110 cps	Long Acceler.	14.5 KC		10.0" to 11.5"	
<u>RECORD #6</u>						
A	330 cps	Guidance Pkg. Temperature	30.0 KC	5	0.5" to 2.0"	
B	330 cps	Rate Gyro Shield Temperature	30.0 KC	8	2.25" to 3.75"	
C	330 cps	Trans. "D" Amb. Temperature	30.0 KC	6	4.0" to 5.5"	
D	330 cps	Trans. "B" Nozzle Insul. Temp.	30.0 KC	4	6.5" to 8.0"	
E	330 cps	"B" Lower Skin near S/A Unit	40.0 KC	25	8.25" to 9.75"	
F	110 cps	Long. Acceler.	14.5 KC		10.0" to 11.5"	

TABLE II (CONTINUED)
SCOUT S-137R PERFORMANCE TELEMETRY - VEHICLE
OSCILLOGRAPH PLAYBACK SET-UP

<u>RECORD #7</u> <u>TRACK</u>	<u>FILTERS</u>	<u>QUANTITY</u>	<u>SCO</u>	<u>COMM.</u> <u>CHANNEL</u>	<u>FULL SCALE</u> <u>PEN. DEFL.</u>
A	110 cps	Longitudinal Acc- eleration	14.5 KC	---	.25" to 5.75"
*B	330 cps	1st Stage H. C. P.	30.0 KC	24,	6.5" to 11.0"
*C	330 cps	2nd Stage H. C. P.	40.0 KC	2,10,18	6.5" to 11.0"
*D	330 cps	3rd Stage H. C. P.	40.0 KC	6,14,22	6.5" to 11.0"

*These should be coincident at zero time.

<u>RECORD #8</u> A	330 cps	Auto Destruct Battery (CL)	30.0 KC	11	0.5" to 2.0"
B	330 cps	3rd Stage "C" Lower Skin	30.0 KC	13	2.25" to 3.75"
C	330 cps	3rd Stage Tunnel AFT Hat Support	30.0 KC	14	4.0" to 5.5"
D	330 cps	3rd Stage N2 Press. Transd. Temp.	30.0 KC	25	6.5" to 8.0"
E	330 cps	N2 Tank Assy. (2nd Stage)	30.0 KC	16	8.25" to 3.75"
F	110 cps	Longitud. Acc.	14.5 KC	---	10.0" to 11.5"

<u>RECORD #9</u> A	110 cps	Long Acceler.	14.5 KC	---	.5" to 2.50"
B	2K cps	Castor Aft. Shoulder Transv. Axis Vibrom.	52.5 KC	---	2.75" to 7.00"
C	2K cps	Castor Aft. Shoulder Long. Axis Vibrom.	70.0 KC	---	7.25" to 11.5"

<u>RECORD #10</u> A	330 cps	1st Stage Low Press. Relief Valve Temp.	30.0 KC	23	.05" to 2.00"
B	330 cps	Base A Nozzle Insulation Temp.	30.0 KC	15	2.25" to 3.75"
C	330 cps	J-40 Discom. Bracket Temp.	30.0 KC	12	4.00" to 5.5"
D	330 cps	C/D RCVR #1 Sig. Str.	30.0 KC	17	6.50" to 8.00"
E	330 cps	C/D RCVR #2 Sig. Str.	30.0 KC	1	8.25" to 9.75"
F	110 cps	Long Accelerom	14.5 KC	---	10.0" to 11.5"

TABLE IIIPAYLOAD TELEMETRY SYSTEM

Type PAM-FM-PM

R. F. Carrier

136.53 MC/sec.

CHANNEL ASSIGNMENT

<u>CHANNEL</u>	<u>FUNCTION</u>	<u>RANGE</u>
.73 KC	Balance X Axis	0-2.5 gr. 0-25 gr.
.96 KC	Balance Y Axis	0-2.5 gr. 0-25 gr.
1.3 KC	Balance Z Axis	0-2.5 gr. 0-25 gr.
1.7 KC	Total Force	0 25 gr.
5.4 KC	Commuted 15 Channels 1 Frame/sec.	

COMMUTATED MEASUREMENTS - 5.4 KC

<u>CHANNEL</u>	<u>FUNCTION</u>	<u>RANGE</u>
1	Gain X Axis	ON - OFF
2	Gain Y Axis	ON - OFF
3	Gain Z Axis	ON - OFF
4	28 V + Programmer Statis	30 V
5	18 V + Pressure Switch No. 1	30 V
6	15.5 V + Pressure Switch No. 2	30 V
7	-19.5	-30 V
8	Ionospheric Antenna Release	0 \pm 100%
9	Decoder Address Signal	ON - OFF
10	Ionospheric Antenna Voltage	0.7 \div 1V
11	Thermistor No. 1 T/M TX	-50°C \pm 125°C
12	Thermistor No. 2 Batteries	-50°C \pm 125°C
13	Thermistor No. 3 (Shell)	-50°C \pm 125°C
14	Thermistor No. 4 (Shell)	-50°C \pm 125°C
15	Syncr. (Double Width) Reference Voltage	1 V

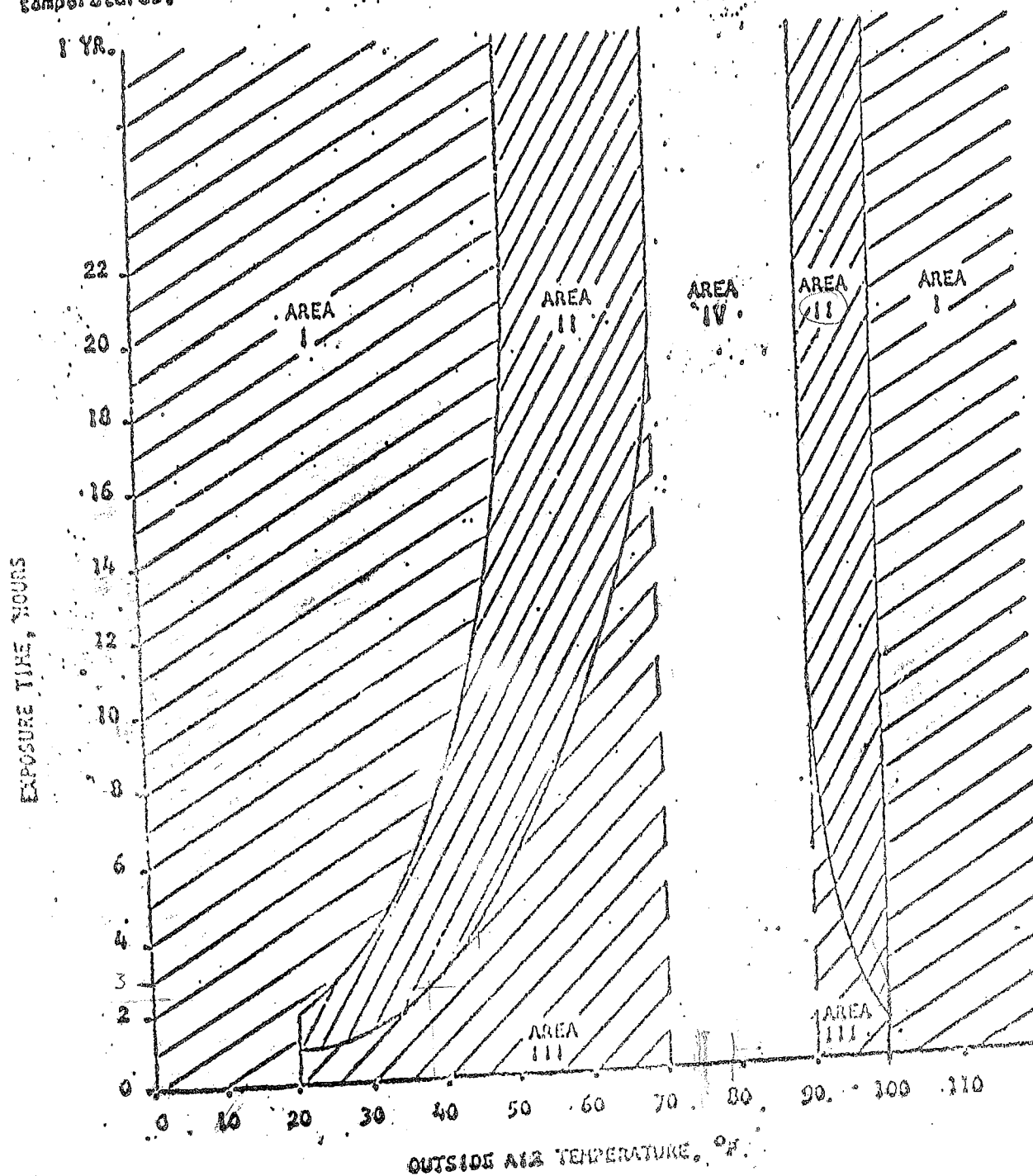
SCOUT VEHICLE EXPOSURE TEMPERATURE - TIME LIMITS

Area I - Do not fire the vehicle if it has been exposed to this temperature time region.

Area II - Vehicle may be fired if exposed to this region, but some motors will require reconditioning. Check individual motor manuals for reconditioning times and temperatures.

Area III - Vehicle may be fired without reconditioning if exposed to this region; however, a temperature gradient will be set up in some of the motors which will cause performance to deviate from nominal.

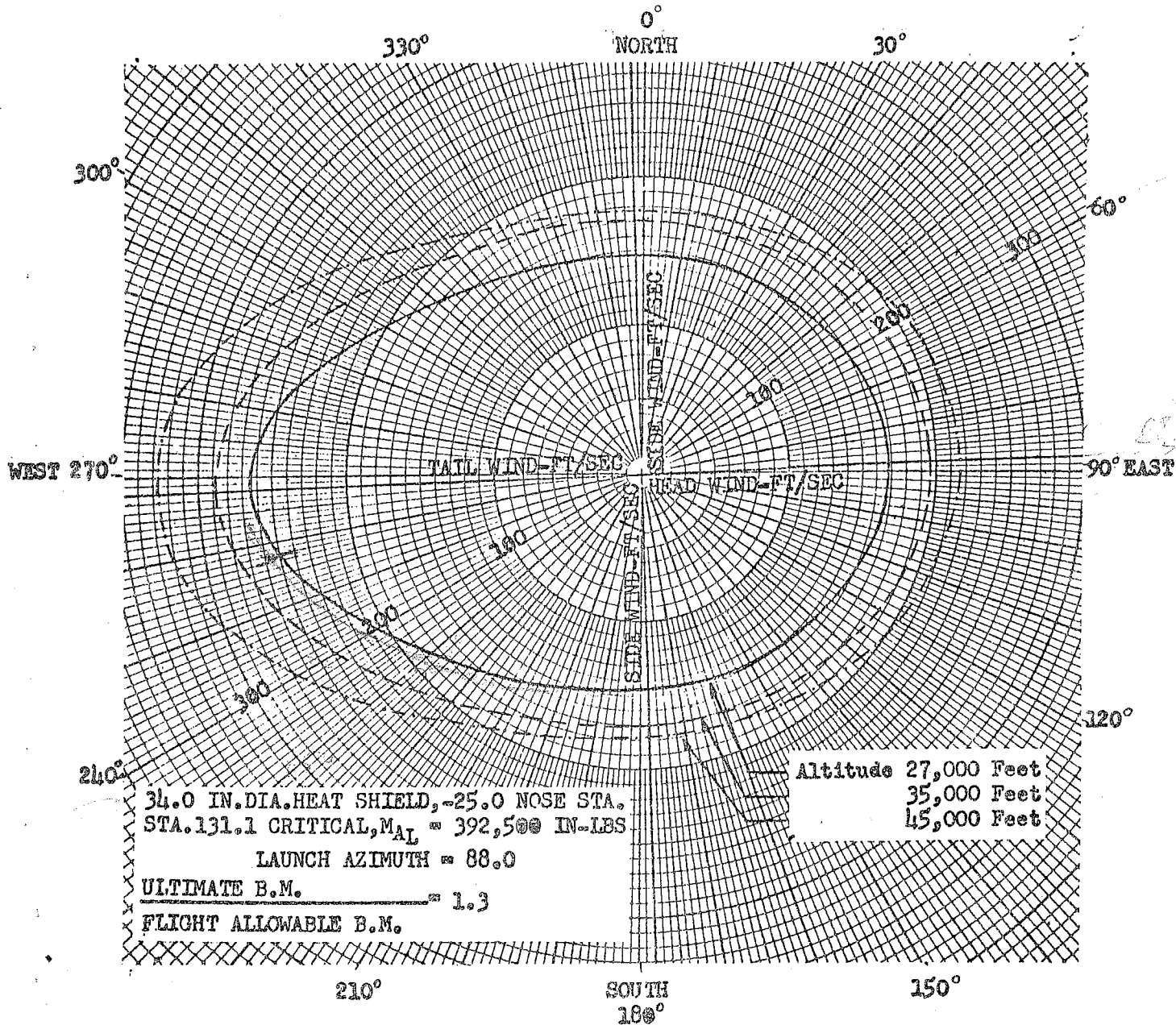
Area IV - Vehicle may be safely fired when conditioned to this region.



10.0

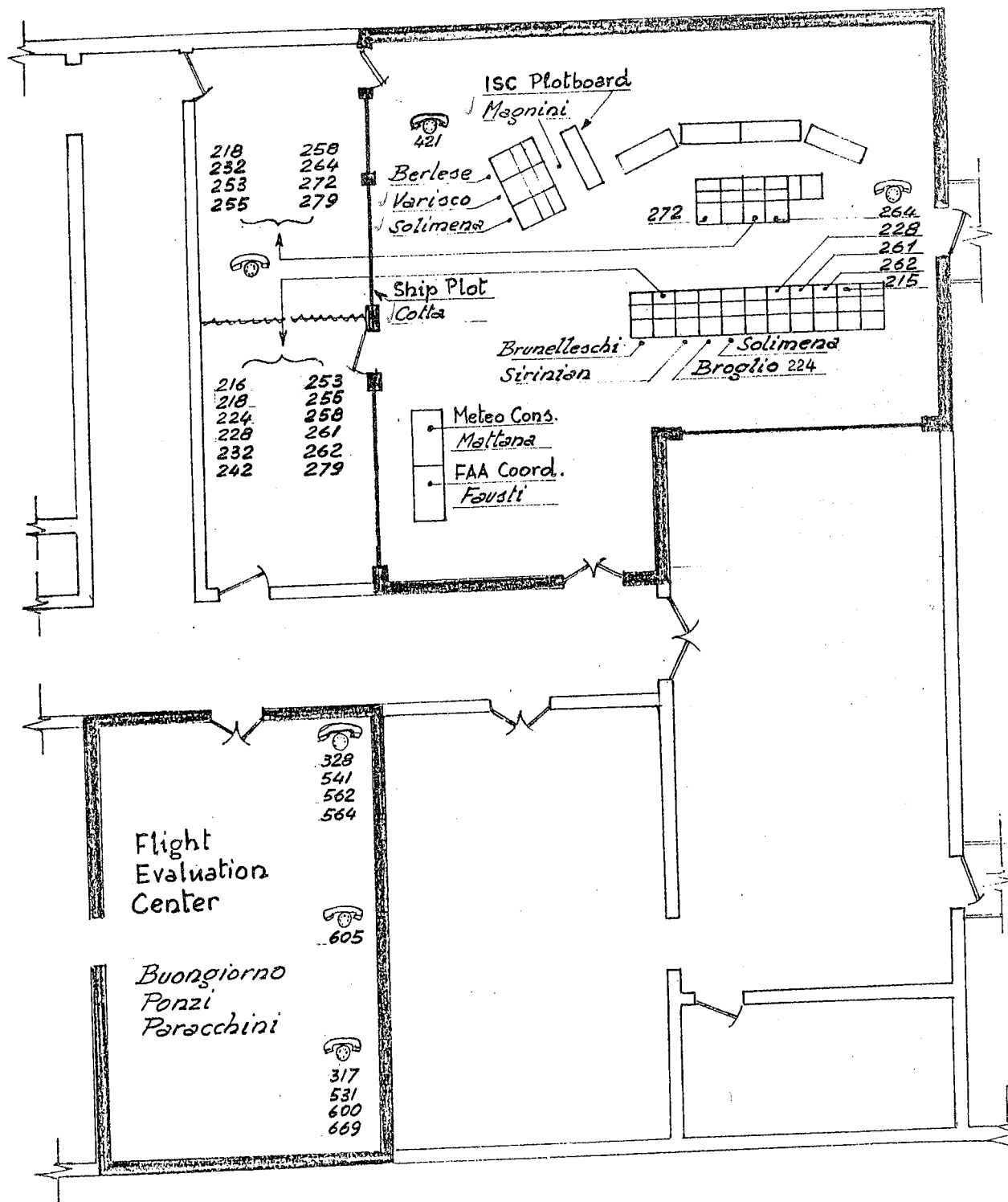
SCOUT VEHICLE S- 137
 .001 PROBABILITY OF EXCEEDING FLIGHT ALLOWABLE
 BENDING MOMENT VS PEAK
 WIND SPEED AND DIRECTION
 PEAK WIND ALTITUDES : 27,000 - 35,000 - 45,000 FEET

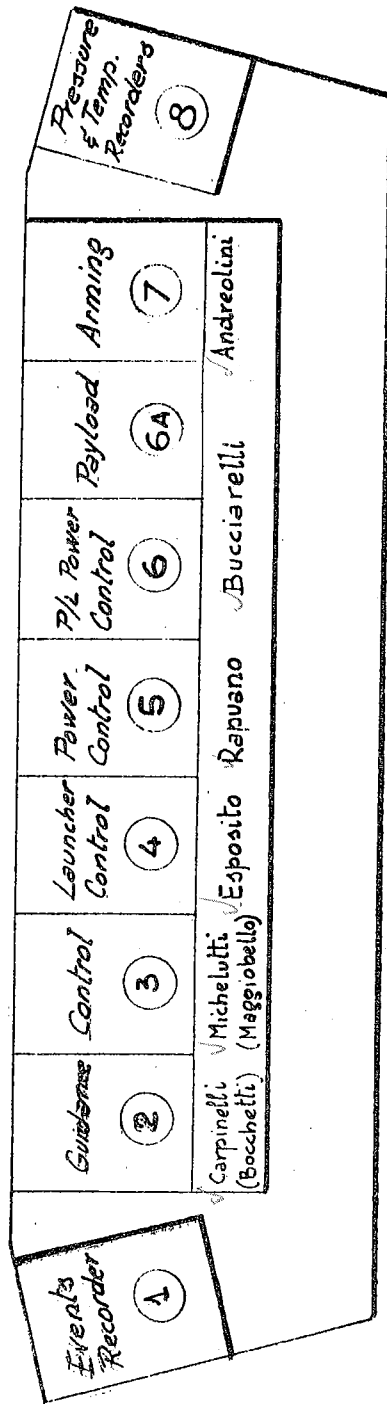
168 FPS = MPH



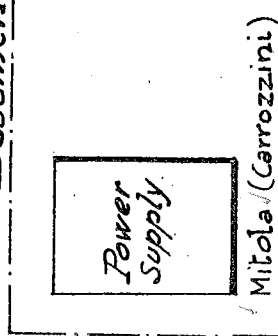
11.0 Launch Operation Areas and ISC Personnel Locations.

11.1 Range Control Center.





Basement



EGSE: Ambrogini
 MGSE: Di Girolamo
 Payload: Arduini

Commu- nications (15)	Guidance (9)	Control System (10)	Test Conduct. (11)	Instrum. System. (12)	P/L Instrum. (13)	Payload (13A)	Ignition Destruct Safety (14)	Range Safety (16)
Casciola	Manarini	Fantoni	Spampinato	Maggiore	Ravelli		Virno	Bernabei

823 828 829 834 842 848

Mechanical

Bernabei
Caporossi
Tebaldi
De Rosa
Briganti

Mechanical GSE

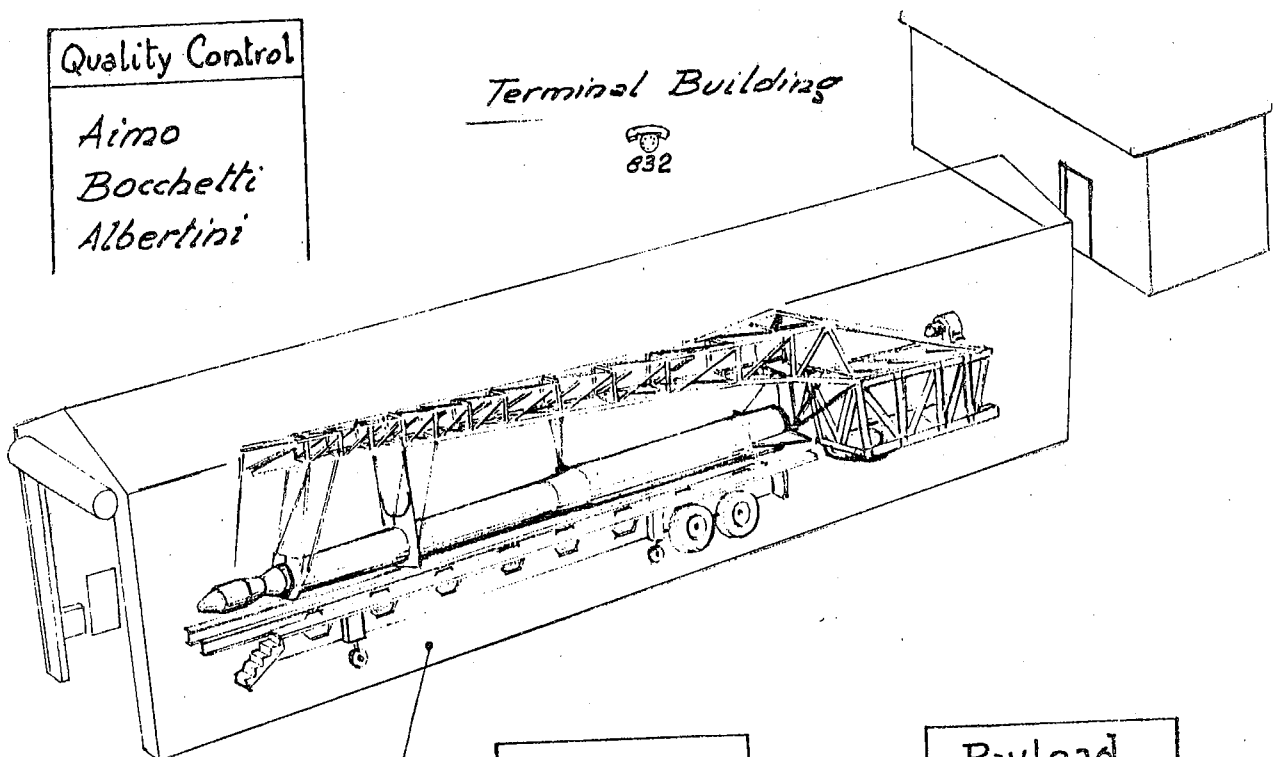
Di Girolamo
Campa
D'Angelo

H₂ O₂

Fantoni
Michelutti
Maggiobello
Moretti

Quality Control

Aimo
Bocchetti
Albertini

Terminal Building

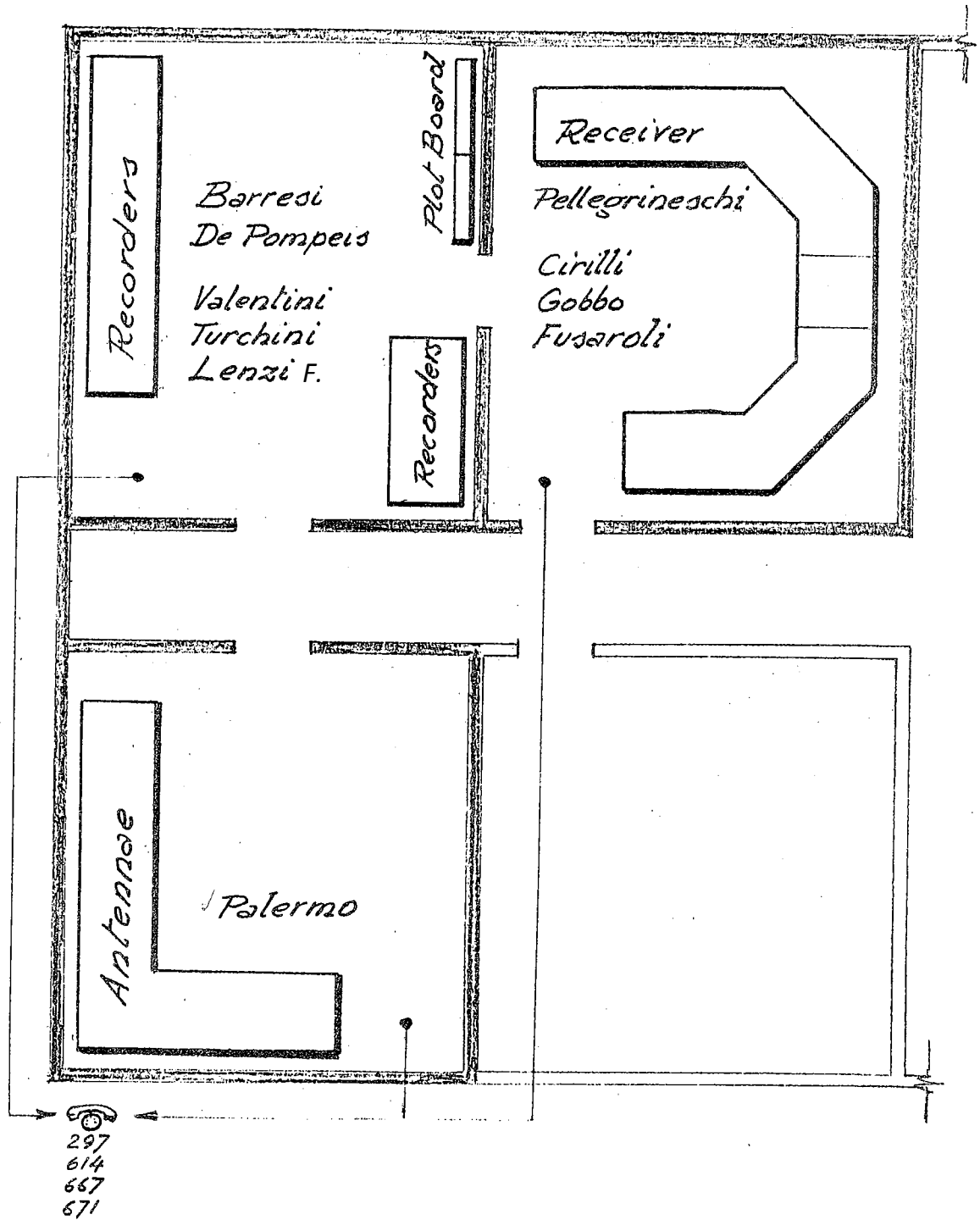
shelter

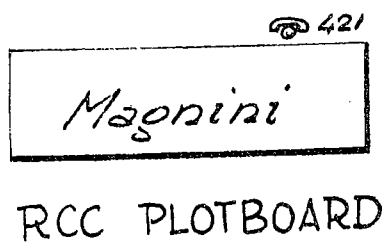
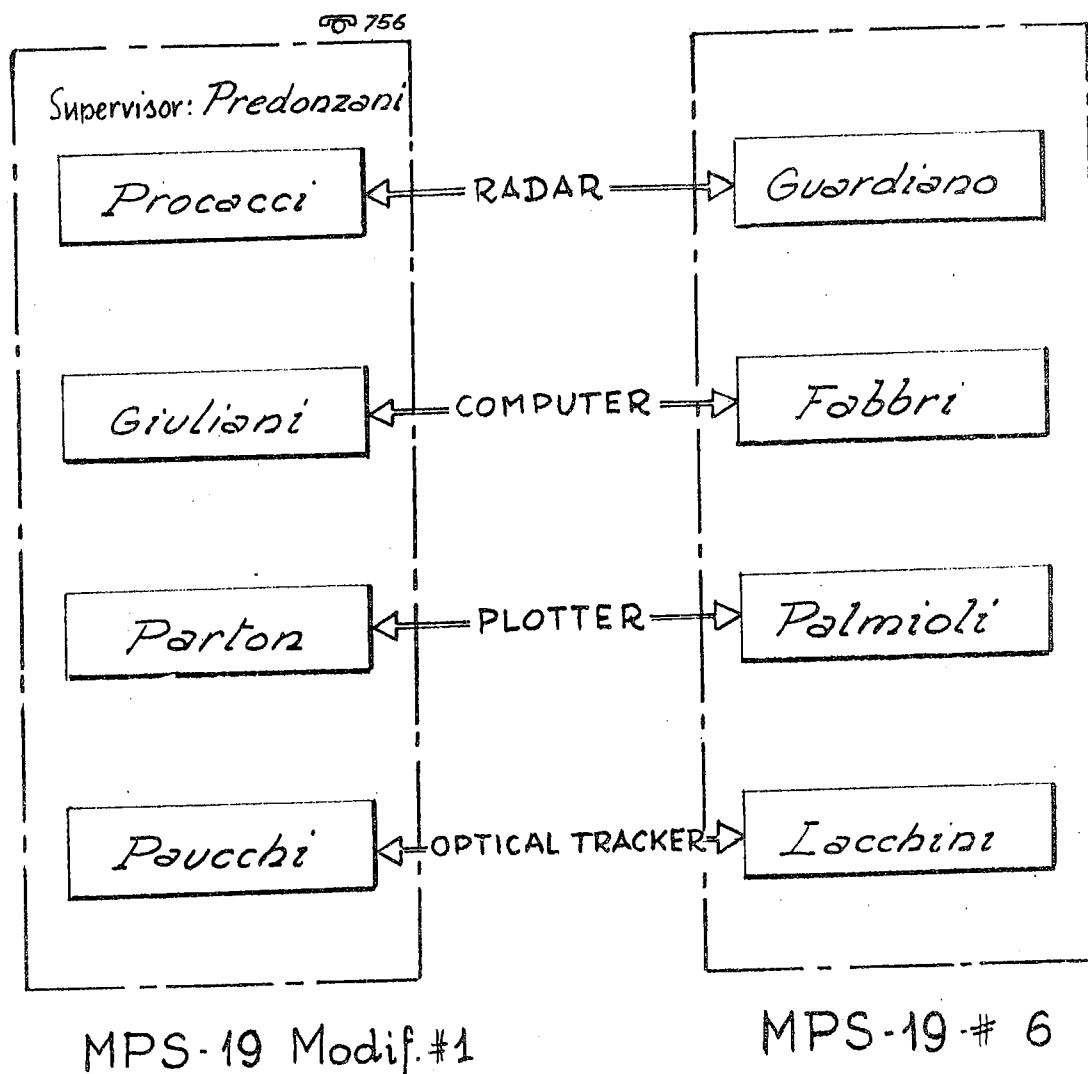
**Pyrotechnics**

Virno
Andreolini
Lenzi M.
Losio

Payload

Ravelli
Arduini
Torabro
Bucciarelli
Ruggeri
De Pompeis





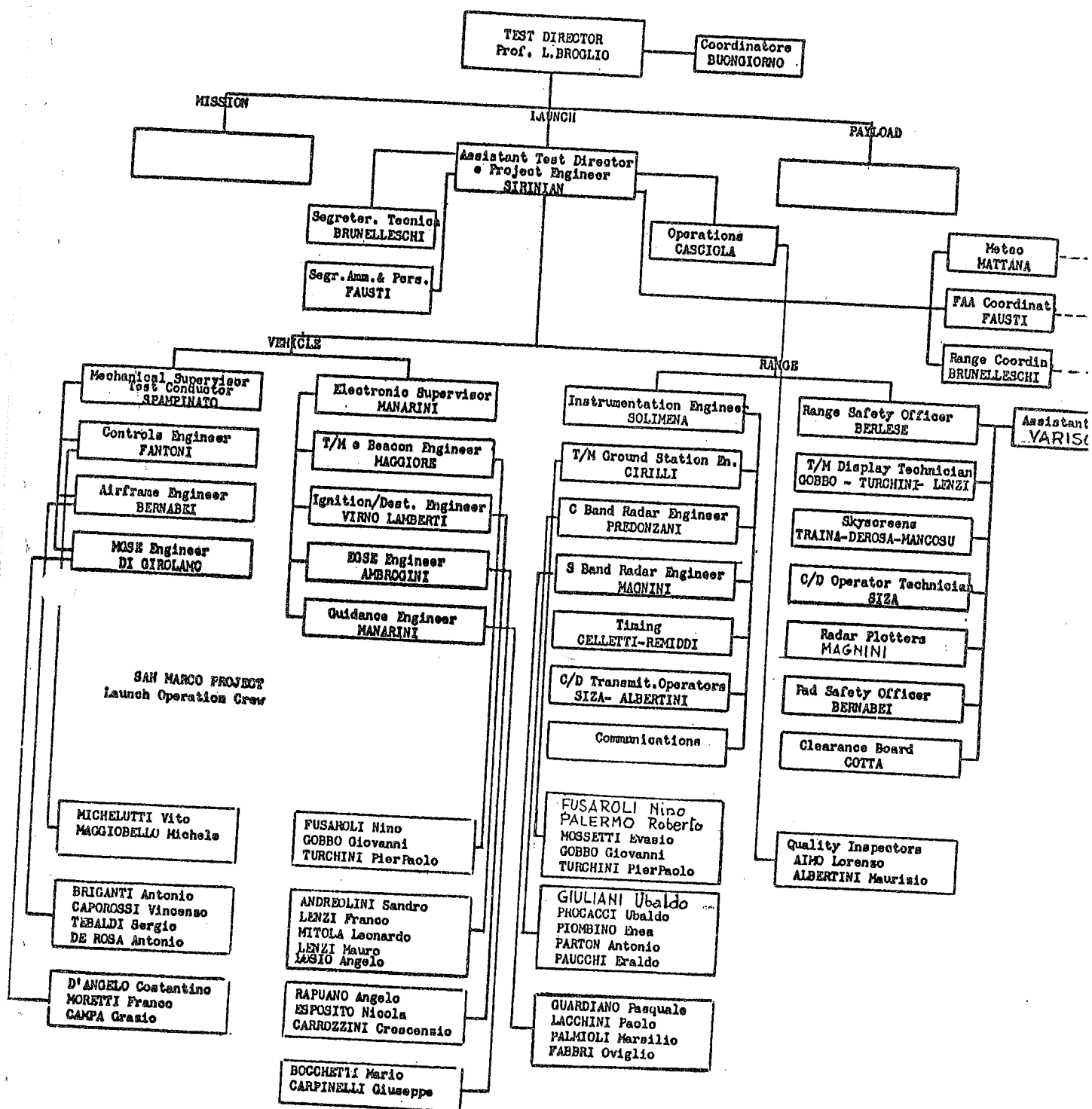
ISC PERSONNEL TELEPHONE
 DIRECTORY FOR LAUNCH
 OPERATION OF S-137R

Prof. L. Broglio	-----Range Control Center-----	224 - 253
A. Berlese	-----Range Control Center-----	421
F. Brunelleschi	-----Range Control Center-----	242 - 262
C. Buongiorno	-----Range Control Center-----	261 - 215
F. Cotta	-----Range Control Center-----	421
F. Fausti	-----Range Control Center-----	631
A. Magnini	-----Range Control Center-----	421
N. Mattana	-----Range Control Center-----	533
M. Sirinian	-----Range Control Center-----	258 - 242
R. Solimena	-----Range Control Center-----	228 - 232
C. Varisco	-----Range Control Center-----	421
C. Buongiorno	-----Flight Evaluation Center-----	531
S. Paracchini	-----Flight Evaluation Center-----	605
U. Ponzi	-----Flight Evaluation Center-----	317
E. Ambrogini	-----Blockhouse #3-----	834 - 714
C. Arduini	-----Blockhouse #3-----	842
B. Bernabei	-----Blockhouse #3-----	848
M. Casciola	-----Blockhouse #3-----	823 - 829
A. Fantoni	-----Blockhouse #3-----	829
A. Maggiore	-----Blockhouse #3-----	829
G. Manarini	-----Blockhouse #3-----	834
G. Ravelli	-----Blockhouse #3-----	842
G. Spampinato	-----Blockhouse #3-----	828
R. Virno-Lamberti	-----Blockhouse #3-----	848
B. Bernabei	-----Pad #3A-----	800 - 832
U. DiGirolamo	-----Pad #3A-----	800 - 832
A. Fantoni	-----Pad #3A-----	800 - 832
G. Barresi	-----Telemetry Building-----	297 - 614
C. Civilli	-----Telemetry Building-----	667 - 671
C. DePompeis	-----Telemetry Building-----	614 - 667
N. Fusaroli	-----Telemetry Building-----	667 - 297
G. Gobbo	-----Telemetry Building-----	297 - 614
M. Lenzi	-----Telemetry Building-----	667 - 671
R. Palermo	-----Telemetry Building-----	297 - 614
G. Pellegrineschi	-----Telemetry Building-----	297 - 614
P. Turchini	-----Telemetry Building-----	667 - 671
G. Valentini	-----Telemetry Building-----	297 - 614
G. Predonzani	-----Radar #1-----	756
P. Guardiano	-----Radar #6-----	756
L. Siza	-----FRW-2 Transmitter-----	723
M. Albertini	-----FRW-2 Transmitter-----	723
San Marco Office	-----Building F-10-----	229 - 336
San Marco Field Office	----- (Trailer) -----	802
Stand-by Room	-----Butler #4-----	811 - 746

INTERCOM CHANNELS ASSIGNMENT DURING S-137R LAUNCH OPERATION

Channel # 1	-----	Override
Channel # 2	-----	Operational
Channel # 3	-----	Radars
Channel # 4	-----	ISC Range Instrumentation
Channel # 5	-----	Meteo
Channel # 6	-----	Range Safety
Channel # 7	-----	Payload
Channel # 8	-----	ISC Range Safety
Channel # 9	-----	Alt-Range (FEC)
Channel #10	-----	Sky Screens
Channel #11	-----	Vehicle - Real Time (FEC) After Lift-off
Channel #12	-----	Events (FEC)
Channel #13	-----	Bermuda
Channel #14	-----	Acc-Time (FEC)
Channel #15	-----	P-10

ISC WALLOPS ORGANIZATION

Dated OCT 1 1964