SECRET

[redacted] Data

[redacted]

ELECTRICAL INTERFACE,
COMMAND DEFINITIONS AND TELEMETRY
INSTRUMENTATION SCHEDULE
FOR PAYLOAD SERIAL NO. J5

20 November 1963

THIS DOCUMENT FOR REFERENCE ONLY

ENGINEERING DRAWINGS AND SPECIFICATIONS SHALL PREVAIL

Distribution

[redacted]

Prepared by [redacted] 11/21/63
Sr. Research Engr. Date

Approved by [redacted] 11/21/63
Supervisor Date
Flight Support Section

Approved by [redacted] 11/21/63
Supervisor Date

Approved by [redacted] 11/21/63
Manager Date
Requirements and Analysis

SECRET [redacted]

J-21 PYRO CONNECTOR PTOOSE-22-55 PW (RED)

PIN	FUNCTION	RECOVERY	SIGNAL
A	SPARE		
B	PYRO RET.		
C	PYRO RET.		
D	SEPARATE NO. 2 RET.	1ST	
E	SEPARATE NO. 1 RET.	1ST	
F	TRANSFER NO. 2 RET.	1ST	
G	TRANSFER NO. 1 RET.	1ST	
H	ARM SIG. NO. 1 RET.	1ST	
J	ARM SIG. NO. 2 RET.	1ST	
K	SIG. 4 RET. (SEPARATE NO. 2 RET.)	2ND	
L	SIG. 4A RET. (SEP. NO. 1 RET.)	2ND	
M	SIG. 3 RET. (TRANSFER NO. 2 RET.)	2ND	
N	SIG. 3A RET. (TRANS. NO. 1 RET.)	2ND	
P	SIG. 2A RET. (ARM NO. 1 RET.)	2ND	
R	SIG. 2 RET. (ARM NO. 2 RET.)	2ND	
S	PYRO SHIELD TIE		
T	PYRO SHIELD TIE		
U	SIG. NO. 1 (FAIRING SEP. NO. 1A)	2ND	+24 V UNREG. FOR 6 SEC.
V	SIG. NO. 1 (FAIRING SEP. NO. 1)	2ND	+24 V UNREG. FOR 6 SEC.
W	SPARE		
X	SPARE		
Y	SPARE		
Z	SPARE		
A-*	SPARE		
B-	SPARE		
C-	SPARE		
D-	SPARE		
E-	SPARE		
F-	SPARE		
G-	SPARE		
H-	SPARE		
I-	SPARE		
J-	SPARE		
K-	SPARE		
M-	LIFEBOAT		+24 V UNREG. FOR 1.2 SEC.
N-	LIFEBOAT		+24 V UNREG. FOR 1.2 SEC.
P-	SPARE		
Q-	+24 V PYRO INPUT		
R-	+24 V PYRO INPUT		
S-	SEPARATE NO. 1	1ST	+24 V PYRO FOR 37 SEC.
T-	TRANSFER NO. 1	1ST	+24 V PYRO FOR 39 SEC.
U-	ARM NO. 1	1ST	+24 V PYRO FOR 114 SEC.
V-	ARM NO. 2	1ST	+24 V PYRO FOR 114 SEC.
W-	SIG. NO. 4A (SEPARATE NO. 1)	2ND	+24 V PYRO FOR 37 SEC.
X-	SIG. NO 3A (TRANSFER NO. 1)	2ND	+24 V PYRO FOR 39 SEC.

[redacted]

SECRET

J5 ELECTRICAL INTERFACE (CONT.)

J-21 PYRO CONNECTOR PTOOSE-22-55 PW (RED) (CONT.)

PIN	FUNCTION	RECOVERY	SIGNAL
Y-	SIG. NO. 2A (ARM NO. 1)	2ND	+24 V PYRO FOR 114 SEC.
Z-	SIG. NO. 2 (ARM NO. 2)	2ND	+24 V PYRO FOR 114 SEC.
AA	SPARE		
BB	BURNOUT SIG.		+24 V UNREG. FOR 15 SEC.
CC	SEPARATE NO. 2	1ST	+24 V PYRO FOR 37 SEC.
DD	TRANSFER NO.2	1ST	+24 V PYRO FOR 39 SEC.
EE	SIG. NO. 4 (SEPARATE NO. 2)	2ND	+24 V PYRO FOR 37 SEC.
FF	SIG. NO. 3 (TRANSFER NO. 2)	2ND	+24 V PYRO FOR 39 SEC.
GG	BURNOUT SIG.		+24 V UNREG. FOR 15 SEC.
HH	INFLIGHT RESET (EARLY DOOR EJECT)		+24 V UNREG. CONTINUOUS

* DASH AFTER LETTER IN COL. 1 INDICATES LOWERCASE LETTERS.

J5 ELECTRICAL INTERFACE (CONT.)

J-22 POWER CONNECTOR PTOOSE-22-21P (WHITE)

PIN	FUNCTION
A	+24 V DC UNREG.
B	+24 V DC UNREG.
C	+24 V DC UNREG.
D	+24 V DC UNREG.
E	+28 V DC REG.
F	-28 V DC REG.
G	-28 V DC REG.
H	+28 V DC REG.
J	AC SHIELD TIE
K	115 V AC, 400 CPS SINGLE PHASE RET.
L	115 V AC, 400 CPS SINGLE PHASE
M	SPARE
N	UNREG. RET.
P	UNREG. RET.
R	UNREG. RET.
S	UNREG. RET.
T	REG. RET.
U	REG. RET.
V	115 V AC, 400 CPS SINGLE PHASE
W	SPARE
X	115 V AC, 400 CPS SINGLE PHASE RET.

[redacted]

J5 ELECTRICAL INTERFACE (CONT.) PAGE 4 OF 16

J-23 COMMAND CONNECTOR PTOOSE-22-55P (GREEN)

PIN	FUNCTION
A	SPARE
B	SPARE
C	SPARE
D	SPARE
E	SPARE
F	SPARE
G	SPARE
H	SPARE
J	SPARE
K	SPARE
L	SPARE
M	SPARE
N	SPARE
P	SPARE
R	T/M SHIELD TIE
S	T/R T/M NO. 1
T	T/R T/M NO. 1 RET.
U	T/R T/M NO. 2
V	T/R T/M NO. 2 RET.
W	REAL TIME COMMAND NO. 6 V/H RAMP LEVEL SELECTION
X	AP CMMD. NO. 3 (UMB.)(SYSTEM OPERATE)
Y	SPARE
Z	BRUSH NO. 17 CLOCK INTERROGATE
A-	BRUSH INPUT NO. 27 V/H START
B-	BRUSH INPUT NO. 28 REDUNDANT OFF
C-	BRUSH INPUT NO. 29 T/M ENABLE
D-	BRUSH INPUT NO. 30 PROGRAM 1 ON
E-	BRUSH INPUT NO. 31 PROGRAM 1 OFF
F-	BRUSH INPUT NO. 32 PROGRAM 2 ON
G-	BRUSH INPUT NO. 33 PROGRAM 2 OFF
H-	BRUSH INPUT NO. 34 PROGRAM 3 ON
I-	BRUSH INPUT NO. 35 PROGRAM 3 OFF
J-	BRUSH INPUT NO. 36 PROGRAM 4 ON
K-	BRUSH INPUT NO. 37 PROGRAM 4 OFF
M-	BRUSH INPUT NO. 38 PROGRAM 5 ON
N-	BRUSH INPUT NO. 39 PROGRAM 5 OFF
P-	BRUSH INPUT NO. 40 PROGRAM 6 ON
Q-	BRUSH INPUT NO. 41 PROGRAM 6 OFF
	BRUSH INPUT NO. 42 PROGRAM 7 ON
S-	BRUSH INPUT NO. 43 PROGRAM 7 OFF
T-	BRUSH INPUT NO. 44 PROGRAM 8 ON
U-	BRUSH INPUT NO. 45 PROGRAM 8 OFF
W-	BRUSH INPUT NO. 47 PROGRAM 9 OFF
Y-	BRUSH INPUT NO. 48 PROGRAM 10 ON
*-	BRUSH INPUT NO. 49 PROGRAM 10 OFF

[redacted]

J5 ELECTRICAL INTERFACE (CONT.)

J-23 COMMAND CONNECTOR PTOOSE-22-55P (GREEN) (CONT.)

PIN	FUNCTION
Z-	BRUSH INPUT NO. 50 T/M OFF
AA	BRUSH NO. 14 ORBIT COUNTER
BB	AP CMMD NO. 2 (UMB.)(ARM BYPASS NO. 2)
CC	REAL TIME CMMD (+24 V UNREG.) NO. 8 V/H RAMP AMPLITUDE SELECTION
DD	REAL TIME CMMD (+24 V UNREG.) NO. 9 PROGRAM SELECTION
EE	REAL TIME CMMD (+24 V UNREG.) NO. 10 V/H RAMP START SELECTION
FF	REAL TIME CMMD (+24 V UNREG.) NO. 11 STEREO/MONO SELECTION
GG	REAL TIME CMMD (+24 V UNREG.) NO. 12 INTERMIX SELECTION
HH	REAL TIME CMMD (+24 V UNREG.) NO. 15 INTERMIX MODE SELECTION

[redacted]

J5 ELECTRICAL INTERFACE (CONT.)

J-24 T/M CONNECTOR PTOOSE-22-55S (ORANGE)

PIN	FUNCTION
A	SPARE
B	AP 245 AUX T/M REAL TIME FILM FOOTAGE POT INST. NO. 2
C	SPARE
D	AP NO. 4 CASS. ROTATION
E	AP 237 AUX. T/M REAL TIME V/H START DELAY TENS RTC 10
F	AP 238 AUX. T/M REAL TIME V/H START DELAY UNITS RTC 10
G	AP 239 AUX. T/M REAL TIME INST. SELECT TENS RTC 11
H	AP 240 AUX. T/M REAL TIME INST. SELECT UNITS RTC 11
J	AP MONITOR NO. 6 (UMB.) PAD TEMPERATURE
K	AP 241 AUX. T/M REAL TIME INTERMIX SELECT TENS RTC 12
L	AP 242 AUX. T/M REAL TIME INTERMIX SELECT UNITS RTC 12
M	AP 243 AUX. T/M REAL TIME INTERMIX MODE SELECTION RTC 15
N	AP 244 AUX. T/M REAL TIME FILM FOOTAGE POT INST. NO. 1
P	AP 231 AUX. T/M REAL TIME V/H RAMP LEVEL TENS RTC 6
R	AP 232 AUX. T/M REAL TIME V/H RAMP LEVEL UNITS RTC 6
S	AP 233 AUX. T/M REAL TIME V/H RAMP AMPLITUDE TENS RTC 8
T	AP 234 AUX. T/M REAL TIME V/H RAMP AMPLITUDE UNITS RTC 8
U	AP 235 AUX. T/M REAL TIME PROGRAM SELECT TENS RTC 9
V	AP 236 AUX. T/M REAL TIME PROGRAM SELECT UNITS RTC 9
W	T/M ON +/-28 V
X	T/M ON COMMUTATOR
Y	T/M SIG. RETURN (UMB.)
Z	A/P MON. NO. 1 (UMB.) CONTINUITY LOOP
A-	SPARE
B-	SPARE
C-	SPARE
D-	AP 51 (SEPARATION MON)
E-	AP 8 SUPPLY IDLER + 101 PERCENT CLUTCH INST. NO. 2
F-	AP 8 (UMB.) SUPPLY IDLER + 101 PERCENT CLUTCH INST. NO. 2
G-	AP 9 LENS ROTATION NO. 1
H-	AP 9 (UMB.) LENS ROTATION NO. 1
I-	AP 10 LENS ROTATION NO. 2
J-	AP 10 (UMB.) LENS ROTATION NO. 2
K-	AP 6 SUPPLY IDLER + 101 PERCENT CLUTCH INST. NO. 1
M-	AP 6 (UMB.) SUPPLY IDLER + 101 PERCENT CLUTCH INST. NO. 1
N-	AP 13 COMMUTATOR 1-B (TEMP SENSOR) SWITCHED TO S/I DURING INSTRUMENT OPERATION
P-	AP 13 COMMUTATOR 1-B (TEMP SENSOR) SWITCHED TO S/I DURING INSTRUMENT OPERATION
Q-	AP 11 COMMUTATOR 1-A (STATUS MONITORS)
R-	AP 11 COMMUTATOR 1-A (STATUS MONITORS)
S-	AP 18 CLOCK SERIAL READOUT
T-	AP 18 (UMB.) CLOCK SERIAL READOUT
U-	T/M SIG. RET.
V-	T/M SIG. RET.
W-	T/M SHIELD TIE

J5 ELECTRICAL INTERFACE (CONT.) PAGE 7 OF 16

J-24 T/M CONNECTOR PTOOSE-22-55S (ORANGE) (CONT.)

PIN	FUNCTION
X-	T/M SHIELD TIE
v-	A/P COMMAND NO. 4 (UMB)(ARM CIRCUIT BYPASS NO. 1)
:-	RELAY RESET (UMB)
AA	RELAY RESET
BB	AP 11 (UMB.) AP MONITOR NO. 2 COMMUATATOR 1-A
CC	AP 13 (UMB.) AP MONITOR NO. 3 COMM. 1-B(TEMP SENSORS) SWITCHED TO S/I DURING INSTRUMENT OPERATION
DD	SPARE
EE	RELATIVE HUMIDITY (UMB.)
FF	RELATIVE HUMIDITY RET. AND AP MON.NO.6 RET. (UMB.) PAD TEMPERATURE
GG	A/P MON NO. 5 (UMB) +28 PAD CHECKOUT MONITOR
HH	A/P COMMAND NO. 5 (UMB) +28 PAD CHECKOUT [redacted]

Notice of Missing Page(s)

Pages 8, 9, 10, and 11 of the original document were missing.

J5 O R B I A L T I M E R C O M M A N D S PAGE 12 OF 16

TRACK	FUNCTION
14	ORBIT COUNTER. ADVANCES INTERMIX (RTC 12) STEPPER SWITCH AND RESETS V/H PROGRAMMER START SWITCH.
17	CLOCK INTERROGATE. INTERROGATES CLOCK FOR SERIAL READOUT.
19	* TAPE RECORDER READ IN
20	* TAPE RECORDER ON
21	* TAPE RECORDER OFF
27	V/H START PULSES. USED FOR STEPPING A SWITCH CONNECTED POINT TO POINT WITH RTC 10 STEPPER SWITCH TO OBTAIN VARIABLE START TIMES FOR THE V/H PROGRAMMER. THE PROGRAMMER STARTS WHEN BOTH SWITCHES ARE AT THE SAME POSITION.
28	REDUNDANT OFF. REDUNDANT OFF FOR ALL PROGRAMS.
29	T/M ENABLE. FOR ENABLING CONTINUOUS TELEMETRY CHANNELS. THIS TRACK IS ALSO USED TO APPLY ENERGIZING VOLTAGE TO THE CONTINUITY LOOP AND WATER SEAL MONITOR CIRCUITRY AND FOR TURNING ON PROGRAMMED TELEMETRY VOLTAGE AND COMMUTATOR FOR THE PAYLOAD.

30 THRU 49 PROGRAM ON/OFF TRACKS

PROGRAM	ON TRACK	OFF TRACK
1	30	31
2	32	33
3	34	35
4	36	37
5	38	39
6	40	41
7	42	43
8	44	45
9	46	47
10	48	49

50 T/M OFF. THIS TRACK IS USED TO TURN PROGRAMMED TELEMETRY VOLTAGE AND COMMUTATOR OFF AND IS ALWAYS REQD FOLLOWING A PUNCH IN TRACK 29. NOTE. TRACKS 29 AND 50 ARE NOT REQUIRED ON-ORIBT DURING TELEMETRY ACQUISITIONS EXCEPT WHEN IT IS DESIRED TO MONITOR THE CONTINUOUS CHANNELS CONTROLLED BY T/M ENABLE. TRACKS 29 AND 50 ARE ALSO REQD TO TURN T/M VOLTAGE AND COMMUTATOR ON AND OFF FOR TAPE RECORDING.

* NOTE. TRACKS 19,20 AND 21 ARE NOT BROUGHT THROUGH THE INTERFACE.

[redacted]

J5 T E L E M E T R Y C H A N N E L S PAGE 13 OF 16

CHANNEL	FUNCTION	
04	CASSETTE ROTATION (BOTH CASSETTES MULTIPLEXED)	
05	SUPPLY IDLER AND 101 PERCENT CLUTCH	INST. NO. 2
06	SUPPLY IDLER AND 101 PERCENT CLUTCH	INST. NO. 1
09	LENS ROTATION, HORIZON IDLER + CENTER OF FORMAT	INSTR. NO. 1
10	LENS ROTATION, HORIZON IDLER + CENTER OF FORMAT	INSTR. NO.2
11	COMMUTATOR 1-A 5 VOLT .4 RPS 60 SEGMENT (STATUS DATA)	
13	COMMUTATOR 1-B 5 VOLT .4 RPS 60 SEGMENT (TEMP. DATA) REQ.D. ON ASCENT AND TIME SHARED WITH STELLAR /INDEX	
18	CLOCK SERIAL READOUT	

COMMUTATED CHANNEL 11

POINT	FUNCTION	
01	CAL 1/2	
02	V/H RAMP LEVEL TENS	RTC 6
03	V/H RAMP LEVEL UNITS	RTC 6
04	CAL 0	
05	V/H RAMP AMPLITUDE TENS	RTC 8
06	V/H RAMP AMPLITUDE UNITS	RTC 8
07	CAL +	
08	PROGRAM SELECT TENS	RTC 9
09	PROGRAM SELECT UNITS	RTC 9
10	H TIMER DELAY POSITION VERIFICATION	
11	CAL 0	
12	V/H DELAY START TENS	RTC 10
13	V/H DELAY START UNITS	RTC 10
14	CAL +	
15	INSTR. SEL STEREO/MONO 1/MONO 2 TENS	RTC 11
16	INSTR. SEL STEREO/MONO 1/MONO 2 UNITS	RTC 11
17	CAL 0	
18	INTERMIX SELECT TENS	RTC 12
19	INTERMIX SELECT UNITS	RTC 12
20	INTERMIX MODE SELECTION	RTC 15
21	CYCLE COUNTER 1000	INSTR. NO. 1
22	CYCLE COUNTER 1	INSTR. NO. 1
23	CYCLE COUNTER 10	INSTR. NO. 1
24	CYCLE COUNTER 100	INSTR. NO. 1
25	FILM FOOTAGE POT	INSTR. NO. 1
26	CYCLE COUNTER 1000	INSTR. NO. 2

J5 T E L E M E T R Y C H A N N E L S (CONT.) PAGE 14 OF 16

COMMUTATED CHANNEL 11 (CONT.)

POINT	FUNCTION	
27	CYCLE COUNTER 1	INSTR. NO. 2
28	CYCLE COUNTER 10	INSTR. NO. 2
29	CYCLE COUNTER 100	INSTR. NO. 2
30	CAL +	
31	FILM FOOTAGE POT	INSTR. NO. 2
32	V/H VOLTAGE MONITOR	
33	OP REL AND +28 VOLT MON	INSTR. NO. 1
34	DRIVE MOTOR ARMATURE VOLTAGE	INSTR. NO. 1
35	DOOR EJECTION MON	INSTR. NO. 1
36	TACH MOTOR VOLTAGE	INSTR. NO. 1
37	+28 VOLT T/M CALIBRATE	INSTR. NO. 1
38	LIGHT LEAK DETECTOR	INSTR. NO. 1
39	-28 VOLT T/M CALIBRATE	INSTR. NO. 1
40	+24 VOLT UNREG MON	INSTR. NO. 1
41	INSTRUMENT ON/OFF MONITOR	
42	V/H PROGRAMMER OPERATE MONITOR	
43	OP REL AND +28 VOLT REG MON	INSTR. NO. 2
44	DRIVE MOTOR ARMATURE VOLTAGE	INSTR. NO. 2
45	DOOR EJECTION MON	INSTR. NO. 2
46	TACH MOTOR VOLTAGE	INSTR. NO. 2
47	FILM DOOR CLOSURE MONITOR	
48	LIGHT LEAK DETECTOR	INSTR. NO. 2
49	FAIRING SEPARATION MONITOR	
50	+24 VOLT UNREG MON	INSTR. NO. 2
51	CONTINUITY LOOP AND WATER SEAL	REC. SYS. NO. 1
52	SEPARATION MONITOR	
53	RECOVERY BATTERY MON NO. 1	REC. SYS. NO. 1
54	CONTINUITY LOOP AND WATER SEAL	REC. SYS. NO. 2
55	RECOVERY BATTERY MONITOR NO. 1	REC. SYS. NO. 2
56	+24 VOLT DC MON	CLOCK
57	CAL 0	
58	SYNC	
59	SYNC	
60	SYNC	

COMMUTATED CHANNEL 13

POINT	FUNCTION	
01	CAL 1/2	
02	FAIRING T/S NO. 1 SWITCH TO SKIN T/S NO.1	BARREL NO. 1
03	T/S NO. 3	INSTR. NO. 1
04	FAIRING T/S NO. 2 SWITCH TO SKIN T/S NO.2	BARREL NO. 1
05	T/S NO. 4	INSTR. NO. 1
06	CAL +	

J5 T E L E M E T R Y C H A N N E L S (CONT.) PAGE 15 OF 16

COMMUTATED CHANNEL 13 (CONT.)

POINT	FUNCTION	
07	FAIRING T/S NO. 3 SWITCH TO SKIN T/S NO.3	BARREL NO. 1
08	T/S NO. 5	INSTR. NO. 1
09	FAIRING T/S NO. 4 SWITCH TO SKIN T/S NO.4	BARREL NO. 1
10	T/S NO. 6	INSTR. NO. 1
11	CAL 0	
12	FAIRING T/S NO. 5 SWITCH TO SKIN T/S NO.5	BARREL NO. 1
13	T/S NO. 7	INSTR. NO. 1
14	FAIRING T/S NO. 6 SWITCH TO GROUND	
15	T/S NO. 8	INSTR. NO. 1
16	CAL 1/2	
17	SKIN T/S NO. 1	BARREL NO. 2
18	T/S NO. 9	INSTR. NO. 1
19	SKIN T/S NO. 2	BARREL NO. 2
20	T/S NO. 10	INSTR. NO. 1
21	SUPPLY SPOOL T/S NO. 1	
22	SKIN T/S NO. 3	BARREL NO. 2
23	T/S NO. 11	INSTR. NO. 1
24	SKIN T/S NO. 4	BARREL NO. 2
25	T/S NO. 12	INSTR. NO. 1
26	CAL 0	
27	SKIN T/S NO. 5	BARREL NO. 2
28	T/S NO. 13	INSTR. NO. 1
29	T/S ON THERMAL SHIELD AT AGENA INTERFACE	
30	CAL +	
31	T/S NO. 3	INSTR. NO. 2
32	T/S NO. 1 CLOCK	
33	T/S NO. 4	INSTR. NO. 2
34	T/S NO. 2 CLOCK	
35	+ 28 T/M BUSS VOLTAGE MONITOR	
36	T/S NO. 5	INSTR. NO. 2
37	THRUST CONE T/S NO. 1 SWITCHED FROM REC. 1 TO REC. 2	
38	T/S NO. 6	INSTR. NO. 2
39	THRUST CONE T/S NO. 2 SWITCHED FROM REC1 TO REC2	
40	SUPPLY SPOOL T/S NO. 2	
41	T/S NO. 7	INSTR. NO. 2
42	T/S NO. 2 S/I UNIT 1 SWITCHED TO S/1 UNIT 2	
43	T/S NO. 8	INSTR. NO. 2
44	CASSETTE T/S NO. 2 (SWITCH TO GROUND)	REC. SYS. NO. 1
45	-28 TLM BUSS VOLTAGE MONITOR	
46	T/S NO. 9	INSTR. NO. 2
47	+28 VOLT T/M CALIBRATE	INSTR. NO. 1
48	T/S NO. 10	INSTR. NO. 2
49	CAL +	
50	T/S NO. 11	INSTR. NO. 2
51	-28 VOLT T/M CALIBRATE	INSTR. NO. 1

[redacted]

J5 T E L E M E T R Y C H A N N E L S (CONT.) PAGE 16 OF 16

COMMUTATED CHANNEL 13 (CONT.)

POINT	FUNCTION	
52	T/S NO. 12	INSTR. NO. 2
53	CASSETTE T/S NO. 2	REC. [illegible] NO. 2
54	+28 VOLT T/M CALIBRATE	INSTR. NO. 2
55	T/S NO. 13	INSTR. NO. 2
56	-28 VOLT T/M CALIBRATE	INSTR. NO. 2
57	CAL 0	
58	SYNC	
59	SYNC	
60	SYNC	

REDUNDANT DATA THROUGH INTERFACE TO VEHICLE

CHANNEL 11

POINT	FUNCTION			
02	V/H RAMP LEVEL TENS	RTC 6	AP 231	
03	V/H RAMP LEVEL UNITS	RTC 6	AP 232	
05	V/H RAMP AMPLITUDE TENS	RTC 8	AP 233	
06	V/H RAMP AMPLITUDE UNITS	RTC 8	AP 234	
08	PROGRAM SELECT TENS	RTC 9	AP 235	
09	PROGRAM SELECT UNITS	RTC 9	AP 236	
12	V/H DELAY START TENS	RTC 10	AP 237	
13	V/H DELAY START UNITS	RTC 10	AP 238	
15	INSTR. SEL STEREO/MONO 1/MONO 2 TENS	RTC 11	AP 239	
16	INSTR. SEL STEREO/MONO 1/MONO 2 UNITS	RTC 11	AP 240	
18	INTERMIX SELECT TENS	RTC 12	AP 241	
19	INTERMIX SELECT UNITS	RTC12	AP 242	
20	INTERMIX MODE SELECTION	RTC 15	AP 243	
25	FILM FOOTAGE POT	INSTR. NO. 1	AP 244	
71	FILM FOOTAGE POT	INSTR. NO. 2	AP 245	
72	SEPARATION MONITOR		AP 51	

[redacted]