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may 1944 GTS
J. H. M. W. J.

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CLASSIFIED BY <u>BYEMAN</u> EXEMPT FROM GENERAL DECLASSIFICATION SCHEDULE OF E.O. 13526 EXEMPTION CATEGORY <u>1B (2)</u> AUTOMATICALLY DECLASSIFIED OR UNCLASSIFIED TO DETERMINE	NATIONAL SECURITY INFORMATION UNAUTHORIZED DISCLOSURE SUBJECT TO CRIMINAL SANCTIONS	HANDLED BY BYEMAN CONTROL SYSTEM ONLY
	TRAINING NOTICE SENSITIVE INTELLIGENCE SOURCES AND METHODS INVOLVED	

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BIF003W/2-140197-78

FOREWORD

THIS DOCUMENT CONTAINS REPRINTS OF THE VISUAL MATERIAL PRESENTED AT LMSC ON 30 MARCH 1978. THE MATERIAL CONTAINED HEREIN WAS PREPARED IN RESPONSE TO AN ACTION ITEM GENERATED DURING THE FARRAH 1 SYSTEM DESIGN REVIEW. DURING THAT REVIEW, IT BECAME EVIDENT THAT A REVIEW OF CURRENT COMMAND SUBSYSTEM DESIGN WAS NECESSARY BEFORE A MEANINGFUL PRESENTATION OF THE APPLICATION OF A STORED COMMAND SEQUENCER TO THAT SUBSYSTEM COULD BE MADE. THIS MATERIAL DESCRIBES THE CURRENT COMMAND SUBSYSTEM DESIGN, DESCRIBES A STORED COMMAND SEQUENCER CONCEPT, AND APPLIES THAT CONCEPT TO THE COMMAND SUBSYSTEM.

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- CAST IRON SYSTEM
 - REAL TIME COMMANDS
 - COMMAND MESSAGE STRUCTURE
 - DECODER COMMAND FUNCTION EXECUTION
 - SYSTEM FUNCTIONAL BLOCK DIAGRAM
 - TYPICAL BASIC COMMAND EXPANSION CIRCUIT
 - TYPICAL SUBCOMMAND FUNCTION ASSIGNMENTS
 - TYPICAL SUBCOMMAND FUNCTION ASSIGNMENTS (CONT)
 - STORED PROGRAM (DUAL TIMER) COMMANDS
 - DUAL TIMER OUTPUT EVENTS
 - DUAL TIMER BLOCK DIAGRAM
 - TYPICAL OPM FUNCTION ASSIGNMENTS
 - CAST IRON COMPOSITE COMMAND SYSTEM
 - TYPICAL COMMAND FUNCTION ASSIGNMENTS SUMMARY
 - CAST IRON COMMAND SYSTEM BLOCK DIAGRAM
- TYPICAL TASKING SCENARIOS (BOTH CAST IRON AND NEW SYSTEM)
- NEW SYSTEM CONCEPTS
 - STORED COMMAND SEQUENCER (SCS)
 - SCS BLOCK DIAGRAM
 - TENTATIVE VSPC-1 FUNCTION ASSIGNMENTS
 - TENTATIVE VSPC-2 FUNCTION ASSIGNMENTS
 - TENTATIVE VSPC-3 FUNCTION ASSIGNMENTS
 - NEW COMPOSITE COMMAND SYSTEM
 - TENTATIVE COMMAND FUNCTION ASSIGNMENTS SUMMARY
 - NEW COMMAND SYSTEM BLOCK DIAGRAM

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REAL TIME COMMAND MESSAGE STRUCTURE• **TERNARY (5, 0, 1) DIGITAL FORMAT**

PREAMBLE (5 BITS)	BINARY (0,1) DATA BITS																			EXECUTE (5 BIT)		
	DECODER ADDRESS					COMMAND FUNCTION															PARITY	
						COMMAND DATA																
5 ——— 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	5	
COMMAND FUNCTION BIT NUMBERS						MSB 14 13 12			11 10		9 8 7			6 5 4			LSB 3 2 1					
COMMAND FUNCTION OCTAL DESIGNATION						DIGIT 1 (0-7)		DIGIT 2 (0-3)		DIGIT 3 (0-7)			DIGIT 4 (0-7)			DIGIT 5 (0-7)						

VALID BINARY DATA COMPRISE EXACTLY 20 BITS CONTAINING THE PROPER 5-BIT DECODER ADDRESS
AND AN ODD NUMBER OF 1 BITS

- UPLINK CARRIER MODULATED WITH FSK/AM COMMAND TONES
DIGITAL NRZ COMMANDS ARE CONVERTED TO KEYED FREQUENCIES (TONES) WHICH ARE AMPLITUDE MODULATED BY THE COMMAND BIT SYNC OF 1 KBPS. THE RESULTING AMPLITUDE MODULATED, FREQUENCY-SHIFT-KEYED SIGNAL PHASE MODULATES THE SGLS UPLINK RF CARRIER

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DECODER COMMAND FUNCTION EXECUTION

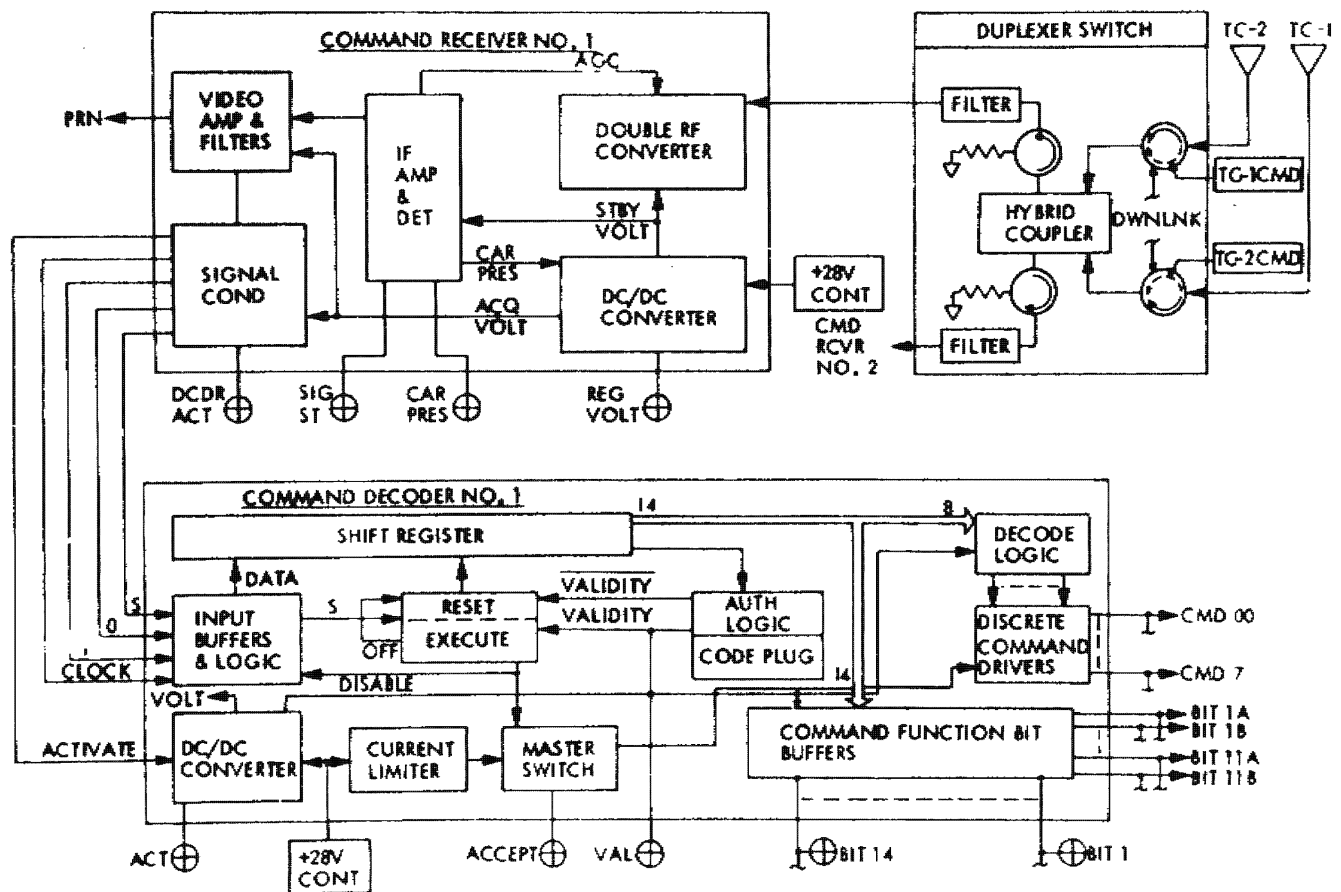
RECEIPT OF AN S BIT, WHEN THE DECODER SHIFT REGISTER CONTAINS VALID BINARY DATA, INITIATES COMMAND EXECUTION WHICH HAS A DURATION OF 270 ± 70 MS. DURING EXECUTION, THE DECODER OUTPUTS A DISCRETE COMMAND AT 28 VDC, AND A BINARY COMMAND OF 11 PARALLEL BITS AT 0 VDC OR 5 VDC.

OCTAL DESIGNATION	MAGNITUDE			COMMAND DATA											DISCRETE COMMAND
	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1XXXX	0	0	1	X	X	X	X	X	X	X	X	X	X	X	MAG CMD 1
2XXXX	0	1	0												2
3XXXX	0	1	1												3
4XXXX	1	0	0												4
5XXXX	1	0	1												5
6XXXX	1	1	0												6
7XXXX	1	1	1	X	X	X	X	X	X	X	X	X	X	X	MAG CMD 7
000XX	0	0	0	0	0	0	0	0							BASIC CMD 00
001XX	0	0	0	0	0	0	0	1							01
002XX	0	0	0	0	0	0	1	0							02
003XX	0	0	0	0	0	0	1	1							03
004XX	0	0	0	0	0	1	0	0							04
005XX	0	0	0	0	0	1	0	1							05
006XX	0	0	0	0	0	1	1	0							06
007XX	0	0	0	0	0	1	1	1							07
010XX	0	0	0	0	1	0	0	0							10
020XX	0	0	0	1	0	0	0	0							20
037XX	0	0	0	1	1	1	1	1							37

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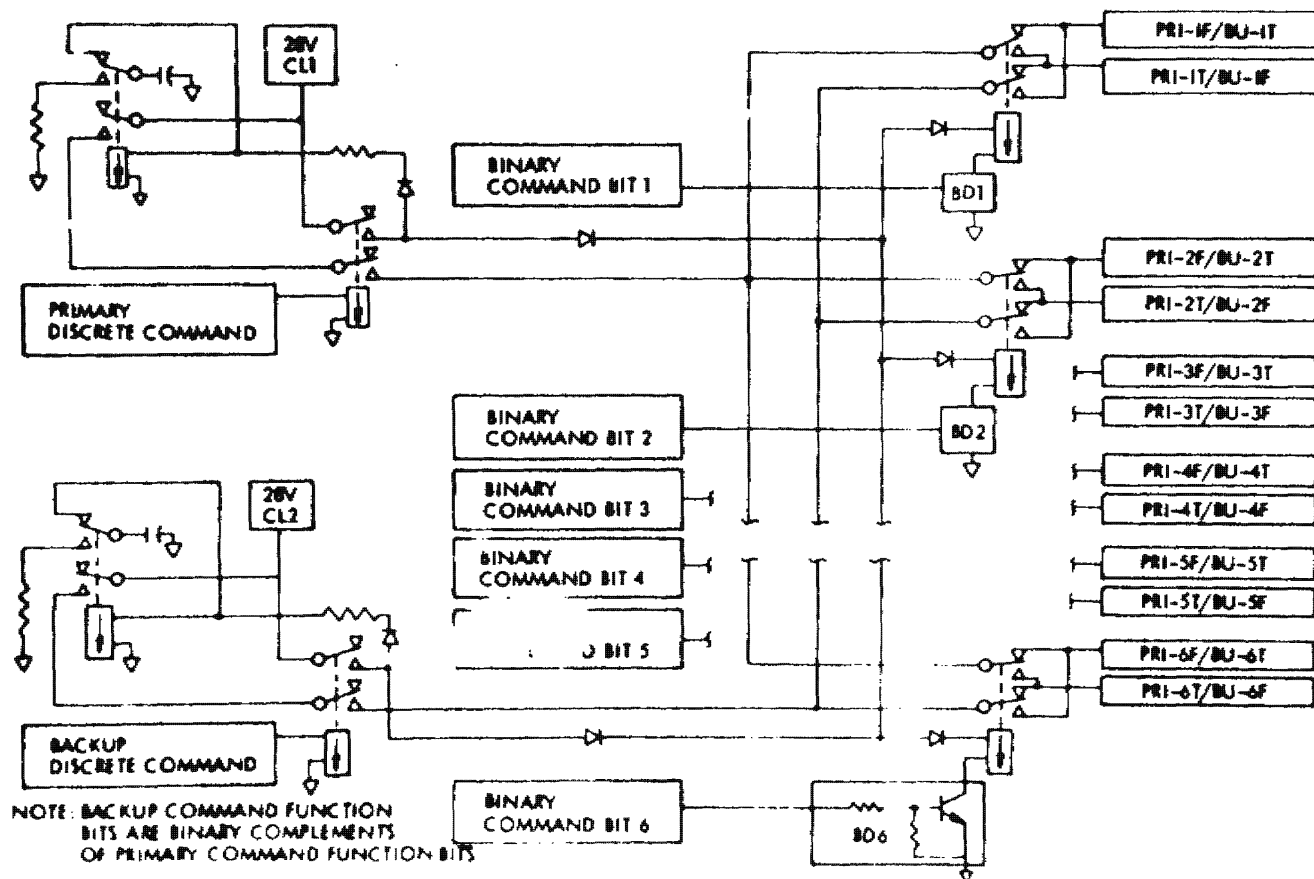
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REAL TIME COMMAND SYSTEM FUNCTIONAL BLOCK DIAGRAM~~SECRET/E~~

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TYPICAL BASIC COMMAND EXPANSION CIRCUIT

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TYPICAL SUBCOMMAND FUNCTIONAL ASSIGNMENTS

DOWNLINK ON			DOWNLINK OFF			DOWNLINK CONFIGURATION			TAPE RECORDER READOUT			TAPE RECORDER READ-IN		
	P-001	B-036		P-002	B-035		P-006	B-031		P-003	B-034		P-010	B-027
SEL PIN 1	0	4	TR NO STOP	0	4	SEL H/S 1	0	4		0	4	TR 1	P-011	B-028
SEL PIN 2	4	0		4	0	SEL H/S 2	4	0	S/A MOTORS OFF	4	0	AT 1-1	0	4
SEL TC-1	0	2	CARR 6 1/2 MB OFF	0	2	STATUS - CARR 1	0	2		0	2	AT 4-1	4	0
SEL TC-2	2	0		2	0	STATUS - CARR 6	2	0	EN PYRO EVENTS	2	0		X	X
START SE-1	0	1	CARR 5 OFF	0	1	STATUS B/B NORM	0	1	0 11 MONITORS	0	1		0	0
	1	0		1	0	STATUS B/B TRANSFER	1	0	0 1 MONITORS	1	0	VIA PE-4A	1	1
	0	4	CARR 4 OFF	0	4	W/B B/B TRANSFER	0	4	TR 3 STOP	0	4		0	0
W/B 2 ON	4	0		4	0	W/B B/B TRANSFER	4	0	TR 3 RO	4	0	VIA PE-3A	4	4
	0	2	CARR 1 (TMI) OFF	0	2	W/B 2 - CARR 5	0	2	TR 2 STOP	0	2		0	0
W/B 1 ON	2	0		2	0	W/B 2 - CARR 6	2	0	TR 2 RO	2	0	VIA PE-2	2	2
	0	1	PL B/A OFF	0	1	W/B 1 - CARR 4	0	1	TR 1 STOP	0	1		0	0
STATUS ON	1	0		1	0	W/B 1 - CARR 6	1	0	TR 1 RO	1	0	VIA PE-1	1	1

BYPASS MODE SEL			TIMER CONTROL			ATTITUDE CONTROL			POWER SYSTEM CONTROL					
	P-013	B-024		P-005	B-030		P-007	B-030		P-004	B-033		P-017	B-020
DIS BY TR B	0	4	SEL TMR A	0	4	SPIN UP	0	4	EN LVCO 1	0	4	EN LVCO 2	0	4
EN BY TR B	4	0	SEL TMR B	4	0	SPIN DOWN	4	0	DIS LVCO 1	4	0	DIS LVCO 2	4	0
EN DOWNLINK - TC-1	0	2	EN CE LOAD	0	2	SACS OFF	0	2	SEL B/C E 1	0	2	SEL B2 C E 1	0	2
EN DOWNLINK - TC-2	2	0	EN PE LOAD	2	0	SACS ON	2	0	SEL B/C E 2	2	0	SEL B2 C E 2	2	0
DIS STATUS	0	1		0	1	DIS ACS 2	0	1	EN B/LCR 2	0	1	EN B2 LCR 2	0	1
EN STATUS	1	0	START PE-4	1	0	EN ACS 2	1	0	DIS B/LCR 2	1	0	DIS B2 LCR 2	1	0
DIS W/B 2	0	4		0	4	DIS ACS 1	0	4	DIS B/LCR 1	0	4	DIS B2 LCR 1	0	4
EN W/B 2	4	0	START PE-3	4	0	EN ACS 1	4	0	EN B/LCR 1	4	0	EN B2 LCR 1	4	0
DIS W/B 1	0	2		0	2	EN ACS 1ST SEL	0	2	SEL B/M C	0	2	SEL B2 M C	0	2
EN W/B 1	2	0	START PE-2	2	0	SEL IN-PLANE	2	0	SEL B/T C	2	0	SEL B2 T C	2	0
DIS BY MODE	0	1		0	1	SEL ACS 1ST	0	1	SEL B/P C	0	1	SEL B2 P C	0	1
EN BY MODE	1	0	START PE-1	1	0	SEL 1/15 POL	1	0	SEL B/B C	1	0	SEL B2 B C	1	0

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TYPICAL SUBCOMMAND FUNCTIONAL ASSIGNMENTS (CONT)

ATTACHMENT DEPLOYMENT (1)				PAYLOAD CONFIGURATION			
P-000	B-037	P-016	B-021	P-016	B-021	P-015	B-022
ACT RST B EN, EN EV 58 (DIS 12)	0 4	ACT EV 38 EN, EN EV 28 (DIS 6)	0 4	SEL R YIG LO-CW	0 4	SEL TK 1 - BBU 2	0 4
EX EV 38 (ROTATE A2)	4 0	EX EV 28 (UNPLUG A1, ROTATE B) 4	0 4	SEL R YIG LO-TI	4 0	SEL TK 2 - BBU 2	4 0
ACT RST A EN, EN EV SA/DIS (1)	0 2	ACT EV 3A EN, EN EV 2A (DIS 3)	0 2	DIS R YIG LO	0 2	SEL TK 1 - BBU 1	0 2
EX EV 3A (ROTATE A2)	2 0	EX EV 2A (UNPLUG A1, ROTATE B) 2	0 0	SEL R YIG LO	2 0	SEL TK 2 - BBU 1	2 3
ACT EV 48 EN, EN EV 38 (DIS 8)	0 1	ACT EV 38 EN, EN EV 48 (DIS 4)	0 1	SEL P 80 MHz LO	0 1	EN 41 PM - BBU 2	0 1
EX EV 38 (DPLY C101/C202)	1 0	EX EV 48 (DEPLOY S/A)	1 0	SEL R 80 MHz LO	1 0	DIS 41 PM - BBU 2	1 0
ACT EV 4A EN, EN EV 3A (DIS 9)	0 4	ACT EV 3A EN, EN EV 4A (DIS 3)	0 4	SEL P 1ST LO	0 4	EN 41 PM - BBU 1	0 4
EX EV 3A (DPLY C101/C202)	4 0	EX EV 4A (DEPLOY S/A)	4 0	SEL R 1ST LO	4 0	DIS 41 PM - BBU 1	4 0
ACT EV 28 EN, EN EV 18 (DIS 8)	0 2	EN RST B/DIS 2	0 2	MEM BK A - PE STRG	0 0	SEL B A OPT 1	0 0
EX EV 18 (DPLY A1, E1E2)	2 0	EX RSTB	2 0	MEM BK B - PE STRG	2 0	SEL B A OPT 2	2 0
ACT EV 2A EN, EN EV 1A (DIS 7)	0 1	EN RST A/DIS 1	0 1	SEL TRG 1	0 0	SEL SAS 1	0 1
EX EV 1A (DPLY A1, E1E2)	1 0	EX RST	1 0	SEL TRG 2	1 0	SEL SAS 2	1 0

DEPLOY LOGIC RESET				AUXILIARY FUNCTIONS			
P-000	B-037	P-016	B-021	P-000	B-037	P-016	B-021
ACT RSTB DIS, DIS EV 58 EN (1)	0 4	ACT EV 38 DIS, DIS EV 28 EN (6)	0 4	DIS 41 PM - BBU 2	0 4	DIS 41 PM - BBU 2	0 4
EX EV 3A DIS, DIS EV 3A EN (1)	4 0	ACT EV 3A DIS, DIS EV 2A EN (3)	0 2	EN 41 PM - BBU 2	4 0	DIS 41 PM - BBU 1	4 0
ACT RST A DIS, DIS EV 3A EN (1)	0 2	ACT EV 3A DIS, DIS EV 4A EN (3)	0 4	EN 41 PM - BBU 1	0 2	EN 58 BUS BY	0 0
EX EV 3A DIS, DIS EV 38 EN (0)	2 0	DIS RST B/DIS 2	0 2	EN 58 BUS BY	2 0	EN 58 BUS BY	2 0
ACT EV 48 DIS, DIS EV 38 EN (0)	0 1	ACT EV 38 DIS, DIS EV 48 EN (4)	0 1	DIS 58 BUS BY	0 1	EN 58 BUS BY	0 0
EX EV 38 DIS, DIS EV 3A EN (0)	1 0	ACT EV 3A DIS, DIS EV 4A EN (3)	0 4	EN 58 BUS BY	1 0	EN 58 BUS BY	0 0
ACT EV 4A DIS, DIS EV 3A EN (0)	0 4	DIS RST A/DIS 1	0 1	EN 58 BUS BY	0 4	EN 58 BUS BY	0 0
EX EV 3A DIS, DIS EV 18 EN (8)	4 0	DIS RST A/DIS 1	0 1	EN 58 BUS BY	4 0	EN 58 BUS BY	0 0
ACT EV 28 DIS, DIS EV 18 EN (8)	0 2	DIS RST A/DIS 1	0 1	EN 58 BUS BY	0 2	EN 58 BUS BY	0 0
EX EV 18 DIS, DIS EV 1A EN (7)	2 0	DIS RST A/DIS 1	0 1	EN 58 BUS BY	2 0	EN 58 BUS BY	0 0
ACT EV 2A DIS, DIS EV 1A EN (7)	0 1	DIS RST A/DIS 1	0 1	EN 58 BUS BY	0 1	EN 58 BUS BY	0 0
EX EV 1A DIS, DIS EV 1A EN (7)	1 0	DIS RST A/DIS 1	0 1	EN 58 BUS BY	1 0	EN 58 BUS BY	0 0

NOTES

1. ATTACH DEPLOY LOGIC RESET MUST BE PRECEDED BY PREP A AND B. PREP A MUST BE SET TO SPEAKING POSITION TO INITIATE DEPLOY LOGIC RESET.

2. DEPLOY LOGIC RESET SEQUENCE MUST BE PRECEDED BY PREP A AND B. PREP A MUST BE SET TO SPEAKING POSITION TO INITIATE DEPLOY LOGIC RESET.

3. DIS 41 PM - BBU 2 IS THE DEFAULT POSITION FOR DIS 41 PM - BBU 2.

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R.F. 003K72-1, July 55

DUAL TIMER OUTPUT EVENTS

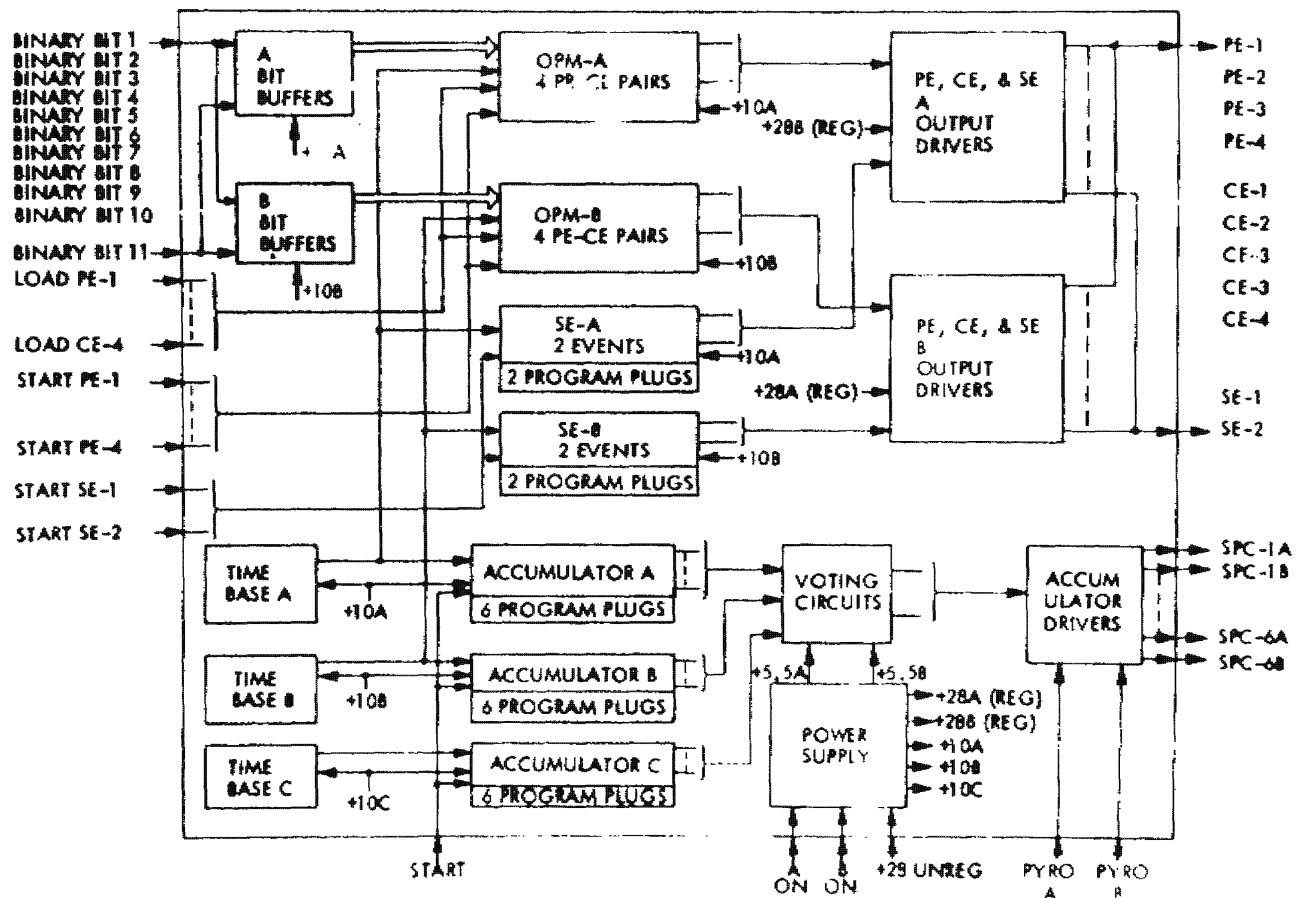
- **SIX DUAL ACCUMULATOR EVENTS (SPC's)**
 - PREPROGRAMMED (HARDWIRED PLUGS) FOR SINGLE OCCURRENCE OF EACH EVENT AT 0 TO 32,752 SECONDS (16 SECONDS GRANULARITY) AFTER START BY SEPARATION SWITCHES
 - FIRST EVENT COUNTDOWN AT 64 TIMES NORMAL SPEED FOR 1/4 SECOND GRANULARITY
- **FOUR PRIMARY EVENTS (PE's)**
 - EACH PROGRAMMABLE BY COMMAND FOR A SINGLE OCCURRENCE AT 16 TO 32,752 SECONDS (16 SECONDS GRANULARITY) AFTER START COMMAND
 - CAN BE STARTED INDIVIDUALLY
- **FOUR COMPANION EVENTS (CE's)**
 - EACH PROGRAMMABLE BY COMMAND FOR OCCURRENCE AT 8 TO 2048 SECONDS (8 SECONDS GRANULARITY) AFTER THE ASSOCIATED PE
 - PROGRAMMED TIME AUTOMATICALLY RESTORED AFTER OUTPUT
 - CE-4 MAY BE RECIRCULATED
- **TWO SINGLE EVENTS (SE's)**
 - PREPROGRAMMED (HARDWIRED PLUGS) FOR OCCURRENCE AT 0 TO 2032 SECONDS (8 SECONDS GRANULARITY) AFTER START COMMANDS
 - 1. SE-1 TYPICALLY PROGRAMMED FOR 672 SECONDS
 - 2. SE-2 TYPICALLY PROGRAMMED FOR 32 SECONDS

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DUAL TIMER BLOCK DIAGRAM

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TYPICAL DUAL TIMER OPM EVENT FUNCTION ASSIGNMENTS

- **PRIMARY EVENTS (PE'S)**
 - PE-1, 2, 3A, 4A
 1. SELECT PAYLOAD MEMORY AND TURN YIG HEATERS ON
 2. TURN HORIZON SENSOR AND SOLAR ASPECT SYSTEM ON
 3. SELECT TAPE RECORDER (1, 2 OR 3) FOR READ-IN (1:1 OR 4:1)
 4. START ASSOCIATED CE COUNTDOWN AND SE-2 COUNTDOWN
 - PE-3B: ACS OFF AND RESET; STOP CE-4 RECYCLE
 - PE-4B: ACS ON
- **COMPANION EVENTS (CE'S)**
 - CE-1, 2, 3A, 4A
 1. STOP TAPE RECORDERS; PAYLOAD OFF; H/S AND SAS OFF
 2. ALL DOWNLINK COMPONENTS OFF; RESET TC ANTENNAS
 - CE-3B: ACS OFF AND RESET; STOP CE-4 RECYCLE
 - CE-4B: ACS MODE TOGGLE
 1. CROSS PLANE - SWITCH POLARITY (+ OR -)
 2. IN-PLANE - SWITCH LEVEL (1/2 OR FULL)
- **SINGLE EVENTS (SE'S)**
 - SE-1: ALL DOWNLINK COMPONENTS OFF; RESET TC ANTENNAS
 - SE-2: PAYLOAD ON; SELECTED TAPE RECORDER ON; SELECTED DOWNLINK ON

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TYPICAL COMMAND SYSTEM FUNCTION ASSIGNMENT SUMMARY

REAL TIME COMMAND FUNCTIONS● **MAGNITUDE COMMANDS**

- 1 - LOAD PE/CE-1 EVENT TIMES
- 2 - LOAD PE/CE-2 EVENT TIMES
- 3 - LOAD PE/CE-3 EVENT TIMES
- 4 - LOAD PE/CE-4 EVENT TIMES
- 5 - LOAD PAYLOAD MEMORY
- 6 - LOAD PAYLOAD MEMORY
- 7 - LOAD PAYLOAD MEMORY

● **BASIC COMMANDS**

- 00/37 - DEPLOY ANTENNAS AND MISC
- 01/36 - DOWNLINK ON
- 02/35 - DOWNLINK OFF
- 03/34 - READ OUT TAPE RECORDERS
- 04/33 - CONFIGURE P/S NO. 1
- 05/32 - CONTROL DUAL TIMER
- 06/31 - CONFIGURE DOWNLINK
- 07/30 - CONTROL ACS AND SRCS
- 10/27 - PROGRAM TR 1 READ-IN
- 11/26 - PROGRAM TR 2 READ-IN
- 12/25 - PROGRAM TR 3 READ-IN
- 13/24 - TR BYPASS MODE SELECTION
- 14 - DISABLE P/S TRICKLE CHARGE
- 15/22 - CONFIGURE PAYLOAD
- 16/21 - DEPLOY ANTENNAS & CONFIGURE PL
- 17/20 - CONFIGURE P/S NO. 2
- 23 - NO FUNCTION

STORED PROGRAM COMMAND FUNCTIONS● **DUAL TIMER**- **ACCUMULATOR EVENTS**

- 1A AND 1B - FIRE SPIN ROCKETS
- 2A AND 2B - FIRE -Y ORBIT ADJUST MOTORS
- 3A AND 3B - FIRE +Y ORBIT ADJUST MOTORS
- 4A AND 4B - START +Y SOLAR ARRAY MOTORS
- 5A AND 5B - STOP +Y SOLAR ARRAY MOTORS
- 6A AND 6B - DEPLOY TC ANTENNAS

- **PRIMARY EVENTS**

- 1 - INITIATE TR RI OR BYPASS
- 2 - INITIATE TR RI OR BYPASS
- 3 - INITIATE TR RI OR BYPASS; ACS OFF
- 4 - INITIATE TR RI OR BYPASS; ACS ON

- **COMPANION EVENTS**

- 1 - TERMINATE TR RI OR BYPASS
- 2 - TERMINATE TR RI OR BYPASS
- 3 - TERMINATE TR RI OR BYPASS; ACS OFF
- 4 - TERMINATE TR RI OR BYPASS; ACS TOGGLE

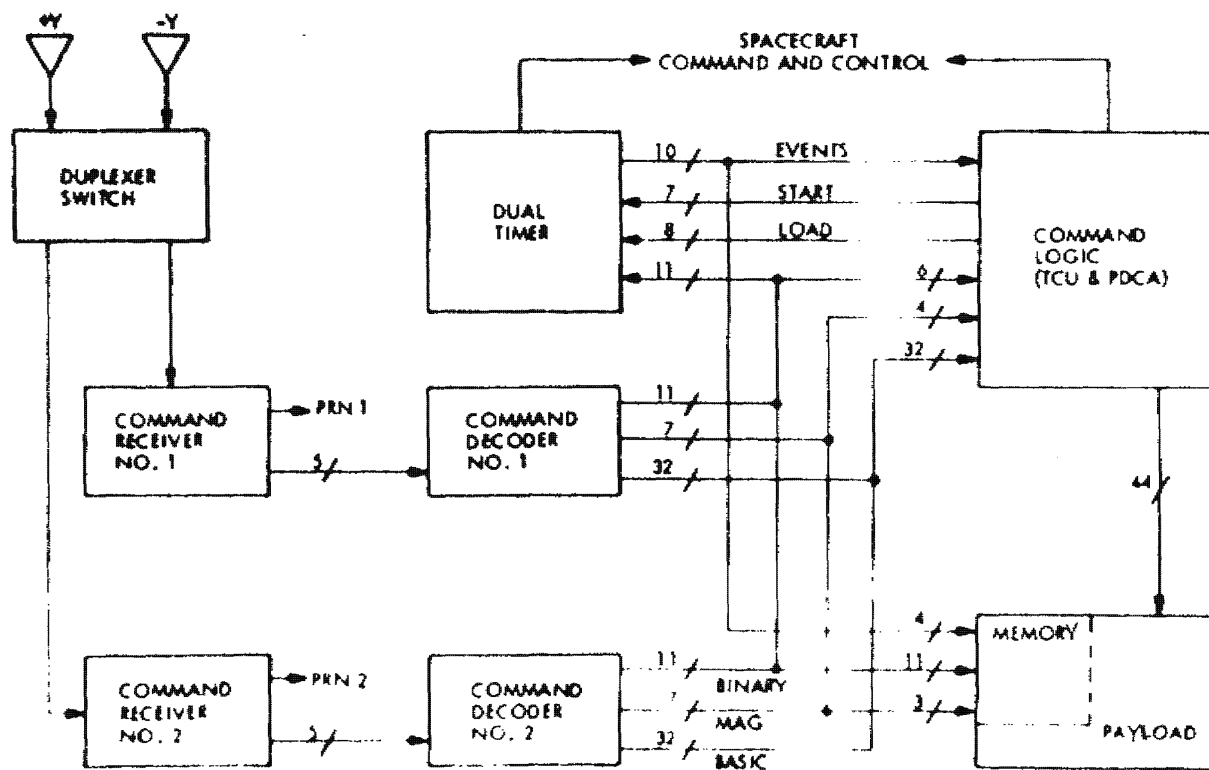
- **SINGLE EVENTS**

- 1 - DOWNLINK OFF
- 2 - PAYLOAD, TR, DOWNLINK ON

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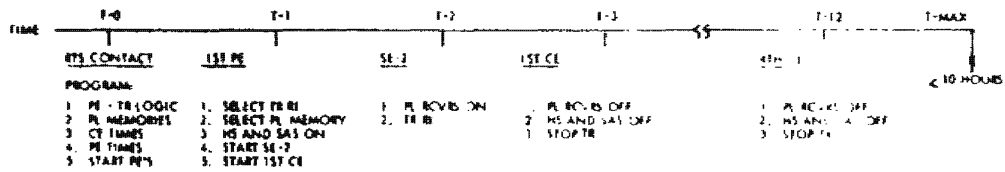
CAST IRON COMMAND SYSTEM BLOCK DIAGRAM~~SECRET~~/E

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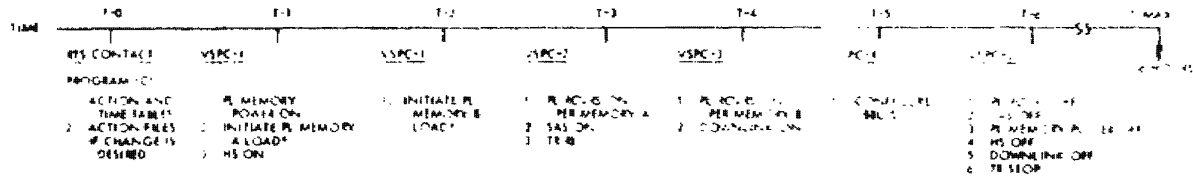
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TYPICAL TASKING SCENARIOS

• CAST IRON SYSTEMS



• NEW SYSTEM



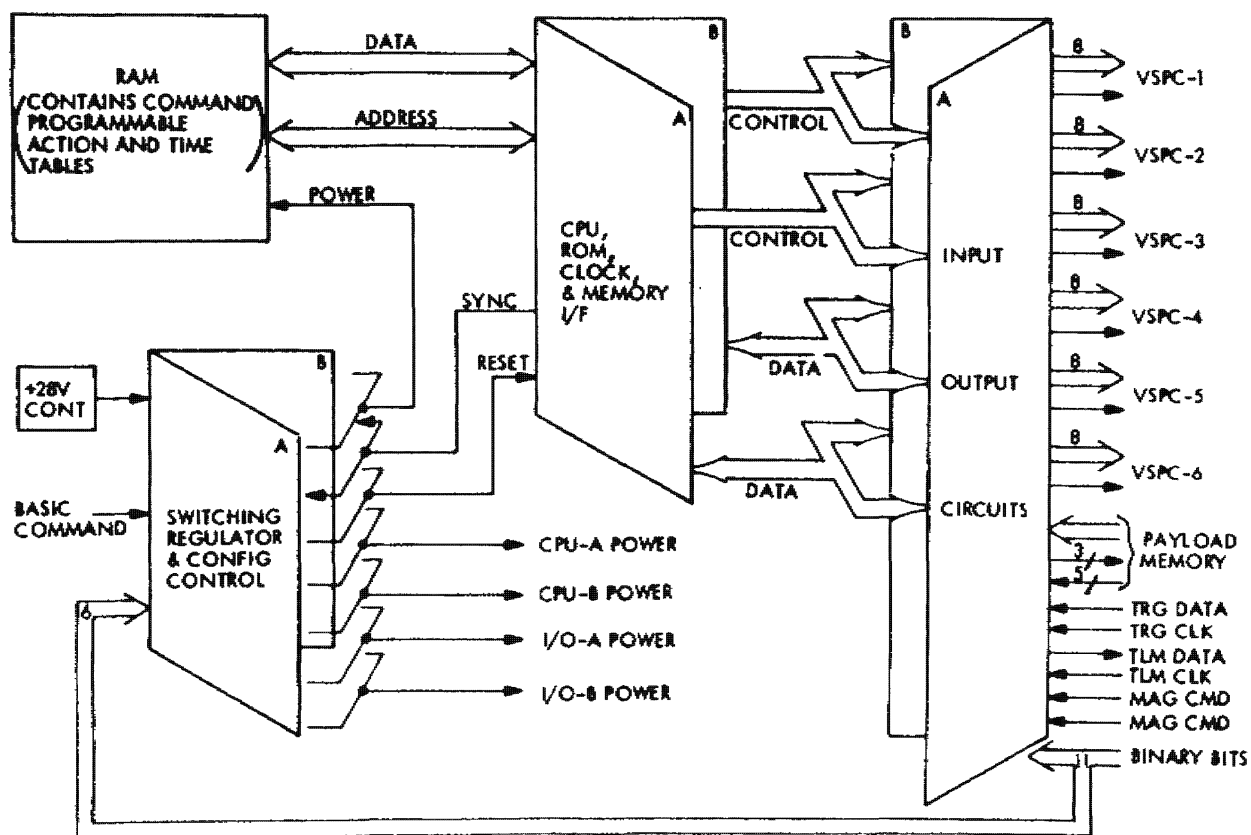
PL MEMORY LOAD CONSISTS OF 192K 8 BIT BYTES

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STORED COMMAND SEQUENCER BLOCK DIAGRAM

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1-

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BIT		SPACECRAFT FUNCTIONS
NO.	STATE	
8	0	NO FUNCTION
	1	PAYLOAD MEMORY POWER ON; HS POWER ON
7	0	SELECT PAYLOAD MEMORY A FOR LOADING
	1	SELECT PAYLOAD MEMORY B FOR LOADING
6	0	} BIT LOGIC STATES SELECT AND INITIATE A PAYLOAD MEMORY LOAD OF 1024 (8-BIT) BYTES
	1	
5	0	
	1	
4	0	
	1	
3	0	
	1	
2	0	
	1	
1	0	
	1	

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BIT NO.	STATE	SPACECRAFT FUNCTIONS							
8	0	X	PAYLOAD RECEIVERS AND MEMORY OFF; HS AND SAS OFF		PAYLOAD RECEIVERS ON PER MEMORY A; SAS ON	X	PAYLOAD RECEIVERS ON PER MEMORY B; SAS ON		PAYLOAD RECEIVERS OFF; SAS OFF
	1			X				X	
7	0	X		X					
	1					X		X	
6	0	X	TAPE RECORDER NO. 3 READ-IN STOP		TAPE RECORDER NO. 3 READ-IN 1:1	X	TAPE RECORDER NO. 3 READ-IN 4:1 NORMAL		TAPE RECORDER NO. 3 READ-IN 4:1 MINI
	1			X				X	
5	0	X		X					
	1					X			
4	0	X	TAPE RECORDER NO. 2 READ-IN STOP		TAPE RECORDER NO. 2 READ-IN 1:1	X	TAPE RECORDER NO. 2 READ-IN 4:1 NORMAL		TAPE RECORDER NO. 2 READ-IN 4:1 MINI
	1			X				X	
3	0	X		X					
	1					X		X	
2	0	X	TAPE RECORDER NO. 2 READ-IN STOP		TAPE RECORDER NO. 1 READ-IN 1:1	X	TAPE RECORDER NO. 1 READ-IN 4:1 NORMAL		TAPE RECORDER NO. 1 READ-IN 4:1 MINI
	1			X				X	
1	0	X		X					
	1					X		X	

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TENTATIVE VSPC-3 FUNCTION ASSIGNMENTS

BIT NO.		STATE	SPACECRAFT FUNCTIONS								
8	0	X	PAYLOAD RECEIVERS AND MEMORY OFF; HS AND SAS OFF		PAYLOAD RECEIVERS ON PER MEMORY A; SAS ON	X	PAYLOAD RECEIVERS ON PER MEMORY B; SAS ON		PAYLOAD RECEIVERS OFF; SAS OFF		
	1			X				X			
7	0	X		X							
	1					X		X		X	X
6	0	SPARE									
	1	SPARE									
5	0	PAYLOAD DATA LINKS IN FM MODE									
	1	PAYLOAD DATA LINKS IN PM MODE									
4	0	SELECT -Y DOWNLINK ANTENNA									
	1	SELECT +Y DOWNLINK ANTENNA									
3	0	PAYLOAD DATA LINK 2 OFF									
	1	PAYLOAD DATA LINK 2 ON									
2	0	PAYLOAD DATA LINK 1 OFF									
	1	PAYLOAD DATA LINK 1 ON									
1	0	STATUS TELEMETRY OFF									
	1	STATUS TELEMETRY ON									

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TENTATIVE NEW COMMAND FUNCTION ASSIGNMENTS SUMMARY**REAL TIME COMMAND FUNCTIONS****• MAGNITUDE COMMANDS**

- 1 - LOAD LOCKOUT A TIME DURATION
- 2 - LOAD LOCKOUT B TIME DURATION
- 3 - LOAD PE-3 EVENT TIME
- 4 - LOAD PE/CE-4 EVENT TIMES
- 5 - PROGRAM SCS
- 6 - PROGRAM SCS
- 7 - PROGRAM MINICOMPUTER

• BASIC COMMANDS

- 00/37 - DEPLOY ANTENNAS; MISC
- 01/36 - DOWNLINK ON
- 02/35 - DOWNLINK OFF
- 03/34 - READOUT TAPE RECORDERS
- 04/33 - CONFIGURE P/S NO. 1
- 05/32 - CONTROL DUAL TIMER
- 06/31 - CONFIGURE DOWNLINK
- 07/30 - CONTROL ACS AND SRCS
- 10/27 - CONFIGURE DIU'S AND KG'S
- 11 - SELECT BBU 1 MODES
- 12 - SELECT BBU 2 MODES
- 13/24 - TBD
- 14/23 - TBD
- 15/22 - CONFIGURE PAYLOAD
- 16/21 - DEPLOY ANTENNAS; MISC
- 17/20 - CONFIGURE P/S NO. 2
- 25 - CONFIGURE SCS
- 26 - TBD

STORED PROGRAM COMMAND FUNCTIONS**• DUAL TIMER****- ACCUMULATOR EVENTS**

- 1A AND 1B - FIRE SPIN ROCKETS
- 2A AND 2B - FIRE -Y ORBIT ADJUST MOTORS
- 3A AND 3B - FIRE +Y ORBIT ADJUST MOTORS
- 4A AND 4B - START +Y SOLAR ARRAY MOTORS
- 5A AND 5B - STOP +Y SOLAR ARRAY MOTORS
- 6A AND 6B - DEPLOY TC ANTENNAS

- LOCKOUT CONTROLS

- 1 - LOCKOUT RTC SYSTEM 1
- 2 - LOCKOUT RTC SYSTEM 2

- PRIMARY EVENTS

- 3A/B - ACS OFF
- 4A/B - ACS ON

- COMPANION EVENTS

- 4 A/B - TOGGLE ACS MODE

- SINGLE EVENTS

- 1 A/B - DOWNLINK OFF
- 2 A/B - TBD

• STORED COMMAND SEQUENCER**- VARIABLE STORED PROGRAM EVENTS (VSPC)**

- 6 (8 BIT) PORTS - TBD

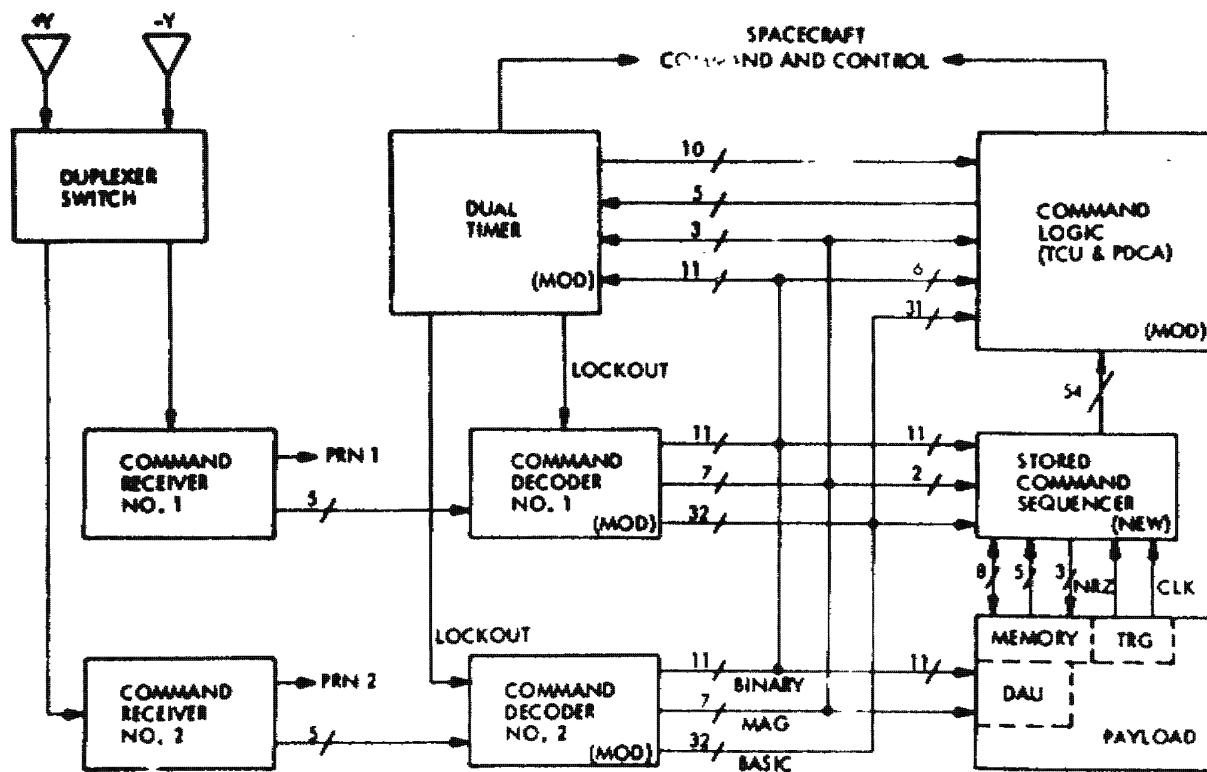
- PAYLOAD MEMORY LOAD

- 1024 BYTES (8 BITS) PER LOAD

~~SECRET/E~~

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B1P003W/2-140197-78

NEW COMMAND SYSTEM BLOCK DIAGRAM~~SECRET/E~~

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