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ASTP

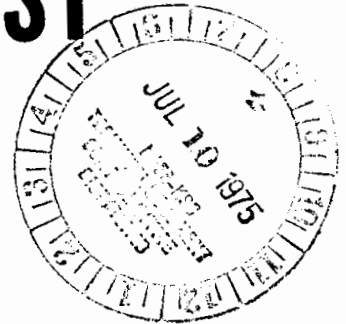
FINAL

PCN-1

NOTE: This is a PAGE CHANGE NOTICE to be incorporated into the previous edition. DISCARD ONLY the changed out pages.

G&C CHECKLIST

**PREPARED BY
PROCEDURES BRANCH
CREW TRAINING & PROCEDURES DIVISION**



National Aeronautics and Space Administration
LYNDON B. JOHNSON SPACE CENTER
Houston, Texas

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ASTP
CSM G&C CHECKLIST
JUNE 23, 1975

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This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes should be submitted to the ASTP Flight Data Manager, T.W. Holloway, CG521, Bldg 4, Rm 225A, telephone 483-4471.

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by the following:

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CHANGE CONTROL RECORD

APOLLO/SOYUZ TEST PROJECT G&C CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
001	PCN-1	1/15/75	
002	FINAL	4/16/75	
003	FINAL	4/16/75	
004	FINAL	4/16/75	
005	FINAL	4/16/75	
006	FINAL	4/16/75	
007	FINAL	4/16/75	
008	FINAL	4/16/75	
009	FINAL	4/16/75	
010	FINAL	4/16/75	
011	FINAL	4/16/75	
012	FINAL	4/16/75	
013	FINAL	4/16/75	
014	PCN-1	6/23/75	
015	PCN-1	6/23/75	
016	PCN-1	6/23/75	
017	PCN-1	6/23/75	

ASTP CSM G&C CHECKLIST

LIST OF EFFECTIVE PAGES

BASIC 9/16/74
PCN-1 1/15/75
FINAL 4/16/75
PCN-1 6/23/75

PAGE	DATE	PAGE	DATE
*i . . .	6/23/75	1-28 . . .	4/16/75
ii . . .	4/16/75	1-29 . . .	4/16/75
iii . . .	4/16/75	1-30 . . .	4/16/75
iv . . .	4/16/75	1-31 . . .	4/16/75
v . . .	4/16/75	1-32 . . .	4/16/75
vi . . .	4/16/75	1-33 . . .	4/16/75
1-1 . . .	4/16/75	1-34 . . .	4/16/75
1-2 . . .	4/16/75	1-35 . . .	4/16/75
1-3 . . .	4/16/75	*1-36 . . .	6/23/75
1-4 . . .	4/16/75	1-37 . . .	4/16/75
1-5 . . .	4/16/75		
1-6 . . .	4/16/75	2-1 . . .	4/16/75
1-7 . . .	4/16/75	2-2 . . .	4/16/75
1-8 . . .	4/16/75	2-3 . . .	4/16/75
1-9 . . .	4/16/75	2-4 . . .	4/16/75
1-10 . . .	4/16/75	2-5 . . .	4/16/75
1-11 . . .	4/16/75	2-6 . . .	4/16/75
1-12 . . .	4/16/75	2-7 . . .	4/16/75
1-13 . . .	4/16/75	2-8 . . .	4/16/75
1-14 . . .	4/16/75	2-9 . . .	4/16/75
1-15 . . .	4/16/75	2-10 . . .	4/16/75
1-16 . . .	4/16/75	2-11 . . .	4/16/75
*1-17 . . .	6/23/75	2-12 . . .	4/16/75
1-18 . . .	4/16/75	2-13 . . .	4/16/75
1-19 . . .	4/16/75	2-14 . . .	4/16/75
*1-20 . . .	6/23/75	2-15 . . .	4/16/75
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1-22 . . .	4/16/75	*2-17 . . .	6/23/75
1-23 . . .	4/16/75	2-18 . . .	4/16/75
1-24 . . .	4/16/75	2-19 . . .	4/16/75
1-25 . . .	4/16/75	2-20 . . .	4/16/75
1-26 . . .	4/16/75	3-1 . . .	4/16/75
1-27 . . .	4/16/75	3-2 . . .	4/16/75

* current change

LIST OF EFFECTIVE PAGES (CONT)

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3-4 . .	4/16/75	6-4 . .	4/16/75
3-5 . .	4/16/75	6-5 . .	4/16/75
3-6 . .	4/16/75	6-6 . .	4/16/75
3-7 . .	4/16/75	6-7 . .	4/16/75
3-8 . .	4/16/75	6-8 . .	4/16/75
3-9 . .	4/16/75	6-9 . .	4/16/75
3-10 . .	4/16/75	6-10 . .	4/16/75
3-11 . .	4/16/75	6-11 . .	4/16/75
3-12 . .	4/16/75	6-12 . .	4/16/75
3-13 . .	4/16/75	6-13 . .	4/16/75
3-14 . .	4/16/75	6-14 . .	4/16/75
3-15 . .	4/16/75	6-15 . .	4/16/75
3-16 . .	4/16/75	6-16 . .	4/16/75
3-17 . .	4/16/75		
4-1 . .	4/16/75		
4-2 . .	4/16/75		
4-3 . .	4/16/75		
4-4 . .	4/16/75		
4-5 . .	4/16/75		
4-6 . .	4/16/75		
4-7 . .	4/16/75		
4-8 . .	4/16/75		
4-9 . .	4/16/75		
4-10 . .	4/16/75		
4-11 . .	4/16/75		
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5-1 . .	4/16/75		
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5-3 . .	4/16/75		
5-4 . .	4/16/75		
5-5 . .	4/16/75		
5-6 . .	4/16/75		
5-7 . .	4/16/75		
5-8 . .	4/16/75		
5-9 . .	4/16/75		
5-10 . .	4/16/75		
5-11 . .	4/16/75		
5-12 . .	4/16/75		
6-1 . .	4/16/75		
6-2 . .	4/16/75		

DATE 6/23/75

2. *CHANGE DATA IN ERASABLE (SINGLE ADDRESS)
MEMORY

F 21 01 V21N1E
Load ADDRESS (R3), E
Load DATA in R1, E

B. DISPLAY/VERIFY DATA IN (SINGLE ADDRESS)
ERASABLE MEMORY

01 01 V1N1E
Load ADDRESS (R3), E
Read DATA in R1

C. *CHANGE DATA IN ERASABLE (CONSEC ADDRESS)
MEMORY

F 21 01 V21N1E, (ADDRESS) E
Load ADDRESS (R3), E
Load DATA in R1, E
N15E (for next word)
ENTR (for each succeeding word)

D. DISPLAY/VERIFY DATA IN (CONSEC ADDRESS)
ERASABLE MEMORY

01 01 V1N1E,
Load ADDRESS (R3), E
Read DATA in R1
N15E (For next word)
ENTR (For each succeeding word)

*NOTE: If data is loaded over a flashing display,
V21 N01 will be overwritten following
XXXXXE. Re-key V21N1E before each load.

DATE 4/16/75

FLAG WORD DISPLAY

1
2 01 01 VIN1E, (FLGWD Address) E
3 R1 FLGWD, R3 ADDRESS
KEY REL

FLAG WORD SET/RESET

1 V25N7E
F 21 07 (Load FLGWD Address) E
2 F 22 07 (Load Bit Code) * E
3 F 23 07
(Set Bit) 1E
(Reset Bit) E

*To determine code:

Find bit in chart. Number above
bit (4, 2 or 1) is code.
(Used in correct octal position)

For more than one bit, add codes.

Examples:	<u>Bit</u>	<u>Code</u>
	3	4
	6	40
	7	100
	15&13	50000

G
1-19

DATE 4/16/75

FLAGWORD BIT ASSIGNMENTS

FLGWRD	ADRS	4	2	1	4	2	1	4	2	1	4	2	1	4	2	1
		BIT 15	BIT 14	BIT 13	BIT 12	BIT 11	BIT 10	BIT 9	BIT 8	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1
0	74		JSMITH	PSS.1FLG	P50.1FLG	ATNFLAG	P30FLAG	NEEDFLG	INUSE	RNDVZFLG	SGTNK (RS3FLAG)	NC12FLG	CYC61FLG	FREEFLAG	NCINTFLG	P29FLAG
1	75	ZJETSFLG (NJETSFLG)	STIRFLAG	ERADCOMP (ERADFLAG)	WODOP01	RCSBURN (ENG2FLAG)	LNTRG (TARG1FLG)	NCLPFLG	CSMUPDAT (VEMUPFLG)	UPDATFLG	IDLEFAIL	TRACKFLG	HARKFLG	ITERISW (SLOPESW)	GUESSW	AYEGFLAG
2	76	DRIFTFLG	R21MARK	ITERFLG	P21FLAG	STEERSW	SKIPVNF	IMPULSW	XDELVFLG	FIRSTFLG HAYEELEV (ETPIFLG)	FINALFLG	REVFLAG	PFRATFLG	SBFLAG	CALCHNZ	WODOV37 (WODOFFLAG)
3	77	VSON18FL	GLOKFAIL	REFSMFLG	500**FLG	501**FLG	VFLAG	POOFLAG	PRECIFLG	CULTFLAG	45/46FLG	STATEFLG	CONICINT (INTYPFLG)	CSHINTSW (VINTFLG)		MPATINT (DINOFFLAG)
4	100	MARKIDLE (MRKIDFLG)	PRIDIDLE (PRIODFLG)	NORMIDLE (NRKIDFLG)	POSPFLAG	MARKWAIT (NWAITFFG)	NORMWAIT (NWAITFLG)	MRMTKEY (MRMNVFLG)	MRMTKEY (MRMNVFLG)	PROMTKEY (PRONVFLG)	PINBRFLG	RUPTMARK (RRUPTFLG)	RUPTNORM (RRUPTFLG)	MRKOVNORM (MRKOVFLAG)	VNFLAG	XDSPFLAG
5	101	DSKYFLAG				FSTINCRP (INCORFLG)	NEWTFLAG			ENGORFLG	3AXISFLG	BKUPLO (GRRBKFLG)		ROSOLNSW (SOLNSW)		RENDWFLG
6	102	DAPBIT1	DAPBIT2	STRULLSW ENTRYDSP	ENDAPARK	GANDIFSW	GONEPAST	RELVELSW	EGSW	NOSWITCH	HIND	INRLSW	LATSW	OSGSW	CHDSTBY	GYNDIF
7	103	TERMIFLG	ITSMITH	IGNFLAG	ASTNFLAG	TIMRFLAG	NORMSW	RYSW	GONEBYTG (GONEBY)		V37FLAG		UNLOCKFL	VERIFLAG	LNATCH (ATTCHFLG)	TFFSW
8	104			REWIFLG				UTFLAG		IMFINFLG	ORDERSW	APSESW	COGAFLAG	V960RFLG	R67FLAG	368SW
9	105	SMTOVER			MAXDBFLG			VHFRFLAG	VHFSOURC	R22CAFLG	R22ERNDS (R22ORN17)	QUITFLAG	R31FLAG	RID1FLAG	RIDAYFLG	AYERIOSW
10	106	PCMANFLG	INTINUSE (INTFLG)	INTGRAB (REINTFLG)	REJECTFLG	WDSUPFLG		EXTRANGE	P35FLAG	AUTOSEQ	TCONPFLG	HANEUFLG	PTV93FLG	TPINNFLG	FULTKFLG	PCFLAG
11	107				R27FLAG	CYCLFLAG	NOUNFLG	R77FLAG	AZINFLAG	FIXFLAG	SNAPFLAG	P48FLAG	P25FLAG	TDFLAG	R27UP2	R27JP1

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CHANNEL SET/RESET

NOTE: Only Channel No's <30 may be used

- 1 Display output channel |
- 2 V25N7E
F 21 07 (Load Channel Number) E
- 3 F 22 07 (Load Bit Code) E
- 4 F 23 07
(Set Bit) 1E
(Reset Bit) E

*To determine codes:

Find bit in chart. Number above
bit (4,2 or 1) is code.
(Used in correct octal position)

For more than one bit, add codes.

Examples:	Bit	Code
	3	4
	6	40
	7	100
	15&13	50000

DISPLAY OF INPUT/OUTPUT CHANNELS

V11N10E
F 01 10 (Load Channel Address) E
R1 OCT CONTENTS OF SPECIFIED CHNL

MODE SWITCH OVERRIDE

NOTE: Place switch(s) to desired
mode before proceeding

(Via Channel 31/33 Control)

V21N1E, 373E, A00D0 ENTR

A=0: Use switches
(SC CONT and CMC MODE)
A=1: CMC FREE
A=2: CMC HOLD
A=3: CMC AUTO
A=5,6 or 7: SCS

D=0: Use switches (OPTICS)
D=1: OPT CMC
D=2: OPT ZERO
D=3: OPT MAN

DATE 4/16/75

EMP ASTP-75: S-BAND Antenna Angle Computation

Purpose:

A means of determining the current S-BAND antenna pointing angles between the CSM and the ATS-F.

Restrictions:

1. EMP usage is restricted to non-rend mission phase (Rend navigation and P31-P36 overwrite EMP).
2. EMP cannot be executed while a display-type extended verb is running.
3. EMP cannot be executed in parallel with most EMP's requiring an uplink (see 'EMP GENERAL RESTRICTIONS', G/1-23).
4. Requires ATS-F S.V. to be uplinked into Soyuz S.V. slots.
5. Requires an uplink of program coding (5 loads).

Procedures:

ISS - on & aligned

- 1 Perform 'P27 CMC UPDATE' (G/1-15)
STDN will uplink EMP ASTP-75 and
ATS-F state vector
- 2 V25N26E, 10001E, 1412E, 66105E
V30E
- 3 F 16 43 RHO,GAMMA (.01deg,.01deg)
HGA TRACK - MAN
HGA BEAM - WIDE
Set required P&Y angles
Tune for signal strength > 1/3 scale
HGA TRACK - REACQ
HGA BEAM - NARROW
PRO (Exit)

NOTES: N43 display will be updated once/sec.

RHO - S-BAND Ant PITCH
GAMMA - S-BAND Ant YAW

If V32E is keyed, a meaningless display of N44 will occur; to recover, key N43 (or V34E to exit EMP).

DATE 6/23/75

EMP ASTP-76: Translational Impulse Mode

Purpose:

A means of providing fixed length, 2-jet impulse translations via the THC.

Restrictions:

1. Use only in P20 Option 5 and P00.
2. EMP must be terminated before activating CSM-alone DAP (V46E).
3. Enter one THC command at a time; return to detent between commands.
4. All jets are (hardware) enabled.
5. Downlink high bit rate has been selected.
Note: Low bit rate could synchronize with DAP and inhibit operation of EMP ASTP-76.
6. The vehicles are not actually docked.
7. Do not call P21, P29, any P3X, or CMC SELF-CHECK.
8. EMP ASTP-75 is not valid anytime after uplink of ASTP-76 program coding (15 loads).

Procedures:

ISS - on & aligned

- 1
F 05 87 V44E
V25E,E,E,E
PRO
F 06 89
PRO
- 2 V45E
- 3 V31E (Key only once)
V5N26E, verify 00001, 01536, 12007
- 4 TERMINATE: V31E

NOTES: Activation of EMP ASTP-76 via V31E alters N26 so that the next V31E terminates the EMP.

If Restart occurs prior to activation:
V25N26E, 1E, 1555E, 12007E
V31E

If Restart occurs after activation:
V25N26E, 1E, 1523E, 12007E
V31E

DATE 4/16/75

DOCKED DAP JET/QUAD FAIL RESELECT

1. Disable failed jet(s) via AUTO RCS SELECT.
2. Inhibit failed jet(s) via N87 reconfig table below.
3. Initial N87 config assumed to be:
(Consult STDN for reconfig if 01111
DAP configured P,Y Couples). 00146
00000

Jets Failed	N87 R2**	Δ'S R3	-X If OK***	Jet/Quad Failed	N87 R2**	Δ'S R3	-X If OK***
A1		00020		C1 & D1*		00100	
B1		00001		C1 & A2	00046	00140	B3***
C1		00100		C1 & B2		00102	
D1		00004		C1 & C2		00300	
				C1 & D2		00110	
A2		00040		D1 & A2		00044	
B2		00002		D1 & B2	00144	00006	C4***
C2		00200		D1 & C2		00204	
D2		00010		D1 & D2		00014	
A1 & B1*		00020		A2 & B2*		00040	
A1 & C1		00120		A2 & C2		00240	
A1 & D1*		00020		A2 & D2*		00040	
A1 & A2		00060		B2 & C2*		00200	
A1 & B2		00022		B2 & D2		00012	
A1 & C2	00106	00220	D4***	C2 & D2*		00200	
A1 & D2		00030					
B1 & C1*		00100		QUAD A		00060	
B1 & D1		00005		QUAD B		00003	
B1 & A2		00041		QUAD C		00300	
B1 & B2		00003		QUAD D		00014	
B1 & C2		00201					
B1 & D2	00142	00011	A3***				

*Att control may be severely degraded about ROLL axis.

**Pitch or Yaw Couple required to maintain att control
(Att control may be degraded if corresponding -X
thruster is not enabled via AUTO RCS SELECT).

A1 & C2 ~ -YAW C1 & A2 ~ +YAW
B1 & D2 ~ +PITCH D1 & B2 ~ -PITCH

***Consult STDN prior to enabling any -X thrusters
(A3,B3,C4,D4) while docked to Soyuz.

DATE 6/23/75

SIMRAY EXPERIMENTS JET/QUAD FAIL RESELECT

Note: This table applicable only during experiments MA 048, MA 083, and MA 088

1. Disable failed jet(s) via AUTO RCS SELECT
2. Reconfigure DAP per table below
3. Initial conditions assumed to be:

AUTO RCS SELECT D1,B2,A3,C4,B3,D4 - MNA
 AUTO RCS SELECT A2,B1,A4,B4 - OFF (verify)
 Undocked DAP activated (6110X, 01111)
 SC CONT - CMC/AUTO

Jet/Quad Failed *	AUTO RCS ON	Undocked DAP N46 R2 Δ	Reconfigure for Docked DAP Mode		
			N87:R1	R2	R3
A3	C3				
B2	D2				
B3	D3				
C4	D2,D3 A1		00010	00013	00241
D1	A1,C2	11111			
D4	A1,C1 C2,C3		10001	00260	00045
QUAD A	C3				
QUAD B	D2,D3				
QUAD C	D2,D3 A1		00010	00013	00241
QUAD D	A1,C1 C2,C3		10001	00260	00045

* Consult STDN for multiple jet failures

DATE 6/23/75

MA 007 EXPERIMENT JET/QUAD FAIL RESELECT

Note: This table applicable only during
experiment MA 007.

1. Disable failed jet(s) via AUTO RCS SELECT
2. Reconfigure DAP per table below
3. Initial conditions assumed to be:

AUTO RCS SELECT D1,B2,C3,A4,D3,B4 - MNA
AUTO RCS SELECT A2,B1,A3,C4,B3,D4 - OFF (verify)
undocked DAP activated (6110X, 01111)
SC CONT - CMC/AUTO

Jet/Quad Failed *	AUTO RCS ON	Undocked DAP N46 R2 Δ	Reconfigure for Docked DAP Mode		
			N87:R1	R2	R3
A4	C1,D2		00010	00016	00241
B2	D2				
B4	A1,C1 C2,D2		10001	00340	00041
C3	A1,D2		00010	00007	00241
D1	A1,C2	11111			
D3	A1,C1 C2		10001	00160	00045
QUAD A	C1,D2		00010	00016	00241
QUAD B	A1,C1 C2,D2		10001	00340	00041
QUAD C	A1,D2		00010	00007	00241
QUAD D	A1,C1 C2		10001	00160	00045

* Consult STDN for multiple jet failures

G
2-18

DATE 4/16/75

ORDEAL INITIALIZATION (G&N)

(In-Plane Alignment Req'd)
FDAI 1 or 2 - ORB RATE
EARTH/LUNAR - EARTH

1 V82E
F 04 12 R1 00002 SPECIFY VEHICLE
 R2 00001
 PRO

2 F 06 16 GET EVENT (hrs,min,.01sec)
 PRO

3 F 16 44 HA,HP (.1nm,.1nm)
 Calculate Average
 ALT SET - Set Average
 PRO

4 V83E
F 16 54 RNG,RDOT,THETA (.01nm,.1fps,.01deg)
 MODE - HOLD/FAST
 SLEW - To THETA
 MODE - OPR/SLOW
 PRO

ORDEAL INITIALIZATION (HORIZON METHOD)

(In-Plane GDC Alignment Req'd)
FDAI 1 or 2 - ORB RATE
EARTH/LUNAR - EARTH

1 STDN Supply Altitude
 ALT SET - Set

2 SC +X At the Horizon (0 deg yaw,heads up)

3 MODE - HOLD/FAST
 SLEW FDAI:

ALT	ANGLE
100 nm	346 deg
120 nm	345 deg
200 nm	341 deg

MODE - OPR/SLOW