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TARGET BOOK

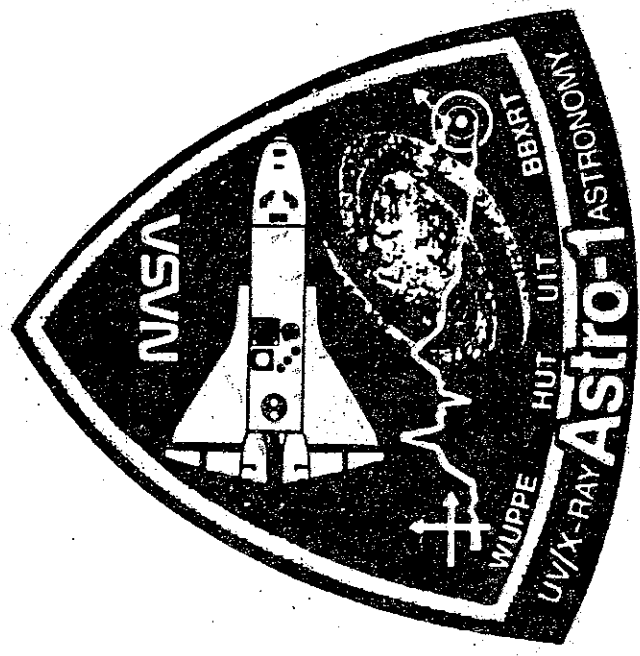
ASTRO 1

NASA
National Aeronautics and
Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812
Operations Planning & Analysis Branch
Operations Development Division
Systems Analysis and Integration Laboratory

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PAYLOAD FLIGHT DATA FILE

SYSTEMS ANALYSIS AND INTEGRATION LABORATORY

OPERATIONS DEVELOPMENT DIVISION

Astro Mission 1

TARGET BOOK

Payload Operating Procedure

FINAL

April, 1990

Prepared by:

Brenda Roberts
Brenda Roberts
Book Manager

Approved by:

Kenneth H. Nordsieck
Dr. Kenneth H. Nordsieck
Astro-1 Target Book Crew Lead

Approved by:

Daniel L. Gunter
Daniel L. Gunter
Operations Controller

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Comments concerning this document may be addressed to B. Roberts TBE/PMIC, MS-172, (205) 726-5484.

ABSTRACT

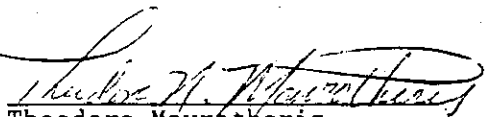
This document presents the Target Book Payload Operating Procedure (Crew Procedure) for the Astro-1 mission. This Crew Procedure has been produced by Teledyne Brown Engineering (TBE) under contract NAS8-32712. The information herein has been obtained from the Principal Investigator, Payload Specialists, Marshall Space Flight Center, and TBE during document development.

Concurrence:



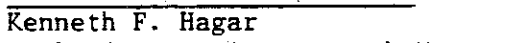
Brenda Roberts
Brenda Roberts
Crew Procedures Engineer
Teledyne Brown Engineering

Concurrence:



Theodore Mavrotheris
Theodore Mavrotheris
Astro-1 Operations Lead Engineer
Teledyne Brown Engineering

Concurrence:


Kenneth F. Hagar
Kenneth F. Hagar
Payload Operations Branch Manager
Teledyne Brown Engineering

CHANGE CONTROL RECORD
TARGET BOOK
PAYLOAD OPERATING PROCEDURES

PFDF EDITION INCORPORATED			
CONTROL NO.	TITLE	DATE	DISPOSITION
	PRELIMINARY	FEBRUARY 21, 1988	
	BASIC	APRIL 22, 1986	APPROVED
	BASIC, REV A	OCTOBER 15, 1988	
	FINAL	APRIL, 1990	

TGT PAYLOAD OPERATING PROCEDURES
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TABLE OF TARGET CLASSES

CLASS	DESCRIPTION
0	Calibration
0.0	HUT Camera Sensitivity Targets
0.1	HUT Spectrometer Focus Targets
0.2	HUT
0.3	UIT Flat Field Sources
0.4	UIT
0.5	WUPPE Aperture Position Calibrators
0.6	WUPPE Unpolarized & Polarized Standards
0.7	BBXRT Calibration Sources
0.8	BBXRT
0.9	Joint Focus and Alignment Targets
1	Solar System Objects
1.1	Comets
1.2	Planets
1.3	Asteroids, etc.
2	Individual Stars
2.1	Supergiants
2.2	Oe/Be Stars
2.3	Wolf-Rayet Stars
2.4	Rapid Rotators
2.5	Normal White Dwarfs
2.6	Magnetic/Pulsating W.D.'s
2.7	Planetary Nebula Nuclei
2.8	Normal Stars A0 & Later
3	Variable and Binary Stars
3.1	Pre-Main Sequence Stars
3.2	Cataclysmic Variables
3.3	Interacting Binaries
3.4	Symbiotic Stars
3.5	Active Chromospheres
3.6	Pulsating Variables
3.7	Low Mass X-Ray Binaries
3.8	High Mass X-Ray Binaries
3.9	X-Ray Transients
4	ISM & Nebulae
4.1	Planetary Nebulae
4.2	Reflection Nebulae
4.3	H II Regions
4.4	Super Nova Remnants
4.5	I.S. Polarization Probes
4.6	I.S. Absorption Probes (Nearby & Hot)
4.7	Herbig-Haro Objects
4.8	Dark Clouds
4.9	Diffuse Galactic X-Ray Emission Regions

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CLASS	DESCRIPTION
5	Star Clusters
5.1	Metal Poor Globulars
5.2	Metal Rich Globulars
5.3	Open (Galactic) Clusters
5.4	O/B Associations
6	Normal Galaxies
6.1	Nearby Galaxies
6.2	Spirals
6.3	Ellipticals
6.4	Irregulars
6.5	Dwarfs
6.6	Edge On Systems
7	Abnormal Galaxies
7.1	Interacting Galaxies
7.2	Amorphous Galaxies
7.3	Rapid Star Formation
7.4	W/Circumgalactic Matter
7.5	E/S0 with I.S. Matter
	X-Ray Miscellany
7.6	X-Ray Background
7.7	Unidentified X-Ray Sources
8	Active Extragalactic
8.1	Seyfert I Galaxies
8.2	Seyfert II Galaxies
8.3	Radio Galaxies
8.4	Radio Loud Quasistellar Objects
8.5	Radio Quiet Quasistellar Objects
8.6	BL Lacertae Objects
8.7	LINERS
8.8	Optically Violent Variable (OVV) Quasars
9	Clusters of Galaxies
9.1	Spiral Poor Clusters
9.2	Spiral Rich Clusters
9.3	X-Ray Selected Clusters
9.4	Deep Survey Fields
9.5	Cooling Flow Clusters
	Spacecraft Specific
9.7	TAPS Tests
9.8	Gyros/IMC/IPS
9.9	Waterdumps/Handovers

TARGET INDEX - ID ORDER

ID	NAME	D / H MET	ID	NAME	D / H MET	ID	NAME	D / H MET
0001-11	HZ43	0 / 21.49	2307-10	THT-MUS	1 / 2.65	3807-12	VELA-X-1	8 / 2.54
0001-12	HZ43	1 / 4.95	2311-10	HD192163	4 / 12.55	3814-11	HER-X-1	4 / 4.64
0004-10	1034+001	1 / 5.94	2313-10	HD193793	6 / 22.28	3814-12	HER-X-1	5 / 21.67
0004-20	1034+001	4 / 4.12	2402-11	ETA-HOR	4 / 17.56	3814-20	HER-X-1	6 / 11.52
0004-30	1034+001	7 / 12.99	2402-12	ETA-HOR	6 / 13.74	3815-10	HD153919	5 / 8.20
0005-10	GD246	2 / 15.11	2406-11	HD61931	2 / 9.46	3815-20	HD153919	6 / 5.41
0009-10	GD190	3 / 4.20	2406-12	HD61931	3 / 5.18	4107-10	NGC2392	6 / 21.71
0010-10	GD002	6 / 15.20	2406-13	HD61931	6 / 9.51	4109-11	NGC3132	4 / 7.14
0301-11	BR-EARTH	0 / 23.38	2417-10	21VUL	7 / 18.32	4109-12	NGC3132	4 / 12.13
0301-12	BR-EARTH	7 / 23.35	2506-11	SW-MID	1 / 0.29	4109-13	NGC3132	7 / 23.91
0502-10	NGC2070	0 / 21.93	2506-12	SW-MID	3 / 10.41	4114-10	NGC6720	3 / 13.71
0603-10	DEL-CYG	1 / 8.02	2517-11	GD153	8 / 8.97	4115-10	A-78	6 / 10.67
0603-21	DEL-CYG	6 / 16.42	2533-10	HZ43	6 / 13.05	4120-10	NGC7009	3 / 22.71
0603-22	DEL-CYG	8 / 9.27	2603-10	H1504+65	8 / 21.17	4122-10	NGC7293	5 / 20.99
0610-11	ZET-PEG	4 / 20.53	2604-10	1031+234	8 / 13.46	4207-10	ETA-CARH	7 / 7.33
0610-12	ZET-PEG	5 / 11.72	2605-10	1159-035	7 / 2.48	4208-10	M1-92	7 / 14.98
0610-21	ZET-PEG	8 / 14.63	2609-11	G70D8247	5 / 3.50	4208-20	M1-92	7 / 21.11
0610-22	ZET-PEG	8 / 22.06	2609-12	G70D8247	3 / 2.65	4211-10	NGC7023	7 / 10.41
0656-10	HD161056	1 / 1.84	2706-11	NGC6905	3 / 20.07	4211-20	NGC7023	7 / 19.56
0656-20	HD161056	7 / 9.06	2706-12	NGC6905	6 / 21.34	4405-10	N132D	1 / 14.81
0657-10	HD204827	3 / 5.72	2805-11	ALF-CENA	0 / 18.09	4405-20	N132D	7 / 21.80
0657-20	HD204827	5 / 12.63	2805-12	ALF-CENA	0 / 19.33	4406-11	N49A+B	5 / 19.39
0972-10	ALF-CIR	0 / 15.86	2805-20	ALF-CENA	1 / 3.33	4406-12	N49A+B	8 / 0.92
1111-10	C-AUSTIN	4 / 14.11	3108-11	BET-PIC	3 / 1.98	4410-11	VELASNRA	1 / 10.62
1111-20	C-AUSTIN	3 / 14.14	3108-20	BET-PIC	3 / 1.30	4410-12	VELASNRA	6 / 12.36
1111-30	C-AUSTIN	1 / 12.80	3110-11	HD53367	5 / 9.11	4411-10	VELASNRB	3 / 20.46
1111-40	C-AUSTIN	7 / 11.05	3110-12	HD53367	6 / 7.96	4412-10	CYGLOOPA	3 / 12.43
1111-50	C-AUSTIN	8 / 13.07	3206-20	VW-HYI	2 / 19.67	4412-20	CYGLOOPA	4 / 9.43
1111-60	C-AUSTIN	8 / 23.67	3206-21	VW-HYI	7 / 5.22	4413-10	CYGLOOPB	4 / 0.13
1204-40	JUPITER	5 / 2.84	3208-22	U-GEM	8 / 10.23	4414-10	CRABNEB	2 / 12.94
1204-50	JUPITER	2 / 7.90	3212-10	C48D1557	3 / 9.87	4415-11	N63A	4 / 16.33
1204-60	JUPITER	4 / 5.58	3212-20	C48D1557	6 / 3.26	4415-12	N63A	7 / 14.25
1206-11	SATURN	1 / 15.69	3216-11	BE-UMA	4 / 19.49	4416-10	SN1987A	1 / 1.03
1206-20	SATURN	2 / 3.97	3216-12	BE-UMA	5 / 16.90	4448-11	VELASNRE	5 / 4.42
2111-10	ZET-PUP	5 / 19.78	3216-13	BE-UMA	7 / 10.02	4448-12	VELASNRE	9 / 0.15
2115-10	DEL-CMA	1 / 12.12	3218-10	UX-UMA	2 / 11.13	4503-11	HD62542	5 / 7.62
2115-20	DEL-CMA	8 / 11.80	3218-20	UX-UMA	6 / 6.97	4503-12	HD62542	7 / 15.95
2118-11	GX-VEL	6 / 20.18	3223-10	AM-HER	6 / 9.98	4516-11	SK69-239	1 / 19.24
2118-12	GX-VEL	9 / 1.64	3223-20	AM-HER	6 / 17.51	4516-12	SK69-239	4 / 22.02
2122-10	HD45677	7 / 8.36	3223-30	AM-HER	4 / 3.06	4516-13	SK69-239	5 / 1.23
2132-10	9SGE	7 / 20.15	3226-21	AE-AQR	4 / 15.93	4516-14	SK69-239	6 / 4.83
2132-21	9SGE	2 / 8.67	3226-22	AE-AQR	4 / 19.00	4519-11	SK69-270	8 / 4.00
2132-22	9SGE	8 / 20.54	3227-21	SS-CYG	2 / 12.01	4519-12	SK69-270	2 / 18.16
2133-11	P-CYG	6 / 8.77	3227-22	SS-CYG	3 / 15.40	4524-10	HD60325	8 / 7.13
2133-12	P-CYG	7 / 12.57	3260-10	2252-035	3 / 21.23	4530-10	HD99264	8 / 0.21
2133-20	P-CYG	2 / 6.93	3308-10	68HER	2 / 5.43	4533-10	HD114886	2 / 0.69
2215-10	FY-CMA	4 / 2.41	3308-20	68HER	3 / 17.92	4543-10	HD147888	8 / 22.98
2215-20	FY-CMA	2 / 21.64	3315-20	44IBOO	7 / 5.77	4545-10	HD154204	1 / 11.27
2217-10	P-CAR	7 / 1.25	3404-11	CH-CYG	2 / 13.16	4549-10	HD161961	8 / 12.33
2222-10	48LIB	5 / 6.77	3404-12	CH-CYG	3 / 1.20	4554-10	ZET-OPH	5 / 9.91
2226-10	EPS-SGR	7 / 15.67	3404-21	CH-CYG	5 / 1.97	4579-10	W197-M16	2 / 20.58
2230-10	HD208682	3 / 7.51	3404-22	CH-CYG	5 / 0.38	4580-10	W246-M16	1 / 14.14
2234-10	EPS-CAP	7 / 2.09	3526-20	XI-BOOA	7 / 13.45	4582-11	W367-M16	8 / 13.87
2235-10	PI-AQR	2 / 10.59	3604-10	R-CRE	6 / 20.69	4582-12	W367-M16	9 / 2.07
2235-21	PI-AQR	5 / 16.32	3613-10	HR4049	8 / 16.46	4583-10	W401-M16	3 / 8.89
2235-22	PI-AQR	6 / 16.88	3621-11	G-HER	6 / 19.19	4647-10	MU-COL	7 / 6.80
2302-11	EZ-CMA	5 / 13.53	3621-12	G-HER	8 / 6.24	4656-10	HD55857	6 / 15.72
2302-12	EZ-CMA	2 / 16.76	3712-11	SCO-X-1	2 / 1.15	4658-10	HD57682	6 / 16.00
2302-13	EZ-CMA	8 / 5.56	3712-12	SCO-X-1	4 / 10.99	4659-10	ALF-CMI	2 / 14.12
2302-90	EZ-CMA	0 / 20.84	3807-11	VELA-X-1	5 / 5.98	4663-10	HD114737	2 / 1.58

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ID	NAME	D / H MET	ID	NAME	D / H MET	ID	NAME	D / H MET
5101-10	NGC2808	3 /23.42	6310-12	M60	4 /22.74	8118-13	NGC3783	7 /16.51
5103-12	NGC1851	1 /17.77	6310-21	M60	2 / 9.82	8119-11	NGC4593	3 / 6.90
5106-10	M5	4 /16.85	6310-22	M60	2 /18.96	8119-12	NGC4593	7 / 3.99
5107-10	M13	7 / 4.41	6332-10	NGC4406	6 /14.33	8126-11	MKN509	8 /15.56
5108-10	M92	2 /14.73	6402-10	NGC2366	2 /23.19	8126-12	MKN509	8 /17.06
5109-11	NGC6752	2 /21.30	6406-11	NGC4449	5 /15.51	8307-10	M87	0 /22.75
5109-12	NGC6752	5 /17.89	6406-12	NGC4449	8 / 1.66	8307-20	M87	1 /23.07
5110-11	NGC3201	1 /13.73	6607-10	NGC4565	3 /16.27	8310-10	CEN-A	4 / 1.51
5110-12	NGC3201	2 / 6.36	6608-10	M104	5 /14.01	8407-11	0558-504	4 / 0.80
5115-10	M30	4 /23.61	7102-10	NG2444-5	3 / 0.58	8407-12	0558-504	7 / 0.48
5116-11	OMG-CEN	5 /23.19	7107-10	M51	3 /19.32	8407-13	0558-504	8 / 1.33
5116-12	OMG-CEN	7 /22.49	7203-10	NGC1705	4 /11.82	8407-14	0558-504	9 / 1.27
5116-13	OMG-CEN	8 / 4.59	7205-11	M82	6 /23.28	8415-11	1700+64	2 /23.55
5201-10	47-TUC	5 /14.76	7302-10	NGC1808	1 / 4.34	8415-12	1700+64	4 / 6.09
5202-10	NGC6496	2 /22.30	7304-11	NGC2782	1 / 7.50	8415-13	1700+64	5 /20.31
5203-10	NGC6624	8 /10.96	7304-12	NGC2782	6 /11.06	8415-14	1700+64	7 /11.88
5204-10	NGC6723	8 /11.36	7305-10	NGC2903	2 / 3.27	8415-15	1700+64	8 /19.71
5206-10	NGC6637	2 /22.73	7306-10	MKN116	7 /11.47	8424-11	3C273	1 / 9.11
5311-10	M67	7 /19.06	7310-10	M100	5 / 4.94	8424-12	3C273	4 /18.19
6106-10	SMC-A	1 /22.41	7323-10	NGC6946	1 /20.12	8506-10	1211+143	5 /17.23
6112-10	SMC-B	6 /19.95	7402-10	NGC1549	3 /17.04	8506-20	1211+143	8 / 3.19
6112-11	SMC-B	5 /22.65	7403-10	NGC1553	3 /18.76	8506-30	1211+143	5 /18.42
6133-10	SEX-B	4 /13.34	7407-11	NGC4631	2 /15.70	8623-11	2155-304	1 /20.62
6202-11	NGC2841	2 /12.59	7407-12	NGC4631	2 /17.48	8623-40	2155-304	8 /18.67
6208-10	NGC3344	6 / 8.30	7504-10	NGC2685	7 /20.57	9101-11	COMA-CL	5 /11.29
6210-10	MALIN 1	6 / 3.79	8102-11	FAIRALL9	1 /23.85	9101-12	COMA-CL	5 /18.74
6215-10	NGC2403	5 /10.68	8102-12	FAIRALL9	6 / 0.05	9104-10	A2142	1 / 6.47
6216-11	M81	3 /22.21	8106-10	NGC1566	6 / 1.66	9202-10	AB1367	4 /10.31
6216-12	M81	8 /18.02	8113-11	NGC2992	3 / 8.33	9203-11	HER-CLUS	4 / 7.66
6232-10	M63	4 /14.97	8113-12	NGC2992	3 /15.93	9203-12	HER-CLUS	8 / 7.86
6235-10	M101A	4 /19.84	8116-11	NGC4151	1 /16.76	9302-10	AB1795	2 / 2.19
6306-10	NGC3379	4 / 8.72	8116-12	NGC4151	2 / 4.96	9302-20	AB1795	1 /21.41
6308-10	M49	1 /18.45	8116-30	NGC4151	8 /15.05	9402-10	CM1	3 / 3.64
6308-20	M49	3 /11.53	8118-11	NGC3783	6 / 0.61	9405-10	SA57	3 /14.56
6310-11	M60	4 /21.09	8118-12	NGC3783	6 / 2.17			

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ID	NAME	D / H MET	ID	NAME	D / H MET	ID	NAME	D / H MET
8407-11	0558-504	4 / 0.80	3212-20	C48D1557	6 / 3.26	4658-10	HD57682	6 / 16.00
8407-12	0558-504	7 / 0.48	8310-10	CEN-A	4 / 1.51	4524-10	HD60325	8 / 7.13
8407-13	0558-504	8 / 1.33	3404-11	CH-CYG	2 / 13.16	2406-11	HD61931	2 / 9.46
8407-14	0558-504	9 / 1.27	3404-12	CH-CYG	3 / 1.20	2406-12	HD61931	3 / 5.18
2604-10	1031+234	8 / 13.46	3404-22	CH-CYG	5 / 0.38	2406-13	HD61931	6 / 9.51
0004-10	1034+001	1 / 5.94	3404-21	CH-CYG	5 / 1.97	4503-11	HD62542	5 / 7.62
0004-20	1034+001	4 / 4.12	9402-10	CM1	3 / 3.64	4503-12	HD62542	7 / 15.95
0004-30	1034+001	7 / 12.99	9101-11	COMA-CL	5 / 11.29	4530-10	HD99264	8 / 0.21
2605-10	1159-035	7 / 2.48	9101-12	COMA-CL	5 / 18.74	9203-11	HER-CLUS	4 / 7.66
8506-10	1211+143	5 / 17.23	4414-10	CRABNEB	2 / 12.94	9203-12	HER-CLUS	8 / 7.86
8506-30	1211+143	5 / 18.42	4412-10	CYGLOOPA	3 / 12.43	3814-11	HER-X-1	4 / 4.64
8506-20	1211+143	8 / 3.19	4412-20	CYGLOOPA	4 / 9.43	3814-12	HER-X-1	5 / 21.67
8415-11	1700+64	2 / 23.55	4413-10	CYGLOOPB	4 / 0.13	3814-20	HER-X-1	6 / 11.52
8415-12	1700+64	4 / 6.09	2115-10	DEL-CMA	1 / 12.12	3613-10	HR4049	8 / 16.46
8415-13	1700+64	5 / 20.31	2115-20	DEL-CMA	8 / 11.80	0001-11	HZ43	0 / 21.49
8415-14	1700+64	7 / 11.88	0603-10	DEL-CYG	1 / 8.02	0001-12	HZ43	1 / 4.95
8415-15	1700+64	8 / 19.71	0603-21	DEL-CYG	6 / 16.42	2533-10	HZ43	6 / 13.05
8623-11	2155-304	1 / 20.62	0603-22	DEL-CYG	8 / 9.27	1204-50	JUPITER	2 / 7.90
8623-40	2155-304	8 / 18.67	2234-10	EPS-CAP	7 / 2.09	1204-60	JUPITER	4 / 5.58
2417-10	21VUL	7 / 18.32	2226-10	EPS-SGR	7 / 15.67	1204-40	JUPITER	5 / 2.84
3260-10	2252-035	3 / 21.23	4207-10	ETA-CARH	7 / 7.33	4208-10	M1-92	7 / 14.98
8424-11	3C273	1 / 9.11	2402-11	ETA-HOR	4 / 17.56	4208-20	M1-92	7 / 21.11
8424-12	3C273	4 / 18.19	2402-12	ETA-HOR	6 / 13.74	7310-10	M100	5 / 4.94
3315-20	44IBOO	7 / 5.77	2302-90	EZ-CMA	0 / 20.84	6235-10	M101A	4 / 19.84
5201-10	47-TUC	5 / 14.76	2302-12	EZ-CMA	2 / 16.76	6608-10	M104	5 / 14.01
2222-10	48LIB	5 / 6.77	2302-11	EZ-CMA	5 / 13.53	5107-10	M13	7 / 4.41
3308-10	68HER	2 / 5.43	2302-13	EZ-CMA	8 / 5.56	5115-10	M30	4 / 23.61
3308-20	68HER	3 / 17.92	8102-11	FAIRALL9	1 / 23.85	6308-10	M49	1 / 18.45
2132-21	9SGE	2 / 8.67	8102-12	FAIRALL9	6 / 0.05	6308-20	M49	3 / 11.53
2132-10	9SGE	7 / 20.15	2215-20	FY-CMA	2 / 21.64	5106-10	M5	4 / 16.85
2132-22	9SGE	8 / 20.54	2215-10	FY-CMA	4 / 2.41	7107-10	M51	3 / 19.32
4115-10	A-78	6 / 10.67	3621-11	G-HER	6 / 19.19	6310-21	M60	2 / 9.82
9104-10	A2142	1 / 6.47	3621-12	G-HER	8 / 6.24	6310-22	M60	2 / 18.96
9202-10	AB1367	4 / 10.31	2609-12	G70D8247	3 / 2.65	6310-11	M60	4 / 21.09
9302-20	AB1795	1 / 21.41	2609-11	G70D8247	5 / 3.50	6310-12	M60	4 / 22.74
9302-10	AB1795	2 / 2.19	0010-10	GD002	6 / 15.20	6232-10	M63	4 / 14.97
3226-21	AE-AQR	4 / 15.93	2517-11	GD153	8 / 8.97	5311-10	M67	7 / 19.06
3226-22	AE-AQR	4 / 19.00	0009-10	GD190	3 / 4.20	6216-11	M81	3 / 22.21
2805-11	ALF-CENA	0 / 18.09	0005-10	GD246	2 / 15.11	6216-12	M81	8 / 18.02
2805-12	ALF-CENA	0 / 19.33	2118-11	GX-VEL	6 / 20.18	7205-11	M82	6 / 23.28
2805-20	ALF-CENA	1 / 3.33	2118-12	GX-VEL	9 / 1.64	8307-10	M87	0 / 22.75
0972-10	ALF-CIR	0 / 15.86	2603-10	H1504+65	8 / 21.17	8307-20	M87	1 / 23.07
4659-10	ALF-CMI	2 / 14.12	4663-10	HD114737	2 / 1.58	5108-10	M92	2 / 14.73
3223-30	AM-HER	4 / 3.06	4533-10	HD114886	2 / 0.69	6210-10	MALIN 1	6 / 3.79
3223-10	AM-HER	6 / 9.98	4543-10	HD147888	8 / 22.98	7306-10	MKN116	7 / 11.47
3223-20	AM-HER	6 / 17.51	3815-10	HD153919	5 / 8.20	8126-11	MKN509	8 / 15.56
3216-11	BE-UMA	4 / 19.49	3815-20	HD153919	6 / 5.41	8126-12	MKN509	8 / 17.06
3216-12	BE-UMA	5 / 16.90	4545-10	HD154204	1 / 11.27	4647-10	MU-COL	7 / 6.80
3216-13	BE-UMA	7 / 10.02	0656-10	HD161056	1 / 1.84	4405-10	N132D	1 / 14.81
3108-20	BET-PIC	3 / 1.30	0656-20	HD161056	7 / 9.06	4405-20	N132D	7 / 21.80
3108-11	BET-PIC	3 / 1.98	4549-10	HD161961	8 / 12.33	4406-11	N49A+B	5 / 19.39
0301-11	BR-EARTH	0 / 23.38	2311-10	HD192163	4 / 12.55	4406-12	N49A+B	8 / 0.92
0301-12	BR-EARTH	7 / 23.35	2313-10	HD193793	6 / 22.28	4415-11	N63A	4 / 16.33
1111-30	C-AUSTIN	1 / 12.80	0657-10	HD204827	3 / 5.72	4415-12	N63A	7 / 14.25
1111-20	C-AUSTIN	3 / 14.14	0657-20	HD204827	5 / 12.63	7102-10	NG2444-5	3 / 0.58
1111-10	C-AUSTIN	4 / 14.11	2230-10	HD208682	3 / 7.51	7402-10	NGC1549	3 / 17.04
1111-40	C-AUSTIN	7 / 11.05	2122-10	HD45677	7 / 8.36	7403-10	NGC1553	3 / 18.76
1111-50	C-AUSTIN	8 / 13.07	3110-11	HD53367	5 / 9.11	8106-10	NGC1566	6 / 1.66
1111-60	C-AUSTIN	8 / 23.67	3110-12	HD53367	6 / 7.96	7203-10	NGC1705	4 / 11.82
3212-10	C48D1557	3 / 9.87	4656-10	HD55857	6 / 15.72	7302-10	NGC1808	1 / 4.34

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ID	NAME	D / H MET	ID	NAME	D / H MET	ID	NAME	D / H MET
5103-12	NGC1851	1 /17.77	5203-10	NGC6624	8 /10.96	4519-11	SK69-270	8 / 4.00
0502-10	NGC2070	0 /21.93	5206-10	NGC6637	2 /22.73	6106-10	SMC-A	1 /22.41
6402-10	NGC2366	2 /23.19	4114-10	NGC6720	3 /13.71	6112-11	SMC-B	5 /22.65
4107-10	NGC2392	6 /21.71	5204-10	NGC6723	8 /11.36	6112-10	SMC-B	6 /19.95
6215-10	NGC2403	5 /10.68	5109-11	NGC6752	2 /21.30	4416-10	SN1987A	1 / 1.03
7504-10	NGC2685	7 /20.57	5109-12	NGC6752	5 /17.89	3227-21	SS-CYG	2 /12.01
7304-11	NGC2782	1 / 7.50	2706-11	NGC6905	3 /20.07	3227-22	SS-CYG	3 /15.40
7304-12	NGC2782	6 /11.06	2706-12	NGC6905	6 /21.34	2506-11	SW-MID	1 / 0.29
5101-10	NGC2808	3 /23.42	7323-10	NGC6946	1 /20.12	2506-12	SW-MID	3 /10.41
6202-11	NGC2841	2 /12.59	4120-10	NGC7009	3 /22.71	2307-10	THT-MUS	1 / 2.65
7305-10	NGC2903	2 / 3.27	4211-10	NGC7023	7 /10.41	3208-22	U-GEM	8 /10.23
8113-11	NGC2992	3 / 8.33	4211-20	NGC7023	7 /19.56	3218-10	UX-UMA	2 /11.13
8113-12	NGC2992	3 /15.93	4122-10	NGC7293	5 /20.99	3218-20	UX-UMA	6 / 6.97
4109-11	NGC3132	4 / 7.14	5116-11	OMG-CEN	5 /23.19	3807-11	VELA-X-1	5 / 5.98
4109-12	NGC3132	4 /12.13	5116-12	OMG-CEN	7 /22.49	3807-12	VELA-X-1	8 / 2.54
4109-13	NGC3132	7 /23.91	5116-13	OMG-CEN	8 / 4.59	4410-11	VELASNRA	1 /10.62
5110-11	NGC3201	1 /13.73	2217-10	P-CAR	7 / 1.25	4410-12	VELASNRA	6 /12.36
5110-12	NGC3201	2 / 6.36	2133-20	P-CYG	2 / 6.93	4411-10	VELASNRB	3 /20.46
6208-10	NGC3344	6 / 8.30	2133-11	P-CYG	6 / 8.77	4448-11	VELASNRE	5 / 4.42
6306-10	NGC3379	4 / 8.72	2133-12	P-CYG	7 /12.57	4448-12	VELASNRE	9 / 0.15
8118-11	NGC3783	6 / 0.61	2235-10	PI-AQR	2 /10.59	3206-20	VW-HYI	2 /19.67
8118-12	NGC3783	6 / 2.17	2235-21	PI-AQR	5 /16.32	3206-21	VW-HYI	7 / 5.22
8118-13	NGC3783	7 /16.51	2235-22	PI-AQR	6 /16.88	4579-10	W197-M16	2 /20.58
8116-11	NGC4151	1 /16.76	3604-10	R-CRB	6 /20.69	4580-10	W246-M16	1 /14.14
8116-12	NGC4151	2 / 4.96	9405-10	SA57	3 /14.56	4582-11	W367-M16	8 /13.87
8116-30	NGC4151	8 /15.05	1206-11	SATURN	1 /15.69	4582-12	W367-M16	9 / 2.07
6332-10	NGC4406	6 /14.33	1206-20	SATURN	2 / 3.97	4583-10	W401-M16	3 / 8.89
6406-11	NGC4449	5 /15.51	3712-11	SCO-X-1	2 / 1.15	3526-20	XI-BOOA	7 /13.45
6406-12	NGC4449	8 / 1.66	3712-12	SCO-X-1	4 /10.99	4554-10	ZET-OPH	5 / 9.91
6607-10	NGC4565	3 /16.27	6133-10	SEX-B	4 /13.34	0610-11	ZET-PEG	4 /20.53
8119-11	NGC4593	3 / 6.90	4516-11	SK69-239	1 /19.24	0610-12	ZET-PEG	5 /11.72
8119-12	NGC4593	7 / 3.99	4516-12	SK69-239	4 /22.02	0610-21	ZET-PEG	8 /14.63
7407-11	NGC4631	2 /15.70	4516-13	SK69-239	5 / 1.23	0610-22	ZET-PEG	8 /22.06
7407-12	NGC4631	2 /17.48	4516-14	SK69-239	6 / 4.83	2111-10	ZET-PUP	5 /19.78
5202-10	NGC6496	2 /22.30	4519-12	SK69-270	2 /18.16			

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ID	NAME	D / H MET	ID	NAME	D / H MET	ID	NAME	D / H MET
0972-10	ALF-CIR	0 /15.86	0005-10	GD246	2 /15.11	9202-10	AB1367	4 /10.31
2805-11	ALF-CENA	0 /18.09	7407-11	NGC4631	2 /15.70	3712-12	SCO-X-1	4 /10.99
2805-12	ALF-CENA	0 /19.33	2302-12	EZ-CMA	2 /16.76	7203-10	NGC1705	4 /11.82
2302-90	EZ-CMA	0 /20.84	7407-12	NGC4631	2 /17.48	4109-12	NGC3132	4 /12.13
0001-11	HZ43	0 /21.49	4519-12	SK69-270	2 /18.16	2311-10	HD192163	4 /12.55
0502-10	NGC2070	0 /21.93	6310-22	M60	2 /18.96	6133-10	SEX-B	4 /13.34
8307-10	M87	0 /22.75	3206-20	VW-HYI	2 /19.67	1111-10	C-AUSTIN	4 /14.11
0301-11	BR-EARTH	0 /23.38	4579-10	W197-M16	2 /20.58	6232-10	M63	4 /14.97
2506-11	SW-MID	1 / 0.29	5109-11	NGC6752	2 /21.30	3226-21	AE-AQR	4 /15.93
4416-10	SN1987A	1 / 1.03	2215-20	FY-CMA	2 /21.64	4415-11	N63A	4 /16.33
0656-10	HD161056	1 / 1.84	5202-10	NGC6496	2 /22.30	5106-10	M5	4 /16.85
2307-10	THT-MUS	1 / 2.65	5206-10	NGC6637	2 /22.73	2402-11	ETA-HOR	4 /17.56
2805-20	ALF-CENA	1 / 3.33	6402-10	NGC2366	2 /23.19	8424-12	3C273	4 /18.19
7302-10	NGC1808	1 / 4.34	8415-11	1700+64	2 /23.55	3226-22	AE-AQR	4 /19.00
0001-12	HZ43	1 / 4.95	7102-10	NG2444-5	3 / 0.58	3216-11	BE-UMA	4 /19.49
0004-10	1034+001	1 / 5.94	3404-12	CH-CYG	3 / 1.20	6235-10	M101A	4 /19.84
9104-10	A2142	1 / 6.47	3108-20	BET-PIC	3 / 1.30	0610-11	ZET-PEG	4 /20.53
7304-11	NGC2782	1 / 7.50	3108-11	BET-PIC	3 / 1.98	6310-11	M60	4 /21.09
0603-10	DEL-CYG	1 / 8.02	2609-12	G70D8247	3 / 2.65	4516-12	SK69-239	4 /22.02
8424-11	3C273	1 / 9.11	9402-10	CMI	3 / 3.64	6310-12	M60	4 /22.74
4410-11	VELASRA	1 /10.62	0009-10	GD190	3 / 4.20	5115-10	M30	4 /23.61
4545-10	HD154204	1 /11.27	2406-12	HD61931	3 / 5.18	3404-22	CH-CYG	5 / 0.38
2115-10	DEL-CMA	1 /12.12	0657-10	HD204827	3 / 5.72	4516-13	SK69-239	5 / 1.23
1111-30	C-AUSTIN	1 /12.80	8119-11	NGC4593	3 / 6.90	3404-21	CH-CYG	5 / 1.97
5110-11	NGC3201	1 /13.73	2230-10	HD208682	3 / 7.51	1204-40	JUPITER	5 / 2.84
4580-10	W246-M16	1 /14.14	8113-11	NGC2992	3 / 8.33	2609-11	G70D8247	5 / 3.50
4405-10	N132D	1 /14.81	4583-10	W401-M16	3 / 8.89	4448-11	VELASRE	5 / 4.42
1206-11	SATURN	1 /15.69	3212-10	C48D1557	3 / 9.87	7310-10	M100	5 / 4.94
8116-11	NGC4151	1 /16.76	2506-12	SW-MID	3 /10.41	3807-11	VELA-X-1	5 / 5.98
5103-12	NGC1851	1 /17.77	6308-20	M49	3 /11.53	2222-10	48LIB	5 / 6.77
6308-10	M49	1 /18.45	4412-10	CYGLLOPA	3 /12.43	4503-11	HD62542	5 / 7.62
4516-11	SK69-239	1 /19.24	4114-10	NGC6720	3 /13.71	3815-10	HD153919	5 / 8.20
7323-10	NGC6946	1 /20.12	1111-20	C-AUSTIN	3 /14.14	3110-11	HD53367	5 / 9.11
8623-11	2155-304	1 /20.62	9405-10	SA57	3 /14.56	4554-10	ZET-OPH	5 / 9.91
9302-20	AB1795	1 /21.41	3227-22	SS-CYG	3 /15.40	6215-10	NGC2403	5 /10.68
6106-10	SMC-A	1 /22.41	8113-12	NGC2992	3 /15.93	9101-11	COMA-CL	5 /11.29
8307-20	M87	1 /23.07	6607-10	NGC4565	3 /16.27	0610-12	ZET-PEG	5 /11.72
8102-11	FAIRALL9	1 /23.85	7402-10	NGC1549	3 /17.04	0657-20	HD204827	5 /12.63
4533-10	HD114886	2 / 0.69	3308-20	68HER	3 /17.92	2302-11	EZ-CMA	5 /13.53
3712-11	SCO-X-1	2 / 1.15	7403-10	NGC1553	3 /18.76	6608-10	M104	5 /14.01
4663-10	HD114737	2 / 1.58	7107-10	M51	3 /19.32	5201-10	47-TUC	5 /14.76
9302-10	AB1795	2 / 2.19	2706-11	NGC6905	3 /20.07	6406-11	NGC4449	5 /15.51
7305-10	NGC2903	2 / 3.27	4411-10	VELASNRB	3 /20.46	2235-21	PI-AQR	5 /16.32
1206-20	SATURN	2 / 3.97	3260-10	2252-035	3 /21.23	3216-12	BE-UMA	5 /16.90
8116-12	NGC4151	2 / 4.96	6216-11	M81	3 /22.21	8506-10	1211+143	5 /17.23
3308-10	68HER	2 / 5.43	4120-10	NGC7009	3 /22.71	5109-12	NGC6752	5 /17.89
5110-12	NGC3201	2 / 6.36	5101-10	NGC2808	3 /23.42	8506-30	1211+143	5 /18.42
2133-20	P-CYG	2 / 6.93	4413-10	CYGLLOPB	4 / 0.13	9101-12	COMA-CL	5 /18.74
1204-50	JUPITER	2 / 7.90	8407-11	0558-504	4 / 0.80	4406-11	N49A+B	5 /19.39
2132-21	9SGE	2 / 8.67	8310-10	CEN-A	4 / 1.51	2111-10	ZET-PUP	5 /19.78
2406-11	HD61931	2 / 9.46	2215-10	FY-CMA	4 / 2.41	8415-13	1700+64	5 /20.31
6310-21	M60	2 / 9.82	3223-30	AM-HER	4 / 3.06	4122-10	NGC7293	5 /20.99
2235-10	PI-AQR	2 /10.59	0004-20	1034+001	4 / 4.12	3814-12	HER-X-1	5 /21.67
3218-10	UX-UMA	2 /11.13	3814-11	HER-X-1	4 / 4.64	6112-11	SMC-B	5 /22.65
3227-21	SS-CYG	2 /12.01	1204-60	JUPITER	4 / 5.58	5116-11	OMG-CEN	5 /23.19
6202-11	NGC2841	2 /12.59	8415-12	1700+64	4 / 6.09	8102-12	FAIRALL9	6 / 0.05
4414-10	CRABNEB	2 /12.94	4109-11	NGC3132	4 / 7.14	8118-11	NGC3783	6 / 0.61
3404-11	CH-CYG	2 /13.16	9203-11	HER-CLUS	4 / 7.66	8106-10	NGC1566	6 / 1.66
4659-10	ALF-CMI	2 /14.12	6306-10	NGC3379	4 / 8.72	8118-12	NGC3783	6 / 2.17
5108-10	M92	2 /14.73	4412-20	CYGLLOPA	4 / 9.43	3212-20	C48D1557	6 / 3.26

TARGET INDEX - TIME ORDER

ID	NAME	D / H MET	ID	NAME	D / H MET	ID	NAME	D / H MET
6210-10	MALIN 1	6 / 3.79	5107-10	M13	7 / 4.41	8506-20	1211+143	8 / 3.19
4516-14	SK69-239	6 / 4.83	3206-21	VW-HYI	7 / 5.22	4519-11	SK69-270	8 / 4.00
3815-20	HD153919	6 / 5.41	3315-20	44IBOO	7 / 5.77	5116-13	OMG-CEN	8 / 4.59
3218-20	UX-UMA	6 / 6.97	4647-10	MU-COL	7 / 6.80	2302-13	EZ-CMA	8 / 5.56
3110-12	HD53367	6 / 7.96	4207-10	ETA-CARH	7 / 7.33	3621-12	G-HER	8 / 6.24
6208-10	NGC3344	6 / 8.30	2122-10	HD45677	7 / 8.36	4524-10	HD60325	8 / 7.13
2133-11	P-CYG	6 / 8.77	0656-20	HD161056	7 / 9.06	9203-12	HER-CLUS	8 / 7.86
2406-13	HD61931	6 / 9.51	3216-13	BE-UMA	7 / 10.02	2517-11	GD153	8 / 8.97
3223-10	AM-HER	6 / 9.98	4211-10	NGC7023	7 / 10.41	0603-22	DEL-CYG	8 / 9.27
4115-10	A-78	6 / 10.67	1111-40	C-AUSTIN	7 / 11.05	3208-22	U-GEM	8 / 10.23
7304-12	NGC2782	6 / 11.06	7306-10	MKN116	7 / 11.47	5203-10	NGC6624	8 / 10.96
3814-20	HER-X-1	6 / 11.52	8415-14	1700+64	7 / 11.88	5204-10	NGC6723	8 / 11.36
4410-12	VELASNRA	6 / 12.36	2133-12	P-CYG	7 / 12.57	2115-20	DEL-CMA	8 / 11.80
2533-10	HZ43	6 / 13.05	0004-30	1034+001	7 / 12.99	4549-10	HD161961	8 / 12.33
2402-12	ETA-HOR	6 / 13.74	3526-20	XI-BOOA	7 / 13.45	1111-50	C-AUSTIN	8 / 13.07
6332-10	NGC4406	6 / 14.33	4415-12	N63A	7 / 14.25	2604-10	1031+234	8 / 13.46
0010-10	GD002	6 / 15.20	4208-10	M1-92	7 / 14.98	4582-11	W367-M16	8 / 13.87
4656-10	HD55857	6 / 15.72	2226-10	EPS-SGR	7 / 15.67	0610-21	ZET-PEG	8 / 14.63
4658-10	HD57682	6 / 16.00	4503-12	HD62542	7 / 15.95	8116-30	NGC4151	8 / 15.05
0603-21	DEL-CYG	6 / 16.42	8118-13	NGC3783	7 / 16.51	8126-11	MKN509	8 / 15.56
2235-22	PI-AQR	6 / 16.88	2417-10	21VUL	7 / 18.32	3613-10	HR4049	8 / 16.46
3223-20	AM-HER	6 / 17.51	5311-10	M67	7 / 19.06	8126-12	MKN509	8 / 17.06
3621-11	G-HER	6 / 19.19	4211-20	NGC7023	7 / 19.56	6216-12	M81	8 / 18.02
6112-10	SMC-B	6 / 19.95	2132-10	9SGE	7 / 20.15	8623-40	2155-304	8 / 18.67
2118-11	GX-VEL	6 / 20.18	7504-10	NGC2685	7 / 20.57	8415-15	1700+64	8 / 19.71
3604-10	R-CRB	6 / 20.69	4208-20	M1-92	7 / 21.11	2132-22	9SGE	8 / 20.54
2706-12	NGC6905	6 / 21.34	4405-20	N132D	7 / 21.80	2603-10	H1504+65	8 / 21.17
4107-10	NGC2392	6 / 21.71	5116-12	OMG-CEN	7 / 22.49	0610-22	ZET-PEG	8 / 22.06
2313-10	HD193793	6 / 22.28	0301-12	BR-EARTH	7 / 23.35	4543-10	HD147888	8 / 22.98
7205-11	M82	6 / 23.28	4109-13	NGC3132	7 / 23.91	1111-60	C-AUSTIN	8 / 23.67
8407-12	0558-504	7 / 0.48	4530-10	HD99264	8 / 0.21	4448-12	VELASNRE	9 / 0.15
2217-10	P-CAR	7 / 1.25	4406-12	N49A+B	8 / 0.92	8407-14	0558-504	9 / 1.27
2234-10	EPS-CAP	7 / 2.09	8407-13	0558-504	8 / 1.33	2118-12	GX-VEL	9 / 1.64
2605-10	1159-035	7 / 2.48	6406-12	NGC4449	8 / 1.66	4582-12	W367-M16	9 / 2.07
8119-12	NGC4593	7 / 3.99	3807-12	VELA-X-1	8 / 2.54			

HUT ALTERNATE PROCEDURES

1CM_AP	9.413 * HSP When actual slit pos = 3
1.000 * JAC VIP ON until at obs slit	9.414 * HSP ITEM 42_5 (open doors)
5.000 * JAC Chk Stat - -LOC RDY	BR_OUT
5.101 * TV Verify HUT acq on TV	6.000 %
8.101 * HSP When actual slit pos=7	6.101 * TV Brt star just off field
8.102 * JAC ITEM 16_0 (T = 0 sec)	6.102 * TV *IF Target is visible
8.103 * JAC ITEM 16_1 (T = 100 sec)	6.103 * JAC * HUT PFKs center target
8.104 * JAC When log_P < -5.5	6.104 * JAC * IMC BEGIN
8.105 * JAC ITEM 16_0 Repeat.	6.105 * JAC * HUT ITEM 5
8.106 * JAC (Cycle pump thru obs)	6.106 * JAC *ELSE IF no Brt star vis
10.701 * HDC (just prior to QUIT)	6.107 * JAC * HUT ITEM 12_X inc mag
10.702 * HDC ITEM 61_0 (ND6 filt)	6.108 * JAC * HUT PFKs center target
10.703 * HDC Check 61_0_0	6.109 * JAC * But watch for Brt star
10.704 * JAC ITEM 16_1	6.110 * JAC * IMC BEGIN
13.000 %	6.111 * JAC * HUT ITEM 5
1CMSAA	6.112 * JAC *ELSE
1.000 * JAC VIP ON until at obs slit	6.113 * JAC * Skip it and locate
3.101 * - Note: Acquisition in SAA	6.114 * JAC * with WUPPE
5.000 * JAC Chk Stat - -LOC RDY	7.000 %
5.101 * TV Verify HUT acq on TV	C_HR2
7.701 * - After SAA exit	8.111 * JOB *IF HUT LOG_R > 4.7
7.702 * JAC HUT SETUP	8.112 * HOP * ITEM 42_2 (door 2)
7.703 * JAC Chk HUT Stat -DET	10.401 * HDC *IF you moved to door 2
8.101 * HSP When actual slit pos=7	10.402 * HDC * (just prior to QUIT)
8.102 * JAC ITEM 16_0 (T = 0 sec)	10.403 * HDC * ITEM 61_0 (ND6 filt)
8.103 * JAC ITEM 16_1 (T = 100 sec)	10.404 * HDC * Check 61_0_0
8.104 * JAC When log_P < -5.5	10.405 * JAC * ITEM 16_1
8.105 * JAC ITEM 16_0 Repeat.	C_HTIM
8.106 * JAC (Cycle pump thru obs)	8.161 * JOB *IF HUT LOG_R < 3.6
10.701 * HDC (just prior to QUIT)	8.162 * HOP * ITEM 39_4 (hitime res)
10.702 * HDC ITEM 61_0 (ND6 filt)	C_LR2
10.703 * HDC Check 61_0_0	8.141 * JOB *IF HUT LOG_R < 3
10.704 * JAC ITEM 16_1	8.142 * HDC * ITEM 61_0 (ND6 filt)
13.000 %	8.143 * HDC * Check 61_0_0
2252	8.144 * HOP * ITEM 42_2 (door 2)
9.101 * JOB *IF LOG_R < 2.6	8.145 * HOP * ITEM 32_X (X = gs mag)
9.102 * HOP * ITEM 41_1 (30" slit)	8.146 * JAC * Leave pump off til end
9.103 * HOP * ITEM 39_1 (histo mode)	C_LR3
ACQ1	8.151 * JOB *IF HUT LOG_R < 3
4.701 * TV Src briter of 20" double	8.152 * HDC * ITEM 61_0 (ND6 filt)
ACQ4	8.153 * HDC * Check 61_0_0
4.701 * TV Src briter of 20" double	8.154 * HOP * ITEM 42_3 (door 3)
ALFCEN	8.155 * HOP * ITEM 32_X (X = gs mag)
4.701 * TV Src briter of 20" double	C_LR5
8.401 * TV HUT will offset to B	8.161 * JOB *IF HUT LOG_R < 4.4
8.402 * TV (fainter) after 1000 sec	8.162 * HOP * ITEM 42_5 (door 5)
ALFILT	C_NOLC
9.411 * JOB HUT will go to Alum filt	5.151 * JAC *IF HUT loc fails
9.412 * JOB after 1000 sec.	

HUT ALTERNATE PROCEDURES

5.152 * JAC * Proceed w/o HUT bias DOOR6

COMET

1.000 * JAC VIP ON until at obs slit
5.000 * JAC Chk Stat - -LOC RDY
5.101 * TV Verify HUT acq on TV
8.101 * HSP When actual slit pos=7
8.102 * JAC ITEM 16_0
9.401 * HOP 500 sec after BEGIN,
9.402 * HOP ITEM 42_1 (1 cm2 door)
9.403 * JAC 600 sec after BEGIN,
9.404 * JAC ITEM 16_1
9.405 * JAC When log_P < -5.5
9.406 * JAC ITEM 16_0 (T = 0 sec)
9.407 * JAC ITEM 16_1 (T = 100 sec)
9.408 * JAC (Cycle pump thru obs)
10.701 * HDC (just prior to QUIT)
10.702 * HDC ITEM 61_0 (ND6 filt)
10.703 * HDC Check 61_0_0
10.704 * JAC ITEM 16_1_1
13.000 %

COMGAL

4.701 * TV Note: Guide stars may
4.702 * TV be fuzzy galaxies.

CTATST

2.501 * IST Instead of ITEM 27[IDOP]
2.502 * IST ITEM 7 (exc obj in slew)
2.503 * IST PFK Reorient
4.101 * IST Do CTA acquisition

DR6SAA

1.000 * JAC VIP ON until at obs slit
3.101 * - Note: Acquisition in SAA
5.000 * JAC Chk Stat - -LOC RDY
5.101 * TV Verify HUT acq on TV
7.701 * - After SAA exit
7.702 * JAC HUT SETUP
7.703 * JAC Chk HUT Stat -DET
8.101 * HSP When actual slit pos=7
8.102 * JAC ITEM 16_0
9.401 * HOP 500 sec after BEGIN,
9.402 * HOP ITEM 42_1 (1 cm2 door)
9.403 * JAC 600 sec after BEGIN,
9.404 * JAC ITEM 16_1
9.405 * JAC When log_P < -5.5
9.406 * JAC ITEM 16_0 (T = 0 sec)
9.407 * JAC ITEM 16_1 (T = 100 sec)
9.408 * JAC (Cycle pump thru obs)
10.701 * HDC (just prior to QUIT)
10.702 * HDC ITEM 61_0 (ND6 filt)
10.703 * HDC Check 61_0_0
10.704 * JAC ITEM 16_1_1
13.000 %

DOOR1

9.401 * HOP 600 sec after BEGIN,
9.402 * HOP ITEM 42_3 (shut -Y door)

DOOR2

9.401 * HOP 800 sec after BEGIN,
9.402 * HOP ITEM 42_3 (shut -Y door)

DOOR3

9.401 * HOP 600 sec after BEGIN,
9.402 * HOP ITEM 42_3 (shut -Y door)

DOOR4

9.401 * HOP 400 sec after BEGIN,
9.402 * HOP ITEM 42_2 (50 cm2 door)
10.701 * HDC (just prior to QUIT)
10.702 * HDC ITEM 61_0 (ND6 filt)
10.703 * HDC Check 61_0_0
10.704 * JAC ITEM 16_1_1
13.000 %

EARTHA

0.411 * HDC ITEM 42_0 (close doors)
0.412 * HDC ITEM 61_3 (ND4 filt)
0.413 * HDC ITEM 63_0 (disable EBOS)
0.414 * HDC Check 61_3_3
0.415 * HDC ITEM 42_5 (open doors)
1.000 * JAC Leave VIP ON, DET OFF
5.000 * JAC Chk Stat - -LOC RDY
7.000 %
8.101 * HDC Perform HUT FO6A
10.701 * HDC (just prior to QUIT)
10.702 * HDC ITEM 42_0 (close doors)
10.703 * HDC ITEM 61_0 (ND6 filt)
10.704 * HDC Check 61_0_0
13.000 %

DOOR5

9.401 * HOP 400 sec after BEGIN,
9.402 * HOP ITEM 42_1 (1 cm2 door)
9.403 * JAC 500 sec after BEGIN,
9.404 * JAC ITEM 16_1
9.405 * JAC When log_P < -5.5
9.406 * JAC ITEM 16_0 (T = 0 sec)
9.407 * JAC ITEM 16_1 (T = 100 sec)
9.408 * JAC (Cycle pump thru obs)

HUT ALTERNATE PROCEDURES

13.402 * HDC ITEM 63_1 (enable EBOS) 7 %

EARTH8 NR_BRT

0.411 * HDC ITEM 42_0 (close doors) 4.121 * - Very brt star near field
 0.412 * HDC ITEM 61_3 (ND4 filt) 4.122 * - Check TV, adj mag if nec
 0.413 * HDC ITEM 63_0 (disable EBOS)
 0.414 * HDC Check 61_3_3
 0.415 * HDC ITEM 42_5 (open doors)
 7.000 %
 8.101 * HDC Perform HUT FO6B
 10.701 * JAC (just prior to QUIT)
 10.702 * JAC ITEM 16_1
 10.703 * HDC ITEM 42_0 (close doors)
 10.704 * HDC ITEM 61_0 (ND6 filt)
 10.705 * HDC Check 61_0_0
 13.000 %
 13.402 * HDC ITEM 63_1 (enable EBOS)

G191B2

8.161 * JOB *IF HUT LOG_R < 4.4
 8.162 * HOP * ITEM 42_5 (door 5)
 8.471 * HSP After 300 sec, HUT will
 8.472 * HSP go to A1 filt, PHOTON=60
 8.473 * HSP When slit reaches pos 3
 8.474 * HSP ITEM 42_5 (door 5)

HER-X1

9.101 * JOB Must keep high time mode
 9.102 * JOB *IF LOG_R > 3.7
 9.103 * HOP * ITEM 40_1 (mask 1216)

HUTMAN

5 * JAC Chk Stat -CUR -LOC RDY

INHSAA

0.411 * HOP ITEM 90_C_0 (inh SAA)
 13.411 * HOP ITEM 90_C_1 (ena SAA)

JUPMAN

0.401 * HOP ITEM 90_5_1 (loc=obs ap)
 4.701 * TV Center up HUT on planet
 13.401 * HOP ITEM 90_5_0 (restore)

LCDATA

0.401 * HOP ITEM 90_5_1 (loc=obs ap)
 13.401 * HOP ITEM 90_5_0 (restore)

MANUAL

4.121 * JAC *IF HUT src visible
 4.122 * JAC * HUT ITEM 4
 4.123 * JAC * HUT PFK cur to src

NOLOC

P-CAR

1.000 * JAC VIP ON until at obs slit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC HUT SETUP
 7.703 * JAC Chk HUT Stat -DET
 8.101 * HSP When actual slit pos=7
 8.102 * JAC ITEM 16_0 (T = 0 sec)
 8.103 * JAC ITEM 16_1 (T = 100 sec)
 8.104 * JAC When log_P < -5.5
 8.105 * JAC ITEM 16_0 Repeat.
 8.141 * JOB *IF HUT LOG_R < 3
 8.142 * HDC * ITEM 61_0 (ND6 filt)
 8.143 * HDC * Check 61_0_0
 8.144 * HOP * ITEM 42_2 (door 2)
 8.145 * HOP * ITEM 32_X (X = gs mag)
 8.146 * JAC * Leave pump off til end
 10.701 * HDC (just prior to QUIT)
 10.702 * HDC ITEM 61_0 (ND6 filt)
 10.703 * HDC Check 61_0_0
 10.704 * JAC ITEM 16_1
 13.000 %

PHDMON

9.401 * JOB HUT will dither to ss
 9.402 * JOB mode for part of obs.

PHDSAA

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -LOC
 9.401 * JOB HUT will dither to ss
 9.402 * JOB mode for part of obs.

SAA_3M

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -LOC

HUT ALTERNATE PROCEDURES

SAA_AC

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -LOC

SAADRI

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -LOC
 9.401 * HOP 600 sec after BEGIN,
 9.402 * HOP ITEM 42_3 (shut -Y door)

SAADR3

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -LOC
 9.401 * HOP 600 sec after BEGIN,
 9.402 * HOP ITEM 42_3 (shut -Y door)

SAAMAN

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -CUR

SAAPHD

1.000 * - VIP ON until SAA exit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC ITEM 16_0
 7.703 * JAC HUT SETUP
 7.704 * JAC Chk HUT Stat -LOC
 9.401 * JOB HUT will dither to ss
 9.402 * JOB mode for part of obs.

SAASM3

1.000 * JAC VIP ON until at obs slit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC HUT SETUP
 7.703 * JAC Chk HUT Stat -DET
 8.101 * HSP When actual slit pos=7
 8.102 * JAC ITEM 16_0
 8.151 * JOB *IF HUT LOG R < 3
 8.152 * HDC * ITEM 61_0 (ND6 filt)
 8.153 * HDC * Check 61_0_0
 8.154 * HOP * ITEM 42_3 (door 3)
 8.155 * HOP * ITEM 32_X (X = gs mag)
 10.701 * HDC (just prior to QUIT)
 10.702 * HDC ITEM 61_0 (ND6 filt)
 10.703 * HDC Check 61_0_0
 10.704 * JAC ITEM 16_1
 13.000 %

SATMAN

4.701 * TV Center up HUT on planet
 5.000 * JAC Chk Stat -CUR -LOC RDY

SM_SAA

1.000 * JAC VIP ON until at obs slit
 3.101 * - Note: Acquisition in SAA
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 7.701 * - After SAA exit
 7.702 * JAC HUT SETUP
 7.703 * JAC Chk HUT Stat -DET
 8.101 * HSP When actual slit pos=7
 8.102 * JAC ITEM 16_0
 10.701 * HDC (just prior to QUIT)
 10.702 * HDC ITEM 61_0 (ND6 filt)
 10.703 * HDC Check 61_0_0
 10.704 * JAC ITEM 16_1
 13.000 %

SMALAP

1.000 * JAC VIP ON until at obs slit
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 8.101 * HSP When actual slit pos=7
 8.102 * JAC ITEM 16_0
 10.701 * HDC (just prior to QUIT)
 10.702 * HDC ITEM 61_0 (ND6 filt)
 10.703 * HDC Check 61_0_0
 10.704 * JAC ITEM 16_1
 13.000 %

SMALR3

1.000 * JAC VIP ON until at obs slit
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 8.101 * HSP When actual slit pos=7

HUT ALTERNATE PROCEDURES

8.102 * JAC ITEM 16_0
 8.151 * JOB *IF HUT LOG_R < 3
 8.152 * HDC * ITEM 61_0 (ND6 filt)
 8.153 * HDC * Check 61_0_0
 8.154 * HOP * ITEM 42_3 (door 3)
 8.155 * HOP * ITEM 32_X (X = gs mag)
 10.701 * HDC (just prior to QUIT)
 10.702 * HDC ITEM 61_0 (ND6 filt)
 10.703 * HDC Check 61_0_0
 10.704 * JAC ITEM 16_1
 13.000 %

SMAPHD

1.000 * JAC VIP ON until at obs slit
 5.000 * JAC Chk Stat - -LOC RDY
 5.101 * TV Verify HUT acq on TV
 8.101 * HSP When actual slit pos=7
 8.102 * JAC ITEM 16_0
 9.401 * JOB HUT will dither to ss
 9.402 * JOB mode for part of obs.
 10.701 * HDC (just prior to QUIT)
 10.702 * HDC ITEM 61_0 (ND6 filt)
 10.703 * HDC Check 61_0_0
 10.704 * JAC ITEM 16_1
 13.000 %

SPEC1

0.111 * HMM As early as possible
 0.112 * HMM ITEM 79_25 (set delta X)
 0.113 * HMM ITEM 83 (start mirror)
 0.401 * HMM When motions complete
 0.402 * HMM ITEM 76_0 (set focus)
 8.401 * - Perform HUT F05B

SPEC2

0.111 * HMM As early as possible
 0.112 * HMM ITEM 80_3251 (or _____)
 0.113 * HMM ITEM 81_4005 (or _____)
 0.114 * HMM ITEM 82_4556 (or _____)
 0.115 * HMM ITEM 83 (start mirror)
 0.401 * HMM When motions complete
 0.402 * HMM ITEM 76_0 (set focus)
 8.401 * - Perform HUT F05C
 13.421 * HMM ITEM 80_3049 (or _____)
 13.422 * HMM ITEM 81_3803 (or _____)
 13.423 * HMM ITEM 82_4354 (or _____)
 13.426 * HMM ITEM 83 (start mirror)

13.427 * HMM When motions complete
 13.428 * HMM ITEM 76_0 (set focus)

SSCYG

4.701 * TV *IF src is very bright
 4.702 * JAC * ITEM 16_1
 4.703 * JAC * Go to XTARGET BOOK and
 4.704 * JAC * edit HUT WUPPE seq num
 4.705 * JAC *ELSE
 4.706 * JAC * ITEM 12_13 (Faint mag)

SU-UMA

4.701 * TV Variable star (could be
 4.702 * TV brighter or fainter).

TO_2ND

8.471 * JOB HUT will dither to Alum
 8.472 * JOB filt (slit 3), LOG_R=2.5

TVSENS

8.101 * HOP Perform HUT F05D

U-GEM

4.701 * TV *IF src is very bright
 4.702 * JAC * Go to XTARGET BOOK and
 4.703 * JAC * edit HUT WUPPE seq num
 4.704 * JAC *ELSE
 4.705 * JAC * ITEM 12_15 (Faint mag)

VW-HYI

4.701 * TV *IF src is very bright
 4.702 * JAC * ITEM 16_1
 4.703 * JAC * Go to XTARGET BOOK and
 4.704 * JAC * edit HUT WUPPE seq num
 4.705 * JAC *ELSE
 4.706 * JAC * ITEM 12_14 (Faint mag)

W_DARK

4.101 * - Note: faint target--if
 4.102 * - necessary wait until
 4.103 * - night to acquire.

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WUPPE ALTERNATE PROCEDURES

APCHK

5.000 * JAC Chk Stat -LOC -CUR RDY
 7.501 * JAC NOTE: Leave WUP Cur on
 8.201 * JAC Chk WUP Stat -PAU
 8.202 * JAC WUP ITEM 9 (Proceed)
 8.203 * JAC WUP ITEM 12_15
 8.204 * JAC PFK WUP Coarse Cur rt 2,
 8.205 * JAC left 4, rt 2
 8.206 * JAC *IF Stars in WUP ap
 8.207 * JAC * WUP ITEM 8 (Pause)
 8.208 * JAC * WUP Cur to new posn
 8.209 * JAC * WUP ITEM 6 (Cntr)
 8.210 * JAC * WUP ITEM 9 (Proceed)

APMAP

8.501 * WOB Perform WUP FO-4, steps
 8.502 * WOB 11.2-12.10 with:
 8.503 * WOB centered aps x = 3
 8.504 * WOB long slits y = 6,7,8
 8.505 * WOB occulting sl z = 10,11

BETPIC

7.201 * JAC IF t=SAA out > 120 sec
 7.202 * JAC * Config All=No-one
 7.203 * JAC * All BEGIN (Begin IMC)
 7.204 * WOB * ITEM 7_5000
 7.205 * JAC * Wait for SAA out
 7.206 * WOB * ITEM 8
 7.207 * WOB * ITEM 2
 7.208 * JAC * Reconfig as before

BKG1

8.501 * JAC NOTE: WUP 1st seq = BKG

BKG2

8.501 * JAC NOTE: WUP last seq = BKG

BKG3

8.501 * JAC NOTE: WUP 1st, last
 8.502 * JAC seq = BKG

BRIGHT

5.000 * JAC Chk Stat -LOC -PAU RDY
 7.801 * JAC WUP ITEM 12_0 (ZOD on)
 7.802 * JAC Chk WUP acq marks
 8.201 * JAC Chk WUP Stat OBS
 8.202 * JAC WUP ITEM 12_-2 (ZOD off)
 8.203 * JAC Expect ZOD SIG err

DFLD

7.801 * JAC WUP ITEM 11_DF
 7.802 * JAC WUP wait CAM MODE ZOOM

FLDLOC

5.000 * JAC Chk Stat -LOC CUR RDY
 7.501 * JAC *IF WUP acq incorrect
 7.502 * JAC * WUP PFK cur to target
 7.503 * JAC * WUP ITEM 6 (Cntr)
 7.504 * JAC WUP ITEM 4 (Cur off)
 7.505 * JAC WUP ITEM 11_Z (Zoom)
 7.506 * JAC Chk WUP Stat -LOC

FNTLOC

5.000 * JAC Chk Stat -LOC -CUR RDY
 7.501 * JAC WUP tgt= HUT faint star
 7.502 * JAC *IF WUP target visible
 7.503 * JAC * WUP PFK cur to target
 7.504 * JAC * WUP ITEM 6 (Cntr)
 7.505 * JAC * WUP ITEM 4 (Cur off)
 7.506 * JAC *ELSE
 7.507 * JAC * Config without WUP
 8.201 * JAC *IF WUP Deconfig
 8.202 * JAC * WUP ITEM 11_F +1
 8.203 * JAC * Cur/ITEM 6 in fld, zm
 8.204 * JAC * WUP ITEM 4 (Cur off)
 8.205 * JAC * WUP ITEM 7 (Begin)
 8.206 * JAC * Config with WUP

FNTSAA

5.000 * JAC Chk Stat -LOC -CUR RDY
 7.501 * JAC WUP tgt= HUT faint star
 7.502 * JAC *IF WUP tgt not visible
 7.503 * JAC * WUP ITEM 11_F +1
 7.504 * JAC * WUP PFK cur to target
 7.505 * JAC * WUP ITEM 6 (Cntr)
 7.506 * JAC * WUP ITEM 11_Z (Zoom)
 7.507 * JAC WUP PFK cur to target
 7.508 * JAC WUP ITEM 6 (Cntr)
 7.509 * JAC WUP ITEM 4 (Cur off)

FTPRNT

5.000 * JAC Chk Stat -LOC CUR RDY
 7.501 * JAC *IF WUP acq incorrect
 7.502 * JAC * WUP PFK cur to target
 7.503 * JAC * WUP ITEM 6 (Cntr)
 7.504 * JAC WUP ITEM 4 (Cur off)
 7.505 * JAC WUP ITEM 11_Z (Zoom)
 7.506 * JAC Chk WUP Stat -LOC
 8.201 * JAC *IF target not on right
 8.202 * JAC *side of aper
 8.203 * JAC * WUP ITEM 8 (Pause)
 8.204 * JAC * WUP ITEM 4 (Cur on)
 8.205 * JAC * WUP Cur to new posn
 8.206 * JAC * WUP ITEM 6 (Cntr)
 8.207 * JAC * WUP ITEM 9 (Proceed)

GANY

7.201 * JAC WUP tgt is Ganymede
 7.202 * JAC (see chart)

HILOC

WUPPE ALTERNATE PROCEDURES

		2.000 %	
5.000	* JAC Chk Stat -LOC -CUR RDY	3.000 %	
7.501	* JAC WUP tgt= offset HII rgn	4.000 %	
7.502	* JAC *IF WUP target visible	5.000 %	
7.503	* JAC * WUP PFK cur to target	6.000 %	
7.504	* JAC * WUP ITEM 6 (Cntr)	7.000 %	
7.505	* JAC * WUP ITEM 4 (Cur off)	8.000 %	
7.506	* JAC *ELSE	9.000 %	
7.507	* JAC * Config without WUP	10.000 %	
8.201	* JAC *IF WUP Deconfig	11.000 %	
8.202	* JAC * WUP ITEM 11_F +1	12.000 %	
8.203	* JAC * Cur/ITEM 6 in fld, zm	13.000 %	
8.204	* JAC * WUP ITEM 4 (Cur off)	13.901 *	(During slew)
8.205	* JAC * WUP ITEM 7 (Begin)	13.902 *	UAC *IF next obj not V-BRT
8.206	* JAC * Config with WUP	13.903 *	UAC * ITEM 43 (Opn dr)
		13.904 *	UAC * Wait for Door O*
 HIISAA			
			NOLOC
5.000	* JAC Chk Stat -LOC -CUR RDY		
7.501	* JAC WUP tgt= offset HII rgn	5	* JAC Chk Stat -LOC -PAU RDY
7.502	* JAC *IF WUP tgt not visible		
7.503	* JAC * WUP ITEM 11_F +1		NOMINAL
7.504	* JAC * WUP PFK cur to target	1	JAC ITEM 16 0
7.505	* JAC * WUP ITEM 6 (Cntr)	2	JAC Config H W U
7.506	* JAC * WUP ITEM 11_Z (Zoom)	3	-----
7.507	* JAC WUP PFK cur to target	4	JAC All SETUP
7.508	* JAC WUP ITEM 6 (Cntr)	5	JAC Chk Stat -LOC -LOC RDY
7.509	* JAC WUP ITEM 4 (Cur off)	6	JAC IMC BEGIN
		7	JAC HUT ITEM 5
		8	JAC All BEGIN
		9	JOB Observe
		10	JAC All PREVIEW
		11	JAC All QUIT
		12	-----
		13	JAC ITEM 16_1
 HOMUN			
5.000	* JAC Chk Stat -LOC -CUR RDY		
7.501	* JAC NOTE: Leave WUP Cur on		
8.201	* JAC Chk WUP Stat -PAU		
8.202	* JAC PFK WUP Cur 10 asec left		
8.203	* JAC of nucleus		
8.204	* JAC WUP ITEM 6 (Cntr)		
8.205	* JAC WUP ITEM 4 (Cur off)		
8.206	* JAC WUP ITEM 9 (Proceed)		
			NOWUP
		2.000	* JAC Config without WUP
		5.000	* JAC Chk Stat -LOC STB RDY
		9.501	* JAC Config with WUP
 IO			
7.501	* JAC WUP ITEM 12_5 or as reqd		
7.502	* JAC *IF WUP target not acq'd		
7.503	* JAC * WUP ITEM 12_0		
7.504	* JAC * WUP ITEM 11_F (Field)		
7.505	* JAC * WUP ITEM 12_until tgt		
7.506	* JAC * visible (see chart)		
7.507	* JAC * WUP ITEM 4 (Cur on)		
7.508	* JAC * WUP PFK cur to tgt		
7.509	* JAC * WUP ITEM 6 (Cntr)		
7.510	* JAC * WUP ITEM 4 (Cur off)		
7.511	* JAC * WUP ITEM 11_Z (Zoom)		
			NUCLOC
		5.000	* JAC Chk Stat -LOC -CUR RDY
		7.501	* JAC WUP tgt is gal nucleus
		7.502	* JAC *IF WUP target visible
		7.503	* JAC * WUP PFK cur to target
		7.504	* JAC * WUP ITEM 6 (Cntr)
		7.505	* JAC * WUP ITEM 4 (Cur off)
		7.506	* JAC *ELSE
		7.507	* JAC * Config without WUP
		8.201	* JAC *IF WUP Deconfig
		8.202	* JAC * WUP ITEM 11_F +1
		8.203	* JAC * Cur/ITEM 6 in fld, zm
		8.204	* JAC * WUP ITEM 4 (Cur off)
		8.205	* JAC * WUP ITEM 7 (Begin)
		8.206	* JAC * Config with WUP
 JFA			
0.301	* (At beginning of slew)		
0.302	* UAC *IF UIT Door O*		
0.303	* UAC * ITEM 44 (Cls dr)		
0.304	* UAC * Wait for Door C*		
0.305	* Expect UIT SET,OBS err		
1.000	* JAC Perform JOP FO-J3 1-15		
			NUCSAA

WUPPE ALTERNATE PROCEDURES

5.000 * JAC Chk Stat -LOC -CUR RDY SAA1
7.501 * JAC WUP tgt is gal nucleus
7.502 * JAC *IF WUP tgt not visible 10.000 %
7.503 * JAC * WUP ITEM 11_F +1 10.801 * JOB Wait for time avail=0
7.504 * JAC * WUP PFK cur to target 11.000 * JAC UIT QUIT
7.505 * JAC * WUP ITEM 6 (Cntr) 12.201 * NOTE: SAA OBS-NO IPS HLD
7.506 * JAC * WUP ITEM 11_Z (Zoom) 12.202 * WOB ITEM 8 (Pause)
7.507 * JAC WUP PFK cur to target 12.203 * WOB ITEM 2 (Setup)
7.508 * JAC WUP ITEM 6 (Cntr) 12.204 * WOB Chk WUP Stat -LOC
7.509 * JAC WUP ITEM 4 (Cur off) 12.205 * WOB ITEM 7_t (t=SAAout/mnvr)
12.206 * JOB Observe
12.207 * JAC All PREVIEW
12.208 * WOB Wait for time rem obj=0
12.209 * JAC All QUIT

OCCUL2
8.501 * WUP OBS target will be
8.502 * occulted on second seq

OCCULT
8.501 * WUP OBS target will be
8.502 * occulted on first seq

OFFLOC
5.000 * JAC Chk Stat -LOC -CUR RDY
7.501 * JAC WUP tgt= offset fnt star
7.502 * JAC *IF WUP target visible
7.503 * JAC * WUP PFK cur to target
7.504 * JAC * WUP ITEM 6 (Cntr)
7.505 * JAC * WUP ITEM 4 (Cur off)
7.506 * JAC *ELSE
7.507 * JAC * Config without WUP
8.201 * JAC *IF WUP Deconfig
8.202 * JAC * WUP ITEM 11_F +1
8.203 * JAC * Cur/ITEM 6 in fld, zm
8.204 * JAC * WUP ITEM 4 (Cur off)
8.205 * JAC * WUP ITEM 7 (Begin)
8.206 * JAC * Config with WUP

OFFTGT
7.201 * WUP tgt is offset star

RETSAT
8.501 * JAC NOTE: Expect RET SIG msg

RING
5.000 * JAC Chk Stat -LOC -CUR RDY
7.521 * JAC WUP PFKs Cur to ring,
7.522 * JAC 18" W of planet center:
7.523 * JAC avoid planet contam
7.524 * JAC WUP ITEM 6 (Cntr)
7.525 * JAC WUP ITEM 4 (Cur off)
8.501 * JAC *IF aper miscentered
8.502 * JAC * WUP ITEM 8 (Pause)
8.503 * JAC * WUP ITEM 4 (Cur on)
8.504 * JAC * WUP Cur to recenter
8.505 * JAC * WUP ITEM 6 (Cntr)
8.506 * JAC * WUP ITEM 4 (Cur off)
8.507 * JAC * WUP ITEM 9 (Proceed)

SAA2
10.000 %
10.801 * JOB Wait for time avail=0
11.000 * JAC UIT QUIT
12.201 * NOTE: SAA OBS-NO IPS HLD
12.202 * WOB ITEM 8 (Pause)
12.203 * WOB ITEM 2 (Setup)
12.204 * WOB Chk WUP Stat -LOC
12.205 * WOB ITEM 7_t (t=SAA out)
12.206 * JOB Observe
12.207 * WOB Wait for time rem obj=0
12.208 * WOB ITEM 8
12.209 * WOB ITEM 2
12.210 * WOB Chk WUP Stat -LOC
12.211 * WOB ITEM 7_t (t=till manvr)
12.212 * JOB Observe
12.213 * JAC All PREVIEW
12.214 * WOB Wait for time rem obj=0
12.215 * JAC All QUIT

SAA3
7.201 * JAC IF t=SAA out > 240 sec
7.202 * JAC * Config All=No-one
7.203 * JAC * All BEGIN (Begin IMC)
7.204 * WOB * ITEM 7_t (t=SAA out)
7.205 * WOB * Wait for tim rem obj=0
7.206 * WOB * ITEM 8 (Pause)
7.207 * WOB * ITEM 2 (Setup)
7.208 * JAC * Reconfig as before

SCAT
8.501 * JAC NOTE: WUP seqs 1,4 occult
8.502 * JAC apers: tgt will vanish
8.503 * JAC NOTE: Carefully monitor
8.504 * JAC WUP LOGR; inform POC
8.505 * JAC *IF WUP RET SIG msg
8.506 * WOB * ITEM 8 (Pause)
8.507 * WOB * ITEM 14 x (x=x-2)
8.508 * JAC * WUP ITEM 9 (Proceed)

VARWRN
0.501 * NOTE: var tgt- adj tv,sp
0.502 * if reqd: WUP ALT-02,03

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UIT ALTERNATE PROCEDURES

BEARTH	1.000 %
0.301 * (At beginning of slew)	2.000 * JAC Config UIT=ALL
0.302 * UOB ITEM 82 (Dsable BOS,chk)	2.301 * IST MS: USE IPS SENSOR SUBS
0.601 * IST NOTE: IPS Res Hld 90,0,0	2.302 * IST Do not start IDOP
0.602 * IST no obj, IDOP	2.304 * IST ITEM 29 E (LOD OHMP)
4.901 * JAC UIT Long calib. filtseq	2.305 * IST ITEM 22 E (EXP CTRL)
4.902 * JAC Not descr. in tgt book	3.301 * PS: PERFORM IN PARALLEL
6.000 %	3.302 * WITH IPS OPS AT COMPL
13.901 * (During slew)	3.303 * OF IST ITEM 7
13.902 * UOB ITEM 81 (Enable BOS,chk)	5.000 %
CALSEQ	7.000 * JAC Chk Stat - - RDY - TRK
4.901 * JAC UIT Long calib. filtseq	8.301 * JAC Chk Stat - - OBS
4.902 * JAC Not descr. in tgt book	9.301 * JAC Config H W U
	13.000 %
LTSTRT	V-BRT
7.901 * JAC Config without UIT	0.301 * (At beginning of slew)
8.601 * JOB Wait for TIME AVAIL 2184	0.302 * UAC *IF UIT Door O*
8.602 * JOB UIT BEGIN	0.303 * UAC * ITEM 44, Chk Door C*
8.603 * JAC Config with UIT	0.304 * Expect UIT SET,OBS err
NOIDOP	5.000 * JAC Chk Stat -LOC -LOC STB
	13.901 * (During slew)
	13.902 * UAC *IF next obj not V-BRT
	13.903 * UAC * ITEM 43, Chk Door O*

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IMCS ALTERNATE PROCEDURES

AS2DF0		0.341 *	CMD WRI_3900_F0022599
		13.341 *	CMD ISS_3928
0.341 *	CMD WRI_3900_F0025080		
13.341 *	CMD ISS_3928	AS2DFJ	
AS2DF4		0.341 *	CMD WRI_3900_F0028B24
		0.601 *	CMD WRI_3900
0.341 *	CMD WRI_3900_F0024E7E	0.602 *	F007F0010FA0 (4s upd)
0.342 *	CMD WRI_3900_F002517E	13.341 *	CMD ISS_3908 (1s upd)
0.343 *	CMD WRI_3900_F0024E81	13.342 *	CMD ISS_3928
0.344 *	CMD WRI_3900_F0025181		
0.345 *	NOTE: defect center 12x12	AS2DFK	
13.341 *	CMD ISS_3928		
AS2DFA		0.341 *	CMD WRI_3900_F00224B4
		13.341 *	CMD ISS_3928
0.341 *	CMD WRI_3900_F0028766	AS2DFL	
0.342 *	CMD WRI_3900_F0028967		
13.341 *	CMD ISS_3928	0.341 *	CMD WRI_3900_F0023B30
		0.342 *	CMD WRI_3900_F0023D32
AS2DFB		13.341 *	CMD ISS_3928
0.341 *	CMD WRI_3900_F0026667	AS2DFM	
13.341 *	CMD ISS_3928		
AS2DFC		0.341 *	CMD WRI_3900_F0025385
		0.342 *	CMD WRI_3900_F0025388
0.341 *	CMD WRI_3900_F00242D6	0.343 *	CMD WRI_3900_F0025088
0.601 *	CMD WRI_3900	13.341 *	CMD ISS_3928
0.602 *	F007F0010FA0 (4s upd)	AST1SC	
13.341 *	CMD ISS_3908 (1s upd)		
13.342 *	CMD ISS_3928	0.601 *	CMD ISS_3908 (1s upd)
AS2DFD		AST2SC	
0.341 *	CMD WRI_3900_F0021FE7	0.601 *	CMD ISS_3910 (2s upd)
0.601 *	CMD WRI_3900	0.602 *	IMC Chk AST WAC incr once/2s
0.602 *	F007F0010FA0 (4s upd)	13.341 *	CMD ISS_3908 (1s upd)
13.341 *	CMD ISS_3908 (1s upd)	AST3SC	
13.342 *	CMD ISS_3928		
AS2DFE		0.601 *	CMD WRI_3900
		0.602 *	F007F0010BB8 (3s upd)
0.341 *	CMD WRI_3900_F0020431	0.603 *	IMC Chk AST WAC incr once/3s
0.601 *	CMD WRI_3900	13.341 *	CMD ISS_3908 (1s upd)
0.602 *	F007F0010FA0 (4s upd)	AST4SC	
13.341 *	CMD ISS_3908 (1s upd)		
13.342 *	CMD ISS_3928	0.601 *	CMD WRI_3900
AS2DFF		0.602 *	F007F0010FA0 (4s upd)
		0.603 *	IMC Chk AST WAC incr once/4s
0.341 *	CMD WRI_3900_F0022A85	13.341 *	CMD ISS_3908 (1s upd)
13.341 *	CMD ISS_3928	DRIAST	
AS2DFG			
		6.301 *	IMC Chk AST TRK *
0.341 *	CMD WRI_3900_F0023135	6.302 *	IMC ITEM 13 (DRIRU only)
0.342 *	CMD WRI_3900_F0023335	6.303 *	NOTE: AST TRK data req'd
13.341 *	CMD ISS_3928	6.304 *	for grnd analysis
AS2DFH			

IMCS ALTERNATE PROCEDURES

DRIRU

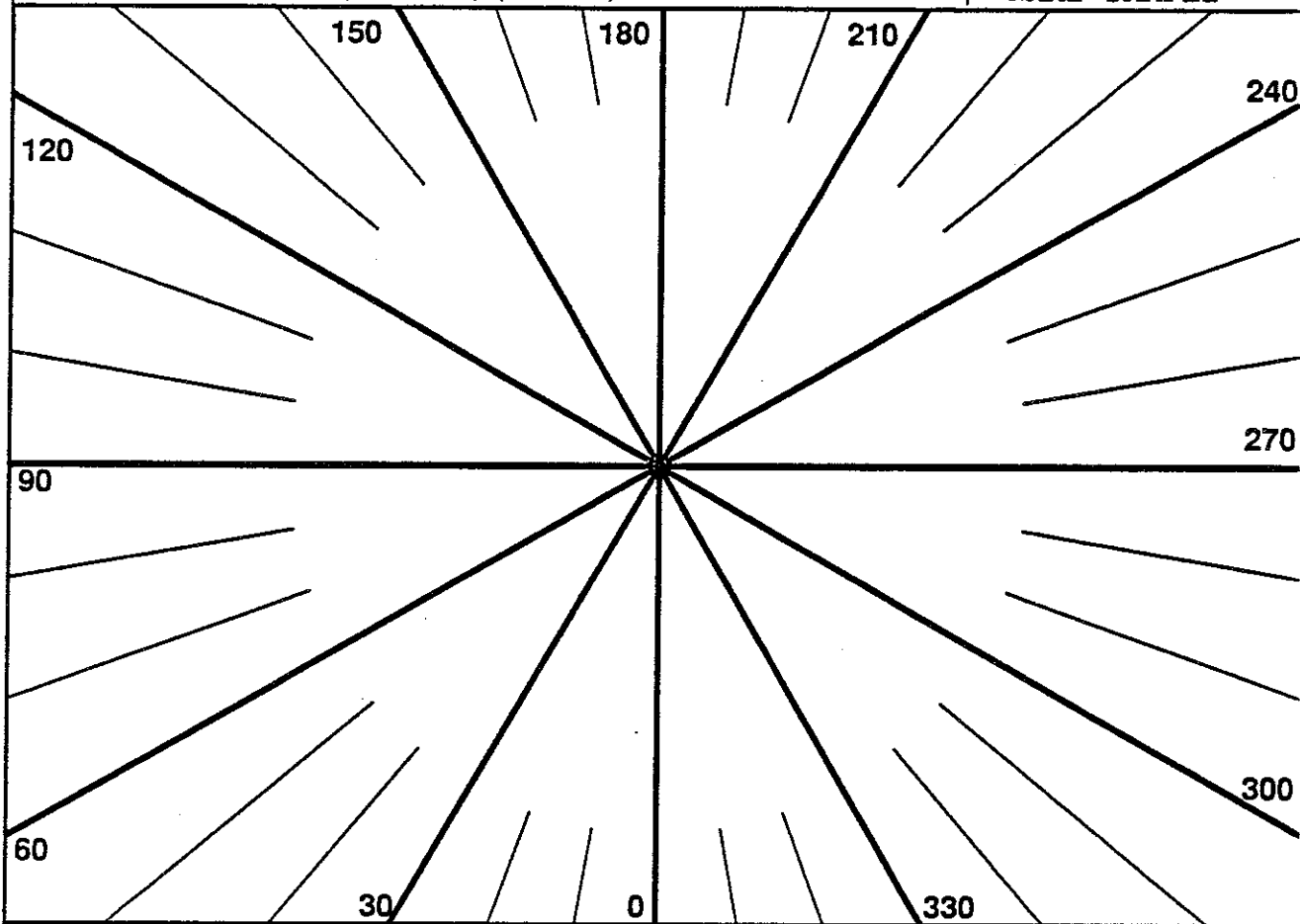
0.601 * IMC ITEM 13 (DRIRU only)
0.602 * IMC ITEM 14 (IMCS TRACK)
6.000 * IMC ITEM 12 (IMCS oper)

1 RA rrr.rrrr DEC sdd.dddd ROLL 111.11

ID xxxy-zz

2 TIME tttt (MANOPS) (TRACK)

NAME SAMPLE



SEQ	LOC	OBS	MAG	LGR	D	A	FM	OF	A	FM	OF	A	FM	OF	ALT1	ALT2	
3	p	H	sss	lll	ooo	tm	gm	r.r	d	a	m	ooo	a	m	ooo	h-alt1	h-alt2
4	p	W	sss	lll	ooo	cm	sm	r.r		aa	f	ooo	aa	f	ooo	w-alt1	w-alt2
5	p	U	sss	DT	ttt	T	F	ttt	cf	ttt	cf	ttt	cf	ttt	cf	u-alt	i-alt
6	i	ddd	cccccccccccccccccccccccc							27							
7										28							
8										29							
9										30							
10										31							
11										32							
12										33							
13										34							
14										35							
15										36							
16										37							
17										38							
18										39							
19										40							
20										41							
21										42							
22										43							
23										44							
24										45							
25										46							
26										47 or less							

HUT

Spectrum and Observation Description

WUPPE

Spectrum and Observation Description

UIT

Observation Description

Description of Target Sheet Fields

line	field	description
1	RA	Right Ascension (degrees) for IPS from JSCIPLAN
	DEC	Declination (degrees) from JSCIPLAN
	ROLL	IPS Objective Roll (degrees 0-360) converted from JSCIPLAN Position Angle
	ID	Target ID xyy-zz: x.x=class (see OV-2.1) yy=target number; zz=revisit number
2	TIME	Planned observation time (seconds) from Begin time to Stop time. Computed from JSCIPLAN sched time - 240 seconds.
	MANOPS	Displayed if manual operation flag set in SEQNUM file.
	TRACK	Displayed if moving target track flag set in SEQNUM file.
	NAME	Target NAME_1 from JSCIPLAN.
	CHART:	Protractor roll scale every 10 deg around edge North up, East left Scale 1mm = 10 arcsec Size 120 x 160 mm = 20 x 27 arcmin Target mark - vertical HUT guide star mark - horizontal Format - half-tone negative print Optional: 8x crowded-field blowup at lower right
3	p	= P or S when HUT Primary or Secondary target
	SEQ	HUT sequence number from SEQNUM
	LOC	HUT Locate mode from HUT Sequence Database (HSD): 0=src 1=man 2=gde 3=nlc
	OBS	HUT Obs type from HSD: 0=sim 1=off 2=hrs (HUT raster) 3=irs (IPS raster) 4=slw
	MAG	HUT tm=TV Target mag; gm=TV guide star mag (HSD)
	LGR	HUT log10(Initial expected rate x 10) = LOGR on JOB
	D	HUT Door Config # from HSD
	A	HUT Primary slit from HSD - APERTURE on JOB
	M	HUT primary SP mode from HSD
	OF	HUT Offset amplitude in arcsec from HSD
	A M OF	HUT slit, mode, offset for additional observations. if dither observation, use Secondary slit, mode if multiple offsets, use cumulative total Offset (Offset_1 + Offset_2, etc) (arcsec) if both, secondary dither and second offset are used for the second observation
	ALT	HUT and Observatory ALT procedure names (see OV-5)

Description of Target Sheet Fields
- Continued

line	field	description
4	p	= P or S when WUPPE Primary or Secondary target
	SEQ	WUPPE first sequence number from SEQNUM
	LOC	WUPPE LOC type from WUPPE Sequence Database (WSD) : =nlc if nloc flag set, else =ncn if nocn flag set, else =fld if fld flag set, else =cur if only cur flag set =aut if none of the above (auto acquisition)
	OBS	WUPPE OBS type for first sequence in WSF : =ngd if nogd flag set (diffuse object) =off if offs flag set (guide on offset object) =aut if none of the above
	MAG	WUPPE cm=cammag (planned TV mag); sm=spcmag (planned spectrometer magnitude - yields frame exposure time)
	LGR	WUPPE "Sig" = log10 (Planned rate/s) - LOGR on JOB
	A	WUPPE Observe aperture - APERTURE on JOB
	F	WUPPE Observe filter - FILTER on JOB
	OF	WUPPE Observe offset amplitude (arcsec) for first sequence
	A F OF	WUPPE Aperture, filter, observe offset for additional sequences. If Filter=6 for some sequence, two identical additional sequences with Filter = 8,10 are assumed to complete halfwave observation.
	ALT	WUPPE ALT procedure names (see OV-6)
5	p	= P or S when UIT Primary or Secondary target
	SEQ	UIT sequence number from SEQNUM
	DT	= UIT dt from SEQNUM (quit early delta)
	T	= total relative time for exposure time on a filter
	F	cf = Camera (a/b) and Filter(1-6) for an exposure sequence (given on JOB)
		Up to 5 T F pairs are listed. The T values are relative only; ratio is maintained in replan algorithm
	ALT	UIT and IMCS/AST ALT procedure names (see OV-7,8)
6-47		Joint operations procedure
	i	= H, W, U, or I for alternate procedure step from HUT, WUPPE, UIT, or IMCS ALT. = J for combination of ALTs
	ddd	= Display, if changed from previous step
	cccc	Step, or ---- to mark Setup and Quit time cues