

Traceability Matrix, PPS Proposal Instructio

Chapter 29: NIRCcam Engineering

Requirement #	Proposal, Visit, Exposure	Comment
29.1 Introduction		
Dark		
NCM0154	703 1.01	Dark Template exists
NCM0155	703 1.01	Field: Module
NCM0156	703 1.01	Module choose from list
NCM0157	703 2.01	Field: Subarray
NCM0158	703 2.01	Subarray, choose from list
NCM0159	703 3.01	Field: Number of Exposures
NCM0160	703 3.01	Number of Exposures, specify number
NCM0161	703 3.01	Field: Number of Groups
NCM0162	703 3.01	Number of Groups, specify number
NCM0163	703 3.01	Field: Number of Integrations
NCM0164	703 3.01	Number of Integrations, specify number
NCM0165	703 3.01	Field: Readout Pattern
NCM0166	703 3.01	Readout Pattern, choose from list
Wheel Exercise		
NCM0177	705 1.01	Wheel Exercise Template exists
NCM0178	705 1.01	Field: Mechanism Type
NCM0179	705 1.01	Mechanism Type, choose FILTER or PUPIL
NCM0180	705 2.01	Field: Wheel
NCM0181	705 2.01	Wheel, choose from list
NCM0182	705 1.01	Field: Number of Rotations
NCM0183	705 1.01	Number of Rotations, specify number (1-6)
Focus		
NCM0184	706 1	Focus Template exists
NCM0185	706 1	Field: Target Name
NCM0186	706 1	Target Name, choose from list
NCM0187	706 1	Field: Module
NCM0188	706 1	Module, choose A or B
NCM0190	706 1	Field: Filter
NCM0191	706 1	Filter: choose from list
NCM0192	706 1	Field: Pupil
NCM0193	706 1	Pupil, choose from list
NCM0194	706 1	Field: Number of Groups
NCM0195	706 1	Number of Groups, specify number
NCM0196	706 1	Field: Number of Integrations
NCM0197	706 1	Number of Integrations, specify number
NCM0198	706 1	Field: Readout Pattern
NCM0199	706 1	Readout Pattern, choose from list
		Linear Actuators:
NCM0200	706 1	Field: Starting Position (steps)

NCM0201	706 1	Starting Position, specify number
NCM0202	706 1	Field: Starting Position (sensor units)
NCM0203	706 1	Starting Position, specify number
NCM0204	706 1	Field: Starting Motor Phases
NCM0205	706 1	Starting Motor Phases, specify number
NCM0206	706 1	Field: Absolute Positions
NCM0207	706 1	Absolute Positions, specify array of 1-10 positions
NCM0208	706 59	Field: Return to Start
NCM0209	706 59	Return to Start, choose Yes or No
IPR Imaging		
NCM0167	618 1	IPR Imaging Template exists
NCM0168	618 1	Field: Target Name
NCM0169	618 1	Target Name, choose from list
NCM0171	618 1	Field: Module
NCM0172	618 1	Module, choose from list
NCM0173	618 1	Field: LED Lamp
NCM0174	618 1	LED Lamp, choose from list
PIL Imaging		
NCM0175	619 1.01	PIL Imaging Template exists
NCM0176	619 1.01	Field: Target Name
NCM0113	619 1.01	Target Name, choose from list
NCM0114	619 1.01	Field: Module
NCM0142	619 1.01	Module, choose A or B
NCM0143	619 1.01	Field: Filter
NCM0144	619 1.01	Filter: choose from list
NCM0145	619 1.01	Field: Number of Groups
NCM0146	619 1.01	Number of Groups, specify number
NCM0147	619 1.01	Field: Number of Integrations
NCM0148	619 1.01	Number of Integrations, specify number
NCM0149	619 1.01	Field: Readout Pattern
NCM0150	619 1.01	Readout Pattern, choose from list
External Flat		
NCM0531	614 1	External Flat Template exists
NCM0532	614 1	Field: Pointing Type
NCM0533	614 1	Pointing Type, choose PRIME or PARALLEL
NCM0534	614 1	Field: Target Name
NCM0535	614 1	Target Name, choose from list
NCM0536	614 1	Field: Primary Dither Type
NCM0537	614 1	Primary Dither Type, choose from list
NCM0538	614 1	Field: Primary Dithers
NCM0539	614 1	Primary Dithers, choose from list
NCM0540	614 1	Field: Camera
NCM0541	614 1	Camera, choose SHORT or LONG
NCM0542	614 1	Field: Dither Size
NCM0543	614 1	Dither Size, choose SMALL, MEDIUM, or LARGE
NCM0544	614 1	Field: Subpixel Positions
NCM0545	614 1	Subpixel Positions: 1,2,3,... 63,64
NCM0546	614 1	Field: Module
NCM0547	614 1	Module, choose A, B, or ALL

NCM0548	614 1	Field: Subarray
NCM0549	614 1	Subarray, choose from list
NCM0550	614 1.01	Field: Filter
NCM0551	614 1.01	Filter: choose from list
NCM0552	614 1.01	Field: Pupil
NCM0553	614 1.01	Pupil, choose from list
NCM0554	614 1.01	Field: Readout Pattern
NCM0555	614 1.01	Readout Pattern, choose from list
NCM0556	614 1.01	Field: Number of Groups
NCM0557	614 1.01	Number of Groups, specify number
NCM0558	614 1.01	Field: Number of Integrations
NCM0559	614 1.01	Number of Integrations, specify number
29.2 Dark		
NCM0211	703 4.01	Dark can be parallel to normal science observation
29.2.1 Module		
NCM0212	703 1.01	MODULE: A
NCM0213	703 1.02	MODULE: B
NCM0214	703 1.03	MODULE: ALL
NCM0245	613 8.01	MODULE: A1
NCM0240	613 9.01	MODULE: A2
NCM0246	613 10.01	MODULE: A3
NCM0241	613 11.01	MODULE: A4
NCM0243	613 12.01	MODULE: ALONG
NCM0247	613 13.01	MODULE: B1
NCM0258	613 14.01	MODULE: B2
NCM0248	613 15.01	MODULE: B3
NCM0249	613 16.01	MODULE: B4
NCM0257	613 17.01	MODULE: BLONG
29.2.2 Subarray		
		Subarrays other than full can only be specified for Module B
NCM0215	703 2.01	SUBARRAY: FULL
NCM0348	703 2.04	SUBARRAY: SUB160
NCM0219	703 2.03	SUBARRAY: SUB320
NCM0220	703 2.02	SUBARRAY: SUB640
NCM0221	703 3.01	Darks can specify one or more combos of parameters
29.2.3 Number of Exposures		
NCM0438	703 1.01	NUMBER OF EXPOSURES
29.2.4 Exposure Duration		
29.2.4.1 Readout Pattern		
29.2.4.2 Number of Groups		
NCM0439	703 1.01	NUMBER OF GROUPS
29.2.4.3 Number of Integrations		
NCM0440	703 1.01	NUMBER OF INTEGRATIONS
Legal Min/Max Values		
NCM0222	6815 7.09	RAPID
NCM0230	6815 8.09	RAPID ALL
NCM0223	6815 7.08	BRIGHT1
NCM0224	6815 7.07	BRIGHT2
NCM0239	6815 8.07	BRIGHT2 ALL

NCM0225	6815 7.06	SHALLOW2
NCM0226	6815 7.05	SHALLOW4
NCM0227	6815 7.04	MEDIUM2
NCM0228	6815 7.03	MEDIUM8
NCM0229	6815 7.02	DEEP2
NCM0244	6815 7.01	DEEP8
Illegal Min/Max Values		
NCM0233	6815 9.09	RAPID
NCM0234	6815 10.09	RAPID ALL
NCM0231	6815 9.08	BRIGHT1
NCM0232	6815 9.07	BRIGHT2
NCM0346	6815 10.07	BRIGHT2 ALL
NCM0339	6815 9.06	SHALLOW2
NCM0235	6815 9.05	SHALLOW4
NCM0236	6815 9.04	MEDIUM2
NCM0237	6815 9.03	MEDIUM8
NCM0238	6815 9.02	DEEP2
NCM0242	6815 9.01	DEEP8
29.3 Wheel Exercise		
29.3.1 Mechanism Type		
NCM0260	705 1.01	FILTER
NCM0261	705 1.02	PUPIL
29.3.2 Wheel		
NCM0262	705 2.01	SHORTA
NCM0263	705 2.02	SHORTB
NCM0264	705 2.03	LONGA
NCM0265	705 2.04	LONGB
NCM0266	705 2.05	ALL
NCM0267	705 2.01	may specify one wheel
NCM0268	705 2.06 705 2.07 705 2.08 705 2.09	may specify more than one wheel (up to all four) SHORTA, LONGB SHORTA, LONGA SHORTB, LONGA, LONGB SHORTA, SHORTB, LONGA, LONGB
NCM0269	705 2.05	may specify ALL
29.4.3 Number of Rotations		
NCM0312	705 1.01	1
	705 2.01	2
	705 2.02	3
	705 2.03	4
	705 2.04	5
	705 2.05	6
29.4 Focus		
29.4.1 Target Name		
NCM0075	706 1	Select Target Name from of list targets previously entered
29.4.2 Module		
NCM0076	706 1	MODULE: A
NCM0151	706 2	MODULE: B
29.4.3 Filter		

NCM0340	706 3	May select filter pair
NCM0341	706 1	May select single filter
NCM0342	706 2	May select no filters
NCM0313	706 3	F070W
NCM0314	706 4	F090W
NCM0315	706 5	F115W
NCM0316	706 6	F150W
NCM0317	706 7	F150W2
NCM0318	706 8	F200W
NCM0319	706 9	F140M
NCM0320	706 10	F182M
NCM0321	706 11	F210M
NCM0322	706 12	F187N
NCM0323	706 13	F212N
NCM0324	706 14	WL4
NCM0325	706 15	F277W
NCM0326	706 16	F322W2
NCM0327	706 17	F356W
NCM0328	706 18	F444W
NCM0329	706 19	F250M
NCM0330	706 20	F300M
NCM0331	706 21	F335M
NCM0332	706 22	F360M
NCM0333	706 23	F410M
NCM0334	706 24	F430M
NCM0335	706 25	F460M
NCM0336	706 26	F480M
29.4.4 Pupil		
NCM0343	706 28	May select pupil pair
NCM0344	706 27	May select single pupil
NCM0345	706 1	May select no pupils
NCM0270	706 27	CLEAR
NCM0271	706 28	MASKRND
NCM0272	706 29	MASKBAR
NCM0274	706 30	F162M
NCM0275	706 31	F164N
NCM0277	706 34	GDHS0
NCM0278	706 35	GDHS60
NCM0279	706 36	PINHOLES
NCM0280	706 37	WLP8
NCM0281	706 38	WLM8
NCM0282	706 39	CLEAR
NCM0283	706 40	MASKRND
NCM0284	706 41	MASKBAR
NCM0286	706 42	F323N
NCM0287	706 43	F405N
NCM0289	706 45	F466N
NCM0290	706 46	F470N
NCM0291	706 48	GRISMR

NCM0292	706 49	GRISMC
NCM0293	706 50	PINHOLES
29.4.5 Exposure Duration		
29.4.5.1 Readout Pattern		
NCM0294	706 51	DEEP8
NCM0295	706 52	DEEP2
NCM0296	706 53	MEDIUM8
NCM0297	706 54	MEDIUM2
NCM0298	706 55	SHALLOW4
NCM0299	706 56	SHALLOW2
NCM0300	706 57	BRIGHT2
NCM0301	706 58	BRIGHT1
NCM0302	706 59	RAPID
29.4.5.2 Number of Groups		
NCM0436	706 1	NUMBER OF GROUPS
29.4.5.3 Number of Integrations		
NCM0437	706 1	NUMBER OF INTEGRATIONS
Legal Min/Max Values		
NCM0449	6815 19	RAPID
NCM0450	6815 18	BRIGHT1
NCM0451	6815 17	BRIGHT2
NCM0452	6815 16	SHALLOW2
NCM0453	6815 15	SHALLOW4
NCM0454	6815 14	MEDIUM2
NCM0455	6815 13	MEDIUM8
NCM0456	6815 12	DEEP2
NCM0457	6815 11	DEEP8
Illegal Min/Max Values		
NCM0458	6815 28	RAPID
NCM0459	6815 27	BRIGHT1
NCM0460	6815 26	BRIGHT2
NCM0461	6815 25	SHALLOW2
NCM0462	6815 24	SHALLOW4
NCM0463	6815 23	MEDIUM2
NCM0464	6815 22	MEDIUM8
NCM0465	6815 21	DEEP2
NCM0466	6815 20	DEEP8
29.4.6 Linear Actuators		
29.4.6.1 Starting Position in Steps		
NCM0303	706 1	Starting Position of each actuator in steps (-11900 to +11900)
	706 3	Linear Actuator 1, Linear Actuator 2, Linear Actuator 3 = -11900
	706 15	Linear Actuator 1, Linear Actuator 3 = -11899
	706 50	Linear Actuator 2 = -11899
	706 38	Linear Actuator 1 = Linear Actuator 2 = 11900
	706 59	Linear Actuator 3 = 11900
	706 39	Linear Actuator 1, Linear Actuator 3 = 11899
	706 15	Linear Actuator 2 = 11899

29.4.6.2 Starting Position in Sensor Units

NCM0304	706 3	Starting Position of each actuator in sensor units (-32767 to 32767)
	706 3	Linear Actuator 1, Linear Actuator 2, Linear Actuator 3 = -32767
	706 15	Linear Actuator 1 = -32766
	706 38	Linear Actuator 2 = -32766
	706 26	Linear Actuator 3 = -32766
	706 39	Linear Actuator 1 = 32767
	706 59	Linear Actuator 2 = 32767
	706 50	Linear Actuator 3 = 32767
	706 38	Linear Actuator 1 = 32766
	706 26	Linear Actuator 2 = 32766
	706 51	Linear Actuator 3 = 32766

29.4.6.3 Starting Motor Phases

NCM0305	706 1	Starting Motor Phase of each actuator (1-6)
	706 1	Linear Actuator 1=1, Linear Actuator 2=5, Linear Actuator 2=1
	706 3	Linear Actuator 1=2, Linear Actuator 2=6, Linear Actuator 2=2
	706 15	Linear Actuator 1=3, Linear Actuator 2=4, Linear Actuator 2=5
	706 27	Linear Actuator 1=6, Linear Actuator 2=2, Linear Actuator 2=4
	706 39	Linear Actuator 1=5, Linear Actuator 2=1, Linear Actuator 2=3
	706 51	Linear Actuator 1=4, Linear Actuator 2=3, Linear Actuator 2=6

29.4.6.4 Absolute Positions

NCM0306	706 1	Individual actuator values -11900 to 11900
	706 3	Linear Actuator 1, Linear Actuator 2, Linear Actuator 3 = -11900
	706 27	Linear Actuator 1, Linear Actuator 3 = -11899
	706 26	Linear Actuator 2 = -11899
	706 50	Linear Actuator 1 = 11900
	706 51	Linear Actuator 2 = 11900
	706 26	Linear Actuator 1, Linear Actuator 3 = 11899
	706 27	Linear Actuator 2 = 11899

NCM0307 706 59 If multiple positions listed, executed in exact order specified

NCM0308 706 59 and option to return to original position is available; next parameter

29.4.6.5 Absolute Positions

NCM0309	706 1.01	YES
NCM0310	706 1.01	YES default
NCM0311	706 2.01	NO

29.5 IPR Imaging

29.5.1 Module

NCM0216	618 1	A
NCM0217	618 3	B

NCM0218	618 2	ALL
NCM0347	618 4	ASHORT
NCM0443	618 5	ALONG
NCM0444	618 6	BSHORT
NCM0445	618 7	BLONG
29.5.2 LED Lamp		
NCM0446	618 1	PRIME
NCM0447	618 2	REDUNDANT
NCM0448	618 3	BOTH
29.6 PIL Imaging		
NCM0466		special requirement PARALLEL not allowed
29.6.1 Target Name		
NCM0467	619 1	Select Target Name from of list targets previously entered
29.6.2 Module		
NCM0468	619 1	A
NCM0469	619 2	B
29.6.3 Filters		
NCM0470		no limit on number of filters
NCM0471		limit of 70 minutes for PIL observation total exposure time
NCM0472	619 1.02	F187N
NCM0473	619 2.01	F212N
NCM0474	619 2.02	F150W
NCM0475	619 3.01	F200W
NCM0476	619 1.05	F140M
NCM0477	619 1.04	WLP4
NCM0478	619 2.03	PINHOLES+F150W
NCM0479	619 4.03	PINHOLES+F200W
NCM0480	619 2.05	GDHS0+F140M
NCM0481	619 1.03	GDHS0+F150W2
NCM0482	619 2.06	GDHS60+F140M
NCM0483	619 4.10	GDHS60+F150W2
NCM0484	619 4.08	WLP8+F150W
NCM0485	619 1.01	WLP8+F200W
NCM0486	619 4.01	WLP8+F150W2
NCM0517	619 4.05	WLM8+F150W
NCM0518	619 2.04	WLM8+F200W
NCM0519	619 1.06	WLM8+F150W2
NCM0520	619 4.04	MASKRND+F150W
NCM0521	619 4.13	MASKRND+F200W
NCM0522	619 4.16	MASKRND+F150W2
NCM0523	619 4.12	MASKBAR+F150W
NCM0524	619 4.15	MASKBAR+F200W
NCM0525	619 4.02	MASKBAR+F150W2
NCM0526	619 4.11	MASKIPR+F150W
NCM0527	619 4.14	MASKIPR+F200W
NCM0528	619 4.09	MASKIPR+F150W2
NCM0529	619 4.06	F162M+F150W2
NCM0530	619 4.07	F164N+F150W2
29.6.4 Exposure Duration		

NCM0487	619 1.01	for each filter give readout pattern, #grps, and #ints
29.6.4.1 Readout Pattern		
NCM0488	619 2.05	DEEP8
NCM0489	619 1.05	DEEP2
NCM0490	619 1.02	MEDIUM8
NCM0491	619 2.02	MEDIUM2
NCM0492	619 1.06	SHALLOW4
NCM0493	619 2.06	SHALLOW2
NCM0494	619 1.01	BRIGHT2
NCM0495	619 1.04	BRIGHT1
NCM0496	619 1.03	RAPID
29.6.4.2 Number of Groups		
NCM0497	619 1.01	NUMBER OF GROUPS
29.6.4.3 Number of Integrations		
NCM0498	619 1.01	NUMBER OF INTEGRATIONS
Legal Min/Max Values		
NCM0499	6815 29.09	RAPID
NCM0500	6815 29.08	BRIGHT1
NCM0501	6815 29.07	BRIGHT2
NCM0502	6815 29.06	SHALLOW2
NCM0503	6815 29.05	SHALLOW4
NCM0504	6815 29.04	MEDIUM2
NCM0505	6815 29.03	MEDIUM8
NCM0506	6815 29.02	DEEP2
NCM0507	6815 29.01	DEEP8
Illegal Min/Max Values		
NCM0508	6815 30.09	RAPID
NCM0509	6815 30.08	BRIGHT1
NCM0510	6815 30.07	BRIGHT2
NCM0511	6815 30.06	SHALLOW2
NCM0512	6815 30.05	SHALLOW4
NCM0513	6815 30.04	MEDIUM2
NCM0514	6815 30.03	MEDIUM8
NCM0515	6815 30.02	DEEP2
NCM0516	6815 30.01	DEEP8
29.7 External Flat		
NCM0560	614 4	can be obtained as prime science
NCM0561	614 1	can be obtained as parallel science
29.7.1 Pointing Type		
NCM0562	614 1	PARALLEL
NCM0563	901 13	PARALLEL is default
NCM0564	614 4	PRIME
NCM0565	901 13	if PARALLEL, target set to NONE, not changeable
NCM0566	901 13	if PARALLEL, special requirement PARALLEL added
NCM0567	901 14	if PRIME target to NONE SELECTED
NCM0568	901 13	if PARALLEL, PRIMARY DITHER TYPE set to NONE
29.7.2 Target Name		
NCM0569	614 1, 4	target only allowed if POINTING_TYPE=PRIME
29.7.3 Dither Patterns		

NCM0570	901 14	if POINTING_TYPE PRIME must select Dither Pattern
29.7.3.1 Primary Dither Type		
NCM0571	614 1	NONE
NCM0572	614 10	FULL
NCM0573	614 4	INTRAMODULE
NCM0574	614 7	INTRASCA
NCM0575	901 14	PRIMARY DITHER TYPE required field
NCM0576	901 14	PRIMARY DITHER TYPE no default set
29.7.3.1.1 None		
29.7.3.1.2 Full		
29.7.3.1.2.1 Primary Dithers		
NCM0577	901 15	FULL must specify Primary Dithers
NCM0578	614 8	2
NCM0579	614 13	3
NCM0580	614 18	6
NCM0581	614 15	9
NCM0582	614 9	3TIGHT
NCM0583	614 17	15
NCM0584	614 16	21
NCM0585	614 14	27
NCM0586	614 19	36
NCM0587	614 10	45
29.7.3.1.3 Intramodule		
NCM0588	901 16	INTRAMODULE must specify Primary Dithers
29.7.3.1.3.1 Primary Dithers		
NCM0589	614 11	2
NCM0590	614 12	8
NCM0591	614 4	16
	901 17	illegal values: 1
	901 18	17
29.7.3.1.4 INTRASCA		
NCM0592	901 19	INTRASCA must specify following parameters
29.7.3.1.4.1 Camera		
NCM0593	614 7	SHORT
NCM0594	614 6	LONG
29.7.3.1.4.2 Dither Size		
NCM0595	614 7	SMALL
NCM0596	614 5	MEDIUM
NCM0597	614 6	LARGE
29.7.3.1.4.3 Primary Dithers		
NCM0598	614 5	2
NCM0599	614 7	10
NCM0600	614 6	25
	901 20	illegal values: 1
	901 21	26
29.7.3.2 Subpixel Positions		
NCM0601	614 1	1

NCM0602	614 3	6
NCM0603	614 2	64
	901 22 901 23	illegal values: 0 65
NCM0604	614 3	Subpixel Positions allowed for NONE
29.7.4 Module		
NCM0605	614 1	A
NCM0606	614 2	B
NCM0607	614 4	ALL
29.7.5 Subarray		
NCM0608	614 4	FULL
NCM0609	614 6	SUB640
NCM0610	614 8	SUB320
NCM0611	614 2	SUB160
NCM0612	614 3	SUB400P
NCM0613	614 10	SUB160P
NCM0614	614 5	SUB64P
NCM0615	see 614 2 menu	Subarrays other than FULL only allowed if MODULE=B
29.7.6 Filters		
NCM0616	614 8.01	select each FILTER pair that you wish to use
NCM0617	901 24	if POINTING_TYPE PARALLEL only 1 long and 1 short
29.7.7 Pupils		
NCM0618	614 8.01	select each PUPIL pair that you wish to use
NCM0619	901 24	if POINTING_TYPE PARALLEL only 1 long and 1 short
NCM0620	614 8.01	ok table elements can be selected
NCM0621	614 9.01	W elements will generate warning
NCM0622	901 1.02	E elements will generate error
NCM0623	901, see below	D elements are disallowed and can't be selected
NCM0637		F070W
	901 1.01	Clear ok
see 901 1.01 short pupil menu		Flatfield/Dark D
	901 1.02	MASKRND E
	901 1.03	MASKBAR E
	901 1.06	F164N E
	901 1.05	F162M E
see 901 1.01 short pupil menu		PINHOLES D
	901 1.09	WLP8 W
	901 1.10	WLM8 W
	901 1.07	GDHS0 E
	901 1.08	GDHS60 E
	901 1.04	MASKIPR W
NCM0638		F090W
	901 2.01	Clear ok
see 901 2.01 short pupil menu		Flatfield/Dark D
	901 2.02	MASKRND E
	901 2.03	MASKBAR E
	901 2.06	F164N E
	901 2.05	F162M E

see 901 2.01 short pupil menu		PINHOLES D
	901 2.09	WLP8 W
	901 2.10	WLM8 W
	901 2.07	GDHS0 E
	901 2.08	GDHS60 E
	901 2.04	MASKIPR W
NCM0639		F115W
	901 3.01	Clear ok
see 901 3.01 short pupil menu		Flatfield/Dark D
	901 3.02	MASKRND E
	901 3.03	MASKBAR E
	901 3.06	F164N E
	901 3.05	F162M E
see 901 3.01 short pupil menu		PINHOLES D
	901 3.09	WLP8 W
	901 3.10	WLM8 W
	901 3.07	GDHS0 W
	901 3.08	GDHS60 W
	901 3.04	MASKIPR W
NCM0640		F150W
	901 4.01	Clear ok
see 901 4.01 short pupil menu		Flatfield/Dark D
	901 4.02	MASKRND E
	901 4.03	MASKBAR E
	901 4.06	F164N ok
	901 4.05	F162M E
see 901 4.01 short pupil menu		PINHOLES D
	901 4.09	WLP8 W
	901 4.10	WLM8 W
	901 4.07	GDHS0 W
	901 4.08	GDHS60 W
	901 4.04	MASKIPR W
NCM0641		F200W
	901 5.01	Clear ok
see 901 5.01 short pupil menu		Flatfield/Dark D
	901 5.02	MASKRND ok
	901 5.03	MASKBAR ok
	901 5.06	F164N E
	901 5.05	F162M E
see 901 5.01 short pupil menu		PINHOLES D
	901 5.09	WLP8 W
	901 5.10	WLM8 W
	901 5.07	GDHS0 W
	901 5.08	GDHS60 W
	901 5.04	MASKIPR W
NCM0642		F212N
	901 6.01	Clear ok
see 901 6.01 short pupil menu		Flatfield/Dark D
	901 6.02	MASKRND ok

	901 6.03	MASKBAR ok
	901 6.06	F164N E
	901 6.05	F162M E
see 901 6.01 short pupil menu		PINHOLES D
	901 6.09	WLP8 ok
	901 6.10	WLM8 ok
	901 6.07	GDHS0 W
	901 6.08	GDHS60 W
	901 6.04	MASKIPR ok
NCM0643		WLP4
	901 7.01	Clear ok
see 901 7.01 short pupil menu		Flatfield/Dark D
	901 7.02	MASKRND E
	901 7.03	MASKBAR E
	901 7.06	F164N E
	901 7.05	F162M E
see 901 7.01 short pupil menu		PINHOLES D
	901 7.09	WLP8 ok
	901 7.10	WLM8 ok
	901 7.07	GDHS0 E
	901 7.08	GDHS60 E
	901 7.04	MASKIPR ok
NCM0644		F187N
	901 8.01	Clear ok
see 901 8.01 short pupil menu		Flatfield/Dark D
	901 8.02	MASKRND ok
	901 8.03	MASKBAR ok
	901 8.06	F164N E
	901 8.05	F162M E
see 901 8.01 short pupil menu		PINHOLES D
	901 8.09	WLP8 ok
	901 8.10	WLM8 ok
	901 8.07	GDHS0 W
	901 8.08	GDHS60 W
	901 8.04	MASKIPR W
NCM0645		F210M
	901 9.01	Clear ok
see 901 9.01 short pupil menu		Flatfield/Dark D
	901 9.02	MASKRND ok
	901 9.03	MASKBAR ok
	901 9.06	F164N E
	901 9.05	F162M E
see 901 9.01 short pupil menu		PINHOLES D
	901 9.09	WLP8 W
	901 9.10	WLM8 W
	901 9.07	GDHS0 W
	901 9.08	GDHS60 W
	901 9.04	MASKIPR W
NCM0646		F182M

	901 10.01	Clear ok
see 901 10.01 short pupil menu		Flatfield/Dark D
	901 10.02	MASKRND ok
	901 10.03	MASKBAR ok
	901 10.06	F164N E
	901 10.05	F162M E
see 901 10.01 short pupil menu		PINHOLES D
	901 10.09	WLP8 W
	901 10.10	WLM8 W
	901 10.07	GDHS0 W
	901 10.08	GDHS60 W
	901 10.04	MASKIPR W
NCM0647		F140M
	901 11.01	Clear ok
see 901 11.01 short pupil menu		Flatfield/Dark D
	901 11.02	MASKRND E
	901 11.03	MASKBAR E
	901 11.06	F164N E
	901 11.05	F162M E
see 901 11.01 short pupil menu		PINHOLES D
	901 11.09	WLP8 W
	901 11.10	WLM8 W
	901 11.07	GDHS0 ok
	901 11.08	GDHS60 ok
	901 11.04	MASKIPR W
NCM0648		F150W2
	901 12.01	Clear ok
see 901 12.01 short pupil menu		Flatfield/Dark D
	901 12.02	MASKRND E
	901 12.03	MASKBAR E
	901 12.06	F164N ok
	901 12.05	F162M ok
see 901 12.01 short pupil menu		PINHOLES D
	901 12.09	WLP8 W
	901 12.10	WLM8 W
	901 12.07	GDHS0 ok
	901 12.08	GDHS60 ok
	901 12.04	MASKIPR W
NCM0649		F277W
	901 1.01	Clear ok
see 901 1.01 long pupil menu		Flatfield/Dark D
	901 1.02	MASKRND W
	901 1.10	MASKBAR ok
	901 1.04	F323N E
	901 1.05	F405N E
	901 1.06	F466N E
	901 1.07	F470N E
see 901 2.01 long pupil menu		Pinholes D
	901 1.08	GRISMR ok

	901 1.09	GRISMC ok
	901 1.03	MASKIPR W
NCM0650		F356W
	901 2.01	Clear ok
see 901 1.01 long pupil menu		Flatfield/Dark D
	901 2.02	MASKRND ok
	901 2.10	MASKBAR ok
	901 2.04	F323N ok
	901 2.05	F405N E
	901 2.06	F466N E
	901 2.07	F470N E
see 901 2.01 long pupil menu		PINHOLES D
	901 2.08	GRISMR ok
	901 2.09	GRISMC ok
	901 2.03	MASKIPR W
NCM0651		F444W
	901 3.01	Clear ok
see 901 3.01 long pupil menu		Flatfield/Dark D
	901 3.02	MASKRND ok
	901 3.10	MASKBAR ok
	901 3.04	F323N E
	901 3.05	F405N ok
	901 3.06	F466N ok
	901 3.07	F470N ok
see 901 3.01 long pupil menu		PINHOLES D
	901 3.08	GRISMR ok
	901 3.09	GRISMC ok
	901 3.03	MASKIPR W
NCM0652		F300M
	901 4.01	Clear ok
see 901 4.01 long pupil menu		Flatfield/Dark D
	901 4.02	MASKRND ok
	901 4.10	MASKBAR ok
	901 4.04	F323N E
	901 4.05	F405N E
	901 4.06	F466N E
	901 4.07	F470N E
see 901 4.01 long pupil menu		PINHOLES D
	901 4.08	GRISMR W
	901 4.09	GRISMC W
	901 4.03	MASKIPR W
NCM0653		F480M
	901 5.01	Clear ok
see 901 5.01 long pupil menu		Flatfield/Dark D
	901 5.02	MASKRND E
	901 5.10	MASKBAR ok
	901 5.04	F323N E
	901 5.05	F405N E
	901 5.06	F466N W

	901 5.07	F470N W
see 901 5.01 long pupil menu		PINHOLES D
	901 5.08	GRISMR W
	901 5.09	GRISMC W
	901 5.03	MASKIPR W
NCM0654		F410M
	901 6.01	Clear ok
see 901 6.01 long pupil menu		Flatfield/Dark D
	901 6.02	MASKRND ok
	901 6.10	MASKBAR ok
	901 6.04	F323N E
	901 6.05	F405N W
	901 6.06	F466N E
	901 6.07	F470N E
see 901 6.01 long pupil menu		PINHOLES D
	901 6.08	GRISMR ok
	901 6.09	GRISMC ok
	901 6.03	MASKIPR W
NCM0655		F360M
	901 7.01	Clear ok
see 901 7.01 long pupil menu		Flatfield/Dark D
	901 7.02	MASKRND ok
	901 7.10	MASKBAR ok
	901 7.04	F323N E
	901 7.05	F405N E
	901 7.06	F466N E
	901 7.07	F470N E
see 901 7.01 long pupil menu		PINHOLES D
	901 7.08	GRISMR W
	901 7.09	GRISMC W
	901 7.03	MASKIPR W
NCM0656		F430M
	901 8.01	Clear ok
see 901 8.01 long pupil menu		Flatfield/Dark D
	901 8.02	MASKRND ok
	901 8.10	MASKBAR ok
	901 8.04	F323N E
	901 8.05	F405N E
	901 8.06	F466N E
	901 8.07	F470N E
see 901 8.01 long pupil menu		PINHOLES D
	901 8.08	GRISMR W
	901 8.09	GRISMC W
	901 8.03	MASKIPR W
NCM0657		F460M
	901 9.01	Clear ok
see 901 9.01 long pupil menu		Flatfield/Dark D
	901 9.02	MASKRND ok
	901 9.10	MASKBAR ok

	901 9.04	F323N E
	901 9.05	F405N E
	901 9.06	F466N W
	901 9.07	F470N E
see 901 9.01 long pupil menu		PINHOLES D
	901 9.08	GRISMR W
	901 9.09	GRISMC W
	901 9.03	MASKIPR W
NCM0658		F250M
	901 10.01	Clear ok
see 901 10.01 long pupil menu		Flatfield/Dark D
	901 10.02	MASKRND W
	901 10.10	MASKBAR ok
	901 10.04	F323N E
	901 10.05	F405N E
	901 10.06	F466N E
	901 10.07	F470N E
see 901 10.01 long pupil menu		PINHOLES D
	901 10.08	GRISMR W
	901 10.09	GRISMC W
	901 10.03	MASKIPR W
NCM0659		F335M
	901 11.01	Clear ok
see 901 11.01 long pupil menu		Flatfield/Dark D
	901 11.02	MASKRND ok
	901 11.10	MASKBAR ok
	901 11.04	F323N W
	901 11.05	F405N E
	901 11.06	F466N E
	901 11.07	F470N E
see 901 11.01 long pupil menu		PINHOLES D
	901 11.08	GRISMR W
	901 11.09	GRISMC W
	901 11.03	MASKIPR W
NCM0660		F322W2
	901 12.01	Clear ok
see 901 12.01 long pupil menu		Flatfield/Dark D
	901 12.02	MASKRND W
	901 12.10	MASKBAR W
	901 12.04	F323N ok
	901 12.05	F405N E
	901 12.06	F466N E
	901 12.07	F470N E
see 901 12.01 long pupil menu		PINHOLES D
	901 12.08	GRISMR ok
	901 12.09	GRISMC ok
	901 12.03	MASKIPR W
29.7.8 Readout Pattern		
NCM0624	614 7.02	MEDIUM2

NCM0625	901 25	MEDIUM2 default
NCM0626	614 2.01	RAPID
NCM0627	614 3.01	BRIGHT1
NCM0628	614 4.01	BRIGHT2
NCM0629	614 5.01	SHALLOW2
NCM0630	614 6.01	SHALLOW4
NCM0631	614 1.01	MEDIUM8
NCM0632	614 8.01	DEEP2
NCM0633	614 9.01	DEEP8
29.7.9 Number of Groups		
NCM0634	614 1.01	number of groups
NCM0635	901 25	default 10
	901 27.01	Illegal min values
	901 27.02	RAPID
	901 27.03	BRIGHT1
	901 27.04	BRIGHT2
	901 27.05	SHALLOW2
	901 27.06	SHALLOW4
	901 27.07	MEDIUM2
	901 27.08	MEDIUM8
	901 27.09	DEEP2
	901 27.09	DEEP8
	901 26.01	Illegal max values
	901 26.02	RAPID
	901 26.03	BRIGHT1
	901 26.04	BRIGHT2
	901 26.05	SHALLOW2
	901 26.06	SHALLOW4
	901 26.07	MEDIUM2
	901 26.08	MEDIUM8
	901 26.09	DEEP2
	901 26.09	DEEP8
29.7.10 Number of Integrations		
NCM0636	614 1.01	number of integrations
	901 27.01	Illegal min values
	901 27.02	RAPID
	901 27.03	BRIGHT1
	901 27.04	BRIGHT2
	901 27.05	SHALLOW2
	901 27.06	SHALLOW4
	901 27.07	MEDIUM2
	901 27.08	MEDIUM8
	901 27.09	DEEP2
	901 27.09	DEEP8

		Illegal max values
	901 26.01	RAPID
	901 26.02	BRIGHT1
	901 26.03	BRIGHT2
	901 26.04	SHALLOW2
	901 26.05	SHALLOW4
	901 26.06	MEDIUM2
	901 26.07	MEDIUM8
	901 26.08	DEEP2
	901 26.09	DEEP8