

SAO-HRC-LOG-97-277
DR# SCM10
Data Type: 3

Vol IV

Started:
5/28/97

HRC-500

HIGH RESOLUTION CAMERA (HRC)

LOG BOOK

Prepared in accordance with DR# SCM10

Prepared for:
George C. Marshall Space Flight Center
National Aeronautics and Space Administration
Marshall Space Flight Center, AL 35812

Smithsonian Astrophysical Observatory
60 Garden Street
Cambridge, MA 02138

The Smithsonian Astrophysical Observatory
is a member of the
Harvard-Smithsonian Center for Astrophysics

LIFE HISTORY

EVENT		SUMMARY OF CHRONOLOGICAL EVENTS		RUNNING TIME/OTHER (HOURS AND MINUTES)			PAGE OF PAGES	
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1054		5/28/72	Power Config has been maintained Run before, swapped to reverse system C 56 → 10 S 56					
			Send INIT (modified to be correct - by GCK)					
1055	HV run		Raised HV to (87, 98) [mon 82 75]	5-28-97	12:10			
			Started Run in x1 mode					
			D197052801.5d					
			S TLimit enabled					
1056	HV up		Raised Voltage to (90, 102)					
			extinct					
			TER = VER ~ 10					
1057	Buckdown		ended (as start I have buckdown)				12:18	
			D197052802.1d [x1]					
1058			Run p197052802.1d completed				13:20	GRM
1059			Began a 1000 s run, background				13:20	GRM
			(p197052803.1d)					

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1060		5/28/97		Background run p197052803 rd completed		13:37				Gem	
1061				Began background run p197052804 rd		13:38	13:55			Gem	
1062				Began background run p197052805 rd		13:56					
1063				Began blkg observed		14:05					
1064	X-ray Al-K			Send cassette 62 → 1 × 10 Turn X rays on						AK	
				Al anode, 50m file, $T_e = 219 \mu A$							
1065				Start 2000 second run to get $\sim 2 \times 10^6$ counts						14:44	
1066				p197052807 rd							
				(note)							
1067				Closed Monro X-ray source gate valve						Gem	
1068				Stacked 1000 background runs							
1069				p197052808 rd						GRM	

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			START	STOP	TOTAL TIME	
		charge and send card #62 → 0				
H/V charge		charged HV → (87, 98)	15:00			A/C
		bit cell thus occurred while taking data				
blkg	5/28/97	started bkg run PI9705280805d interrupted to do At flat field	PI9705280905d			
X-rays		changed 62 → 7 (X10)				
Alts		started PI97052810.d				A/C
X-rays off					15:40	
blkg		Background run PI97052811.d				
1607	5/29/97	Background run for 3600s, p/97052822.d	15:42	16:00		Ray
1608	Manson	Conder, ctr window, and filter changes in Manson source (2003)(2004)(2005)				GM
1609	Diffrnl	additional background runs 13, 14, 15	16:20	17:30		R/R/R/R
1610	Byrd	1000 s piop. ctr + HRC-S PI97052818.d				1807
						1811
						1821

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1671	Ni-Li flat field	18 May 97	Ni anode, Cu(2μm) filter 0.163mA 2.00kV 2000 second run p197052819. rd	1830			1905
1672	Previous		Ball. 3x10^-6 Torr pump cast 1.1x10^-7 Torr	1841			
1673	change HV		Changing HV to 90 (top) Event rate : Total 55^-1 Valid 55^-1	1916			
1674	b Kynd	1000 s	p197052820. rd	1920	1940		
1675	Ni-Li fl.		emission current 0.089mA 2000s p197052821. rd	1944			
1676	B Kynd		bounce gate valve closed p197052822. rd	2013			
1677	Ti fil		p197052823. rd Ti anode 10.000kV 0.812mA 152μTi filte	2115	2162		
1678	2000s run p1970528. rd			2144			
1679	b Kynd HV change		2000s run p1970529. rd change HV 87. 98	2144			

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1679	Blind	28 May 97	/000 second	background run	p197052830.1d	21:54			
1680	Ti, flat field		2000 s run	p197052832.1d					
1681	H/V off		H/V off: 1 → 0 power off; 56 → 11; 26 V off			22:55			
1682	H/V on	29 May 97	power up:			7:30			
1683	H/V on		56 → 10						
1684	Test run	5/29/97	Send INIT HU → (87, 98)						
1685	Blg run		limit → 1						
1686	Blg run	5/29/97	2000 s background run, p197052901.1d	07:32	08:05	08:05	09:05	Gm	
1687	Blg run	5/29/97	3600 s background run, p197052902.1d	08:05		08:05	09:05	Gm	
1688	Blg run	5/29/97	7200 s background run, p197052903.1d	09:06	11:06	11:06	11:06	Gm	
1689	Blg run	5/29/97	3600 s background run, p197052904.1d	11:06	12:06	12:06	12:06	Gm	

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1638	X-ray off	5-28		X-ray on, Ag La, ~ 1300 sec - ¹	12:45	13:20		AK		
				2000 second run	P197052907.rd					
1639	X-rays off	5-29		62 → 1 (x 10)						
				Closed Mamta X-ray source shutter	13:20			Gm		
1640	X-ray off	5-29	1000 s	background run, P197052908.rd	13:20	13:37				
1641	X-ray off	5-29	1500 s	background run P197052909.rd	13:37			Gm		
1642	X-ray off			raise voltage to 90, 102, 62 → 0 during run	P197052909.rd			B:48	13:49	
				ended run	P197052909.rd					
				62 → 1 x 10						
1643	X-ray off			Started X-rays started run, Ag, SKN	13:53					
				Te = 295 mA P197052909 10. rd	2000 sec					
1644	X-ray off			Run ended, start bkg P197052911.rd	14:26					
				1000 sec						
1645	X-ray on			Started bkg Run P197052912.rd	14:50					
				X-rays on during run, end run						
				start						

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1646	Xrays, run	5/27	Started run P1970529/4.rd	14:55'					
1647	Xrays off		Fe \downarrow HRC ~ 1300 sec I _o = 0.558 A HRC HV = 14 = 10 kV					Ak	
1647	Xrays off		Xrays off Start background run					Ak	
			P1970529/5. rd						
1648	Lower HV		lower voltage during run						
			62 \rightarrow 0 (X7)						
			HRC-S HV = (87, 98)						
1649	Bkg run	5/29/97	1000 s background run P1970529/6.rd	15:45		16:00		Gan	
1650	Xrays	5/29/97	Opened Mainline Service relay contacts and started 2000 s run at 12 kV, file = P1970529/7.rd	16:12				Gan	
1651	HV off		HV off 1000 s power switched off	16:45'				NZ/RM	
	pur off		"56 \rightarrow 11 sent (This is out of proper order)						
			"SPF" sent and LVPS turned off					JG	
			1730						

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1656	Regress	5/20/07	CLOSED BLACK VIBRATOR AND BACK FILLER	1735				
1657			The VIBRATOR LINE HAD TO BE LAD 1/2" TO BLACK VIBRATOR					
1658	BACKFILL	5/29/07	BLOCK FILLED Housing & Pipe	1821				
1659	SNOOT	20-11-51	X CLOSING BLOCK VALVE IN TRAVERS HRC/SNOW					
1660	CHANGE		FROM X-OUT PIPE. REOPENED HRC BLOCK					
1661			JAWES. TRAVERS SEGMENT TO SNOUT INSTALLATION SEGMENT +1 SNOUT. RECOMMENDED					
1662			HRC/SNOUT TO X-OUT PIPE.					
1663	PUL-UP DOWN	29-PM-51	SWINGING PULL-UP DOWN D12 X 8MM PIPE/HRC	1854				
1664			BN GATES ON PIPE HRC PULL-UP SPOT					
1665			4.5X10 ⁻⁵	1915				
1666			1.8X10 ⁻⁵	1928				
1667			4.1X10 ⁻⁶	2042				

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1656	Powerups	5/30	Power up S of E6SE system measured = 1.0×10^{-6} restated in 'Watt' direction *	7:24				A/C
1657	HV up		Started run D19705300 Board HV SUP. card	7:40				
			Pause @ 83,94 for 300 sec data rate ~ 1 sec ⁻¹					
1658	HV up		Raise voltage to 90,102 Pause @ 89,100 ~ 6 sec ⁻¹ @ 90,102 8 sec ⁻¹					
			TER ~ 18, UER ~ 8					
1659		5/30	End Run start I beam background				9:01	A/C
			D19705300 Board					
1660	Xrays		Xrays on B 'K' noted Paddle was in incorrect position Started run 3 ended					

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1661	Molders w/ source =>					A/C		
1662	Background run	P197053005.0d						
1663	HV on	5/30	all buzz due to fire alarm fixed incusion source (?)	9:40		A/C		
1664	HU up	HSP up, and	start P197053006.1d	13:17				
1665	X-ray	Raised to (90,102) Bkgs rate ~ 10 sec -1		13:23				
		Bkgs run	P197053007.6d	13:29				
		1000 seconds				13:45		
		Bkgs @ 800V	456 feet Party C			13:49		
		Started P197053008.1d						
		ended after 1550 sec because we were getting collection from Duke flats				14:14		
		Moved paddle(3) in 2 min rest time	P197053009.1d	18000 sec				
		2 Boxes						

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			START	STOP	TOTAL TIME	CUM. TOTAL	
1666		ended after 700 sec still see a reflection move paddle(3) in lower eye (dela will be used to feedback reflec'tn to) 5.30					AK
1667	5.30	Start next run p197053010.r.d Stopped at 1100 sec to point increment of Tans # 3 in one min (4000 steps) Note my started (p197053011.r.d) 7000 sec	14:30		~17:20		RK/RK
1668	5.30	all hives / Swiss uncaged hole from flat base } cabsus change IT TO INGENIE BASE			17:30	1938	EKA
1669	5.30	crossed the brook veins, turn off built cabs, modify how fire coming to another outlet. position fire pipe and open valve.				1956	EKA
1670	5.30	BIG bags 1.1x1.6 turns on +5V, start init, disabsurd HRC-S HV CDR LIMIT, turns on HRC-S HPS, set Laser to 20/102, res-increas CDR. LIMIT				2001	RKA
1671	5.30	Blind p197053012.r.d				2012	RKA
						2015	RKA/RK2

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				START	STOP	TOTAL TIME		
1672	blynd	30 May 97	1000 s blynd run p/97053015.rd	2025			MZ	12
1673	C flat field		Canode 1.000 kV 33 μm poly film /ter 0/122 mA 500 second run p/97053016.rd ~2500 c.s.- startet second run 1500s p/97053017.rd ~1400ht emission current 0.353 mA	2048			MZ	
1673	H/V change			2126			MZ	
1674	blynd		1000 s ballynd run p/97053018.rd	2131	2151	20	MZ	
1675	flame		1.1X10 ⁻⁶ BA1 pump out 1.3KV ⁻⁷	2142	2142	2	MZ	
1676	C flat field		emission current 0.653 mA 1500 s run p/97053019.rd	2156			MZ	
1677	blynd		p/97053020.rd ~1500s	2228			MZ	
1678	O flat field		Mg(OH) ₂ 2μm Cr film 1.00 kV 0.776 mA 4000 s run p/97053024.rd	2245			MZ	
1679			short background p/97053025.rd	2350			MZ	

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1680	30 May 97		H V charge	H V to 90/102	1155				M2
1681	Off	20005	run	9/97053026.1d	1155		1235		
			field						
1682	H V off	31 May 97	Command 1 → 0 sent	5C → 11 28V off	1240	0040			
			X-ray source off						
1683	pressure	31 May 97	pump cart 1.2 x 10 ⁻⁷	BAI: 1.0 x 10 ⁻⁶	1245	0045			M2

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1684	Powerup	5/31	C56 → 10, Send 56 Load, Send TNT Verify HSKP Verify HV display C4 → 0, Send 4 Set HV = 0 Set C4 = 0	7:10				A/C
1685	Background		C4 → 1, send 1 Send HV to 87, 98 current limit 4 → 1, send 4 Start 1000 second Bks p197053106.rd " " 02					
1686	Xrays		" " 03 " " 04 62.1 → 1 (x10 count)					
1687	Bkg		All Xrays, 4KV, 358μA, 1300 sec Send 2000 sec run p197053105.rd Start 500 s background run p197053106.rd 09:12					A/C Gan

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1688	HV up	7 Δ 62 \rightarrow 0 (X 1 forward) Take voltage to 90, (0 2 during Bk run 0 80, 102 started p192053107.d ended Bk's	9:11				A/E
1689	Bk's	5/31 Bk run 0 80, 102 started p192053107.d ended Bk's	9:11 3				
1690	Xrays	started Xrays Al K _α , (1300 sec ⁻¹) I(HV = 4 kV, T _e = 189, 62 \rightarrow 1 (X 10) 2000 second run	9:30				
1691	Xrays off	P192053108.d 62 \rightarrow 0 (X 1)			9:33		A/E
1692	HVC off	HVC's HV off					
1693	Power off	5 6 \rightarrow 11 (+5V A off)					
1694	Switch off	switch off					
1695	SNOUT CHANGE	62 \rightarrow 0 (X 1)			10:07		
1696	PURGE DOWN	31/7/97 PURGE DOWN OF HVC'S X-ray pipe BA gas off 195 The Purge start 1.4 \times 10 ⁻⁵				1306	
		1.5 \times 10 ⁻⁵				1310	
		4.1 \times 10 ⁻⁶				1340	

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1697	Pressure	31 May 94	B#1	2.6 x 10^-6 Torr Pump cart	6.3K/5-7 Torr	1/6/4				MZ
1698	PSL	31 MAY 94	UNCAUSED	long, noisy static & 20mV THD						
1699	PSL	31 MAY 94	ABE S	connects this flight to						
1700	PSL	31 MAY 94	BAI			1620				GKA
				PURPLE CAR						
				1.3 x 10^-6	1.7 x 10^-7					
1701	Power Up	601.57		Power up detector, measure = 1.1x10^-6						6:55
1701	HV S up			HV up on S	start run	P117060100a	7:04			
1702	raise HV			raise HV to	90, 102					7:09
1703				end run, start timer loops						7:15
				Play 06010b.ord						
				VER ~ 10 - 15 sec						
				TER ~ 28 sec -						(seems high)
1704	Xrays			B Rx to find paddle locations						
				(300sec) Paddle out	P19706010C.ord					
				(300sec) Paddle in	P19706010D.ord					
1705				Background R500 sec	P19706010e.ord					
1706	HV off			all (but foreground) power down, kill switches						9:12 AK

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1707	PWR UP	1 JUN 97	Powered up with punctaf. chg to 50%					17
			Power configuration to pcfag 2.					
1708	PWR DOWN	1 JUN 97	Powered down with 5vcc. chg		02:56			
1709	BSSE	1 JUN 97	Unearns flight bases in cabin up				SKM	
	Chances		long running bases					
1710	PWR UP	1 JUN 97	56 = 0		09:30			
			Stand init					
			4 = 0					
			1 = 1					
			Sum HV to 30/102					
			4 = 1					
1711	Xray		Al Xray to run P197060104.rd		09:34			
			switch to to (to)2000 sec					
1712	Xray off		lower HV to 87, 78 switch to x1		10:15			
			to take background run P197060105.rd					
			1000 seconds @ x1 TERN 12, VER ~6		10:16			
1713			Xray on, switch to x10, Al k					
			2000					
1714	Bkg		3600 s background run, P197060107.rd		10:35	11:09	AK	
					11:09	12:09	Gan	

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1715		1 June 97	P197060108ard ② X 1 HU C	12:11	12:36			Ak	
1716			P197060109ard ② x 1 HU C 87, 98	500 s	56g	12:36		Gm	
1717	X-ray		X-ray on C C 1kv, 436mA 33 μm Poly window	12:42				Ak	
			turned on during run						
			end run 62 → 1 (X10)						
			start 2000 second run P197060110.ad	12:45		13:18			
1718	HNP		HU 87, 98						
1719	8g		raised HU to 90, 102, 62→0 (x 1)	13:20					
1720	8g		background 60s P197060111.ad	13:24		13:38			
1721	X-rays		carbon flat field C 90, 102					Gm	
1722	X-rays off		62→1 (X 10) P197060113.ad			13:50			
			62→0 (X 1) P197060114.ad 1000 sec						
			P197060115.ad 1000 sec						

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NO.	SUBJECT					START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL		
1723	X-rays	6.1.87		Oxygen X-ray (W.DH @ 1kV), 62 -> 1 500 sec ⁻¹ stat 4500 second run @ HV = (90, 102), P197060116, rd		13:05				AK		
1724	X-ray off			Unit value altered		16:15				RPK		
				Decrease MCP HV to 87, 98								
1725				Background runs		16:20				RPIC		
				1000 sec								
				P197060117, rd								
1726				Open set valve		16:40				RPIC		
				O Ka X-rays at lower MCP voltages 87, 98 MCP mode Vg = 1000V 1 mm Li filter T = 650 sec		1800						
				P197060119, rd		~ 450 steps						
				4500 sec								

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				RUNNING TIME/OTHER (HOURS AND MINUTES)			
START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL			
1727		1 June 97	Start valve closed Monitor power off	18:00			RPK
1728			Increase map HV to 90,102 Continuous background 9500 sec PI97060120, sec switch to V1 formatters to virgin HV settings (62->0) switch back to X10 formatters (62->1) P = 1.0 X10 ⁻⁶ Torr	18:00			RPK
1729			1000 sec background PI97060123, sec	18:25			
1730			B Kα X-rays - G1 open HRC-5	18:45			
			Hole notches 90,102 VA = 800 eV IE = 439 ua Zern Rev-C P = 1.6 X10 ⁻⁶ Torr filter	18:45			RPK
				23:45			

18000
50
90,000

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EVENT NO.	DATE	SUBJECT	SUMMARY OF CHRONOLOGICAL EVENTS			PAGE OF PAGES
			RUNNING TIME/OTHER (HOURS AND MINUTES)		STAMP OR INITIAL	
1731	flas off	1 Jun 97	commands sent: 62 → 0 1 → 0 56 → 11 28V turned off	2345	WZ	
1732	pressure	1 Jun 97	1.0 × 10 ⁻⁶ pump sat 1.1 × 10 ⁻⁷ 2.2 × 10 ⁻⁷ 9.6 × 10 ⁻⁸	2350 0747	WZ GVA	
1733	SWAP GSE CABLES	2 Jun 97	SWITCHED GSE FROM LAB UNIT TO FIGHT (RCTU/ CTUE) GSE. PUT FLT FIFO BACK IN SYSTEM.	1045	EJ	
1734	MCP PREAMP MEASUREMENTS	2 Jun 97	REMOVED "A" SIDE MCP PREAMP REMOVED "B" SIDE MCP PREAMP AND INSTALLED IT ON AN EXTENSION ON SIDE "A" PURPOSE: CAND	1050	JG	
			1 hr SP - UP. CND			
			SD 0366 BOT PLATE			
			SD 0252 TOP PLATE TERN 20/SZ.			
			UF - 4 85mV P-P (1601)			
			5 387mV P-P			
			X 6 99 mV P-P			
			4, 6 ~ 90mV (1600)			
			5 ~ 263mV			

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NO.	SUBJECT		RUNNING TIME/OTHER (HOURS AND MINUTES)	STAMP OR INITIAL
START	STOP	TOTAL TIME	CUM. TOTAL	
		6/2/97	w/ 1600 cmd, all 3 preamp signals in phase	JG
			Send sd 1600,	
			pin 4 96 mV LEADS sum somemore ~ 30-40°	
			pin 5 260 mV in phase	
			pin 7 356 mV slight lag, not quite simultaneous	1236
			POWER down sparse power up 1ms	
			Send image cmd	1232
			send hr IM up, cmd	1240
			"slow" ~ 488 mV	
			pin 4 0 mV	
			pin 5 287 mV in phase	
			pin 7 0 mV	
			1600 is same.	
			POWER DOWN	1300
			PUT A MCP PA BACK IN	JG
		6/2/97	INST the "A" MCP CARD IN SIDE A	.
			Pwr up S. cmd	
			1309	

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NO.	SUBJECT			START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL	PAGE
		6/2/91		hvr sp up, Cmd	(1691)	1213		JR	23
		SD 0366							
		SD 025a							
		"Slow"	=	93.4 k427 1.380V p-p					
		U8-PIN 4	86mV	LEADS ~ 40°					
		PIN 5	360mV	IN PHASE w/ SLOW					
		PIN 7	360mV	" .. " , SOME DISTORTION SEND 1690					
		"Slow"	0.412 V p-p						
		U8-PIN 4	78mV p-p						
		PIN 5	250mV p-p						
		PIN 7	336mV p-p						
		∴ A "BOARD ESSENTIALLY THE SAME AS 'B'"							
		"Fast"	540mV LEADS SLOW BY ~ 135° SOME DISTORTION						
		"FAST" - 							
		1601	NO CHANGE IN FAST, INCLUDING PHASE PUR OF PA						145

LIFE HISTORY

SUMMARY OF CHRONOLOGICAL EVENTS			RUNNING TIME/OTHER (HOURS AND MINUTES)			PAGE OF PAGES	
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1736	Replace MCP card	6/2/97 PLUG IN MCP CARD WITHOUT EXTERNDER					JG
		"SLOW" 1.376 V					
		"FAST" 0.652					
		SEND 1b0d					
		"SLOW" 0.412 V					
		"FAST" 0.535 V					
1737	PWR OFF	2 Jun 97 all losses, SV off				1358	GVA
1738	PWR ON	2 Jun 97 initas				1435	GVA
1739	Done	2 Jun 97 check 0255. cmd					
		door open - steps on secondary					
		check 0255. cmd					
		dislsp. cmd - steps on primary					
1740	PWR OFF	2 Jun 97 SV off				1544	GVA
1741	PWR UP	2 Jun 97 MCP CARD "A" ON EXTERNDER, POWER UP				1550	
		SPEZ DET w/ HV 90, 102.					
		NO XTHK S1-S2, S1-S3, S2-S3. Purdeu					
1742	CUT XTHK SLOW PIN	CUT PIN 33 ON EXTERNDER TO PURDEU					JG
		MCP "SLOW" FROM GETTING OUT TD SYSTEM					
		POWER UP w/ HV				1603	
		"SLOW" RIPPLE = 1.4V					
		"FAST" RIPPLE = 0.64 V					

LIFE HISTORY

LIFE HISTORY

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1745	R ₁₃₅		REPLACE THE LM139 COMPARATOR POWERUP w/ H ₁₁ ON SPOT (90, 102) U8-4 RIPPLE = 126 mV - 5 " = 294 mV - 7 " = 368 mV POWER DOWN	JR	1715			
1746	Repair	2 Jun 97	CROSSED HRC BLOCK VALVE. VENTED & DISCONNEC- ED PUMP CABLE. CONNECTED LAS CAN SYSTEM TO BLOCK VALVE. PROGRESSIVE X-LIN PIPES OF HRC THRU HRC BLOCK VALVE.					
1747	HRC REPAIR	2 Jun 97	INITIATED HRC REPAIR FOR PROBLEMS P-HRC-347 REA CONNECTIONS	GVA	1753			
1748	GAS Flow	3 Jun 97	1/2 Supply checked ok	2040				
1749	HRC REPAIR	3 Jun 97	CONTINUOUS SECTION 3 OF HRC-347 & SECTION 4 THRU STOP 00A	0715				
1750	HRC REPAIR	8 Jun 97	NMR 30855 FOR USING SPECIFIED WIRE CONNECTIONS. DISPOSITION USE AS IS.	GVA				
			COMPLETED HRC-347 SECTION 4 & PARTIAL SECTION 5	JG				
			PARTIALITY CONNECTED SECTION 6					
1751	PURGE DOW	8 Jun 97	STARTED DUTIE DOWN	2031				
				2300				
				2301				
				GVA				
				SKA				

LIFE HISTORY

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EVENT NO.	SUBJECT	RUNNING TIME/OTHER (HOURS AND MINUTES)				STAMP OR INITIAL	
		START	STOP	TOTAL TIME	CUM. TOTAL		
1751	COINT'S BLINDS	BA GAGG ON PIPE	PULLS CART				
		1.2 x 10 ⁻⁴		4.6 x 10 ⁻⁵	2320	GKA	
		8.0 x 10 ⁻⁵		2.5 x 10 ⁻⁵	2327	GKA	
		4.3 x 10 ⁻⁵		1.5 x 10 ⁻⁵	2345	GKA	
		3.5 x 10 ⁻⁵		1.3 x 10 ⁻⁵	2355	SM	
		3.5 x 10 ⁻⁶		1.6 x 10 ⁻⁶	1030		
					15.08	W.M.	
1752	RE-INSTALL FRONT POCS	Re-install Boards into FEA From POC	SLOT # S/N	S/N			
			2	12	22	TRIG Comp 1 "U"	
			4	1	24	TRIG Comp 2 "V"	
			6	2			
			8	16		NOTE: Torque to 60 in/oz.	
			10	13			
			12	9			
			14	15			
			16	6			
					1620		
1753	LEFT	6/9/97	START LONG PURM - POST HVPS FILTER CHANGE				
			"A" SIDE SPCT		1630		
			"B" SIDE SPCT		1730		
					1940	GKA	
1754	PUR OFF	9 JUN 97	SPS. cmd				

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1755	Pressures	9 June 97	BA GANG 8.5x10 ⁻⁶ pump cap 1.1x10 ⁻⁶	1943					28
			2.4x10 ⁻⁶		1.1x10 ⁻⁶	2046			
	Pressure	10 JUNE	1.8x10 ⁻⁶	3.7x10 ⁻⁷	0550				
1756	Turn on	10 June 97	pumping and Start	P1 97061001					
		10 June 97	ho SP-up.cmd	→ 87/98 Spec HV step	06:08				
			sd29@2 (ldd) ♂♀ → ♀♂	68	06:15	06:30			
				sd29@130@5/sec	06:30				
1757	X-RAYS	10 June	P1 97061002 threshold set @φ5 TER=45 VER=32		06:35				
		10 JUNE	P1 97061003 C X-RAYS ON SOURCE ADJUSTED ~150 c/s		06:33				
			SOURCE 1 KV C 164A						
		10 June 97	sd29@6 (from φ5)		06:55				
		10 June 97	sd29@7 (from φ6) still observe 'double trigger'		06:57				
			no observed change in count rate (VER) TER reduced						
		10 June 97	P1 97061004 Started new run w/ ldd C & 7 hex		06:59				
			@ 250 seconds into runs: sd29@7 → φ8						
			TER dropped VER = const ~ 140-150	γ = 500 sec					
			P1 97061005 BKGR & HV change to 90/101 HV step		07:10				
			sd φ366 → 90/102 (after hvspl725 was sent)		07:12				
			HOT SPOT IN CENTER seq ~ 50/sec	T = 300 sec					
			4sec@2000 cts due to hot spot						

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NO.	SUBJECT		START	STOP	TOTAL TIME	CUM TOTAL	
X-RAYS		10 JUNE 97	P1970610 06	HUC 90/102	0000 08	07:16	Jhc
			C X-Rays 160 @ 16mm	33mm poly	← C-XRAYS		
			TER = 150 - 160	VER = 140 - 150	hot spot		
"		10 June	P197061007	much lower food out or 2 mm to fully illuminated detector. Move top jaw in ~3.5 mm to cover flats + additional 1 mm.	67:25		Sm
"		10 June	P197061008	- jaws now set for SEC-P. Test run with C-LC	07:37		Sm
			→ cap to set of fully missing flats.				
			↓ necessary salting HV 50/100	LTD 08A (sd 2908-f)			
				Crd 2EA (sd 2B2E-h)			
1750	Bk	10 June	P197061009	Bobbed run for 100 are	07:49		
1750	Bk	10 June	P197061010	B-LC tests very LHD last at rate LTD TER VEL closed			
			08 50/100	80-90			
			09 ~80	~80 (~20)	15-20		
			0C ~80	~75 (~250)	~15		
			0E ~20	~20 (910)	~15		
			0.8 ~90	~80 (~580)			
		17 June			OF 20		Sm

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NO.	SUBJECT							START	STOP	TOTAL TIME	CUM. TOTAL
1761	SVH	10 Jun		Send SVH com. & change of Imra EGE to Fast EGE				08 21			Sm
1762	changes	10 Jun 97		UNCALIBRATED EGE & CABINETS LONG IN DRIVING ACCESS TO HAC IN ORDER TO USE 10X DATA PORTS. POSITIONED SIDES A FIFO BOARD. INSTALLED FOR FIFO BOARD & SEARCH AC 1/F BOARD							
1763	PWR on	10 Jun 97		ESTABLISHED NEW INIT E1 12V, "UNITS" WITH UNTESTED L2T/H (DIGITAL 8) & GND BALANCE (DIGITAL 4G) & SPARE. IN NORMAL MODE, TURNED ON PWR USING C110 56 = 10. SENT "UNITS", CURRENT IS 1.3A 0800							
1764	HV on	10 Jun 97		C110 4 → 0 C110 3 → 1 HV → 90,102 C110 4 → 1						0922	Sm
1765	Xrays			Background run @ X1 p197061011.d Filler Background Xrays on during run Carbon (KU 179mA, 62 → 1 (X10)						0930 0947 0951	

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				RUNNING TIME/OTHER (HOURS AND MINUTES)			
START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL			
1766	Flatfield	6-10	Start "official" run P1970610 12. sec out 1 sec ~ 12.50 sec ⁻¹	9:52	10:25		Ak
1767	Background	6-10	2000 background run, p1970610 sec ⁻¹ lens focused early	10:25	10:20		Gm
1768	Background	6-10	1000 + background, p1970610 sec ⁻¹	10:40	11:00		Gm
1769	Background	6-10	Began 2000 s run, p1970610 sec ⁻¹ while adjustment was made for Al flat field.	11:00			Gm
1770	Xrays	Al 002"	Al filter @ 4KV Te 152nd turned on during Background filter run, rate ~ 1350 sec ⁻¹	11:04			AK
1771	Flatfield	Start 2000 sec	flat field	P1970610 16. sec L			
	Xray fil		Xrays off	11:35			
			Background filter	P1970610 00 sec			
1772	Xray on		Official Bkgd filter P1970610 1 sec Oxy gen, Mg(OH) ₂ @ 1KV, 64BmA	12:03			
			2uCt filter P1970610 20. sec, n 800 sec ⁻¹	12:22	13:12		

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NO.	SUBJECT			START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL	
1773	X-ray #	closed	Manor	Shuttle valve and begun 2000s background test of 9706/00 second	13:04			GK	
1774	Bk's	official	bkg run, 1000 sec	13:30				AK	
			P19706 ID 23.5d						
1775	Xrays	Boron	flat field	18000 sec (5 hrs)	13:50			AK	
			P19706 ID 24.5d			18:45		RPK	
			~80 sec -						
1776		Set valve to source closed (Nansen shuttle)	18:45						
1777		1000 sec background				18:50		RPC	
		P19706 ID 25.5d							
		~15 ats /s							
1778	PWR OFF	RELAX	PWR DOWN				19:05		
1779	LEGS	10 days	UNCLNG UNCLG LEGS & ROORAB WNS FLIGHT					GVA	
			CLCS & TO HIRE						
1780	4RC-I	10 JUN 87	Powers by 1RC-II & HVPS up						
			Up to 1480 Vppole, Block n 10 dkree sd 29.04 w OKY					OK	
			1						

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NO.	SUBJECT							START	STOP	TOTAL TIME	CUM. TOTAL
1781	Power off	10/June		Power down NRC-II after HVPS checked out (P197061011)				19:45			58
1782	Switches	15/June		Reconfiguration of NRC-5				19:46			59
1783	Vent	16/June		Vent Vacuum tank off then switch switch to SEG +1				19:50			60
1784	Power down	10/July		Pull up down NRC's X-ray & IP BA GAGE Pull up card 6.2×10^{-5}					20:44		61
1785	Power up	10/July		Power up S Powered up S detector hv SP up card Started run P19706110 card				07:00			62
1786	HV up			on "turn on run" current = 1.8×10^{-6}				7:10			63
1787	Background	6/11/97		Power const = 6×10^{-7} ended run, start 600 sec					7:10		64
1788	Background	6/11/97		Background run @ 90, 102 Hz initial rate = 45 sec ⁻¹					7:27	7:37	65
				600 s background run, p1970610 record							66
				600 s bkgd							67
				Platotabilized							68
				7:42							69

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SUMMARY OF CHRONOLOGICAL EVENTS

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EVENT NO.	SUBJECT	DATE	RUNNING TIME/OTHER (HOURS AND MINUTES)				PAGE OF PAGES	STAMP OR INITIAL
			START	STOP	TOTAL TIME	CUM. TOTAL		
1753 Paddles		900's run with carbon x-rays to block out	07:55					Gm
X-rays		Drake Flat. Count rate ~20/s while moving paddle, and run 600 sec run w/ Drake flat blocked						
1750		P19706110 forward			8:18			
1751 X-rays off		X-rays off, 3kgs ~20 sec ⁻¹			8:18			
1752 (11/30)		All in off. card, 5V off. second			8:19			
1753 (11/30)		Randy to switch to X10 system						
		Switched to X10 system, bkg run start bkg, @ X1 "official" run						
		= P19706110 record 1000 sec						
		9:16						
		Start filling run P19706110 hard						
1754 X-rays		C X-rays on during run					9:19	
		T = 7288, V = 11KV 33A poly file						
		start 62.22 (\rightarrow X10)						
		start + run P19706110 4.16						
		X-ray rate ~ 1300 sec ⁻¹						
1755 X-rays off		\rightarrow switch to X1 (62-0) 9.55 start litter run P19706110 hard						

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				START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL
1776			"Official" background run, P197061107ard Set + "Source Hes" → X10 Filler run P197061107ard	10:10				
1777	Xrays		All X rays during, filler run 10:30					
1778	Xrt field		flat field @ X10 2000 sec @ ~1250 sec ⁻¹	P197061108ard	10:31	11:06		AC
1779	X-ray off		Close Mirror Shutter taken Began 1,000 s background run while The source is configured for O Kα run P197061107ard	11:06				CM
1800	Xrays		switched to X7 to observe valve ~ 14 → 20 sec ⁻¹					
1801	Xray off		Oxygens X rays from insight, start 3000 sec run @ X10 P197061117ard				11:46	
			Run ended, Shutter valve closed				12:36	AC

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NO.	SUBJECT			START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL
1802		6/11	start fill on bks P197061102.r.d					
			fill on bks P19706110.m.r.d					
			start official bks P197061115.r.d					
1803	B1ca flat field		P197061116.r.d	13:16		18:35		
1804	Gate valve gate valve closed							
				18:35				
1805	BKD		start backwash runs 10000sec					
			P19706110.r.d	18:37				
1806	Shuttle		Move shuttle back 8mm to expose drake flat					
			P= 1.6 x 10 ⁻⁶ Torr	18:50				
1807	GVisper		Gate valve open					
	X-ray on		Drake flat measurement at C ka					
			P197061117.r.d	19:04				RIC
			C nozzle					
			1000 S					
			33 mm polyfill					
			1 hV at 133 mV					

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EVENT		DATE		SUMMARY OF CHRONOLOGICAL EVENTS		RUNNING TIME/OTHER (HOURS AND MINUTES)			PAGE OF PAGES	
NO.	SUBJECT					START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL
1808	Lab valve			X-rays off Lab valve closed		19:20				RPK
1809	BKD			Detector background p197061109.p. recd		19:20				RPK
1810	X-rays on			Dynkin flat test at 0.1A - 1000s p197061118.rec ~7500 shots		19:30				19:45
1811	X-rays off			source gate valve closed X-rays off						19:45
1812	BKD			Background run						19:55
1813	X-rays on			Dynkin flat test B 1KA 10.000 sec p197061119.rec V _A = 800 V ~ 75 shots						20:00
				Te = 163 ms						20:36
				Stopped after ~ 2020 sec						

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1814	X-ray	16	bounce gets value cleared	10:35				
1815	PWR OFF	11 Jun 97	C110 1 → 0					
			C140 56 → 11					
			ZBVN SUPPLY OFF					
			C140 62 → 0					
1816	SNOOT	11 Jun 97	PROCESSING SYSTEM'S POP UP CARD +1 SNOOT	20:37				GKA
	CHANGES		WIND -1 SNOOT					
1817	PWRD	11 Jun 97	STATUS PUMP DOWN	21:15				
	DOWN		BA GAGE 4.1 X 10^-5					
1818	ESSE	11 Jun 97	INCABUSO DNG's EGSS S RECAPTURE	21:37				
	CHANGES		FU7A EGSS TO H2C					
1819	PWR ON	11 Jun 97	POWER S	22:13				GKA
1820	DEBR		RAN DOOR CLOSSES & DRY LSP PREPARATION					
	TURBS		CHUCKING M16 HANSON CLEARMARANTS					
1821	PWR OFF	11 Jun 97	SV OFF	23:05				
1822	PRESSURE	11 Jun 97	BA 4.2 X 10^-6	PWR CARD 1.4 X 10^-6	23:08			GKA

LIFE HISTORY

EVENT		SUMMARY OF CHRONOLOGICAL EVENTS				RUNNING TIME/OTHER (HOURS AND MINUTES)				PAGE OF PAGES
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1823	Power Up	6/12	Turned on HRC-S detector powerups	Powerups	6:55					A/C
1824	HU up		Hu SP up card		7:00					
			background run during turn on							
			DIGITAL BOARD							
			Background run 600sec	PILOTBOARD						
			Background rate ~ 30 sec ⁻¹ (VER)							
			~ 40 sec ⁻¹ (TER)							
1825	Xrays		Puddle orientation run	PILOTBOARD	7:24					
			C Xrays 33 sec Polycfilter							
			Moved puddle in							
			short flat field 600 sec - PILOTBOARD		7:25					
			rate ~ 120 sec ⁻¹							
			alluvial background							
			5V off board							
1826	HU up									
	5V off									
1827	fast tap		Switched to "fast tap" HU → 90, 102		8:10					
			start filter background PILOTBOARD							
			1000 sec background rates ~40							

LIFE HISTORY

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NO.	SUBJECT						START	STOP	TOTAL TIME	CUM. TOTAL	
1828	BKS	6.12		Start official background run P197061203.rd			8:34				
				Started filler run P197061204.rd			8:52				
1829	X-ray			Tuned on X-ray during above filler run C 1kW, 254μA			8:54				
				33μ poly fit/s							
1830	Flatfield			Started official flatfield @ C ~1300 sec -1			8:55	09:29			
				P197061204.rd							
1831	X-ray			Closed Masson shutter value			09:29				
1832	Background			Began 1000s background run			09:30				
				P197061209.rd							
1833	Bks			Filler run P197061208.rd							
				Background 1000 sec P197061207.rd 9:48							
				Filler run P197061208.rd							
1834	X-ray			At X-ray, 4kW rate ~1300sec -1			10:10				
				tuned on during card							
1835	Flatfield			Started flatfield P197061208.rd							
				2000 sec							

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1836 X-rays	6/12	X-rays of start fillet bks P197061201ard	10:43	AK
1837 Bk's		Background rays P1970612110Yrd, 1000 sec	11:12	AK
1838 X-rays		① from Mg Olt, 1keV, Zn a fillet 3000 second P197061212ard ~7000 sec -1 rate	11:30	
1839 X-rays		X-rays off C start fillet bks P197061201ard	12:15	
1840 Bk's		official Bk's van started P197061215ard	12:40	
1841 X-rays	6/17	Boron X-rays 18000 sec run P197061216-ard ~60 sec -1	13D:3	
1843 X-rays	off	bounce gate valve closed	17:58	RPK
1844 BKD		Background run P197061206sec	17:59	

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NO.	SUBJECT		START	STOP	TOTAL TIME	CUM. TOTAL		
1845	Shutter		Move shutoff out of beam by 1mm for Drakie flat top	18:02			RPK	
1846	X-rays on	15000 sec run at CK4 - Drakie flat top	18:05				RPK	
		Camera	14:18:05					
		33 mm poly filters	To = 223 ms					
		p197061217.set	~130 sets					
1847	Gate valve closed	X-ray off - opt valve closed	18:32				RPK	
1848	BK6	Background 1000 sec	18:33				RPK	
		p197061217.0m.set						
1849	X-rays on	15000 sec run at CK4 - Drakie flat top	18:37				RPK	
		My/CH4e Chiville	14:10:00					
		2 mm G filters	To = 631 ms					
		~600 sets	~600 sets					
		p197061218.set						

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				RUNNING TIME/OTHER (HOURS AND MINUTES)			
START	STOP	TOTAL TIME	CUM. TOTAL	STAMP OR INITIAL			
1852	X-rays		Anti valve closed X-ray off	1907			
1851	B&G		backronymed p19606120.1d	1907			
1852	X-rays	11	B KA Drape off 1st segment Son my mouth 10 = 800V 2 min Par-C filter 10 = 947 mm 800 see p19606121.1d	19.10	19.43	RDX	
1853	X-rays		source gate valve closed	19.43		EPIC	
1854	B&G		backronymed p19606120 p.1d source	19.44		EPIC	
1855	X-rays	07	Move shutter 1/4 into beam Open gate valve KA turned 33 mm poly filter 1000s ride p196061220.1d	19.55	20.11	RDX	
			Drape off 1st				~450 m/s

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1556	SHUTTER		More shutters off in more addition 1000 sec run P1557061221 red	2017					
			Measuring It's 6.37 sec ~200 st/s Run stopped after 450 sec - there is a corner that is strongly illuminated		2025				
1558	Y-rays		source valve closed		2025				
1559	Shutter		More shutters off in		2025				
1558	B116		Rehearsed 1000 sec p19706120g.red		2025			RPMC	
1559	Y-rays		X-rays on, some settings at 180s 150 st/s		2030				
			P1557061222.red P: Z.1 Y.10 & T on		2045				
1560	Y-rays		Close source gate valve off						

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				START	STOP	TOTAL TIME		
1861	BIG C		background 2000 P1960711071 sed	2046			RPK	45
1862	X-ray on		BIG Probe flat tip Bonney smooth 2000 sec. U=800V T=1.50 ms	2052		2124		
			P1970617224 sed					
			~3000ms					
1863	Y-rays		close source and probe			2125		
			U=60					
1864	PUR OFF	12JUN97	CND 62 → 0	CND 1 → 0		2127		
			CND 56 → 11					
1865	SNOOT CHANGER	12JUN97	REPLACED HEC'S X-RAY PIPE WITH BN7 WHICH MAINTAINS A 60° BURST POSITIONED SUCH THAT SNOOT IS INSTALLED HERE TO SNOUT. RAISING SUPPORT TABURE TO ACCOUNT FOR					
			Δ & DIIMENSION BUTWEE HEC-S & HEC-T			2252		
1866	PUMP DOWN	12JUN97	STARTED PUMP DOWN OF LINE IN X-RAY PIPES			2253		
			BA GAGE 4.8 × 10 ⁻⁵ PULSE CARS 6.6 × 10 ⁻⁶			2323		
			2.1 × 10 ⁻⁵	3.3 × 10 ⁻⁶		2340		

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1867	Power up	6/13	Power UP Test card	7:02			
1868	HVR		hut m up card	7:10			
			HVR 77 / 58				
			Kang p197061309.vd was running				
			during fun on				
1869	LLO		determine LLD				
			Sd 2910 (down from 204)				
			VER = TER				
			Sd 2908				
			VER = TER				
			Sd 2904				
			VER = TER				
			Sd 2902				
			TER = 60				
			VER = 20				
			Sd 2903				
			TER = VER + 2				

LIFE HISTORY