

Intensified Reticon

TO CAM 9/1/88

Spectrograph ECHELLE

Log Sheet

RAW RET

Grating 300l

Observer JMZ - JRL

Telescope 6" WYETH

Date 8/31, 9/1, 9/2 1988

Disk 0170 2280

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60s	$\lambda = 5187\text{\AA}$ CLEAR
		2	TV (ET)	3:12:03	2:34:10	↓	6.5M 8.6/100 ESTARS (69)
		3			↑	60s	
		4			↓	60s	
		5	H2G162	4:06:15	19:28:43	↓	3M S.S. IAU STANDARDS
		6			↑	60s	
		7			↓	60s	
		8	SKYDOME	4 <sup>h</sup> East	+30°	↓	2M 16 SKY
		9			↑	60s	
		10			↓	60s	
		11	SKYDOME	Meridian	+30°	↓	2M 16 SKY
		12			↑	60s	
		13	INCANDS			120M	
		14	INCANDS			120M	
Sept 1-2 1988		15			↓	60s	$\lambda = 5187\text{\AA}$
		16	SKYEVIEW	0hrs	+20°	↓	2M 16 SKY
		17			↑	60s	
		18			↓	60s	
		19	SKYEVIEW	4hrs West	+20°	↓	2M 16 SKY
		20			↑	60s	
		21			↓	60s	
		22	H136202	15 16 45 01 57 11		2M	17 IAU STD S.1
		23			↑	60s	
		24			↓	60s	
		25	G66-65	15 05 22 09 04 18		2M	15 HALOS 8.28/15
		26			↑	60s	
		27			↓	60s	
		28	H134440	15 07 28 -16 13 29		11M	15 HALOS very low <sup>DM</sup> 9.46/20
		29			↑	60s	
		30			↓	60s	
		31	S101380	15 05 26 17 38 30		M	15 HALOS 9.2/50
		32			↑	60s	



TO CAM 9/1/89

Intensified      Reticon

Spectrograph ECHELLE      Log Sheet

Grating 3002      Observer JRC

Telescope 61" Wyeth      Date Sept 1-2 1988      Disk 020 2282

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60s	251578
	G188-29	21:51:27	35:34:42			3 <sup>M</sup>	15 HALOS 9.13/15
		3			↑	60s	
		4			↓	60s	
	G156-4	22 22 42	-05 47 54			15 <sup>M</sup>	15 HALOS 10.97/15
		6			↑	60s	
		7			↓	60s	
	G68-3	23 10 49	20 40 24			4 <sup>M</sup>	15 HALOS 9.75/15
		9			↑	60s	
		10			↓	60s	
	G29-20	23 15 28	08 48 12			3 <sup>M</sup>	15 HALOS 9.19/20
		12			↑	60s	
		13			↓	60s	
	S165604	23 14 30	-14 06 28			9 <sup>M</sup>	15 HALOS 8.17/50
		15			↑	60s	
		16			↓	60s	
	S182486	19 20 21	63 58 44			6 <sup>M</sup>	40 FSTARS 7.59/18 obs
		18			↑	60s	
	S85977	19 37 08	63 37 04			15 <sup>M</sup>	40 FSTARS 8.10/150
		20			↑	60s	
		21			↓	60s	
	7751	01 14 33	-17 20 54			14 <sup>M</sup>	40 FSTARS 8.02/15 obs
		23			↑	60s	
		24			↓	60s	
	10908	01 14 31	-03 30 56			5 <sup>M</sup>	40 FSTARS 8.10/18 obs
		26			↑	60s	
		27			↓	60s	
	12984	02 04 31	-04 27 08			6 <sup>M</sup>	40 FSTARS 7.55/18 obs
		29			↑	60s	
		30			↓	60s	
	13179	02 06 09	-00 40 24			6 <sup>M</sup>	40 FSTARS 8.4/18 obs
		32			↑	60s	double star



TO CAM 7/2/88

Spectrograph ECHELLE Intensified Reticon  
 Log Sheet  
 Grating 300L Observer JRC  
 Telescope 61" Wgeth Date Sept 1-2 1988 Disk ORO 2284

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments	
		1	Th-Ar		↓	60s	251878	
		2	SKYDWE	4 hrs East	+20°	2.5m	16 SKY	
		3	Th-Ar		↑	60s		
		4	Th-Ar		↓	60s		
		5	SKYDWNM	0 hrs	+20°	2.5m	16 SKY	
		6	Th-Ar			60s		
		7	INCANS			120m		
		8	INCANDS			120m		
2-3 Sept. 1988		9	Th-Ar		↓	60s	(Re-set CEX/SKY Gear)	
		10	SKY-EVE	0 hrs.	+30°	2m		
		11	Th-Ar		↑	60s		
		12	Th-Ar		↓	60s		
		13	SKY-EVE	4.5 hrs W	+30°	2m		
		14	Th-Ar		↑	60s		
		15	Th-Ar		↓	60s		
		16	114 60S1	16:11:43	-03:34:01		2m	2.7 IAU standard 1.0 ND
		17	Th-Ar		↑	60s		
		18	Th-Ar		↓	60s		
	19	G17-25	16:32:04	+04:07:06		7m	9.6/15 HALOS (marginal - but last chance to get)	
	20	Th-Ar		↑	60s			
	21	Th-Ar		↓	60s			
	22	G17-22	16:30:22	+03:21:12		3m	8.8/15 Halos	
	23	Th-Ar		↑	60s			
	24	Th-Ar		↓	60s			
	25	151783	16:46:53	00:58:36		17m	7.2/600 Fstars	
	26	Th-Ar		↑	60s			
	27	Th-Ar		↓	60s			
	28	150340A	16 37 31	23 05 55		20m	7.0/500 FSTARS <span style="border: 1px solid black; padding: 2px;">••</span>	
	29	Th-Ar		↓	60s			
	30	150340A	"	"		7m	" " " "	
	31	Th-Ar		↑	60s			
	32							

TO CAM 9/2/88

Spectrograph ECHELLE Intensified Reticon  
 Log Sheet  
 Grating 3002 Observer JRC  
 Telescope 61" Wyeth Date Sept 2-3 1988 Disk 020 2285

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		TMR			↓	60s	λ 5187 Å
	Z Lac	22 38 53	56 34 05			5 <sup>m</sup>	38 Ceph 8.9
		TMR			↑	60s	
		TMR			↓	60s	
	SV Vul	19 49 28	27 19 53			2 <sup>m</sup>	38 Ceph 7.8
		TMR			↑	60s	
		TMR			↓	60s	
	624-18 P+F	20 26 43	05 02 48			4 <sup>m</sup>	15 Halos P+F 8.75/15
		TMR			↑	60s	
		TMR			↓	60s	
	-095831	21 42 51	-08 39 06			11 <sup>m</sup>	15 Halos 10.39/20
		TMR			↑	60s	
		TMR			↓	60s	
	159502	17 32 02	29 07 42			8 <sup>m</sup>	40 f-stars 8.10/150
		TMR			↑	60s	
		TMR			↓	60s	
	161299	17 41 34	33 54 51			17 <sup>m</sup>	40 f-stars 7.89/400
		TMR			↑	60s	
		TMR			↓	60s	
	177365	19 31 33	17 41 32			5 <sup>m</sup>	40 f-stars 7.02/300
		TMR			↑	60s	
		TMR			↓	60s	
	172342	15 36 38	24 36 03			20 <sup>m</sup>	40 f-stars 8.00/600
		TMR			↓	60s	
	172342	" " "	" " "			14 <sup>m</sup>	" " " "
		TMR			↑	60s	
		TMR			↓	60s	
	G132-73	01 18 12	37 46 18			3.5 <sup>m</sup>	15 H1105 7.87/30
		TMR			↑	60s	
		TMR			↓	60s	
	H213014	22 25 45	17 00 28			4 <sup>m</sup>	17 IAN STDS 7.7
		TMR			↑	60s	

Intensified Reticon

TO CAM 9/2/88

Spectrograph ECHELLE

Log Sheet

RAW RET

Grating 3002

Observer JRC

Telescope 6" Wynth

Date Sept 2-3 1988

Disk 020 2286

Change....	File	ID	RA	1950.0 Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60 <sup>s</sup>	251878
	G69-1	00 29 55	27 55 18			7 <sup>m</sup> 15	HALOS 8.72/100
		3			↑	60 <sup>s</sup>	
		4			↓	60 <sup>s</sup>	
	G68-30	23 33 12	20 18 18			2 <sup>m</sup> 15	HALOS 9.11/15
		6			↑	60 <sup>s</sup>	
		7			↓	60 <sup>s</sup>	
	G128-84	23 33 57	32 45 42			5 <sup>m</sup> 15	Halos 10.13/15
		9			↑	60 <sup>s</sup>	
		10			↓	60 <sup>s</sup>	
	G157-93	23 40 59	-08 11 54			6 <sup>m</sup> 15	Halos 10.12/15
		12			↑	60 <sup>s</sup>	
		13			↓	60 <sup>s</sup>	
	273-152	23 49 55	-09 41 06			7 <sup>m</sup> 15	Halos 10.10/15
		15			↑	60 <sup>s</sup>	
		16			↓	60 <sup>s</sup>	
	G158-14	23 54 59	-09 55 30			2 <sup>m</sup> 15	Halos 7.93/15
		18			↑	60 <sup>s</sup>	
		19			↓	60 <sup>s</sup>	
	(2) stars	00 14 34	-15 37 25			2 <sup>m</sup> 17	ASTEROID Found by hand! 9.6/
		21			↑	60 <sup>s</sup>	
		22			↓	60 <sup>s</sup>	
	13722	02 10 55	-15 08 24			7 <sup>m</sup> 40	FSTARS 7.89/1 <sup>st</sup> obs
		24			↑	60 <sup>s</sup>	
		25			↓	60 <sup>s</sup>	
This one looked like an F-STAR	17613 a	02 47 11	08 43 57			18 <sup>m</sup> 40	FSTARS Southern obj 8.74/1 <sup>st</sup>
		27			↓	60 <sup>s</sup>	
This one did not	17613 b	" "	" "			18 <sup>m</sup> 40	FSTARS Northern obj 8.74/1 <sup>st</sup>
		29			↑	60 <sup>s</sup>	
		30					
		31					
		32					

TO CAMI 9/2/88

Intensified      Reticon

Spectrograph ECHELLE      Log Sheet      RAW/RET

Grating 3002      Observer JRC

Telescope 61" Wynell      Date Sept 2-3 1988      Disk DR0 2287

Change....	File	ID	RA	1950.0 Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60s	251879
		2	TV Cet	03 12 03	02 34 10	10 <sup>m</sup>	40 FSTARS WUMa 8.6
		3			↑	60s	
		4			↓	60s	
		5	G95-57A	03 43 36	41 17 25	2 <sup>m</sup>	15 Halos 8.19/20
		6			↑	60s	
		7			↓	60s	
		8	F81-15	04 17 22	45 22 18	5 <sup>m</sup>	15 Halos 9.93/15
		9			↑	60s	
		10			↓	60s	
		11	H8779	01 23 53	-00 39 29	2 <sup>m</sup>	17 Ed4. 510 6.4
		12			↑	60s	
		13			↓	60s	
		14	F100-52	05 59 26	27 24 18	3 <sup>m</sup>	15 Halos 9.18/15
		15			↑	60s	
		16			↓	60s	
		17	G81-33	04 41 15	43 06 42	2 <sup>m</sup>	15 Halos 8.74/15
		18			↑	60s	
		19			↓	60s	
		20	G96-16	04 58 32	44 58 12	4 <sup>m</sup>	15 Halos 9.86/15
		21			↑	60s	
		22			↓	60s	
didn't look like an FSTAR →		23	12180	01 56 39	-23 09 40	2 <sup>m</sup>	40 FSTARS <input checked="" type="checkbox"/> NPobj 6.81/1st obs
		24			↑	60s	
This one did →		25	12180	" "	" "	5 <sup>m</sup>	" " <input checked="" type="checkbox"/> SF obj 6.81/1st obs
		26			↑	60s	
		27			↓	60s	
		28	14285	02 15 47	-23 51 25	5 <sup>m</sup>	40 FSTARS 7.34/1st obs
		29			↑	60s	
		30			↓	60s	
		31	38465	05 43 47	20 09 20	"	40 FSTARS 7.89/100
		32			↑	60s	



9/3/88

TO CAM

Spectrograph ECHELLE Intensified Reticon  
 Grating 3000 Log Sheet  
 Telescope 61" Wynth Date Sept 2-3 1988 Observer JRC  
 Disk 020 2288

Change....	File	ID	RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60s	λ 5157 Å
		2	SKY WNE	4hrs East	+20°	2m	16 SKY
		3	Th-Ar		↑	60s	
		4	Th-Ar		↓	60s	
		5	SKY WNW	0hrs	+20°	2m	16 SKY
		6	Th-Ar		↑	60s	
		7	INCA DS			120m	} Very High Sats > 4000!! DO NOT USE
		8	INCA DS			120m	
		9	INCA DS			120m	
		10	INCA DS			120m	
Sept 3-4 1988		11	Th-Ar		↓	60s	70°F cldg λ 5157 Å
		12	SKY E W	0hrs	+20°	2m	16 SKY
		13	Th-Ar		↑	60s	
		14	Th-Ar		↓	60s	
		15	SKY E W	4hrs West	+20°	2m	16 SKY
		16	Th-Ar		↑	60s	
		17	Th-Ar		↓	60s	
		18	H156014	17:22:22	14:26:46	2m	17 DM STD 1.0 Filter 7.1/
		19	Th-Ar		↑	60s	
		20	Th-Ar		↓	60s	
		21	G21-20	18:35:15	-06:50:30	4m	8.3/15 Halo
		22	Th-Ar		↑	60s	
		23	Th-Ar		↓	60s	
		24	G22-7	18:53:13	-05:48:24	2.5m	7.5/15 Halo
		25	Th-Ar		↑	60s	
		26	Th-Ar		↓	60s	
		27	G224-81	15:44:07	63:00:48	7m	8.9/15 Halo
		28	Th-Ar		↑	60s	
		29	Th-Ar		↓	60s	
		30	157427	17:19:53	35:52:14	20m	8.1/350 F stars
		31	Th-Ar		↑	60s	
		32	/				

Combine with the next obs.

9/5/88

Intensified Reticon

TO CAM

Spectrograph ECHELLE

Log Sheet

RAW/RET

Grating 3002

Observer RPS

Telescope 61" Wyoth

Date 3-4 Sept. 1988

Disk ORO 2289

Change....	File	ID	1950.0 RA	Dec	L/R +/-	Exposure	Comments
		1	Th-Ar		↓	60s	- 5187A -
combine with previous observation		2	157427	17:19:53	35:52:14	9m	F stars
		3	Th-Ar		↑	60s	- stopped by clouds -
		4	Th-Ar		↓	60s	
		5	H212943	22:25:20	04:26:39	3m	4.9 IAU standard
		6	Th-Ar		↑	60s	SKY TOO POOR TO CONT
5-6 Sept 1988		7	Th-Ar		↓	60s	
		8	SKY-EVE	φ hrs.	+30°	2m	(Power out - cooler at stand temp = -30°C.)
		9	Th-Ar		↑	60s	
		10	Th-Ar		↓	60s	
		11	SKY-EVE	4.5 hrs. W	+30°	2m	
		12	Th-Ar		↑	60s	(Best RA)
		13	Th-Ar		↓	60s	
		14	136202	15:16:45	01:57:12	2m	5.1 IAU standard
		15	Th-Ar		±	60s	
		16	136202B	"	"	6m	IAU standard companion
	17	Th-Ar		↑	60s		
	18	Th-Ar		↓	60s		
	19	+013070	15:20:08	01:26:30	17.5m	9.5/40 Halos	
	20	Th-Ar		↑	60s		
	21	Th-Ar		↓	60s		
	22	G202-25	15:58:22	45:52:48	14m	11.0/15 Halos	
	23	Th-Ar		↑	60s		
	24	Th-Ar		↓	60s		
	25	1E1848	18:48:10	33:05:30	18m	103/30 Marschall	
	26	Th-Ar		↑	60s		
	27	Th-Ar		↓	60s		
	28	(2)	19:52:50	09:55:43	5m	10.1 Asteroid	
	29	Th-Ar		↑	60s		
	30						
	31						
	32						

9/5/88

TO CAM

Spectrograph ECHELLE

Intensified Reticon

Grating 300L

Log Sheet

RAW/RET

Telescope 61" Wyeth

Date 5-6 Sept. 1988

Observer RPS

Disk ORO 2290

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		Th-Ar			↓	60s	
		H14284	16:00:57	58:41:59		2m	4.1/20 Mstars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		GRS 616.2	16:15:59	55:23:48		13m	10/20 Mstars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		H57427	17:19:53	35:52:14		9.5m	8.1/350 Fstars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		H58956	17:29:07	19:03:12		20m	8.1/300 Fstars
		Th-Ar			↑	60s	
		H58956	"	"		20m	"
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		GRS 830	21:27:19	-12:43:46		6m	9.1/20 Mstars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		H164461	21:29:39	-12:29:21		2.5m	6.9/20 "
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		IE1037	19:37 05	30:27:58		14m	9.5/30 Marschall
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		H213014	22:25:46	17:00:28		2.5m	7.7 AU standard
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		(18)	22:48:21	-12:16:07		2.5m	8.8 Asteroid
		Th-Ar			↑	60s	
		/					
		/					
		/					













Spectrograph ECHELLE

Intensified Reticon

TO CAM

9/7/88

Grating 300l

Log Sheet

RAW/RET

Telescope 61" WyethDate Sept 7-8 1988Observer JLCDisk ORO 2296

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60 <sup>s</sup>	λ 5187 Å
		2	SKYEVEM	0hrs	+20°	2 <sup>m</sup>	16 SKY
		3	THAR		↑	60 <sup>s</sup>	
		4	THAR		↓	60 <sup>s</sup>	
		5	SKYEVEM	4hrs West	+20°	2 <sup>m</sup>	16 SKY
		6	THAR		↑	60 <sup>s</sup>	
		7	THAR		↓	60 <sup>s</sup>	
		8	H182572	19 22 35	11 50 09	2 <sup>m</sup>	17 TAN STOS S.2
		9	THAR		↑	60 <sup>s</sup>	
		10	THAR		↓	60 <sup>s</sup>	
		11	154945	17 06 10	-05 07 43	10 <sup>m</sup>	40 FSTARS 8.46/150
		12	THAR		↑	60 <sup>s</sup>	
		13	THAR		↓	60 <sup>s</sup>	
		14	W Ser	18 06 50	-15 33 36	12 <sup>m</sup>	40 FSTARS WU Ma 9.0
		15	THAR		↑	60 <sup>s</sup>	
		16	THAR		↓	60 <sup>s</sup>	
		17	158527	17 27 47	-23 48 12	5 <sup>m</sup>	40 FSTARS 7.39/100
		18	THAR		↑	60 <sup>s</sup>	
		19	THAR		↓	60 <sup>s</sup>	
		20	158956	17 29 07	19 03 12	22 <sup>m</sup>	40 FSTARS MOUNTING TAPE ORANGE 10/300
		21	THAR		↑	60 <sup>s</sup>	
		22	THAR		↓	60 <sup>s</sup>	
		23	172547	18 38 47	-24 24 06	15.5 <sup>m</sup>	40 FSTARS 7.60/200
		24	THAR		↑	60 <sup>s</sup>	
		25	THAR		↓	60 <sup>s</sup>	
		26	G18-27	22 02 58	05 30 42	6 <sup>m</sup>	15 HALOS 10.57/15
		27	THAR		↑	60 <sup>s</sup>	
		28	THAR		↓	60 <sup>s</sup>	
		29	G18-12	21 57 42	08 07 54	8 <sup>m</sup>	15 HALOS 10.97/15
		30	THAR		↑	60 <sup>s</sup>	
		31					
		32					

9/8/88

Spectrograph ECHELLE Intensified Reticon TO CAM  
 Grating 3002 Log Sheet RAW RET  
 Telescope 61" Wyeth Date Sept 7-8 1988 Observer JRC  
 Disk ORO 2297

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		TMR			↓	60s	λ 5157 Å
	G16-39	22 16 06	08 11 42			5 <sup>m</sup>	15 HALOS 10.38/30
		TMR			↑	60s	
		TMR			↓	60s	
	G67-7	22 35 53	09 36 00			8 <sup>m</sup>	15 Halos 10.59/15
		TMR			↑	60s	
		TMR			↓	60s	
	G127-43	22 36 22	25 18 36			5 <sup>m</sup>	15 Halos 10.02/15
		TMR			↑	60s	
		TMR			↓	60s	
	G67-9	22 37 06	11 05 30			8 <sup>m</sup>	15 Halos 10.44/15
		TMR			↑	60s	
		TMR			↓	60s	
	DL 655	00 27 11	59 56 12			3 <sup>m</sup>	38 CEPH 10.6/
		TMR			↑	60s	
		TMR			↓	60s	
	G67-40	22 59 15	11 33 06			9 <sup>m</sup>	15 HALOS (PAN OFF) 10.66/15
		TMR			↑	60s	
		TMR			↓	60s	
	(18)	22 47 02	-12 43 35			2 <sup>m</sup>	17 ASTEROID 9.8/
		TMR			↑	60s	
		TMR			↓	60s	
	G27-29	22 25 20	-05 32 06			12 <sup>m</sup>	15 HALOS 11.21/15
		TMR			↑	60s	
		TMR			↓	60s	
	G1-4	00 25 06	04 33 48			8 <sup>m</sup>	15 HALOS 10.69/
		TMR			↑	60s	
		TMR			↓	60s	
	G2569	01:40:10	63:34:24			2 <sup>m</sup>	8.5/20 M stars
		TMR			↑	60s	
	/						
	/						

9/8/88

Intensified Reticon TO CAMI  
 Spectrograph ECHELLE Log Sheet RAW/RET  
 Grating 3002 Observer RPS  
 Telescope 61" Wyeth Date 7-8 Sept. 1988 Disk ORD 2298

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1					
		2			↓	60s	
		3	5011483	01:44:10	63:36 14	2m	5.7/20 Mstars.
		4			↑	60s	
		5			↓	60s	
		6	G173-2	01:27:49	52:29 18	5m	10.0/15 Halos
		7			↑	60s	
		8			↓	60s	
		9	5191895	23:23:03	-24:12 18	14m	10.1/20 Halos (looking through the trans!)
		10			↑	60s	
		11			↓	60s	
		12	G128-11	22:51:04	27:27 30	16m	11.1/20 Halos 2-4" seeing!
		13			↑	60s	
		14			↓	60s	
		15	G128-43	23:14:41	31:27 18	12m	11.3/15 "
		16			↑	60s	
		17			↓	60s	
		18	G157-47	23:17:18	-00:44 12	7m	10.3/15 "
		19			↑	60s	
		20			↓	60s	
		21	G128-80	23:32:31	32:44 14	20.5m	12.0/15 "
		22			↑	60s	
		23			↓	60s	
		24	G131-55	00:26:53	-02:57 24	6m	10.7/20 "
		25			↑	60s	
		26			↓	60s	
		27	158-102	00:33:09	-06:59 06	11m	10.8/15 "
		28			↑	60s	
		29			↓	60s	
		30	G70-14	00:46:08	-01:39 24	12m	10.9/15 "
		31			↑	60s	
		32					



9/8/88

Spectrograph ECHELLE Intensified Reticon TO CAM1  
 Grating 300 $\lambda$  Log Sheet RAW/RET  
 Telescope 61" Wyeth Date 7-8 Sept 1988 Observer RPS  
 Disk OR02300

Change....	File	ID	RA	Dec	1950.0	L/R	Exposure	Comments
						$\uparrow/\downarrow$		
		1	Th-Ar			$\downarrow$	60s	
		2	SKY-DWN	4 hrs. E	+20°		2m	
		3	Th-Ar			$\uparrow$	60s	
		4	Th-Ar			$\downarrow$	60s	
		5	SKY-DWN	$\phi$ hrs	+20°		2m	
		6	Th-Ar			$\uparrow$	60s	
		7	INCAUDS				120m	
		8	INCAUDS				120m	
		9						
		10						
		11						
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						
		21						
		22						
		23						
		24						
		25						
		26						
		27						
		28						
		29						
		30						
		31						
		32						

The End of  
 August - Sept. Echelle  
 Run

Spectrograph ECHELLE Intensified Reticon TO CAM  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date 15 Sept. 1988 Observer RPS  
 Disk ORO 2300 CONTINUED

Change.... File ID RA Dec L/R Exposure Comments

Change....	File	ID	RA	Dec	L/R	Exposure	Comments
		1					
		2					
		3					
		4					
		5					
		6					
		7					
		8					
		9					
		10					
		11					
		12					
		13					
15 Sept 88		14					INC-NEW
		15					PHD 3.00
		16					PHD 2.00
		17					PHD 1.50
		18					PHD 1.00
		19					PHD 3.00
		20					PHD 2.00
		21					PHD 4.00
		22					PHD 6.00
		23					PHD 8.00
		24					PHD 9.80
		25					PHD 3.00
		26					PHD 2.00
		27					PHD 1.50
		28					PH 1.50
		29					PH 2.00
		30					PH 3.00
		31					PH 4.00
		32					PH 6.00

Testing for Sept-Oct. 1988  
Echelle Run.

New D-connectors for MCP  
Reset Rel. ion  
Replaced A/D Processor chips

3.77 v

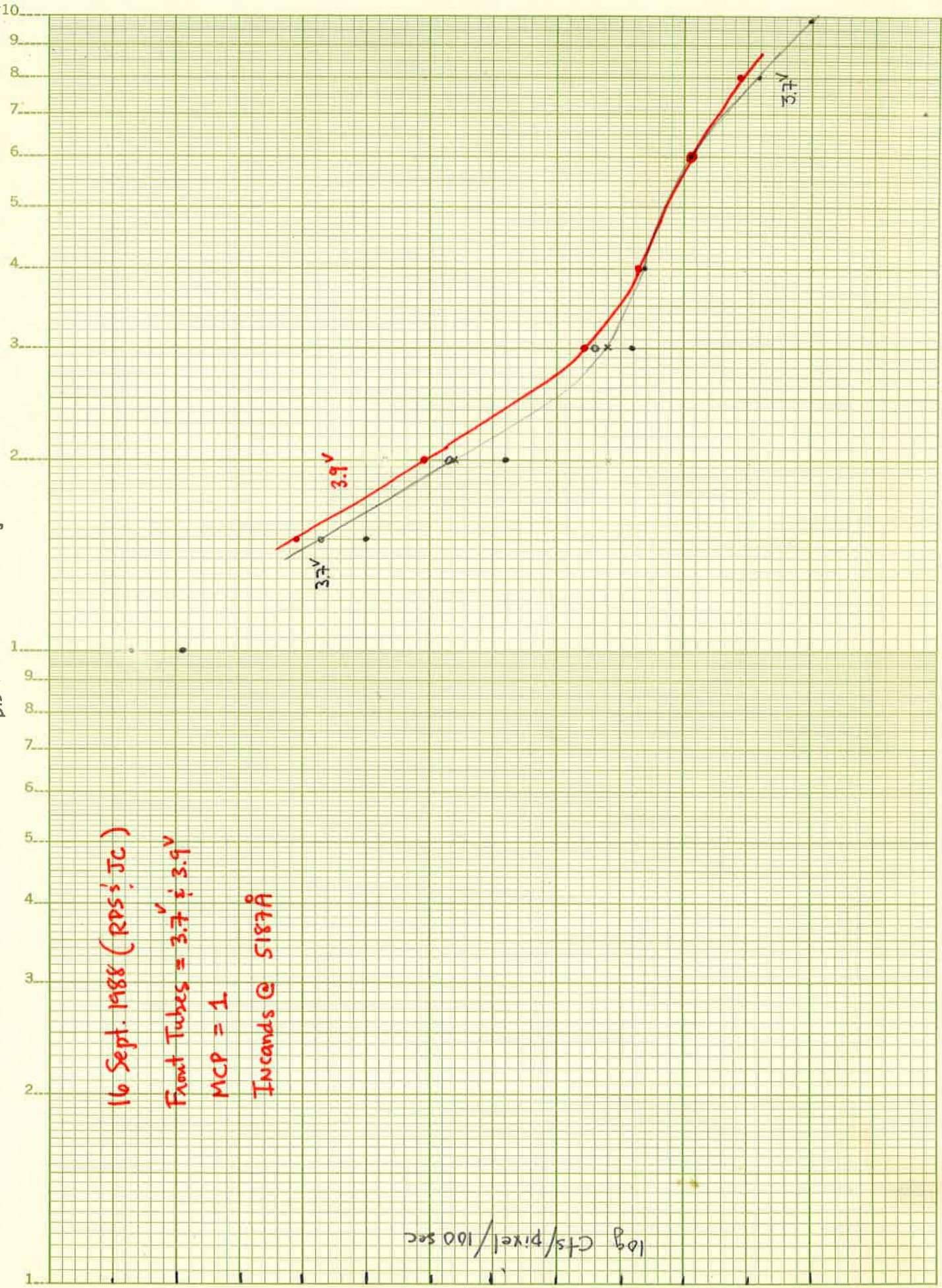
3.92 v

PHD - 150 (LWN)  
PH - 2M (LWN)

Discriminator Voltage

16 Sept. 1988 (RDS: JC)  
Front Tubes = 3.7 V ± 3.9 V  
MCP = 1  
Incands @ 5187 Å

log Cts/pixel/100 sec



Intensified Reticon

TO CAM

Spectrograph ECHELLE

Log Sheet

RAW/RET

Grating 300 l

Observer RPS-JLC

Telescope 61" Wyeth

Date Sept 15-16 1988

Disk ORO 230.1

Change.... File ID RA 1950.0 Dec L/R Exposure Comments Start ORO Echelle Sept. - Oct. 1988

Change....	File	ID	RA	1950.0	Dec	L/R	Exposure	Comments
		TNR				↓	60s	25167R
	H22484	03 34 19	00 14 40				2M	17 IAM STD 1.0 MD FILTER +.4
		TNR				↑	60s	
		TNR				↓	60s	
	H26162	04 06 15	14 28 43				2M	17 IAM STD 5.5
		TNR				↑	60s	
		TNR				↓	60s	
	H16141	07 59 39	02 28 23				2M	17 IAM STD 1.0 MD FILTER 4.4
		TNR				↑	60s	
		TNR				↓	60s	
	H26162	04 06 15	14 28 43				2M	17 IAM STD 5.5
		TNR				↑	60s	
		TNR				↓	60s	
	SKYDOME	4hrs East	+20°				2.5M	16 SKY
		TNR				↑	60s	
		TNR				↓	60s	
	SKYDWNM	0hrs	+20°				2.5M	16 SKY
		TNR				↑	60s	
	INCANS						120M	
	INCANDS						90m	
16-17 Sept 88	PHD2.0φ	2.33	} MCP = 6 Front = 4.12					DWL Reset Internal MCP Gains; Reticon Re-set and Intensifiers after cleaning
	PHD1.5φ	2.36						
	PHD1.0φ	2.46						
	PHD0.5φ	2.85						
	PHD3.0φ	2.21						
	PHD4.0φ	2.09						
	PHD5.0φ	1.95						
	PHD0.75	2.65						
	PHD2.00	2.36						
	PHD3.00	2.27						Front = 4.23
	PHD4.00	2.17	} MCP = 6					
	PHD5.00	2.05						



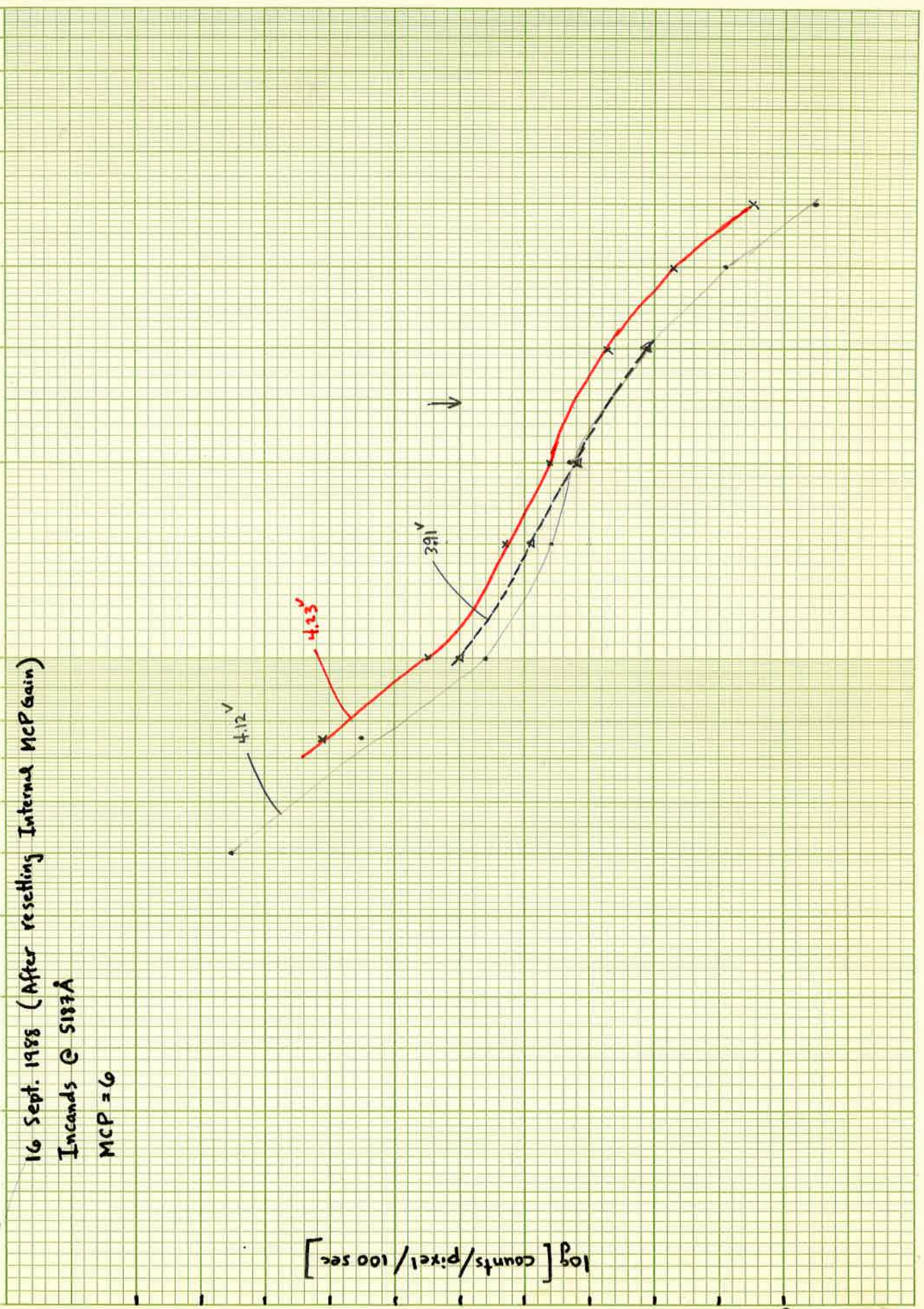
Discriminator Voltage

16 Sept. 1988 (After resetting Internal MCP Gain)

Incands @ 5187A

MCP = 6

$\log [\text{Counts/pixel}/100 \text{ sec}]$



Spectrograph ECHELLE  
 Grating 300 l  
 Telescope 61" Wyeth

Intensified Reticon  
 Log Sheet

TO CAM 1/16/85  
RAW RET

Observer RPS & JLC  
 Disk ORO 2302

Date 16-17 Sept. 1988

Change.... File ID RA 1950.0 Dec L/R Exposure Comments

1	PHD1.00	2.55		Front = 4.13		
2	PHD0.75	2.71		MCP = 6		
3	PHD1.50	2.43				
4	PHD1.50	2.39				
5	PHD2.00	2.32		Front = 3.91		Disc. = 2.35
6	PHD1.00	2.50		MCP = 6		MCP = 6; Front = 3.91V
7	PHD3.00	2.21				
8	Th-Ar			↓	60s	
9	H213014	22:25:45	17:00:28		35m	7.7 IAU standard
10	Th-Ar			↑	60s	
11	Th-Ar			↓	60s	
12	(18)	22:41:24	-14:43:13		3m	8.9 Asteroid - cloudy -
13	Th-Ar			↑	60s	
14	Th-Ar			↓	60s	
15	156-48E	22:45:15	-04:29:30		8m	6.7/15 Halos (fainter than 6.7)
16	Th-Ar			↑	60s	NO GOOD: Stopped by clouds
17	Th-Ar			↓	60s	
18	G18-28	22:03:14	+12:08:18		135m	9.5/30 Halos
19	Th-Ar			↑	60s	
20	Th-Ar			↓	60s	(SKY/SEX WORM GEAR FAILED)
21	G18-55	22:30:20	10:09:00		18m	Halos
22	Th-Ar			↑	60s	
23	Th-Ar			↓	60s	
24	G130-10	23:43:38	24:58:12		8m	9.1/20 Halos
25	Th-Ar			↑	60s	
26	Th-Ar			↓	60s	
27	G69-1	00:29:55	27:56:18		14m	8.72/100 Halos
28	Th-Ar			↑	60s	
29	Th-Ar			↓	60s	
30	G72-58	07:05:31	28:04:36		12m	9.99/15 Halos Northern object
31	Th-Ar			↑	60s	
32						



Intensified      Reticon      TO CAM      9/18/88

Spectrograph ECHELLE      Log      Sheet      RAW/RET

Grating 300 L      Observer JRL

Telescope 61" Wyeth      Date Sept 16-17-1988      Disk ORO      2304

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		TMR			↓	60s	X5167A
		H22484	03 34 19	00 14 40		2 <sup>m</sup>	17 IAM STDs THRU CLDS 4.4/
		TMR			↑	60s	
		TMR			↓	60s	
		DL CASS	00 27 11	59 56 12		13 <sup>m</sup>	78 Cepheids THRU CLDS 10.6
		TMR			↑	60s	
		TMR			↓	60s	
		23393	03 42 07	-12 12 48		10 <sup>m</sup>	40 FSTARS clds + 10% sky 8.19 / 1st obs
		TMR			↑	60s	
		TMR			↓	60s	
		SKHDWNE	4hrs East	+20°		2 <sup>m</sup>	16 SKY
		TMR			↑	60s	
		TMR			↓	60s	
		SKHDWNM	0hrs	+20°		2 <sup>m</sup>	11 SKY
		TMR			↑	60s	
		INCAMPS				120 <sup>m</sup>	
		INCAMOS				120m	low clds??
Sept 18-19 1988		TMR			↓	60s	X5167A cldy
		SKNEVE M	0hrs	+20°		2 <sup>m</sup>	16 SKY
		TMR			↑	60s	
		TMR			↓	60s	
		SKNEVEW	4hrs West	+20°		2 <sup>m</sup>	16 SKY
		TMR			↑	60s	(refocused slit)
		TMR			↓	60s	
		H156014	17 12 22	14 26 46		8 <sup>m</sup>	17 IAM STD (Thru clds) 3.1
		TMR			↑	60s	
		TMR			↓	60s	
		H182572	19 22 35	11 50 09		5 <sup>m</sup>	17 IAM STD 5.2
		TMR			↑	60s	
		TMR			↓	60s	
		H14284	16 00 57	58 41 59		2 <sup>m</sup>	34 MSTARs 4.1/20
		TMR			↑	60s	

MIRROR FOGGED OVER



TO CAM 9/19/88

Intensified Reticon  
Spectrograph ECHELLE Log Sheet RAW/RET  
Grating 300 l Observer JRC  
Telescope 61" Wyeth Date Sept 18-19 1988 Disk ORO 2306

Change....	File	ID	RA	Dec	L/R +/-	Exposure	Comments
		1			↓	60s	λ 5187 Å
	G102-20	05 37 21	12 09 12			16m	15 Halos (fogged out) 10.22/15 ← MAY be no good - low CTs
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	SKYDOME	4 hrs East	+20°			2m	16 SKY
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	SKYDOME	0 hrs	+20°			m	16 SKY
	Th-Ar				↑	60s	
	INCA NS					120m	set at ≈ 1100
	INCA UDS					120m	
	INCA UDS					60m	end at 1500
	Th-Ar				↓	60s	S187A partly cloudy
19-20 Sept. 1988	SKY-EVE	φ hrs.	+20°			2m	minor wet - heater ON.
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	SKY-EVE	4 hrs. W	+20°			2m	
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	H156014	17:12:22	14:26:46			3.5m	3.1 IAU standard 1.φ NO
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	S124835	19:33:44	05:53:45			2m	6.7/20 M Stars.
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	G25 763	19:32:10	04:28:16			7m	9.4/20 M Stars
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	HR6437	17:15:32	49:44:36			2.5m	7.5 F stars
	/						
	/						
	/						

TO CAM 9/11/88

Intensified      Reticon

Spectrograph ECHELLE      Log Sheet

Grating 300 l      Observer RPS

Telescope 61" Wyeth      Date 19-20 Sept. 1988      Disk ORO 2307

Change....      File      ID      RA      Dec      L/R      Exposure      Comments

1950.0

↑/↑

Change....	File	ID	RA	Dec	L/R	Exposure	Comments
		Th-Ar			↓	60s	
	1E1848		18:48:10	33:05:30		14m	10.3/30      Marschaal
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
	G21-20		18:35:15	-06:50:30		3.5m	8.3/15      Halos
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
	G22-7		18:53:13	-05:48:24		2.8m	7.5/15      Halos (Excellent Seeing: three
		Th-Ar			↑	60s	maybe a very faint close companion to
		Th-Ar			↓	60s	the NE)
	V433Her		18:20:03	23:25:47		20m	10.5      Canyon/Symbiotics
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
	G23-16		19:51:54	01:48:48		2.5m	8.9/15      Halos
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
	G24-18?		20:28:43	05:02:48		7m	* Under excellent seeing G24-18
		Th-Ar			↕	60s	doesn't look like a double. What
	G24-18E	11	11			7m	do the P: F Refer? This is the West
		Th-Ar			↑	60s	* on the LPM chart = G24-18.
		Th-Ar			↓	60s	the * East of G24-18 on chart.
	(2)		19:50:37	07:05:20		4m	10.2      Asteroid (?)
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
	H182572		19:22:35	11:50:09		2m	5.2      (IAU standard)
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
	Gls 830		21:27:19	-12:43:46		9.0m	9.1/20      M stars
		Th-Ar			↑	60s	
	/						
	/						
	/						

\* Bob Davis checked this object with the MMT: G24-18 is indeed double with about 1.5" separation - Not an ORO object!!

9/19/88

Spectrograph ECHELLE Intensified Reticon TO CAMI  
 Grating 300 L Log Sheet RAW RET  
 Telescope 61" Wyeth Date 19-20 Sept. 1988 Observer RPS  
 Disk ORO 23φ8

Change.... File ID RA Dec L/R Exposure Comments

Change....	File	ID	RA	Dec	L/R	Exposure	Comments
		Th-Ar			↓	60s	
	S164461	21:29:39	-12:29:21			2.5m	6.9/20 M stars
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	GLS 846	21:59:38	01:09:30			6m	7.2/20 M stars
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	S127114	21:48:59	00:32:09			3/4m	6.9/20 M stars
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	GLS 876	22:50:35	-14:31:12			20m	10.2/20 M Stars
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	AG Peg	21:48:36	12:23:27			6m	8.5 Kerym / Symbiotics
	Th-Ar				↑	60s	- overcast -
	Th-Ar				↓	60s	- fog -
	GLS 820A	21:04:54	38:32:06			4m	5.2/20 M stars + Newby
	Th-Ar				↓	60s	
	GLS 820B	21:04:55	38:32:06			2.5m	6.0/20 " "
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	H8779	01:23:54	-00:39:29			2m	6.4 IAU standard
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	- stopped by fog -
	SKY-DWN	4 hrs. E	+30°			2m	
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	SKY-DWN	φ hrs.	+30°			2m	
	Th-Ar				↑	60s	
	/						
	/						
	/						

Stop  
60



9/20/88

Intensified Reticon

TO CAM

Spectrograph ECHELLE

Log Sheet

RAW RET

Grating 300 L

Observer RPS

Telescope 61" Wyeth

Date 19-20 Sept. 1988

Disk ORO 2309

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
------------	------	----	--------------	-----	------------	----------	----------

20-21  
Sept.  
1988

1	INCAUDS					120m	
2	INCAUDS					120m	} low rts (Replaced INCAUD Potentiometer)
3	INCAUDS					120m	
4	Th-Ar				↓	60s	
5	SKY-EVE	φ hrs.		+10°		2m	
6	Th-Ar				↑	60s	- cloudy, light rain -
7	Th-Ar				↓	60s	
8	SKY-EVE	4hrs. W		+10°		2m	
9	Th-Ar				↑	60s	
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
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26							
27							
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29							
30							
31							
32							

Tape to Cambridge 9/20/88

9/24/88

Intensified Reticon  
 Spectrograph ECHELLE  
 Grating 300 L  
 Telescope 61" Wyeth  
 Log Sheet  
 Observer RPS  
 Date 21-22 Sept. 1988  
 Disk ORO231φ  
TO CAM  
RAW/RET

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		Th-Ar			↓	60s	(Reset RCO = 173φ; LCO = 11φ)
		SKY-EVE	φ hrs	+30°		2m	(from 1700 ' 80) - cloudy -
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		SKY-EVE	4.5 hrs. W	+30°		2m	
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		H1460S1	16:11:43	+03:34:01		2m	2.7 IAU standard (NO. 1.0)
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		162883	17:50:51	-08:41:55		13.5m	8.3/250 F stars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		175384	18:52:54	-18:35:55		15.5m	8.3/300 F stars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		G25616.2	16:15:59	55:23:48		10m	10.0/20 M stars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		G25623	16:22:39	48:28:24		7.74m	10.3/20 " (Slips 60 - clouds)
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		IE1037	19:37:05	30:27:58		7m	9.5/30 Marschall
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		G142-2	18:59:36	15:59:36		8m	10.4/15 Halos
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		17458 SC	18:47:54	32:45:14		7.5m	±10.5 Lindroos Binaries
		Th-Ar			↑	60s	
		/					
		/					

TO CAMI 9/22/88

Spectrograph ECHELLE Intensified Reticon  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date 21-22 Sept. 1988 Observer RPS  
 Disk ORO 2311

Change....	File	ID	1950.0 RA	Dec	L/R +/-	Exposure	Comments
		1			↓	60s	
		2	G208-29	19:30:32	48:28:54	7.5m	8.5/20 Halos
		3			↑	60s	
		4			↓	60s	
		5	G188-30	21:53:03	32:24:24	9.5m	11.0/30 Halos
		6			↑	60s	
		7			↓	60s	
		8	156-48E	22:45:15	-04:29:30	3m	6.7(?) / 15 "
		9			↑	60s	
		10			↓	60s	
		11	(1)	23:59:36	-17:22:22	2m	8.5 Asteroid
		12			↑	60s	
		13			↓	60s	
		14	G85809	20:52:18	61:58:30	7.5	8.5/20 Mstars. (Stop: 90)
		15			↑	60s	(exposure cut short by clouds)
		16			↓	60s	
		17	♀ And	23:31:15	48:32:32	17.5m	10.0 Kanyon/Supernovics
		18			↑	60s	(Stop: 90) Probably NO GOOD
		19			↓	60s	(CEX/SKY Gear Problems)
		20	SKY-DWN	φ Hrs. W	+20°	2.5m	8.5 10" standard
		21			↑	60s	
		22			↓	60s	
		23	SKY-DWN	φ hrs	+20°	2m	(CEX/SKY motor will not
		24			↑	60s	shut off in sky position
		25	INCANDS			120	- set by hand)
		26	"			120	
		27	"			95	
		28					
		29					
		30					
		31					
		32					

Intensified Reticon

TO CAM 9/22/88

Spectrograph ECHELLE

Log Sheet

RAW/RET

Grating 300 L

Observer JLC

Telescope 61" Wyeth

Date Sept 22-23 1988

Disk ORO 2312

1950.0

L/R

NO SKYS: SKN/CGX MIRROR PROBLEM

Change....

File

ID

RA

Dec

↑/↓

Exposure

Comments

Change....	File	ID	RA	Dec	↑/↓	Exposure	Comments
		TMR			↓	60s	
	1182572	19 22 35	11 50 09		↓	2 <sup>M</sup>	ATTENTION: After replacing the <sup>3AM</sup> 310 CEX/SKY Gear the Th-Ar beam
		TMR			↑	60s	10 <sup>NO</sup> filter did not fall on the slit! We had to
		TMR			↓	60s	move the CEX magnet stop out about
	W Ser	18 06 50	-15 33 36			8 <sup>M</sup>	FSTARS 3/16" to get max. Th-Ar counts.
		TMR			↑	60s	Possible Tshift change
		TMR			↓	60s	
	G21-20	8 35 15	-06 50 30			2 <sup>M</sup>	15 Halos 8.34/15
		TMR			↑	60s	
		TMR			↓	60s	
	G22-7	18 53 13	-05 45 24			2 <sup>M</sup>	15 Halos 7.46/15
		TMR			↑	60s	
		TMR			↓	60s	
	G23-16	19 51 54	01 48 48			2 <sup>M</sup>	15 Halos 8.44/15
		TMR			↑	60s	
		TMR			↓	60s	
	(2)	14 50 39	06 30 31			7 <sup>M</sup>	17 ASTEROID 10.1
		TMR			↑	60s	
		TMR			↓	60s	
	G127-33	22 25 40	24 41 00			5 <sup>M</sup>	15 Halos 9.97/15
		TMR			↑	60s	
		TMR			↓	60s	
	H213014	22 25 46	17 00 28			2 <sup>M</sup>	17 IAM STDS 7.7
		TMR			↑	60s	
		TMR			↓	10s	
	GLs 69	01 40 10	+63 34 24			2 <sup>M</sup>	34 MSTARs 8.5/20
		TMR			↑	60s	
	S011983	01 44 10	+63 36 14			2 <sup>M</sup>	34 MSTARs 8.7/20
		TMR			↑	60s	LOW CTS 5500
		TMR			↓	60s	readjusted SKN/CGX STDS
	(1)	23 58 46	-17 26 37			2 <sup>M</sup>	17 ASTEROIDS 8.5
		TMR			↑	60s	

Possible Tshift change





9/24/88

Spectrograph ECHELLE Intensified Reticon TO CAMI  
 Grating 300 l Log Sheet RAW RET  
 Telescope 61" Wyeth Date 23-24 Sept. 1988 Observer RPS  
 Disk ORO2315

Change....	File	ID	RA	Dec	1950.0 L/R ↑/↓	Exposure	Comments
		1			↓	60s	
		2	6134-UN	02:34:26	+3:46:42	10m	10.2/15 Halos
		3			↑	60s	
		4			↓	60s	
		5	533-30	00:58:27	16:06:18	14m	10.7/30
		6			↑	60s	
		7			↓	60s	
		8	6054A	00:03:05	+45:32:06	35m	8.9/20 Mstars. & Space Motion
		9			↓	60s	
		10	6054B	00:03:05	+45:32:00	5.5m	9.0/20 " "
		11			↑	60s	
		12			↓	60s	
		13	EG And	00:41:53	40:24:22	2.5m	7.5 Kingon/Symbiotics
		14			↑	60s	
		15			↓	60s	
		16	Z And	23:31:15	48:32:32	14m	10.0 " "
		17			↑	60s	
		18			↓	60s	
		19	GL 860A	22:26:13	59:26:48	7m	9.9 Newby/Space Motion/Mstars.
		20			↑	60s	
		21			↓	60s	
		22	HR 1630	05:02:17	54:20:26	3m	7.2 Andersen/F stars
		23			↑	60s	
		24			↓	60s	(clouds)
		25	14738	02:20:19	26:27:21	7.5m	7.2 F stars
		26			↑	60s	
		27			↓	60s	
		28	373	00:05:53	52:03:24	5m	7.8/100 F stars
		29			↑	60s	
		30					
		31					
		32					







9-25-88

Intensified Reticon TO CAM  
 Spectrograph ECHELLE Log Sheet RAW RET  
 Grating 300 L Observer JRC  
 Telescope 61" Wyeth Date Sept 24-25 1988 Disk ORO 2318

Change....	File	ID	RA	1950.0 Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60s	
		2	SKYDOWN	0 hrs	+20°	2M	16 SKY
		3			↑	60s	
		4	INCANDS			120M	
		5	INCANDS			120M	
		6	INCANDS			120M	
Sept 25-26 1988		7			↓	60s	X 5,57P
		8	SKYEVEM	0 hrs	+20°	2M	16 SKY
		9			↑	60s	
		10			↓	60s	
		11	SKYEVEM	4 hrs West	+20°	2M	16 SKY
		12			↑	60s	
		13			↓	60s	
		14	H146051	16 11 43	-03 34 01	2M	17 IAM STD 1.0 ND filter 2.7
		15			↑	60s	
		16			↓	60s	
		17	G20-8	17 37 16	02 26 32	20M	15 Halos 9.94/100
		18			↑	60s	
		19			↓	60s	
		20	G20-15	17 44 43	-08 45 30	17M	15 Halos 10.61/50
		21			↑	60s	
		22			↓	60s	
		23	W Ser	18 06 50	-15 33 36	6M	40 Fstars 9.01
		24			↑	60s	
		25			↓	60s	
		26	G183-11	17 52 35	20 16 54	7M	15 Halos 9.76/50
		27			↑	60s	
		28			↓	60s	
		29	178341	19 06 02	-18 45 48	8M	40 Fstars 7.95/500
		30			↑	60s	
		31					
		32					

TO CAM 9/25/88

Intensified Reticon

Spectrograph ECHELLE Log Sheet RAW RET

Grating 300 l Observer JRC

Telescope 61" Wyeth Date Sept 25-26 1988 Disk ORO 2319

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		ThAr			↓	60s	λ 5157 Å
	5162947	19 42 21	-17 37 42			5.5M	15 Halos 9.16/30
		ThAr			↑	60s	
		ThAr			↓	60s	
	GLS 763	19 32 10	04 28 16			3M	34 Mstars 9.4/20
		ThAr			↑	60s	
		ThAr			↓	60s	
	5124835	19 33 44	05 53 45			2M	34 Mstars 6.7/20
		ThAr			↑	60s	
		ThAr			↓	60s	
	GLS 830	21 27 19	-12 43 46			4M	34 Mstars 9.1/20
		ThAr			↑	60s	
	5164461	21 29 39	-12 29 21			2M	34 Mstars 6.9/20
		ThAr			↑	60s	
		ThAr			↓	60s	
	H8-55	22 30 20	10 09 00			3M	15 Halos 9.35/15
		ThAr			↑	60s	
		ThAr			↓	60s	
	5191333	22 39 17	-21 02 48			5M	15 Halos 9.27/30
		ThAr			↑	60s	
		ThAr			↓	60s	
	5165532	23 07 48	-13 34 54			7M	15 Halos 8.41/100
		ThAr			↑	60s	
		ThAr			↓	60s	
	GLS 7-21	23 06 29	-02 49 18			5M	15 Halos 9.27/20
		ThAr			↑	60s	
		ThAr			↓	60s	
	(18)	22 37 15	-16 20 45			3M	17 Asteroid 8.8
		ThAr			↑	60s	
		ThAr			↓	60s	
	156-48E	22 45 15	-04 29 30			3M	15 Halos <span style="border: 1px solid black; padding: 2px;">S.O.</span> 6.6/15
		ThAr			↑	60s	







TO CAM 1/26/88

Intensified Reticon  
Spectrograph ECHELLE Log Sheet RAW RET  
Grating 300 l Observer JRC  
Telescope 61" Wyeth Date Sept 25-26 1988 Disk ORO 2323

Change....	File	ID	RA	Dec	1950.0	L/R	Exposure	Comments
						↑/↓		
		TNR				↓	60s	
	G-84-37	05 07 06	05 29 42				3M 15 Halos	λ 5157 Å 9.72/15
		TNR				↑	60s	
		TNR				↓	60s	
	S150685	05 38 34	-11 13 24				2M 15 Halos	CEX/SKY clutch loose Possible Tsh. lt change 6.87/15
		TNR				↑	60s	
		TNR				↓	60s	
	H66141	07 59 40	02 28 24				2M 17 IAM STDS	1.0 ND Filter 4.4
		TNR				↑	60s	
		TNR				↓	60s	
	SKYDWN E	4 hrs East	+20°				2M 16 SKY	
		TNR				↑	60s	
		TNR				↓	60s	
	SKYDWN M	0 hrs	+20°				2M 16 SKY	
		TNR				↑	60s	
	INCANS						120M	
	INCANDS						120M	
Sept 26-27 1988		TNR				↓	60s	
	SKNEVE M	Meridian	+20°				2M 16 SKY	
		TNR				↑	60s	
		TNR				↓	60s	
	SKNEVE W	4 hrs West	+20°				2M 16 SKY	
		TNR				↑	60s	
		TNR				↓	60s	TURNED UP Varing to 100
	H156014	17 12 22	14 26 46				2M 17 IAM STDS	1.0 ND filter 3.1
		TNR				↑	60s	
		TNR				↓	60s	
	G169-13	16 27 49	30 48 06				6M 15 Halos	
		TNR				↑	60s	
		TNR				↓	60s	
	H144515	16 03 32	10 49 12				3M 34 M STARS	8.5/20
		TNR				↑	60s	









9/26/88

Spectrograph ECHELLE Intensified Reticon TO CAM  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date Sept 26-27 1988 Observer JRC  
 Disk ORO 2327

Change....	File	ID	RA	Dec	1950.0 L/R ↑/↓	Exposure	Comments
		ThAr			↓	60s	25187R
	Z LGC	22 38 53	56 34 05			3 <sup>m</sup>	38 Cepheids 89
		ThAr			↑	60s	
		ThAr			↓	60s	
	HR1130	05 02 17	59 20 26			4 <sup>m</sup>	40 fstars for b.S. catalog 7.2
		ThAr			↑	60s	
		ThAr			↓	60s	
	32306	04 59 37	05 34 09			8 <sup>m</sup>	40 fstars 6.65/500
		ThAr			↑	60s	
		ThAr			↓	60s	
	G250-23	06 45 49	60 59 18			2 <sup>m</sup>	15 Halos 8.61/15
		ThAr			↑	60s	
		ThAr			↓	60s	
	G172-49	01 17 59	51 43 24			3 <sup>m</sup>	15 Halos 7.62/20
		ThAr			↑	60s	
		ThAr			↓	60s	
	S148474	02 31 46	-12 36 01			7 <sup>m</sup>	15 Halos 9.78/25
		ThAr			↑	60s	
		ThAr			↓	60s	
	H22484	03 34 19	06 14 40			2 <sup>m</sup>	17 IAU STDS 1.0 ND filter 4.4
		ThAr			↑	60s	
		ThAr			↓	60s	
	33673	05 09 33	11 18 12			3 <sup>m</sup>	40 fstars 8.19/50
		ThAr			↑	60s	
		ThAr			↓	60s	
	34892	05 17 59	-08 04 36			3 <sup>m</sup>	40 fstars 8.00/100
		ThAr			↑	60s	
		ThAr			↓	60s	
	72984	08 33 33	16 29 31			20 <sup>m</sup>	40 fstars 8.01/800
		ThAr			↓	60s	
	72984	"	"			11 <sup>m</sup>	" " " "
		ThAr			↑	60s	

9/27/88

Intensified Reticon TO CAMI  
 Spectrograph ECHELLE Log Sheet RAW/RET  
 Grating 300 l Observer JRC  
 Telescope 61" Wyeth Date Sept 26-27 1988 Disk ORO 2328

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		ThAr			↓	60s	
	G9-42	05 57 54	21 39 12			2m	15 Halo 25187A 88/15
	ThAr				↑	60s	
	ThAr				↓	60s	
	H26162	04 06 14	19 28 43			2m	17 IAG STD 5.5/
	ThAr				↑	60s	
	ThAr				↓	60s	
	SKYDWN	4 hrs East	+20°			2m	16 SKY
	ThAr				↑	60s	
	ThAr				↓	60s	
	SKYDWN	0 hrs	+20°			2m	16 SKY
	ThAr				↑	60s	
	INCRMS					120	
	"					120	
	"					103	
27-28 Sept 1988	Th-Ar				↓	60s	5187A -clear-
	SKY-EVE	φ hrs	+20°			2m	
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	SKY-EVE	4 hrs. W	+20°			2m	
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	H146051	16:11:43	-03:34:01			2m	2.7 11U standard ND 1.φ
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	(2)	19:51:08	05:33:16			7.5m	103 Asteroid
	Th-Ar				↑	60s	
	Th-Ar				↓	60s	
	G224-81	15:44:07	63:00:48			2m	8.9/15 Halo
	Th-Ar				↑	60s	
	/						
	/						

9/27/88

Intensified Reticon TO CAMI  
 Spectrograph ECHELLE Log Sheet RAW RET  
 Grating 300 L Observer RPS  
 Telescope 61" Wyeth Date 27-28 Sept. 1988 Disk ORO 2329

Change....	File	ID	1950.0 RA	Dec	L/R +/-	Exposure	Comments
		Th-Ar			↓	60s	
		CI-Cyg	19:48:21	33:33:24		15m	11.0 Keyon / Symbiotics
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		G21-20	18:35:15	-06:58:30		2.5m	8.3/15 Halo
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		G22-7	18:33:13	-05:48:24		2m	7.5/15 "
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		G140-S3	18:15:25	05:25:54		12m	10.9/15 "
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		172506	18:38:01	02:38:12		9m	7.8/200 F stars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		Gls 846	21:59:38	01:09:30		4m	9.2/20 M stars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		S127114	21:48:59	00:32:09		2m	6.9/20 "
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		GCS876	22:50:35	-14:31:12		14m	10.2/20 M stars & Nearby
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	
		177005	18:59:27	35:33:03		9m	8.0/100 F stars
		Th-Ar			↑	60s	
		Th-Ar			↓	60s	- clouds -
		176894	18:58:55	41:36:46		20m	7.7/400 F stars
		Th-Ar			↓	60s	
		176894	"	"		16m	V
		Th-Ar			↑	60s	



9/28/88

Spectrograph ECHELLE Intensified Reticon TO CAM  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date 27-28 Sept. 1988 Observer RPS  
 Disk ORO 2331

Change....	File	ID	1950.0 RA	Dec	L/R +/-	Exposure	Comments
		1			↓	60s	
		2	H357	04:22:46	15:49:43	4m	6.5 Hyades Binary
		3			↑	60s	
		4			↓	60s	
		5	V324	04:15:25	21:27:31	7m	5.7 "
		6			↑	60s	
		7			↓	60s	
		8	H448	04:26:08	16:03:00	3.5m	6.6 "
		9			↑	60s	(sky improving)
		10			↓	60s	
		11	H379	04:23:15	15:24:44	3.5m	7.5 "
		12			↑	60s	
		13			↓	60s	
		14	H578	04:31:08	15:03:37	7m	8.5 " (clouding up)
		15			↑	60s	
		16			↓	60s	
		17	H26162	04:06:15	19:28:48	4m	8.5 (IAU standard)
		18			↑	60s	
		19			↓	60s	
		20	SKY-DWN	4 1/2 hrs E	+30°	2.5m	
		21			↑	60s	
		22			↓	60s	
		23	SKY-DWN	φ hrs.	+30°	2m	
		24			↑	60s	
		25	IRKANDS			120	
		26				120	
		27				120	
		28			↓	60s	5187A -clear-
		29	SKY-EVE	φ hrs	+30°	2m	
		30			↑	60s	
		31					
		32					

28-29  
Sept  
1988

9/28/88

Spectrograph ECHELLE Intensified Reticon TO CAM  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date 28-29 Sept. 1988 Observer RPS  
 Disk ORO 2332

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60s	
		2	SKY-EVE	4.5hrs W	+30°	2m	
		3			↑	60s	
		4			↓	60s	
		5	H156014	17:12:22	14:26:46	27m	3.1 IAU Standard 1.0ND
		6			↑	60s	
		7			↓	60s	
		8	SL699	17:55:23	04:33:18	10m	9.5 Nearby S Space Motion
		9			↑	60s	
		10			↓	60s	
		11	171836	18:34:23	-04:39:34	13m	7.9/250 F stars
		12			↑	60s	
		13			↓	60s	
		14	185206	19:35:15	12:34:31	19m	7.9/300 "
		15			↑	60s	
		16			↓	60s	
		17	183775	19:28:16	16:41:45	5m	7.9/50 "
		18			↑	60s	
		19			↓	60s	
		20	191317	20:06:44	-02:44:49	20m	8.3/400 F stars
		21			↓	60s	
		22	191317	"	"	26.5m	(hard to stay awake doing the F stars!)
		23			↑	60s	
		24			↓	60s	
		25	179216	19:08:28	35:30:38	26.5m	7.4/500 (ditto) "
		26			↓	60s	
		27	179216	"	"	10m	"
		28			↑	60s	
		29			↓	60s	
		30	185580	19:35:58	52:11:06	15.5m	8.0/150 "
		31			↑	60s	
		32					



9/28/88

Spectrograph ECHELLE Intensified Reticon TO CAM  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date 28-29 Sept. 1988 Observer RPS  
 Disk ORO 2333

Change.... File ID RA Dec L/R Exposure Comments

Change....	File	ID	RA	Dec	L/R	Exposure	Comments
		1			↓	60s	
		2	182735	19:21:59.9	56:07:34	9.5m	7.3/300 F Stars
		3			↑	60s	
		4			↓	60s	
		5	186253	19:39:07	59:43:24	8.5m	7.9/200 "
		6			↑	60s	
		7			↓	60s	
		8	H212943	22:25:20	04:26:39	2m	4.9 IAU Standard
		9			↑	60s	
		10			↓	60s	
		11	(18)	22:36:19	-16:48:01	4m	9.2 Asteroid
		12			↑	60s	
		13			↓	60s	
		14	H213014	22:25:46	17:00:28	2.5m	7.7 IAU Standard
		15			↑	60s	
		16			↓	60s	
	16	213014B	22:25:46	17:00:28		7.5m	IAU Standard
		17			↑	60s	
		18	G 216-Ar	20:52:18	61:58:30	60s	8.5/20 M Stars
		19	G 85 809	20:52:18	61:58:30	7.5m	8.5/20 M Stars
		20			↑	60s	
		21			↓	60s	
		22	G 69-1	60:29:55	27:55:18	11.5m	8.7/100 Halas
		23			↑	60s	
		24			↓	60s	
		25	Z Lac	22:38:53	56:34:05	4m	8.9 Cepheids
		26			↑	60s	
		27			↓	60s	
		28	218714	23:07:26	37:24:58	7m	7.7/150 F Stars
		29			↑	60s	
		30					
		31					
		32					



Spectrograph ECHELLE  
 Grating 300 l  
 Telescope 61" Wyeth

Intensified Reticon  
 Log Sheet

TO CAM 9/29/88

RAW/RET

Observer RPS JRC

Date 28-29 Sept. 1988

Disk ORO2335

1950.0

L/R

Change.... File ID RA Dec  $\uparrow/\downarrow$  Exposure Comments

1	Th-Ar				↓	60s	
2	TV Cet	08:12:03	02:34:10			20m	8.6 Fstars/Scoping Binocular
3	Th-Ar				↑	60s	
4	Th-Ar				↓	60s	
5	11705	01:52:53	18:14:57			20m	8.2/500 Fstars
6	Th-Ar				↓	60s	
7	11705	"	"			15m	
8	Th-Ar				↑	60s	
9	Th-Ar				↓	60s	
10	H26162	04:06:15	19:28:43			3m	5.5 100 standard
11	Th-Ar				↑	60s	
12	Th-Ar				↓	60s	
13	SKY-DWU	4 hrs E	+20°			2.5m	
14	Th-Ar				↑	60s	
15	Th-Ar				↓	60s	
16	SKY-DWU	φ hrs	+20°			2.5m	
17	Th-Ar				↑	60s	
18	INCANDS					120	
19	"					120	
20	"					120	
21	Th-Ar				↓	60s	
22	SKYEVEN	0 hrs	+20°		↓	2m	16 SKY X5107A
23	Th-Ar				↑	60s	
24	Th-Ar				↓	60s	
25	SKYEVEN	4 hrs West	+20°			2m	16 SKY
26	Th-Ar				↑	60s	
27	Th-Ar				↓	60s	
28	H146051	11 11 43	-03 34 01			2m	17 JAN STD 1.0 Mg filter 2.7
29	Th-Ar				↑	60s	
30	Th-Ar				↓	60s	
31	127823	14 30 07	51 14 24			9m	40 Fstars 8.0/150
32	Th-Ar				↑	60s	

Sept 24-30  
1988



Intensified Reticon TO CAM 9/29/68  
 Spectrograph ECHELLE Log Sheet RAW/RET  
 Grating 300 l Observer JRC  
 Telescope 61" Wyeth Date Sept 29-30 1988 Disk ORO 2337

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		TnAr			↓	60s	
	205075	21 29 58	33 58 52			20M	40 fstars 2.51878 8.00/600
		TnAr			↑	60s	
		TnAr			↓	60s	
	209919	22 03 46	41 43 05			8M	40 fstars 8.19/100
		TnAr			↑	60s	
		TnAr			↓	60s	
	219085	23 10 38	-18 38 28			20M	40 fstars 7.65/300
		TnAr			↑	60s	
	219085	"	"			6M	" " " "
		TnAr			↑	60s	
		TnAr			↓	60s	
	(1)	23 52 57	-17 51 40			4M	17 ASTEROIDS
		TnAr			↑	60s	
		TnAr			↓	60s	
	222950	23 42 47	-13 57 32			20M	40 fstars 7.84/300
		TnAr			↑	60s	
		TnAr			↓	60s	
	224512	23 56 00	-14 24 15			19M	40 fstars 7.18/400
		TnAr			↑	60s	
		TnAr			↓	60s	
	G33-30	00 58 27	16 06 18			20M	15 Halos 10.65/30
		TnAr			↑	60s	
		TnAr			↓	60s	
	G76-31	02 38 32	09 33 24			14M	15 Halos (clipped out) 10.18/30
		TnAr			↑	60s	
		TnAr			↓	60s	
	H4128	08 41 05	-18 15 39			2M	17 IAU STDS 2.0
		TnAr			↑	60s	
		TnAr			↓	60s	
	G73-67	02 31 58	05 14 06			9M	15 Halos (no clipped out) 9.78/15
		TnAr			↑	60s	

Intensified      Reticon  
TO CAM 9/30/88

Spectrograph ECHELLE      Log Sheet      RAW RET

Grating 300 l      Observer JRL

Telescope 61" Wyeth      Date Sept 29-30 1988      Disk ORO 2338

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60S	25187A
		2	SK4DNNE	4 hrs East +20°		2 <sup>m</sup>	16 SKY complete overcast
		3	TMR		↑	60S	
		4	TMR		↓	60S	
		5	SK4DNNM	0 hrs +20°		2 <sup>m</sup>	16 SKY
		6	TMR		↑	60S	
		7	INCANPS			120 <sup>m</sup>	
		8	"			120	
		9	"			120	
		10	"			75	
Sept 30- Oct 1 1988		11	TMR		↓	60S	Forged MIRROR
		12	H212943	02 25 20 04 38 06		6 <sup>m</sup>	17 IAN Low ETS: 4.9
		13	TMR		↑	60S	closed down to clear mirror
		14	TMR		↓	60S	
		15	H8779	01 23 53 -00 39 29		2 <sup>m</sup>	17 IAN STDS 6.4
		16	TMR		↑	60S	
		17	TMR		↓	60S	
		18	G73-67	02 31 58 05 14 06		12 <sup>m</sup>	15 Halos 9.78/15
		19	TMR		↑	60S	
		20	TMR		↓	60S	
		21	27291	04 17 26 53 34 54		11 <sup>m</sup>	40 fstars 7.86/150
		22	TMR		↑	60S	
		23	TMR		↓	60S	
		24	35864	05 26 43 53 07 25		13 <sup>m</sup>	40 fstars 7.69/150
		25	TMR		↑	60S	
		26	TMR		↓	60S	
		27	37395	05 37 12 52 08 42		20 <sup>m</sup>	40 fstars 8.00/300
		28	TMR		↓	60S	
		29	37395	" " " " " " "		8 <sup>m</sup>	40 " " "
		30	TMR		↑	60S	
		31					
		32					

Spectrograph ECHELLE Intensified Reticon TO CAM 1/30/88  
 Grating 300 l Log Sheet RAW/RET  
 Telescope 61" Wyeth Date Sept 30 - Oct 1 1988 Observer \_\_\_\_\_  
 Disk ORO 2339

Change....	File	ID	1950.0 RA	Dec	L/R ↑/↓	Exposure	Comments
		1			↓	60 <sup>s</sup>	25157A
		2	39166	05 41 46	57 02 04	10 <sup>M</sup>	40 FSTARS 7.8/150
		3			↑	60 <sup>s</sup>	
		4			↓	60 <sup>s</sup>	
		5	39968	05 54 21	40 47 37	20 <sup>M</sup>	40 FSTARS 8.1/400
		6			↓	60 <sup>s</sup>	
		7	39968	" " "	" " "	20 <sup>M</sup>	" " 8.1/400
		8			↓	60 <sup>s</sup>	
		9	39968	" " "	" " "	20 <sup>M</sup>	" " 8.1/400
		10			↑	60 <sup>s</sup>	
		11			↓	60 <sup>s</sup>	
		12	43621	06 16 13	54 14 13	8 <sup>M</sup>	40 Fstars 7.26/250
		13			↑	60 <sup>s</sup>	
		14			↓	60 <sup>s</sup>	
		15	TVGT	03 12 03	02 34 10	10 <sup>M</sup>	40 Fstars Edig Binaries 8.6
		16			↑	60 <sup>s</sup>	
		17			↓	60 <sup>s</sup>	
		18	H22484	03 34 19	00 14 40	2 <sup>M</sup>	17 IAM STDS 4.4
		19			↓	60 <sup>s</sup>	
		20			↓	60 <sup>s</sup>	
		21	2 LAC	22 38 53	56 34 05	8 <sup>M</sup>	38 Cepheids 8.9
		22			↑	60 <sup>s</sup>	
		23			↓	60 <sup>s</sup>	
		24	DL Cass	00 27 11	59 56 12	8 <sup>M</sup>	38 Cepheids 10.6
		25			↑	60 <sup>s</sup>	
		26			↓	60 <sup>s</sup>	
		27	G-173-2	01 27 49	52 29 18	10 <sup>M</sup>	15 Halos 10.05/15
		28			↑	60 <sup>s</sup>	
		29			↓	60 <sup>s</sup>	
		30	5133424	06 31 51	-03 02 51	4 <sup>M</sup>	34 Mstars 7.1/20
		31			↑	60 <sup>s</sup>	
		32					

TO CAM 10/3/88

Spectrograph ECHELLE

Intensified Reticon

Grating 300 l

Log Sheet

RAW RET  
JRC

Telescope 61" Wyeth

Date Sept 30 Oct 1 - 1988

Observer JRC  
Disk ORO 2340

Change.... File ID RA Dec L/R Exposure Comments

Change....	File	ID	RA	Dec	L/R	Exposure	Comments
		THAr			↓	60s	λ 5167 Å
	GL 1669	04 12 59	-07 43 48			2 <sup>M</sup>	45 Nearby 4.43
		THAr			↓	60s	
	GL 166C	04 12 58	-07 43 48			10 <sup>M</sup>	45 Nearby <span style="border: 1px solid black; padding: 2px;">A</span> check ID? 11.1/
		THAr			↑	60s	↳ hopeless - Too dim
		THAr			↓	60s	
	H 66141	07 59 39	02 28 24			2 <sup>M</sup>	17 FA4 SIDS No filter 4.4
		THAr			↑	60s	
		THAr			↓	60s	
	SKYDWN E	4 hrs East	+20°			2 <sup>M</sup>	16 SK4
		THAr			↑	60s	
		THAr			↓	60s	
	SKYDWN M	0 hrs	+20°			2 <sup>M</sup>	
		THAr			↑	60s	
	IN ANDS					120 <sup>M</sup>	
	"					120	
	"					120	

end of Run