Scheduling Compact Array Configurations

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At present all 14 standard Compact Array configurations are offered to proposers each term but only the eight most requested are actually scheduled. Configurations that are not scheduled tend to accumulate proposals until they do achieve sufficient demand. While in some ways this system can be said to be "market driven" it does lead to a lot of uncertainty and frustration. In this document I explore some alternative schemes that offer no less facility but in which the configurations to be offered each term are predetermined and advertised well in advance.

Figure 1 shows the usage of the various configurations in the period April 1991 to July 1993. While this distribution may evolve with time as demands change I propose to use it as the basis for determining the frequency with which each configuration is offered.

Figure 2 shows a fixed sequence of configurations with the same number of configurations per term as currently offered. The frequency with which a given configurature is offered is compatible with the usage shown in figure 1. To reduce the number of reconfigurations the same configuration is offered at the end of one term and at the beginning of the next.

Figure 3 compares the proposed sequence with others with more and less reconfigurations per term. For these sequences figure 4 compares the observing efficiency (percentage of time spent observing) for various maintenance and reconfiguration scenarios. Important gains in observing time are realised if fewer configurations are offered. Futher gains are potentially available by reducing maintenance and installation and system testing times or by speeding up the reconfiguration and calibration process. Neither of these options are currently viable but are being actively persued.
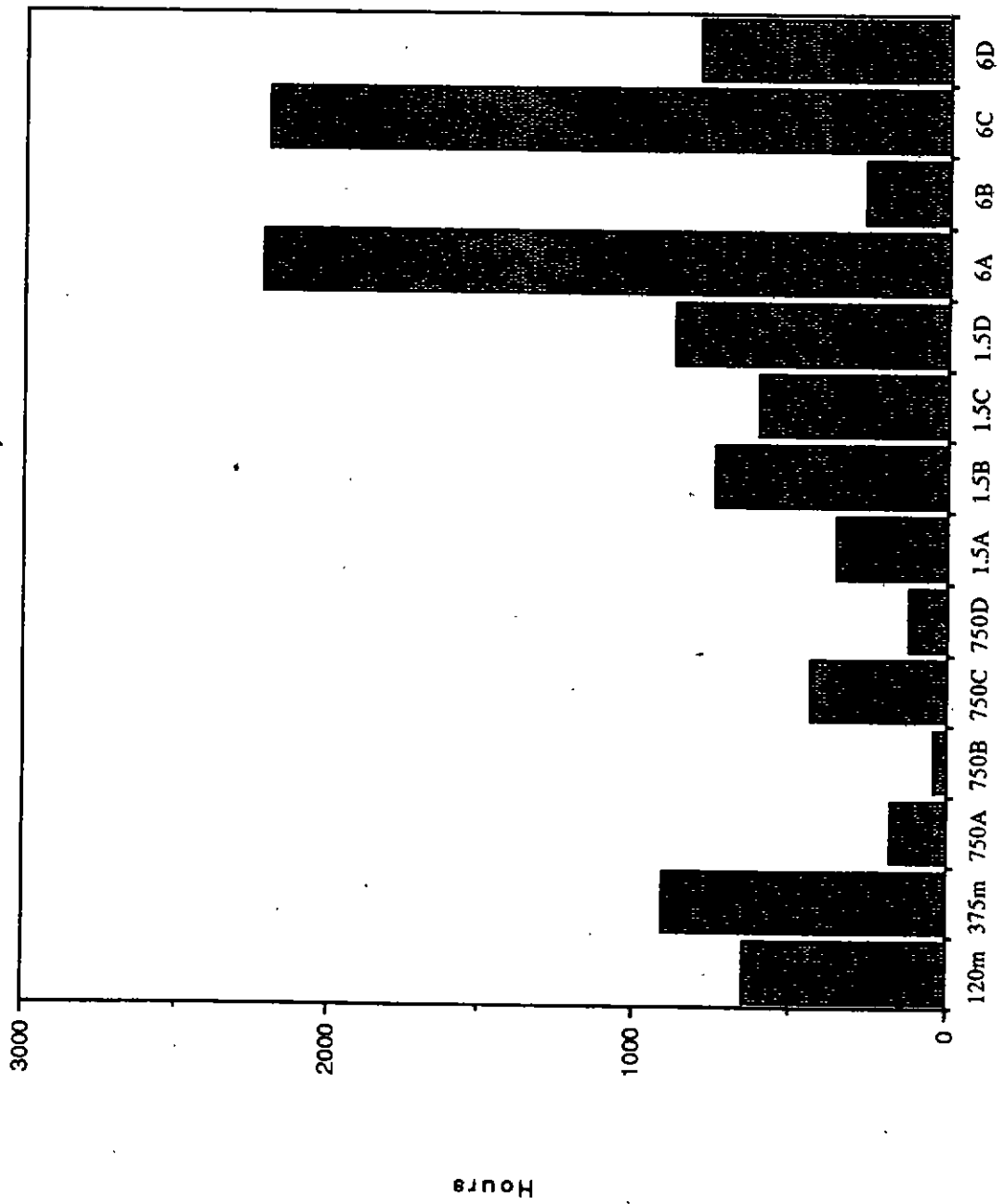
Arrays allocated
April 1991 to July 1993

Figure 1

PROPOSED CONFIGURATION SEQUENCE

8 Configurations per Term (7 reconfigurations)

	6A	6B	6C	6D	1.5A	1.5B	1.5C	1.5D	750A	750B	750C	750D	375	Special
Term 1	⊡	*	⊛		*		*		*				*	*
Term 2	*	⊡	*			*	*	⊛		*		*		
Term 3	⊛		*	*		*	⊡				*	*	*	

⊡   Start Term
⊛   End Term

Figure 2

POSSIBLE CONFIGURATION SEQUENCES

14 Configurations per Term

	6A	6B	6C	6D	1.5A	1.5B	1.5C	1.5D	750A	750B	750C	750D	375	Special
Term 1	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Term 2	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Term 3	*	*	*	*	*	*	*	*	*	*	*	*	*	*

8 Configurations per Term (7 reconfigurations)

	6A	6B	6C	6D	1.5A	1.5B	1.5C	1.5D	750A	750B	750C	750D	375	Special
Term 1	⊞	*	⊛		*		*		*				*	*
Term 2	*		⊞	*		*	*	⊛		*			*	
Term 3	⊛		*	*		*		⊞			*		*	*

7 Configurations per Term (6 reconfigurations)

	6A	6B	6C	6D	1.5A	1.5B	1.5C	1.5D	750A	750B	750C	750D	375	Special
Term 1	⊞	*	⊛		*		*		*					*
Term 2	*		⊞	*		*		⊛		*			*	
Term 3	⊛			*		*		⊞			*	*	*	

6 Configurations per Term (5 reconfigurations)

	6A	6B	6C	6D	1.5A	1.5B	1.5C	1.5D	750A	750B	750C	750D	375	Special
Term 1	⊞		⊛		*				*				*	*
Term 2			⊞	*			*	⊛		*		*		
Term 3	⊛	*				*		⊞			*		*	

⊞ Start Term
⊛ End Term

Figure 3

OBSERVING EFFICIENCY (%)

Configurations per term	6	7	8	14
Reconfigure/Calibrate (2 1/2 days per configuration) Maintain/Install/Test (15 days per term)	70	68	66	55
Reconfigure/Calibrate (2 1/2 days per configuration) Maintain/Install/Test (10 days per term)	76	73	72	61
Reconfigure/Calibrate (1 1/2 days per configuration) Maintain/Install/Test (10 days per term)	80	78	77	71

Figure 4