

Astra operational statistics 08/09

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During the reporting year April 08 – March 09 a total of 4 complete experiments were delivered to the two Astra Target Areas. 3 experiments were delivered to the Gemini Target Area and 1 experiment in Astra Target Area 2. In total 20 high power laser experimental weeks were delivered to the Gemini Target Area, in addition to 3 set up weeks. In total 6 weeks were delivered to Target Area 2. The delivered schedule is presented below in figure 1.

The availability of the Gemini laser system (delivery to the Gemini Target Area) was 75% during normal working hours, rising to 113% with time made up from running out of normal working hours. The reliability of the Gemini laser was 82%. The availability of the Astra laser (delivery to ATA2) was 73% during normal working hours, rising to 101% with time made up from running out of normal working hours. The reliability of the Astra laser was 79%.

		Gemini	ATA2
07-Apr-08	13-Apr-08	Z. Najmudin Extension	
14-Apr-08	20-Apr-08		
21-Apr-08	27-Apr-08	Maintenance	
28-Apr-08	04-May-08		
05-May-08	11-May-08		
12-May-08	18-May-08		
19-May-08	25-May-08	S. Hooker	
26-May-08	01-June-08	G307-08P2	
02-June-08	08-June-08		
09-June-08	15-June-08		
16-June-08	22-June-08		
23-June-08	29-June-08	S. Hooker Extension	
30-June-08	06-July-08		
07-July-08	13-July-08	Quantel service	
14-July-08	20-July-08	Setup	D. Symes
21-July-08	27-July-08		81022
28-July-08	03-Aug-08	D. Jaroszynski	
04-Aug-08	10-Aug-08	81030	
11-Aug-08	17-Aug-08		
18-Aug-08	24-Aug-08		
25-Aug-08	31-Aug-08		
01-Sep-08	07-Sep-08	South beam optimisation	
08-Sep-08	14-Sep-08		
15-Sep-08	21-Sep-08		
22-Sep-08	28-Sep-08		
29-Sep-08	05-Oct-08		
06-Oct-08	12-Oct-08		
13-Oct-08	19-Oct-08		
20-Oct-08	26-Oct-08	Target area preparation	
27-Oct-08	02-Nov-08	South beam optimisation	D. Symes extension
03-Nov-08	09-Nov-08		
10-Nov-08	16-Nov-08		
17-Nov-08	23-Nov-08		
24-Nov-08	30-Nov-08		
01-Dec-08	07-Dec-08	J. Wark	
08-Dec-08	14-Dec-08	81007	
15-Dec-08	21-Dec-08	Coseners meeting	
22-Dec-08	28-Dec-08	Christmas	
29-Dec-08	04-Jan-09		
05-Jan-09	11-Jan-09		
12-Jan-09	18-Jan-09		
19-Jan-09	25-Jan-09	Target area preparation	
26-Jan-09	01-Feb-09	South beam optimisation	
02-Feb-09	08-Feb-09		
09-Feb-09	15-Feb-09		
16-Feb-09	22-Feb-09		
23-Feb-09	01-Mar-09	Maintenance	
02-Mar-09	08-Mar-09	Setup	
09-Mar-09	15-Mar-09		
16-Mar-09	22-Mar-09		
23-Mar-09	29-Mar-09	M. Borghesi (LIBRA)	
30-Mar-09	05-Apr-09	81025	

Figure 1. Astra experimental schedule.

The experiment by experiment availability and reliability of the Gemini laser system is presented below (fig 2). It is clear from the data that this has improved from the Najmudin experiment in the previous year as staff gained a better understanding of the laser's workings and its performance capabilities.

Extensive de-bugging of the laser during the Najmudin experiment in the period 07-08 had identified a number of areas that needed to be addressed in order to improve the operational statistics. This included the use of 2 operators, one being the Astra operator as previously, the other a dedicated Gemini operator who is responsible for aligning the Gemini amplifiers and the Quantel pump lasers in parallel with Astra operations. This allowed the Gemini laser to come online sooner during the day. Issues with reliability of the Quantel pump laser were addressed with a new software control system and replacement of damaged components.

Areas identified for improvement are the replacement of the macholite pump laser, which provides the pump source for the 3rd Astra amplifier. An extensive rebuild of the 3rd Astra amplifier including 4 new pump lasers, automated alignment systems and new infrastructure is planned for the summer of 09. A replacement for the Jade laser which provides the pump source for the front end systems is planned for the period 09/10, this is to be replaced with a more reliable JADE2 system, already bought for this purpose. A campaign of contrast improvement is also planned for the summer and autumn, with investigation into double CPA schemes and cross polarize wave concepts planned. Investment has been made in a spatial light modulator to replace the Dazzler, this will give greater control over the shape of the spectrum and spectral phase.

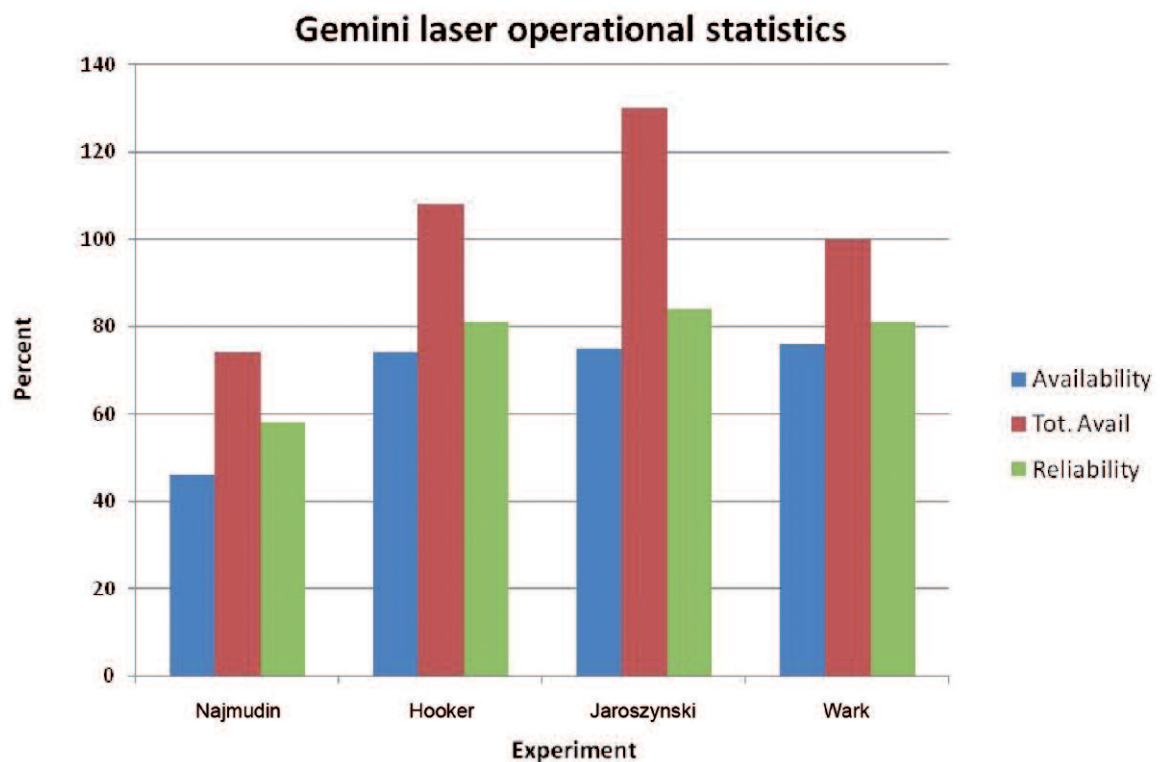


Figure 2. Gemini operational statistics 2008/9.