Accelerator Shutdown Report

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This report describes the main service and upgrade measures of the GSI accelerator facility in 2013. The presented information is based on the work of the shutdown coordination and the corresponding MS-Project shutdown planning.

General Overview

At the beginning of 2013 the annual schedule for operation contained a long shutdown from January till August followed by a beam period of three month. At the end of 2013 there was a short second shutdown foreseen. In April due to budget constraints this beam period was shifted to 2014. Hence there was no accelerator operation in 2013 at all and the whole year was used for maintenance und upgrade work at the accelerators. For commissioning of the different components there were 6 dedicated working periods each lasting two weeks. These periods were used to switch on these components and to check their behaviour.

Work Packages

Table 1 shows the duration of the main work packages. Figure 1 displays the distribution of about 1000 shutdown schedule entries corresponding to the main topics. The extensive maintenance of the ALVAREZ II cavity, the RF-system, as well as the chemical cleaning of drift tubes were the major work packages at UNILAC. A water leak of the first drift tube of the High Current Injector IH1-cavity has been repaired. Also emittance measurements were perfomed at the beam line behind the MEVVA ion source. At the end of 2013, most parts of the EmTEx (emittance transfer experiment) have been assembled in the transfer channel.

Work package	Begin	End
Alvarez service	Dec 2012	Nov 2013
EmTEx	Apr 2013	Feb 2014**
H=2 cavity	Dec 2012	Feb 2014**
radiation resistant safes	Feb 2013	Dec 2013
SIS18 switching station	Jan 2013	Aug 2013
SIS18 beam diagnostics	May 2013	Dec 2013
ESR target section	Sep 2013	Jan 2014**
HTA beam line upgrade	Jun 2013	Jan 2014**

Table 1: Duration of different project tasks.

At the SIS18, the construction of the H=2-Cavity, the installation of a new ionisation profile monitor (IPM) and the NEG-coating of the triplet chamber at section 11 were dominating the shutdown work. Moreover, 11 radiation resistant safes have been installed on the ceiling of the SIS18-tunnel, to protect sensitive electronic components from radiation damage. Another major work package was the installation and commissioning of a new switching station for the SIS18-main power supply. The magnets, used for the horizontal orbit correction were equipped with new bipolar power supplies. At the ESR, the injection beam line and the target section has been redesigned and rebuild. The kicker module of the stochastically cooling device has been dismantled, repaired and reinstalled. At the HEBT, many water leaks of magnet coils have been found and repaired. Additional beam diagnostic components have been installed in the beam line from ESR to Cave A. The dismantlement of the components in Cave B, to gain space for the future installations of the CRYRING, has almost been completed. In addition all beam diagnostic systems, the vacuum system and all infrastructure installations have been checked and maintained.

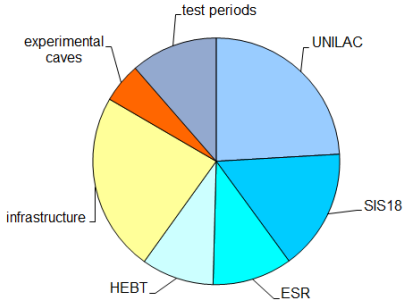

Figure 1: Work task distribution of the shutdown schedule.

Summary

Technical problems (unexpected need for repair of all crane tracks in TR-, TH- and ESR- hall, a cracked weld seam on the ESR-crane) as well as organisational problems (integration of all affected departments, delayed procurement and delivery of components) were the reasons for delays and forced a permanent adjustment of the shutdown schedule. Furthermore we have been faced with a shortage of manpower in all involved departments. About 4 % of the schedules tasks have to be shifted to the next shutdown. To improve the scheduling we will reorganize the structure of the project schedule to provide a better overview. The main work packages of the next break in operation have to be discussed and defined as soon as possible.

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** Expected completion date