

Eplanner Software for Machine Activities Management

Bakshi Sanjai Kumar Srivastava, Rajesh Kumar
Agrawal, Pravin Fatnani*



**Raja Ramanna Centre for Advanced Technology (RRCAT)
Indore, INDIA**

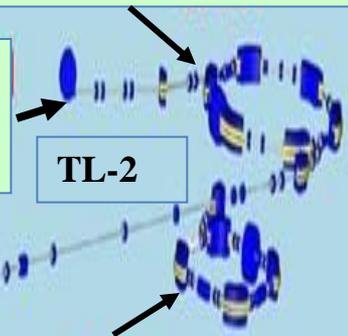


Schematic View of Indus Complex

RRCAT is the home to TWO Synchrotron Radiation Sources: Indus-1 & Indus-2



Microtron
(20 MeV)
(Commissioned in 1992)



Booster Synchrotron
(700 MeV)
(Commissioned in 1995)

TL-3

Indus-1
(450 MeV, 100 mA)
(Operational since 1999)

The Need

The need was felt for a system for easily managing various related activities for avoiding communication gaps among the crew members and clearly bringing out the important communications for machine operation.

ePlanner !



What is *ePlanner* ?

ePlanner is a web based software package for online management and dissemination of information related to machine operation of Indus-2.

Functions of *ePlanner*



Work Plan Management

- ✓ Edit and log each day's plan of next one week in one go
- ✓ Read only View of old date work plans
- ✓ Storing each entries with timestamp and user name
- ✓ Searching of historical work plans in chronological order
- ✓ Quick View of Current Work Plans
- ✓ Auto assign one day old plan as Today's Work Plan
- ✓ Auto refreshed 'Today's Work Plan' formatted for Large Size Displays

Beamline Booking Management

- ✓ **Multiple beamline booking in one go**
- ✓ **Option for beamline under commissioning**
- ✓ **Unlimited days booking in steps of two weeks**
- ✓ **Undo option**
- ✓ **Booking Disabled for Shutdown days**
- ✓ **Booking Search in chronological order**
- ✓ **Quick View of Current Bookings**

Machine Shutdown Management

- ✓ **Two week shutdown booking in one go**
- ✓ **User Friendly User Interface (Checkboxes)**
- ✓ **Unlimited days shutdown bookings**
- ✓ **Undo option**
- ✓ **Activity Search in chronological order**

Standing Instructions Management

- ✓ **Standing Instruction for each group**
- ✓ **Online Rich Text Formatting**
- ✓ **Search in chronological order**
- ✓ **Quick View of Current Standing Instructions**

Electronic Noticeboard (eNoticeboard)

- ✓ **Standing Instruction for Today**
- ✓ **Reminder**
- ✓ **Important Note**
- ✓ **Search facility**

Information Display

- ✓ **Auto refreshed pre scheduled work plan display on Large Size Display Panel in Indus Control Room**
- ✓ **Auto refreshed Today's Standing Instruction display on Large Size Display Panel in Indus Control Room**
- ✓ **Auto refreshed Scrolling Message (Important Note) display on Large Size Display Panels installed at various locations of Indus premises**
- ✓ **Current Work Plans, Beamline Bookings, Shutdown details, Notices, Standing Instructions, etc. on IndusOnline (SRS) website**

Indus Fault Logbook (FLogbook)

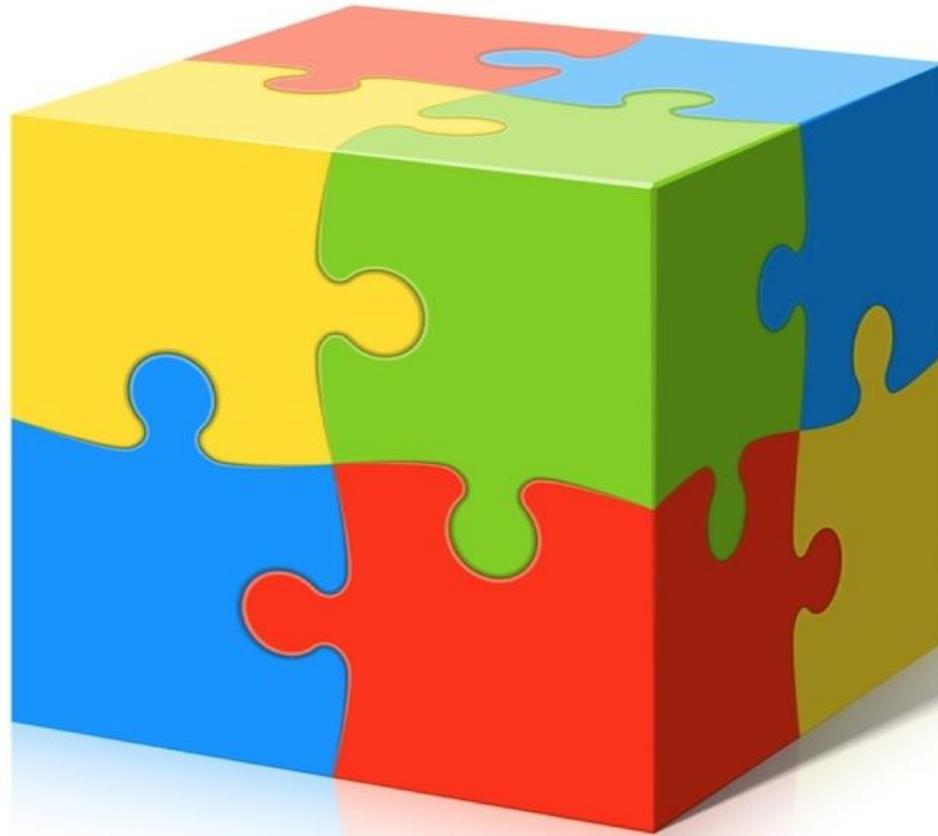
This application was developed before ePlanner for tracking the faults occurring during round the clock operations of Indus-1 & Indus-2.

Now it is felt to merge the functionality of Flogbook with ePlanner so that all the information could be managed from a single software package.

Salient Features of FLogbook

- ⊕ **Authenticated Service**
- ⊕ **Snapshot Grabbing & Logging**
- ⊕ **Comments from System Experts**
- ⊕ **Editing Lock & Fault Deletion**
- ⊕ **Email with Attachment**
- ⊕ **Searching option with 'Text String'**
- ⊕ **Report Generation in Microsoft Word Format**

ePlanner's Building Blocks



JavaServer Pages (JSP)

JSP technology enables rapid development of Web-based applications that are platform independent.

JSP technology separates the user interface from content generation, enabling designers to change the overall page layout without altering the underlying dynamic content.

JavaBeans



JavaBeans components (beans) are reusable software programs that we can develop and assemble easily to create sophisticated applications. These web resources reside in middle tier.

SQL Database

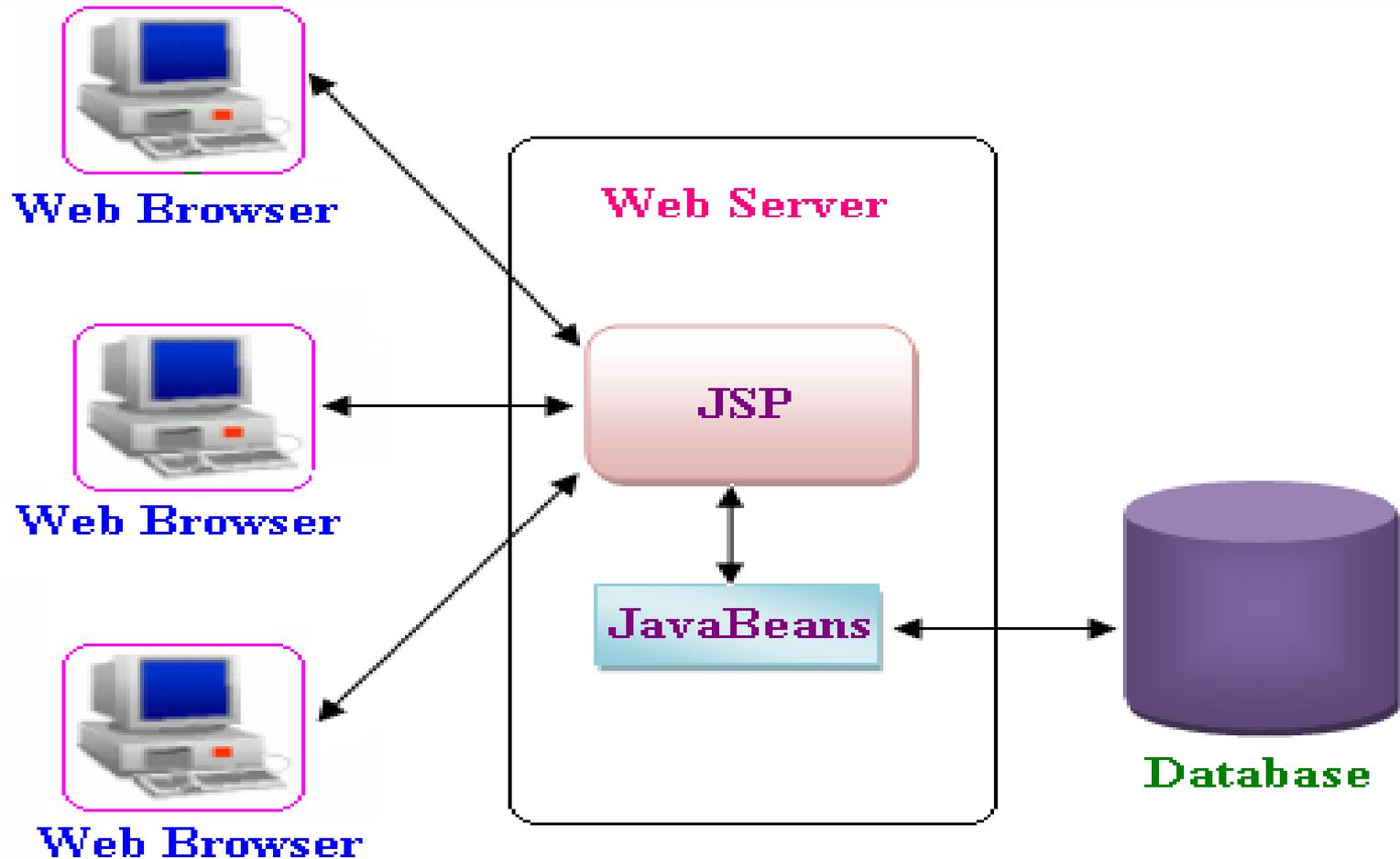
Microsoft SQL Server based relational database is designed to implement the data tier of ePlanner, which stores the complete information in related tables.

Web Server

Apache Tomcat

We have used Apache Tomcat web server for executing & serving web components of ePlanner. Apache Tomcat is an open source web server developed by the Apache Software Foundation (ASF).

Software Architecture



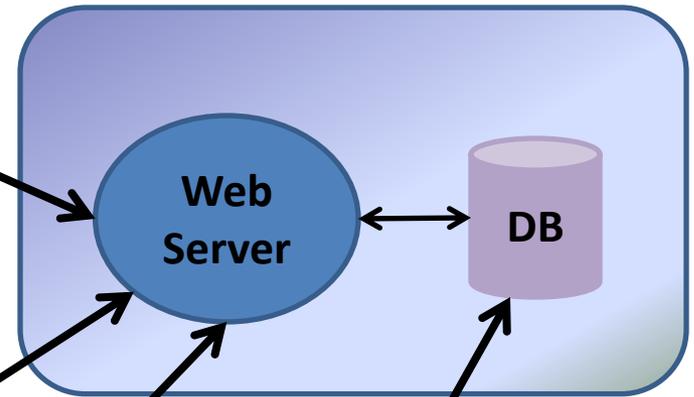
Information Flow

Information Display

- Auto refreshed and formatted for Large size Displays.
- Multiple data in a single scrolling page
- Work Plan, Standing Instructions, Beamline Bookings



Data updation



....
....
....

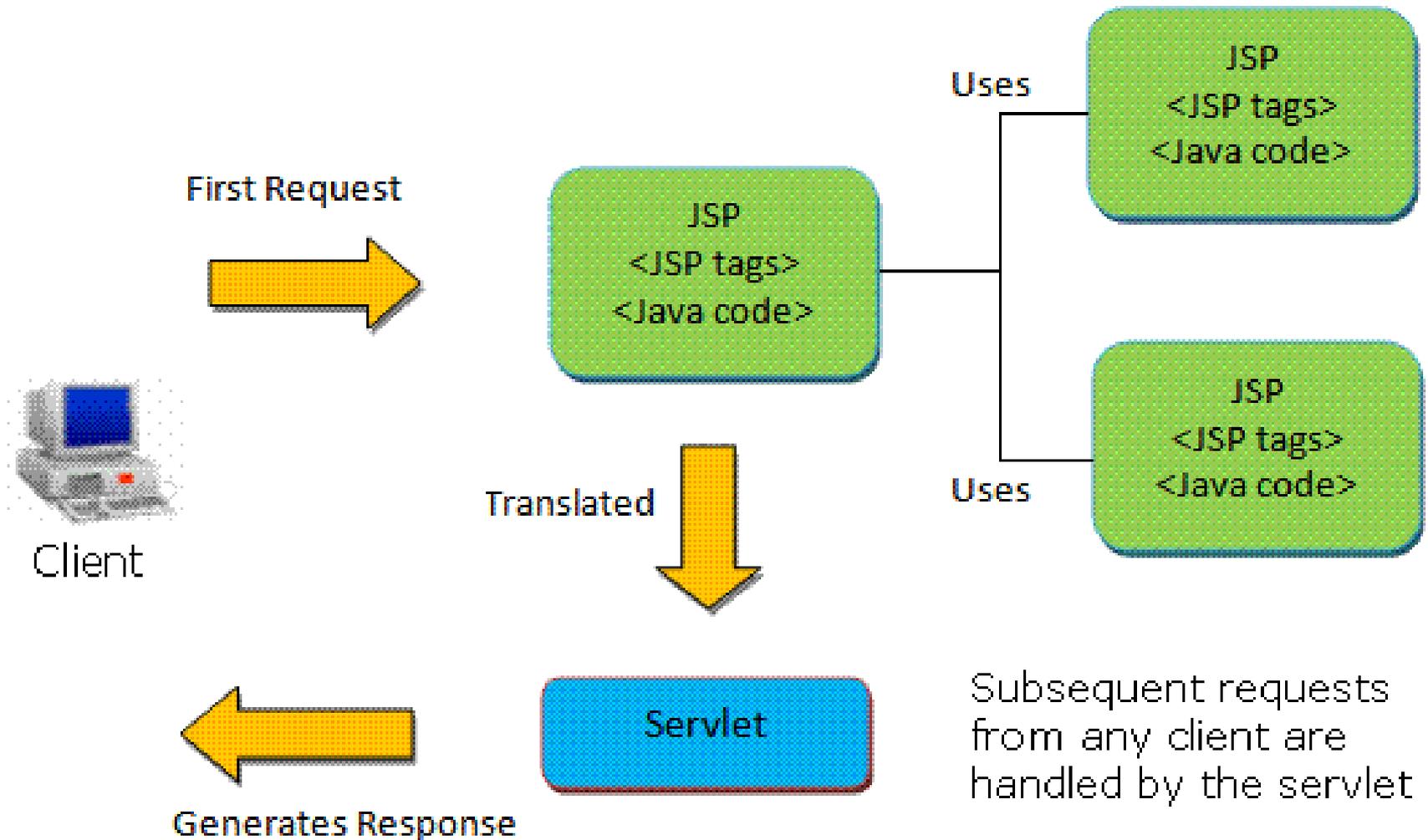
Pre planned work activities



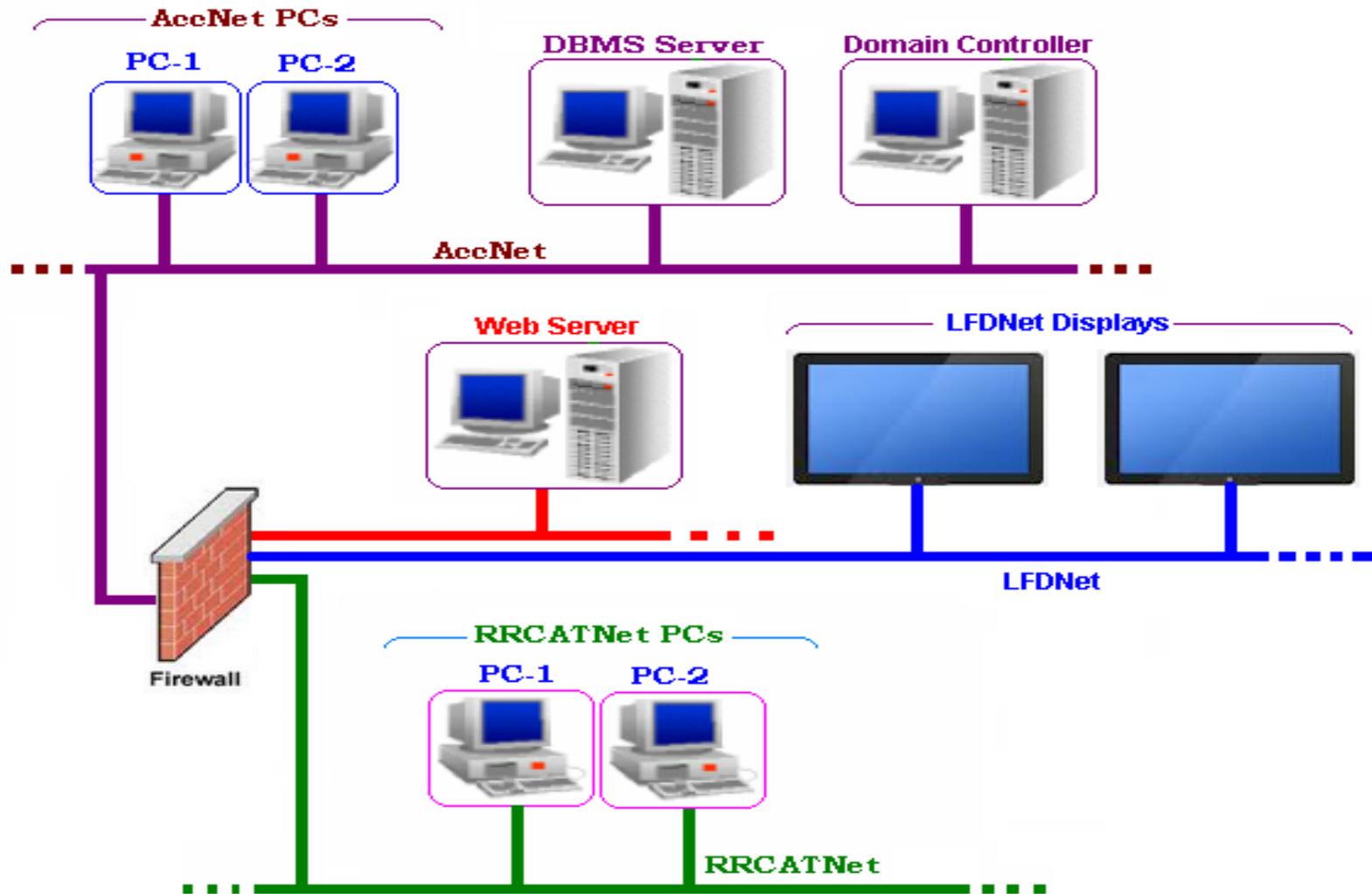
View Clients

- Any user through our **IndusOnLine** web-site.
- view and search: beam line bookings, operation plan, standing instructions, etc.

Execution of a JSP



Software Accessibility Over LAN



Users' Machine's Requirement?

To access this software users' machine must be connected with Campus Network (RRCATNet) or Accelerator Network (AccNet) and must have a Web browser installed.

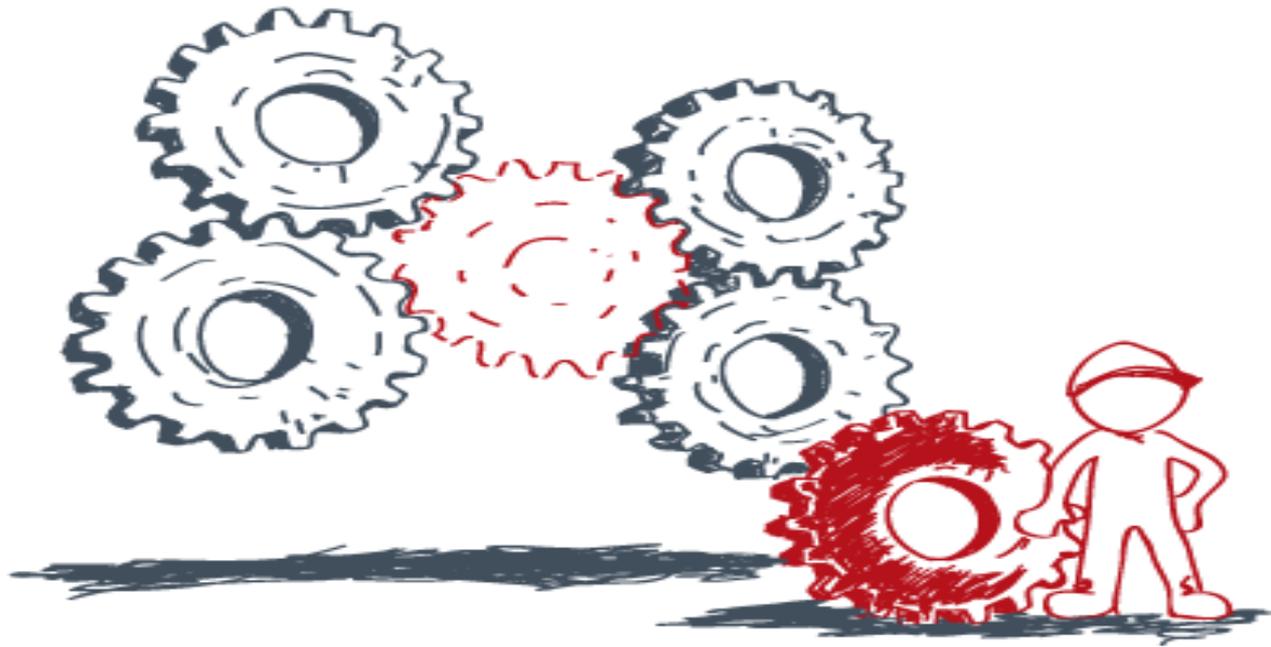
How to reach?

<http://srs.cat.ernet.in/ePlanner>

ePlanner Authentication

- User's credentials are verified from RRCAT email server.
- This was done to avoid storing duplicate credentials on AccNet Server.
- Each module has different user group.

ePlanner in Action (Screenshots)



Authentication Page



ePlanner

Raja Ramanna Centre for Advanced Technology
ACCELERATOR PROGRAMME



Please login using your RRCAT email id & password:

Login:

Password:

Activity:



Work Plan Editing Page

Welcome to Indus OnLine - Mozilla Firefox

File Edit View History Bookmarks Tools Help

srs.cat.ernet.in:8100/eboard/eboard.htm

How to exit Java loop? - Stack Overflow x Raja Ramanna Centre for Advanced Tec... x Welcome to Indus OnLine x Welcome to Indus OnLine x +

ePlanner

Indus Work Plan Management System
Raja Ramanna Centre for Advanced Technology
ACCELERATOR PROGRAMME

[New](#) [Edit](#) [Plan Search](#) [Current Plans](#) [About](#) [Sign Out bsks!](#)

Editable Instructions*

[*Logged by rakesh at 2014-02-17 17:58:05.0]

13-Feb-2014
Testing of Steering Power Supplies (up to 9:30 hrs)
Fill Indus-2 ~ 125 mA @ 2.5 GeV. Fill 177 bunches. Monitor the dipole chamber temperatures closely.
Beam to users in I, II & III shift as per the request
After all users have left, measurement of Response Matrix by ACS & BDL
Indus-2 Beamlines in use: BL-7, BL-9, BL-12, BL-16, BL-21, BL-23, BL-24

14-Feb-2014
Fill Indus-2 ~ 125 mA @ 2.5 GeV. Fill 177 bunches.
Beam to users in I, II & III shift as per the request
Indus-2 Beamlines in use:

15-Feb-2014
Fill Indus-2, 125 mA @ 2.5 GeV with 177 bunches.
Beam to users in I, II & III shift as per the bookings.

~ Developed & maintained by Accelerator Controls Section (ACS) ~

eNoticeBoard

Welcome to Indus OnLine - Mozilla Firefox

File Edit View History Bookmarks Tools Help

srs.cat.ernet.in:8100/eboard/eboard.htm

How to exit Java loop? - Stack Overflow x Raja Ramanna Centre for Advanced Tec... x Welcome to Indus OnLine x Welcome to Indus OnLine x +

ePlanner

eNoticeboard
Raja Ramanna Centre for Advanced Technology
ACCELERATOR PROGRAMME

● [Edit](#) ● [Search](#) ● [Notice Board](#) ● [About](#) ● [Sign Out](#)

Important Notices

Last updated by rakesh at 2014-02-17 18:00:23.0

Today's Standing Instructions:

Indus-2 Kicker K3 delay should be reduced by 14 nsec. w.r.t.it's previous operation delays, to get the same operating conditions Automatic current limiting module for Indus-1 is put in operation.For details, see description available in control room After ramping the beam to 2.5 GeV, wait for ~ 1 hour, then start SOFB after consulting with Dr A K Sinha, ISUD. Make announcement on PA system regarding start of SOFB

Reminders:

Outstation users at BL-21 :
Feb 10-13, AIIMS, New Delhi
Feb 18-21, IIT Bombay
March 4-7, CDRI Lucknow

Note:

Welcome to Indus complex. Beyond the clock operation will be
~ Developed & maintained by Accelerator Controls Section (ACS) ~

Standing Instructions Editing Page

Welcome to Indus OnLine - Mozilla Firefox

File Edit View History Bookmarks Tools Help

srs.cat.ernet.in:8100/eboard/eboard.htm

How to exit Java loop? - Stack Overflow x Raja Ramanna Centre for Advanced Tec... x Welcome to Indus OnLine x Welcome to Indus OnLine x +

Indus Standing Instructions Management System
Raja Ramanna Centre for Advanced Technology
ACCELERATOR PROGRAMME

●[Edit](#) ●[Search](#) ●[Current Standing Instructions](#) ●[About](#) ●[Sign Out](#)

Standing Instructions

System Name: controls [last updated by bsks at 2014-01-29 18:04:14.0]

Re-Ramp Facility:
For ramping the beam energy the re-ramp feature is updated to cater the difference in the current injection settings from the injection settings of Ramp data generation. Now operators are advised to use Re-ramp for beam energy ramping regularly. In case of any problem please contact R. K. Agrawal (8055) or Smt. Bhavna Merh (2197).

PVSS Panel Launching:
For launching of PVSS panels on any PC other than Indus 2 Power supply follow this procedure From

~ Developed & maintained by Accelerator Controls Section (ACS) ~

Beamline Booking Page

Welcome to Indus OnLine - Mozilla Firefox

File Edit View History Bookmarks Tools Help

srs.cat.ernet.in:8100/eboard/eboard.htm

How to exit Java loop? - Stack Overflow x Raja Ramanna Centre for Advanced Tec... x Welcome to Indus OnLine x Welcome to Indus OnLine x

ePlanner

Indus Beamline Booking Management System
Raja Ramanna Centre for Advanced Technology
ACCELERATOR PROGRAMME

[Indus-2 Beamlines](#) [Search Bookings](#) [Current Bookings](#) [About](#) [Sign Out](#)

Indus-2 Beamlines Booking Form (Two Weeks)

Reminder: Outstation users at BL-21 : Feb 10-13, AIIMS, New Delhi Feb 18-21, IIT Bombay March 4-7, CDRI Lucknow March 10-12, IISER Bhopal March 13-14 BARC March 18-21, AJC Bose instt, Kolkata April 8-11, IICB, Kolkata

17-Feb-2014

<input type="checkbox"/> BL-1	<input type="checkbox"/> BL-2	<input type="checkbox"/> BL-3	<input type="checkbox"/> BL-4	<input type="checkbox"/> BL-5	<input type="checkbox"/> BL-6	<input checked="" type="checkbox"/> BL-7	<input checked="" type="checkbox"/> BL-8	<input checked="" type="checkbox"/> BL-9	<input type="checkbox"/> BL-10	<input type="checkbox"/> BL-11	<input type="checkbox"/> BL-12
<input type="checkbox"/> BL-13	<input type="checkbox"/> BL-14	<input type="checkbox"/> BL-15	<input type="checkbox"/> BL-16	<input type="checkbox"/> BL-17	<input type="checkbox"/> BL-18	<input type="checkbox"/> BL-19	<input type="checkbox"/> BL-20	<input checked="" type="checkbox"/> BL-21	<input type="checkbox"/> BL-22	<input checked="" type="checkbox"/> BL-23	<input type="checkbox"/> BL-24

18-Feb-2014

<input type="checkbox"/> BL-1	<input type="checkbox"/> BL-2	<input type="checkbox"/> BL-3	<input type="checkbox"/> BL-4	<input type="checkbox"/> BL-5	<input type="checkbox"/> BL-6	<input checked="" type="checkbox"/> BL-7	<input checked="" type="checkbox"/> BL-8	<input checked="" type="checkbox"/> BL-9	<input type="checkbox"/> BL-10	<input type="checkbox"/> BL-11	<input type="checkbox"/> BL-12
<input type="checkbox"/> BL-13	<input type="checkbox"/> BL-14	<input type="checkbox"/> BL-15	<input type="checkbox"/> BL-16	<input type="checkbox"/> BL-17	<input type="checkbox"/> BL-18	<input type="checkbox"/> BL-19	<input type="checkbox"/> BL-20	<input checked="" type="checkbox"/> BL-21	<input type="checkbox"/> BL-22	<input checked="" type="checkbox"/> BL-23	<input checked="" type="checkbox"/> BL-24

19-Feb-2014

<input type="checkbox"/> BL-1	<input type="checkbox"/> BL-2	<input type="checkbox"/> BL-3	<input type="checkbox"/> BL-4	<input type="checkbox"/> BL-5	<input type="checkbox"/> BL-6	<input checked="" type="checkbox"/> BL-7	<input checked="" type="checkbox"/> BL-8	<input checked="" type="checkbox"/> BL-9	<input type="checkbox"/> BL-10	<input type="checkbox"/> BL-11	<input checked="" type="checkbox"/> BL-12
<input type="checkbox"/> BL-13	<input type="checkbox"/> BL-14	<input type="checkbox"/> BL-15	<input type="checkbox"/> BL-16	<input type="checkbox"/> BL-17	<input type="checkbox"/> BL-18	<input type="checkbox"/> BL-19	<input type="checkbox"/> BL-20	<input checked="" type="checkbox"/> BL-21	<input type="checkbox"/> BL-22	<input checked="" type="checkbox"/> BL-23	<input checked="" type="checkbox"/> BL-24

20-Feb-2014

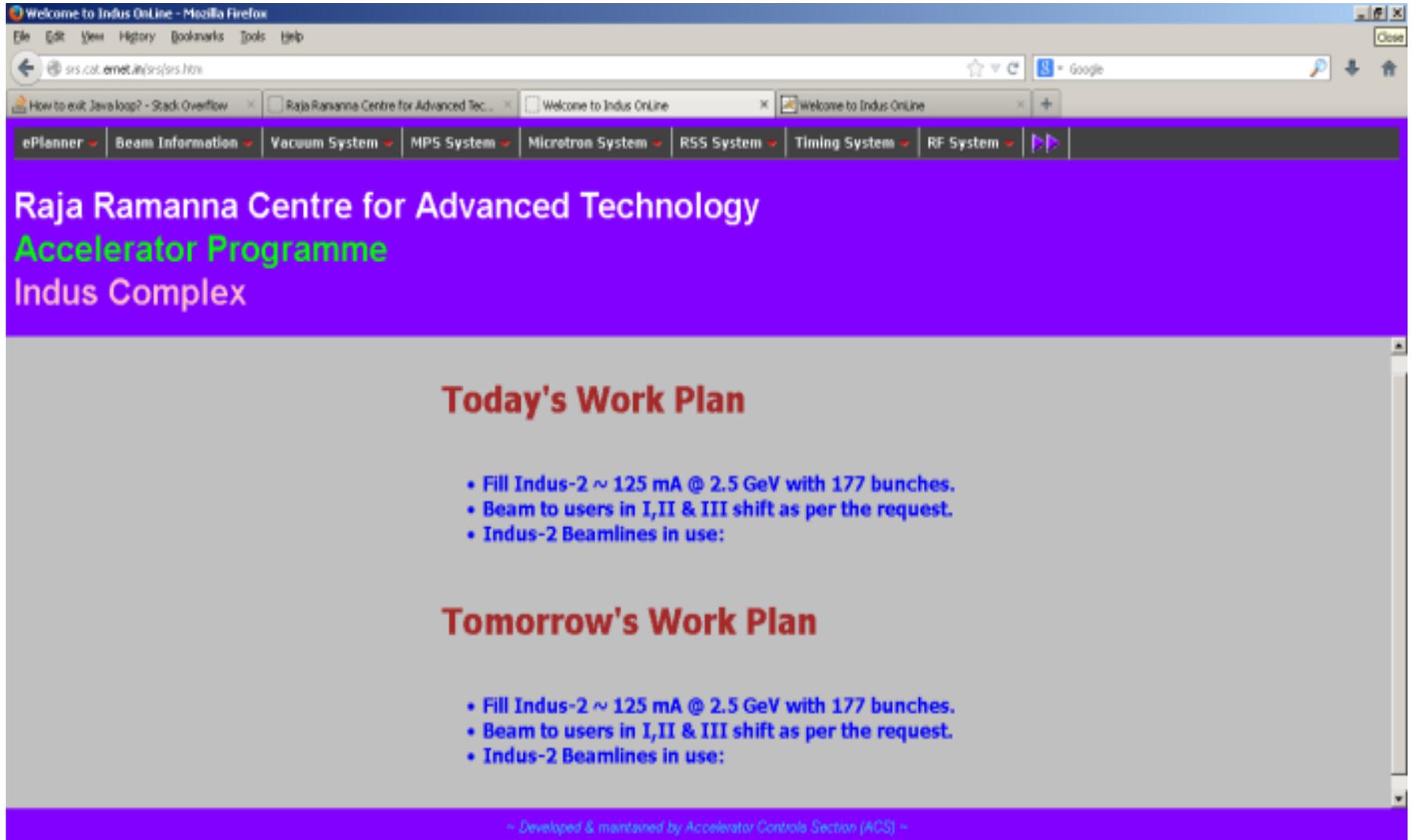
<input type="checkbox"/> BL-1	<input type="checkbox"/> BL-2	<input type="checkbox"/> BL-3	<input type="checkbox"/> BL-4	<input type="checkbox"/> BL-5	<input type="checkbox"/> BL-6	<input checked="" type="checkbox"/> BL-7	<input checked="" type="checkbox"/> BL-8	<input checked="" type="checkbox"/> BL-9	<input type="checkbox"/> BL-10	<input type="checkbox"/> BL-11	<input type="checkbox"/> BL-12
<input type="checkbox"/> BL-13	<input type="checkbox"/> BL-14	<input type="checkbox"/> BL-15	<input type="checkbox"/> BL-16	<input type="checkbox"/> BL-17	<input type="checkbox"/> BL-18	<input type="checkbox"/> BL-19	<input type="checkbox"/> BL-20	<input checked="" type="checkbox"/> BL-21	<input type="checkbox"/> BL-22	<input checked="" type="checkbox"/> BL-23	<input checked="" type="checkbox"/> BL-24

21-Feb-2014

<input type="checkbox"/> RI-1	<input type="checkbox"/> RI-2	<input type="checkbox"/> RI-3	<input type="checkbox"/> RI-4	<input type="checkbox"/> RI-5	<input type="checkbox"/> RI-6	<input type="checkbox"/> RI-7	<input checked="" type="checkbox"/> RI-8	<input checked="" type="checkbox"/> RI-9	<input type="checkbox"/> RI-10	<input type="checkbox"/> RI-11	<input type="checkbox"/> RI-12
-------------------------------	-------------------------------	-------------------------------	-------------------------------	-------------------------------	-------------------------------	-------------------------------	--	--	--------------------------------	--------------------------------	--------------------------------

~ Developed & maintained by Accelerator Controls Section (ACS) ~

Current Work Plans



The screenshot shows a Mozilla Firefox browser window displaying the 'Welcome to Indus OnLine' website. The browser's address bar shows 'srs.col.ernet.in/srs/srs.htm'. The website has a navigation menu with items like 'ePlanner', 'Beam Information', 'Vacuum System', 'MPS System', 'Microtron System', 'RSS System', 'Timing System', and 'RF System'. The main content area has a purple header with the text 'Raja Ramanna Centre for Advanced Technology', 'Accelerator Programme', and 'Indus Complex'. Below this, there are two sections: 'Today's Work Plan' and 'Tomorrow's Work Plan', each with a bulleted list of tasks. At the bottom, a footer note reads 'Developed & maintained by Accelerator Controls Section (ACS)'.

Welcome to Indus OnLine - Mozilla Firefox

File Edit View History Bookmarks Tools Help

srs.col.ernet.in/srs/srs.htm

How to exit JavaApplet? - Stack Overflow Raja Ramanna Centre for Advanced Tec... Welcome to Indus OnLine Welcome to Indus OnLine

ePlanner Beam Information Vacuum System MPS System Microtron System RSS System Timing System RF System

Raja Ramanna Centre for Advanced Technology
Accelerator Programme
Indus Complex

Today's Work Plan

- Fill Indus-2 ~ 125 mA @ 2.5 GeV with 177 bunches.
- Beam to users in I,II & III shift as per the request.
- Indus-2 Beamlines in use:

Tomorrow's Work Plan

- Fill Indus-2 ~ 125 mA @ 2.5 GeV with 177 bunches.
- Beam to users in I,II & III shift as per the request.
- Indus-2 Beamlines in use:

~ Developed & maintained by Accelerator Controls Section (ACS) ~

Beamline Booking at a Glance

Welcome to Indus OnLine - Mozilla Firefox

srs.cat.ernet.in/srs/srs.htm

How to exit Java loop? - Stack Overflow x Raja Ramanna Centre for Advanced Tec... x Welcome to Indus OnLine x Welcome to Indus OnLine x

ePlanner Beam Information Vacuum System MPS System Microtron System RSS System Timing System RF System

Raja Ramanna Centre for Advanced Technology
Accelerator Programme
Indus Complex

Reminder: Outstation users at BL-21 : Feb 10-13, AIIMS, New Delhi Feb 18-21, IIT Bombay March 4-7, CDRI Lucknow March 10-12, IISER Bhopal March 13-14 BARC March 18-21, AJC Bose instt, Kolkata April 8-11, IICB, Kolkata

Beamline Bookings at a Glance

	BL1	BL2	BL3	BL4	BL5	BL6	BL7	BL8	BL9	BL10	BL11	BL12	BL13	BL14	BL15	BL16	BL17	BL18	BL19	BL20	BL21	BL22	BL23	BL24
17-Feb-2014	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N
18-Feb-2014	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y
19-Feb-2014	N	N	N	N	N	N	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N	Y	Y
20-Feb-2014	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y
21-Feb-2014	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y
22-Feb-2014	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
23-Feb-2014	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
24-Feb-2014	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	Y
25-Feb-2014	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y
26-Feb-2014	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y
27-Feb-2014	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

~ Developed & maintained by Accelerator Controls Section (ACS) ~

Today's Work Plan & Standing Instructions

Today's Work Plan & Standing Instructions 22-Jul-2014

- 0600 to 0700 hrs : visit by UHVTL and RFSD persons inside the tunnel for undulator work.
- Fill Indus-2 \sim 180 mA @ 2.5 GeV
- Beam to users in I, II and III shift as per the requirement
- Indus-2 Requirements: BL-4, BL-7, BL-9, BL-11, BL-12, BL-14, BL-16, BL-21, BL-23, BL-24,
- While searching Indus-1 user hall, make sure to evacuate civil contractor personnel also, if any,

Work Plan

Beamline Bookings

Standing Instructions

Data Search using FLogbook

Welcome to Indus Fault Logbook (FLogbook) - Windows Internet Explorer

http://srs.cat.ernet.in:8100/flogbook/searched_faults.jsp

File Edit View Favorites Tools Help

★ Favorites Welcome to Indus Fault Logbook (FLogbook)

FLogbook Raja Ramanna Centre for Advanced Technology Accelerator Control Section

 [Print](#)  [Log](#)  [Search](#)  [Snapshot](#)  [Help](#)  [About](#)  [Sign Out](#)

Fault Id: 64 [Reported by ladm on 2012-07-06 08:26:00.0]
System/Device: Other of Indus-1 RF System
Fault Description: Indus1 beam got killed first due to which Indus1 RF tripped with high reflected power of beam. This was checked by logging data, beam killed first and RF got tripped after 20 secs, this was recorded even in slow logging of SRS but may not be recorded many times. So whenever high beam current > 80 mA gets killed the chances of Indus1 RF tripp due to heavy reflection of beam power from RF cavity are there. Persons: TQLC Shift crew
Action Taken: Indus1 RF System is OK but Indus1 beam is getting killed. Was reset by shift crew and put on again.
Comments:
???

Fault Id: 65 [Reported by dheerajsharma on 2012-07-10 15:30:00.0]
System/Device: Other of Indus-2 RF System
Fault Description: RF Station 1 tripped at 15:30 hrs. with FC/RC fault latched on interlock unit.
Action Taken: Station 1 was checked thoroughly, and problem in feedback control loop was observed and rectified. Station was tested for full power operation and handed over for machine operation at 19:20 hrs.
Comments:
(1) (Please consider the fault time as "4:00 pm", while logging the fault it was by mistake written as 3:30 pm) - by dheerajsharma on 2012-07-11 15:37:31.0

Email message generated from FLogbook

Printer Friendly - Mozilla Firefox

webmail1.cat.ernet.in/newmail/src/printer_friendly_main.php?passed_ent_id=0&mailbox=INBOX&passed_id=4898&view_unsafe_images=1

Print Close

From: flogbook
Subject: Controls Hardware: Indus-1 MPS System
Date: Mon, August 13, 2012 10:32 pm
To: thakurta@rrcat.gov.in,hannurka@rrcat.gov.in,fatnani@rrcat.gov.in,kirti@rrcat.gov.in,sheth@rrcat.gov.in,ragrawal@rrcat.gov.in,tgp@rrcat.gov.in

FLogbook

Raja Ramanna Centre for Advanced Technology

Accelerator Control Section

Fault Time:
2012-08-13 18:30

System Name:
Indus-1 MPS System

Device Name:
Controls Hardware

Fault Description:
Around 1830hrs it was alarmed for tripping of TL2 PS11. On diagnosing it was found that GUI of MPS system hung. After reset and rerunning GUI MPS I-1 beam got killed, it was observed that after resetting the GUI values of SRS DP power supply were at abnormal(770A SET) (439A R/B). A GUI reseted and rerun but during cycling was not responding.

Action Taken:
Shri Janardhan was contacted as per his suggestion several command were tried on GUI but could not resolved the problem. Finally as per his suggestion memory chip was pressed on AUTOWRITE card.Finally problem solved.

Logged by:
tgp

 For current status of the fault please contact to 2191-4 or logon to <http://srs.cat.ernet.in/flogbook>

Developed JavaBeans for ePlanner

Sr. No.	Name	Functions
1	EboardQueryFormBean	Form's components
2	EboardMailBean	Authentication
3	EboardDatabaseBean	Database interactions
4	FlogMultipartBean	File uploading
5	FlogWordBean	Word document
6	FlogMailBean	Emails

Programming Languages Used

- HTML (User Interface)
- Java (JSP, JavaBeans, JDBC, JavaMail)
- SQL (data logging & retrieving)
- JavaScript (Form validation)

