

A.3: Indus-1 RF control system enhancements

In Indus-1, the RF control system comprises of three sub-systems viz Booster, Storage Ring and RFKO & Ion Clearing sub-systems. The Booster RF system is common sub-system for Indus-1 and Indus-2 rings. In the process of upgradation, the Booster and Indus-1 RF sub-systems were replaced with the Solid State Power Amplifiers (SSPA) by RFSD. This has resulted into addition of several interlock signals (search interlock, solid state amplifier water interlock, vacuum interlock, reflected power over load interlock, forward power overload interlock, cavity water interlock, RF system interlock) for Indus-1 and Booster sub-systems to give exact information regarding the health of the SSPA systems (Fig.A.3.1). In case of system error, interlock fault is displayed with blinking options to immediately attract the attention of operator.

	Indus-1	Booster
	Machine Acc OK	
Search I/L	OK	
Vaccum I/L	OK	OK
Cav Water I/L		OK
Cav/Plunger I/L	OK	OK
Amp Water I/L	OK	
DC P/S I/L	OK	OK
SSA Water I/L		OK
FWD PW op I/L	OK	OK
SIP		ON
RF System I/L	OK	OK

Fig.A.3.1: Screenshot of modified Indus-1 RF Interlocks signals

Also, two new control commands (“SR RF system Reset” and “BR RF system Reset”) are added for deactivating the latched interlock conditions. As a result, modifications are carried out in hardware at Indus-1 RF system VME rack for physical connections of the signals for status and control channels. The Graphical User Interface (GUI) and control software of RF system is modified by creating and configuring the corresponding device tags to associate them with physical channels at VME card level. Also GUI panel indicators are modified to display the status of these newly added signals as shown in fig. A.3.2.

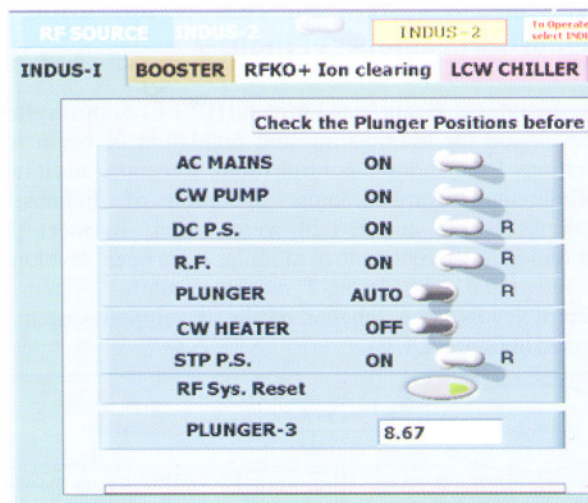


Fig.A.3.2: Screenshot of Modified Indus-1 RF controls

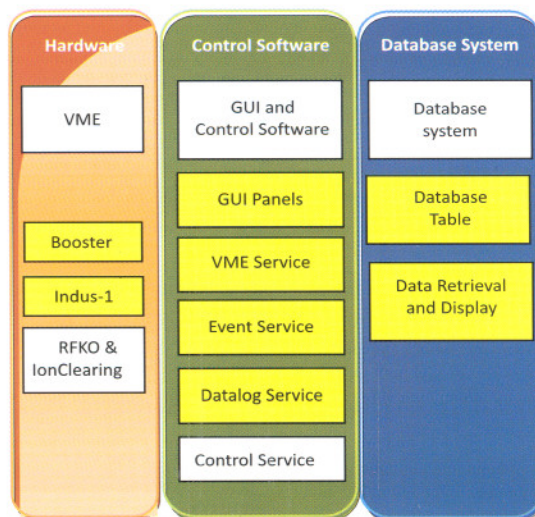


Fig.A.3.3: Different Indus-1 RF system components that have undergone modifications (Yellow colour)

As an integrated system, these modifications have also propagated throughout database management system, alarm handling system and data retrieving system. Figure A.3.3 shows different system components that have undergone modifications. ACS has implemented all the modifications and handed over the system for regular operation. These modifications are found useful in day to day operation as well as for easy system fault diagnosis by sub-system persons.

Reported by:
M. Janardhan (mjn@rrcat.gov.in), R. P. Yadav and P. Fatnani