Southern African Large Telescope
High-Resolution Spectrograph

SALT HRS

3200AE0016 Description of the CDR Package

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Issue History

Number and file name	Person	Issue	Date	Status
3200AE0016 R4 index	PLC	1.0	4 June 2004	First draft
		…		Various changes
		1.3	9 July 2004	Final
3200AE0016 index	PLC	1.4	4 February 2005	Start CDR collation
		1.5	20 Feb 2005	Update for team
		1.6	3 March 2005	Correct numbering
		2.0	10 March 2005	Insert echelle theory and explanation of new docs (Sec 4)
		2.1	16 March 2005	Final edit

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4 Introduction

This document describes the CDR Document package for the design of the Southern African Large Telescope High-Resolution Spectrograph (SALT HRS), including its CCD detectors.

0 Finding your way around

This is the CDR document list for the design of SALT HRS (3200-3250). This takes the R4 PDR documents for SALT HRS and expands them as appropriate for the level of detail required for the Critical Design Review. Some documents from PDR have been removed from this compilation, replaced by others.

The Detector subsystems (329X) are no longer part of a subsystem being developed by SAAO, but are by way of a specification for a COTS for the hardware and basic controlling software, with additional custom software to be developed by the SALT HRS team.

File name		Title	Person
3200AE0016 index		This document	PLC
3200AE0015 FPRD		Functional Performance Requirements Document	PLC
3200AE0017 descript		Instrument description	PLC
3200AE0018 OCDD		Operational Concepts Definition Document	MDA
3200AE0019 testing		Testing, assembling and commissioning	PLC
3200AP0031 ATP		Acceptance testing plan	PLC
3200BP0020 manage		Management structure	PLC
3200BP0021 sched_budg		Instrument schedule and budget narrative	PLC
3200BP0028 Gantt		Fully rolled out Gantt chart	PLC
3200BP0022 budget		Instrument budget (as xls)	PLC
3200AS0023 ICD		Interface Control Document	PLC
3200AE0024 SOW		Statement of Work for SALT HRS	PLC
3200CG0025 safety		Safety review	PLC
3200CG0026 risks		Risk's register	PLC
3210AE0005 optical		Optical Design including input fibres	SIB
3210AD0006 optical spec		Appendix to 3210AE0005 optical	SIB
3210AA0007 camera		Camera design report by Prime Optics	SIB
3210AE0034 echelle theory		Echelle theory chapter from Barnes' thesis	SIB

3220AE0004 mechanical		Mechanical Design	GMK
3220AD0005 mech spec		Appendix to 3220AE0004	GMK
3230AE0030 input mechanics		Input optics mechanical design	NF
3230AD0032 input mech spec		Appendix to 3230AE0030	NF
3240AE0002 software		HRS software requirements	MDA
3250AE0029 electronics		Electronics design and control	RR
3250AD0033 elec spec		Appendix to 3250AE0029	RR
3290AE0001Detector spec		Detector specification	PLC

6 Top Level Documents

All documents starting with 3200 correspond to the instrument as a whole. The key management ones are described below. Some of the other documents at the 3200 level are of a more technical nature and are noted in the following section.

2.0. Statement of Work
This describes the work that is to be undertaken in designing and building SALT HRS and includes references to the Fibre Instrument Feed (FIF), although this is a separate instrument on the Payload. It is vital to SALT HRS as it delivers the light to the fibres and hence to the spectrograph.

2.0. Management Plan
This gives a broad overview of the SALT HRS management and the management interfaces necessary between the SALT HRS and the SALT facility, FIF and the detector subsystem. There is also some important commentary on procurement, especially since this instrument will be funded principally by the SALT consortium rather than by the PI's institution, as well as discussion of contingencies.

2.0. Schedule
Gantt charts, with indicative personnel (but not resourcing allocation) against each task throughout the design and construction phases, are provided. A narrative as well as an MS Project file (as a pdf) is included.

2.0. Budget
The resourcing has been defined through a series of consultations with the key designers and manufacturers and is included in the Labor worksheet in the budget. This is combined with the capital expenditure profile to give the overall budget for this instrument, as well as a Spending Profile throughout the whole project. An multi-sheet Excel spreadsheet is included with the document release and a narrative is included with the schedule discussion.

As has been agreed by SALT Board consensus, a nil budget has been allocated to the PI, although it can be seen where PI resourcing is being used.

2.0. Safety and Risks Issue
A safety review was undertaken by the PI and Project Manager, in consultation with all members of the SALT HRS team, and has been written up as 3200CG0025. The currently identified risk issues have been reviewed and will be an evolving document throughout the whole project.

3 Technical Documents

The following comprise the technical aspects of SALT HRS. They span high level (3200) for Instrument Description, FPRD, OCDD, Interface Control, Testing, Assembling and Commissioning as well as an Acceptance Testing Plan, and then Optics (3210), Mechanical (3220), Fibre Injection (3230), Software Requirements (3240), Electronics (3250) and the Detector subsystem (3290).

The documents use the same number as for PDR except that the Issue number has been incremented by one.

A series of background documents (3250AA0002) were included with the R2 design PDR package and are not repeated in this set of CDR documents.

Some new documents have been added namely: 3200BP0031 Acceptance Testing Plan; 3210AE0034 Echelle theory; 3230AE0030 Input optics mechanical design; 3230AD0032 Input optics mechanics specifications; 3250AE0029 Electronics design and control; 3250AD0033 Electronics design and control specifications.

Some of the R4 PDR documents are not reproduced in this package namely: 3200AE0027 radial velocity error budget; 3230AE0003 (fibre injection optical design document) has been incorporated into 3210AE0005 (optical design document); 3230AA0004 fibre consultancy (from Durham); and the series of 329ZYYXXXX SAAO detector documents have been rationalised to reflect the new circumstances with respect to the CCD subsystems. The Detector specifications are included as 3290AE0001 and the Detector ICD and Detector software have been included in 3200AS0023 ICD and 3240AE0002 software respectively.

3 Disclaimer

The SALT HRS CDR package, including all mechanical and optical designs and/or software, is the property of the identified authors and/or their institutions. It is made available to the SALT HRS CDR reviewers and the SALT Science Working Group for the purposes of the SALT HRS Critical Design Review only.