

Project Name:		
OBS11-501 Base facility Operations Project		
Business objective served by this project		
Science operations conducted completely by personnel at the Base Facilities with no permanent nighttime staff at the summit		
Project Manager/Leader:	Project Sponsor:	PDS Version/Date:
Michael Sheehan	Gustavo Arriagada	20 October, 2010

## Project Description

### Issue Statement:

This project includes the design, fabrication, procurement, integration, test and commissioning of all systems necessary to remotely operate all observatory systems required for Science Operations from the Base Facilities with little or no human presence at the summits.

### Project Objective Statement (POS):

In a systematic way, the project will review all observatory systems to identify their current capabilities for remote operations, assess risks of remote operation of these systems and mitigate these risks by the design of upgraded features.

- Perform a comprehensive and systematic review of all major telescope, enclosure and summit facility systems relative to their function, inputs, outputs, internal health monitoring capabilities, etc.. This exercise is intended to provide a complete set of baseline information for use in assessing the current state of the systems with regards to remote operation and status & health states.
- Perform failure modes and effects analyses for the systems as appropriate to identify possible failure scenarios, the likelihood or probability of failures, the resulting effect of a particular failure and a determination as to whether the failure could have been detected in advance by some means.
- Complete conceptual designs for upgrades necessary to give systems the capability to be operated remotely. These designs will also address changes to systems to allow for sufficient monitoring of status and health and also to address the risks and consequences of failures identified in the failure modes and effects analyses. Conceptual designs for the addition of cameras and microphones as well as an Observatory Status Display will also be completed.
- Conduct a comprehensive Conceptual Design Review.
- Complete the Preliminary and Final designs for all system upgrades with independent reviews as appropriate. It is intended that all design work will be completed by the end of the first quarter of 2012.
- Procure, integrate, test and commission all upgrade work. The procurement activity will cover both sites in parallel. The integration, test and commissioning will be completed in series starting with Gemini North.
- Handover to full base facility operations will include a trial period where Science Operations are conducted at the Base facility with technical support personnel stationed at the summit. The trial period is scheduled for a duration of 1 year. The trial periods and handover to base facility operations will happen in series starting with Gemini North.

### Project Flexibility:

Flexibility Matrix	Least Flexible	Moderately Flexible	Most Flexible
Scope	X		
Schedule			X
Resources		X	

### Major Deliverables:

- System review reports. A template will be used in this exercise such that a standardized set of information is collected

- Failure Modes and Effects Analysis Reports
- System level design requirements documents
- Risk Ledger, continuously updated.
- A Conceptual Design Report. Conceptual design information for all system upgrades will be integrated into a single report.
- A Preliminary Design Report.
- A Final Design Report.
- Engineering Drawings necessary for procurement and/or system modification.
- The Integration, Validation & Verification Plan.
- The Commissioning Plan
- The Acceptance Test Plan

### Assumptions:

- This project will deliver a system whereby all Science Operations can be performed from the Base Facilities with little or no human presence at the summit. The capability of remote operations from outside of the observatory will not be provided, however as a goal, all interfaces necessary to allow remote operation from outside of the Observatory will be provided.
- To the extent possible, the ability to recover from a fault state will be provided through remote means. It is assumed though that under certain, as yet undefined failure conditions, Science Operations will cease and a technical support team will go to the summit to make repairs prior to resuming Science Operations.

### IS and IS NOT:

Describe what the project **is** and what the project **is not**, you can have as many **is** or **is not** as you want.

- **IS:** A comprehensive set of system upgrades to allow for remote operation at the base Facilities.
- **IS:** A set of sensor upgrades that provide the instantaneous health and status of critical systems at the base facilities.
- **IS NOT:** A remote controlled Observatory from anywhere beyond the base Facilities.

## Strategy and Resources

### Milestones and Stages:

Define and describe a set of milestones for the project, also define stages that can be used later as off ramp points.

- Stage 1
  - Comprehensive system review
  - Failure modes and effects analyses
  - System requirements definition
  - Conceptual Design
- Stage 2
  - Preliminary Design and completion of Design Reviews
- Stage 3
  - Final Design and completion of Design Reviews
- Stage 4
  - Procurement
  - Integration, Validation & Verification
  - Commissioning

- Stage 5
  - Trial Period at Gemini North
  - Hand over to Base facility Operations at Gemini South
- Stage 6
  - Trial Period at Gemini North
  - Hand over to Base facility Operations at Gemini South

**Estimated Costs:**

- Supplies and materials: \$750k
- Equipment : To be identified during the Design Phase
- Resources : See PI Plan for Resource Loading
- Spares : To be identified during the Design Phase
- Contracts: None anticipated

**Core Team Members(see Guidelines for Developing New Projects document):**

- Project Manager: Michael Sheehan
- Project Scientist: Leads of the GN and GS SOS
- Systems Engineer: Gelys Trancho

**Extended Core Team Members:**

- Electronics Engineering: Rolando Rogers, Stan Karewicz, John White
- Mechanical Engineering: Steve Hardash, Chas Cavedoni
- Software: Matthieu Bec
- IS: Tim Minick
- CP/MK: Diego Maltes, Mario Calderara
- Additional Science Support: Andy Adamson

**Dependencies that require coordination:**

- Dome Sealing at GN (a 2010 project)
- Supplemental Fuel Storage at GN (a 2010 project)

**Risks and Issues:**

- Schedule risk: This project is at the low end of the 2011 high priority projects. Therefore, resource conflicts with higher priority projects will result in schedule delay.

**Supplemental Resources:**

- Other resources required by the project.