

Magellan Instrument Procedures and Policies

(formerly Magellan Facility Instruments Policy)

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Real-world experience deploying Magellan instruments prompts this update of Magellan instrument policies. The requirements and content from the previous version are retained but the relationship between instrument builders and observatory staff is changed from vendor-customer to collaborator. This simplifies the telescope-instrument interface and gives observatory staff an active role in operational details. User instruments, which were not covered in the previous document, are incorporated here.

1 Purpose

This document describes how Magellan instruments are proposed, approved, commissioned, accepted, and retired.

2 Magellan instrument categories

There are two:

Facility instruments are defined in the Magellan Agreement as “those [instruments] that Consortium Members contribute in fulfillment of their obligations.” Facility instruments are available to all observers and are supported as continuing observatory capabilities.

User instruments are supplied by individual PIs for targeted science programs. User instruments are not supported by observatory staff except as required for safe and effective installation and removal. Since user instruments are not supported by the observatory staff, access to user instruments and support for user instrument operations must be arranged on an individual basis directly with the PI in advance of proposal submission. The instrument principal investigator or an equivalently expert and responsible designated observer must be on-site whenever a user instrument is employed. User instruments have limited scheduling opportunities. Visiting instruments are considered user instruments.

3 Delivering instruments to Magellan

Because the practical aspects of delivering an instrument to Magellan are the same for facility and user instruments, the steps outlined here apply to both instrument categories except where noted. This is a guideline and may be modified as appropriate by the Magellan Council for individual cases.

4 Proposal, review, and approval

4.1 *Written proposal to the SAC*

A proposal from the instrument’s institution with input from the observatory staff must be submitted to the Magellan SAC. The proposal will describe the scientific applications, technical characteristics and specifications, budget, schedule, and observatory requirements (such as telescope modifications) for the instrument. Also included will be an estimate of the observatory resources needed to install and commission the instrument and an estimate of the level of routine support needed.

Preliminary discussions with the SAC regarding the desirability and specifications of the proposed instrument may take place before submitting the proposal.

4.2 *SAC review*

The SAC will review the proposal within 30 days of receipt. If the SAC resolves that the instrument should be installed at Magellan, it forwards the proposal to the Council with its recommendations.

4.3 Council approval

The Council reviews the proposal and SAC recommendations and votes on approving the instrument development. In making their decision, the Council takes into consideration the overall disposition of existing and previously approved Magellan instruments in terms of numbers of supported instruments and their capabilities.

5 Instrument development

5.1 Support agreement

After Council approval, the instrument team and observatory staff will write and post a preliminary observatory support agreement. The support agreement is between the institution providing the instrument and the Council. Appendix A contains an outline of such an agreement.

5.2 Progress monitoring

The instrument team and observatory staff will meet as needed to track progress and coordinate the telescope-instrument interfaces. If the instrument team holds formal reviews (PDR, CDR, etc.), observatory staff will be available to support the instrument team.

Significant revisions in the proposed instrument should be discussed with the SAC. If the SAC feels the changes substantially affect the performance, support requirements, or schedule, the matter should be referred to the Council after conferring with the instrument group.

5.3 Commissioning plan

The instrument team and observatory staff will develop a commissioning plan together. Engineering time for instrument installation and commissioning will be scheduled through the normal process¹ *after* the commissioning plan is posted.

5.4 Director's pre-ship review

Before shipping, the Director will conduct a pre-ship review. The review panel may include members of the Magellan operations committee, the SAC, and outside experts. The panel will advise the director on instrument readiness through a written report. The instrument group will address concerns expressed in the report to the satisfaction of the Director before shipping.

5.5 Commissioning report

After installation and commissioning, the instrument group and observatory staff will deliver a written report to the SAC summarizing the measured instrument performance, noting the areas where the instrument meets and misses its design goals.

6 Facility instrument acceptance requirements

If the instrument is a candidate for facility instrument status, the following additional items are required:

¹ See the "Magellan Engineering" link at <http://www.lco.cl/>

6.1 Manuals and spare parts

The instrument team, with advice from observatory staff, supplies and maintains the following:

- User's manual for the observer.
- Technical manuals for site staff and instrument team. These include detailed descriptions of routine and special support procedures, full technical documentation (drawings, schematics, source code), and phone numbers for key personnel.
- Spare parts, including vendor information, part numbers, location, etc.

6.2 Staff training

The instrument team will provide comprehensive on-site training so site staff may confidently troubleshoot and repair the instrument and instruct new observers on its operation.

6.3 Final support agreement

The preliminary support agreement should be updated and posted (see section 5.1).

6.4 Probationary period

New facility instruments will be accepted only after they have served a one-year period in a probationary mode, during which time the PI and the PI's institution will provide substantial support for their use.

6.5 SAC review & recommendation

After receiving the commissioning report and updated support agreement, the SAC may recommend to the Council that the instrument be accepted as a facility instrument.

6.6 Council acceptance

Upon receiving the report from the SAC, the Council may accept or reject the instrument as a facility instrument or recommend action to correct deficiencies prior to acceptance. If the Council rejects an instrument as a facility instrument, the SAC may still approve the instrument for use at Magellan as a user instrument.

7 Facility instrument upgrades

7.1 Upgrade proposal

Any member institution may propose upgrades to an in-service facility instrument through a written proposal to the SAC. Upgrade plans must be discussed with the instrument team and be approved by the institution that owns the instrument. The instrument group's home institution has veto power over proposed modifications.

The proposal should describe the changes, identify who will perform the work, show how it is to be funded, and provide a schedule that includes estimated

instrument downtime. Magellan facility modifications and requirements for operations support should also be described.

7.2 SAC review

The SAC will review facility instrument upgrade proposals and may appoint a committee if additional study is required.

If a significant allocation of resources or change in instrument capabilities is involved, or if there is not unanimous SAC agreement, the SAC will forward the proposal to the Council with its recommendation.

If the changes are deemed minor, the SAC may approve the upgrade without referral to the Council. Certain improvements may, in effect, be approved in advance. These might include, for example, purchase of additional filters or gratings.

7.3 Council approval (if needed)

The Council will review the SAC recommendation and vote on approving the upgrade.

Upgrades that occur in the course of routine maintenance do not need SAC or Council approval. Such upgrades must not result in a loss of instrument capabilities or impair the ability of the instrument group or site staff to service the instrument.

Whenever possible, observatory staff will consult with the instrument group before making changes. An example would be the replacement of a disk drive with a larger unit. The changes will be reported to the instrument group at the earliest possible time. Instrument upgrades will be included as part of regular reports to the SAC on instrument status.

8 Monitoring

Once a year the operations staff will report to the SAC on the status of all facility instruments. The report will describe the overall condition, their current performance, the current level of support required, its impact on operations, and usage statistics. The SAC will in turn report facility instrument status to the Council.

9 Facility instrument retirement

Proposals to change an instrument's status from "facility" to "user," or to retire an instrument, may be submitted to the SAC by any member institution. The SAC will review the proposal and prepare a recommendation to the Council, which has approval authority over facility instrument status changes. A retired instrument reverts to the institution that supplied it.

Appendix: Support Agreement Outline

A 1 Instrument Description

Example: Permanently mounted f/11 imager on the folded port instrument with its own rotator and guider. Single dedicated cryo-tiger refrigerator mounted below the azimuth disk. One electronics box mounted on the telescope center section and a LINUX workstation located in the equipment area. Instrument will be continually powered on. Excess heat removed using the observatory glycol cooling system.

A 2 Configuration

The following information will be provided relating to the telescope/instrument configuration:

- Specify the intended port.
- Specify the secondary mirror and ADC.
- Provisions for guiding: Does the instrument require one of the observatory guiders and, if so, specify which model?
- Specify instrument size and weight.
- List size and location of instrument racks, compressors, and other equipment.
- Description and location of the control console. Is this dedicated equipment or shared with other instruments?
- Discuss telescope and rotator balance considerations.
- Specify special baffle requirements.
- Cable description and layout. State if the cables are permanently installed and if they are shared with other instruments. Is a cable wrap required?

A 3 Service requirements

The following information will be provided related to controls, utilities, and cabling:

- Requirements for power, compressed air, and coolant.
- Requirements for heat extraction.
- Requirements for cryogenes.

A 4 Routine Support

The following information regarding routine operation of the instrument will be provided:

- Description of the routine servicing and periodic maintenance that will be performed by the Observatory Staff both when the instrument is on and off the telescope.
- Technical personnel required for operation and an estimated amount of time they will regularly devote to the instrument.
- Consumable supplies required for operations with estimated quantities.
- Power, air, and coolant requirements.
- Description of the procedures required for routine instrument changes. These include pump down and cool down procedures, cabling, power up, filter and mask preparation, preparation of the data system, and actual start-up procedures. Actual handling procedures are described in a later section.
- Requirements for status reports from the support staff to the instrument group. Here the instrument groups would specify what feed back they expect from LCO on the operation and performance of the instrument.
- Instrument mailing list and the names of its members.

A 5 Troubleshooting and repair

The following information will be provided relating to troubleshooting and repair:

- List the subsystems that are serviceable by the observatory staff and describe those repair procedures that may be attempted by the local staff for each subsystem.
- List the critical subsystems and repair procedures that specifically may not be attempted by the local staff.
- Specify procedures that must be followed when a problem occurs. This should include who is the responsible that should be contacted at the home institution, how notification is made, who coordinates the local effort at the observatory.
- Specify who authorizes and pays for replacement parts and contracted services.
- Specify what constitutes chronic or severe problems that go beyond the ability of the staff to maintain the instrument and/or that place excessive demands on the technical staff such that normal observatory operation is impaired. Under these conditions intervention by the instrument group is expected.

A 6 Support provided by the Instrument Group

List the individuals at the home institution that are responsible for supporting the instrument:

- Principal point of contact
- Others: mechanical engineer, software systems, instrument scientist.

Describe the remote help that will be provided:

- Online trouble shooting and consultation.
- Updating documentation.
- Purchasing parts and arranging repair service in the US.
- Specify the period for this support. Normally this would be for the life of the instrument as a Facility Instrument.

Describe the on-site help that will be provided:

- Individuals committed to traveling to Chile when necessary.
- Time to respond.
- Criteria and procedures for authorizing and scheduling trips.

Describe the training that will be provided:

- During the development phase at the home institution.
- On-site at commissioning.
- Over the course of operations.

A 7 Handling & storage fixtures

The following information will be provided relating to handling, storage, and shipping:

- Description of required handling & storage fixtures and a statement of how they are to be provided.
- Procedures for moving the instrument too and from the telescope and mounting it on the telescope.
- Description of the off-telescope storage requirements including amount of space, type of environment, and power or cooling.
- Description of shipping requirements, shipping costs and how arrangements are made. State if this is an on-going expense, e. g. instruments shared with other observatories. If parts of the instrument must be returned to the home institution for periodic upgrade or service, so state.

A 8 Special provisions

- Describe any special provisions, conditions or modifications at the Magellan facility not already covered above and necessary in order to operate the instrument.
- List any factors associated with the instrument that would interfere with the operation of instruments on other ports or that otherwise constrain normal operations.
- Are there arrangements with other organizations, observatories, or groups that affect the way this instrument will be used and supported at LCO?