EUROPEAN SOUTHERN OBSERVATORY

La Silla Observatory

SCIENCE OPERATION DEPARTMENT

Re-Engineering Project:

Astronomy Operation

LSO-PLA-ESO-90000-3/1.1

Prepared	Olivier Hainaut	2002-03-20
Reviewed	Rene Mendez	2002-04-25
Released	Jorge Melnick	2002-06-12

Revision History

0.1	2002-03-10 first draft, ohainaut
0.2	2002-04-02 2d draft, ohainaut
0.9	2002-05-11 2d includes revision, ohainaut. Includes Review Discussion
1.0	2002-05-29 added few comments from 2d round.
1.1	2002-06-12 more comments by JMelnick included

CONTENT

1- INTRODUCTION

1.1- PURPOSE AND SCOPE

This document discusses astronomical aspects of the LSO Science Operation Department. It will eventually become part of a larger document describing the Science Operation Department as a whole.

1.2- GENERAL COMMENTS

This document is the result of the discussion that took place on Thu. 2002 Mar. 18 at la Silla and Vitacura. Were present at that meeting, in Vitacura, Emmanuella Pompei, John Pritchard, Leonardo Vanzi, Malvina Billeres, Michael Sterzik, Rene Mendez, and in La Silla, Lisa Germany, Martin Kurster and Olivier Hainaut. Gaspare Lo Curto had sent some written input. Version 0.2 was released to the LaSilla audience for discussion and comments. These comments were edited by R.Mendez. Contributions are from G. Hau, L. Vanzi, K.Brooks and R. Mendez . Additional comments were received from J. Melnick, D. Alloin and J. Breysacher. Comments and discussion are included in v.0.9 of this document.

1.3- STYLISTIC CONVENTION

In this document, "he" and "his" refer to the position described. In practice, these positions can be occupied by people of any gender.

1.4- DOCUMENTS AND REFERENCES

- [1] LSO-SPE-ESO-90000-1, Hainaut: SciOp Job Titles and Generic Job Descriptions
- [2] LSO-PLA-ESO-90000-1, Hainaut: SciOp Structure and Operation
- [3] LSO-PLA-ESO-90000-6, Hainaut: SciOp Staffing Plan

1.5- ABBREVIATIONS AND ACRONYMS

DMD	Data Management (and Operation) Division
MPE	Max Planck Institute
MTS	Medium Term Scheduling
OB	Observation Block
OPC	Observation Program Committee
OpA	Operation Astronomer, aka 80/20 Astronomer

P2PP	Phase II Preparation Package
QC	Quality Control
QC	Quality Control
SM	Service Mode
USG	User's Support Group
VA	Visiting Astronomer
VM	Visitor Mode
VisAs	Visiting Astronomers Department
WFI	Wide Field Imager

2-ROLE OF THE ASTRONOMERS

2.1- GENERIC TASKS AND DUTIES

In this section, Astronomer refer to all the flavors of astronomers available, i.e. Staff, OpAs, Fellows (described in [1]) and to a certain extent, Students.

The tasks and duties of the La Silla SciOp Astronomers are

- Provide support to VAs: when at La Silla, to get their Phase II ready, and to "hold their hand" during at least the beginning of the first night, more if needed, but also before their run (including Phase I preparation), and after their run (hints/tips to process their data, etc -but not to process the data for them).
- Provide support to SM astronomers (including ToOs), to get their Phase II ready, and also before their run (including Phase I preparation), and after their run (hints/tips to process their data, etc).
- Instrument calibration, monitoring and documentation.
- Contribute to the commissioning of new instruments, new software, etc.
- Contribute to the development of new instruments, new software, new features...
- Develop and implement tool to process the data, in order to make the calibration plan data processing more uniform, reliable and fast, and to permit the observer to evaluate their data. These tools could eventually be assembled in a pipeline, if a supported structure exists.
- Advocacy to the community, i.e make the instruments and service available known, e.g. through papers (Messenger and others), and through presentations in other institutes.

2.2- CONSIDERATIONS

It is considered desirable that, in the case of VM, the Phase II (P2PP, strategy, etc) and the night support are provided by the same person, i.e. as done at present. It is considered desirable that, in the case of VM, the Phase II (P2PP, strategy, etc) and the night support are provided by the same person, i.e. as done at present, in order to have continuity and to optimize the communication level. However, it should be noted that some of the Telescope Introduction could possibly be delegated to the TIO (e.g. tour of the telescope). This has to be experimented with.

The Phase II preparation could take place in Vitacura, e.g. in cases where that would permit the support astronomer to come later on the mountain. This was experimented with success at the NTT. It should however remain an exception, the normal mode of operation being Phase II intro at La Silla. Indeed, the astronomer's time at Vitacura is for Science, but it is better to "lose" 2h of science for an introduction than to "lose" 2 days. The hardware and software set-up in Vitacura will need to be improved (i.e. have a "Visitor Computer" with P2PP and up-to-date instrument packages).

It is also stressed that the VAs should do their homeworks before the Phase II preparation, i.e. read the manuals and think about what they want to do. This will have to be made clear to the VAs before they arrive.

Even "experienced" observer will have to go through all the point of the standard introduction. The support astronomer can of course go over some of these points very quickly if the VA is very familiar with them, but the support astronomer has to make sure that nothing is forgotten!

The possibility of (limited) "remote observing" or "remote operation" from Vitacura is also considered. This would permit more flexibility, e.g. in case of trouble-shooting, tests, and even observations. This is to be experimented with.

2.3- SPECIFICS

Obviously, what follows concerns the astronomers after the completion of their training period.

2.3.1- STAFF ASTRONOMERS AND OPA

Every astronomer (staff and OpA) should belong to one Instrument Force (cf [2]), and be able to support all instruments in that force (to the level of a good generic introduction), and be specialist (i.e. be able to provide in-depth support and good level of trouble-shooting) of at least one instrument. After some time at La Silla, the Astronomers should also be able to provide basic support on at least one instrument of another Instrument Force.

Most astronomers are likely to be at some point Instrument Scientist (cf [2]) of an instrument.

As stated in [1], it is expected from the Astronomers that they will remain informed while being in Vitacura, by reading emails and replying to urgent emails related to their duties, and perform/complete urgent tasks related to their duties for SciOp. This should take a very small fraction of their research time.

ESO considers that a "support astronomer" should be an "active astronomer". This is the justification of the 20% of the 80/20. Nevertheless, ESO acknowledge that it hard/difficult/impossible to be a world-wide top scientist with only 20% of one's time to do research. As a consequence, the performance appraisal of the OpAs is based only on their functional work, not on their science (as opposed to the 50/50 astronomers). On a case by case bases, OpAs could request to be passed on a 100/0 scheme (i.e. 150n duties, no science).

2.3.2- FELLOWS

Every Fellow should be specialist (to the level of providing in-depth introduction and basic trouble-shooting) of one instrument, and be able to provide generic introduction on at least another instrument of the same instrument Force.

Most fellows are likely to be at some point Instrument Scientist (cf [2]) of an instrument. Indeed, as La Silla will have 10 instruments and 12 astronomers (inc. Fellows), their role will be crutial.

The contract of the Fellows include 80n of duties on the mountain, and 35 days of duties in Vitacura. These 35d are used to ensure the continuity of their service to SciOp (e.g. read SciOp email, reply to those concerning them directly, complete urgent tasks, etc.), and perform background tasks such as documentation, analysis, etc. The Fellows are not expected to keep detailed track of their time in Vitacura, but experience (+ time record from some template fellows) shows that this does not amount to 35d. The remainder is considered as a compensation for possible over-run of their 80n quota on La Silla (not to be abused, and to be kept at a small level, e.g. no more than 10%), required by emergency situations or schedule impossibilities.

2.3.3- STUDENTS

Currently, the ESO Students are not included in the La Silla Operation, although some experienced was gained from Students who volunteered to work for the Teams. Students have no obligation (by contract) to perform duties at the Observatories. It must be noted that the most important goal of the Observatory is to support the observing projects, not train students. It is therefore important that the Observatory should get some return from the resources invested in the students.

The current experience with students showed that involving them in long term projects is a failure: they don't come enough to La Silla, and they are not supposed to work in such project in Vitacura. On the other hand, they proved to provide very efficient help for very well defined tasks that can be completed in very short time (few hours to few days, to be competed before they finish their "turno"), i.e. "here-and-now" projects.

Based on this, it is proposed that the Students will be proposed to volunteer to perform a small amount of duties (of the order of 40n/yr). These duties will be of the "here-and-now" kind, i.e. should be completed at the end of their "turno". These will be decided on a trimester by trimester bases (i.e. each scheduling period). Once accepted (i.e. once the schedule is accepted and published), the Student are committed to perform the scheduled "turnos" and to follow the instructions they are given.

The implementation of this scheme will be negotiated with the relevant instances (Science Division, etc), and the budget to cover their travel and stay expenses will have to be secured for >2002. For 2002, an arrangement has been found between the different parties: Science/Vitacura pais the trips, SciOp pais the stay.

3- STAFF, MANPOWER & SCHEDULE COVERAGE

3.1- STAFFING LEVEL

This section is a summary, for information purposes, of the relevant sections of the SciOp Staffing Plan [3].
Currently, the staff of SciOps includes 5 Staff Astronomers (>=105n/yr), 4 OpAs (>=120n/yr, with some variation from contract to contract) and 7 Fellows (=80n/yr). In the long run (>=2004), **SciOp will have 4 Staffs, 3 OpAs and 3 Fellows** (assuming one of the remaining Fellow position is converted in an OpA, which is the current plan).

This will ensure 980 man-night/yr, i.e. an average of 2.7 astronomer per night. It is therefore **not** possible to ensure full coverage of 1 astronomer/night/telescope.

In that framework, the Common Control Center will play an important role: one astronomer will be able to support more than one telescope, provided that

- more than one instruments from the same Force are scheduled simultaneously (see 3.3 below).
- when more than one astronomers are on the mountain, they train eachother on the instruments being operated.

The Common Control Center will therefore have to be implemented asap.

3.2- CASE OF THE OpAs

Currently, the OpAs have 1-yr "Paid Associate" contracts with no retirement benefits, with a duty level varying between 120 and 135 nights/yr.

The duty level should be uniformized for all new contracts, e.g to 125n/yr, which is the number currently used for scheduling purposes. Also, the OpA contracts should be as much as possible made similar to those of Paranal, i.e. 3yrs with retirement benefits. The implementation of this point will have to be negotiated with the relevant instances (Pers. and Co).

3.3- SCHEDULE

In order to ensure the quality of the support, it will become a necessity to constrain the program schedule as follow

- Encourage long runs. The current average (P69) is 2.9n on 3.6m and 2.4 on NTT. This should be the absolute minimum.
- Discourage short runs: 1-night runs should either not be scheduled (c.f next section "Service Observing"), or reserved to extremely experienced observer, considering that it is possible that such run would not get support.
- Schedule the various telescopes so that **at least** two telescopes have instruments from the same Instrument Force mounted. As this adds one (difficult) constraint to the schedule, this will obviously not always be possible, but it should be true for the majority of the time.

The implementation will have to be negotiated with the relavant instances.

4-SERVICE OBSERVING

The following is considered as what SciOp can reasonably and efficiently support in terms of Service Observations. Its implementation for P>=70 will be negotiated with the relevant instances (OPC, VisAs and Co).

4.1- DEFINITIONS

Visitor Mode: a Visiting Astronomer to perform his own observations on defined nights.

Flexible Observing: aka "queued observing", aka Q-mode: during some pre-defined nights, observations are selected for execution from a pool of pre-prepared OBs according to the weather conditions, instrument availability, priorities, etc.

Delegated Observing: on pre-defined nights, a specific observing program is executed by SciOp staff. From the scheduling point of view, this is similar to VM.

4.2- SERVICE OBSERVING PER TELESCOPE

4.2.1- 3.6m

Currently, ~3-5% of the time is performed in Service Mode, exclusively as Delegated Observing. As the 3.6m does not receive support from DMD/USG for Phase II, QC and data distribution, this should remain at the ~5% level. As there is no instrument flexibility, and as the number of night in SM is very small, Flexible Scheduling is not an option, so the SM should be exclusively performed as Delegated Observing, and strictly be reserved to

- Micro Programs: 1 night or less
- Monitoring programs: Repeated very short (up to few h) observations.

In particular, programs of >= 2 nights should not be accepted in Service Mode any more, since there is no justification for this to happen. More specifically, the justification that "an observer from the proposal is not absolutely needed at the telescope" should not be sufficient to grant Service Mode.

4.2.2- NTT

A small fraction of the time, about 5-10%, is performed in Service Mode. Thanks to the fact that, in general, all 3 NTT instruments are available at all times, this SM can be offered in full Q-Mode. Nevertheless, it should be strictly reserved to

- Programs that can be performed only in specific conditions (excellent seeing, photometry, etc...). Only OBs with very restrictive constraint set can be accepted in this category, and they can constitute only a small fraction of the SM time.
- Micro Programs: 1 night or less
- Monitoring programs: Repeated very short (up to few h) observations.

The latter two will constitute the "filler" needed for when conditions are not exceptional (i.e. the majority of the time).

Programs of >= 2 nights with no specific constraints should not be accepted in Service Mode any more. More specifically, the justification that "an observer from the proposal is not absolutely needed at the telescope" should not be sufficient to grant Service Mode.

It must be noted that NTT receives no support from DMD for Phase II, MTS, QC, and data distribution. This is fine provided that the fraction of SM time remains <10%.

4.2.3- 2.2m

Three months per yrs (i.e. 25%) belong MPE, 75% to ESO. MPE can use both WFI and FEROS, and agreement with MPE is that 100% of its WFI time in SM. It is expected that about 1/3 of the ESO time will be scheduled with FEROS.

- WFI Imaging: ~100% SM in Flexible Mode. Phase II, MTS, QC and Data Distribution are dealt with fully by DMD in Garching. This is totally similar to what is happening in Paranal. A small fraction of the time could be performed in VM for specific programs absolutely requiring the presence of an astronomer from the program.
- WFI Spectroscopy (Grisms): 100% VM, we cannot deal with this in SM.
- FEROS: 100% VM at the beginning. In the future (Periods > 70 after the implementation of the VLT-like observ. software for FEROS), we could consider up to 50% in Delegated Service Observing, to be reserved to Micro Programs and Monitoring Programs. It should be noted that it is unclear whether there would be some demand for such service.

--oOo--