P2PP User's Manual

David Silva
ESO User Support Group

VLT-MAN-ESO-19200-1644/2.1B

This document is the user's manual for the ESO Phase 2 Proposal Preparation (P2PP) tool used to create Observation Blocks (OBs). P2PP 2.1 functionality is described. This is the new Java tool.

Prepared:. . . . . David Silva

Approved:. . . . . Peter Quinn

Released:. . . . . Peter Quinn

Change record

Issue/ Revision	Date	Section/Paragraph affected since last version	Reason/Remarks
0.0	April 16, 1997	All	First draft (AZ)
0.1	July 14, 1997	All	FM version
0.2	August 16, 1997	All	Draft release
0.4	10 September 1997	All, moved NTT TSF appendices to separate document	Draft release
0.5	22 September 1997	All	Draft release
0.6	25 September 1997	All	Mathys comments
1,1beta1	13 July 1998	All	Revised for P2PP 1.1; released internally for review
1.1	15 September 1998	All	External release
1.2D1	15 December 1998	As marked with bars in left margin	P2PP 1.2
1.3	20 June 1999	As marked with bars in left margin	P2PP 1.3
2.0D1	24 December 1999	All - Java version	P2PP 2.0
2.1NN	11 April 2000	All - NoNet Demo	P2PP 2.1beta5 (NN)
2.1A	19 July 2000	All sections	P2PP 2.1
2.1B	2 August 2000	Added figures, revised Phase 1 and ESO DB browser sections	P2PP 2.1

Contents

List of Figures

List of Tables

1 Introduction

1.1 Purpose & Scope

This document is a user's manual for the ESO Phase 2 Proposal Preparation (P2PP) tool.

This manual describes P2PP Version 2.1. **This is the new Java implementation**.

This manual does not contain an installation guide. Installation instructions for home users are maintained on-line on the Phase 2 information Web site (http://ww.eso.org/observing/p2pp). On-site installation instructions can obtained from the DMD Systems Engineering Group (seg@eso.org).

1.1.1 Note on P2PP Version numbering

P2PP development is currently following parallel tracks. The P2PP 1.X series is the Tcl/Tk based system in use since February 1997. This P2PP series will be used to support OB creation at all relevant ESO facilities until the end of Period 65.

The 1.X series is being phased out. Its replacement is the Java based P2PP 2.X series. P2PP 2.0 has been released to support UT2 commissioning activities (including UVES and FORS-2). P2PP 2.1 has been released to support all science operations activities during Period 66 and beyond.

Major releases within each series are designated by the second digit. These releases incorporate significant functionality or user interface changes and will be accompanied by updates to this manual.

Minor releases are designated by the third digit. These minor releases contain bug patches as described in the release notes and do not change the user interface or invalidate this manual. No manual updates will be issued for these minor releases.

1.1.2 Location of the Latest Version of this Manual

The latest version of this manual will be available from the Phase 2 information Web site (http://www.eso.org/observing/p2pp).

1.2 Intended Audience

This manual is intended for P2PP users. It is not a technical manual.

For technical details, especially about interfacing new instruments to P2PP, please contact the ESO System Engineering Group (seg@eso.org).

1.3 Applicable Documents

[1] VLT-ICD-ESO-17240-19200/1.1/17-Oct-97 - *ICD Between Scheduling Tools and the VCS*

[2] VLT-SPE-ESO-19200-1779/0.4/24-Feb-99 - *VLT Data Flow System Front-End Software Requirements Documen*t

[3] A.M. Chavan, G. Giannone, D. Silva, T. Kreuger, G.E. Miller. “Support tools for VLT Operations: the NTT prototyping experience”, 1998, SPIE Proceedings 3349.

1.4 Reference documents

[4] VLT-SPE-ESO-00000-1423/1.0/04-Sept-97 - *VLT Level 1 Requirements*

[5] VLT-SPE-ESO-19000-0842/0.92/14-Aug-97 - *VLT Data Flow System, Architectural Design Document*

[6] GEN-SPE-1940-794/1.1/25-Nov-97 - *Data Interface Control Document*

[7] VLT-PLA-ESO-100000-0441/2.0/DRAFT/5-Dec-97 - *Science Operations Plan*

[8] D.R. Silva, B. Leibundgut, P.J. Quinn, J. Spyromilio, M. Tarenghi. “Data flow system operations: from the NTT to the VLT”, 1998, SPIE Proceedings 3349.

[9] VLT-SPE-ESO-19200-1778/0.6/24-Feb-99 - *VLT Data Flow System Front-end Architecture Design Document.*

1.5 Glossary

Where appropriate, these definitions were adopted from the Data Interface Control Document ([3]). Minor wording changes have been made since P2PP will be used at several ESO facilities, not just the VLT. Many of these terms and their inter-relationships are explained further in Section 5.

Acquisition Template (AT): an *Observation Block* object. An Acquisition Template is used to specify how a target will be acquired by the telescope. It may also specify any preliminary instrument configuration steps (e.g. set rotator to specific angle). It can contain parameters for interactive as well as automatic acquisitions. This template may define a different instrument/ detector configuration from the templates within the *Observation Description*. Each science Observation Block contains at most one Acquisition Template.

Broker of Observation Blocks (BOB): the *VLT Control System* tool which receives *Observation Blocks* from the *Observation Handling System* and executes them.

Calibration Observation Blocks: *Observation Blocks* used to acquire calibration data.

Calibration template: an *template* used to acquire calibration data.

Clone: a perfect copy of an entire *Observation Block*. Only the internal OBSID number is different.

Constraint Set (CS): an *Observation Block* object. A list of observation condition execution requirements. OBs will only be executed under these conditions or better. Each Service Mode science Observation Block contains at most one Constraint Set.

Data Flow System (DFS): A system that can handle the flow of data and information within certain ESO facilities, in particular, the VLT. It includes sub-systems for proposal handling, observation handling, science and engineering data archiving, science data pipeline processing, and data quality control (see [5]). The DFS is being developed by the *ESO Data Management and Operations Division*.

Engineering Mode (EM): P2PP technical mode used by developers and operations staff to implement and/or test *template signatures*.

ESO Data Management & Operations Division (DMD): the ESO division primarily responsible for developing and operating the *Data Flow System*.

ESO Observing Programmes Comittee (OPC): external committee that oversees the allocation of telescope time at all ESO facilities

ESO User Support Group (USG): the ESO group responsible for assisting astronomers prepare observing proposals and observing programmes, particularly for Service Mode programmes.

ESO Visiting Astronomers Section (VISAS): the ESO group responsible for managing the observing proposal acceptance and review process, for creating the long-term operations (observing) schedule for each ESO Period, and for providing logistical support for astronomers traveling to Chile to use one of the ESO facilities.

Exposure: a synonym for the acquisition of a single data frame, typically resulting in a single FITS file.

Folder: a disk storage area within the *Local Cache* that contains zero, one, or more OB objects

Instrument Package (IP): set of files containing the *Template Signature Files* and *Instrument Summary File* for a specific instrument. The correct Instrument Package must be installed before OBs can be created for that instrument.

Instrument Summary File (ISF): part of *Instrument Package*, contains a summary of the P2PP addressable optical elements of that instrument.

Import/Export (IMPEX): a mechanism for converting *Observation Blocks* into text files that can be modified and transported between workstations outside of the *Observation Handling System*, and then re-ingested by the OHS.

Local Cache: disk directory where the *Phase 2 Proposal Preparation* tool writes and reads local versions of the user's *Observation Blocks*.

NoNet: OB concept where OBs are single, independent entities. There is no network dependence between OB components.

OB Repository: a database which contains two kinds of *Observation Blocks*: (1) *Service Mode* OBs which have been submitted to ESO for review, scheduling and possible execution; and (2) clones of *Visitor Mode* OBs executed on-site to be used as a reference for post-observation *Data Flow System* data processing modules. The OB Repository should not be considered an "OB scratchpad" - it should only contain OBs which are ready for review, scheduling, and/or execution. OBs in this database are considered to be under configuration control by ESO.

Object: a technical term for *Observation Block* components (e.g. Target Packages, Observation Descriptions, Observation Blocks, etc). Sometimes also know as **Business Objects**.

ObservingRun: an approved *ESO Programme* consists of one or more ObservingRuns, each of which specify an independent combination of telescope, instrument, and observing operations mode (i.e. *Service Mode* or *Visitor Mode*).

Observation: a coordinated sequence of telescope, instrument, and detector actions that results in a scientific or technical dataset.

Observation Blocks (OBs): The smallest observational unit within the *Data Flow System*. An Observation Block contains a sequence of high-level operations, called *templates*, that need to be performed sequentially and without interruption in order to ensure the scientific usefulness of an observation. Observation Blocks may contain only one target acquisition. Observation Blocks may contain scheduling and collect all status information of operations as they pass through the Data Flow System from definition, execution, reduction, and archiving. Observation Blocks used in both *Visitor* and *Service Mode* to acquire data. They are used to acquire scientific, calibration, and technical data.

Observation Description (OD): an *Observation Block* object. A sequence of *templates* used to specify the observing sequences within one or more Observation Blocks.

Observation Handling System (OHS): a part of the *Data Flow System* used to create, manage, and schedule *Observation Blocks*. The *Phase 2 Proposal Preparation* tool, the *Observation Toolkit*, and the *Short-term Scheduler* are all part of the Observation Handling System. The Observation Handling System is the primary interface between the *VLT Control System* and the *Data Flow System*.

Observation Toolkit (OT): an *Observation Handling System* tool used to create queues (sets) of *Observation Blocks* for later scheduling and possible execution.

Phase 2 Proposal Preparation: Detailed description of an observing programme. This phase is executed by astronomers who have been allocated time by the *ESO Observing programme Committee*. During this phase, astronomers construct *Observation Blocks*.

Phase 2 Proposal Preparation tool (P2PP): the tool used to create and (in Visitor Mode) execute *Observation Blocks*.

Service Mode (SM): observing operations mode where the astronomer submits a detailed description of their observing programme to ESO for later possible execution. Service Mode programmes are executed primarily in order of their *ESO Observing Programmes Comittee* assigned priority but only when the astronomer specified observing conditions are achieved on-site.

Science Observation Blocks: *Observation Blocks* used to acquire scientific data.

Science template: a *template* used to acquire science data.

SPIKE: a tool used to schedule the Hubble Space Telescope. It was developed for and is now maintained by the Space Telescope Science Institute in Baltimore, MD, USA. STScI is under contract by ESO to modify SPIKE so it can be used to schedule ground-based astronomical facilities such as the VLT.

Standard Observation Blocks: *Observation Blocks* used to acquire standard data, i.e. observations of astronomical standards for (e.g.) photometry, spectrophotometry, and polarimetry.

Synchronisation: a simple copy-and-paste mechanism that allows users to copy a component from one source OB and paste it into one or more target OBs.

Target Package (TP): an *Observation Block* object. A description of an astronomical target. It contains target celestial coordinates and some additional information (e.g. magnitude). Each science Observation Block contains at most one Target Package.

Technical Observation Blocks: *Observation Blocks* used to acquire technical (engineering) data.

Template: A high-level data acquisition operation. Templates provide the means to group commonly used procedures into well-defined and standardized units. They can be used to specify a combination of detector, instrument, and telescope configurations and actions.Templates have input parameters described by a *template signature*, and produce results that can serve as input to other templates. As an example, an Acquisition Template takes target coordinates and produces through an interactive procedure the precise positions used later, e.g. to place an object on a slit.

Template signature files (TSF): files which contain *template* input parameters. Template signatures are used to created *Observation Descriptions* with the *Phase 2 Proposal Preparation tool*.

Timing Intervals: an *Observation Block* object. Allows user to specify absolute execution time requirements (e.g. exact dates and time intervals during which OB should be executed).

Visitor Mode (VM): observing operations mode where the astronomer is present at the telescope while their observing programme is being executed.

VLT Control System (VCS): the software and hardware tools that are used to control directly VLT instruments, telescopes, and related hardware. It enables and performs the acquisition of scientific and technical data. Originally designed for the Very Large Telescope, the VCS has been installed at the La Silla New Technology Telescope (NTT) and 3.6m telescope.

1.6 Abbreviations and Acronyms

AT	Acquisition Template
BOB	Broker of Observation Blocks
CCD	Charge Coupled Device
CS	Constraint Set
DFS	Data Flow System
DMD	Data Management and Operations Division
EM	Engineering Mode
ESO	European Southern Observatory
GUI	Graphical User Interface
ID	Identification
IP	Instrument Package
ISF	Instrument Summary File
IMPEX	Import/Export
NTT	New Technology Telescope
OB	Observation Block
OD	Observation Description
OHS	Observation Handling Subsystem
OLAS	On-Line Archive System
OT	Observing Tool
P2PP	Phase II Proposal Preparation system
SM	Service Mode
TBC	To Be Completed
TBD	To Be Decided
TP	Target Package
TSF	Template Signature File
USG	User Support Group
UT	(VLT) Unit Telescope
VCS	VLT Control System
VISAS	Visiting Astronomer Section
VM	Visitor Mode
VLT	Very Large Telescope

1.7 Conventions used in this document

The callout style is used for items in the P2PP graphical user interface.

The **bold** style is used for terms defined in the glossary or for important notes to the user.

The `typeout` style is used for P2PP disk files which the user can read and modify.

1.8 How to get help or report problems with P2PP or this manual

In all of the following situations:

- questions regarded OB creation for Service Mode programmes, no matter where you are physically located
- P2PP bug reports
- suggestions for improvements to this manual

please contact the **ESO User Support Group (usg-help@eso.org)**.

Users assigned Visitor Mode should contact the appropriate ESO Telescope Team:

- NTT: nttt@eso.org
- 3.6m: 360cat@eso.org
- VLT: pso@eso.org

1.9 Acknowledgments

P2PP 2.X was developed under the leadership of A. Maurizio Chavan by Carlo Boarotto, Tim Canavan, and Bob Kemp. The P2PP project is part of the larger Data Flow System project, led by Michele Peron. The P2PP project scientist was David Silva.

The style of this document was inspired by the style of the Data Interface Control Document (DICB) created principally by Miguel Albrecht. This document was created using Adobe FrameMaker running under Solaris and MacOS.

1.10 Release Notes

This is release 2.1A of the P2PP User's Manual. It has been made available to all users via the P2PP Web page: http://www.eso.org/observing/p2pp/.

Final responsibility for this manual's contents rests with the author.

No user's manual is ever perfect. Here is a list of topics to be discussed in a later release:

- TBD

This manual also needs an index.

2 How To Read This Guide

2.1 Read This First

The Phase 2 Proposal Preparation tool, P2PP, is a simple yet powerful tool for creating and managing Observation Blocks (OBs). An OB describes a “single” observation and contains information about target position & acquisition, exposure sequences, and scheduling requirements.

All users of the NTT and VLT must create OBs to acquire their science and calibration data. Users of EFOSC2 and CES at the ESO 3.6m must also create OBs. Implementation of a P2PP interface to the Wide Field Imager (WFI) at the ESO 2.2m is under discussion.

This user’s manual describes how to use P2PP to build OBs. It contains information useful to all P2PP users. However, although all P2PP features are discussed, not every user will need every feature.

In this section, a few reading suggestions are provided.

2.2 All Users

All users are reminded to read the latest Phase 2 information, available on-line at:

http://www.eso.org/observing/p2pp/

2.3 First Time P2PP Users

First time users should read about basic OB concepts (Section 5) and how to install and start P2PP (Section 4). They should then do the tutorial (Section 7), and read about other advice & hints (Section 8).

2.4 Experienced P2PP Users

Veterans of the P2PP experience may want to re-familiarize themselves with P2PP by reading the What’s New (Section 3), P2PP installation and startup (Section 4), and quick reference OB creation checklist (Section 6) sections. A tutorial (Section 7), and the advice & hints section (Section 8) is also available.

2.5 Users with Detailed Questions

Users with detailed questions should first investigate the P2PP reference guide (Section 10). If their question is not answered there, they should contact the ESO User Support Group (usg-help@eso.org).

2.6 Users with Large Observing programmes

Users with large observing programmes (e.g. more than 50 OBs) should consider making their OBs off-line as text files and then importing them into P2PP as discussed in Section 9.

2.7 Users Who Want To Create OBs Off-line

It is possible to create a few template OBs and then produce similar OBs off-line using the IMPEX mechanism. For example, users might want to draft OBs while in-transit to the Observatory. Users interested in this option should review Section 8.7 and Section 9.

2.8 Users with Visitor Mode programmes

Users assigned Visitor Mode time should read Section 8.5 carefully.

2.9 Users with Service Observing programmes

Users assigned Service Mode time should read Section 8.6 carefully.

2.10 Users Who Want Instrument Specific Information

This manual does not contain instrument specific information. In particular, it contains no information about currently available instrument observing templates. For the latest information, see the P2PP support Web page (http://www.eso.org/observing/p2pp/).

3 What’s New in P2PP 2.X

This section summarizes major user interface and user conceptual changes introduced in P2PP 2.X.

3.1 Java

P2PP has been completely re-implemented in Java to provide better platform independence and more easily maintainable code. Support is provided officially for Solaris 2.6+, HP-UX 10, and Linux.

However, P2PP should run on any system which supports a Java Virtual Machine and JDK 1.1.7 or later. In particular, it has been run under Windows NT and the MacOS (MRJ 2.1.4 or later). *ESO cannot provide official technical support for these platforms at this time.*

3.2 Observation Blocks are now independent entities (NoNet)

An Observation Block (OB) consists of some or all of the following objects: an Acquisition Template, an Observation Description, a Target Package, and a Constraint Set.

In the past, each of these objects could be shared between one or more OBs. This is known as the **network model**.

In P2PP 2.X, the network model has been replaced by the **NoNet model**. Each OB is now independent of every other OB – objects are not shared. To re-use an object, the user must copy-and-paste (i.e. **synchronize**) an object from one OB to one or more OBs.

The major advantage of this paradigm shift is that OBs are now completely independent of each other, eliminating operational problems caused when a change made to one OB inadvertently affects many other OBs.

The major disadvantage is that users must remember to manage their OBs independently, that changing a template parameter in one OB does not update other OBs. Users can manage such changes, however, using the synchronizsynchronize mechanism.

3.3 User Interface

The P2PP user interface has been completely re-designed to make it more intuitive and more stream-lined. It is no longer necessary to click OK hundreds of times!

This does mean that P2PP 1.X users will have to re-learn how to use P2PP but our beta testing experience suggests most users learn how to use P2PP 2.X very quickly and find it more intuitive than P2PP 1.X.

The list of currently created OBs and a summary of their contents are organized in spreadsheet like *grids*.

The OB details are presented and edited within *OB Views*.

Keyboard shortcuts are now available for many commonly repeated operations.

Many functions and parameters (especially in the Observation Description View grid) now have *in-line helpboxes* - simply point at object and an helpbox will appear.

3.4 Folders

Observation Blocks and their various components can now be organized in folders. Users can choose to use a single folder per programme or create a hierarchy of folders. Folders can be used to organize OBs as desired by users.

3.5 Modes

From the user's perspective, the concept of P2PP mode has essentially been eliminated. All users run P2PP in the same way. The tool automatically decides what connections and functionality to support based on user ID, observing run ID and environment.

3.6 Automatic Phase 1 Information Retrieval

At run-time, P2PP automatically tries to retrieve your Phase 1 information and create a basic set of folders, if they do not already exist.

3.7 Automatic Saving

All information is automatically saved to the Local Cache as you are working. Every time you leave a parameter field, its value is updated in the Local Cache.

3.8 Automatic OB Verification

As OBs are being modified, P2PP verifies that the OB is technically compliant. If it is not, a "red dot" appears next to the OB name in the OB Summary grid. OBs which have failed verification cannot be checked into the ESO Repository.

Note that technical compliance does not always mean operationally reasonable.

3.9 Submitting Service Mode OBs to ESO: check-in, check-out

The concept of OB submission has become more sophisticated. When OBs are ready for submission to ESO, users must check-in the OBs. The OB is written into the ESO Database and then locked (i.e. made read only) in the Local Cache. If a user needs to revise that OB, it must first be "checked-out" (retrieved) from the ESO Database, which deletes it from the ESO Database and unlocks it in the Local Cache.

Note that OBs which have been "accepted" by ESO cannot be "checked-out". This prevents users from modifying active OBs.

3.10 IMPEX: New Format and Backwards Compatibility with P2PP 1.X

P2PP 2.X OBs are exported as one, single IMPEX file that contains all information.

P2PP 1.X OBs can be exported using the P2PP 1.X tool and re-imported into P2PP 2.X, as long as the Instrument Package is still supported. Unfortunately, the Instrument Packages tend to change every semester.

4 P2PP Installation and Startup

The Phase 2 Proposal Preparation (P2PP) tool is used to create Observation Blocks (OBs). These OBs are used to describe observing sequences for a growing number of ESO instruments.

This section contains a basic overview of how to install and start P2PP. It is written for the P2PP user at their home institution in Europe or at ESO Headquarters in Garching. On-site visitors using P2PP should contact their assigned support astronomer for additional help and instructions.

In this section, we discuss the following topics:

- how to upload and install P2PP
- how to become a registered P2PP user
- how to get a P2PP user account
- how to start P2PP
- a quick tour of the P2PP tool
- how to exit P2PP
- where to get further information & help
- how to report problems and bugs

4.1 How to upload and install P2PP and associated Instrument Packages

P2PP has been installed on-site at the Chilean sites.

Installation instructions for off-site locations are posted on the Phase 2 support Web site:

http://www.eso.org/observing/p2pp/

Contact the User Support Group (usg-help@eso.org) if you need assistance.

4.2 How to become a registered P2PP user

Please fill out and submit the **P2PP Registration Form** located on the ESO User Support Group P2PP Web page (http://www.eso.org/observing/p2pp/). Registration is optional but registered users will be notified by e-mail when new versions of P2PP, this User's Manual, or the various Instrument Packages are released.

4.3 How to get a P2PP user account

Principal Investigators allocated ESO time are assigned a P2PP UserID and a corresponding password. The use of a password system prevents one PI from accidently modifying the OBs of a different programme. This UserID and password should be requested from ESO before beginning your initial P2PP session. Note that UserIDs and passwords are assigned to PIs, not programmes.

A PI can have multiple programmes covering multiple semesters but only one P2PP UserID. If you do not already have a P2PP UserID, contact the ESO User Support Group (usg-help@eso.org) or your on-site contact scientist.

4.4 Starting P2PP

To start P2PP, simply type:

```
p2pp
```

Note to on-site visitors: please start P2PP from your workstation desktop menu whenever possible. Contact your local support scientist for details.

If the P2PP starts correctly, a small login window will appear. Enter your User ID and Password.

Three things now occur:

- P2PP tries to find and open your Local Cache folder
- P2PP tries to load your Phase 1 information
- P2PP tries to load any Observation Blocks already present in Local Cache

4.4.1 Your Local Cache directory

P2PP will now try to find your **Local Cache** folder where it will automatically save all your information as you work.

By default, P2PP will use setup and/or re-use a Cache folder (directory) in your installation folder (directory). If P2PP has been installed centrally on your network, you may not have write permission on the default Cache folder. P2PP will issue an error message and not continue. If this occurs you will have to setup a personal Cache folder. *A personal Cache folder is strongly recommended. See the on-line P2PP installation instructions for further information.*

If you have specified a personal Cache folder in your p2pp.cf file (as recommended in the installation instructions), P2PP will try to open that folder. If it cannot open that folder (because, e.g. it does not exist), P2PP will issue an error message and will not continue until you create the proper directory.

Note that multiple users can use the same Local Cache folder as long as they have different P2PP UserIDs.

4.4.2 Your Phase 1 information

Once it opens your Local Cache folder, P2PP will now try to load your Phase 1 information.

For each OPC approved ObservingRun, a Phase 1 cookie exists. This cookie contains a variety of information, include ObservingRun ID, observing mode (Visitor or Service), instrument, and Period. Each cookie in turn corresponds to a P2PP top-level folder.

If your Local Cache folder contains no Phase 1 cookies, P2PP attempts to retrieve automatically all available cookies from ESO via the Internet. If you are not connected to the Internet, P2PP will report an error.

If your Local Cache folder does contain one or more Phase 1 cookies, P2PP will load those cookies and create the corresponding top-level folders. You do not have to be connected to the Internet.

However, you may wish to upload new Phase 1 cookies (e.g. you have been allocated new observing runs). To do that, select File>Download/Refresh Observing Runs. If you are connected to the Internet, P2PP will download any new observing run information. If not, you will receive an error message.

4.4.3 Pre-existing OBs

Finally, if there are any OBs present in your Local Cache, P2PP will load them and display their characteristics in the appropriate OB Summary grid.

4.4.4 P2PP start-up problems

P2PP can report start-up problems for several reasons:

- Cannot find (or write to) Local Cache folder
- No Phase 1 cookies in Local Cache and cannot make Internet connection to ESO
- Other problems, TBC

This section will be completed as common problems are reported by users.

4.5 The P2PP Graphical User Interface

After a successful login, the login dialog box will disappear.

After a short time (less than one minute typically), the main P2PP Graphical User Interface (GUI) will appear (see Figure 4).

P2PP 2.X uses the concepts of **folders**. The startup GUI is in fact the Folder View of the first folder in your current folder hierarchy.

Folder Views have several main sections which we quickly review here. The complete details are given in Section 10.

The **Main Menu Bar** is at the top of the GUI. It contains the File, Edit, Folder, Reports, and Synchronise menus.

Below the Main Menu Bar is the **Icon Bar** which shows (from left-to-right) the New, Duplicate, Verify, and View icons, the Period selector, the CCS connection indicator, and the AppServer indicator.

The rest of the GUI is divided into two sections:

- **Folders** - provides overview of currently available folders
- **Summarie**s - summaries of OBs in currently selected folder

4.6 Exiting P2PP

To exit P2PP, select File>Quit... (or Ctrl+Q) A dialog box will ask you to confirm your decision.

5 Basic Observation Block Concepts

The Phase 2 Proposal Preparation (P2PP) tool is used to create Observation Blocks (OBs). These OBs are used to describe observing sequences for a growing number of ESO instruments. This section provides a high-level overview of how OBs fit into the ESO operations.

5.1 General Concepts

To maximize science operations efficiency at the Very Large Telescope, ESO has developed the **Data Flow System (DFS)**. The DFS is a set of tools for building and executing standard observing sequences, and for automatically archiving and processing the resultant data as well as verifying the technical quality of the data frames produced by those standard observing sequences.

The DFS tools are intended for use by both observers using the observatories on-site in **Visitor Mode (VM)** and by investigators with programmes assigned to **Service Mode (SM).** Visitor Mode Principal Investigators (PIs) are assigned specific nights and must cope with the vagaries of weather conditions and facility downtime. Service Mode programmes, in contrast, are first defined in detail by the PI and then executed by ESO staff astronomers when observing conditions are appropriate (as specified by the programme Principal Investigator) and the facility is functioning appropriately.

Every DFS compliant ESO instrument (e.g. SUSI2, EMMI, and SOFI at the NTT, EFOSC2 and CES at 3.6m, and all VLT instruments) has an associated set of standard observing sequences called **observation templates**. Observation templates contain the information necessary to carry out an observation sequence with a specified detector and instrument configuration. These observation sequences can be very simple (e.g. acquire 1 R-band frame with SUSI2) or very complex (e.g. acquire a jittered stack of on-target K-band images and a corresponding series of off-target background frames with ISAAC). There are templates for science observations (i.e. **science templates**) and for calibrations (i.e. **calibration templates**).Templates are associated with specific instruments (e.g. EMMI or SUSI2) and specific instrument modes (e.g. EMMI BIMG vs. EMMI RILD). The exposure time is considered to be part of the instrument configuration and thus is set within the templates. Templates are developed by the various instrument development teams and then maintained by ESO instrument operations teams.[1,2]

To use these templates, astronomers are required to specify their observing programmes in terms of **Observation Blocks (OBs)**. OBs contain all the information necessary to obtain a “single” observation, including target position, observation templates, and scheduling requirements (if applicable). Such a single observation can contain multiple exposures or even multiple instrument configurations with multiple exposures. The product of an OB is the smallest dataset con-

1. There may also be technical maintenance and setup templates for each instrument. These templates are typically only used by ESO staff and are not generally available to the broader user community.
2. The P2PP **Engineering Mode (P2PP)** can be used by instrument development teams and ESO operations staff to develop and debug template signature files (see Section 10.8).

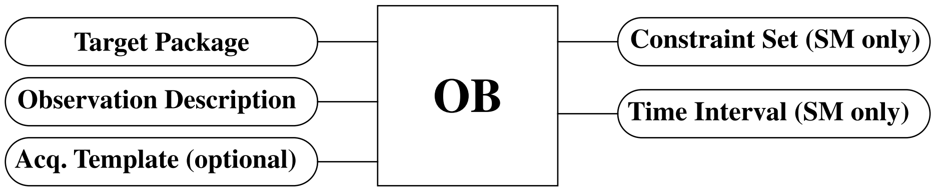
sistent with the scientific and technical goals of a given observing programme. An OB is a "unit" of observation.

OBs are intended to be unique and executable only once. If repeated observation sequences are needed, one OB should be created for each sequence.

Science OBs are used to obtain scientific observations of an astronomical target. Reference data requiring the observation of astronomical targets (e.g. photometric standard data) are obtained using science OBs. **Calibration OBs** are used to acquire reference data such as domeflats, skyflats, biases, darks, comparison lamps, etc. which do not require the observation of an astronomical target.

5.2 OB Structure

FIGURE 1. A Simple Observation Block



All Observation Blocks contain some or all of the following parts: (see Figure 1)

- **General Information** including the OB Name,User Priority, User Comments, and Calibration Requirements
- an (optional) **Acquisition Template (AT)** which specifies the method to be used to acquire a given target and any other information related to target acquisition (e.g. rotator position angle, guide star). An Acquisition Template is required when a telescope preset to a new position is desired. If a telescope preset is not required to complete an observation, then an Acquisition Template is also not required.
- an **Observation Description (OD)** which contains the instrument and telescope actions to be done within an observation block. It consists of one or more **template signature files (TSF)** which pass parameters to their corresponding observation templates (see above). *The OD template order is the template execution order.*
- a **Target Package (TP)** which contains the information unique to a specific target. This information includes the target position and proper motion. Other information (such as target magnitude and comments about the target) may be given but is not required.
- a **Constraint Set (CS)** (Service Mode only) which specifies the observing conditions that must occur before an OB should be executed. The CS controls when a service mode OB can be executed.
- **Timing Intervals** (Service Mode only) which describe optional absolute scheduling constraints.

Service Mode science OBs consist of the following parts:

- General Information
- one and only one Acquisition Template
- Constraint Set
- Target

- an Observation Description containing
  - one or more science templates
  - one or more calibration templates
- one or more Timing Intervals (optional)

Visitor Mode science OBs consist of the following parts:

- General Information
- one and only one Acquisition Template
- Target
- an Observation Description containing
  - one or more science templates
  - one or more calibration templates

Calibration OBs consist of the following parts:

- General Information
- a Observation Description containing
  - one or more calibration templates

OB components are not directly shared between OBs. Changes to a component only affect that OB. However, OBs can be **synchronized** using a simple copy-and-paste mechanism so that a set of OBs has the same component(s).

Targets and Constraint Sets are instrument independent and therefore can be synchronized over any set of OBs and across ObservingRuns.

Acquisition and Operational Templates are instrument dependent and therefore can only be synchronized over OBs using the same instrument. However, they can be synchronized across ObservingRuns as long as all runs use the same instrument.

5.3 OB Creation and Management: The P2PP Tool

Because the observation templates that OBs contain are standardized and do not change rapidly over time, OBs can be constructed any time before the astronomer wishes to execute these OBs - seconds before if the astronomer is visiting the telescope physically (**Visitor Mode**) or weeks before if the astronomer's programme is being executed in **Service Mode**.

The **Phase 2 Proposal Preparation tool (P2PP)** is used to construct OBs[1]. P2PP uses one **Instrument Package** for each instrument. The Instrument Package consists of a **Instrument Summary File** (which summarizes the P2PP controllable optical elements in that instrument) and the currently available **template signature files** (which specify the user controllable instrument functions and observational sequences). The Instrument Package is read by P2PP when P2PP is started.

P2PP organizes OBs into **folders**. These folders reside within the **Local Cache,** a local storage area on your workstation. OBs created with P2PP are automatically saved to the current **active folder**. OBs in the Local Cache are not protected from erasure by commands at the operating system level.

1. The Phase 1 proposal is the original observing proposal submitted to ESO and reviewed by the ESO Observing Programmes Comittee (OPC). The Phase 2 proposal is the detailed description of an OPC approved observing programme.

Each OPC approved ESO observing programme consists of one or more **ObservingRuns**. Each ObservingRun has it's own top-level folder. Many users will only use that top-level folder. However, it is possible to create a hierarchical set of sub-folders to organize your OB objects.

Visitor Mode (VM) users create their OBs in their Local Cache folders, either at home or at the telescope. OBs created at home are exported as **IMPEX (Import/Export) files** for transfer to other users or the mountain. Once present at the telescope, VM users can re-import their OBs and continue editing them.

Service Mode (SM) users also create their OBs in their Local Cache folders. Once finalized, Service Mode OBs are submitted to the **ESO Repository**. This repository is a multi-site database maintained by ESO in Garching, on La Silla, and on Paranal. OBs submitted to the OB Repository can be retrieved and re-opened if further modifications are requested by the ESO operations staff. When present in the OB Repository, OBs are considered to be "ready for execution". They can be scheduled and executed at any time when conditions are right at the discretion of the ESO operations staff.

Since OBs created by P2PP stored in the Local Cache in a user unfriendly binary format, it is possible to create more easily edited **import/export (IMPEX)** ASCII-based files. These IMPEX files can be used to efficiently create large numbers of similar OBs for large observing projects (such as surveys).

5.4 OB Execution

When ready for execution, Visitor Mode OBs can be submitted directly from P2PP to the **VLT Control System (VCS)** via the **Broker of Observation Blocks (BOB)** for execution.

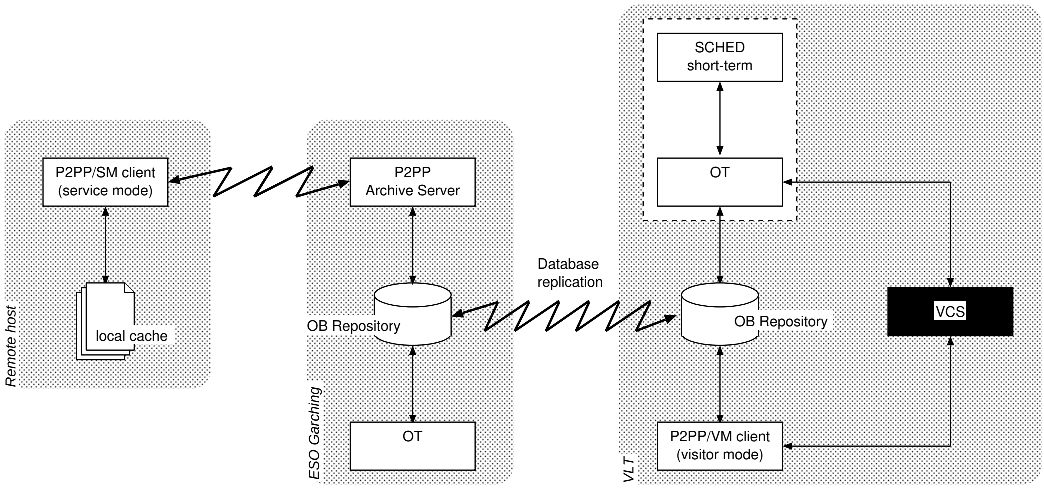
When execution time arrives, Service Mode OBs are retrieved from the OB Repository by the on-site ESO staff observer using the OHS **Observation Tool (OT)** . Using the OT, the on-site staff observer can perform a range of scheduling tasks including:

- submission of individual or groups of OBs to BOB for execution;
- construction of OB queues containing OBs related by instrument configuration, user specified observing condition requirements, celestial coordinates, OPC ranking, etc.;
- semi-automatic construction of OB execution timelines using a scheduling engine derived from the Hubble Space Telescope SPIKE scheduling tool. (This OT module is currently under development).

5.5 P2PP and the Observation Handling System

P2PP and the OT are part of the Observation Handling System (OHS) which is described in reference documents [2] and [3]. The OHS architecture is illustrated in Figure 2.

FIGURE 2. The Observation Handling Subsystem (OHS) Architecture



The OHS toolset is part of the **Data Flow System** project, a product of the ESO **Data Management and Operations Division (DMD)**. Suggestions for improving P2PP or bug reports can be submitted using the Web-based DFS **problem reporting form** at http://www.eso.org/dmd/usg/.

Any questions about using P2PP or any of the other OHS tools should be forwarded by e-mail to the ESO **User Support Group** (usg-help@eso.org).

6 OB Creation: A Quick-Start Checklist

This section provides a brief checklist for constructing simple Observation Blocks (OBs).

A simple science OB consists of the following parts:

- General information
- Acquisition Template
- One or more Observation Templates
- Target information
- Constraint Set (if Service Mode)

A simple calibration OB consists of the following parts:

- General information
- One or more Observation Templates

6.1 Installing P2PP

To upload, install, and run P2PP, see the instructions at

`http://www.eso.org/observing/p2pp/`

6.2 Science OBs

6.2.1 Create New OB

1. Select a folder.
2. Select the ObsBlock Summary grid.
3. Click New icon. A new but empty OB is created.
4. Click View icon. The OB View window will appear.

6.2.2 Enter General Information

1. Input OB Name (**Mandatory**)
2. Input User Priority [Optional]
3. Enter User Comments [Optional but strongly encouraged]

6.2.3 Attach and complete Acquisition Template

In general, the instrument mode of the Acquisition Template and the Observation Template should agree.

1. Select Template Type = acquisition.
2. Double-click desired Template to select and attach it. Template will appear in Observation Description grid

3. Complete the Template parameters.

6.2.4 Attach and complete Observation template(s)

1. Select Template Type = science.
2. Double-click desired Template to select and attach it.
3. Complete the Template parameters.
4. Repeat until all desired templates are attached and completed.

6.2.5 Enter Target information

1. Input Name, RA, and Dec.
2. Update coordinate Equinox, if necessary.
3. Enter optional information as desired:
   - Proper Motion (RA, Dec, Epoch)
   - Differential Tracking Rates (RA, Dec)
   - User Comments

6.2.6 Enter Constraint Set information (Service Mode only)

1. Enter Name and User Comments (optional)
2. Enter your scheduling constraints for:
   - Sky Transparency
   - Seeing
   - Airmass
   - Lunar Illumination
   - Moon Angular Distance

6.3 Calibration OBs

6.3.1 Create New OB

1. Select a folder.
2. Select the CalBlock Summary grid.
3. Click New icon. A new but empty OB is created.
4. Click View icon. The OB View window will appear.

6.3.2 Enter General Information

1. Input OB Name (**Mandatory**)
2. Input User Priority [Optional]
3. Enter User Comments [Optional but strongly encouraged]

6.3.3 Attach and complete Observation template(s)

1. Select Template Type = calibration.
2. Double-click desired Template to select and attach it.
3. Complete the Template parameters.
4. Repeat until all desired templates are attached and completed.

Tutorial: An Example P2PP Session

This tutorial provides a basic introduction to P2PP. It illustrates all the basic functions required to build OBs. A detailed P2PP function reference is provided in Section 10.

In this tutorial, you will create in your Local Cache.

In Section 8, we will discuss how you would:

- export your OBs for user transfer to the telescope (Section 8.5).
- execute your OBs if you were working in Visitor Mode at the telescope (Section 8.5).
- how you would submit your Service Mode OBs to ESO for review and scheduling (Section 8.6).

7 OB Creation: A Tutorial

This tutorial provides detailed Service Mode OB creation examples.

7.1 Outline of P2PP Process

The generic P2PP process has the following steps:

- Create one or more baseline OBs
- Duplicate the baseline OBs
- Update or synchronize the OBs

Visitor Mode users then have several options (discussed in Section 8.5):

- At home, OBs can be exported and transferred by the user to the observatory.
- At the telescope, OBs can be executed immediately and/or exported for future re-use.

Service Mode users have different options (discussed in Section 8.6):

- OBs can be exported for future re-use.
- OBs may be submitted ("checked in") to ESO for review and verification. If accepted by ESO, OBs will then be queued for later scheduling and possible execution, depending on OPC priority and observing conditions.

TABLE 1 An Example Science programme: The Details

Target Name	RA (2000)	Dec (2000)	Instrument Mode	Filter	Exptime
TUT-1	00:00:00.0	-40:00:00.0	ISAAC SWI	K	300
TUT-1	00:00:00.0	-40:00:00.0	ISAAC SWI	NB_2.34	1800
TUT-2	00:10:00.0	-40:00:00.0	ISAAC SWI	K	300
TUT-2	00:10:00.0	-40:00:00.0	ISAAC SWI	NB_2.34	1800
TUT-3	00:20:00.0	-40:00:00.0	ISAAC SWI	K	300
TUT-3	00:20:00.0	-40:00:00.0	ISAAC SWI	NB_2.34	1800

7.2 An Example Observation programme: ISAAC/SW Imaging

All P2PP sessions start with an OPC approved science or technical programme. Although we use a simple science programme as our starting point here, there are really no special additional steps for defining technical programme OBs.

You have successfully convinced the ESO OPC that your science programme should be allocated VLT time using the ISAAC instrument on Antu (UT1). For three (3) different targets, you wish to obtain one K-band image and one narrow-band NB_2.34 image. The details of your observing programme are provided in Table 1.

You have read the ISAAC User's Manual (posted on the ESO Web site) and you have decided that you will use the AutoJitter template. You have also read that Paranal Science Operations will provide you with standard calibration data, but you have decided that you want extra darks.

You also read that ISAAC contains the Ks filter, not the K filter.

You have been assigned Service Mode time. Thus, all your OBs must be submitted ("checked in") to the ESO Repository.

Before creating your Service Mode OBs, you have confirmed your exposure time estimates using the latest version of the ISAAC Exposure Time Calculator (ETC), available on-line at:

http://www.eso.org/observing/etc/

Additional Service Mode procedures are described in Section 8.6.

7.3 P2PP installation and startup

Install and start P2PP as described in Section 4.

When the P2PP Login dialogue window appears, enter the following UserID:

- P2PP Tutorial UserID: 52052
- P2PP Tutorial Password: tutorial

If P2PP can connect to the ESO OB Repository, your Phase 1 information will be retrieved and seven folders should be created.

7.4 Create Your Science Observations Blocks

You are now ready to create your science OBs. You want two images through two different filters for three targets. The following OB creation guidelines should be followed:

- Whenever possible, only use one instrument configuration per OB.
- Only one preset is allowed per Observation Block.

Since you have two instrument configurations (i.e. 2 filters) and three targets (i.e. 3 presets), you need to make six OBs: two OBs for each target.

Basically, the process of creating OBs is about associating Targets (where to point the telescope) and Observation Descriptions (what to do with the instrument and telescope when you get there). For Service Mode, you also have to add Constraint Sets (under what conditions to make this observation). The OB creation process is harder to write down than it is to do!

7.4.1 Create Your First OB: TUT-1 Ks 300secs

Start with the Tut-1, K-band imaging OB as follows:

1. Select folder 60.A-9252(E)/SM/ISAAC
2. Select ObsBlocks tab in Summaries area
3. Click New icon. A new but empty OB will be created and summarized in the Summaries area. The "red dot" means this OB is invalid – which is not surprising since it is still mostly empty!
4. Click the View icon. The OB View will now appear.

The OB View shows the contents of the selected OB. Since this is a new OB, most fields are empty. You should now start filling in the appropriate information. Note this information will be saved to disk as your enter it – there is no need to do an explicit save or write.

- Select the Name field and enter TUT-1 Ks 300 secs.

Go to the Target fields (near the bottom).

1. Input the Name, Ra, and Dec for TUT-1 (see Table 1). You can use colons (e.g. 23:15:34.0)
2. Check that the Equinox is set correctly.
3. If needed, Proper motion (proper motion Ra and proper motion Dec) can be entered in arcseconds per century. Do not forget to enter the Proper Motion Epoch!
4. You can also add Diff RA and Diff Dec if you need differential tracking speeds.
5. The Target Classification should be set to High_z_G.
6. Comments about the target (e.g. the name of a finding chart) can be entered in the User Comments box.

Now attach and fill in an Acquisition Template (AT). There is only one AT per OB. This template describes how your target will be acquired

1. Select the ISAACSW_img_acq_Preset Acquisition Template by first selecting acquisition under Template Type and then double-clicking on ISAACSW_img_acq_Preset from the Template list[1]. This AT will be added to the **template signature file (TSF) grid** as the first template. Update the parameters to DIT = 10, NDIT = 6, SW Filter wheel 1 = Ks, SW Filter wheel 2 = open.[2]

1. Template documentation can be found on appropriate instrument Web pages. See the P2PP Web site (http://www.eso.org/observing/p2pp/) for links to these pages.
2. When the cursor is placed on a parameter name, a short "tool-tip" will explain what that parameter is. When the cursor is placed over the parameter value, the valid parameter range is given.

Now attach and fill in one or more Observation Templates (OTs). Each template describes an instrument/detector setup and observational sequence to be executed on the Target acquired by the Acquisition Template.

To describe your K-band imaging, use the following steps:

1. Select the ISAACSW_img_obs_AutoJitter "science" template by selecting Template Type = "science" and doubleclicking Template = ISAACSW_img_obs_AutoJitter . This template will appear in the TSF grid after your acquisition template.
2. Edit the default ISAACSW_img_obs_AutoJitter template to conform to your programme. Note that you can type RETURN to complete and exit a field. For this tutorial:
   - Exposure Name = DO NOT CHANGE DEFAULT
   - DET.DIT = 10
   - DET.NDIT = 6
   - Number of Exposures = 5
   - SW Filter wheel 1 = Ks
   - SW Filter wheel 2 = open
   - Jitter Box Width = 30
3. Enter your OD Name as "Ks Jitter"

The next step is to specify your Constraint Set (CS). These values specify the minimally acceptable observing conditions under which this OB should be executed. Your OB may be executed under better conditions, but this is unlikely.

1. Select Constraint Sets tab.
2. Update values as follows:
   - Name = Clear_07
   - Sky Transparency = Clear
   - Seeing = 0.7
   - Airmass = 1.2
   - Lunar illumination = 1.0
   - Moon Angular Distance = 30

Constraint Sets are not needed for Visitor Mode OBs. The VM user is working directly at the observatory, making real-time decisions about which OBs to execute.

To finish your OB, you can fill in the (optional) Time Intervals, User Comments, and Calibration Requirements fields.

Your first OB is done!

- Select File>Close (or Ctrl+W) to close the OB View.

If all is well, the "red dot" will not appear in the Summaries grid, and all the Summary values will be updated to the names you have given the OB components.

If you cannot see the entire name, you can expand the column size by placing the cursor near the column boundry in the header row until the double-arrow icon appears. Hold the mouse button down and drag the column to a different size.

7.4.2 Create Your Second OB: TUT-1 NB_234 1800 secs

To make your first NB_2.34 OB, use the following process:

1. Select TUT-1 Ks 300 secs in the Summaries grid in the main GUI.
2. Click the Duplicate icon. A new OB will be created with the name TUT-1 Ks 300 secs-0.
3. Click the View icon to open the OB. Update OB as follows:

- Rename the OB
  - Name = TUT-1 NB_234 1800 secs.
- Update the ISAACSW_img_obs_AutoJitter template
  - Exposure Name = DO NOT CHANGE DEFAULT
  - DET.DIT = 180
  - DET.NDIT = 1
  - Number of Exposures = 10
  - SW Filter wheel 1 = open
  - SW Filter wheel 2 = NB_2.34
  - Jitter Box Width = 30

4. Re-name OD = NB_234 Jitter

You are done. Close the OB View if you wish.

7.4.3 Create TUT-2 and TUT-3 OBs

First, create the K-band OBs:

1. Select TUT-1 Ks 300 secs in the Summaries grid in the main GUI.
2. Click the Duplicate icon. A new OB will be created with the name TUT-1 Ks 300 secs-0.
3. Click the View icon to open the OB.
   - Change the OB Name to TUT-2 Ks 300secs
   - Enter the right Target information for TUT-2. Remember to update the Target name!

Repeat this process for TUT-3.

To make the NB_2.34 OBs, you could follow the same process. However, there is an easier way that uses the **synchronize** process.

1. Select TUT-1 NB_234 1800 secs in the Summaries grid in the main GUI.
2. Click the Duplicate icon. A new OB will be created with the name TUT-1 NB_234 1800 secs-0. Open the OB by clicking on the View icon and re-name the OB - change TUT-1 to TUT-2 and delete the trailing -0.
3. Click the Duplicate icon again. A new OB will be created with the name TUT-2 NB_234 1800 secs-0. Open the OB by clicking on the View icon and re-name the OB - change TUT-1 to TUT-2 and delete the trailing -0.
4. Select TUT-2 K-band 300 secs and select Synchronise>Copy Target from main GUI menu.
5. Select TUT-2 NB_234 1800 secs and then Synchronise>Paste to Selected OBs from main GUI menu. This will update the target information from TUT-1 to TUT-2 and that will be displayed in the Summaries grid.
6. Repeat Steps 4 and 5 for TUT-3.

You have completed all your science OBs. You can sort them by clicking on the Name cell in the header row.

7.5 Defining calibration OBs

Calibration Observing Blocks are used to obtain calibration data which do not require telescope presets. Examples of such data include all varieties of flat fields, wavelength calibration exposures (“arcs”), bias frames, and dark frames.

Calibration OBs are created exactly the same as science OBs except that they do not require a Target package or a Constraint Set. They never have an attached AT (see Section 5.2).

For many observing programmes, PIs will not have to define their own calibration OBs because ESO is providing certain standard calibration data automatically (see discussion in Section 8.6).

For programmes which need additional calibration data, you will have to define your own calibration OBs. Here is how you can create the darks related to this tutorial:

1. Select the CalBlock tab in the Summaries area.
2. Click New icon. The OB View window will appear.
3. Change the Name
4. Select Template Type = “calib”, and double-click Template = ISAACSW_img_cal_Darks.
5. This template will now be added to the TSF grid. Update the parameters Number of Exposures, DET.DIT, and DET.NDIT appropriately.
6. Your calibration OB is ready. Close the OB View as you wish.

7.6 Reports

To generate a summary of your OBs, select Reports>OB Breakdown>All

To generate a summary of your OB execution times, select Reports>Execution Report>All

7.7 OB Check-in

When all OBs are ready, the next step is to submit them to the ESO Repository.

1. Select the ObsBlocks Tab in the Summaries area. Then select all the OBs you want to submit to ESO.
2. In the main menu bar, select File>Check-in Selected (or Ctrl+K). Your P2PP session will now try to connect to ESO and submit your OBs. As the check-in process proceeds, a “lock” icon will appear next to each OB. This lock means that the local copy of your OB has been made read-only – you will not be able to modify it unless you check it out.
3. Once all your OBs have been checked in, you can verify that all is well by viewing the ESO Database. Select File>View ESO Database. The OB Browser widget will appear. For a simple report, check OB Name, ProgID, and PIName in the Selected Columns section and the proper Period in the Selection Critieria section. Then click Query. A list of the OBs that met the Selection Criteria in the ESO Database will be displayed.

7.8 OB Check-out

If you want to update an OB, you must first “check out” the OB.

Please check-out all tutorial OBs you check-in so that the ESO Repository stays clean.

7.9 Finishing Up: Exit

You can now exit P2PP by selecting File>Quit or Cntrl-Q.

8 OB Creation: Advice & Hints

This section contains general advice about using P2PP and creating Observation Blocks. Please read the relevant instrument user's manual for instrument specific information.

The P2PP user support Web pages (http://www.eso.org/observing/p2pp/) provide detailed and up-to-date advice for specific ESO Periods and instruments. **Please read these P2PP Web pages carefully!**

8.1 Names ≠ Contents

In P2PP 2.X, OBs are independent objects. Changes made in one OB do not automatically get applied to other OBs. To transfer a change, you must use the Synchronise mechanism.

One implication of this model is that two OBs or two OB components can have the same name but different contents.

OB components potentially affected are: Acquisition Templates, Observation Descriptions, Constraint Sets, andTargets.

In future releases, we plan to include functionality to check for situations where OBs or OB components have the same name but different contents. *For now, users are urged to keep this potential problem in mind when checking their OBs carefully before submission or execution.*

8.2 Creating Observation Descriptions

8.2.1 P2PP Supported Instruments

At the time this manual was released, P2PP support is either available or planned for the following instruments:

TABLE 2 P2PP Supported Instruments

Telescope	Instruments	P2PP Support Availability
2.2m	WFI	Under discussion
3.6m	EFOSC2,CES	available now
NTT	EMMI, SUSI2, SOFI	available now
VLT-UT1	FORS-1, ISAAC	available now
VLT-UT2	FORS-2, UVES	available now

Most future VLT instruments will also be supported by P2PP.

8.2.2 Retrieving Observing Templates and associated documentation

All P2PP supported instruments have an associated set of observing templates. These templates define the instrument modes and operations strategies available to users. You must use these templates to define your Observation Descriptions (see Tutorial chapter).

For user preparing OBs before traveling to Chile, the latest template packages and their documentation can be retrieved from the USG maintained P2PP support Web page (http://www.eso.org/observing/p2pp/). *Using obsolete template packages may produce invalid OBs, so please verify that you have the latest versions.*

The on-site installations of P2PP will contain the latest template packages.

8.2.3 Keep Observation Block execution times short!

Most observing programmes will benefit from periodically tuning telescope parameters (e.g. telescope focus) and observing standard stars approximately once per hour. To allow such checks to occur, *we strongly recommend that the maximum Observation Block execution time be 45 minutes or less.*

When constructing Observation Blocks, keep in mind operational overheads such with detector readout, instrument setup, and target acquisition. More specific information can be found in the individual instrument user's manuals or on the P2PP Web site. When such information is not available, please assume a 20% overhead.

8.2.4 Multi-mode, multi-configuration Observation Descriptions discouraged

While it is possible to create Observation Descriptions which call a series of templates covering a range of instrument configurations, *this is strongly discouraged.*

Instead, we suggest each Observation Description specify only one instrument configuration. For imaging, this implies only one filter and detector configuration per Observation Description. For spectroscopy, this implies only one dispersion setup and one detector configuration per Observation Description. For multi-object spectroscopy, this implies only one slitlet configuration, one dispersion setup, and one detector configuration per Observation Description.

8.2.5 Spectroscopy

When making spectroscopy OBs, keep in mind the following issues:

- Select your Acquisition Template carefully.
- If you want wavelength calibration exposures taken for every science exposure, construct Observation Descriptions that contain both a science observation template and a calibration lamp template.

8.3 Enhanced Target Information

P2PP now provides support for rapidly moving targets. Users can now enter:

- differential tracking rates
- different values for equinox and epoch

This information is typically not passed directly to the telescope but is manually entered by the observer. For further information, see the Phase 2 support Web site http://www.eso.org/observing/p2pp/.

8.4 Using the Exposure Time Calculators (ETCs)

ESO is deploying ETCs for all DFS compliant instruments. These ETCs are available from the ESO Web site (http://www.eso.org/observing/etc/). You should use these ETCs to estimate your integration times. If you need further information, contact the ESO User Support Group (usg-help@eso.org)

8.5 Issues specific to Visitor Mode programmes

All investigators assigned Visitor Mode time (i.e. required to travel to Chile to execute their programme) should read this section carefully.

8.5.1 Early arrival on mountain MANDATORY

La Silla and Paranal visitors are requested to arrive on-site 48 hours before the start of their observing run to allow time for OB preparation. Experienced NTT users may only have to arrive 24 hours in advance. For further information, please contact the Visiting Astronomers Section (visas@eso.org).

8.5.2 Pre-creation of all anticipated OBs is strongly encouraged

Visitors are strongly encouraged to create some or all of their OBs before arriving in Chile. Visitors who create their OBs ahead of time are still required to arrive on the mountain early (see last section). Visitors should review their pre-built OBs with the on-site support staff.

For more complex instruments or instrument modes (e.g. any MOS mode), the success of your observing run may depend critically on the amount of preparation you do before you arrive in Chile.

During pre-run observing preparation, Visitor Mode users should concentrate on preparing their Observation Descriptions, as these are the most complex OB components.

In some cases, VM users may be required to create **all** their OBs before their first observing night. Contact your mountain support scientist after arriving on the mountain for advice.

Assume you have been allocated Visitor Mode time and you decided to use P2PP to prepare your OBs before traveling to Chile.

8.5.3 Transfering pre-created OBs to Chile

To transfer your OBs to the observatory, you must perform two steps

8.5.3.1 Step 1: Export all your OBs

1. Select the appropriate folder in the Folders area.
2. Select the ObsBlock tab in the Summaries area.
3. Select the OBs you want to export.
4. Select File>Export (or Ctrl+E). P2PP will create a Select Export Directory window listing the directory to which it will write the OBs. Choose the directory where you want to write your IMPEX files and click Select Export Directory.
5. In the directory you selected, P2PP will create a group of IMPEX text files which describe your OBs (see Section 9).

8.5.3.2 Step 2: Transfer the IMPEX files to the Observatory

At this time, there is only one option for transferring your IMPEX files to the Observatory. You must create a TAR file on a DAT tape and hand carry it to the Observatory. A local support astronomer will assist you with reading the tape and re-importing your OBs.

If you do not have access to a DAT drive, please contact the ESO User Support Group (usg-help@eso.org) for further assistance.

In the future, we plan to create an FTP-based system for submission of VM OBs. *At this time, FTP transfers to the Observatory are discouraged.*

8.5.4 OB creation order not necessarily equivalent OB execution order

It is not necessary to create OBs in the order that they will be executed. Conversely, OBs do not have to be executed in the order that they were created.

8.5.5 Calibration Plans

As a service to users, ESO plans to acquire calibration data for a number of standard instrument modes on a regular basis. For the latest information, see the on-line instrument handbooks.

The time required to obtain non-standard *night-time* calibration data will be taken out of your OPC time allocation, i.e. visiting observers will have to acquire these calibration data during their own nights.

Day-time calibration support policy is site-specific. Please contact your on-site support scientist for advice.

8.6 Issues specific to Service Mode programmes

All investigators assigned Service Mode time (i.e. their programmes will be executed by ESO mountain staff) should read this section carefully.

Warning - Read Carefully: the most up-to-date information is maintained on-line on the P2PP Web site (http://www.eso.org/observing/p2pp/). *The on-line information takes precedence over whatever is written here.*

8.6.1 Additional Requirements for Service Mode OBs

If you were allocated Service Mode time, you would also have to provide some additional information for each OB.

Some of these additional requirements are MANDATORY. OBs which do not comply with the mandatory requirements will be REJECTED.

8.6.1.1 Setting User Priority and User Comments for Service Mode OBs

OBs created for Service Mode programmes must have the following parameters set in the OB panel:

6. Set User Priority to the priority of this observation within your programme: ‘1’ is the highest.
7. Add a User Comment.

8.6.1.2 Defining and attaching a Constraint Set (CS) [MANDATORY]

Service Mode OBs **must** contain Constraint Set information.

Constraint Sets (CS) are used to specify the required observing conditions for each OB. Since it is quite common for a series of OBs to have the same observing condition constraints, a Constraint Set is re-usable in the same way as an Observation Description or a Target Package is re-usable.

Remember: ESO will try to observe your OB under your specified conditions or better.

For your example programme, the ISAAC images must be obtained under photometric conditions with K-band seeing of 0.7 arcsecs FWHM or better and a fractional lunar illumination (FLI) at local La Silla midnight of 100% or less. All your objects must be observed more than 30 degrees away from the moon and at an airmass less than 1.5.

Remember: it is not always photometric, dark, and/or less than 0.3 arcsecond seeing. If you specify rare conditions as your requirements for OB execution, your OBs may never be executed. The more you can relax your required observing conditions, the more likely it is that your OB will be executed, all other things being equal like relative OPC ranking.

Note to Infrared Observers: The combination of FLI and Moon Distance can be used to estimate effective sky background for $\lambda < 0.7$ µm. The sky background in the range 0.7 µm $< \lambda < 2.3$ µm is dominated by OH bands which are time-variable and dependent on airmass. Above 2.4 µm, the background is dominated by the thermal effects. Later versions of P2PP will allow users to specify required background in terms of actual surface brightness. For now, users planning to observe beyond 1µm should set Lunar Illumination to 1.

8.6.1.3 Setting the Timing Interval (optional)

Users can also specify absolute timing constraints for OBs. See Section 10.9.5 for details.

Remember that it is not always 1998-September-18 at 02:33:34 UT when specifying Time Intervals. At that time, the observing conditions may not be right or a more highly ranked programme may take priority. Only specify a Time Interval if it is absolutely necessary.

8.6.2 Phase 2 submission package

For the latest requirements and procedures, please see the Phase 2 support Web site: http://www.eso.org/observing/p2pp/.

All Service Mode users are required to submit the following items:

- Observation Blocks describing their observing programme
- Finding Charts
- A written description of their observing programme (the README file)

Investigators assigned service observing time will be contacted by the USG approximately two months before the start of the ESO Period about the schedule for preparing and submitting their Phase 2 package.

When you have finished submitting your entire Phase 2 package, do not forget to send e-mail to p2pp-submit@eso.org.

8.6.3 Service Mode OBs are only executed once

A Service Mode OB is only executed once. The user must submit an OB for every requested observation sequence. When identical observation sequences are required (e.g. repeated observations of the same target using the same templates), a series of OBs must be constructed.

Occasionally, ESO may elect to re-execute an OB if some failure occurred during the initial execution. In this instance, the user will recieve all acquired data.

8.6.4 Planning for non-contiguous & random scheduling

Remember: OBs submitted for queue observing could be executed in any order on any night that the observation conditions met your specifications. Do not assume when constructing OBs that we will execute them in some particular order. If this means you have to reacquire your target at the start of each OB, please make sure you attach the appropriate Acquisition Template to your OB.

Whenever possible, OBs will be executed in their “natural” sequence. In this instance, the attached Acquisition Templates will not be executed if the telescope is already pointed at the right position.

8.6.5 Multi-mode, multi-configuration Observation Descriptions strongly discouraged

We strongly discourage multi-mode, multi-configuration Observation Descriptions during service observing unless they are absolutely necessary to execute your programme correctly. Try to keep your Observation Descriptions simple: one detector/instrument setup per OD.

Consider the optical imaging case. You might think that for efficiency’s sake it would be best to make an OB which acquires a target and then takes observations through N different filters. However, this is strongly discouraged because if the delivered seeing degrades for some reason, the later images in the observing sequence might be ruined. Since ESO considers OBs to be indivisible, we would have to re-execute the entire OB, not just the exposures that were bad. If your OBs are very long, such re-execution can become very inefficient. Furthermore, OBs which take a long time to execute are harder to schedule.

Obviously, there are programmes which require more complex Observation Descriptions. For example, when doing slitless spectroscopy with EMMI, it is desirable to take a short image of the field being observed spectroscopically. The Observation Description for this observation sequence might specify a short imaging integration followed by a longer slitless spectroscopic observation. If you think your programme would benefit from more complex Observation Descriptions, please contact the ESO User Support Group (usg-help@eso.org) for advice and/or assistance.

8.6.6 The importance of comments

Please use all the comment fields in P2PP profusely. We do read them and they are useful to us.

8.6.7 Calibration Plans

As a service to users and to monitor instrument performance, ESO acquires standard calibration data for a number of standard instrument modes on a regular basis. The descriptions of these calibration plans can be found in the individual instrument user’s manuals or telescope team Web pages.

If your programme can be calibrated just using this standard data, you do not have to submit calibration OBs. However, if your programme requires calibration data which is not provided automatically by ESO, you must submit calibration OBs or your programme will not be executed. The time required to obtain non-standard *night-time* calibration data will be taken out of your OPC time allocation. The time required to obtain non-standard daytime calibration data will be absorbed as long as the acquisition of this data does not interfere with the acquisition of standard daytime calibration data.

8.6.8 Submitting your OBs to the OB Repository for Execution

The OB Repository should not be used for saving incomplete or intermediate OBs. OBs should be submitted (“checked-in”) to the OB Repository only when they are ready for execution.

As you are creating your OBs, P2PP has been saving them automatically to the Local Cache. This action assures that if P2PP crashes for some reason, your work will be saved.

However, before your OBs can be executed at the telescope by an ESO service observer, your OBs must be submitted (“checked-in”) to the OB Repository.

This process is described in Section 7.7.

8.6.8.1 Please notify the User Support Group after submitting all Phase 2 materials

After you have submitted **all** your Phase 2 material (OBs, finding charts, README files), please notify the ESO User Support Group by submitting an e-mail to *p2pp-submit@eso.org* with your programme ID in the Subject line. See the P2PP Web pages for further details. Once notified, USG will review your OBs. If a problem is detected, you will be contacted. Otherwise, you should assume that your OBs have been received and are accepted.

8.6.8.2 Re-opening your OBs from the OB Repository

This process is described in Section 7.8.

8.6.9 All Service Mode Programmes must submit finding charts and a README file!

All Service Mode programmes must submit digital finding charts for all their target fields, as well as a README file describing their technical objectives.

The ESO software tool **Skycat** provides a facility for producing Postscript finding charts. See the Skycat Web page (http://archive.eso.org/skycat/skycat.html) for further information.

For the latest information about finding chart requirements and submission procedures, see the P2PP Web site (http://www.eso.org/observing/p2pp/).

8.7 Creating OBs for Large programmes and Survey Projects

Although it is possible to create an entire observing programme using just the P2PP interface, a mechanism to import and export text descriptions of OBs and their associated components has been provided.

The Import/Export mechanism is particular useful in the following situations:

- exchanging files between collaborators
- creating and/or modifying OBs off-line (e.g. on a portable computer while traveling)
- automatically creating large sets of repetitive OBs from a large target list

Observation Blocks can be saved to disk, and read back, as ASCII files called **Import/Export (IMPEX) files**.

Although these Import/Export files are similar to the **Observation Block Descriptor (OBD)** files used to transfer information between the OHS tools and BOB (see Section 5), IMPEX and OBD files are not interchangeable.

A complete description of the IMPEX system is given in Section 9.

8.7.1 Import/Export Hints & Advice

In general, we suggest that users create master OBs within P2PP and then export them. The template signatures within the OBs can be quite complex, having many parameters, leading to the possibility of not including some vital parameter in the text-based OB.

8.8 Sharing OBs between programmes

By design, OBs are associated with specific ESO programmes. However, many users want to re-use OBs for different programmes or for different periods.

8.8.1 Same P2PP User

If you want to move OBs between programmes within the same folder structure, simply select the OBs you want to move and then choose File>Move and the destination folder. P2PP will not allow you to move OBs between folders for different instruments.

Remember: you are only moving the OB, not all its sub-components. To move the sub-components, select and move them in the same way.

8.8.2 Different P2PP Users

To move folders between P2PP sessions (e.g. between collaborators at two different institutions), use the following simple process.

1. Select the OBs you want to move.
2. Select File>Export (or Ctrl+E) and export the OBs into some directory.
3. Send the resultant IMPEX files to your collaborator and have them re-import the files.

8.9 Notes to Road Warriors

Many users carry portable computers running Linux. These users can installed P2PP 2.X on portables and then create OBs anywhere.[1]

Important Trick: before creating OBs on that trans-Atlantic flight, you will need connect to the Internet and start P2PP at least once. This first P2PP session will initialize your P2PP session, i.e. any newly available Phase 1 information will be retrieved from ESO and new top-level folders will be created. Once your top-level folders appear, you can work off-line using only the Local Cache.

8.10 Getting help, reporting problems, and requesting changes

8.10.1 Getting P2PP help

The ESO User Support Group (usg-help@eso.org) is the main source of P2PP user support. Any P2PP user can request help from USG. However, Visitor Mode users are encouraged to contact the appropriate ESO telescope team first.

P2PP information is also available on the USG P2PP Web site (http://www.eso.org/observing/p2pp/).

8.10.2 Reporting P2PP problems

Problems with P2PP should be reported to the ESO User Support Group using the on-line **DFS problem reporting form** (http://www.eso.org/observing/p2pp/).

8.10.3 Submitting suggestions for P2PP improvements

Suggestions for P2PP changes of any nature can reported to the ESO User Support Group using the on-line **DFS problem reporting form** (http://www.eso.org/observing/p2pp/).

1. In principle, this is also possible for Windows NT and MacOS users, but those operation systems are not officially supported at this time. See the P2PP Web site (http://www.eso.org/observing/p2pp/) for more details.

9 Detailed Import/Export Mechanism Reference Guide

A detailed IMPEX reference guide is maintained on-line at:

http://www.eso.org/observing/p2pp/P2PP-tool.html#Manual

This on-line reference guide will be integrated into this manual at some future time.

For assistance, contact the User Support Group (usg-help@eso.org).

10 Detailed P2PP Reference Guide

This section describes all P2PP functionality. Where appropriate, descriptions of procedures are also provided.

10.1 General Features

10.1.1 Automatic Save

P2PP saves all entered data to your Local Cache automatically. The data are not saved until you leave the entry box by typing TAB or RETURN, or by selecting a different entry box using the mouse.

There may be a short delay while P2PP does an automatic save to disk. The length of this delay will depend on your system configuration and run-time load.

10.1.2 Automatic OB Verification

As OBs are constructed, P2PP is constantly reviewing the OB for technical compliance. Basic structural consistancy is checked, as well as if parameters are within acceptable ranges.

If an OB is not technically compliant, an **red dot** appears next to the OB Name in the OB Summary grid. It is not possible to check-in (submit) such OBs to the ESO Database.

10.1.3 Folders

Observation Blocks are stored locally in **folders** within the **Local Cache**. Selecting a folder makes it the **active folder**. The main P2PP GUI is effectively the **Folder View** of the active folder.

Each OPC approved ESO ObservingRun has a **top-level folder** which is identified by the ObservingRun ID, the operations mode (Service Mode = SM, Visitor Mode = VM), and the instrument requested for that Observing Run (e.g. 60.A-9252(A)/VM/EMMI).

Sub-folders can be created to store OBs using the Folder pull-down menu (see Section 10.4.3). All the sub-folders under a single top-level folder form a single folder hierarchy. Sub-folders can be deleted (if empty), renamed, and moved to a different master folder.

To view the contents of a folder, select that folder in the Folders area and then use the Summaries grids to see what is in that folder. If you want to view more than one folder at once, select folder(s) in the Folders area and then select Folder>Open Folder (or Ctrl+O) to open a new **Folder View** window.

Users can organize their OBs within folders in a variety of ways, e.g., by instrument setup, by target, by priority, etc. *However, these groupings are not preserved when the OBs are submitted to the ESO Repository at this time.* You cannot expect that ESO will know about your sub-folder organization during execution.

10.1.4 Grids

P2PP uses parameter grids (conceptually similar to spreadsheets) in two places: the Summaries area and the ObsBlock View window.

Parameter values which are common between grids (e.g. ObsBlock Name in Summaries area and ObsBlock View window) are **linked**. If the value is changed in one place, it is changed in all places. Conceptually, the grids are internally sharing the parameter values.

Grids can be navigated using common spreadsheet **keyboard shortcuts** (see Table 3).

Whenever you leave a cell, the parameter is **automatically saved to disk** if it has been modified. You must leave a grid cell before you close the window, or the parameter may not be saved.

Incorrect parameter values are colored red.

OB objects within Summary grids can be selected by:

- **Dragging** - hold mouse down and drag cursor over series of objects
- **Ctrl-Click** - select current object, do not de-select other selected objects
- **Shift-Click** - select all objects between previously selected objects and current object

Grid columns can be **re-sized** by placing the cursor at the column boundries and then dragging the column to a new width.

Objects can be **sorted** in ascending order by clicking the column headers. To sort in descending order, use Shift-Click.

To make a grid column active, you must select the value field of some item in the grid. For example, in the ObsDesc grid, to make a template active, go to one of the parameters (e.g. DET.DIT) and select the value field (e.g. 10).

10.1.5 Keyboard Shortcuts

P2PP has a number of global keyboard shortcuts (see Table 4).

TABLE 3 Grid Keyboard Shortcuts

Shortcut	Action
TAB, Shift-TAB	Move one cell left, right
RETURN, Shift-RETURN	Move one cell up, down
Arrow keys	Move one cell in arrow direction

TABLE 4 Global Keyboard Shortcuts

Shortcut	Name	Action
Ctrl+A	Select All	Select all OBs
Ctrl+D	Duplicate	Duplicate selected OB(s)
Ctrl+E	Export	Open Export window
Ctrl+H	Engineering Mode	Open Engineering Mode window
Ctrl+K	Check-in	Check-in selected OB(s)
Ctrl+M	Import	Open Import window

Shortcut	Name	Action
Ctrl+N	New	Open new OB
Ctrl+O	Open	Open folder
Ctrl+Q	Quit	Quit P2PP
Ctrl+W	Close	Close current window

10.1.6 Synchronisation

The Synchronise mechanism can be used to copy an OB component from one OB and then paste it into one or more different OBs.

The following synchronization operations are allowed:

- Copy/Paste between all science OB components of OBs using the same instrument
- Copy/Paste between all calibration OB components of OBs using the same instrument
- Copy/Paste between science and calibration OBs of Observation Descriptions using the same isntrument

Note that a synchronization Copy can be made from an OB in the ESO Database. The copied component can then be Pasted into OBs in the Local Cache.

10.1.7 Check-in/Check-out

Service Mode only.

When you are ready to submit OBs to ESO for review and scheduling, you must **check-in** the OBs. You can do this using the File>Check-In (or Ctrl+K) function. After check-in, OBs can no longer be editted, as indicated by the “lock” icon which appears in the OB Summary grid.

It is not possible to check-in an OB which has a verification error.

To edit a checked in OB, you must first **check-out** the OB using the ESO Database Browser. You can launch the ESO Database Browser using File>View ESO Database. However, you can only check-out OBs which have status Checked-In or Reject. All other OBs are considered to be under ESO control until ESO releases them back to the user. For more information about OB status, see Section 10.1.8.

Important: once checked-out, OBs are **not** present in the ESO Database anymore. In short, the check-out process deletes the OB from the ESO Database. However, the ESO OB ID number is preserved, so that when (or if) you check-in the OB again, it will have the same OB ID number.

10.1.8 OB Status

OB status is shown in the OB Summary Grid and in the ESO Database Browser.

OBs can have the following status:

TABLE 5 OB Status

Status	Mark	Definition
In Prep	P	(Partially Defined) In preparation (with or without error)
Checked-in	D	(Defined) Verified OB checked into ESO Database
Reject	-	Rejected by ESO, check-out and repair
Accepted	+	Accepted by ESO for possible execution

Status	Mark	Definition
Queued	Q	Scheduled by ESO for possible execution
Executed	X	Executed, Quality Control tests in process
MustRepeat	M	Failed Quality Control, repeat as time/conditions permit
Completed	C	Passed post-execution Quality Control tests

OBs always have status In Prep when they are unlocked in the OB Summary Grid, i.e. they can be revised by the user and are not present in the ESO Database.

OBs with status Checked-in can not be modified until they are checked out again.

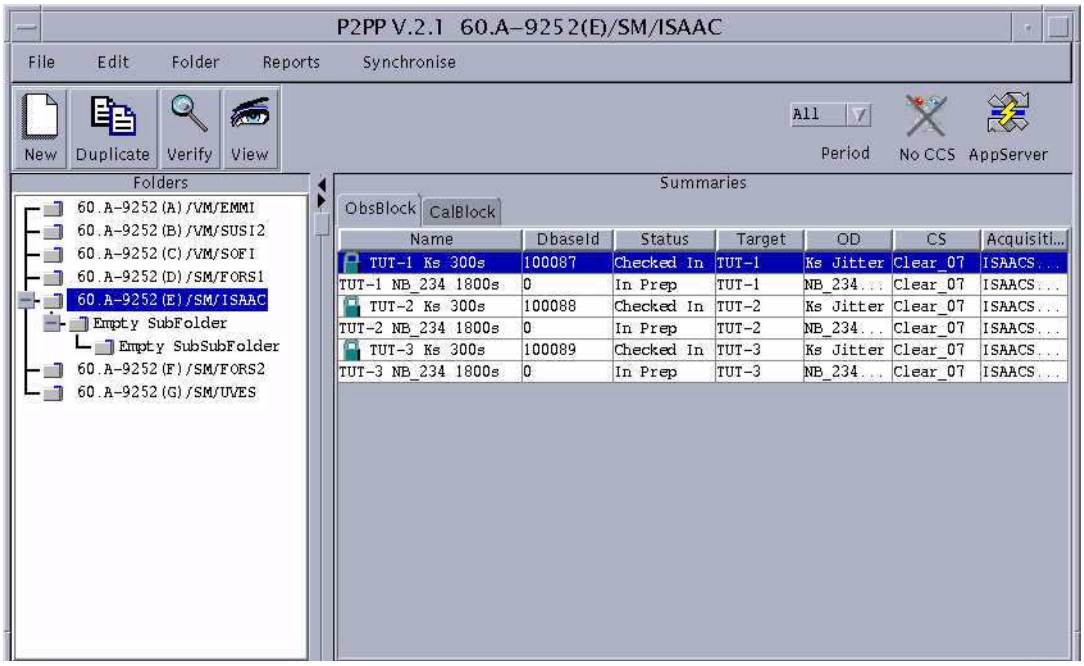
OBs can only be checked out if they have status Checked-In or Reject. In all other states, ESO has control of OBs and they cannot be checked out until ESO releases control by changing the status back to Checked-In or Reject.

10.2 Login window

FIGURE 3. P2PP login window

For further information about the P2PP login process, see Section 4.4.

FIGURE 4. Main P2PP Graphical User Interface = Main Folder View



10.3 The Main P2PP GUI

The main P2PP GUI is shown in Figure 4.

10.4 The Main Menu Bar

10.4.1 File Menu

Option	Description
New (Ctrl+N)	Create new OB in current Summary grid
Move	Move selected OB(s)
Verify	Verify selected OB(s)
Check-in (Ctrl+K)	Check-in selected OBs to ESO Database (see below)
Delete	Delete selected OB(s) in current Summary grid
Login as...	Login as a different user
View ESO Database	View OBs already submitted to ESO Database (see below)
View Phase 1 Targets	View Phase 1 targets (see below)
Download/refresh Observing Runs	Download new ObservingRun information from ESO if available
Import (Ctrl+M)	Open Import window
Export (Ctrl+E)	Open Export window
Engineering Mode (Ctrl+H)	Open Engineering Mode window (see Section 10.8)
Display in OBD (PAF) format	Display OB in ESO PAF format (OBD file)
Close (Ctrl+W)	Close current window
Quit (Ctrl+Q)	Quit P2PP

10.4.1.1 Check-In

See discussion in Section 10.1.7.

10.4.1.2 View ESO Database

Launch the ESO Database Browser.

Once you have launched this browser, you can select OBs you have already submitted to the ESO database and then:

- check-out selected OBs
- generate OB structure or execution-time reports
- copy OB components and then synchronize those components into OBs in your Local Cache

To use this browser, you must be connected to the Internet.

See Section 10.12 for complete details.

10.4.1.3 View Phase 1 Targets

Launch the Phase 1 Target Browser.

Using this browser, you can view the Phase 1 targets from all available Observing Runs and then paste selected runs into selected OBs in your Local Cache.

To use this browser, you must be connected to the Internet.

See Section 10.11 for more details.

10.4.1.4 Import/Export (IMPEX)

OBs can be exported as transportable, human-readable, text files. To export an object, select it and then select File>Export (or Ctrl+E). To import an object, select File>Import (or Ctrl+M).

Important: OBs and OB components exported by P2PP 1.X can be re-imported into P2PP 2.X

For more details, see Section 9.

10.4.2 Edit Menu

Option	Description
Select All (Ctrl+A)	Select all OBs in current Summary grid
Duplicate (Ctrl+D)	Duplicate selected OB(s) in current Summary grid

10.4.3 Folder Menu

Option	Description
New	Create sub-folder under active folder
Open (Ctrl+O)	Open active folder into new Folder View
Rename	Rename active folder
Move	Move active folder to different folder
Delete	Delete active folder

Top-level folders are associated with specific ESO Observing Runs, and thus, specific instruments. It is not possible to rename, move, or delete top-level folders.

The user is allowed to create and manipulate a sub-folder hierarchy.

See Section 10.1.3 for a general discussion of folders.

10.4.4 Report Menu

Option	Description
Execution Time	Generate execution time report for Selected or All OBs in active folder
ObsBlocks Breakdown	Generate OB contents report for Selected or All OBs in active folder

10.4.5 Synchronise Menu

Option	Description
Copy ObsDesc	Copy ObsDesc out of selected OB
Copy Acquisition Template	Copy Acquisition Template out of selected OB
Copy Target	Copy target information out of selected OB
Copy Constraint Set	Copy constraint set information out of selected OB
Paste to Selected OB	Paste information in copy buffer to selected OB(s) (can be one or more)
Paste to Entire Folder	Paste information in copy buffer to all OBs in active folder.

10.5 Icon Bar

The Icon Bar is located between the Main Menu Bar and the Summaries area near the top of the Folder View (see Figure 4).

Icon	Description
New	Create new object in current Summary grid
Duplicate	Duplicate selected object(s) in current Summary grid
Verify	Verify OB for internal consistancy
View	Open View window for selected object in current Summary grid
Period	Only folders from this Period are display in Folder view
CCS	Indicates whether CCS connection is open or not (see below)
AppServer	Indicates whether AppServer connecton can be openned or not (see below)

CCS is the protocol for connections between P2PP and the VLT Control System. It is only active when P2PP is being used at the telescope to execute Visitor Mode OBs.

The AppServer is the process at ESO/Garching that transfers information back and forth between P2PP and the ESO Database.

10.6 Folders Area

Graphically displays current folder hierarchy. Only the Folders associated with the selected Period (see Section 10.5) are shown. You can show all Folders by setting Period = All.

See Section 10.1.3 for general discussion of folders.

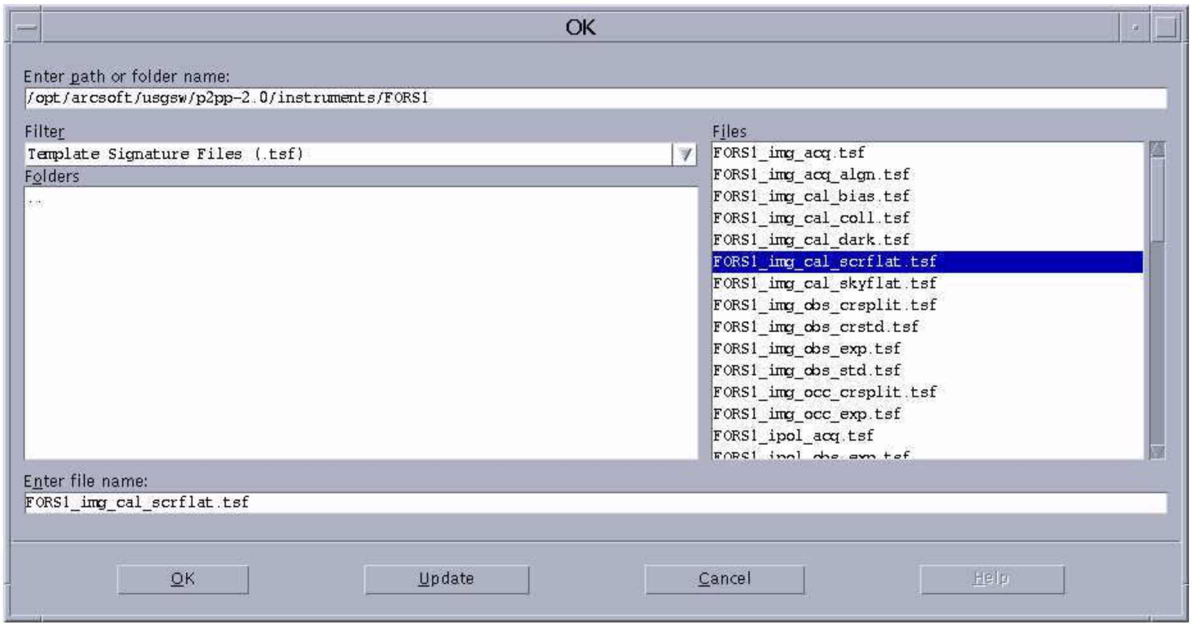
10.7 Summaries Area

This area contains the Summary grids for OBs contained in the active folder. OBs are displayed grouped by type: ObsBlocks (i.e. science OBs) or CalBlocks (i.e. calibration OBs). The desired object type is chosen by selecting the correct tab.

Note that the Summary area can be made wider or narrower by selecting and dragging the left or right margin.

See Section 10.1.4 for general comments about grid functionality.

FIGURE 5. Engineering Mode TSF selection window



10.8 Engineering Mode

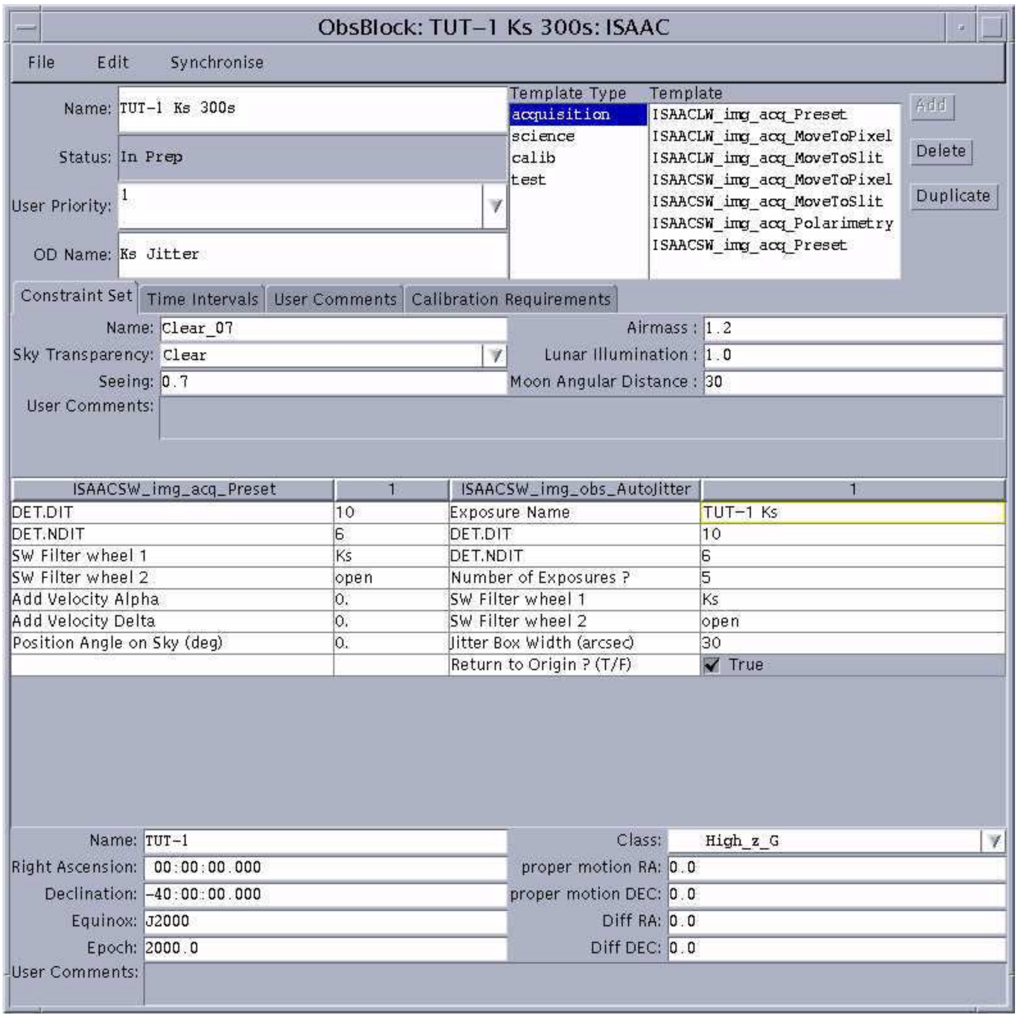
Engineer Mode has been provided for **template signature file (TSF)** developers.

When P2PP is started, it loads all the TSFs located in the current Instrument folder. Engineering Mode allows developers to re-load revised TSFs on-the-fly without re-starting P2PP. When the user attempts to re-load a TSF, it is checked for errors and an error report is generated.

To re-load and verify a TSF:

1. Select File>Engineering Mode (or Ctrl+H).
2. The Engineering Mode TSF selection window will appear (see Figure 5). Select the TSF to re-load and click OK.
3. The TSF will now be verified and an Error Report will be generated. This Error Report can be saved to disk (File>Save), printed (File>Print), or closed (File>Close or Ctrl+W). Old error reports can be re-loaded (File>Open)
4. If no fatal TSF errors are found, the TSF will be loaded. Otherwise, re-loading will not be permitted.

FIGURE 6. ObsBlock View



10.9 OB Views

OBs are viewed and edited within the View widget.

10.9.1 General Features

10.9.1.1 Views are Linked to Main GUI

Once a View is open, selecting a new OB in the main GUI will cause the information in the current View to update.

The View title bar contains the name of the active object.

10.9.1.2 View pull-down menus

The OB view has several pull-down menus, described in Table 6, Table 7, and Table 8.

TABLE 6 View File pull-down menu

Menu Item	Action
Close (Ctrl+W)	Close View window

TABLE 7 View Edit pull-down menu

Menu Item	Action
Cut (Ctrl+X)	Cut out current parameter
Copy (Ctrl+C)	Copy current parameter
Paste (Ctrl+V)	Paste parameter last cut or copied

TABLE 8 View Synchronise pull-down menu

Menu Item	Action
Copy ObsDesc	Copy operation templates to copy buffer
Copy Acquisition Template	Copy acquisition template to copy buffer
Copy Target	Copy target information to copy buffer
Copy Constraint Set	Copy constraint set information to copy buffer

10.9.2 General Information

Name and **User Priority** can be edited by the user. **Status** is not user changeable.

10.9.3 Templates (Acquisition and Operational) and the ObsDesc Grid

The **Template Type** field shows the list of available template types while the **Template** list shows the list of templates available for the selected type. To add a template to this OB, select the appropriate Template Type and then double-click on desired Template. The **Add** button can also be used to add the selected template.

The currently attached templates are shown in the **Observation Description grid**. The **active template** is the template with one parameter value selected (highlighted with green box).

To make some template active, you must select a parameter value within that template. Selecting the template header or a parameter name will not work.

The active template can be deleted or duplicated using the **Delete** or **Duplicate** buttons in the upper right corner.

Acquisition Templates are special. There can only be one AT and it cannot be duplicated.

10.9.4 Constraint Sets

In this area, the user specifies under which observing conditions the OBs should be executed.

- **Name field**

Name of Constraint Set.

- **Eff. Seeing FWHM selector**

Select required image size in units of 0.1 arcseconds. Seeing is defined to be image FWHM in arcseconds at the central wavelength current instrument configuration in the focal plane of the detector i.e. after image has been transmitted through entire telescope & instrument system. *It is not the free-air instantaneous seeing outside of the dome.*

- **Sky Transparency pull-down menu**

The following options for Sky Transparency are available

Option	Description
Variable, thick cirrus	
Thin, variable cirrus	
Clear	Less than 10% of the sky above 2 airmasses covered in clouds, transparency variations under 10%
Photometric	No visible clouds, transparency variations under 2%, only assessable by analyzing standards

- **Airmass selector**

Select required airmass in steps of 0.1 airmasses.

- **Lunar Illumination selector**

Required (fractional) lunar illumination (FLI) is defined as the percentage of the lunar disk which is illuminated at local (Chile) civil midnight, where 1.0 is fully illuminated. Traditionally, prime dark-time corresponds to FLI $\leq$ 0.35, gray-time corresponds to 0.35 < FLI $\leq$ 0.60 and bright-time corresponds to FLI > 0.60. By definition, FLI = 0 when the Moon is below the local horizon. FLI can be specified in steps of 0.1.

- **Moon Distance selector**

Moon distance is defined as the angular separation of the specified Target and the center of the lunar disk at local (Chile) civil midnight.

Moon Distance can be specified in units of 1 degrees.

The combination of FLI and Moon Distance can be used to estimate effective sky background for $\lambda < 0.7$ µm. The sky background in the range 0.7 µm $< \lambda <$ 2.3 µm is dominated by OH bands which are time-variable and dependent on airmass. Above 2.4 µm, the background is dominated by the thermal effects.

Recommendation: for observations at $\lambda > 1.0$ µm, set Lunar Illumination to 1 and Moon Distance to 30.

- **User Comments**

Used to write (optional) description of Constraint Set.

10.9.5 Timing Intervals

To activate one of the Timing Intervals, you must first click its checkbox.

Time Intervals are created by specifying a Start and End time for each allowed scheduling interval, and a relative Priority (1 = highest). Up to five (5) intervals can be defined.

Times are specified in the Coordinated Universal Time (UTC) system and with the following format:

`yyyy-mm-ddThh:mm:ss`

Field	Description
yyyy	four digit year number (e.g. 1997)
mm	two digit month number (e.g. 08 = August)
dd	two digit day number (e.g. 15)
hh	two digit hour from 24 hour clock (e.g. 23)
mm	two digit minute (e.g. 33)
ss	two digit second number (e.g. 05)

10.9.6 User Comments

A place where user can enter comments about OB.

10.9.7 Calibration Requirements

A place where the user can enter comments about calibration requirements.

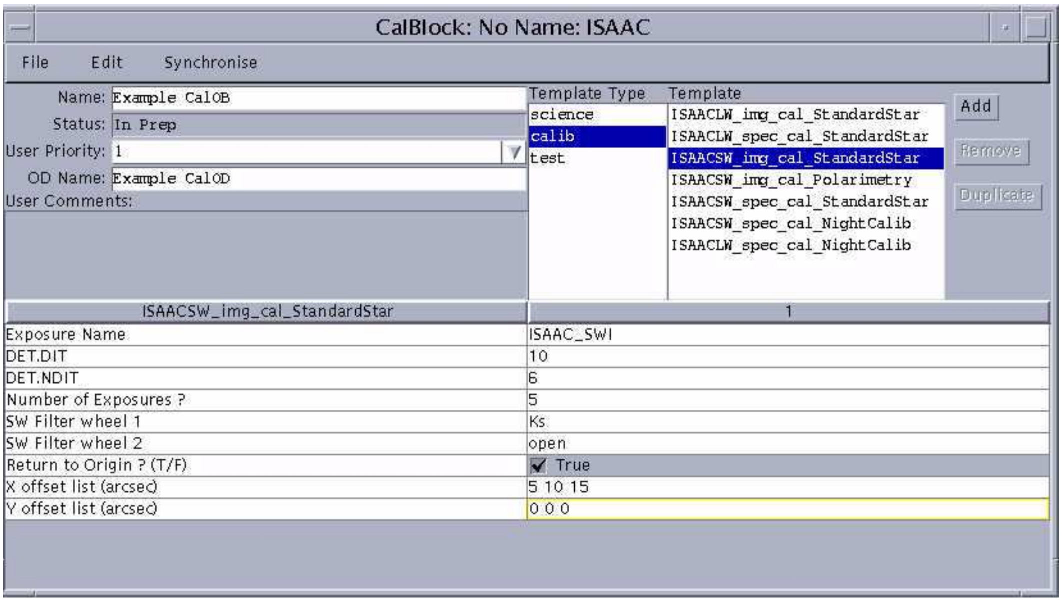
10.9.8 Target information

The area where Target information is provided.

Parameters to be completed are:

Parameter	Description
Name	obvious
Right Ascension	obvious
Declination	obvious
Equinox	equinox of RA/Dec
Epoch	epoch of proper motion
Class	SIMBAD object classification
proper motion RA	arcsecs per century
proper motion DEC	arcsecs per century
Diff RA	differential tracking in RA (arcsecs/sec)
Diff DEC	differential tracking in DEC (arcsecs/sec)
User Comments	place for target specific user comments

FIGURE 7. CalBlock View

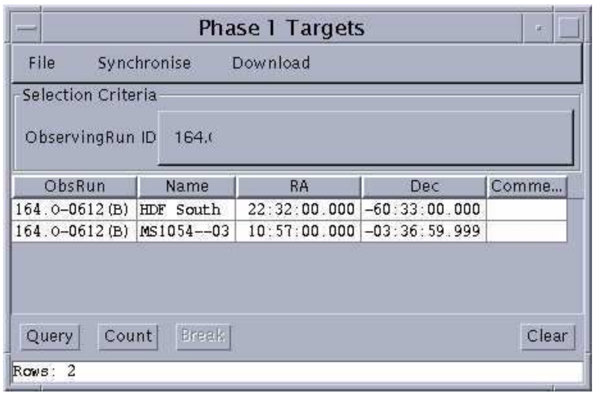


10.10 CalBlock View

See description of ObsBlock View (Section 10.9).

CalBlocks do not have Timing Intervals, Constraint Sets, or Targets.

FIGURE 8. Phase 1 Target Browser



10.11 Phase 1 Target Browser

To use this browser, you must be connected to Internet.

The Phase 1 Target browser allows you to view all the targets you specified in your original Phase 1 observing proposals for a given Period. These targets are stored in the ESO Database. Once you view them, you can synchronize them into OBs and/or create new OBs which contain one or more targets.

Procedure:

1. Select the appropriate Observing Run ID
2. Click Query
3. You can now select a target and Synchronise>Copy Target it into the synchronise buffer. This target can then be pasted into any OB.
4. Alternatively, you can Download selected or all Targets. Using the currently selected OB as a template, new OBs will be created for each downloaded target.

The **action buttons** at the bottom are:

Button	Action
Query	Select all targets stored for the chosen Observing Run ID
Count	Count targets stored for chosen ObservingRun ID
Break	Stop current query
Clear	Reset parameters to defaults

TABLE 9 Phase 1 Target browser: File menu

Menu Item	Action
Close (Ctrl+W)	Close this window

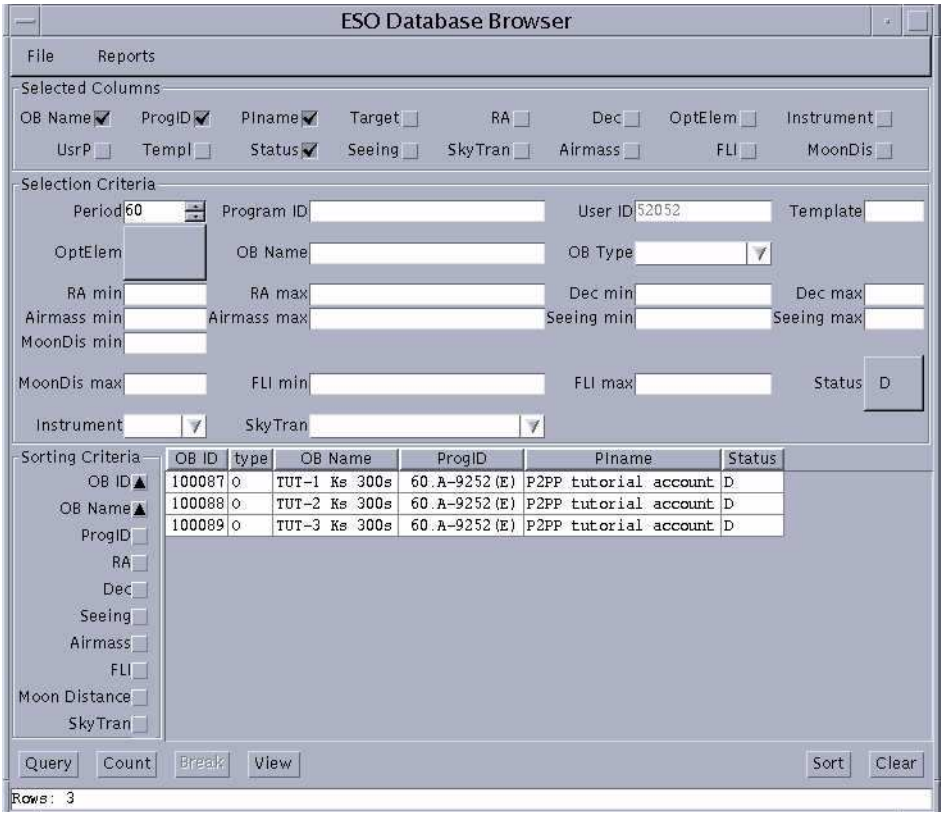
TABLE 10 Phase 1 Target browser: Synchronize menu

Menu Item	Action
Copy Target	Copy target information to copy buffer

TABLE 11 Phase 1 Target browser: Download menu

Menu Item	Action
Selected targets	Download selected targets and paste them into selected OBs. If there are more targets than OBs, create duplicate OBs with new targets
All targets	Same as above but for all targets in list

FIGURE 9. ESO Database Browser



10.12 ESO Database Browser

The ESO Database Browser is used to select OBs in the ESO Database, display user configurable information, and then select OBs for “check-out”.

The basic operation is:

1. Select ObsBlocks>View ESO Database in main GUI. The ESO Database Browser will appear if a connection can be made to ESO.
2. Use Selected Columns to specify what information to display.
3. Use Selection Criteria to specify what OBs to examine.
4. Click Query to retrieve information.
5. If you want to check-out an OB (i.e. delete it from ESO Repository and start working on it in your Local Cache), select one or more OBs in the Results section, and then select File>Check-out selected (or Ctrl+D).

The **File menu** has two options:

Item	Action
Check-out selected (Ctrl+D)	Check-out selected OBs
Close (Ctrl+W)	Close browser

The **Reports menu** has two options:

Item	Action
Execution Time	Estimate execution times for selected or all OBs
ObsBlocks Breakdown	OB details for selected or all OBs

These are the same reports available for OBs in the Local Cache (see Section 10.4.4).

The **action buttons** at the bottom are:

Item	Action
Query	Find OBs matching Selection Criteria
Count	Count OBs matching Selection Criteria
Break	Stop current query
View	View selected OB
Sort	(Re-)sort OBs using Sorting Criteria
Clear	Reset all parameters to default values

The OB View is the same as described in Section 10.9, except that OB parameters cannot be edited.

10.12.1 Selected Columns

In this section, the parameters to be retrieved and displayed are selected using check boxes.

The Selected Column parameters are:

Button	Definition
OB Name	OB Name
ProgID	ESO Programme ID
PIname	PI Last Name
Target	Target Name (from Target Package)
RA	Right Ascension (from Target Package)
Dec	Declination (from Target Package)
OptElem	Optical elements in templates
Instrument	Instrument
UsrP	User specified priority
Templ	Template(s) in OD
Status	OB Status (see Section 5)
Seeing	Seeing limit from Constraint Set
SkyTran	Sky Transparency limit from Constraint Set
Airmass	Airmass limit from Constraint Set
FLI	Fractional Lunar Illumination limit from Constraint Set
MoonDis	Moon Distance limit from Constraint Set

10.12.2 Selection Criteria

In this section, the OB selection criteria are set by filling in parameters or parameter ranges.

The Selection critiera are defined as:

Field	Definition
Period	ESO Period
Programme ID	ESO Programme ID, format: 63.X-0AAA
UserID	*Not Changeable*
Template	Templates used in OD (can be abbreviated)
OptElem	Optical element in templates
OB Name	OB Name (can be abbreviated)
OB Type	OB Type (Calibration or Observation)
RA Min/Max	RA in decimal hours, Min/Max define range
Dec Min/Max	Dec in decimal degrees, Min/Max define range
Airmass Min/Max	Airmass, Min/Max define range
Seeing Min/Max	Seeing in arcsecs, Min/Max define range
MoonDis Min/Max	MoonDis in decimal degrees, Min/Max define range
FLI Min/Max	FLI, Min/Max define range
Status	OB Status
Instrument	Instrument used in OD
SkyTran	Sky Transparency desired or better

Sorting Criteria

Selected OBs can be sorted by one or more of the parameters in this section.

The definitions of these parameters are given in Selected Column section above.

A blank, up-arrow, or down-arrow can be selected by clicking on the checkbox next to the parameter names. This corresponds to:

- **Blank** = do not sort
- **Up-arrow** = sort in ascending order
- **Down-arrow** = sort in descending order