

User support: new ways forward after 10 years of successful VLT operations

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ABSTRACT

User support and operations of a large observatory rely on a well defined infrastructure, which is based on different policies, procedures, and tools. April 1, 2009 marked the 10th anniversary of VLT operations. Our VLT operations and data-flow schemas have proven to be reliable and efficient and users feedback continues to be positive. Thanks to eleven years of day-to-day experience and users feedback, we have evaluated new possible ways forward to make operations even smoother and more efficient. Here, I will review recent developments and new services offered to our VLT users community.

Keywords: Operations, tools, user support, users feedback

1. INTRODUCTION

The Very Large Telescope has now been in operations for more than 11 years, but very little has changed in the basic concepts of its underlying data-flow structure. Of course, improvements have been introduced along the way (the most notable one being the User Portal, Chavan et al. 2006 [1], Tacconi-Garman 2007 [2]), but the pillars of how the VLT is operated, its dual Visitor/Service Mode system, the tools available to ESO Staff and the ESO users community to verify and prepare the observations have remained at the core of the VLT operational model.

Indeed, the model has proven to be very successful, which is rewarding but also makes it harder to look for new ways forward and improvements that could be implemented. However, daily operations during the past 11 years have clearly identified which of the processes and tools are the weakest.

The way that the VLT operational model has been developed and structured implies that its success strongly depends on a combination of reliable and robust tools on one side and dynamic interfaces among the various operational groups on the other. The success of the past 11 years has clearly proven that this has been achieved, but also that some other useful characteristics are missing, namely more flexibility (in the tools) and higher efficiency (in the communication between different interfaces).

There is of course a third important component to the success of the VLT operational model, and that is the users feedback and satisfaction. In other words, tools and interfaces are not only to be intended for “internal use” but we do interact daily with our users providing them with tools and processes they need to use and follow.

Despite our successes, the start of VISTA operations and of the six approved Public Surveys has added quite some complexity to the schema and has triggered some of the new concepts described below.

2. USERS' FEEDBACK

At the last SPIE Conference on Astronomical Telescopes and Instrumentation (Marseille, June 2008), Primas, Marteau & Patat [3] reported on the importance of users' feedback and on how difficult it is to get an unbiased picture. Users'

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satisfaction surveys rarely reach a response rate higher than 15-20%, which clearly makes the outcome of such surveys doubtful, due to the small fraction of the surveyed population that has indeed expressed an opinion. Both positive and negative outcomes could be easily interpreted as pure biases, diminishing the usefulness of the survey. Back in 2008, we concluded that despite this general trend, there was still room for improvement in our Service Mode Questionnaire, especially in terms of its length, content, and timeframe (when users are probed for what).

Two years later, we ran again a feedback campaign, but in a slightly different way. This time, we decided to target some users (633) from older observing periods (P80-P83, i.e. Oct07 – Sep09, because they had never been targeted before) with the standard (long) questionnaire and some users (436) who had gone through the two most recent VLT Phase 2 periods (P84 and P85, i.e. from Oct09 until now) with a much shorter version of the questionnaire that included only the relevant (Phase 2-related) sections.

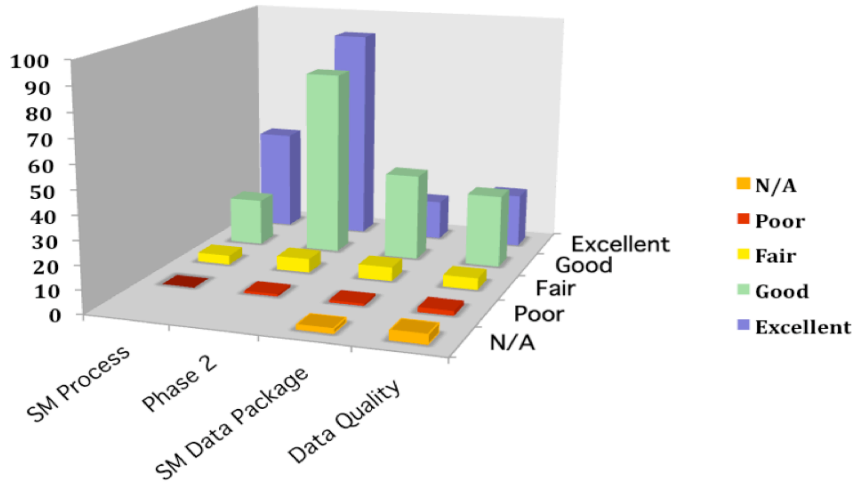


Figure 1 – An overview of the outcome of our 2010 feedback campaign targeting Service Mode users of VLT facilities (all responses included).

Overall, the positive feedback we have always received from our VLT Service Mode users’ community was confirmed (cf Figure 1), but the response rate from the “older users” group was less than 10%. However, the most surprising outcome of this exercise was the response rate to the shorter questionnaire: 123 responses out of 436 targeted Principal Investigators, i.e. a response rate of 28%, much higher than the above mentioned “common” expectations. Obviously, since this was the very first attempt in this direction, we cannot exclude a priori that this was a fortuitous event. However, we believe that the combination of a shorter and more focused questionnaire and a request for feedback much closer in time to the “action/interface” a user has just experienced seem to be very promising, and possibly key to increase response rates, hence the meaningfulness of our users’ polls. In any case, this is the path we will be following in the next 12 months, with a full re-implementation of carefully targeted users’ polls (also in style, cf Figure 2 below for a very first prototype of the new look), requiring less time to be filled out from the user’s side and hopefully providing us, in operations, with prompter (in time) feedback on our tools and interfaces.


3. PROP: IMPROVING COMMUNICATION AND PROBLEMS LOGGING

ESO’s split configuration, with the Headquarters based in Europe and its telescopes in Chile, is certainly not unique. Therefore, efficient communication might be a sensitive subject to several observatories in the world that run multiple sites. For now more than 11 years, the VLT operational and data-flow system has proven to be very successful, with a very efficient usage of the four 8m telescopes and their respective instrumentation, a high quality

service offered to the users (both in Service and in Visitor Mode – based on the positive feedback we continue to receive) and a satisfactory networking among the various ESO-internal operational groups.

ESO

ESO Phase 2 Satisfaction Survey

0%  100%

Communication with the User Support Department (USD)
Tell us about your interaction with the User Support Department.

4. Did you need help from USD to prepare your Phase 2 material?

Yes
 No

5. How soon after the submission of your Phase 2 material did you receive feedback from your USD support astronomer?

Choose one of the following answers

within 24 hours
 between 1 and 5 working days
 between 1 and 2 weeks
 more than 2 weeks
 never

6. If your programme had problems at the telescope, how would you rate the interaction with USD to fix it?

Choose one of the following answers

5 - excellent
 4
 3
 2
 1 - poor
 not applicable

[Exit and clear survey]

Figure 2 – A first prototype of what our new users’ polls will look like: simple, clean, with a progress report bar in the upper right corner, and offering the possibility to the user to come back at a later time without losing the answers already provided (‘Resume later’ button, bottom central).

However, there are some aging effects that if not promptly addressed may become bigger hurdles with time.

A case in point is internal communication. Once the challenge of launching a new facility like the Very Large Telescope has been achieved (from the mechanical, technical, and operational points of view) and the system has reached stability and maturity, the risks of falling into a standardized operational mode increase. Communication channels that have always been in place and have been used successfully in the past may become less attractive, because they are no longer new and seem un-necessary when everything goes well. But, in the long run, this may have a detrimental effect on operational efficiency.

Currently, there is no unified way to reliably communicate information between all groups and departments involved in the ESO operations data-flow. Even though there are currently only few entry points (usd-help@eso.org, archive@eso.org for example) which are publicly advertised for questions and problem reports submitted by users of the ESO scientific community, it is not always possible to forward the resulting ticket created to the group which can solve it or contribute valuable information for its resolution. From this point of view, there is therefore no tool able to guarantee a reliable follow-up and timely resolution of the users' problems and questions, without having to rely on private e-mail exchanges. Moreover, this does not ensure that all the information leading to the resolution of a ticket is properly stored in a central place available to all people involved in operations.

PROP, i.e. the new Portal for Reporting of Operational Problematics (Marteau 2010 [4]) is our recent attempt to: i) better connect ESO-internal VLT- and VISTA-related operational groups (the ones with an interface to external users); ii) offer a centralized database of all problems reporting and resolutions, i.e build a “collective memory” of ESO operations; iii) improve one of our main public interfaces with the users’ community, i.e. the so-called help-desk.

The idea is to continue offering a single entry point for all categories of questions and problem reports, both via e-mail and via a web-based interface. The single entry point is meant to facilitate our users’ community to communicate their problems/doubts to us – they should not worry about how their request is going to be handled and by whom, but they clearly deserve a prompt and correct answer (preferably given by an “expert”). This has been a clear request from the ESO Users’ Committee and is already in place, even with the current ticketing system. The possibility to submit a ticket via e-mail will be kept also in the new Remedy-based schema (mostly for uniformity reasons with the current system). However the system will also offer a well-structured web-based submission form, with which most users will be able to provide important details about the category and nature of their question/problem. In turn, this will be automatically “decoded” by our PROP Remedy schema so that any web-submitted ticket will be automatically assigned to the most suitable operational group. One of the key features of PROP is its capability to log the entire ESO-internal workflow behind any ticket and make it always available to all ESO operational groups. Tickets will be solved and closed or re-assigned to other operational groups, depending on the specific feedback that is required (cf Figure 3).

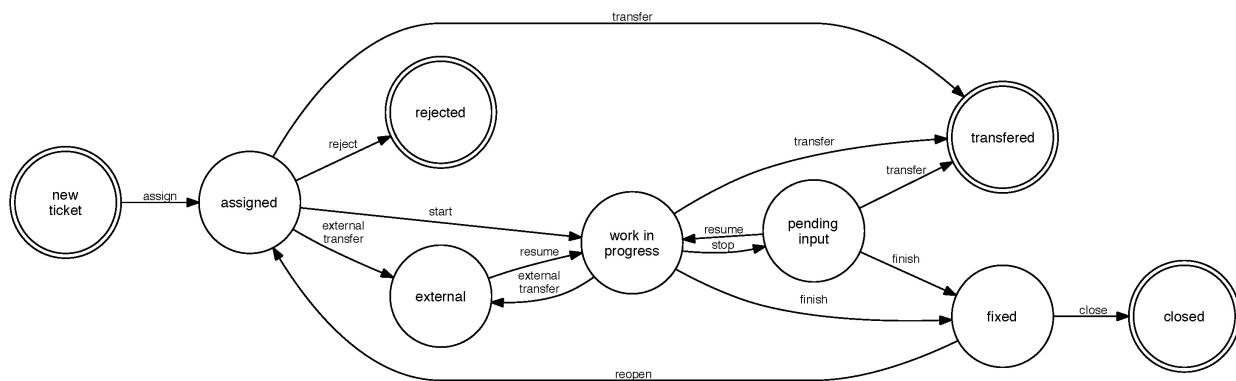


Figure 3 – A simplified view of the life of a ticket (from Marteau 2010 [4]). Each circle represents a possible transitory state for a ticket, while double-walled circles stand for either initial or final states. Arrows represent the most plausible transitions to happen from one state to another (without precluding other possibilities), keeping in mind that a ticket does not have to go through all the steps depicted, and not all the workflows may need all the states on the diagram.

The new portal is currently under development and it is being implemented under Remedy². The first prototype should be released to the (ESO-internal) PROP stakeholders during late summer, and we foresee thorough testing of the system for several months before going live by releasing it publicly.

4. A NEW LOOK FOR OUR MOST COMMONLY USED TOOLS: P2PP AND OT

The recent implementation and start of the six ESO Public Surveys on the VISTA Telescope has required a rather deep re-haul of our two most commonly used tools, the Phase 2 Proposal Preparation tool (P2PP) and the Observing Tool (OT). The former is mostly used by the scientific community, the latter only by the ESO operations groups directly involved with supporting/carrying out VLT observations. So far, both tools have allowed us to efficiently support and perform all observations approved on all four VLT Unit Telescopes, VLTI and several telescopes in La Silla. Along the years, some features were found to be missing (e.g., a more automatic handling of time critical observations), but overall no major showstopper has ever been identified.

With public surveys one clearly enters a different dimension! Surveys usually go deep, cover large areas of the sky, follow a multi-wavelength (filter) approach, maybe even with some scanning/repetition pattern, and run for several years. All these imply a huge number of observations, hence of observing material to be prepared by the Principal Investigators and then submitted to ESO for verification and execution (by definition, public surveys can only be carried out in Service Mode). In turn, these call for flexibility at time of preparation (each public survey submits thousands of what we call Observation Blocks – OBs - i.e. single schedulable units) and “automatization” at time of verification (again, thousands of OBs to review) and execution (thousands of OBs to select from and to classify).

A careful and detailed review of the observing strategies of all approved public surveys has guided the selection and implementation of all new features now present in P2PP3/OT3. This has been a major project, which has required significant resources to be invested both by the ESO Software Development Division (especially by the Data Flow Infrastructure Department) and by the Directorate of Operations (especially User Support and Science Operations Departments). A detailed summary of the main new features that have been implemented in version 3 of these tools is presented in Bierwirth et al. 2010 [5], whereas a graphical representation of the main GUI of the new P2PP3 is shown in Figure 4. More information can be found in the P2PP3 User Manual [6].

As it can be seen from the figure below, P2PP3 now allows the creation of special “containers” of OBs, and not just standalone OBs as it is the case for the VLT. Namely, one has the possibility to connect a series of time critical observations by putting all relevant OBs in the “Time Link” container. Or one can connect a science OB to a specific calibration OB that must be taken, e.g., immediately afterwards via the so-called “Concatenation” container. Also, one can use a “Group” to collect a set of OBs that even if they do not have any specific execution order they shall preferably be executed in one go (i.e., set of OBs using the same filter). Individual OBs and/or container execution priorities can be further added to the picture.

The verification of all submitted material is carried out with the same (P2PP3) tool, which has verification modules and execution time reports installed. Verification concerns not only the content of the submitted OBs, but also the proposed observing strategies and area mapping.

At time of execution, one of the most critical features of the Observing Tool is the ability to choose the best OB from a repository containing thousands of them. There is of course a ranking based on scientific evaluation of the 6 ESO Public Surveys to follow, the requested atmospheric constraints to respect, some overlap in Right Ascension to take care of, and the user priorities to be properly accounted for. This calls for a robust and rather articulated ranking and selection algorithm (Bierwirth et al. 2010 [5]) that can be run by the service mode observer any time from the tool and that provides him/her with a list of “most suitable” OBs that shall be observed next (cf Figure 5).

Once an OB is executed, the fulfillment of the user’s requirements (in terms of atmospheric constraints and image quality) needs to be somehow evaluated (not a very easy task when the night astronomer is busy selecting one short OB after the other, as it is the case for some of our public surveys) and added to the so-called “night-log.” The novelty here is that the classification itself of all executed OBs is done directly by the night astronomer via OT3 and replicated back to the database in Garching. Work is now in progress in order to implement new logging functionalities.

² BMC Remedy Action Request System (<http://www.bmc.com/products/product-listing/22735072-106757-2391.html>)

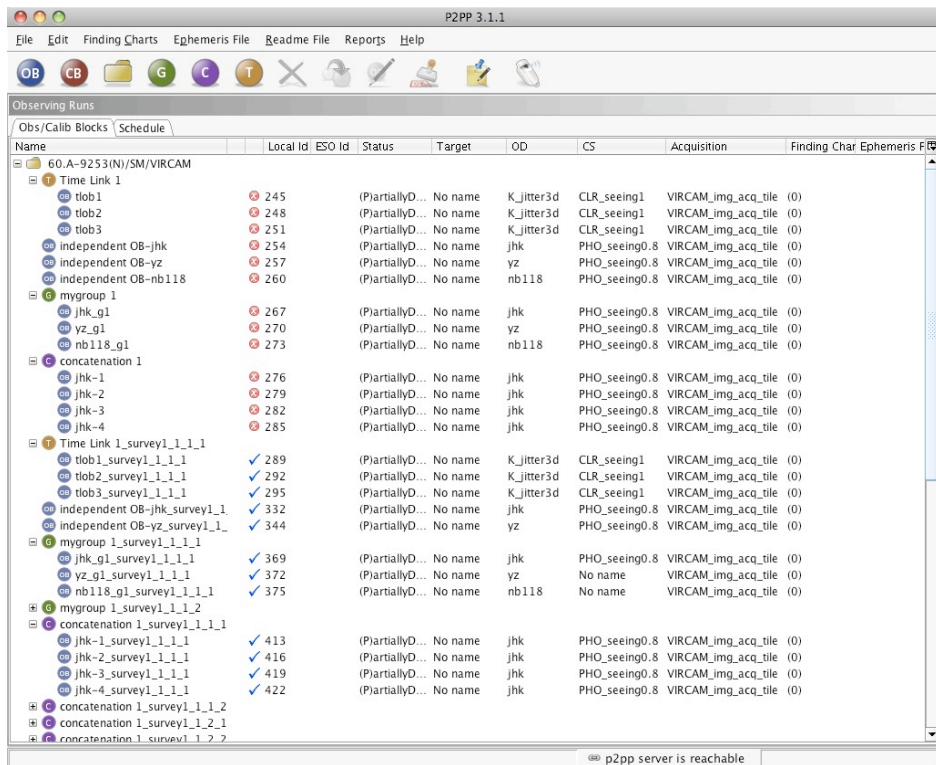


Figure 4 – A snapshot view of the main GUI of the new P2PP3

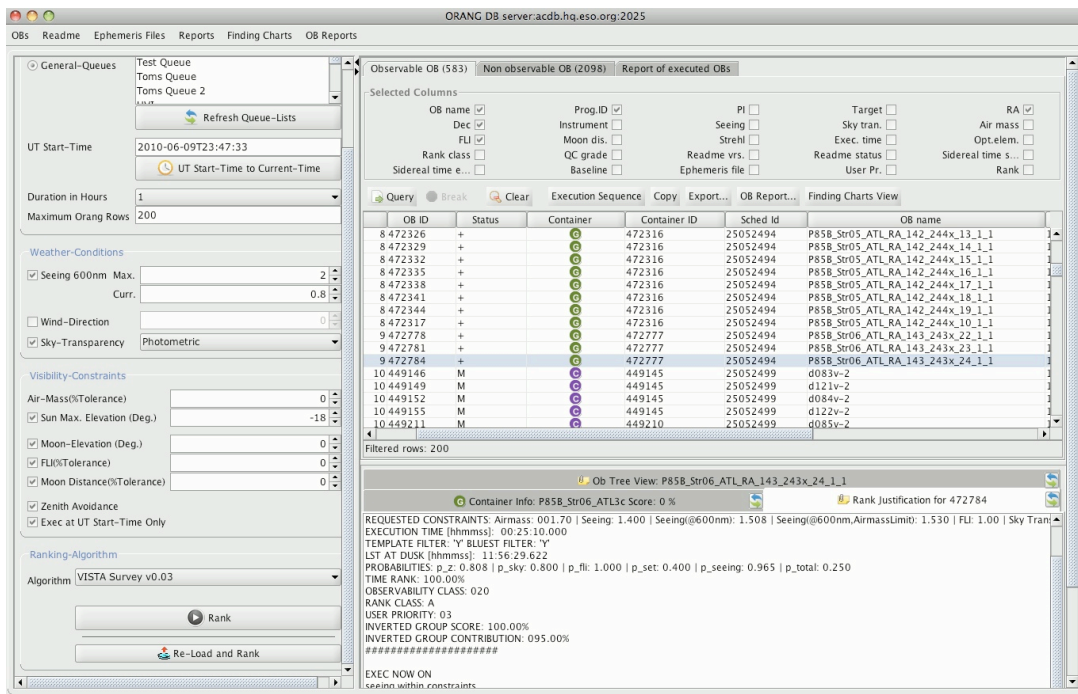


Figure 6 – A snapshot view of the main GUI of the new OT3.

What then remains to be done is for the support astronomer in Garching to follow-up the progress of each survey and provide some type of reporting to the Public Surveys PIs. This is again something that cannot be handled for public surveys ‘a la’ VLT, where it is rather easy for the USD support astronomer to follow the progress of any “normal” or even “large” programme, considering the usually rather limited number of OBs submitted per programme, per semester. A graphical interface to quickly visualize the completion rate (or for that matter, also the submission of new observing material) of any given public survey, in any proposed filter, etc comes in very handy. Figure 7 shows a prototype of the Survey Visualization and Monitoring Tool, which is based on VirGO³ (Hatziminaoglou and Chéreau 2009 [7]), adapted to interface with the ESO public surveys database and modified as to display the necessary keywords for the visualization and monitoring tasks to be performed by ESO staff. This is again a rather large collaborative effort among several groups/departments (mostly Virtual Observatory Project Office, User Support, Data Products, Archive and Data Flow Infrastructure Departments) and is still under development. The already rather advanced prototype currently available has also been tuned to allow important checks at time of Phase 2 verification.

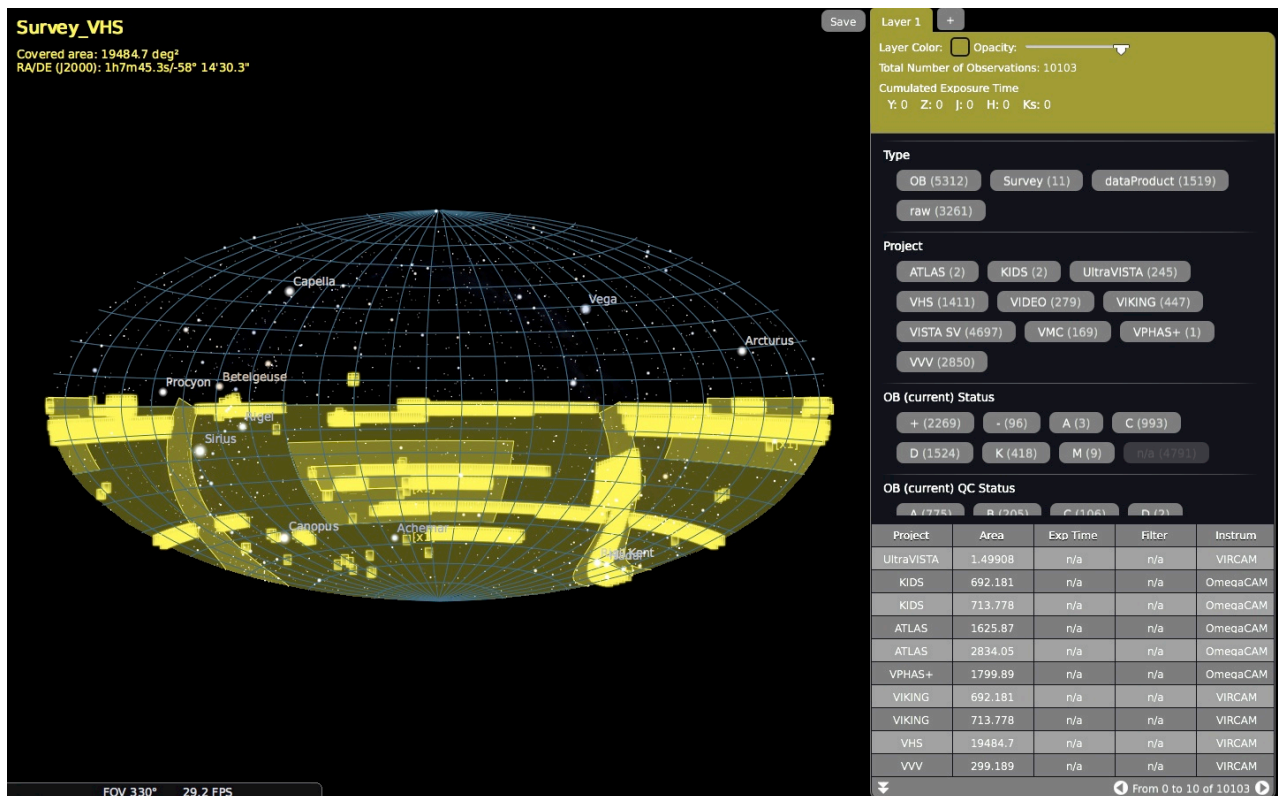


Figure 6 – A snapshot view of the graphical interface to visualize and monitor the progress of public surveys.

The future looks even brighter, since we plan to have one version only (version 3) of both P2PP and OT running on all ESO telescopes. In other words, we are currently working towards deploying P2PP3/OT3 to the VLT as well. The few characteristics of the new tools mentioned above (‘time link’, ‘concatenation’ and ‘group’ scheduling containers) have been awaited for a long time at the VLT as well, both from ESO operations staff and the users community. Once this is achieved, the VLT/I will get a fresher and more dynamic look that shall ensure another long period of highly efficient operations.

³ Available from <http://archive.eso.org/cms/tools-documentation/visual-archive-browser>

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