

REPORT TO THE ASAC

July to September 2008

INTRODUCTION

This is extracted from a series of JAO reports to the Board and is intended to cover the items that are of most interest to ASAC.

PROJECT MANAGEMENT

The appointments have been announced of Thijs de Graauw as ALMA Director, Dick Kurz as ALMA Project Manager and Tetsuo Hasegawa and ALMA Deputy Project Manager. The appointment of Wolfgang Wild as ALMA European Project Manager had been announced rather earlier. The new appointments take effect on 1st Nov 2008

Key events

- Acceptance by the JAO of the antenna transporter followed by the first successful transport of a complete antenna (Vertex#2) between two antenna pads at the vendor's site.
- An initial acceptance review was held on ACA 12-m (MELCO) antenna #1. Most of the test results showed performance at or above requirements but higher than expected thermal deformations of the surface were seen under direct solar heating. Further investigations of this problem have been carried out on this antenna.
- Meanwhile testing of MELCO #2 has proceeded, including a more comprehensive set of pointing tests using the optical pointing telescope. Documentation is now being prepared for conditional acceptance of that antenna (leaving the thermal issue to be resolved later).
- MELCO #2 is now in a shared use period, with the ALMA electronics being integrated into it while it remains formally unaccepted and at ALMA-J's Site Erection Facility. The Back End electronics and the Front End Support Structure (FESS) were recently integrated into the antenna and the Front End should be installed very soon.
- The testing of Vertex antennas #1 and #2 has continued with excellent results on the surface measurements of #1 and a large amount of data recorded on the pointing of both antennas. A campaign focused on the metrology system is presently underway.
- The first amplitude calibration device has arrived at the OSF and is having on-site acceptance testing by EU FEIPT. At present it has only a simple ambient load. Other devices – hot load, low reflectivity ambient load and solar filter – will come later.
- A second set of Back End electronics has been delivered and accepted.
- The first quadrant of the 64-input correlator has been shipped and installed at the AOS and is being checked out for acceptance by around mid-October.
- Inserts and ridges have been installed in two of the OSF antenna foundations which are being serviced with power and communication to be able to accept antennas soon.
- At the AOS the initial leveling of the ground for the central cluster has been completed.

Concerns:

- In general, there is a growing concern about the continuing sliding of delivery schedules and the lack of credibility in predicted delivery dates. We are all looking forward to the results of the re-schedule exercise by the Executives and JAO Project Managers. The results will be discussed at the October 1st-3rd Management IPT meeting in Garching

and incorporated into a new integrated schedule. The new Schedule Control Board will work from this basis.

- The main building at the OSF – the “Technical Facility” (TF) – is still largely unoccupied. It is now clear that a substantial amount of work will be needed to make it practical for use for the AIV activities and in the longer term for housing such functions as the site administration.
- The provision of power remains problematical in both the short and longer terms. New generators have been purchased for the AOS and a substantial re-working of the system at the OSF is in progress. Bids are expected shortly for the provision of a “permanent” power supply in the form of a power line from Calama, but the process of obtaining permits, etc., is likely to be lengthy. We continue to investigate other options, in particular renewable power sources.

The Management IPT

The management has been meeting regularly by telecon and in face to face meetings. Here is a summary of recent issues and actions.

1. Front Ends

The first FE from the East Asian FEIC in Taiwan will be delivered as an engineering model (i.e., completely functional, but with performance verification done only for items allowed by the current setup). It is expected to be shipped in October. This will allow the North American FEIC to complete the development of the test procedures and deliver a fully-characterized front-end next year. A full set of components is being drawn together in Taiwan so that they can continue their program.

2. The ALMA Test Facility

When it became clear that it would not be possible to have an operating interferometer running in Chile until after the beginning of 2009, it was decided to extend the operation of the ATF. This will enable software testing to continue and give Systems Engineering the opportunity to check out some of the procedures they are developing for verification of systems specifications. It is however becoming increasingly difficult to run the system in New Mexico, given the relatively low level of technical support available there.

3. OSF Interferometer

The ATF interferometer played a critical role in testing and debugging the ALMA computing system under development. Based on this positive experience, the MIPT decided to plan OSF activity and instrumentation to run a single baseline interferometer at the OSF during the construction phase, primarily as a testing environment for the computing system.

4. Photonic LO Development

A decision was made to procure Laser Synthesizers #3 and #4 with the baseline design. This decision minimizes the schedule risk, although the technical risks with the baseline LO system remain. It was decided to continue the parallel development of the alternative central LO system in order to mitigate the technical risk. A plan for how to do this is being developed.

5. JAO System Engineering Team

The Systems Engineering group has been centered in Garching. It was decided to set up a group in Chile. The role and organization of this JAO System Engineering team have been discussed and agreed and some posts have been advertised. Nick Whyborn is serving as interim Systems Engineer.

6. Further Integration of ALMA-J to PMCS

Following the discussion at the PMCS face-to-face meeting in late July, the integration of the ALMA-J related information including Goods and Services has proceeded.

7. Site issues

A construction plan for the antenna stations at AOS was reexamined to fulfill the scientific need for commissioning before completion of all the stations.

A problem was found in the revised design for the earthworks of the AOS central cluster, and a working group was set up to find a solution as soon as possible.

Preparation to start using the OSF Technical Facility continued.

8. Preparations for Reviews

Preparations were made for the following reviews:

Safety External Review (October 8th –10th)

Computing External Review (November 17th –19th)

AAER 2008 (December 9th –11th)

PROJECT ENGINEERING

Highlights of Recent Events

Chilean Activity

- a) NAOJ continued to work on characterizing the surface performance of the ACA 12-m antennas. This activity is scheduled to continue at least through mid-September.
- b) The second ACA 12-m antenna is now in a shared use period, with the ALMA electronics being integrated into it while it remains formally unaccepted and at ALMA-J's Site Erection Facility. The Band End electronics, and the Front End Support Structure were recently integrated into the antenna (photos below); the Front End is scheduled to go onto the antenna in the next weeks. This antenna is currently scheduled to be moved by the antenna transporter to the OSF Technical Facility (TF) on October 10th.
- c) Vertex, together with AIV and the NA AIPT, continue to measure pointing performance on both the first and second antennas. The work is proceeding slower than planned, in part due to problems in commissioning the metrology system.
- d) At the OSF TF, two antenna foundations have had inserts and ridges installed and are being serviced with power and communication, in readiness to be able to accept antennas. The new holography tower, sited to serve the OSF TF antennas, is complete and ready to receive the second set of holography transmitter electronics. The second set of electronics is expected to ship from NTC in September. The antenna-based infrastructure looks on track to receive the antennas on the October 10th schedule above. Unfortunately, TF labs and offices will not be ready in time - but as fallback we are preparing to connect the antenna directly to the electronics (LO, correlator, computing) in the interim lab, so no schedule slip for that reason is anticipated.
- e) The first prototype amplitude calibration device is at the OSF and is scheduled to have on-site acceptance testing performed by EU FEIPT on the week of 15 Sept. If successful, it will go into the ACA 12-m antenna shortly afterwards, before the FE is installed.



AIV team hoisting the first FE Support Structure into the ACA 12-m antenna.



The BE IPT bringing the first antenna article into the ACA 12-m antenna.

Project Activity outside Chile

- f) It looks very probable that the problem reported last month with two LORTM units can be corrected with a firmware update from Teraxion. That update should be applied imminently, units retested and delivered.
- g) The second FE (the first from the East Asian FEIC) is scheduled to ship to Chile as an engineering model in the first week of November. The acceptance test readiness review will be held on September 15th.

- h) The ACA 7-m antenna Pre-Production Design Review is scheduled for September 9th-11th in Amagasaki, Japan. There are a number of points of interest in the material provided, especially in the differences between the ACA 12-m and 7-m designs. Those include:
- (i) The 7-m antenna design uses a steel BUS structure rather than CFRP, with a different panel support design and different panel design. The use of steel is justified in the report since a larger mass/stiffness ratio is permissible in the 7-m antennas and steel would reduce cost significantly.
 - (ii) The quadrapod is made of four straight tubular members (as in AEM design) rather than four truss structures.
 - (iii) The HVAC system is redesigned to be simpler.
 - (iv) The Az platform has been redesigned and platform equipment redistributed to reduce moment of inertia about the azimuth axis.

Most significantly, the design presented departs significantly from the ACA 12-m design, increasing our cost and risk during design verification.

Further, the proposed change of specification for the 7-m antennas differs from the 12-m in that the submillimeter (20 micron) RMS surface performance would be achieved in nighttime only. The proposed change does guarantee the 25 micron surface spec over the same primary conditions used in the 12-m antennas. This proposed change will be debated at the PPDR, before taking the specification to the CCB for approval.

SCIENCE IPT

ATF testing

The emphasis during August was to complete the testing of software needed for AIV activities that are now starting in Chile. We have very nearly achieved this. Recent successes include planetary fringe tracking and application of residual delay corrections. The Science staff is now able to create scripts for observing a series of QSO's automatically such that the data can be used in solving for baselines and measuring fluxes of calibrators. Much effort also went into exercising the system, optimizing scripts, and reporting crashes and delays in the software seen during normal operations, in order to help developers improve the robustness of the system and reduce "latency" (time spent while the computers are thinking and no data is being taken). The remaining aspects of development in support of AIV that will take priority during the remaining period of ATF operation from now until the end of the year are: data calibration and analysis in TelCal, analysis of total power data in CASA (e.g. finding the cause of the apparent ellipticity currently seen in the images of the Moon), and finding a means of setting up different correlator modes from CCL scripts.

There will be no Science staff on-site in September due to scheduled antenna maintenance activities. From October 1st, scheduling of Science staff at the ATF will be done by Robert Laing (as Alison Peck shifts her duties to the OSF), and science support will be provided about 10-14 days per month. There will also be time allocated for Systems Engineering to test their procedures at the ATF, and we will assist in obtaining and analyzing their data.

An outline plan for interferometry at the OSF was drawn up and agreed by the management which will enable this sort of software testing to continue and also make it possible to carry out tests that require interferometric measurements, e.g. phase stability, on various aspects of the hardware before it is taken up to the AOS.

Technical

We continue to support the antenna testing and characterization efforts, with Jeff Mangum taking a leading role in the pointing tests that are now underway on Vertex antennas #1 and #2 and several of the EA Science staff working on the MELCO antenna testing. We are preparing for the final design review of the ACA 7-m antennas.

The investigations of the performance of and modifications to the layout of the foundations at distances of about 4 to 10 km from the centre of the array have led to the conclusion that ten additional pads are needed, together with some changes to the positions of existing pads, if the imaging performance is to meet ALMA's demanding requirements. A summary of this, together with a request for approval for funding, will be submitted during the Board meeting in November.

A problem has been uncovered with modifications that had been made to the layout of the foundations in the central cluster: in order to ensure that the transporter was always picking up and setting down the antennas in an exactly flat position, the foundations had been arranged as a series of "terraces". This is in conflict with the requirement that the foundations lie in a single plane, which is necessary to avoid distorting the UV coverage when observing away from the zenith and to prevent uneven "shadowing" of one dish by another. We are optimistic that this problem can be solved relatively easily since the gradients in this part of the site are extremely small – of order 1% or so.

The investigations into the receiver beam measurements made at the NA Front-End Integration Centre have largely converged and an effort is now being made to revitalise the ALMA Optics Working Group to increase communication across the project on such topics.

The concerns about the water vapour radiometers, optical pointing telescopes and calibration "loads" mentioned in the last monthly report still remain, but some progress has been made on all these fronts. It was disappointing that it did not prove possible to order laser synthesizers of the "alternative" design under the existing contract. We still need, as a matter of some urgency, to find a way of pushing forward the alternative system (and that should include the line length measurement and correction aspects as well as the signal generation) in order to have adequate protection against difficulties with the baseline LO system.

ASAC

The ASAC did not meet but the panel to work on the ALMA Development Program held its first telecon and has started work. The membership is as follows:

John Bally
Andrew Blain
Dominique Brockelee
John Carlstrom
Frederic Gueth
Mark A. Gurwell
Michiel Hogerheijde
Kohno Kotaro
Toshikazu Onishi
Linda Tacconi
Christine Wilson
Toru Yamada
with the JAO and regional Project Scientists in attendance

Outreach

Talks and posters on ALMA and related topics were given by Science IPT members at the URSI General Assembly in Chicago, USA.

SCIENCE OPERATIONS

Hiring

Job offers were sent to two system astronomer candidates and four operations astronomer candidates. The two system astronomer candidates have accepted (Baltasar Vila Vilaro and Bill Dent, both starting on January 1st), as well as two of the four operations astronomer candidates (Juan Cortés and Ruediger Kneissl, starting on January 1st and November 1st, respectively). It is likely that the two remaining candidates will accept.

The DSO astronomers will start out with 20-25% science time during CSV and early science operations, and end up with 50% science time during full operations. None of the Executives have such positions. After several meetings with the Executives, it now appears to be possible to make such an increase in science time for DSO astronomers.

Array Operator positions were advertised with a deadline of August 31st. Twenty-one applications were received.

DSO staff

The four array operators are now back in Chile. Due to the extension of the ATF, continued operator support will be needed at the ATF until the end of December for part of the time (most likely one week per month).

Other activities

The Head of DSO visited the UTFSM (Universidad Técnica Federico Santa María) and had discussions with representatives from the Physics and Computing Departments.

The Head of DSO gave talks at CSIRO in Sydney and Narrabri on ALMA science operations.

ADMINISTRATION

Operations Overview

The ESO power consultant (Massimiliano Camuri) confirmed the power solution for the AOS presented by the Facilities Group and the Executives have purchased the recommended generators and equipment (2 Caterpillar CA32 1 MW generators). These generators should be installed and operating by mid-August and will provide power to the technical building and the first antenna pad. Additional generators will be added as required to provide power to future antenna pads.

Massimiliano also provided a short term (12 – 18 months) temporary solution for the OSF site power. This proposal is scheduled to go before the ESO Finance Committee in November before they proceed with the purchase, delaying the implementation until Q1 2009. The Facilities Group has been able to stabilize the power at the Antenna area, Camp and Guardhouse; however, the OSF generator is fading and requires a major repair (out of service for 20 – 45 days) to operate properly. We will proceed with minor repairs and rental generators to maintain power until the new generators and associated equipment is purchased and installed. In addition, Massimiliano will continue to work on a long term solution including a generator plant at the OSF and transmission line to the AOS.

The OSF was provisionally accepted by the Director and we are proceeding to make the facility ready for occupancy. The users have identified a few critical incomplete items, plus several new user requirements that are needed for full occupancy. The Facilities Managers have received the manuals and drawings, and have prepared the maintenance programs. We began cleaning and maintenance for the occupied areas (Safety, Security and Warehouse). Most office furniture has been ordered with delivery schedule for early October.

Site occupancy is reaching capacity for both the ALMA and contractors camps and is expected to exceed capacity for most of 2009. We are reviewing several options including purchasing

part of the VVMO contractor camp and renting additional units. Other options include reserving blocks of rooms in San Pedro, building more facilities and advancing the Residencia.

No new activities this month for the CMMS, but the first on-site meetings are scheduled for early August. Due to limited information available from the IPTs, management is considering delaying the start-up of the CMMS implementation for six months. The ADM Operations group requires this system for warehouse management and asset management and would like to proceed with these modules immediately.

The One ALMA campaign is ongoing with many areas identified and procedures under development. This month, the NRAO Human Resource advisor (Bob D'Angio) reviewed our draft documents and provided suggestions to proceed. We are planning to hire a consultant to assist with formalizing the documents and develop web-based applications such as Jira and Wiki. We plan to implement some of the processes in August as well as continue to develop the program.

Staffing

There was no new staff hired this month for the ADM Operations group. ADM is fully staffed as per the ALMA Operations Plan through Q2 2008, with the exception of the Budget Controller position, which is on hold until Q1 next year.

Contracts

The contracts process for ALMA Operations is on schedule with several contracts carrying over from Construction. No new contracts were awarded this month; however, amendments were made to the Security and Paramedic contracts to provide additional support at the AOS.

HUMAN RESOURCES

Recruitment

AIV: A total of three people hired during August. The current staffing for AIV is therefore 31 local employees and seven international employees of a total expected for this year of 45.

Operations: One person joined the Technical Services team this month. Ads published and closed during the month include: Safety Engineer, Public Relations Assistant and Human Resources Assistant. Other processes closed for Array Operators. Shortlists will be ready in early September.

In terms of ISM staff, offers to the Systems and Operations Astronomers were coordinated and sent out to the selected candidates, most of which have accepted the offers to date. The ads for Antenna Group Manager and Electronics Group Manager were also published during this month.

Activities of the Month

Supervisor's Guide to HR Total Rewards: Having received the comments from the HR Advisory Group, we shared the document with the ALMA Department Heads in a closed session, getting their impressions as well. Some concern was shown regarding sharing salary ranges and specific position grading and the document was adjusted accordingly and submitted once more for comments from the HRAG. The benefits portion of the document was also revised during the month and various changes will be proposed at the start of September.

HR Presence at the OSF: The August visit to the OSF was dedicated mainly to employee contract signatures, signing up for medical insurance and clarifying related doubts.

Salary Survey: The first meeting with an Ernst & Young team was held to obtain an updated salary survey of local staff.

Miscellaneous: during this month we spent considerable time organizing visas for software engineers going to the ATF now that it has been determined that it will continue functioning until the end of the year.

Issues and Urgencies

Performance Evaluation: August was the month for supervisors to revise self-appraisals of their local employees. As agreed with the Director, HR personnel attended three PEP evaluation meetings during the month, all of them requested by the Science Operations area.

Shifts: The final definition on shifts and subsequent presentation to the Labor Office includes two types of shifts for the site: 8x6 and 5x2. We are beginning to experience some difficulty in obtaining full compliance with these by the different Departments. Even when we understand the need for flexibility of the project, local law is not flexible in changing the extension of these shifts to fit our needs and this may cause confusion and trouble with our employees.

TECHNICAL SERVICES

Management

Prestage assumed responsibility for the ALMA Site Meeting, which coordinates all activities on the site on a weekly basis. We agreed a rotating shift schedule whereby Prestage will alternate with de Graauw and Smeback on a turno shift basis to maintain a permanent senior management presence at the site.

Staffing

DTS hired an electrical technician and a machinist. Offers have been made for two IT positions. The Antenna Group Manager, Electronics Group Manager and Transporter Operator positions are still open.

Maintenance Planning

A number of ALMA staff attended the second CMMS Project Meeting, which was held at the OSF-TF and in ESO Vitacura during the week of August 4th. DTS staff gave the Siveco project team tours of the OSF and the high site, so that they have a better understanding of the requirements of the project. Due to the delay in receiving maintenance plans and procedures from the construction IPTs, we have agreed to focus the CMMS project on Inventory and Stock Control for the immediate future (through October). We will return to the maintenance aspects in November.

All DTS Staff attended a two-day MELCO Antenna Operations training course.

OSF Antenna Foundation Inserts and Vaults

DTS coordinated ongoing work by ESO and NA Site IPTs to generate common designs for the antenna signal and power vaults. Each of these will be prototyped in the first two antenna foundations at the OSF, so that antenna installations will not be delayed. After the first two prototypes are installed, the designs will be fully reviewed.

DTS coordinated investigation of the reason why the transporter "dummy load" bolt holes do not match the Vertex antenna pad. The tentative conclusion is that the hole tolerances are tighter than for the Vertex Antennas.

Antenna Transporters

With the assistance of Jean-Michel Moresmau (ESO Antenna IPT), DTS staff tested the Antenna Transporter interlocks and generator power connections from both of the transporters

to each of a Vertex and MELCO antenna. Numerous minor problems and misunderstandings were corrected, and we believe that all systems are now functioning correctly.

With the assistance of Deutz (engine manufacturer) representatives, Sheuerle and ESO Antenna IPT, we tested revised control parameters to improve the transporter engine "cold start" performance. This required taking both transporters to the high site on a number of occasions. As a result of close interactions between all parties, the performance has been significantly improved. A number of other minor transporter problems were identified, and have been added to the checklist for later completion. These will not affect use of the transporters.

OSF Technical Facility

Working with ESO Site IPT and others, Steve Watson has made considerable progress to define the remaining work required to complete and outfit the OSF Technical Facility, and to start the execution of this work.

Work completed in August included the installation of fiber optic and Ethernet switches for the IT data network back bone; trenching and installation of power and fiber optical cable from the Technical Facility to Holography Tower # 2, and installation of power and fiber optic cable between the Technical Facility and OSF antenna pads 5 and 7. This, together with work planned for September, will allow initial use of the OSF-TF by AIV in October.

The rest of the work identified to complete the OSF-TF will be reviewed in September, and a proposal made for how to proceed.

IT

A new e-mail system was put into production, significantly improving performance. Fine tuning is in process, but the system is stable and running according to plan. New functionalities for the IP-phone system were added (for example direct dial-in to NRAO-Chile, extension mobility) and more will be added soon. A new international conference system was tested and we should have a contract with the company in place soon.

The installation of a new microwave link from OSF-AOS was aborted due to new requirement from Apex; we are preparing a new solution for approval. The fiber optic link between AOS and Cerro-Chico was repaired and is working according to expectations.

Work has started on incorporating the new ALMA EPO web site into the standard ALMA web site, and a project has been initiated to improve the internal web pages for ALMA staff.

Computing

Support was provided for the Vertex optical pointing campaign. Vertex #2 was connected to the Vertex Standard Test Environment (STE) computer to allow debugging of Vertex Antenna Control Unit (ACU) problems. Support was provided to MELCO for the holography campaign, and NAOJ mount ACA software development (alarms and ACA status in mount panel). Computing staff participated in MELCO antenna operations training. Stage 2 of the Common Control Language (CCL) commissioning is almost complete. Several additions were made to front end and back end control software. Work of the Simulation Functional Based Team will continue to mid-September.

The OSF-TF STE software installation and validation was completed. The AOS STE was moved to the high site mid-August. Archive machine stress testing is on-going. The existing STE are being upgraded to the latest hardware standards. A proposal for the STE usage for the OSF-TF antenna pads was developed and circulated for comments.

Jorge Sepúlveda, Pablo Burgos and Rodrigo Araya finalized their stay in Socorro. The future ATF support missions schedule was agreed, and the first mission started (Rubén Soto). Rodrigo Araya and Pablo Burgos attended training as planned.

EDUCATION AND PUBLIC OUTREACH

A new EPO Integrated Product Team (IPT) has been created, composed of the head of the JAO Public Relations Department and a representative from each of the Executives'

Communications Departments *. The main purpose of this EPO-IPT is to ensure the implementation of the ALMA EPO long-range implementation plan (to be produced by November 2008). Under the coordination and leadership of the EPO-IPT JAO representative, each of the projects is assigned to one of the EPO-IPT managers, who thus becomes responsible for the implementation and follow-up of such project. Monthly reports will be sent to the members of the EPO WG and to ASAC members. The larger EPO Working Group still remains a forum for discussion, which annually discusses the long-term communications strategy and EPO opportunities for ALMA.

* EPO-IPT members: William Garnier (JAO), Douglas Pierce-Price (ESO), John Stoke (NRAO) and Kenichi Tatematsu (NAOJ).

Global ALMA Website: A lot of work has been done on this and the initial content is in place. Technical implementation has however been lagging and the new website is still not publically available.

Production: a planetarium show about ALMA, called "Exploring the cold Universe", is ongoing, as part of the ALMA-related activities for the IYA2009. This show, jointly produced by ESO and the Association of French language Planetarium, will be broadcasted in seven languages in European countries, and will be edited as well in Chile and adapted to the Chilean context/audiences.

Interaction with local communities

Two consultants with expertise in the education field hired by ALMA were formally introduced to the educational community of San Pedro and Toconao in June. These meetings were an excellent opportunity to explain the philosophy of the Director's Office to support and set-up education initiatives in the region which coincide with local needs and interests. This approach was very well received. The consultants continue working in the region and will propose a strategy and implementation plan to improve the level of science and English education by the end of July.

The JAO EPO Department accompanied some members of Radio Toconao on a site visit, setting the ground of a working partnership. Henceforth, a journalist from that radio station will regularly interview ALMA staff on site to showcase the project's achievements, editing the content and broadcasting it to a wide audience.

An ethno-astronomy research project led jointly with the San Pedro museum will begin shortly. This project will document indigenous cosmology by training and employing local people in ethnographic research lasting approximately 18 months. The results of this research will be used as an education and outreach tool to strengthen local cultural heritage and will also act as a symbolic bridge between ancestral, and current, atacameño practices and ALMA.

The JAO Executive Officer and the JAO EPO Department have been working on a project to improve English, science and mathematics education in San Pedro (with special emphasis in Toconao). After a two-month fieldwork period led by two consultants with expertise in the education field, a diagnostic analysis was performed and a strategy and implementation plan is now ready to be put into action. The details of the plan have been presented to the Mayoress of San Pedro de Atacama and the educational community in Toconao and were very well-received. The Chilean Ministry of Education is also very interested in this project and would like to show their endorsement through a "carta de intenciones" (statement of good will) with ALMA. Apparently, the Minister would be willing to travel to San Pedro to meet ALMA and the Mayoress.

PROED Seminar: ALMA was one of the main sponsors of the Third Academy of Astronomy Strengthening Days in Antofagasta, June 13-14, organized by the Chilean institution PROED, which has worked for the past 12 years in cultural/scientific promotion and the development of educational programs.

This event consisted of two days of training for 34 teachers of the II and III Region of Chile. In this opportunity, the JAO EPO Department invited the Director of the Toconao school and two teachers from San Pedro.

Landscape architect: As part of the new approach to community relations initiated by the ALMA Director's office, a landscape architect experienced in managing projects in close collaboration with indigenous communities visited the ALMA site this month. In August, she will make a proposal to ALMA on how to mitigate the visual impact of the guardhouse and improve the landscaping around the OSF technical facility.