ALMA Construction Status and Science Perspective

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The Atacama Large Millimeter/submillimeter Array (ALMA) reached the halfway point in construction in 2008 with the completion of the major infrastructure at both the 3000m altitude Operations Support Facility (OSF) and at the 5000m Array Operations Site (AOS). As the year closed, twelve production antennas were at the OSF both at the antenna contractor facilities and at the Technical Building. Initial testing has confirmed that antenna performance is superlative. Both massive transporters have been delivered and have moved antennas around the ALMA site. The first quadrant of the main correlator has been installed at the AOS, joining the NAOJ correlator installed at the end of 2007. About four dozen antenna foundations have been poured at the AOS, ready for the installation of antennas brought up the completed 43km road during the coming months. Sensitive receivers based on the ALMA design already produce scientific results on antennas around the world, including the ARO and CARMA in the U. S. The first Front Ends, populated with receiver cartridges covering atmospheric bands between 3mm and .45 mm, have been tested and installed in the first production antennas. The first of the Water Vapor Radiometers will be installed on the ALMA Front Ends soon. The three Front End Integration Centers will deliver further tested and calibrated units to populate the stream of incoming production antennas. The first back ends have also been tested and installed in those antennas; that production line continues. Software and hardware tests that have occurred at the ALMA Test Facility in New Mexico will transfer to the production test facility at the OSF in the next few months. The production photonic Local Oscillator components will be installed and interferometry in Chile will begin. Very soon the production system at the AOS will commence commissioning and astronomical validation.

Figure 1 Grading foundation areas for the ALMA Compact Cluster. The Technical Building Complex is in the background.