

Specifications

In search of our Cosmic Origins The ALMA Antennas



Mobile High Precision Instruments

and performance define the overall functionality of ALMA
The specifications of each antenna are 2" absolute point ing over the whole sky, 0.6" tracking, and a 25-micromete RMS surface accuracy. These are very tight specification for radio telescopes fully exposed to the harsh weathe environment at 5000-m altitudes.
In view of the difficulties in fulfilling these requirements, pro totype antennas were supplied by three companies: the AEC Consortium (procured by ESO), Vertex RSI (procured by NRAO for North America) and the Mitsubishi Electrica Company (procured by NAOJ, Japan). All three prototype were extensively tested at the ALMA Test Facility in Socord New Mexico. Several groups of international experts, both internal and external to ALMA, reviewed the performance of the prototype antennas and concluded that, on the basi of the tested functioning, their expected performance a the ALMA site conformed to the technical requirements.
The North American partners of the ALMA project, through AUI, signed a contract with Vertex RSI on July 11, 2005 to sup ply up to 25 antennas, with options to increase to 32 anten nas. On December 6, 2005 the ESO Director General signed a contract with the AEM (Alcatel Alenia Space France Alcatel Alenia Space Italy, European Industrial Engineering S.r.L., MT Aerospace) Consortium to supply 25 ALMA anten nas, with options to increase the number of antennas to 32 The four 12-m antennas and the twelve 7-m antennas to

up to 2016

The first antennas supplied by Vertex RSI were delivered in Chile during the second half of 2007. The first antenna to be Supplied by the AEM Consortium is expected by the end of 2008. Despite the later delivery of the first AEM antenna, both suppliers are expected to deliver their 25th antenna by the end of 2011. The four Japanese 12-m antennas have also been delivered to the Operations Support Facility (OSF).









16 GHz per ba







🕀 The AOS Technical Building



















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The ALMA Array Operations 5ite (AOS) will lie in an unusual setting: the Altiplano de Chajnantor, a plateau at an altitude of 5000 m in the Atacama Desert in Chile, selected for its dryness and altitude. The ALMA















sitivity, angular resolution, spectral resolution, and imag- enabling the study of their physical, chemical and mag-ALMA will offer an unprecedented combination of sen- the star forming clouds in Ophiuchus or Corona Australis).

Science Objectives

In search of our Cosmic Origins



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