

NATIONAL RADIO ASTRONOMY OBSERVATORY
Charlottesville, Virginia

*25 Meter Millimeter Wave Telescope
Memo #120*

May 16, 1979

M E M O R A N D U M

To: 25-Meter Telescope Working Group

From: M. A. Gordon

Subj: Status of the High-Altitude Leighton Dish

1. Relevance:

As you know, Bob Leighton has suggested that the NRAO operate one of his 10-m dishes on Mauna Kea as part of our proposed operation at that site. He discussed the characteristics of this telescope at the April 16 meeting of the Mauna Kea Users' Committee, which Dale Webb and I attended.

2. Expected Performance:

Based upon experience with the dishes which he has made to date, Bob Leighton believes that the overall RMS deviation from a paraboloid for the high-altitude dish will be at most 10 μm overall. The RMS error of the dish will be at most 6 μm in the position in which the dish is rigged. He may be able to improve this accuracy by lapping the surface. The accuracy of the template used to make the dish is 2.2 μm , an accuracy which has varied less than 1.5 μm over the last several months. The accuracy of the dishes now in use at the Owens Valley degrades substantially in direct sunlight, but Bob did not state how large the degradation was. He did say that a high-altitude dish would require the protection of an astrodome.

3. Funding:

His existing NSF contract has funds adequate to construct the surface of this high-altitude, fourth dish. The Kresge Foundation have given verbal assurances that they will be able to provide \$0.5 M for the telescope mount. These funds will also be adequate for the design of the astrodome. Bob plans to submit a proposal to the NSF in late 1979 or early 1980 for additional money to ship and erect the telescope and astrodome on the summit of Mauna Kea.

4. Time Scale:

To some extent the time scale of this project is determined by the funding. In July the Kresge Foundation expects a statement from Caltech describing the feasibility of this project and giving a budget for the telescope mount. At that time they will issue a statement to Caltech guaranteeing that

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the funds will be available in 1980. When Caltech receives the guarantee, Leighton will be able to get an advance from the Caltech administration to proceed with construction of the telescope mount. If the NSF proposal is funded by late 1980, Leighton expects to be in a position to build the telescope upon Mauna Kea in early 1981.

MAG/pj

cc: M. S. Roberts
D. E. Hogg