

Interoffice

NATIONAL RADIO ASTRONOMY OBSERVATORY

TUCSON, ARIZONA

February 4, 1976

To: J. Payne
From: B. L. Ulich
Subject: Antenna Efficiency Tests

12 METER MILLIMETER WAVE TELESCOPE
MEMO No. 4

The following is a summary of 90GHz Cassegrain efficiency measurements made in the total power mode:

<u>Date</u>	<u><T> (°C)</u>	<u>$\eta_A \pm 1\sigma$ (%)</u>	<u>Foil</u>
8/26/75	20	30.5 ± 2.3	None
8/27/75	20	28.8 ± 2.3	None
2/3/76	9	30.0 ± 2.0	None
8/28/75	16	34.6 ± 1.2	One layer thick ring of 0.2 mm foil
8/28/75	16	33.2 ± 1.2	"
8/31/75	20	30.9 ± 2.0	"
8/21/75	20	32.9 ± 2.0	"
8/31/75	20	31.9 ± 2.0	"

The weighted average of the clean dish data is $29.8 \pm 1.3\%$, and that of the foiled dish is $33.2 \pm 0.7\%$. Thus we have improved the efficiency at 3 mm by a factor of 1.11 ± 0.05 . This appears to be a significant increase, and the improvement at higher frequencies should be even greater.

c: J. M. Hollis
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