
NATIONAL RADIO ASTRONOMY OBSERVATORY
Socorro, New Mexico

VLBA Antenna Memo Series No.39

Los Alamos – Drive #1 Axle Repair
June 18-19, 2002 - Trip Report

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The azimuth drive #1 wheel in Los Alamos started making popping noises. The 7" diameter axle subsequently broke a few days later. The axle broke about 1 inch inside the edge of the taper coupling between the wheel and the outside bearing. The break and place of the break were very similar to the previous axle failure on Drive #2 of the Los Alamos antenna (VLBA antenna Memo's #28 and #30).



The paint on the gearbox drive shaft revealed that the coupling on the shaft had moved out approximately 1/4". This most likely occurred when the axle broke, as it was not detected when the wheel started making popping noises.

During the maintenance visit in April 2001, Jim Ruff and company found that the angular alignment of this drive wheel was off by 0° 4' vertical and 0° 1.5' horizontal. It is unknown whether this misalignment contributed to the failure.

Gene Dunn, Ramon Gutierrez, Paul Johnson, Jim Ruff and John Wall replaced the wheel/bearing assembly on June 18. The author of this report showed up on June 19 after the bulk of the work was done.

On June 19 the following alignment parameters were recorded for the new axle/wheel assembly. The antenna rotated smoothly without popping sounds.

	Measured	Specified
Conic radius	299.97"	300" 1/4
Coupling	0.013 TIR	Not Specified
Axle Vertical Slope	93° 27' 14"	93° 26' 23" ± 1.4'
Axle Horizontal error	1' 38"	< 1.4'