
NATIONAL RADIO ASTRONOMY OBSERVATORY
Socorro, New Mexico

VLBA Antenna Memo Series No.58

Owens Valley – Drive Wheel #2 replacement

February 14 – 17, 2005 - Trip Report

Ramon Gutierrez

DRIVE WHEEL REPLACEMENT

During the previous Owens Valley Tiger Team maintenance visit, we found a bad inside bearing on azimuth drive wheel #2. During this trip, the wheel assembly was replaced with a new one using a forklift that Eric Carlowe had arranged to borrow from OVRO.

After installing the new wheel, we checked the verticle angle and the coupling runout. We added shims accordingly to the pillow blocks. After verifying the coupling runout, we bolted the coupling together with a few bolts and ran the wheel position procedure to find the wheel radius and axle allignment. We discovered we could move the wheel assembly fairly easy, but without much control. We welded blocks with push bolts on both sides of the pillow blocks to help control their movement. We then added shims as needed to position the axle.

Final Results:

		<u>Specs</u>
Wheel Radius	300.133" in.	$300 \pm \frac{1}{4}$ in.
Horizontal Angle Error	.04"	<1.4'
Verticle Angle Error	.15"	<1.4'
Horizontal Hub TIR	.000 in.	<.005 in.
Verticle Hub TIR	.0025 in.	<.005 in.

Note:

The wheel radius could not be reduced because there wasn't any play left in the pillow block mounting holes. After verifying hub runout, we installed all the coupling bolts. They all went in easily indicating good alignment.

IDLER WHEEL REPOSITIONING

The outside bearing on idler wheel #1 was replaced during the previous Owens Valley Tiger Team visit. It was later seen that the wheel moved out ¼ inch. After jacking up the antenna, we were able to move the wheel in fairly easy by pounding on the end of the axle with a 10 pound dead blow hammer. We noticed that the axle moved through the inside bearing, which in this case was the fixed bearing. This indicated that the lock nut was not tightened sufficiently on the inside bearing. We unbent the lock tooth on the lock washer and were able to unscrew the lock nut by hand. The tapered sleeve which locks the bearing to the axle slid out very easy, as we expected. We pulled in the sleeve by tightening the lock nut until we got the internal clearance within specification.

After mounting a dial indicator to check for wheel movement, we rotated the antenna back and forth a few times. The wheel did not move. We ran the wheel position procedure and came up with the following results.

Final Results:

		<u>Specs</u>
Wheel Radius	299.958 in.	300" ± ¼ in.
Vertical Error	43 "	<1.4'
Horizontal Error	1'05 "	<1.4'

OTHER TASKS ACCOMPLISHED

- 1.Replaced elevation drive motor #2
- 2.Replaced Az gear box #1 first stage input shaft and housing assembly
- 3.Replaced all 4 antenna servo motor air filter boxes with the new Phillip Sanchez designed box

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