

National Radio Astronomy Observatory  
Socorro, New Mexico

VLBA Antenna Memo #47

Kitt Peak, Arizona VLBA Maintenance Visit June 5-12/03

Team members consisted of Steve Aragon, Eric Carlowe, Ramon Gutierrez, Bob McGoldrick and Steve Tenorio. VLBA Site Techs Ray McFarlin and Duane Clark assisted in all areas of maintenance during the visit. An action item list is attached and the task list was completed.





Subreflector is in good condition.



Ramon and Steve installing a new ladder and fall arrest on the quad leg. The site techs were trained on using the new Sellstrom fall arrest.



Duane greases the focus flex shaft. FRM is well lubricated and all j-boxes, cables, and connectors are in good condition. During the FRM PM a bellows was replaced. The focus flex shaft was replaced 2 months earlier by the site techs and not replaced by the maintenance team. The focus motor encoder coupling modification had been previously installed by the site techs.

**FRM INA BEARING CHECK 50LBS PULL ON PRIMARY SIDE**

Primary Travel:	+0.0015	Secondary Side:	-0.0005
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**FRM INA BEARING CHECK 50 LBS PULL ON SECONDARY SIDE**

Primary Travel:	-0.001	Secondary Side:	+0.001
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Dichroic reflector is in good condition except for a small delaminating blister in the center running vertically. The dichroic panel and ellipsoid reflectors were both realigned. Notice the feed cone is need of painting.



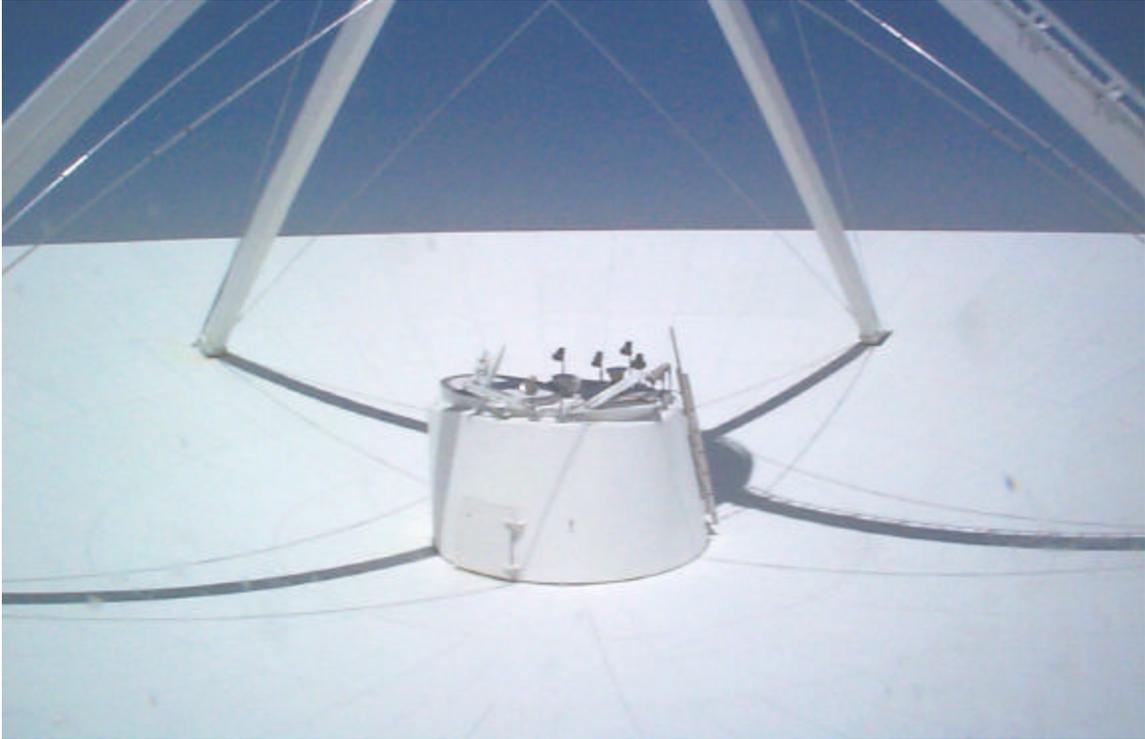
Bob preps the feed cone for painting. Ray, Bob and Steve then applied 3 coats of Elastomeric paint to the feed cone.



A spring was replaced in the ellipsoid actuator during alignment. Ellipsoid is in good condition. Feed cone FE windows and heaters are in good condition.



Feed cone & Vertex room. FE and rack cables are neat, orderly and secure.



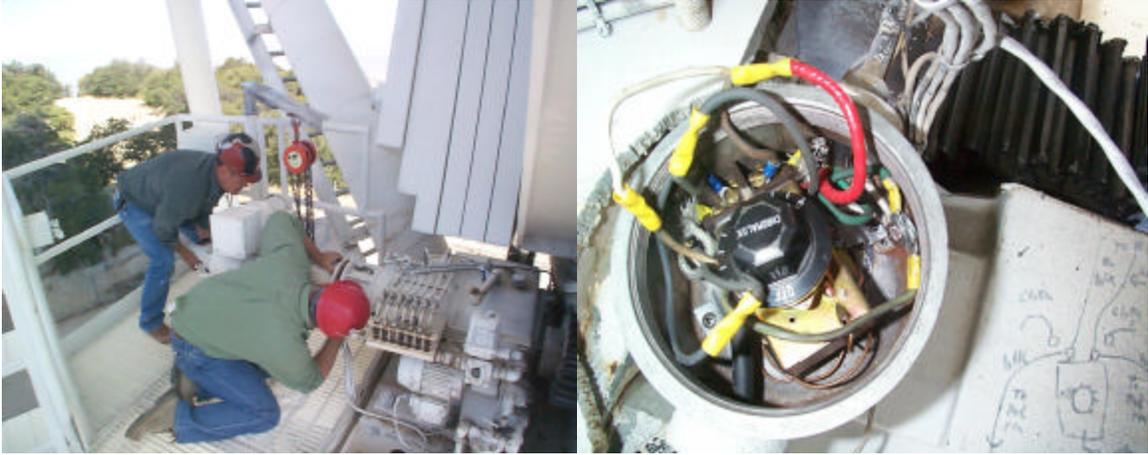
Feed cone insulation is in good condition. Dish panels, and the dish panel's paint are in good condition. Quad legs and guy wires are in good condition.



Elevation #2 gearbox pre-load inspection.



Steve measures  $\sim .002$  of wear with a feeler gauge showing EL #2 gearbox is in good condition. Both EL gearboxes oil was changed. Fish eyes and flow gauges were also cleaned. EL #1 gearbox was not opened for inspection.



Elevation #1 and #2 motor gearbox rubber couplings (spiders) were replaced. The elevation gearbox heaters were wired in series. This was corrected to parallel and tested. The elevation bull gear is well lubricated and in good condition. Paint in the elevation platform area is in good condition.



Azimuth #2 motor brushes were replaced and seated. Azimuth #2 tach and blower were also replaced. Azimuth #2 motor has a wobbling tail shaft and a rear motor bearing seal that is leaking into the brake assembly. Azimuth #2 motor was replaced on July 23<sup>rd</sup> during the writing of this report. Azimuth #1 flow gauge manifold was replaced. Azimuth #1 tach was well within spec. and wasn't replaced. Azimuth #1 motor spider was replaced. The antenna paint in the azimuth area is in good condition.



Azimuth #1 gearbox pre-load inspection



Steve measures  $\sim .002$  of wear with a feeler gauge showing AZ #1 gearbox is in good condition. Both AZ gearboxes oil was changed. Fish eyes and flow gauges were also cleaned. AZ #2 gearbox was not opened for inspection.



AZ wheel bearings were inspected. AZ #2 idler bearing was replaced. No popping or grinding noises were heard from the AZ bearings or gearboxes.

#### AZIMUTH BEARING GREASE INSPECTION

	INNER	OUTER
D1	Very few small flakes of metal.	No metal, smooth races.
D2	Little flakes, slight scratches.	No metal, very smooth races.
I1	Good, small linear scratches.	Small scratches on races.
I2	Changed bearing.	Little flakes, slight scratches.



#### ELEVATION BEARING GREASE INSPECTION

EL. Encoder side	Good with no metal flakes.
EL. Synchro side	Good with no metal flakes.

Elevation bearings are well lubricated. Elevation axle has no visible signs of cracks. Antenna paint in the EL axle area is in good condition. There are no popping and grinding noises heard from the elevation bearings or gearboxes. No metal flakes were found in the pintle bearing grease.



Steve and Ray retrofit the ACU with the new power supply upgrade.



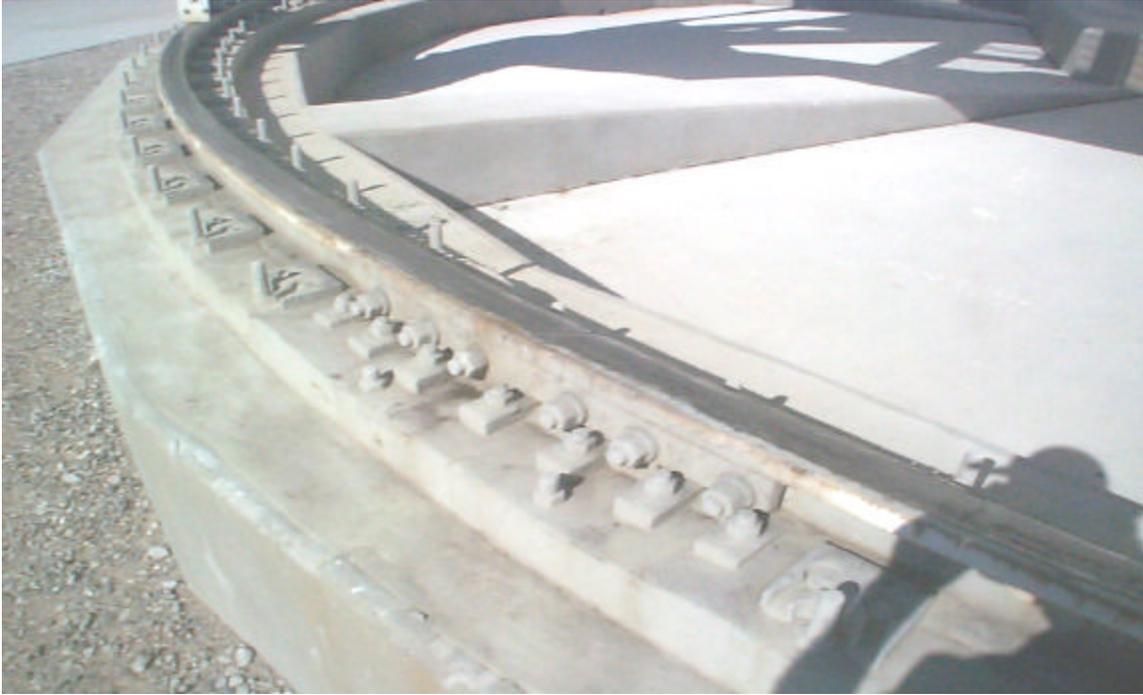
Inside the pintle bearing room power panel Bob found a ground terminal block severely corroded. The terminal block was cleaned and then sealed with primer. The antenna cable wrap and cables are in good condition.



Dish panel bolts were checked. VTX baulk head is in good condition.



The antenna was repainted in two visits (June 2001 and June 2002). All the photos in this report show what a great paint job John Wall and his crew did.



A typical rail splice. Rail splices and vulchem are in good condition.



Rail clips and vulchem are in good condition.



The weather station PM was done. Weather station and generator enclosures are in good condition and rust free. Generator inspection and PM was done.



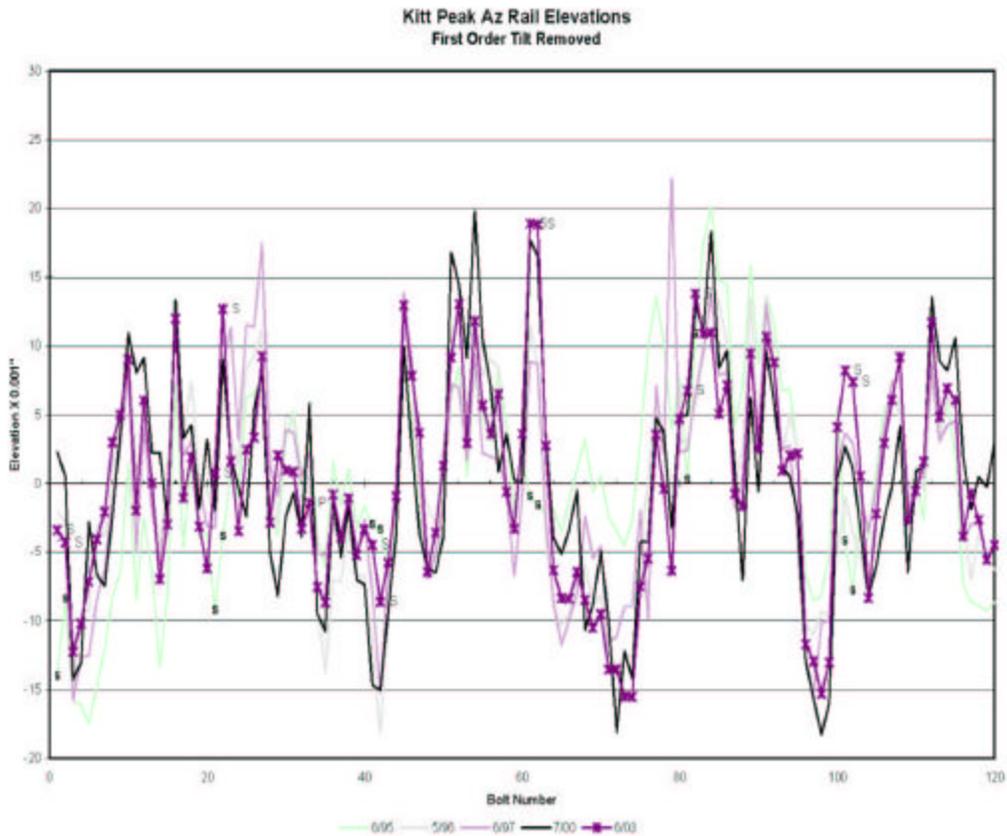
The area inside the fence is weed free and orderly.



Ramon measures AZ #1&2 drive wheel alignment. The rail was measured.

### AZIMUTH DRIVE WHEEL ALIGNMENT

	D1	D2
Horizontal error	0d 00'18"	0d 00'57"
Vertical error	0d 01'02"	0d 01'47"
Radius error	.317"	.135"



## ACTION ITEMS

1. REPLACE AZIMUTH MOTOR #2.---REPLACED ON JULY 23<sup>RD</sup>.
2. REPLACE VERTEX ROOM DOOR (TEMPERALLY PATCHED).
3. REPLACE FRM LOGIC POWER CONTROL CABLE.
4. ADD STEEL TO PED ROOM GRATING WALK WAY (A TRIP HAZZERD).
5. REPLACE ELEVATION #1 LUBE MANIFOLD WHEN SPARE IS AVAILABLE.
6. PED ROOM PVC POWER FEED THROUGH NEEDS REPLACED.