

ELEVATION BEARING/AXLE INSPECTION:

EL. Grease inspection/Encoder side	Good, With no metal.
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EL. Grease inspection/DGB side	Good, with no metal.
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Remove excess grease from encoder side bearing. Done.
 Grease elevation bearings. Done, bearings are well lubricated.
 Check elevation axle for cracks. No cracks found.
 Listen for popping or grinding. No popping or grinding detected.
 Encoder and Synchro cable wraps, (bracket and cables). Repaired sychro side wrap.

ELEVATION BULL/PINION GEAR INSPECTION:

Bull gear welds/hardware. Good, well lubricated.
 Pinion gears. Good, well lubricated.
 Lube bull and pinion gears as needed. Done.
 Check stow pin and tray. OK, Installed new stow pin safety pin.

ELEVATION GEARBOX INSPECTION:

EL.#1 seals/coupling. Replaced motor, seals ok.
 EL.#2 seals/coupling. Replaced motor, seals ok.
 Lube pumps, (leaks). No leaks found.
 Flow gauges/fish eyes, (clear). Cleaned—clear.
 Change gearbox oil. Done, New oil.
 Inspect oil for metal. None found.
 Listen for popping or grinding. No popping or grinding detected.

ELEVATION PLATFORM INSPECTION:

Swinging Catwalk/Gate, (latch working). All OK.
 Hoist and Jib-arm, (cable condition). All Good, Repaired 1 hook end.
 Stairways and grating. Good, Some surface rust.
 Cable trays, (cracked/corroded/loose cables). All Good.

ANTENNA STRUCTURAL INSPECTION:

Spot-check structural bolts. Done, OK.
 VTX walk way. Good, some surface rust.
 Antenna structural welds, (cracks). None detected.
 Antenna backup/lower structure. Some flaking paint and surface rust.
 Structure Cracks. None found.

AZIMUTH BEARING/GREASE INSPECTION

	INNER	OUTER
D1	No metal, minimal pixie dust.	No metal, minimal pixie dust.
D2	Very few minute flakes, OK.	Very few minute flakes, OK.
I1	Excellent condition.	Excellent condition.
I2	Excellent condition.	Excellent condition.
Replace wheel bearings as needed. No drive wheels needed replaced.		

AZIMUTH WHEEL INSPECTIONS:

Wheel to structure clearances. All OK.
Listen for popping or grinding. No popping or grinding noises detected.
Check for Broken bolts. None found.

AZIMUTH WHEEL RADIUS/ALIGNMENT

Measured	Specified	D1	D2
Horizontal	0.00.00 (<1'24")		
Vertical	93.26.23(+/-1'24")		
Radius	300.000" (+/- .25")		

AZIMUTH GEARBOX INSPECTION:

AZ#1 seals/coupling. Replaced motor and spider coupling.
AZ#2 seals/coupling. All OK.
Lube pumps, (leaks). No leaks.
Flow gauges/fish eyes, (clear). Done.
Change gearbox oil. Done, new oil.
Inspect oil for metal. No metal found.
Listen for popping or grinding. All quiet.

PINTLE BEARING INSPECTION:

Cable wrap & cables. Some chafing on the large cables, wrapped 4 with Teflon.
Check for loose bolts. None found.
Check bearing grease. No metal flakes found.
Clean out bearing grease tray. Done.
Snake Pit Window, (cracked/stained). Replaced with a new window.

AZIMUTH RAIL INSPECTION:

Rail elevation measurements. Completed.
Excessive rail movement. None detected.
Joint bars and clips. OK.
Antenna foundation/grout. Needs work, deteriorating badly.
Re-torque rail splice plates as needed. Completed.
Remove vulchem, (if time). Removed some.

ANTENNA PAINT/INSULATION INSPECTION:

Antenna paint condition. Fair to Poor condition.
Repair antenna insulation as needed. Not needed.
Spot paint/corrosion control as needed, (if time). No time left after main maintenance visit.

ADDITIONAL MECHANICAL MAINTENANCE ITEMS TO BE COMPLETED:

1. Check AZD1 and AZD2 inside bearings for metal, (1st Day). Completed, no metal found.
2. Spot Seal and Paint Feed Cone w/elastomeric. Completed.
3. Install new blower motor air boxes. All motors done.
4. Install VTX HVAC extension platform. Completed.
5. Install new Pintle bearing IF cable wrap. Done electronics.
6. Replace VTX room door as needed. New door installed.
7. Install Ped room backup A/C. Done by site techs.
8. Remove East rotation motor, (plug dry air). Completed.
9. Remove station MKIII recorders. Loaded into the container.

ANTENNA MECHANICS NOTES:

Removed old vulchem from top of feed cone, then sealed and painted.

Rail grout is severely degraded.

ANTENNA SERVO MAINTENANCE HNVLBA 9/20-27/06

ANTENNA SAFETY TESTS/INSPECTION:

Ped Room Electrical Panel Inspection. All good tightened terminal block.
Drive Cabinet Inspection, (**TURN OFF LOGIC POWER**) All good, tightened terminal blocks.
Check voltage/phase detectors & Timers for MAX settings. All set too MAX.
Antenna Fire Alarm, (bat. condition). Tested OK, Batteries are good condition.

BRAKE HOLDING-TORQUE TESTS (FT-LBS)

AZ #1	New motor installed, 75lbs.
AZ #2	Replaced Brake assembly. 80lbs.
EL #1	New motor installed, 70lbs.
EL #2	New motor installed, 70lbs.

MOTOR INSPECTIONS:

Elevation motor/tach couplings. New Tach couplings installed.
Elevation brushes/commutator. Both elevation motors were replaced.
Azimuth motor/tach couplings. New Tach couplings installed.
Azimuth brushes/commutator. AZ #1 replaced. AZ #2 in good condition.
Test and inspect Gearbox heaters, (32deg.F). All work/some surface rust.

ANTENNA GROUNDING INSPECTION:

Elevation ground cables. Replaced old ground cables with new ones.
Elevation platform to pintle turret. Good condition w/some surface rust.
Pedestal room. Good w/some surface rust.
Azimuth wheel contacts. Replaced AZ#1 contacts.
Pintle room/cable wrap. Good condition w/some surface rust.
Apex/Dish lightning rods. All good.

SERVO RECORDINGS:

Elevation Timing UP/DN tests, (30deg/60sec). Trained site techs/60 seconds in both directions.
Azimuth Timing CW/CCW tests, (90deg/60sec). Trained site techs/59 seconds in both directions.
Elevation position loop test, (IF NEEDED). Not needed/no time left.
Azimuth position loop test, (IF NEEDED). Not needed/no time left.
Elevation Tach differential output voltage, (UP/DN<400mv). <180mv.
Azimuth Tach differential output voltage, (CW/CCW<400mv). <200mv.

ACU AUTO MODE TESTS:

System/axis faults. All tested OK.
AZ/EL motor fault status. All tested good.
Stow commands, Synchro feedback. Good on both axis.
VME to ACU comm. dead, (10min auto stow). Tested OK.

INSPECT AND TEST ANTENNA LIMIT SWITCHES:

Elevation Up/Down 1st, 2nd and final, (record). Tested good, DN 1.8 degrees, UP 124 deg.
Azimuth CW/CCW 1st, 2nd and final, (record). Tested good, CW 272 deg. CCW 290 deg.
Antenna stow pin/interlock. Done, new pin installed.
Limit switches and cables. All tested good, a little surface rust.
Restore ACU parameters, (if needed). Need parameter sheet taped to ACU rack.

ADDITIONAL SERVO MAINTENANCE ITEMS TO BE COMPLETED:

1. Install digital tachs on both antenna axis. Azimuth drive cabinet interface board replaced.
2. Install new ACU backplane. Done by Ray and Tom.
3. Install new ACU power supply mod. Done by Ray and Tom.
4. Spot seal and paint feed cone w/elastomeric. Stripped Vulchem from top of FC.
5. Replace AZ and El motors as needed. Replaced both elevation motors and azimuth #1.
6. Install new blower motor air boxes. Completed.
7. Install AC outlets above AZ motors. Not needed/site techs had already completed.
8. Remove MKIII recorders. Done.
9. Install Ped room Backup A/C. Completed by site techs.
10. Install new drive cabinet power supply mod. (if time). Not needed.

SERVO TECHNICIAN NOTES:

Motor gear box and tach couplings loose on azimuth #2.
New longer ACU power supply cable needed, (6 footer).

APEX FRM INSPECTION:

FRM cable/j-box, (cable/connector condition). All terminal connections tightened.
FRM motor/encoders, (dry air flow). Dry air shut for repair.
90/50cm FE/dipole/cables. All in good condition.
FRM E-stop operational/tight. OK works in both directions.
Replace tie wraps w/metal as needed.

FEEDCONE INSIDE/OUTSIDE INSPECTION:

Ellipsoid operation, (test MNL/CMP modes). Works in modes/actuator switch needs replaced.
Feed heater operation, (monitor#4108 10v=20Amps) (command#4128 0off-1on). All works ok.
All FE cables, (connections tight/no cable kinks). All checked OK.
CRYO systems, (pumps/vacuum lines). Checked cryo compressor's and all cryo lines.
FE dry air, (lines open @ feeds/VTX manifold). Dry air shut down for repair.

VTX ROOM IN/OUT INSPECTION:

IF/PWR cable/connector blkhd. OK, no problems found.
Power blkhd/rfi filters, (tight-no corrosion). Replaced corroded terminal block connections.
A/B racks/cables, (grating clamps tight). Tightened all cable connections.
HVAC and condenser, (belt, electrical connections, fittings). Replaced blower fan belt.
PC to DDC connection, (@ station PC). Tested good from room 103.

ANTENNA CABLE WRAP/TRAY INSPECTION:

Elevation cable wraps, (IF connectors). All good, synchro side cable wrap repaired.
All antenna cable trays, (cables tight). Replaced broken tie wraps with metal.
Elevation platform. SO cables to EL and AZ motors needs replaced.
Replace tie-wraps with metal as needed.
Cryo Lines, (flex lines/over the top). Tight over the top.

PINTLE BEARING INSPECTION:

Cable wrap, (bulk head/all if cables). Inspected cables/replaced cable wrap.
Power panel Terminal blocks, (tight-no corrosion). Replaced terminals in limit switch J-Box.
Cable strain relief, (tight). All tight, OK.
Cable condition and connections. Connections tight/added Teflon to 4 SO cables.

PEDESTAL ROOM INSPECTION:

ACU/FRM logic on UPS. FRM was taken off critical power and put on UPS power.
UPS operation/by-pass switch, (battery check). Tested OK.
Breakers all labeled correctly. Breakers labeled correctly.
Dry air compressor, (check connections/run time). Compressor under repair.
Marv Air operation/inspection, (balance w/backup A/C). Marvair weak, backup AC/good air flow.

STATION BUILDING INSPECTION:

ROOM 100:

UPS operation, (bypass switch/battery check). All batteries checked OK.
Electrical panels, (voltage & phase detectors set for max). All panels checked/TB's tightened.
Onan x/switch operation, (timing correct). OK, generator slow to stabilize.

ROOM 102:

Contempo 1&2 operation/inspection, (belts, electrical connections, fittings). Connections tightened.
Station PC to DDC connection, (copy parameters). Connection works, switched off R2 dehumid.

ROOM 103:

VME/communication rack, (communications on UPS). Communications on UPS. All comm. Will-
Electrical Panels, (UPS and Critical/connections tight). be relocated by site techs.
MK V, (cables connected correctly/on UPS power). On UPS, cables connected correctly.
Fire alarm operation, (battery condition). Batteries good under load.
Chatter box/phone operation, (phone #'s correct, battery condition). Changed phone #'s.
Under floor cables/bulk head. 2 feed thru's missing.

ROOM 104:

Electrical Panels, (UPS and Critical/connections tight). Inspected and tightened all connections.
Maser/C&D rack. All connections tight.
Under floor cables/bulk head, (connections tight). OK, all looked clean.

WEATHER STATION INSPECTION:

Check operation/test alarms, (wind/temp stow ACU). Alarm trips are all good.
Cabinet/tower condition. Tower in good condition, some surface rust.
Weather station PM, (if time).

SITE GROUNDS & STATION INSPECTION:

Check generator, (All fluids, battery and governor oil). All checked good.
Contempo condensers, (no oil residue, electrical connections). No oil residue, electrical OK.
Station building. New Site Techs making house.
Fence/gate/signs/grounds/storage.

ADDITIONAL ELECTRONIC MANTENANCE ITEMS TO BE COMPLETED:

1. Install new FRM focus motor encoder coupling. Completed.
2. Complete FRM single rotation motor mod. Completed, Jumpers added/east motor removed.
3. Install ACU Power supply mod. Completed and tested.
4. Install new ACU backplane. Completed and tested.
5. Install digital tachs on both antenna axis and calibrate. Done, Techs trained on calibration.
6. Install IF Cable wrap. Done, New wrap tested.
7. Install ped room backup A/C, (balance outputs). Completed, outputs balanced.
8. Spot seal and paint feed cone w/elastomeric. Done, Down side is wet and left open to drain.
9. Remove station MKIII recorders. Completed.

ANTENNA ELECTRONIC MAINTENANCE HNVLBA 9/20-27/06

FINAL ANTENNA/SITE INSPECTIONS:

Review open PM's and close. PM's closed by site techs.

Any TT oversights. No tasks left undone.

Site cleanup. Completed.

Review TT list. Done with TT crew.

Review problems with site techs. Done w/site techs at end of maintenance visit.

VLBA operations startup tests at night, (~3 days prior to TT end date). Done, repaired minor stuff.

ELECTRONIC TECHNICIAN NOTES:

Need to replace ellipsoid switch.