NATIONAL ASTRONOMY AND IONOSPHERE CENTER

Reply to:
Arecibo Observatory
Post Office Box 995
Arecibo, PR 00613
Telephone: 809-878-2612
FAX: 809-878-1861

Cornell University
Space Sciences Building
Ithaca, NY 14853-6801
Telephone: 607-255-3735
Telex: 932454
FAX: 607-255-8803

NAIC Laboratory
124 Maple Avenue
Ithaca, NY 14850-4902
Telephone: 607-255-5274
Telex: 932454
FAX: 607-255-5276

September 25, 1998

ADVANCED COPY

To :Distribution

From :Jose N. Maldonado Torres

Subject :Hurricane Georges

During the week ending September 18, 1998 the Weather Bureau warned of a Hurricane threatening the Caribbean Islands. The final threat finally became a warning on Monday, September 21, 1998 and Hurricane Georges hit the island of Puerto Rico. On Sunday, September 20, 1998 the Arecibo Observatory and the HF Facilities were "prepared" following the Hurricane Procedures written for these events.

Hurricane Georges, hit the A.O. Facilities during the evening hours on September 21, 1998 (± 6:00 pm) and ended at (± 4:00 am) early Tuesday morning September 22, 1998. Mr. Philip Perillat and Rey Velez stayed on site to take care of any type of un-speculated events. They did a great job.

After the Hurricane passed, the Maintenance Employees returned for an inspection of the site which was begun on September 22, 1998. Due to continuous rains which followed the Hurricane not much could be accomplished except for some cleaning of the trees on the roads in order, to allow vehicles through.

A more thorough inspection was begun on September 23, 1998 and during said inspection the following was found:

A. Access roads and site

a. Several trees were down or broken around the site and the roads leading to the site.

b. There was a landslide on the road going to the Tape Building near the V.C. Stairway.

B. Operations Building

a. A 480 MHZ transmitter fan hood was blown out. The hood measured approximately 10' x 10'. The fan is installed on the transmitter building roof.

C. Commercial Electric Power

a. The 13 KW main sub-station cubical roof of 12' x 10' was blown out.

b. A wooden pole that belong to the power company before the one that connects to the site underground feeder was broken and the line is on the ground.

c. The antenna testing Shack roof located near T-12 is damaged.

D. Pool Area

a. The metal roof sheet at the pool building west side was damage due to a tree falling on it.

E. Machine Shop Bldg.

a. The screws on the Welding room south east wall were pulled and the wall was slightly bent outward (no plates were lost).

b. The Auto Shop's main door (15' x 12') was tilted but not lost.

F. 430 MHZ Waveguide

a. 5 flexibles sections broken.

b. The wave guide slid downhill, it should be pulled uphill before the flexible sections replacing.

G. Platform Catwalk

a. Several floor beam cross members broke the weld at connection points with main channels (parallel to catwalk ℄).

b. The cable catenary sags seems to have increased. A catenary sag survey must be conducted to determine the real position.

c. Floor beam bolts at splices became loose.

d. S.S. hooks which fasten the gratings to the floor beam are loose (several lost). The grating slipped downhill (from ½" to 2").

e. Cyclone fence railing holding wires and longitudinal ½" cable hardware broke at several sections and the cyclone fence is now down.

f. Toe plate and grating weld is broken at several places.

g. The 1½" pipe air-line is broken near the top landing.

h. Approximately 50% of the Catwalk lighting fixtures, conduits, wiring and post are broken.

i. Cable tray bottom beams, covers and supports of the system are broken in several places. The cable are hanging down the bottom.

j. Approximately a 35' catwalk floor frame and gratings section is broken near top landing. The gratings flew and hit the 1000' diameter reflector.

k. Power cable, control cable and coax cables must be tested to determine damages.

l. The 6"⌀ and 50 MHZ waveguide broke in two places. Waveguide supporting system has also broken in several places.

m. Catwalk entrance cyclone fence is inclined, and several posts are broken.

H. 1000' Diameter Dish

a. A total of 27 aluminum panels and 13 corner cups broke in 7 places, at south and southwest Reflector section.

b. Water level under bowl was at approximately 4' at the center of the concrete pad.

I. **Towers**

a. Tower 4 - Aviation signal light at 125' from the ground is broken.

b. Tower 12 - Alumimun plate support for light interference with Lidar building is broken.

J. **Cable Suspension System**

a. In general new cable connection at socket shows some displacement toward the inside of the socket in the order of 1/16".

K. **Platform**

a. A 25' working platform floor section on main truss #1 that provides access to laser shelter near corner 4 was blown to the 1000' dish.

b. Secondary bracing truss at joint U-31, L-31, and L-32 shows paint cracks on bolt joints.

L. **Azimuth Feedarm**

a. Azimuth Feed Arm Trolley walking platform Bridge connection structure at Carriage House side has several bolts loose.

b. U-5 Top chord joint bolt at panel point 5 (of 7/8" bolt) shows paint cracks on bolt, and nut which shows slippage.

c. Dome uphill survival structure shows Dome vertical displacement in the order of a 1". The survival interior pipe shows scratches which indicates up and down movement. The 4" x 4" pipe is bent.

d. Telephone connection box at panel point 7 (bottom chord) near Gregorian side broken and door is missing (lost).

M. **Dome**

a. Link beam and cross strut beam at uphill right handside bolt splicing shows paint crack due to small slipage.

b. Uphill heat exchanger service door cover blown off.

c. Terciary reflector Jack bolt or turnbuckle was broken

N. **HF Facilities status is as follows:**

a. Water level around the building area and parking area is as of now.
b. The 3-HP compressor shelter was torn out.
c. All of the 32 antennas are nearly totally destroyed.
d. Tower A-9 leaning to the southwest by 10 degrees
e. Tower B-9 laying flat on the ground, condition unknown
f. Tower B-6 broken at the 40' level, two section still standing
g. Towers C-3, C-6, C-7, C-8 broken at the 40' level, two sections still standing for each tower.
h. Towers D-6, D-7 broken at the 40' level, two sections still standing.
i. Tower E-6 broken at the 40' level, two sections still standing.
j. One of the three-window assembly on the generators building was ripped off and destroyed.
k. All other towers and feed points are under 2' ft. of water.
l. At least 16 tower footings and 16 Feed Points are under 2' of water.
m. Diesel tank dike has cracks.
n. 400 KW Diesel generator engine is soaked w/water.
o. 400 KW generator has damaged winding.

JNMT/mm

Distribution:

Altschuler, D
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