

#2

1-DEC-1988 11:57:25

NEWMAIL

Return-Path: <nraogba!rfisher@nrao1.CV.NRAO.EDU>

Received: by nrao1.CV.NRAO.EDU (4.12/DLB-1.4)
id AA26949; Thu, 1 Dec 88 11:56:35 est

Date: Thu, 1 Dec 88 11:56:35 est

Message-Id: <8812011656.AA26949@nrao1.CV.NRAO.EDU>

To: nrao1!abridle, nrao1!dheesche, nrao1!hhvatum, nrao1!mbaliste

To: nrao1!abridle, nrao1!dheesche, nrao1!hhvatum, nrao1!mbaliste

Dave, Mike, Alan, Hein,

This, too, will go out to Bob Mattias' group.

12/1/88 R.Fisher

Other Observations and Open Questions

1. There are no signs that the telescope drive chain moved after contact with the ground or with the lower trays leading to the sprocket wheels in the pit, except for lateral distortion to the west. Also, there is no slack in the chain anywhere in the drive mechanism. This indicates that the drive motor had stopped before an appreciable amount of slack had developed in the chain during collapse. Most of the chain lays to the south of the drive motor very nearly on a north-south line all the way into the south hole. If the drive sprocket had run after the chain touched the ground to the south, I would expect drag marks on the ground or chain piled up between the drive sprocket and the south idler sprocket.
2. The wheel that held the chain in an arc below the telescope is distorted to the west on both the north and south sides of the drive pit. This indicates to me that the collapse began on the east side or that there was significant movement of the structure to the west at the beginning of collapse forcing the wheel to swing to the west, initially. A bit of slack must have developed in the chain early in the collapse to avoid its being carried to the west with the wheel on the south.
3. The north lip of the telescope is on top of the concrete pad at the north side of the north hole. This indicates that the north edge of the dish was not below the concrete pad when the collapse began since it would have had to push through the pad to get to its present position. Hence, the telescope was not at or beyond its northern travel limit as is confirmed by the position of the drive chain.
4. The north end of the box girder is very heavily dug into the ground slightly west of the center line with dirt plowed to the north. This indicates that at large part of the weight of the telescope rested on this point sometime during the collapse. Since this area was relatively close to the ground before collapse, this may have been one of the first contacts with the ground. The structure above the north end of the box girder has sheared to the north relative to the box girder and is dug heavily into the ground with dirt plowed to the north. This, too, indicates a lot of force down and toward the north on the north end of the box girder.
5. Several details in the data from the computer remain unexplained.

I thought that the message "COMMANDED DEC BEYOND TELESCOPE LIMITS" should have been printed once each for scans 8892 and 8895 (last scan). Instead, the message came out four times for the last scan and not at all for scan 8892. Also, the declination rates in Table 5 are peculiar both in the sense that they are of opposite sign and in the sense that they are slightly higher than the maximum variable speed drive rate. These discrepancies may have trivial explanations or could indicate a more significant problem in the drive commands before collapse. We need more time to look into this before attaching importance to any of it.

6. So far, we have not tried reconnecting all of the computer components to rerun the commands up to the time of collapse, mainly because it would take several days to a week to do properly. If we are still left with some troubling discrepancies in the computer data after further looks through the code, we may want to set up a rerun. Unfortunately, we cannot test the drive servo loop since that involved the declination encoder and structure dynamics. The part of the computer code that deals with the drive system dates back to the early 70's, and the original programmers are gone, so we are slow at familiarizing ourselves with this part of the system.