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The 300ft Telescope - my part in its Collapse

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20 years ago this week the Green Bank 300ft transit radio telescope collapsed, at 21:43 on November 15th, 1988. Subsequent investigations (1) indicated that this was due to the sudden failure of a gusset plate in the main support structure of the antenna. This dramatic event was reported in the US and international press as well as in a number of astronomical magazines (2). First-hand accounts of the circumstances are related in the recent NRAO publication on the first 40 years of the Green Bank Observatory (3). Some reports have been accompanied by photographs which I took immediately before, and immediately after the collapse; these can be seen at a number of internet locations and are even available as a postcard on sale at the Green Bank Science Center. I thought on this anniversary occasion it might be interesting for me to recall the circumstances of how those pictures came to be taken.

I had been invited to attend a meeting of the VLBA Advisory Committee on the 16th and 17th November in Charlottesville. As affordable transatlantic flights (it was \$ 974) required a 6-night stay in the USA I planned to leave Bonn on Saturday 12th, spending a few days before the meeting revisiting old haunts and recovering from jet-lag, and returning the day after the meeting. I had been a postdoc in Charlottesville from 1975 to 1977, with frequent observing trips to Green Bank. This would be my first re-visit to Green Bank since those times. I duly arrive in Frankfurt on the 12th for PanAm flight 061 to Washington Dulles, departing 13:20, only to be informed that the flight was delayed considerably. (I believe that fog had forced the incoming flight from Washington to land in Cologne, and more fog prevented it from continuing to Frankfurt.) In the end we could not leave on Saturday; we passengers were herded into a local Frankfurt hotel and duly delivered to the airport on Sunday 13th, whence we took off some 23 hours late. I arrived in Charlottesville on Sunday evening, having lost one day from my trip.

My original plan was to try to arrange a visit to Green Bank on Monday, stay overnight, and return on Tuesday 15th in preparation for the Wednesday meeting. However, it was not possible to arrange a shuttle at short notice on Monday. In the event, NRAO kindly arranged this for Tuesday, staying in Green Bank overnight, and returning early (06:00) by car with the Green Bank site Director, George Seielstad, who was also attending the meeting. On this occasion I had with me my Nikon FM camera - a considerable advance on the Kodak Instamatic which I had used in the old days - and hoped to do a better job of photographing the telescopes than I had done a decade earlier.

The journey on Tuesday morning to the observatory was very familiar, including the stop half-way near the site of the old Confederate breastworks for the traditional exchange of cars/drivers. On this occasion the driver approached Green Bank from the South, allowing me to capture the view of the 300ft telescope, suddenly seen in the distance after a turn in the road (see Fig. 1).

It became a beautiful, sunny, autumn afternoon. I had use of one of the Observatory Checker diesels, and spent my time touring the Green Bank site, photographing telescopes



Figure 1: 300ft telescope from southern approach

and talking to some of the staff. I visited George Grove, valiant VLBI observing friend of the 140ft telescope, and the 300ft telescope operator. I do remember there being an inspection of the elevation bearing occasioned by reports of unusual noises, but I believe this was not an infrequent occurrence (see Fig.2, bottom right enlargement of bottom left)



Figure 2: 300ft telescope on Tuesday afternoon, 15th November 1988

Afterwards I walked round into the local village, photographing both the church and Trent's Store in late afternoon light. Finally, I returned to the Green Bank lounge, that great institution for visitors, with comfortable armchairs and minibar. The sole other occupant on that occasion was John Payne. The television was showing a repeat of the Kennedy assassination saga, since the 25th anniversary of that dramatic event was about to take place.

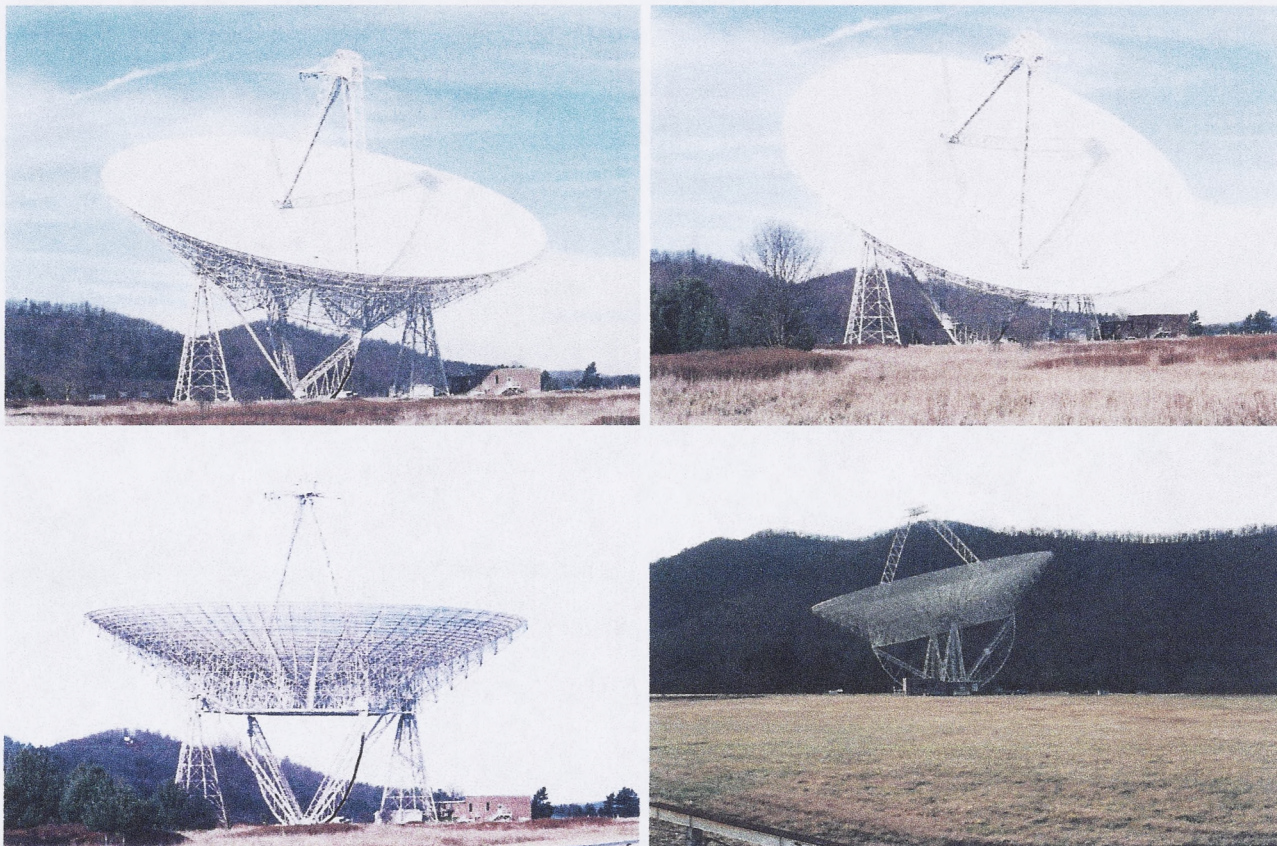


Figure 3: 300ft telescope on Tuesday afternoon, 15th November 1988

I went to bed quite early, setting the alarm clock for 05:30 to be ready for 06:00 departure. I was awoken from a deep sleep by a persistent ringing, which I first thought was the alarm clock but gradually realized was the telephone. A voice, claiming to be George Seielstad, apologized for not now being able to drive me to Charlottesville in the morning, with the strange explanation that “the 300ft has fallen down”. I looked at the clock, which showed something like 02:30, and began to wonder what was going on. Had I dreamt up this call? The matter seemed so extraordinary that I eventually thought I should investigate further. I dressed and went over to the Jansky Lab which was not, as I would have expected, full of anguished staff, but was essentially deserted. A single janitor was patrolling. Not wishing to be thought a complete fool in case my imagination had invented the whole thing, I said something like “I hear there’s some trouble at the 300ft?” to which he replied (nonchalantly) “Yeh, the 300ft is down.” Now, a telescope being “down” to a radio astronomer usually means something quite different (and I think it did to him, too) so I was not much wiser.

I decided that the only thing to do was to drive down to the 300ft myself but unfortunately

I had already returned the Checker's keys to the secretary's office which was locked. I asked the janitor to open it, retrieved the key, and was about to set off in the car when I saw the headlights from a convoy of cars returning along the long road to the telescopes. It emerged that I had NOT dreamt the call, the 300ft really HAD fallen down, and my ride to Charlottesville had indeed disappeared. And I hadn't heard a thing !

I remember having two thoughts: how was I to get to the meeting in Charlottesville (the reason for my trip) and could I get some photographs of the collapsed 300ft before I left ? In the end I accomplished both. NRAO managed to arrange a driver to take me back, leaving at about 8:30, and giving me enough time to have breakfast AND to drive down to the telescope to see and photograph the wreckage in early morning light. "A mass of mangled steel" is truly the appropriate stock phrase to describe what I saw. I remember two things: Dick Fleming, realizing that the Press would no doubt soon be descending, telling all his staff to make sure they were wearing hard hats; and a conversation with one of the cafeteria ladies, who was aware that there was a problem with the 300ft but had not actually grasped the fact that it was destroyed (perhaps none of us had).



Figure 4: 300ft telescope on Wednesday morning, 16th November 1988

I remember little of the journey back to Charlottesville and I arrived around the time of the morning coffee break of the VLBA Advisory Committee meeting. People knew of the collapse and were naturally interested in my first-hand description of the wreckage. NRAO people were particularly interested to hear that I had taken photographs before the collapse, so I duly



Figure 5: 300ft telescope on Wednesday morning, 16th November 1988

handed over my 3 films for them to have processed and printed. Soon after lunch some enlarged prints of some of them were on display, including both before and after shots. At this point I realized that most of my "after" pictures were still in my camera, so I gave these in, too. In total I had taken 71 pictures in Green Bank.

I remember almost nothing of the VLBA Advisory Committee meeting, but evidently we did a reasonable job, and the VLBA did eventually get built. I do remember talk in the NRAO corridors that they had been instructed from on high to immediately put in a proposal for a replacement for the 300ft. This, too, eventually came to fruition with the construction of the GBT - and I have not yet dared to photograph it !

References

- (1) Report of the Technical Assessment Panel - Collapse of the 300 foot Radio Telescope. (see: http://www.nrao.edu/whatisra/Collapse_300-ft_PressQ.pdf)
- (2) Sky and Telescope, 1989, 78, 11
- (3) "But it was Fun: the first 40 years of radio astronomy at Green Bank." Lockman et al, NRAO publication, 2008.