

Radar LOG

| Radar Unit: SMART

Site coords (i,j,k)	Mission Type:	Operator(s): Pryor/Moore/Biggerstaff	UTC Date: 5 April 2023	
Lat (dec. degs) 35.54823 n	Long (dec. degs) 90.60855 w	Alt (m) 62	Orientation (deg) 151	Clutter scan performed? Y

Radar Ops Time (UTC)

Note beginning (B) and end (E) times of ops; list periods of down (D) time along with reason for failure, and other problems.

Started radar: 1553 UTC. CoW is 34.1 km at 221.3° from SR1.

When we executed R40 deep, the elevation drive failed at the end and volume was lost. Had to cold restart three times. Last time was delayed due to nearby CGs in all quadrants.

Some data collected intermittently between restarts.

Tested various ways to cause elevation drive failure. First one was just repeating four elevation tilts at 18 deg/sec rotation rate. Ran fine for 20 minutes. Switched to R20DEEP tilt sequence with

Meteorological Notes

Describe general storm structure and evolution; note position and time of significant features and events; document fine lines (gust fronts, bores, other), peak Z₀, max echo tops, and height of first echo. Record time of significant sfc weather (peak wind gust, etc.)

A definite multicell line with trailing stratiform precipitation moved over the area. The convection was severe-warned over much of the leading edge of the convective band for straight-line winds, including the areas impacting the PERILS domain. Winds did appear to be severe as the line passed our location.

Occasional tornado-warned cells to the far south and southwest of the Perils domain.

Interesting merger of two gravity-type waves. There was the cold-pool driven wave from the northwest that merged with a ne-moving wave perpendicular to the convective band. Merger occurred over and just sw of our location. Significant downburst overhead and reinforced inflow notch on the severe-warned cell to the southwest. This multicell region where the merger occurred later took on some supercell characteristics. There appeared to be some rotation aloft in the WSR-88D data but not anything notable at low levels the few times we were able to sample it. That part of the line stayed severe warned for about an hour after passing the Perils domain.

Scan Strategy Notes

List scan type and time period used (chronological order); note nature and time scan mods were made (if any)

Clutter scans with 0.25 microsec pulse started at 1553. Initially no clutter filter 1553-1603 utc. Then changed to clutter filter of 3 from 1604-1614 utc. Attempted R40 deep at 1615. Elevation failed. Radar performed one surveillance at 1712 utc. Collected one set of R20 deep and shallow starting at 1715 UTC. Collected another two R20 deeps at 1720 and 1727 UTC. Switched to surveillance scans 1741-1747 UTC to try and maintain elevation control. R20_6tilts was created using the lowest 6 elevations from R20 shallow but the rotation rate was slowed to 18 deg/sec with a repeat cycle of 3 minutes to see if the rotation rate was causing the elevation drive failures. R20_6tilts started at 1751-1805 UTC. Created R20_4tilts with lowest 4 tilts from R20 at 18 deg/sec with a 90-second repeat

Radar Images

Insert images that illustrate the general character of the event

