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High Resolution Microburst Outflow Vertical Profile Data from Huntsville, Alabama, and Denver, Colorado

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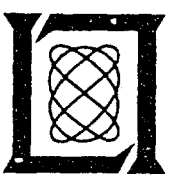

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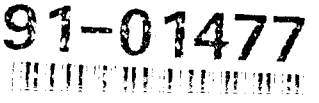

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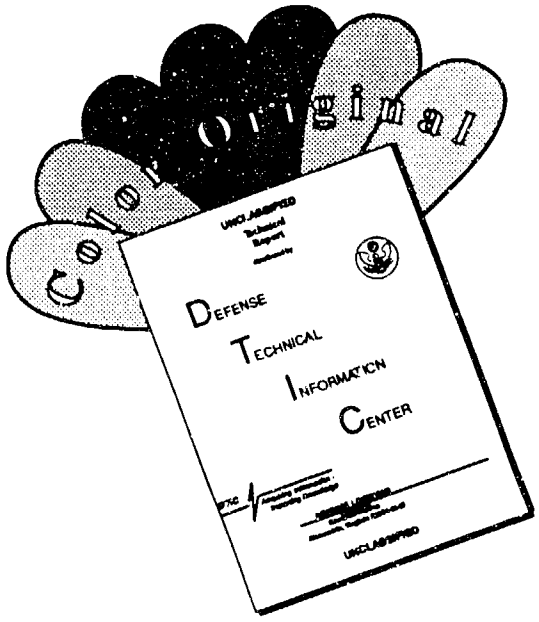

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16. Abstract

The purpose of this report is to present detailed data on microburst outflows recorded by the TDWR testbed radar (FL-2) in Huntsville, Alabama (1986) and Denver, Colorado (1987-88). Whenever possible, a microburst detected within 10 km of the radar was scanned in a vertical direction (RHI) at 1 to 2 degree azimuthal intervals about the center of divergence.

The vertical profile of the outflow is pertinent to the detection capability and siting strategy of a single Doppler radar observing the microburst from a horizontal viewing angle. Additionally, outflow features are important in assessing the hazard associated with microbursts as well as the capability of other wind shear detection (LLWAS or ASR). Of particular interest is the variability of outflow depths from case to case and site to site. If the depth across the maximum velocity differential is shallow, an outflow might go undetected or underestimated by a radar, the beam of which was not viewing the axis of peak divergence. Previous research projects in Denver reported the highest winds in a microburst typically occur near the surface with an average outflow depth (1/2 peak velocity) ranging between 500 and 600 meters; however, the vertical resolution of these data was fairly crude due to the scan strategies utilized. This report provides detailed high resolution microburst outflow vertical profile data pertinent to TDWR system studies based on RHI and closely spaced PPI scans.

The median observed outflow depth in Huntsville was 200 meters shallower than in Denver while the median height of the maximum velocity varied from 100 meters AGL in Huntsville to 200 meters AGL in Denver. For those Denver events that were located inside 15 km, the typical maximum velocity was detected just above the surface. Based on the analysis presented here, we recommend that the TDWR microburst detection scan extend to at least 200 meters AGL and 100 meters if there is adequate clutter suppression.

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I. INTRODUCTION

The focus of this report is to provide detailed data on microburst outflows recorded by the TDWR testbed radar (FL-2) in Huntsville, Alabama (1986) and Denver, Colorado (1987-88). Detailed information on microburst outflow characteristics is relevant to a number of issues:

(1) optimizing the siting and scanning of TDWR systems
(2) assessing the detection capability of other wind shear detection systems (e.g. ASR-9 and LLWAS)
(3) understanding the operational hazard of a microburst to aircraft, and
(4) validation of numerical models for microburst producing storms.

However, much of the extensive past data base on microbursts does not provide adequate quantitative data to address these issues due to:

(1) clutter contamination of the surface scan data, and
(2) scan strategies that did not provide adequate vertical and temporal resolution in the outflow region.

In view of the importance of microburst outflow characteristics to the operational application of the TDWR system, a concerted effort has been made to obtain high resolution data on microbursts which were close to the FL-2 radar from 1986 to 1988. The microburst data contained in this report were obtained in both a vertical (RHI) and horizontal (PPI) scan mode. Microbursts observed within 10 km were typically scanned with RHI's at an azimuth resolution of 1 or 2 degrees.

The pertinent characteristics of the FL-2 radar are shown in Table 1.

TABLE 1

Characteristics of the FL-2 Radar

BEAMWIDTH (deg)	1
WAVELENGTH (cm)	10.5
AZIMUTH RESOLUTION (deg)	1
RANGE RESOLUTION (m)	120
SENSITIVITY @ 15 km (dB)	-15
CLUTTER SUPPRESSION (dB)	-40
AZ. ROTATION RATE (deg/sec)	10(HSV), 25(DEN)
SIDELOBES (dB)	-25
REFL. ACCURACY	$\leq$ 2 dBz for weather width $\leq$ 4m/s
VELOCITY ACCURACY	$\leq$ 1 m/s for weather width $\leq$ 4m/s

The report is organized as follows. Section II provides summary results on outflow depths as a function of core reflectivity, outflow wind strength, storm height, etc. Sections III and IV discuss examples of microburst outflows observed in Huntsville and Denver respectively. Section V describes the raw data compiled in the report. The final section is a conclusion of the pertinent issues in understanding the importance of the depth of outflow in the microburst detection process. The vast bulk of the report consists of Appendix B, which provides detailed data (e.g. printouts of the radial velocity data on RHI scans together with color plots of the RHI and PPI data) for use by researchers investigating the issues discussed at the beginning of this section.

II. OUTFLOW DEPTHS

The depth of outflow is pertinent to the detection capability and siting strategy of a single Doppler radar observing the microburst from a horizontal viewing angle. The current TDWR scan strategy consists of only PPI tilts with a surface tilt for microburst outflow detection scheduled once per minute. The altitude over the airport of the lowest elevation angle represents a delicate tradeoff between:

(1) scanning close to the surface to insure that the strong outflow winds are observed, and
(2) scanning far enough above the surface to minimize ground clutter contamination.

Of particular interest is the variability of outflow depths from case to case and site to site (refer to Tables 3 and 4). If the depth of the microburst is shallow, a detection algorithm might underestimate or miss the wind shear entirely. Wilson et al. (1984) stressed the importance of radar siting in order to detect shallow outflows. A study by DiStefano (1987) concluded that a shallow outflow depth contributed to a missed microburst by the FL-2 radar on 23 July 1985 in Memphis, Tennessee.

In this section we provide a comparative analysis of outflow statistics tabulated from the FLOWS Project in a wet environment (Huntsville) and dry region (Denver). Table 2 is a list of the fourteen highest resolution microburst outflows from Huntsville and Denver which were scanned in an RHI mode.* The radial velocity differential for these outflows ranged from 14 to 27 m/s.

Tables 3 and 4 contain outflow depths from a larger microburst data base for Huntsville and Denver including a majority of the microbursts scanned with RHI's. For this analysis, the depth of outflow is defined as the height of one-half the maximum surface velocity. Based on this criteria, Huntsville wind shears were slightly shallower than Denver e.g., 0.4 versus 0.6 km. Microburst depths in Huntsville ranged from 300 to 1000 meters, while Denver outflows varied from 200 to 1100 meters. These results are similar to the typical outflow depths reported for Memphis by Rinehart et al., (1987) and for Denver by Wilson et al., (1984).

A more detailed analysis of Denver outflow structure is presented in Tables 5 and 6. The data was tabulated from RHI's whose vertical resolution was dependent on the distance of the event from the radar. The values are the lowest for which the criteria was meet. An important parameter in Table 5 is the height at which the differential radial velocity drops below 10 m/s. This is the current minimum velocity threshold for declaring a microburst (without a precursor) in the TDWR microburst detection algorithm. The median height of differential velocity < 10 m/s was 720 meters.

*In Table 2 and the subsequent tables, we have shown the vertical resolution of the radar (Zres). For RHI scans, the vertical resolution is the beamwidth (in radians) multiplied by range while for PPI scans, Zres is the elevation angle spacing (in radians) multiplied by range.

There was quite a lot of variability ranging from a low of 200 meters to a high of 2200 meters. The height of one-half the maximum velocity was computed for the same cases and are listed in Table 5. The median height of one-half the maximum velocity is 700 meters, which is similar to the height at which the differential velocity drops below microburst threshold.*

The height of the maximum velocity and maximum differential velocity for Denver microbursts is presented in Table 6. The median height of maximum velocity and maximum differential velocity were 50 and 60 meters respectively. The height of the maximum deltav was below 100 meters in approximately two-thirds of the cases. In order to detect the strongest velocities in a microburst, the minimum elevation in the TDWR scan should cover the lowest one hundred meters AGL.

Table 7 is a subset of Denver microbursts at a distance of 15 km or less from the radar. Ten of thirteen microbursts analyzed here attained their maximum velocity on the lowest PPI tilt in the scan. The median height of maximum velocity was 10 meters with an extreme of 160 meters. Those microbursts with stronger velocities aloft could have been captured prior to the strongest outflow reaching the surface. Additional research should be conducted to determine the variability of the outflow structure in a microburst with time.

Figure 1 is a plot of the average differential velocity versus height for the Denver microburst cases according to the three reflectivity classifications determined by Roberts and Wilson, 1986 (low: $\leq$ 35 dBz, moderate: 40-50 dBz, high: $\geq$ 55 dBz). At a height of 500 meters, the differential velocity in the low reflectivity microbursts was reduced by 15 percent, while the medium and high reflectivity cases were reduced by 20 and 25 percent respectively. There was little difference in the structure of the radial velocity differential with height for Denver microburst reflectivity classes.

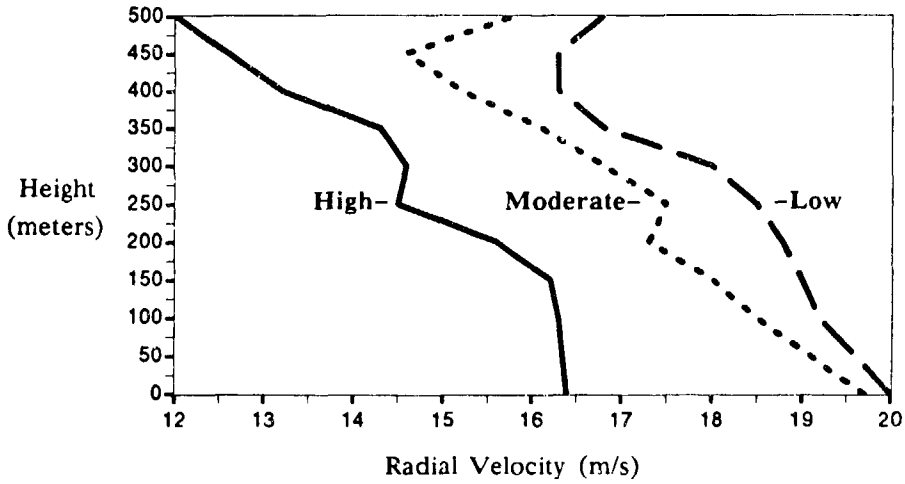

Figure 1. Average differential velocity versus height for low, moderate and high reflectivity Denver outflows.

It is important to be able to classify the type of microburst which may produce the shallowest outflow. Figure 2 is a plot of the outflow depth versus the maximum core reflectivity at 0.5 km AGL for the Denver data-set. The reflectivity distribution varies from 20 to 65 dBz. All of the low reflectivity outflows were at least 500 meters deep, while the distribution for the moderate and high

* All heights cited in this report refer to the height of the radar plane assuming earth curvature. The height above ground level would depend on the difference in elevation between the antenna and ground in the location of interest. For example, at Huntsville the elevation difference between the radar and airport was -25 feet, while at Denver it was -311 feet.

reflectivity events ranged from 200 to 900 meters. For the cases examined here, there was no distinct relationship between the depth of the outflow and the maximum core reflectivity.

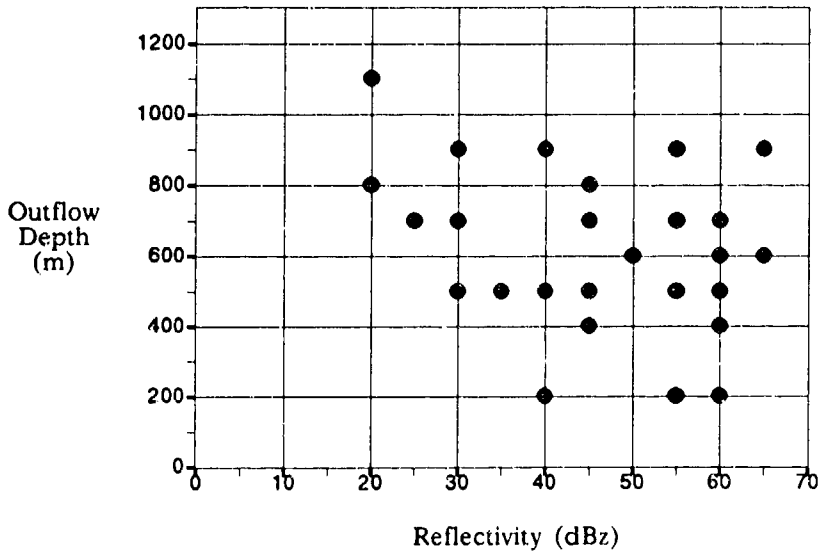

Figure 2. Outflow depth (m) vs. maximum core reflectivity for the 1987 Denver data set.

Figure 3 is a plot of the distribution of maximum differential velocity and depth of outflow for those cases with a Zres $\leq$ 200 meters. The strongest outflow in this data-set was also one of the shallowest. However, the distribution suggests there is no relationship between the strength and depth of the microburst. This topic will be further investigated as additional data is collected.

The TDWR system requirements statement (SRS) calls for a wind shear estimation accuracy of + and – 20 percent or 5 knots, whichever is greater. The depth of outflow statistics in Table 8 pertain to the specification required in the TDWR SRS. At a height of 325 meters the velocity in a typical Denver microburst is 80 percent that of the surface. Approximately 90 percent of the Denver microbursts attained the 80 percentile value at a height of greater than 185 meters.

III. CASE STUDY (HUNTSVILLE)

On 22 September 1986, a microburst developed just east of the FL-2 radar causing damage in the area surrounding the Huntsville-Madison County Jetplex. The maximum surface reflectivity reached 60 dBz. The outflow was quite shallow having a maximum depth (height of one-half maximum deltav) of 190 meters (Table 9). This is also the height at which the differential velocity drops below 10 m/s. The maximum radial velocity recorded by FL-2 was 21 m/s at the surface. This is an example of a strong microburst that could be underestimated or undetected by a radar which did not scan near the surface.

IV. CASE STUDY (DENVER)

On 25 June 1988, a line of 50 to 55 dBz cells formed along a convergent boundary east of FL-2. Numerous microbursts were detected along the line as it tracked westward. A high reflectivity core

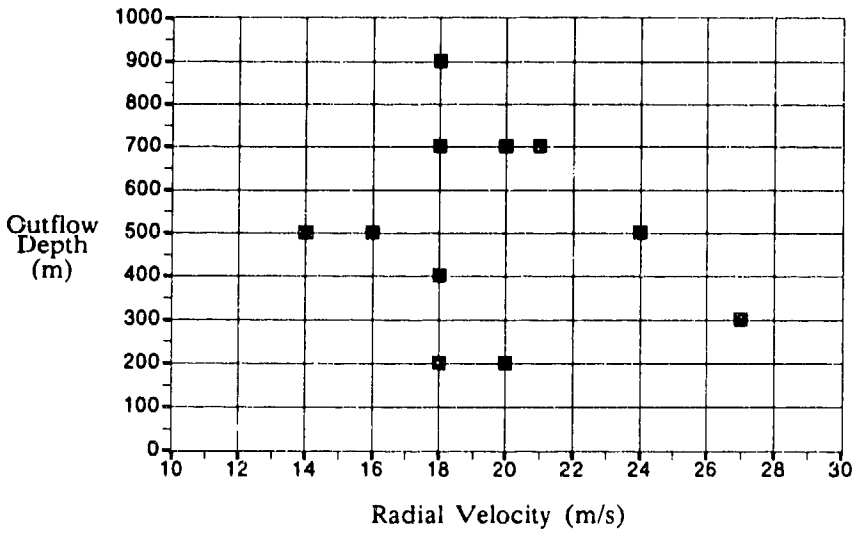

Figure 3. Maximum differential velocity vs. depth of outflow for cases with Zres $\leq$ 200 meters.

just east of the radar produced a strong outflow accompanied by heavy rain and hail. The wind shear increased from 10 to 30 m/s over a period of 4 minutes. Since there was no activity within the airport TDWR sector, FL-2 collected two volume scans of RHI's through the outflow region located within 2 km. This wind shear peaked at a velocity difference of 36 m/s over a distance of 2.5 km. This represents an average wind speed change of 14 m/s per kilometer. A divergent line persisted until after the cells had crossed Stapleton International Airport.

In comparison to the Huntsville event, the Denver outflow was deeper, maintaining a velocity in excess of 10 m/s to a height of 630 meters (Table 10). The maximum differential velocity is located near the surface at a height of 30 meters. By 430 meters AGL, the microbursts wind speed drops below one-half that of the surface.

V. ADDITIONAL DATA

A complete data set of resampled images and BSCANS are located in Appendix B for those interested in additional outflow research. Each BSCAN is composed of the velocity value (m/s) versus range and elevation. The range in kilometers is located along the x-axis while the elevation in degrees is along the y-axis. Since the data were acquired from a single RHI tilt there is only one azimuth for each plot. Thus it is possible to estimate the 50 or 80 percent outflow depth by determining the velocity change with height. A number of outflows were detected on more than one volume scan allowing for an analysis of the outflow structure with time. The resampled images depict the microburst at approximately its strongest velocity differential. For each outflow in Table 2 there is a brief weather synopsis.

VI. CONCLUSION

Vertical profiles of microburst outflows are important for TDWR siting and scanning strategy, windshear detection systems, and an understanding of the outflow variability with location and time. The TDWR testbed has collected an extensive set of high resolution vertical profile data with RHI and PPI scans in Huntsville and Denver. This report provided summary statistics on the cases with good vertical resolution.

The median depth of Huntsville outflows was slightly less than Denver events e.g., 400 versus 600 meters. However the shallowest outflow in either locale was 200 meters for several cases from Denver. According to the data presented here, the TDWR must scan the lowest one hundred meters AGL in order to detect the strongest velocities in the microburst. There seems to be no relationship between the maximum surface reflectivity or maximum velocity versus the depth of the outflow for Denver and Huntsville.

Based on this analysis, we recommend that the TDWR microburst detection scans extend from the surface to at least 200 m AGL and 100 m if there is adequate clutter suppression. Future studies should consider:

(1) the variability of outflow depth with time to attempt to address the issue of whether the deepest outflows are coincident with the strongest velocities

(2) an attempt to understand the physical processes that produce shallow (several hundred meters) and deep (2 km) outflows

(3) focusing on the fine detailed study of the outflow structure to determine if microburst vortices or rotors are present as numerical models suggest.

TABLE 2

Microbursts Within 8 km of FL-2 Captured with RHI's

DATE	SITE	YEAR	TIME UT	LOCATION R(km)/AZ(deg)	DELTA V (m/s)	Z RES. (km)
July 1/A	Huntsville	1986	1830	5/003	16	.08
Sept 22/A	Huntsville	1986	2240	2/076	14	.03
Sept 22/B	Huntsville	1986	2318	2/108	27	.03
Aug 10/A	Huntsville	1986	2326	6/034	30	.10
Aug 10/B	Huntsville	1986	2340	7/015	30	.12
Aug 10/C	Huntsville	1986	2351	3/007	40	.05
June 7/A	Denver	1987	0159	7/322	18	.12
May 17/A	Denver	1987	2046	8/237	16	.13
June 12/A	Denver	1987	2147	3/288	22	.05
June 12/B	Denver	1987	2153	4/250	15	.07
June 12/C	Denver	1987	2213	6/169	25	.10
Sept 13/A	Denver	1987	0108	7/302	24	.12
Sept 13/B	Denver	1987	0117	2/358	16	.03
June 25/A	Denver	1988	1936	2/100	35	.03

Note: Some of the velocity range gates on 10 August 1986 are contaminated.

TABLE 3

1986 FLOWS Surface Outflow Characteristics (Huntsville)

DATE	TIME UT	LOC. R(km)/AZ(deg)	DELTA V (m/s)	DEPTH OUTFLOW(km)	MaxZ CORE	HEIGHT TOP 20 dBz	Z RES. (km)
June 24	1548	19/161	12	0.5	55	7.0	.32
July 01	1830	5/003	18	0.4	60	10.8	.08
July 06	2041	27/212	21	0.6	60	12.5	.45
July 13	2050	24/023	32	1.0	65	13.9	.40
July 13	2126	16/325	28	0.7	65	13.4	.27
July 25	2020	20/215	15	0.3	55	7.1	.33
July 25	2206	24/066	18	0.3	55	10.3	.40
Aug 07	2123	23/339	24	0.4	55	10.6	.38
Aug 24	2019	23/283	18	0.4	60	13.1	.38
Sept 21	1903	9/235	24	0.5	60	12.8	.15
Sept 22	2249	3/088	14	0.5	60	11.5	.05
Sept 22	2317	3/155	27	0.3	60	12.0	.05
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		Median	19.5	0.45	60	11.75	

TABLE 4

1987 FLOWS Surface Outflow Characteristics (Denver)

DATE	TIME UT	LOCATION R(km)/AZ(deg)	DELTA V (m/s)	DEPTH OUTFLOW(km)	MaxZ CORE	HEIGHT TOP 20 dBz	Z RES. (km)
May 17	2046	8/237	18	0.9	65	10.6	.13
May 17	2102	16/033	14	0.5	60	11.5	.27
May 23	2152	14/236	25	0.6	65	10.6	.23
May 23	2146	19/318	18	0.5	60	11.0	.32
May 26	1851	16/113	21	0.9	55	8.2	.27
June 7	2343	20/290	20	0.6	50	6.0	.33
June 7	0021	29/280	16	0.5	45	5.9	.48
June 7	0101	26/277	16	0.9	40	6.3	.43
June 7	0129	13/338	14	0.2	40	3.8	.22
June 7	0136	10/337	20	0.2	55	6.3	.17
June 7	0159	8/322	18	0.2	60	5.5	.13
June 10	2219	18/276	21	0.9	30	5.6	.30
June 11	1841	19/250	15	0.5	35	6.8	.32
June 12	2147	3/293	20	0.7	30	-	.05
June 12	2149	4/263	16	0.5	40	9.2	.07
June 12	2155	12/236	21	0.7	55	7.9	.20
June 12	2223	10/124	18	0.7	25	6.8	.17
June 17	2146	17/273	24	0.4	45	8.6	.28
June 17	2152	23/278	21	0.8	45	7.4	.38
June 18	2317	21/312	18	0.7	45	7.9	.35
June 18	2301	32/283	22	0.4	60	10.1	.53
July 02	0254	17/253	21	0.5	30	4.6	.28
July 02	0236	18/178	27	0.6	60	11.9	.30
July 23	0443	14/279	20	0.5	55	11.5	.23
Aug 07	0155	13/120	18	0.6	60	12.0	.22
Sept 10	0314	16/109	20	0.5	55	9.2	.27
Oct 08	0015	17/147	22	1.1	20	4.8	.28
Oct 08	0034	16/164	16	0.7	25	4.0	.27
Oct 08	0121	20/164	22	0.8	20	4.5	.33
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		Median	20	0.6	45	7.65	

TABLE 5

1987 Denver Outflow Depths

DATE/CASE #	TIME UT	LOCATION R(km)/AZ(deg)	HEIGHT DELTAV < 10 m/s (m)	HEIGHT 1/2 MAX. VELOCITY (m)
5-17-87/1	204648	9/237	400	560
5-17-87/2	210213	16/033	280	450
5-23-87/1	215219	13/236	1000	1000
5-23-87/2	214628	18/318	480	1300
5-26-87/1	185105	16/113	940	940
6-07-87/1	234320	21/290	360	1000
6-07-87/2	002105	29/280	400	560
6-07-87/3	010105	28/277	820	980
6-07-87/4	012952	10/337	200	190
6-07-87/5	015950	8/322	260	260
6-10-87/1	221930	18/276	1100	860
6-12-87/1	214741	3/293	730	690
6-12-87/2	222327	10/124	750	680
6-12-87/3	215519	12/236	1630	1630
6-12-87/4	184146	18/250	470	900
6-17-87/1	214648	18/276	450	650
6-17-87/2	215233	23/279	410	900
6-18-87/1	231735	19/312	910	730
6-18-87/2	230129	32/283	1420	1420
7-02-87/1	205359	16/253	720	1000
7-02-87/2	023603	18/178	2200	1480
7-23-87/1	044242	13/279	1540	900
8-07-87/1	015606	13/120	1640	1640
9-10-87/1	031357	16/109	590	520
10-08-87/1	001527	17/147	1440	1280
10-08-87/2	003316	16/164	720	700
10-08-87/3	012457	19/164	670	860
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		Median	720	700

TABLE 6

1987 Denver Outflow Velocity Characteristics

DATE/CASE #	LOCATION R(km)/AZ(deg)	TIME UT	REFLECTIVITY CORE (dBz)	HEIGHT MAX. VELOCITY (m)	HEIGHT MAX. DELTA V (m)
5-17-87/1	8/237	204648	55	< 10	10
5-17-87/2	16/033	210213	60	40	50
5-23-87/1	13/236	215219	65	10	20
5-23-87/2	[illegible]/318	214628	60	50	60
5-26-87/1	16/113	185105	50	10	200
6-07-87/1	21/210	234320	45	130	160
6-07-87/2	30/280	002105	45	60	60
6-07-87/3	28/277	010105	40	180	100
6-07-87/4	10/337	012952	40	10	10
6-07-87/5	8/322	015950	55	20	20
6-10-87/1	18/276	221930	20	20	20
6-11-87/1	18/250	000146	15	20	20
6-12-87/1	3/293	214741	25	< 10	10
6-12-87/2	10/124	222327	40	160	160
6-12-87/3	11/236	215519	5	450	450
6-17-87/1	18/276	214648	30	20	20
6-17-87/2	23/279	215233	35	40	40
6-18-87/1	20/312	231735	45	150	190
6-18-87/2	32/283	230129	60	110	140
7-02-87/1	17/253	205359	15	70	20
7-02-87/2	18/178	023603	55	20	20
7-23-87/1	14/271	044242	55	10	320
9-10-87/1	16/109	031357	55	60	80
10-08-87/1	17/147	001527	5	560	330
10-08-87/2	16/164	003316	5	140	140
10-08-87/3	20/164	012457	15	150	180
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		Median	45	50	60

TABLE 7

Height of Maximum Velocity in Denver Outflows

DATE	TIME UT	LOCATION R(km)/AZ(deg)	MAX. VELOCITY (m/s)	HEIGHT MAX. VELOCITY (m)	LOWEST TILT
5-17-87	2046	7/237	10	< 10	Y
5-23-87	2152	10/236	16	10	Y
5-26-87	1851	14/113	15	10	Y
6-07-87	0129	8/337	10	< 10	Y
6-07-87	0159	8/322	11	20	Y
6-12-87	2147	2/293	12	5	Y
6-12-87	2155	10/236	16	10	N
6-12-87	2223	9/124	10	160	N
7-02-87	2053	15/253	18	70	N
7-23-87	0442	11/279	12	10	Y
9-10-87	0313	14/109	10	60	Y
10-8-87	0033	15/164	13	140	Y
6-25-88	1937	2/104	23	< 10	Y
				--	
			Median-	10	

TABLE 8

Depth of Outflow (80% Maximum Delta V)

DATE	TIME UT	LOCATION R(km)/AZ(deg)	DEPTH OUTFLOW AT 80% DELTA V (m)
June 7	2343	20/290	185
June 7	0021	29/280	310
June 7	0101	26/277	830
June 7	0136	10/337	40
June 7	0159	8/322	125
June 17	2146	17/273	280
June 17	2152	23/278	368
May 17	2046	8/237	240
May 17	2102	16/033	200
May 23	2152	14/236	195
May 23	2146	19/318	400
June 10	2219	18/276	770
June 18	2317	21/312	639
June 18	2301	32/283	218
July 02	2054	17/253	560
Oct 08	0015	17/147	1260
Oct 08	0034	16/164	314
Oct 08	0121	20/164	558
July 23	0443	14/279	416
Aug 07	0155	13/120	330
Sep 10	0314	16/109	280
July 02	0236	18/178	564
June 12	2147	3/293	150
June 12	2155	12/236	890
June 12	2223	10/124	470
May 26	1851	16/113	320
			--
		Median	325

TABLE 9

22 September 1986 Microburst Outflow Depths

TIME UT	VELOCITY (m/s)	HEIGHT (m)	VELOCITY (m/s)	HEIGHT (m)	DELTA V (m/s)
231800	-10	0	+11	0	21
	-9	0	+10	10	19
	-11	20	+9	30	20
	-9	30	+8	60	17
	-9	40	+5	100	14
	-11	50	+1	140	12
	-9	90	+1	190	10

TABLE 10

25 June 1988 Microburst Outflow Depths

TIME UT	VELOCITY (m/s)	HEIGHT (m)	VELOCITY (m/s)	HEIGHT (m)	DELTA V (m/s)
193711	-23	0	+12	20	35
	-23	10	+13	30	36
	-23	10	+12	40	35
	-23	20	+12	80	35
	-21	30	+12	90	33
	-19	40	+12	140	31
	-19	40	+11	190	30
	-19	50	+9	190	28
	-18	50	+9	230	27
	-18	60	+7	290	25
	-18	80	+5	320	23
	-18	90	+4	290	22
	-19	100	+5	370	24
	-18	110	+4	380	22
	-17	120	+3	410	20
	-14	110	+3	430	17
	-13	130	+3	500	16
	-14	140	+3	550	17
	-14	150	+2	490	16
	-13	100	+3	490	16
	-14	110	+2	520	16
	-14	120	-1	590	13
	-13	160	-2	630	11

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APPENDIX A: WEATHER SUMMARY

July 1, 1986

Due to a warm, moist and unstable atmosphere on this day, air-mass showers and thunderstorms developed over northern Alabama. The morning's activities focused on several scattered thundershowers which developed to the south and southeast of FL-2. These cells were quite weak and produced only weak outflows. By early afternoon, stronger cells developed in the vicinity of the radar. Several fairly strong outflows were detected by FL-2, including one with a 33 m/s differential shear.

July 19, 1986

This day's mission began at 19:10 GMT focusing on a cell 42 km to the north of the radar. By 2000 GMT, a strong cell had developed at a range of 6 km and 090 degrees. A reflectivity core of 60 dBz was observed prior to a microburst shear of +15 and -9 m/s. Several other microbursts were observed to the east and southeast of FL-2.

September 22, 1986

On this day, air-mass thundershowers developed during the afternoon hours within the FLOWS mesonet. A total of 5 microbursts and 2 gustfronts were recorded in the radar logs. The strongest event was a microburst located near FL-2 producing a radial shear of 36 m/s.

May 17, 1987

The passage of a strong cold front on this day led to the development of several strong (55 to 60 dBz) cells west of Denver by 1900 GMT. Two gustfronts and four microbursts were detected during this day's mission. All of the events were accompanied by moderate to heavy rainfall at the surface.

June 8, 1987

On this day, echoes began to develop over the mountains by early afternoon. At 2140, a gustfront was detected. Convergence along this feature provided additional lifting to a cell over Denver. Several microbursts were noted within a line west of Stapleton. Most of the outflows on this day were classified as moderate or high reflectivity events.

June 12, 1987

On the 12th, several lines of virga developed to the west and north of FL-2. A number of strong windshears accompanied by blowing dust were documented. The surface reflectivities in these storms were generally less then 45 dBz. A total of 28 microbursts were logged within 4 divergent lines.

September 13, 1987

Virga developed along the foothills during the mid-afternoon producing several weak microbursts. Later in the afternoon, a second line of stronger cells built off of the mountains and moved across the airport. A number of outflows were detected in real time to the northwest, north, and northeast of the FL-2 site.

June 25, 1988

By early afternoon on this day, several moderate echoes developed along a convergence line east of the FL–2 radar. This line produced several microbursts as it drifted to the west and passed over Stapleton. The strongest event, accompanied by hail, caused minor damage at the FL–2 site.

APPENDIX B: RADAR DATA

1. July 1, 1986

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7- 1-86 Time:18:30:11 Scan: 3 Tilt: 6 Product:V / 2

Time	Elev	Az	3.44	3.68	3.92	4.16	4.40	4.64	4.88	5.12	5.36	5.60	5.84	6.08
18:30:16	10.80	5.0	-7 -4 -4 -6	-6 -6 -7 -7	-5 -5 -5 -7	-7 -7 -6 -6	-6 -5 -5 -4	-4 -4 -4 -4	-4 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3
18:30:16	9.70	5.0	-7 -4 -4 -6	-6 -6 -6 -6	-6 -5 -6 -6	-6 -5 -5 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4
18:30:17	8.60	5.0	-7 -5 -5 -5	-6 -6 -5 -4	-5 -6 -6 -6	-5 -5 -5 -5	-4 -3 -2 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3
18:30:17	7.50	5.0	-5 -5 -4 -5	-5 -5 -4 -3	-4 -6 -6 -6	-5 -5 -4 -5	-5 -4 -3 -2	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3
18:30:17	6.50	5.0	-2 -4 -3 -4	-4 -3 -3 -3	-3 -5 -6 -6	-5 -6 -5 -4	-5 -3 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	5.40	5.0	-2 -3 -3 -5	-4 -2 -3 -4	-4 -4 -5 -5	-5 -5 -5 -4	-3 -3 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	4.30	5.0	-3 -4 -5 -6	-5 -4 -4 -4	-4 -3 -3 -3	-3 -4 -5 -4	-3 -3 -3 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	3.30	5.0	-5 -5 -5 -6	-5 -5 -5 -5	-6 -5 -3 -4	-4 -3 -4 -3	-3 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	2.10	5.0	-6 -6 -6 -6	-6 -7 -5 -6	-6 -4 -4 -4	-3 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	1.20	5.0	-7 -6 -6 -6	-6 -6 -5 -5	-5 -5 -3 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	0.40	5.0	-3 1 -2 -5	-5 -4 -4 -2	0 -4 -4 0	-2 -2 -2 -2	-2 -1 0 1	1 1 1 1	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2 2 2 2
Time	Elev	Az	3.44	3.68	3.92	4.16	4.40	4.64	4.88	5.12	5.36	5.60	5.84	6.08

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7- 1-86 Time:18:30:11 Scan: 3 Tilt: 6 Product:V / 2

Time	Elev	Az	6.32	6.56	6.80	7.04	7.28	7.52	7.76	8.00	8.24	8.48	8.72	8.96
18:30:16	10.80	5.0	-4 -4 -4 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5
18:30:16	9.70	5.0	-4 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -4	-3 -4 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-4 -4 -4 -4	-4 -4 -4 -4
18:30:17	8.60	5.0	-3 -2 -3 -2	-2 -2 -2 -2	-2 -2 -2 -3	-2 -4 -4 -4	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-3 -3 -3 -3	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4
18:30:17	7.50	5.0	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -3 -3 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -5 -5 -5	-5 -5 -5 -5
18:30:17	6.50	5.0	-2 -2 -2 -1	-2 -2 -2 -2	-2 -2 -2 -3	-3 -3 -3 -3	-2 -3 -3 -4	-4 -4 -4 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5
18:30:17	5.40	5.0	-3 -2 -2 -2	-2 -2 -1 -1	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2
18:30:17	4.30	5.0	-3 -4 -3 -3	-3 -2 -2 -2	-1 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	0 0 -1 -1	-1 -1 -1 -1
18:30:17	3.30	5.0	-3 -2 -3 -3	-3 -3 -2 -2	-2 -1 -2 -2	-2 -2 -2 -2	-1 -1 -1 0	1 2 3 3	3 4 4 4	4 5 5 6	7 7 6 7	7 8 8 8	8 8 8 8	8 8 8 8
18:30:17	2.10	5.0	2 -1 -1 -1	0 -1 -2 -2	-2 -1 0 -1	0 1 2 2	2 3 3 4	4 4 4 4	4 5 5 5	5 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6	6 6 6 6
18:30:17	1.20	5.0	2 1 2 2	2 2 2 2	2 2 2 3	3 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4	4 4 4 4
18:30:17	0.40	5.0	2 2 2 2	2 2 3 2	2 2 2 4	4 5 5 7	6 6 6 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7
Time	Elev	Az	6.32	6.56	6.80	7.04	7.28	7.52	7.76	8.00	8.24	8.48	8.72	8.96

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7- 1-86 Time:18:30:11 Scan: 3 Tilt: 6 Product:V / 2

Time	Elev	Az	9.20	9.44
18:30:16	10.80	5.0	-5 -5 -5 -5	-5 -5 -5 -5
18:30:16	9.70	5.0	-4 -4 -4 -4	-4 -4 -4 -4
18:30:17	8.60	5.0	-5 -5 -5 -5	-5 -5 -5 -5
18:30:17	7.50	5.0	-5 -5 -5 -5	-5 -5 -5 -5
18:30:17	6.50	5.0	-4 -4 -4 -4	-4 -4 -4 -4
18:30:17	5.40	5.0	-2 -2 -3 -2	-2 -2 -2 -2
18:30:17	4.30	5.0	1 2 1 2	2 2 2 2
18:30:17	3.30	5.0	3 3 3 4	4 4 4 4
18:30:17	2.10	5.0	4 5 4 4	4 4 4 4
18:30:17	1.20	5.0	6 5 5 6	6 6 6 6
18.30:17	0.40	5.0	8 7 7 8	8 8 8 8
Time	Elev	Az	9.20	9.44

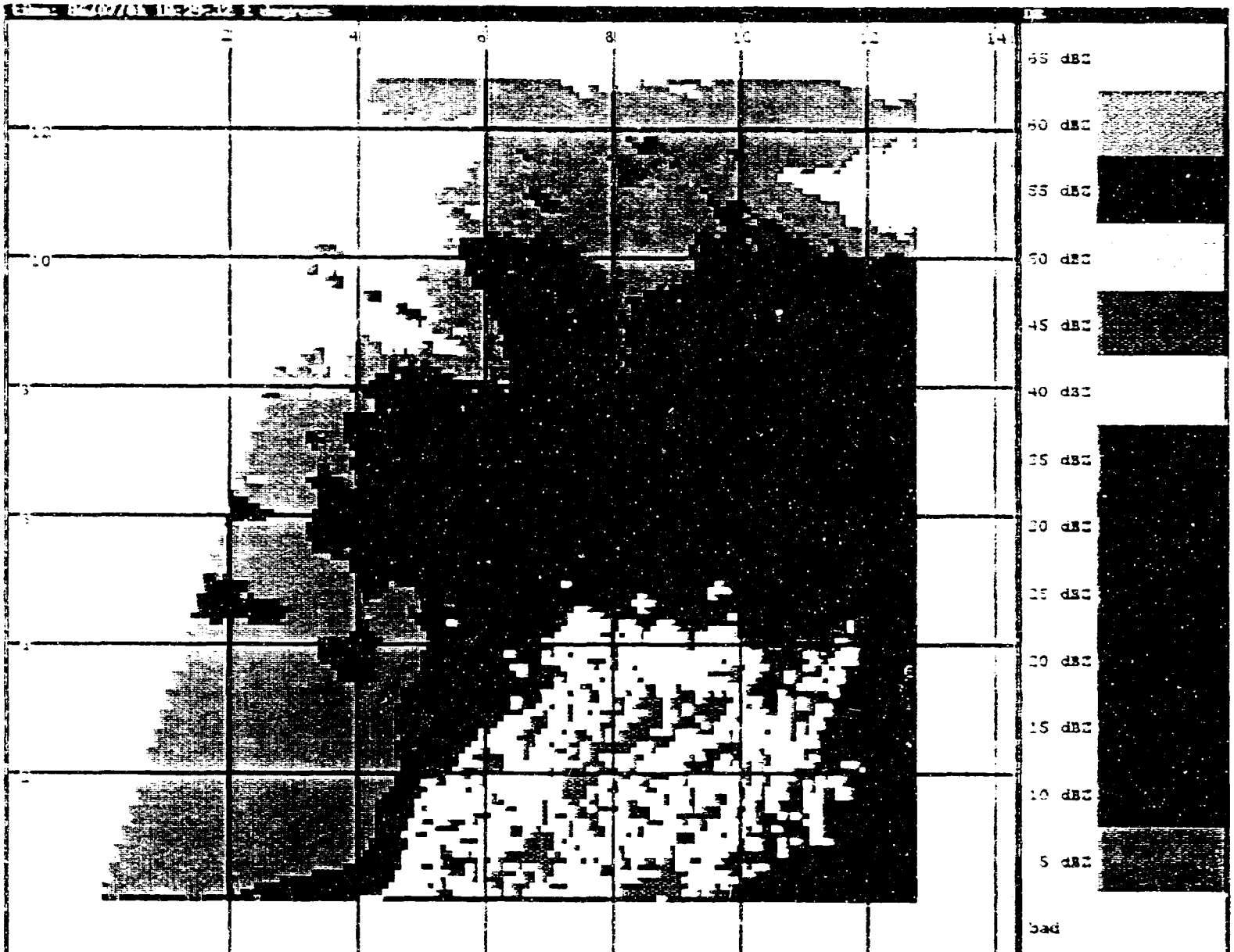

Figure B-1. RHI scan of reflectivity at 1 degree azimuth during microburst at 18:29:32 UT on July 1, 1986.

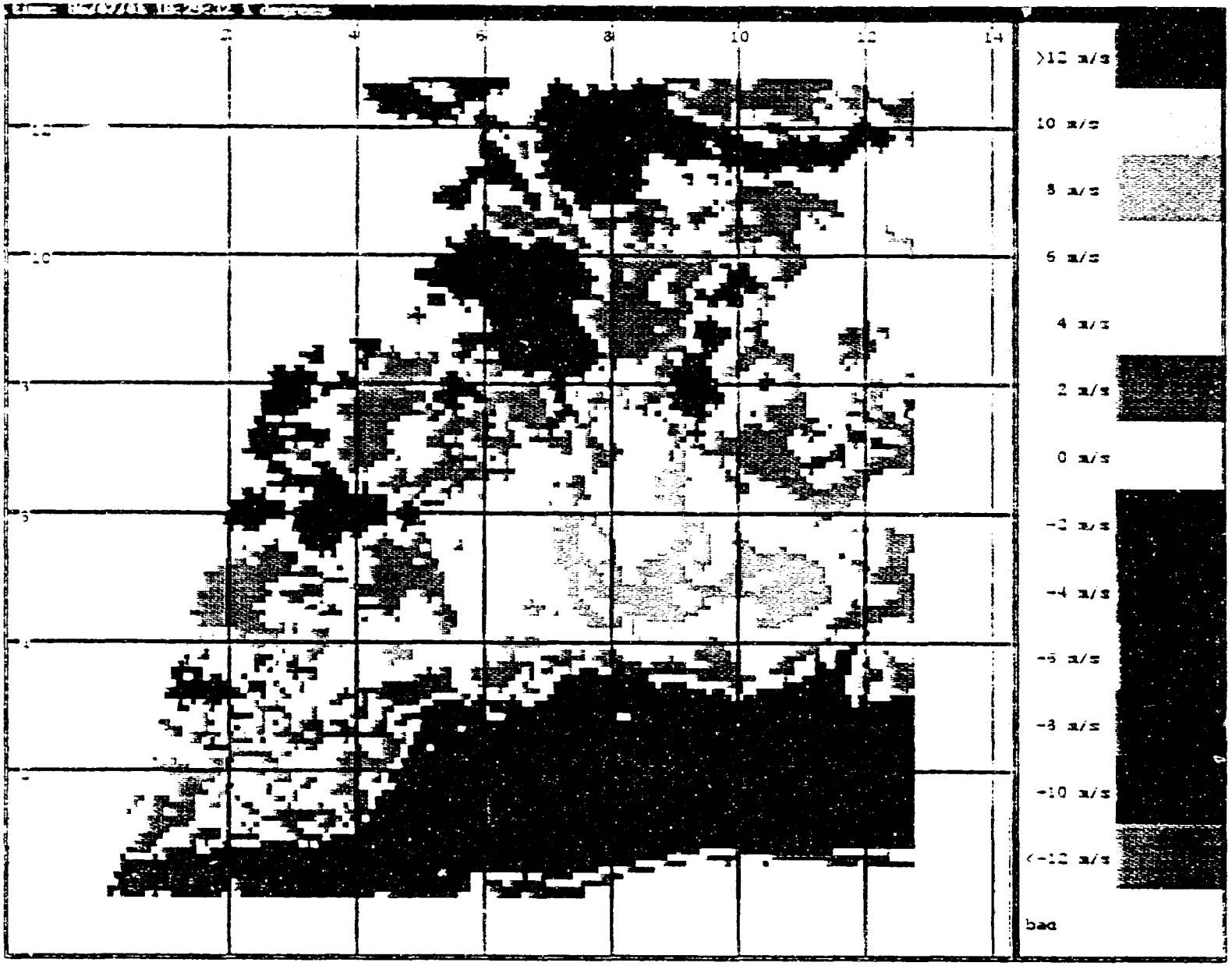

Figure B-2. RHI scan of velocity at 1 degree azimuth during microburst at 18:29:32 UT on July 1, 1986.

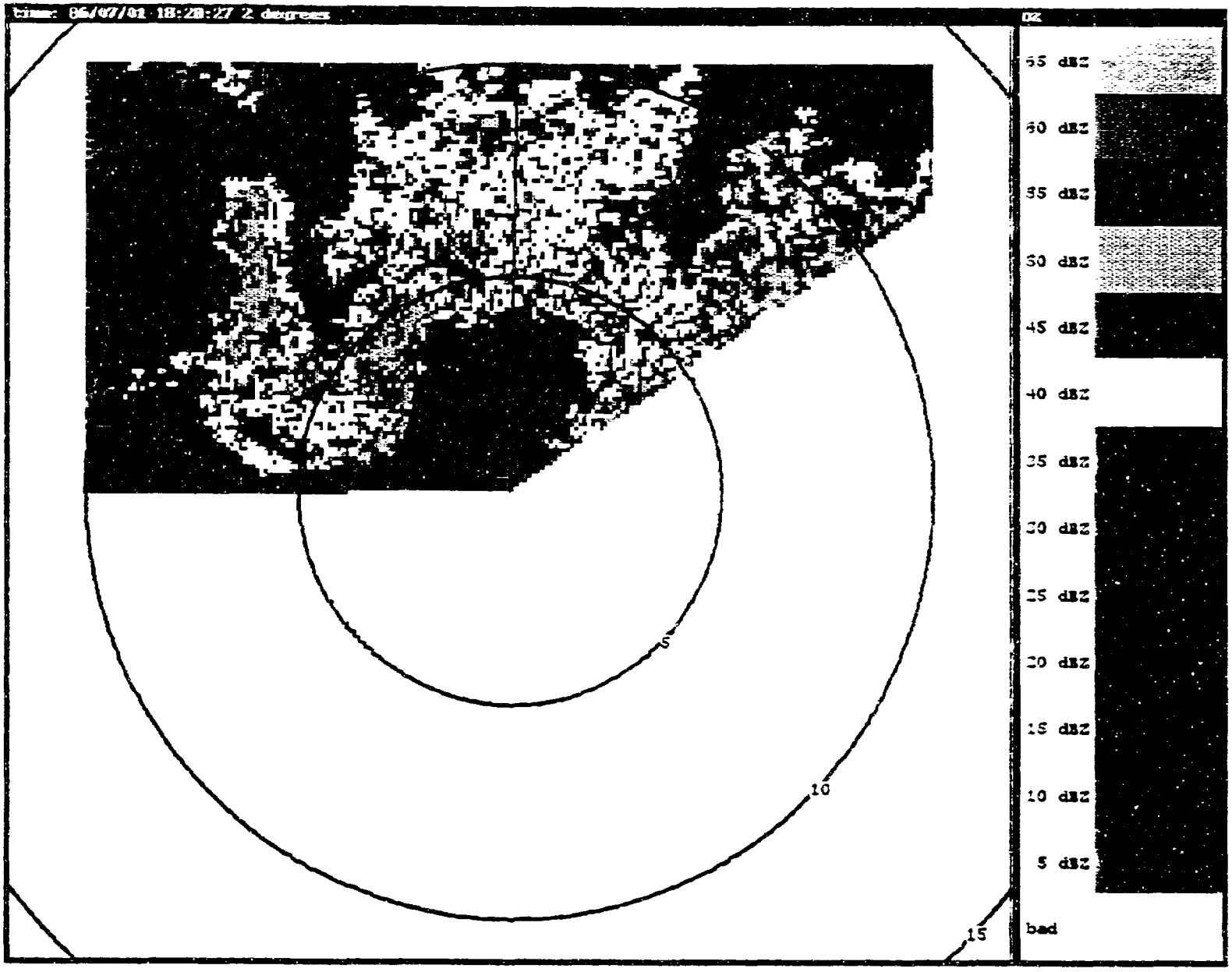

Figure B-3. PPI scan of reflectivity at 2 degrees elevation during microburst at 18:28:27 UT on July 1, 1986.

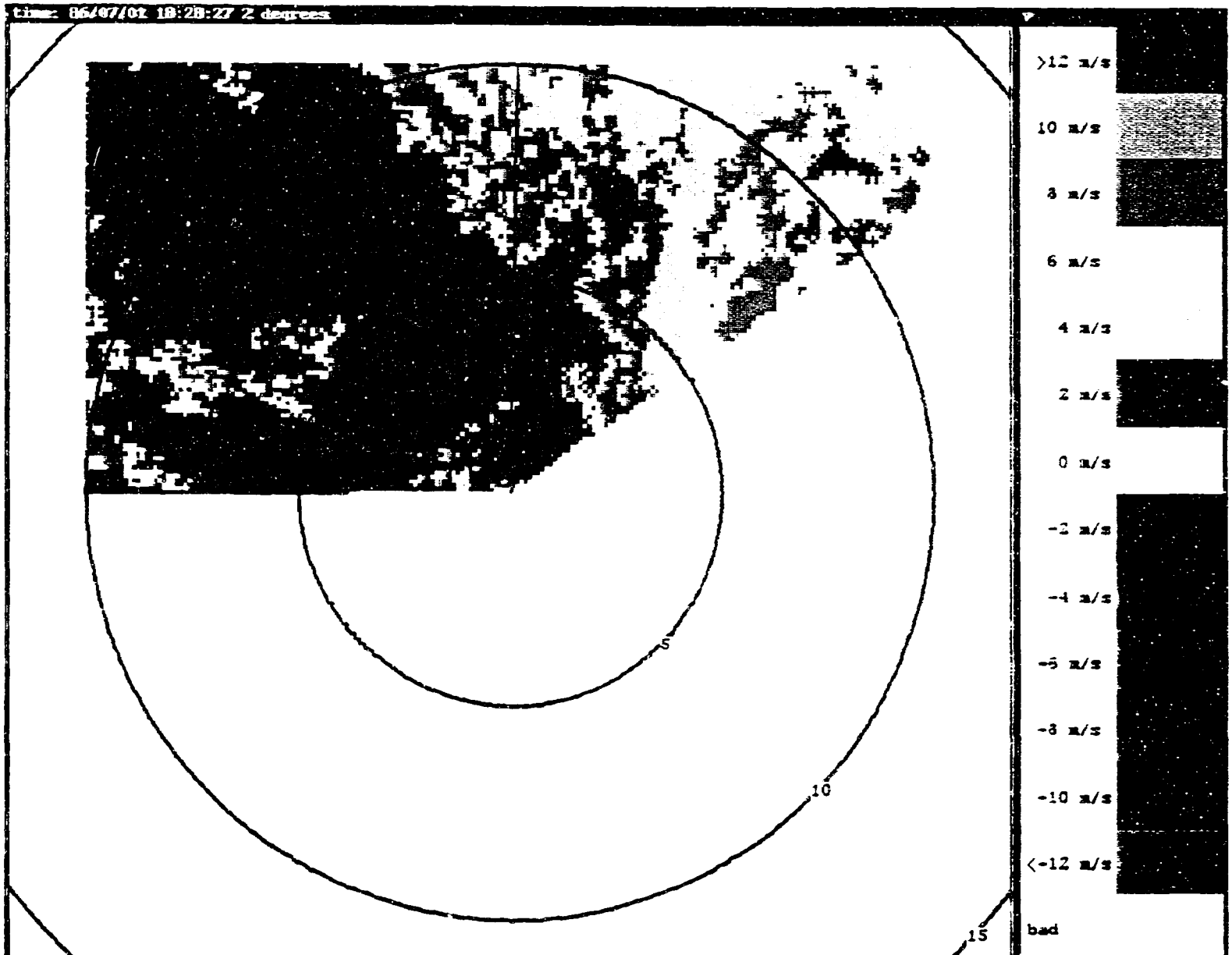

Figure B-4. PPI scan of velocity at 2 degrees elevation during microburst at 18:28:27 UT on July 1, 1986.

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7- 1-86 Time:18:37:44 Scan: 5 Tilt: 8 Product:V / 2

Time	Elev	Az	3.92	4.16	4.40	4.64	4.88	5.12	5.36	5.60	5.84	6.08	6.32	6.56
18:37:49	14.90	7.0	-3 -3 -3 -2	-2 -2 -2 -2	-2 -2 -2 -1	-1 -2 -2 -2	-2 -2 -2 -1	-1 -2 -2 -2	-1 -1 -2 -2	-2 -2 -2 -3	-3 -3 -3 -4	-3 -3 -3 -4	-3 -3 -3 -4	-3 -3 -3 -4
18:37:49	13.80	7.0	-3 -3 -2 -2	-1 -2 -2 -2	-2 -2 -1 -2	-2 -2 -1 -1	-1 -1 -1 -1	0 -1 0 -1	-1 -2 -2 -2	-3 -3 -3 -4	-4 -4 -4 -5	-5 -5 -5 -6	-5 -5 -5 -6	-5 -5 -5 -6
18:37:50	12.80	7.0	-3 -3 -2 -1	-2 -2 -2 -1	0 -1 -1 -1	0 1 0 -1	-1 -1 -1 -1	0 1 0 -1	-1 -1 -1 -2	-3 -3 -3 -4	-4 -4 -4 -5	-5 -5 -5 -6	-5 -5 -5 -6	-5 -5 -5 -6
18:37:50	11.70	7.0	-3 -2 -2 -2	-1 -1 -2 0	1 1 0 0	0 1 0 0	-1 -1 -1 -2	-2 -2 -2 -3	-3 -3 -3 -4	-4 -4 -4 -5	-5 -5 -5 -6	-6 -6 -6 -7	-6 -6 -6 -7	-6 -6 -6 -7
18:37:50	10.60	7.0	-3 -2 -1 -1	-1 -1 0 1	1 1 1 1	1 1 1 1	0 -1 -1 -2	-3 -3 -2 -2	-3 -4 -4 -4	-5 -5 -5 -6	-6 -6 -6 -7	-7 -7 -7 -8	-7 -7 -7 -8	-7 -7 -7 -8
18:37:50	9.50	7.0	-3 -2 -2 -1	-1 1 1 1	2 1 2 1	1 1 1 0	1 -1 -2 -3	-3 -2 -3 -4	-4 -5 -5 -6	-6 -6 -6 -7	-7 -7 -7 -8	-8 -8 -8 -9	-8 -8 -8 -9	-8 -8 -8 -9
18:37:50	8.50	7.0	-2 -2 -1 -1	-1 1 1 2	2 2 1 1	1 1 1 1	1 -1 -2 -2	-2 -3 -4 -4	-5 -5 -6 -6	-6 -6 -7 -7	-8 -8 -8 -9	-9 -9 -9 -10	-9 -9 -9 -10	-9 -9 -9 -10
18:37:50	7.20	7.0	-2 -2 -1 -2	-1 1 1 2	2 2 1 1	1 1 1 1	1 -1 -2 -2	-2 -4 -5 -5	-6 -6 -7 -7	-7 -7 -8 -8	-9 -9 -9 -10	-10 -10 -10 -11	-10 -10 -10 -11	-10 -10 -10 -11
18:37:50	6.10	7.0	-2 -2 -2 -2	-2 0 2 2	1 1 1 1	1 1 1 1	1 -1 -2 -2	-2 -4 -4 -4	-5 -6 -7 -7	-8 -8 -9 -9	-10 -10 -10 -11	-11 -11 -11 -12	-11 -11 -11 -12	-11 -11 -11 -12
18:37:50	5.10	7.0	-2 -2 -2 -2	-1 1 1 2	1 1 1 1	1 1 1 2	-1 -2 -2 -2	-3 -3 -2 -2	-3 -4 -5 -6	-7 -8 -9 -9	-10 -10 -11 -11	-12 -12 -12 -13	-12 -12 -12 -13	-12 -12 -12 -13
18:37:50	4.00	7.0	-2 -2 -2 -1	-1 -1 -1 1	1 1 0 1	0 1 0 -1	-2 -3 -2 -2	-2 -2 -2 -2	-3 -4 -5 -6	-7 -8 -9 -10	-11 -11 -12 -12	-13 -13 -13 -14	-13 -13 -13 -14	-13 -13 -13 -14
18:37:50	2.90	7.0	-3 -3 -2 -2	-2 -3 -2 -2	-1 -2 -1 -2	-1 -2 -2 -2	-3 -4 -3 -2	-1 -1 -1 0	-1 -2 -3 -4	-5 -6 -7 -8	-9 -10 -11 -12	-13 -14 -14 -15	-14 -14 -14 -15	-14 -14 -14 -15
18:37:51	1.90	7.0	-5 -4 -4 -4	-4 -3 -2 -4	-3 -4 -4 -3	-3 -3 -2 -4	-3 -4 -2 -1	-1 2 2 2	2 1 0 -1	-2 -3 -4 -5	-6 -7 -8 -9	-10 -11 -12 -13	-11 -12 -13 -14	-11 -12 -13 -14
18:37:51	1.00	7.0	-6 -5 -4 -5	-5 -4 -4 -4	-5 -5 -5 -5	-4 -5 -5 -5	-4 -3 -2 -2	2 3 4 3	4 3 2 1	0 -1 -2 -3	-4 -5 -6 -7	-8 -9 -10 -11	-9 -10 -11 -12	-9 -10 -11 -12
18:37:51	0.30	7.0	0 -4 -3 -4	-4 -4 -4 -4	-5 -4 -5 -4	-5 -5 -4 -3	-3 -1 3 2	4 4 5 6	5 4 3 2	1 0 -1 -2	-3 -4 -5 -6	-7 -8 -9 -10	-8 -9 -10 -11	-8 -9 -10 -11
Time	Elev	Az	3.92	4.16	4.40	4.64	4.88	5.12	5.36	5.60	5.84	6.08	6.32	6.56

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7- 1-86 Time:18:37:44 Scan: 5 Tilt: 8 Product:V / 2

Time	Elev	Az	6.80	7.04	7.28	7.52	7.76	8.00
18:37:49	14.90	7.0	-4 -4 -3 -4	-4 -3 -3 -3	-4 -3 -3 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4
18:37:49	13.80	7.0	-4 -4 -4 -5	-4 -4 -4 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5
18:37:50	12.80	7.0	-4 -4 -5 -5	-4 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5
18:37:50	11.70	7.0	-4 -4 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5
18:37:50	10.60	7.0	-3 -4 -4 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -5	-5
18:37:50	9.50	7.0	-4 -4 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-5 -5 -5 -5	-5 -5 -5 -5	-5
18:37:50	8.50	7.0	-5 -5 -4 -4	-4 -4 -4 -4	-4 -4 -4 -4	-4 -3 -3 -3	-3 -3 -3 -3	-3
18:37:50	7.20	7.0	-5 -5 -4 -4	-4 -4 -4 -4	-4 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2
18:37:50	6.10	7.0	-4 -3 -3 -2	-3 -2 -2 -2	-1 -1 -1 -1	-1 -1 -1 -1	-1 -1 -1 -1	-1
18:37:50	5.10	7.0	-2 -2 -2 -2	-2 -1 0 1	1 2 2 2	2 2 2 2	2 2 2 2	2
18:37:50	4.00	7.0	-2 0 -1 -1	1 1 2 2	2 2 2 2	2 2 2 2	2 2 2 2	2
18:37:50	2.90	7.0	1 2 2 2	3 3 4 3	3 3 3 3	3 3 3 3	3 3 3 3	3
18:37:51	1.90	7.0	2 3 4 4	5 5 5 5	4 3 2 2	2 2 2 2	2 2 2 2	2
18:37:51	1.00	7.0	4 5 7 6	6 6 5 5	4 3 3 3	3 3 3 3	3 3 3 3	3
18:37:51	0.30	7.0	7 8 8 9	7 6 5 5	4 5 4 4	4 4 4 4	4 4 4 4	4
Time	Elev	Az	6.80	7.04	7.28	7.52	7.76	8.00

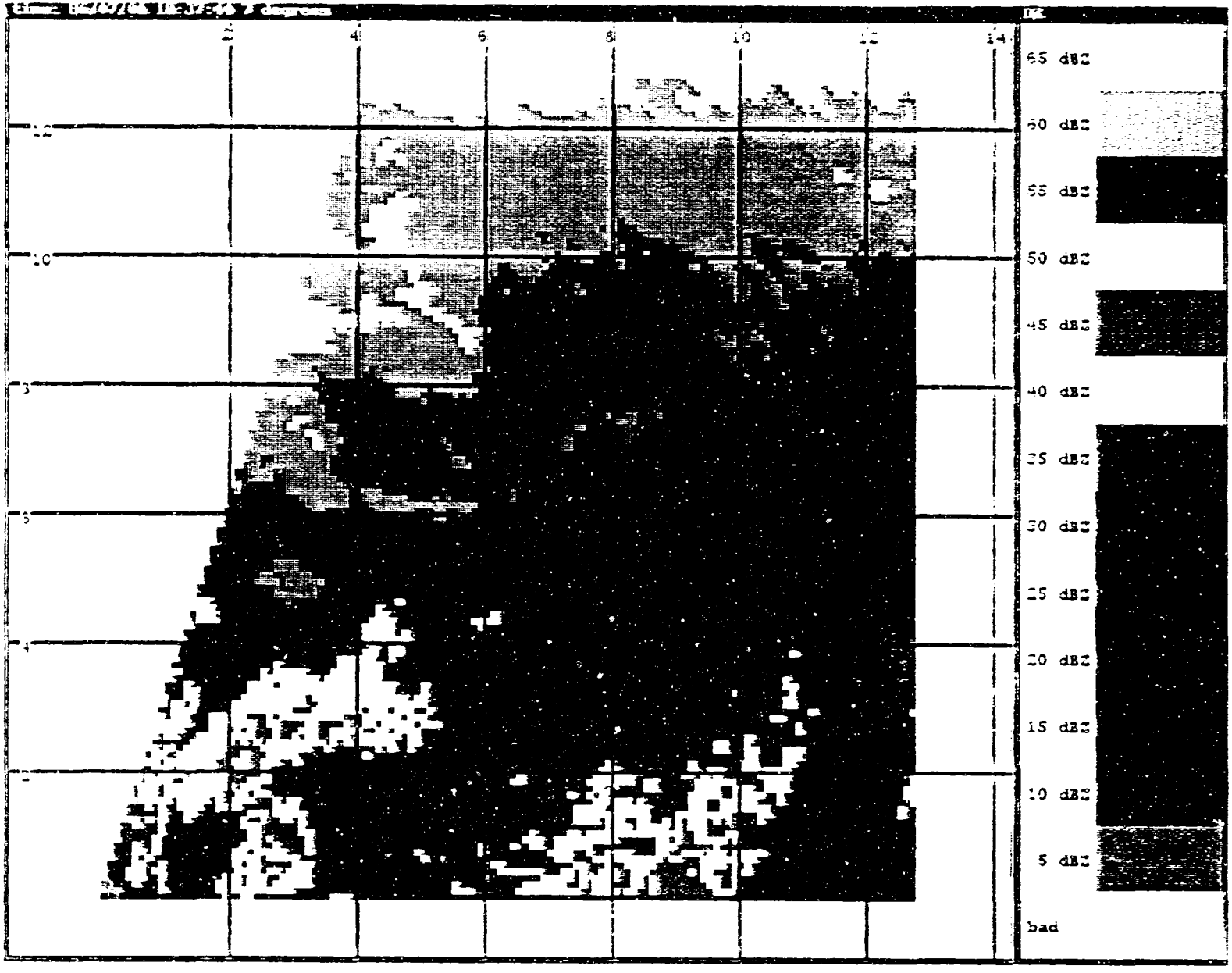

Figure B-5. RHI scan of reflectivity at 7 degrees azimuth during microburst at 18:37:44 UT on July 1, 1986.

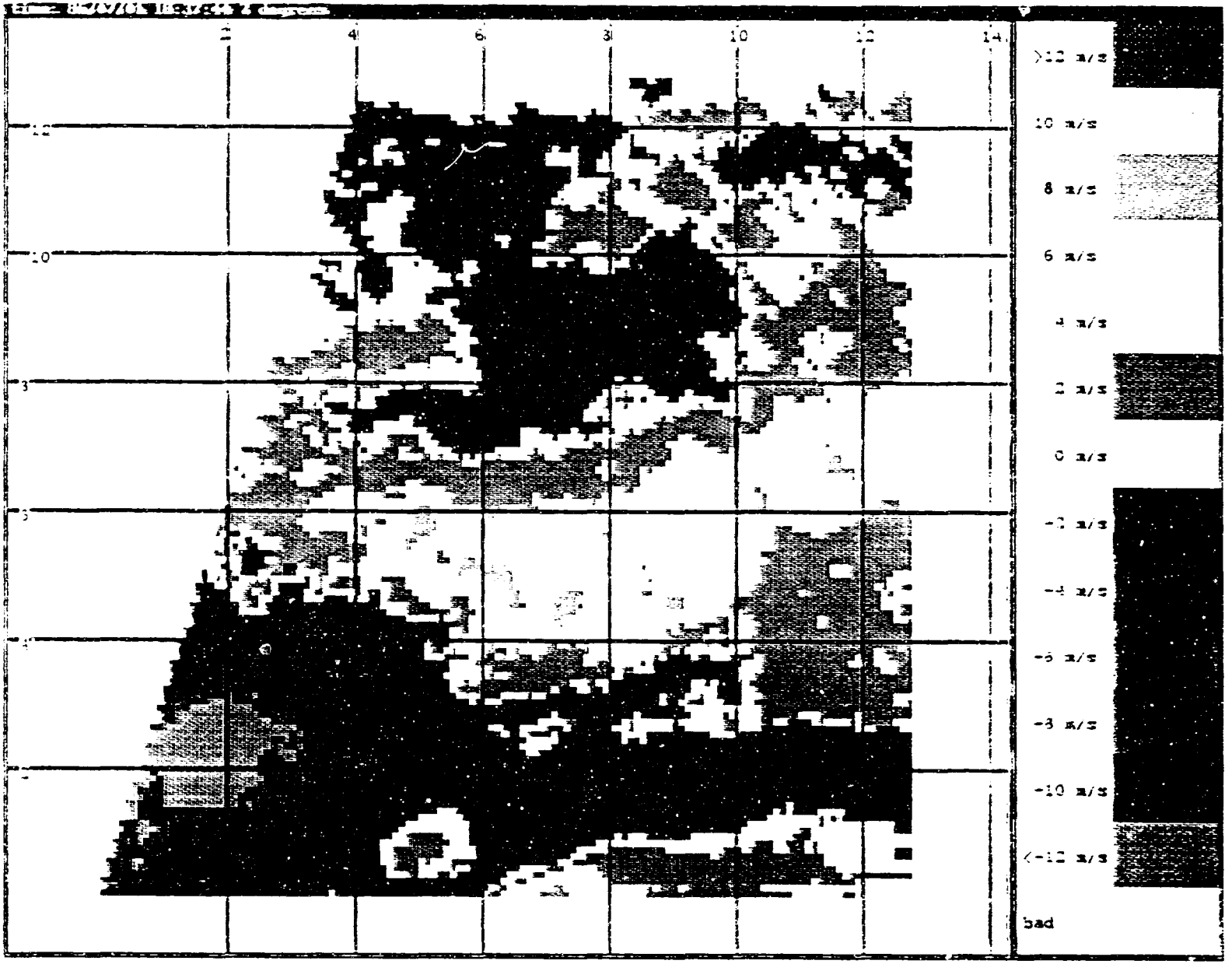

Figure 8-6. RHI scan of velocity at 7 degrees azimuth during microburst at 18:37:44 UT on July 1, 1986.

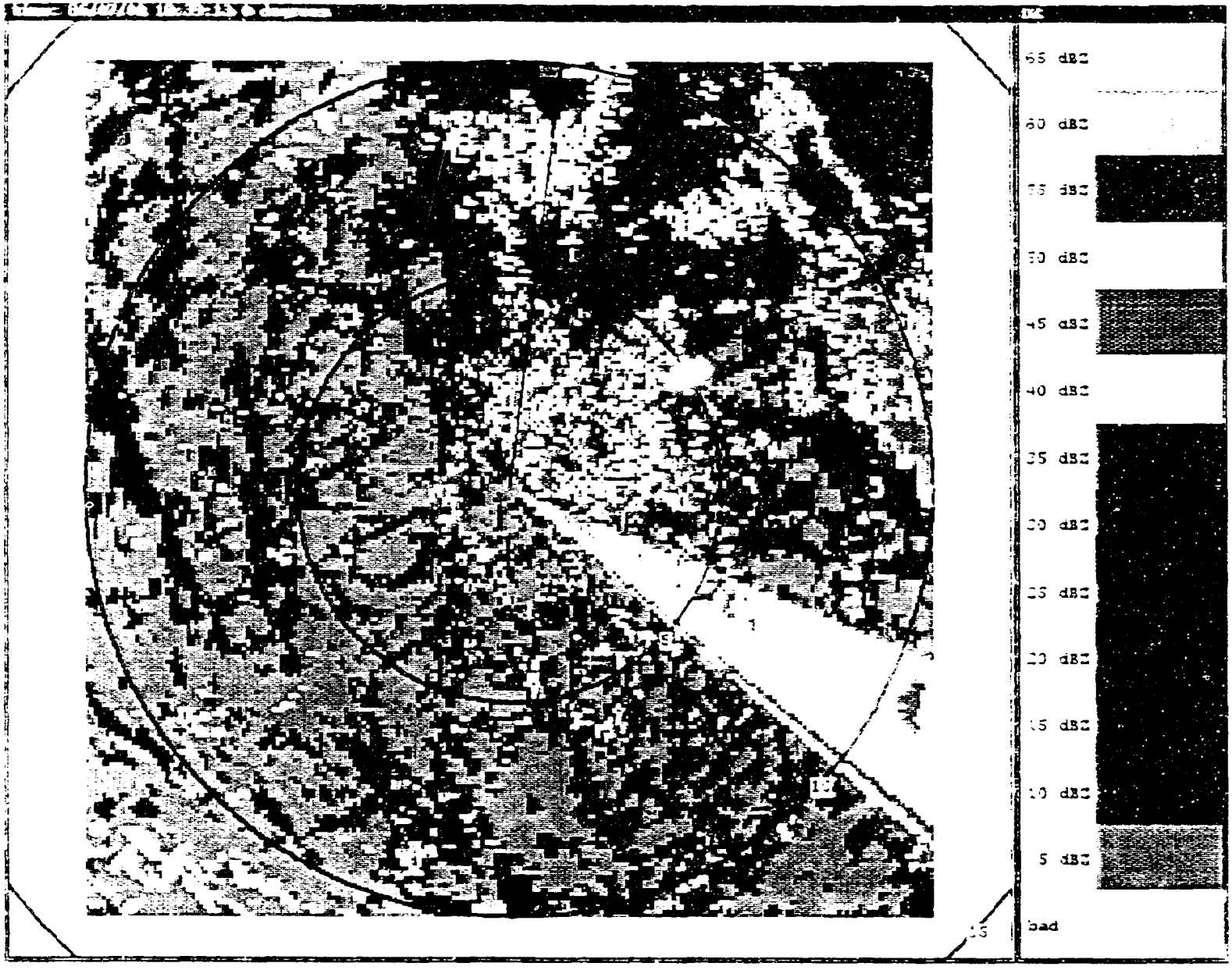

Figure B-7. PPI scan of reflectivity at 0 degrees elevation during microburst at 18:39:13 UT on July 1, 1986.

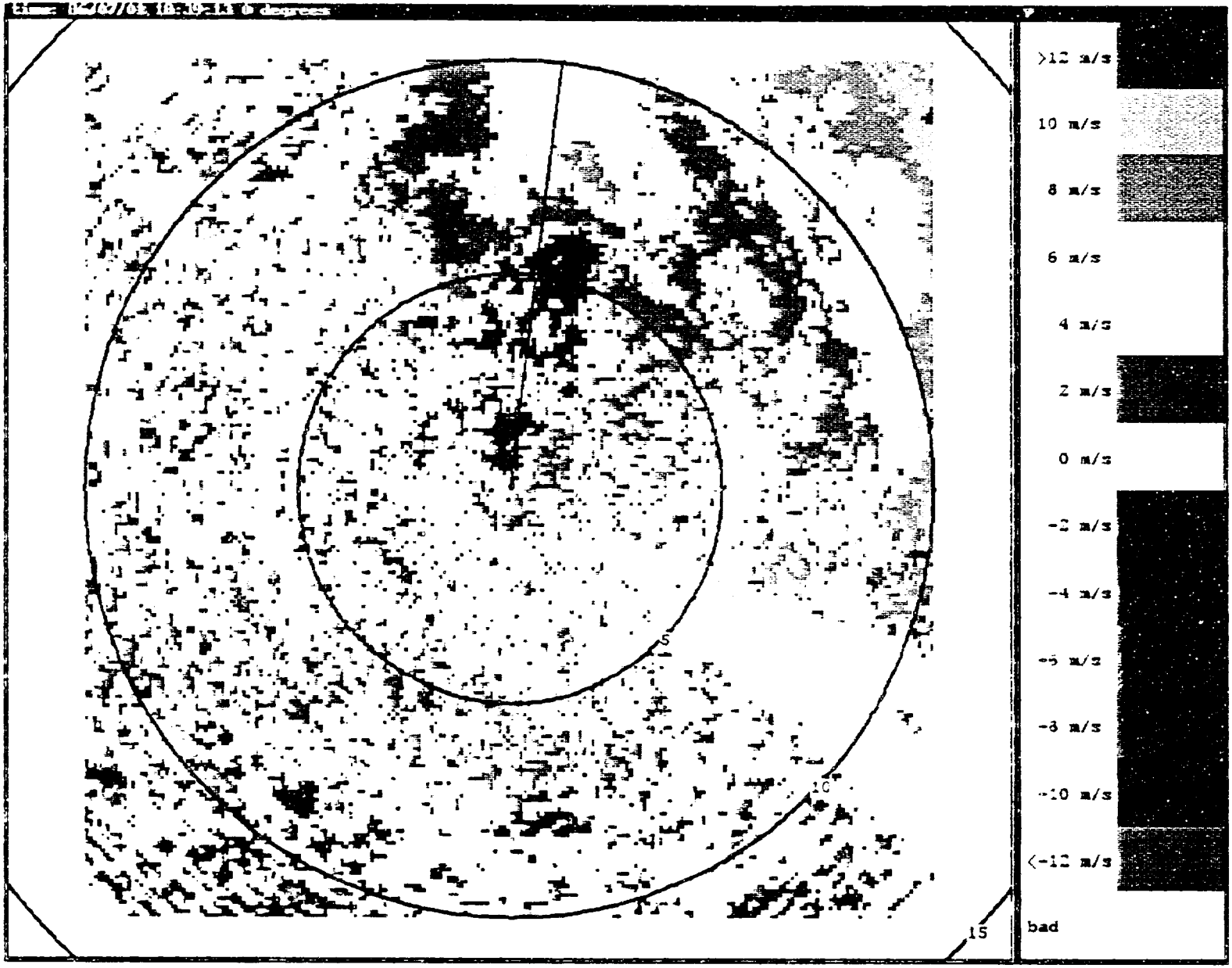

Figure B-8. PPI scan of velocity at 0 degrees elevation during microburst at 18:39:13 UT on July 1, 1986.

2. July 19, 1986

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7-19-86 Time:20: 4:44 Scan:21 Tilt:10 Product:V / 2

Time	Elev	Az	5.96	6.20	6.44	6.68	6.92	7.16	7.40	7.64	7.88	8.12	8.36	8.60
20:04:47	11.10	98.0	3 2	2 2	2 2	2 3	2 2	2 2	2 1	1 -1	-1 -1	-2 -2	-2 -3	-4 -4
20:04:47	10.00	98.0	2 3	3 3	2 2	2 2	2 2	2 2	2 1	2 1	0 -2	-2 -2	-2 -2	-3 -3
20:04:48	8.90	98.0	3 3	3 3	3 3	2 3	3 2	2 2	2 1	1 1	-1 -2	-2 -1	-2 -2	-2 -2
20:04:48	7.70	98.0	3 3	3 3	3 3	2 3	3 2	2 2	2 2	0 1	0 0	0 0	-2 -2	-2 -2
20:04:48	6.60	98.0	3 3	3 3	3 3	3 3	2 3	3 2	2 1	1 0	-1 -1	-1 0	-2 -2	-2 -2
20:04:48	5.60	98.0	3 3	3 3	3 2	3 2	3 3	3 2	2 1	1 1	1 -1	-2 -1	-1 -1	-2 -1
20:04:48	4.50	98.0	2 2	2 2	2 2	3 2	3 3	3 3	1 1	1 2	1 -1	-2 -2	0 2	2 1
20:04:48	3.40	98.0	2 2	2 2	2 2	2 2	2 2	2 1	1 1	1 1	2 2	1 1	2 2	4 5
20:04:48	2.40	98.0	1 1	2 1	2 1	1 2	1 2	1 0	0 -1	1 0	2 2	2 2	4 4	4 5
20:04:48	1.40	98.0	-2 -2	-2 -2	-2 -2	-2 -2	-2 -2	-2 -2	-2 -2	-2 -2	-2 1	2 3	4 5	5 4
20:04:48	0.60	98.0	-3 -4	-5 -4	-4 -5	-4 -5	-5 -4	-4 -4	-3 -3	-3 -2	-2 1	2 2	4 5	5 6
20:04:48	0.10	98.0	-6 -6	-6 -6	-5 -6	-7 -6	-6 -5	-6 -6	-5 -4	-2 -2	-1 0	2 2	3 4	5 7
Time	Elev	Az	5.96	6.20	6.44	6.68	6.92	7.16	7.40	7.64	7.88	8.12	8.36	8.60

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7-19-86 Time:20: 4:44 Scan:21 Tilt:10 Product:V / 2

Time	Elev	Az	8.84	9.08	9.32	9.56	9.80	10.04
20:04:47	11.10	98.0	-4 -4	-5 -4	-4 -3	-2 -2	-2 -2	-2
20:04:47	10.00	98.0	-2 -3	-3 -3	-2 -2	-2 -2	-3 -3	-2
20:04:48	8.90	98.0	-1 -1	-2 -2	-2 -2	-2 -3	-3 -2	-2
20:04:48	7.70	98.0	-2 -1	-2 -2	-2 -2	-2 -2	-2 -2	-1
20:04:48	6.60	98.0	-2 -2	-2 -2	-2 -2	-2 -1	-1 -1	-1
20:04:48	5.60	98.0	-1 0	1 0	-1 -1	-1 -1	-1 -1	-1
20:04:48	4.50	98.0	1 1	1 1	1 2	1 2	1 1	2
20:04:48	3.40	98.0	3 2	2 2	2 2	2 2	2 3	3
20:04:48	2.40	98.0	5 3	2 3	4 5	4 4	5 4	4
20:04:48	1.40	98.0	5 6	7 7	6 7	6 6	6 5	6
20:04:48	0.60	98.0	7 8	9 10	9 9	9 9	9 9	8
20:04:48	0.10	98.0	6 0	2 10	9 10	11 11	11 11	11
Time	Elev	Az	8.84	9.08	9.32	9.56	9.80	10.04

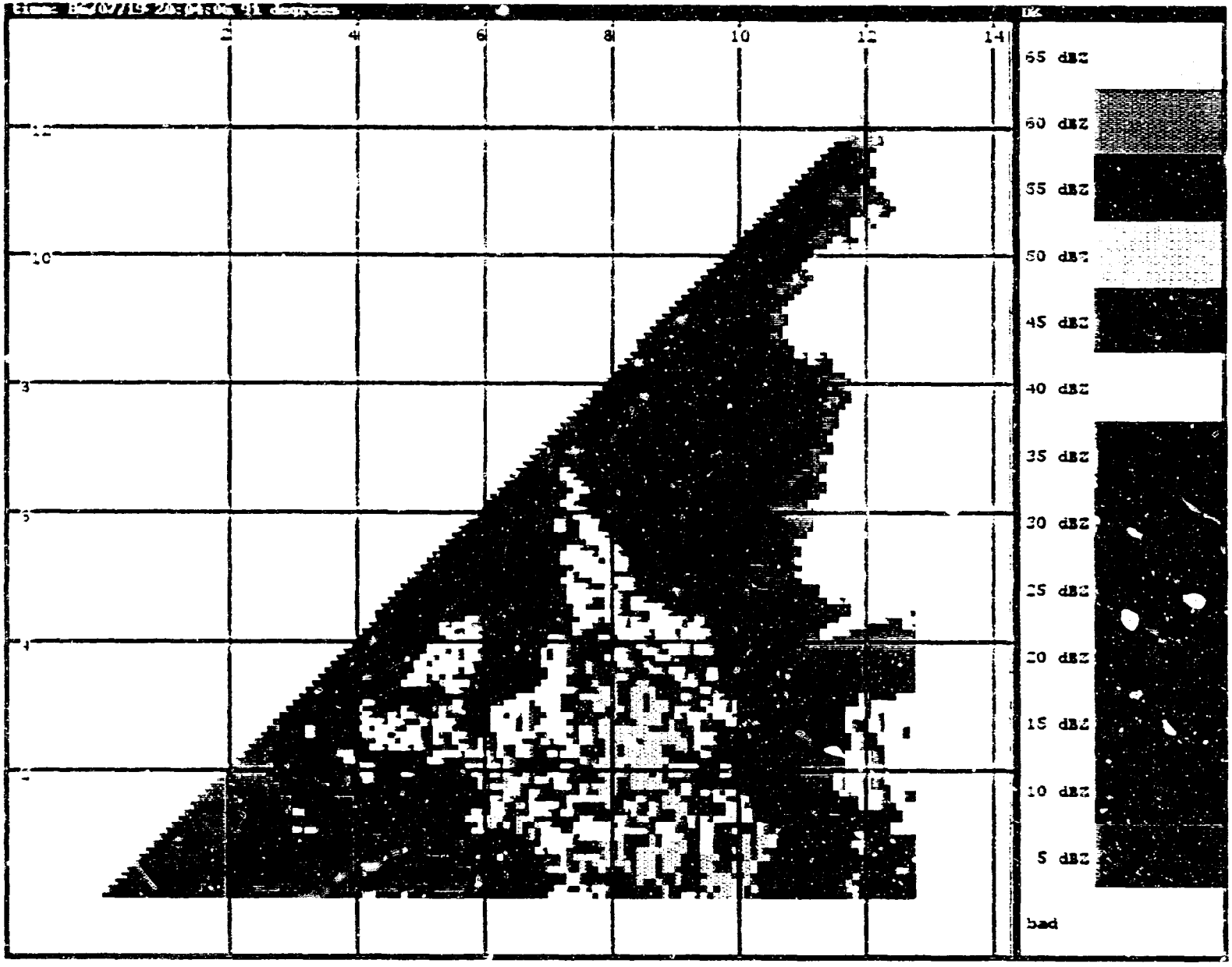

Figure B-9. RHI scan of reflectivity at 91 degrees azimuth during microburst at 20:04:06 UT on July 19, 1986.

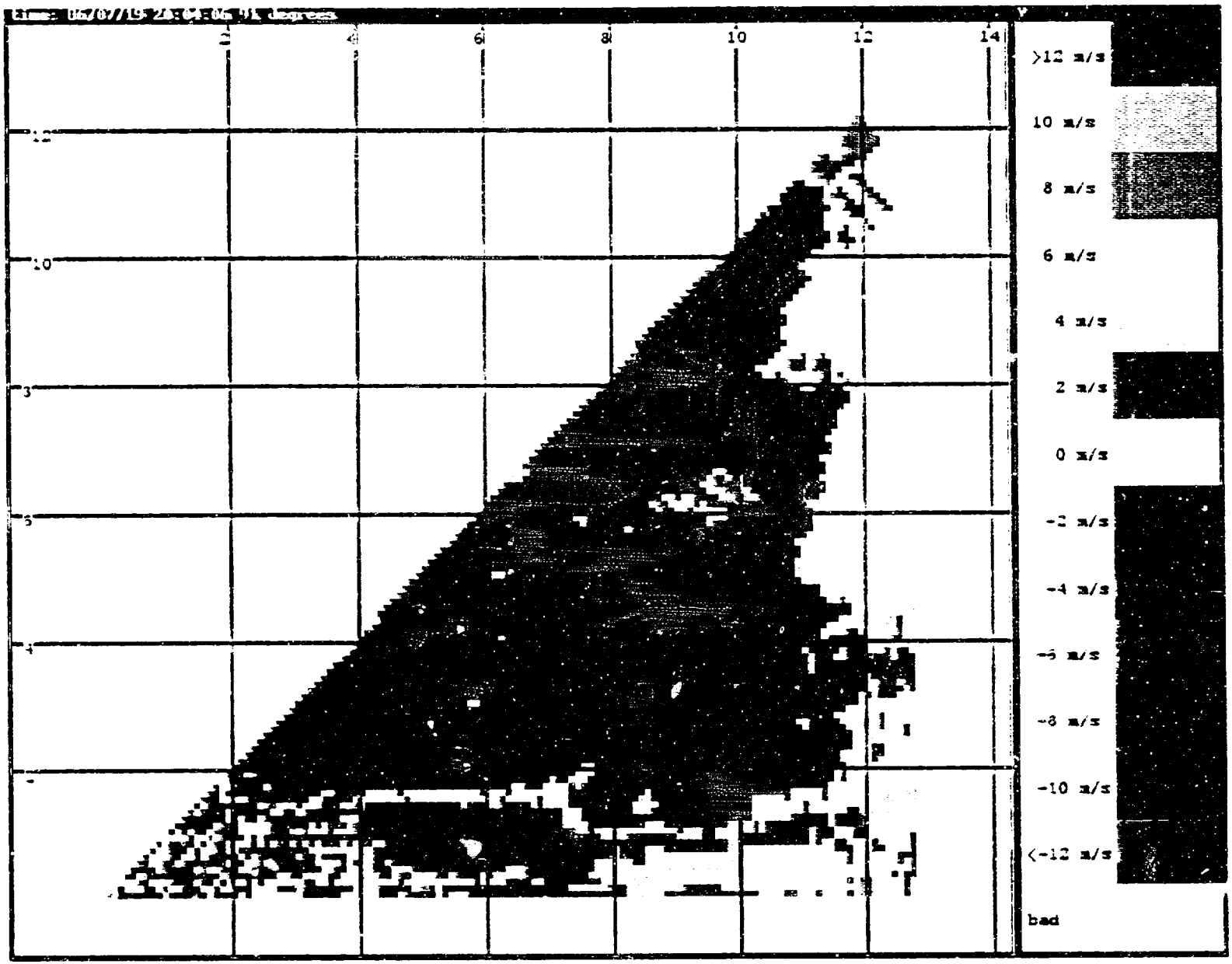

Figure B-10. RHI scan of velocity at 91 degrees azimuth during microburst at 20:04:06 UT on July 19, 1986.

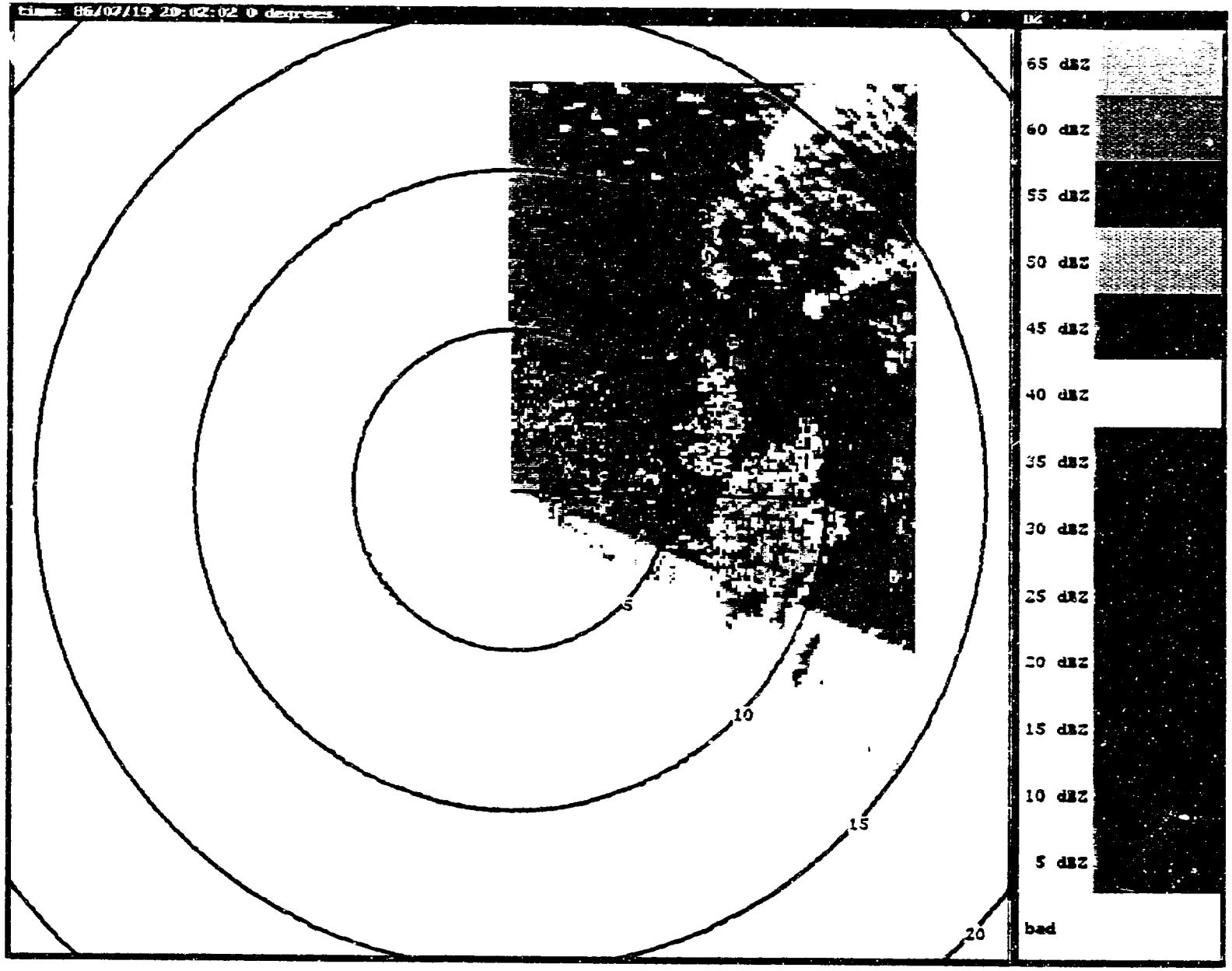

Figure B-11. PPI scan of reflectivity at 0 degrees elevation during microburst at 20:02:02 UT on July 19, 1986.

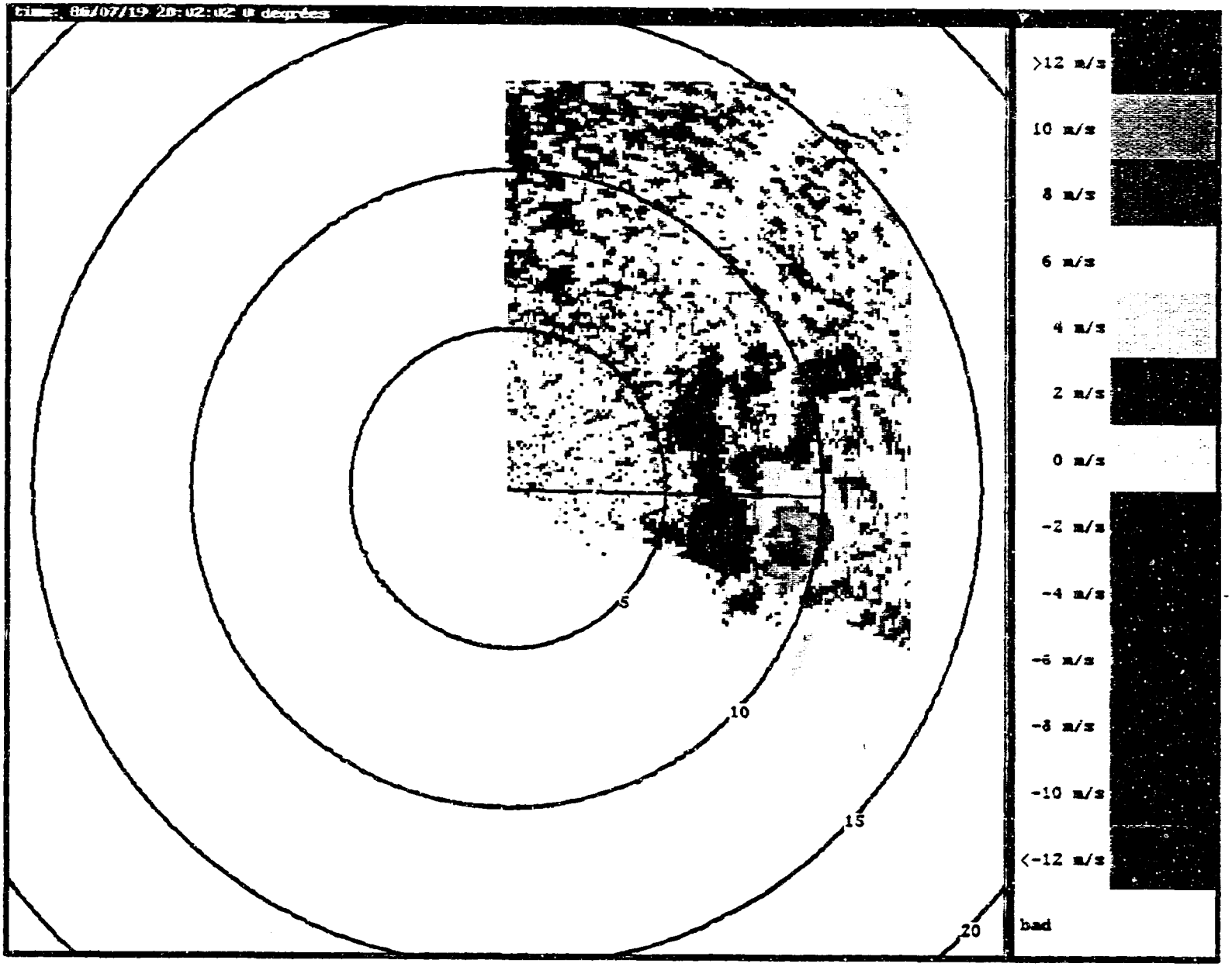

Figure B-12. PPI scan of velocity at 0 degrees elevation during microburst at 20:02:02 UT on July 19, 1986.

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7-19-86 Time:20: 9:37 Scan:23 Tilt: 5 Product:V / 2

Time	Elev	Az	5.96	6.20	6.44	6.68	6.92	7.16	7.40	7.64	7.88	8.12	8.36	8.60
20:09:37	0.20	98.9	0 -1 -5 0	-7 -9	-6 -5	-5 -5	-5 -5	-5 -4	-4 -3	-2 -3	-2 -2	-1 2	2
20:09:37	0.60	98.9	-1 -3 -5 0	-7 -8	-5 -5	-5 -4	-5 -5	-4 -4	-3 -3	-2 -2	-2 -2	-2 0	2 2
20:09:37	1.20	98.9	-3 -3 -4 -4	-5 -7	-3 -2	-3 -3	-3 -2	-2 -2	-1 0	1 1	2 1	1 2	2 3
20:09:37	1.90	98.9	-2 -2 -3 -2	-1 -1	-1 -2	-2 -1	-1 -1	1 2	2 2	2 2	3 3	3 4	4 4
20:09:37	2.80	99.0	0 1 2 2	2 2	1 1	2 1	1 2	2 2	2 3	3 3	3 3	4 4	4 4
20:09:37	3.80	99.0	2 3 3 2	2 2	2 2	2 2	2 2	2 3	3 3	4 4	4 3	4 4	3 3
20:09:37	4.90	99.0	3 3 3 3	3 3	3 3	3 3	3 3	3 3	4 4	4 4	4 4	4 4	2 2
20:09:37	6.10	99.0	3 3 4 3	3 3	3 3	4 4	4 4	4 4	4 4	4 4	4 3	2 1	2 2
20:09:37	7.20	99.0	4 4 4 4	4 4	4 4	4 4	4 4	5 4	4 4	3 3	3 2	2 1	2 2
20:09:38	8.40	99.0	4 4 4 4	4 4	4 4	4 5	5 5	5 4	4 3	2 3	3 2	1 1	2 1
20:09:38	9.50	99.0	4 4 4 4	4 5	4 4	4 4	4 4	4 3	3 2	2 2	2 2	2 2	1 1	2
20:09:38	10.50	99.0	3 4 4 4	4 4	4 4	3 3	3 3	2 1	1 1	2 1	1 1	1 1	2 1
20:09:38	11.60	99.0	3 4 4 4	4 4	3 3	2 2	2 2	1 1	0 -1	0 1	1 1	-1 -1	-1 -2
20:09:38	12.60	99.0	3 3 3 3	2 3	3 2	2 2	1 1	1 0	0 -1	-1 -1	-2 -2	-2 -2	-2 -2
20:09:38	13.70	99.0	3 3 2 2	2 2	2 2	1 1	1 -1	-1 -1	-2 -2	-2 -2	-2 -2	-2 -3	-2
20:09:38	14.80	99.0	2 2 2 2	2 2	1 1	1 -1	-1 -2	-2 -2	-3 -3	-3 -4	-3 -2	-3 -3	-3 -2
20:09:38	15.90	99.0	2 1 1 1	1 1	1 1	-1 -1	-2 -2	-2 -3	-3 -3	-5 -5	-4 -4	-5 -5	-4 -3
Time	Elev	Az	5.96	6.20	6.44	6.68	6.92	7.16	7.40	7.64	7.88	8.12	8.36	8.60

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 7-19-86 Time:20: 9:37 Scan:23 Tilt: 5 Product:V / 2

Time	Elev	Az	8.84	9.08	9.32	9.56	9.80	10.04
20:09:37	0.20	98.9	4 4 5 5	6 6	6 7	7 8	9
20:09:37	0.60	98.9	4 4 5 5	6 6	6 6	6 8	7
20:09:37	1.20	98.9	4 4 4 5	5 6	5 5	5 6	6
20:09:37	1.90	98.9	4 5 4 5	5 5	5 5	6 7	7
20:09:37	2.80	99.0	4 5 4 4	4 5	5 5	6 5	5
20:09:37	3.80	99.0	3 4 2 3	3 4	5 3	4 4	3
20:09:37	4.90	99.0	2 2 2 2	2 3	1 2	2 2	1
20:09:37	6.10	99.0	2 2 2 1	1 0	-1 -1	0 0	0
20:09:37	7.20	99.0	2 1 0 -1	-1 -1	-1 -1	0 0	0
20:09:38	8.40	99.0	1 -1 -1 -2	-2 -1	-2 -2	-2 -1	-1
20:09:38	9.50	99.0	1 1 -1 -1	-1 -2	-2 -2	-2 -2	-2
20:09:38	10.50	99.0	1 0 -1 1	-1 -2	-2 -2	-2 -2	-2
20:09:38	11.60	99.0	-2 -2 0 0	0 0	0 0	1 0	0
20:09:38	12.60	99.0	-2 -2 -2 -2	-1 0	0 0	0 -1	-1
20:09:38	13.70	99.0	-2 -2 -2 -2	-2 -2	-2 -2	-2 -2	-2
20:09:38	14.80	99.0	-3 -2 -3 -3	-3 -2	-2 -3	-2 -2	-2
20:09:38	15.90	99.0	-2 -3 -4 -4	-4 -3	-2 -3	-3 -4	-2
Time	Elev	Az	8.84	9.08	9.32	9.56	9.80	10.04

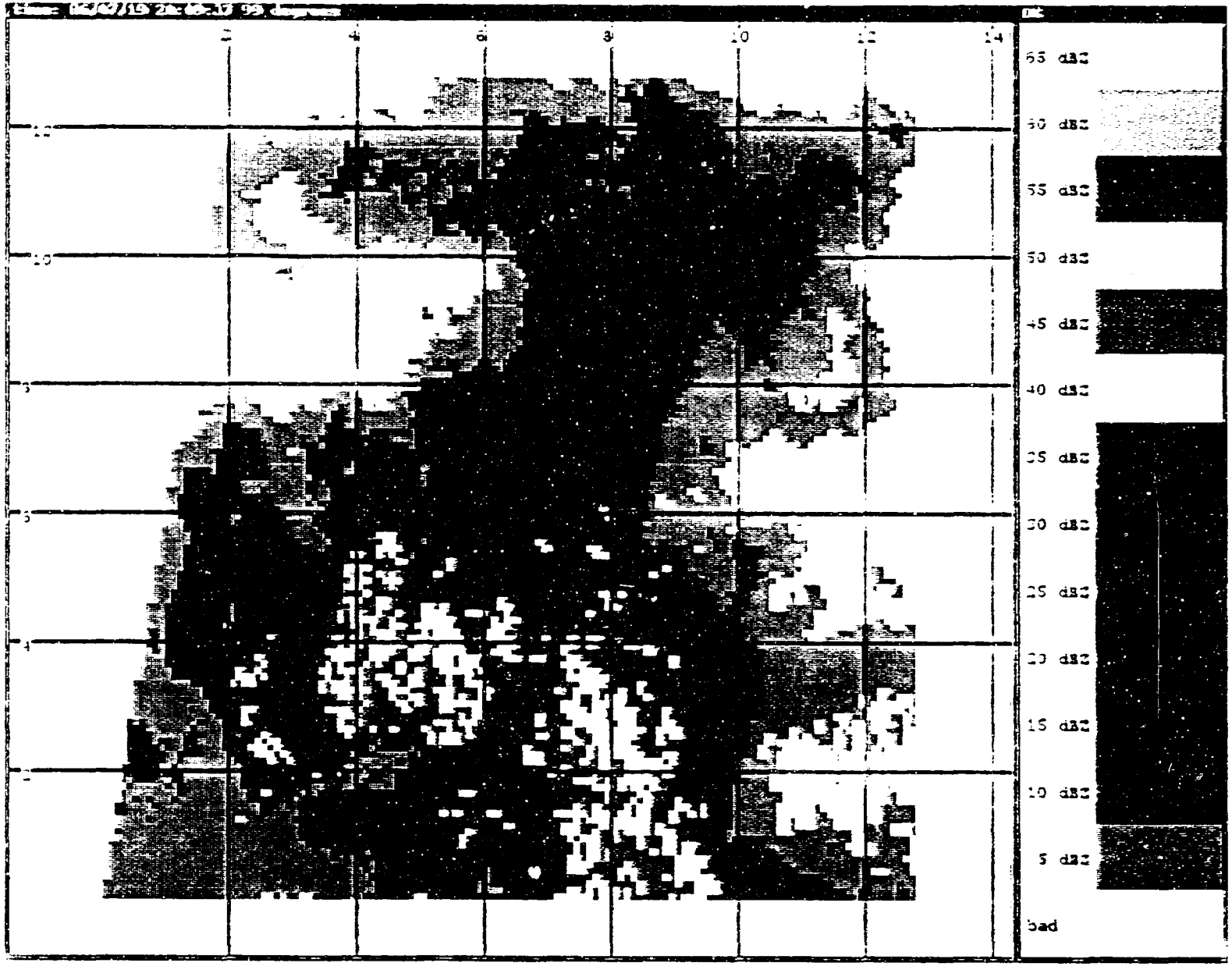

Figure B-10. RHI scan of reflectivity at 99 degrees azimuth during microburst at 20:09:37 UT on July 19, 1986

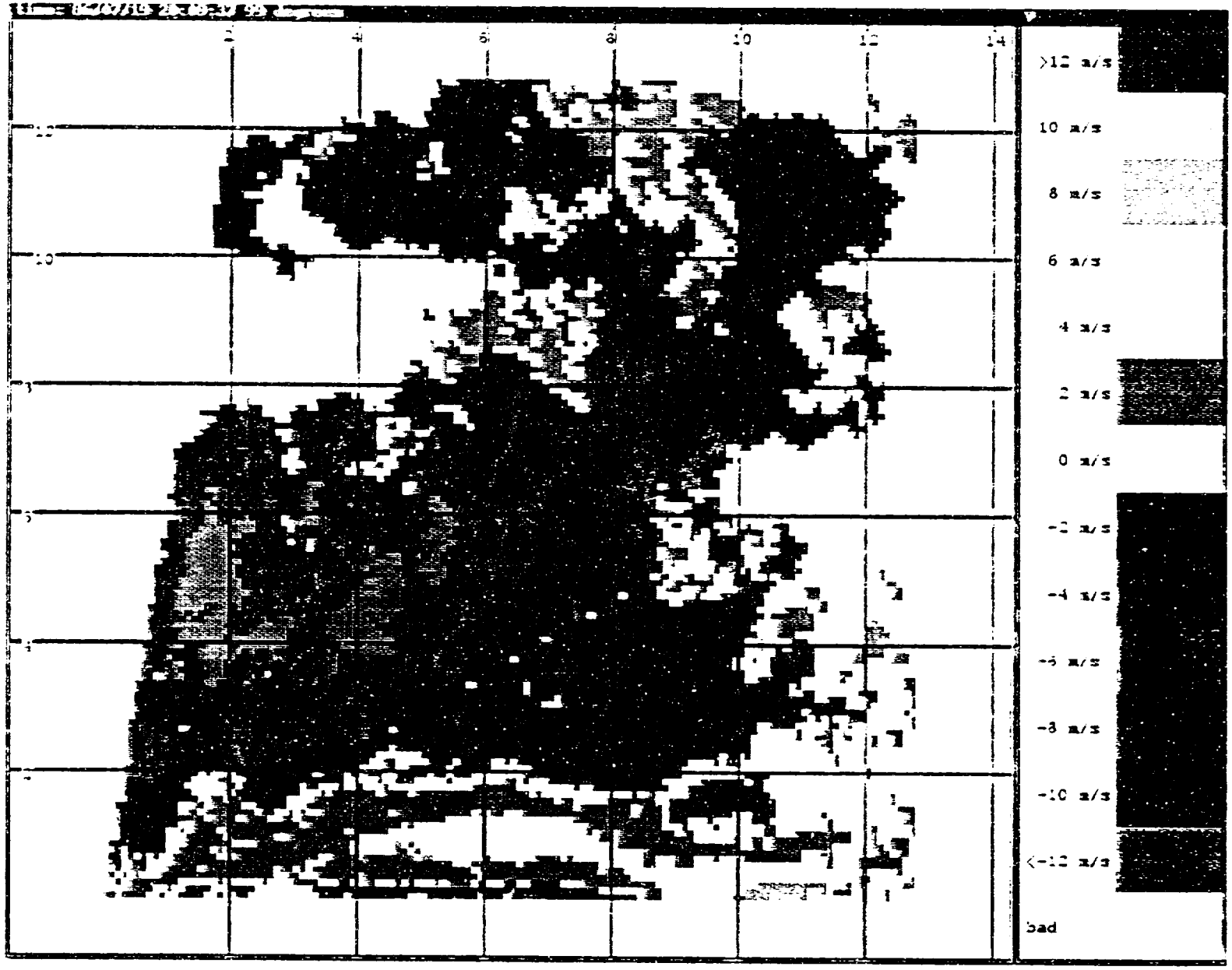

Figure 8-14. RHI scan of velocity at 99 degrees azimuth during microburst at 20:09:37 UT on July 19, 1986.

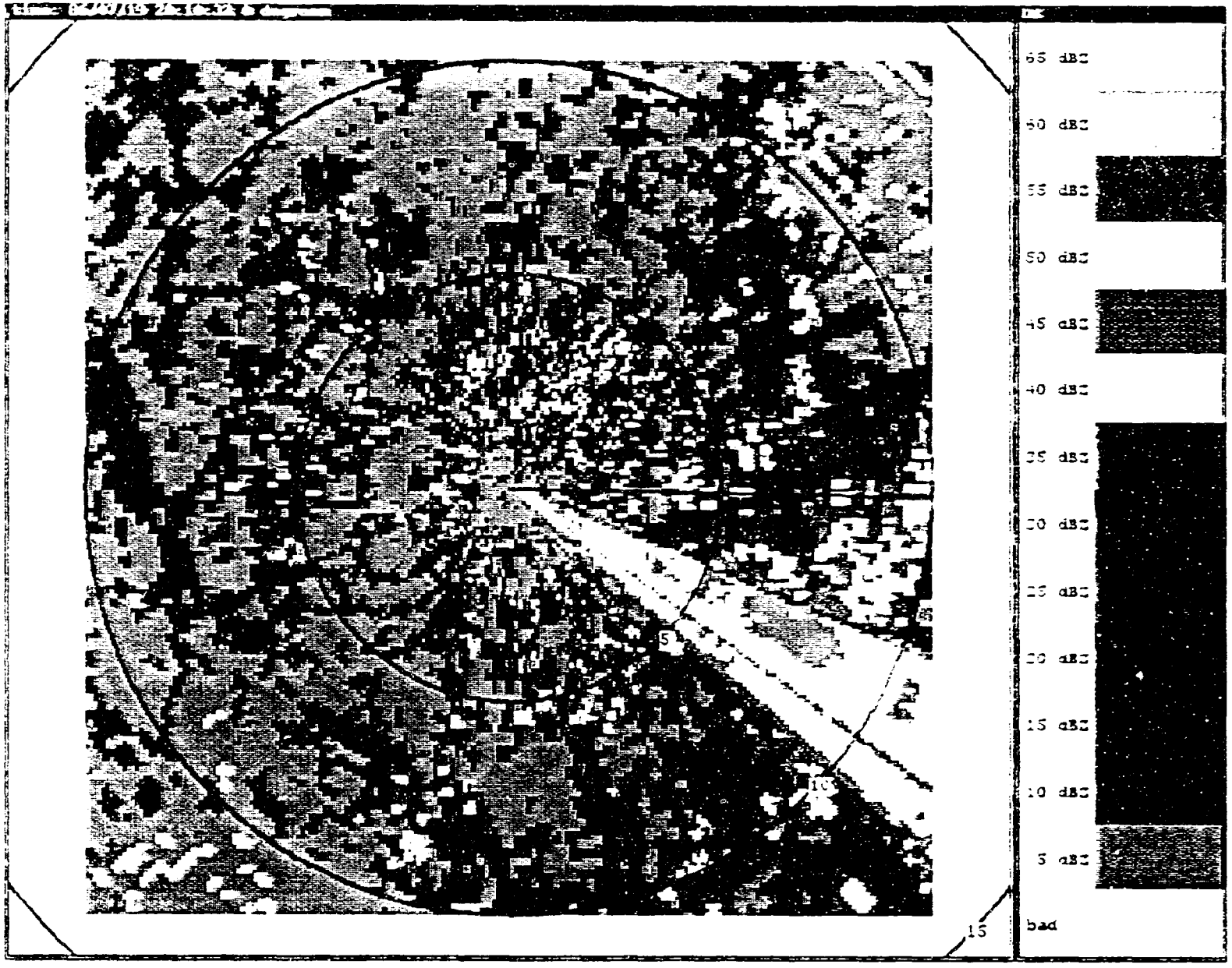

Figure b-1b. PPI scan of reflectivity at 0 degrees elevation during microburst at 20:10:32 UT on July 19, 1986

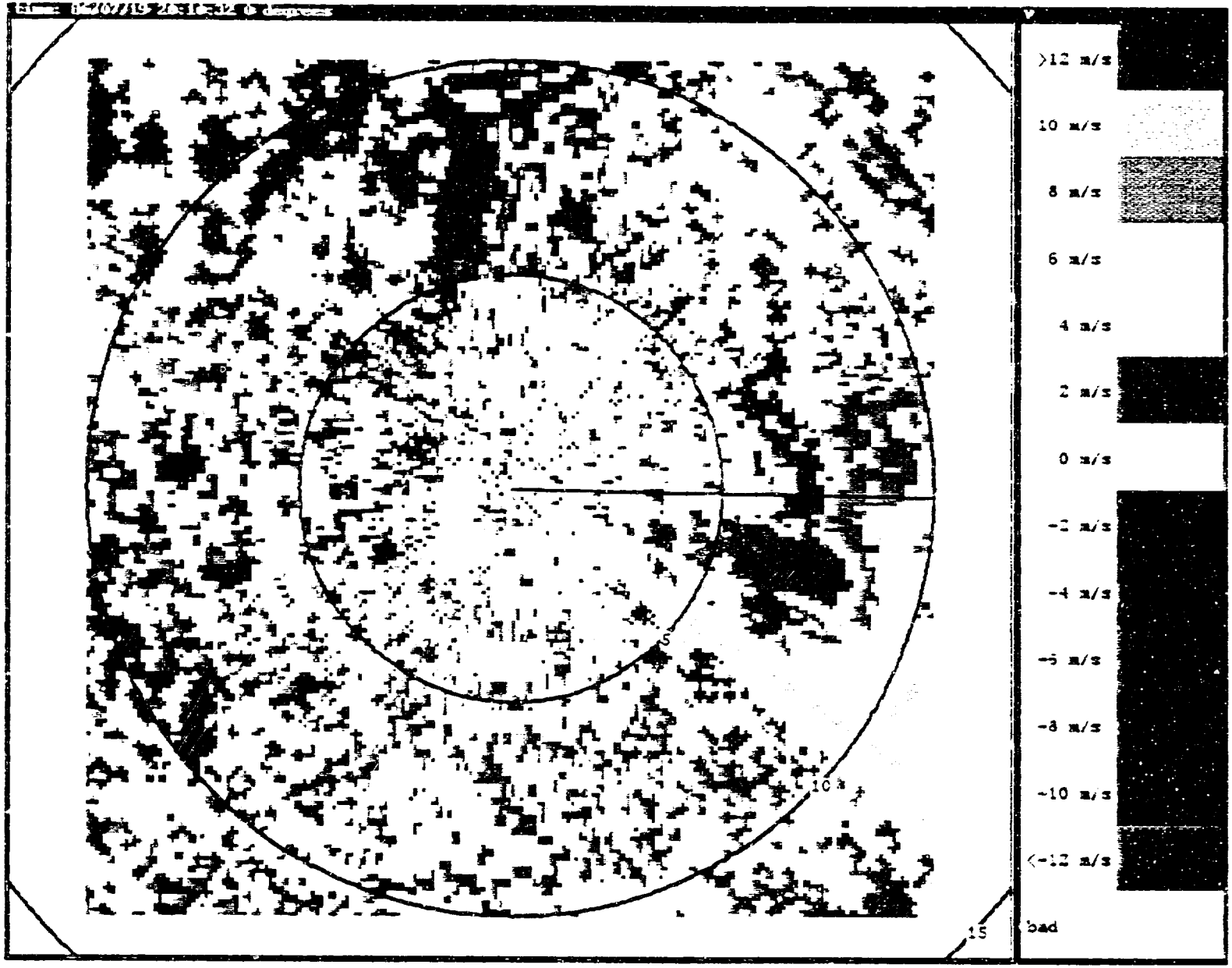

Figure B-16. PPI scan of velocity at 0 degrees elevation during microburst at 20:10:32 UT on July 19, 1986.

3. September 22, 1986

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23: 2:21 Scan:66 Tilt: 6 Product:V / 2

Time	Elev	Az	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84	3.08	3.32	3.56
23:02:28	16.00	70.0	-6 -5 -4 -5 -2 -2 -5 -6 -6 -5 -3 -2 -2 -4 -6 -5 -5 -3 -2 -2 -2 -4 -4 -5											
23:02:28	14.90	70.0	-6 -5 -4 -2 -2 -2 -7 -5 -4 -4 -4 -2 -2 -3 -5 -5 -4 -2 -2 -2 -3 -4 -4 -4											
23:02:28	13.80	70.0	-3 -5 -4 -3 -2 -2 -6 -4 -4 -4 -3 -2 -2 -3 -4 -5 -4 -2 0 -3 -4 -4 -4 -4											
23:02:28	12.70	70.0	-6 -7 -1 -3 -4 -3 -5 -4 -3 -4 -3 -2 -3 -3 -3 -4 -4 -2 -2 -3 -4 -4 -4 -4											
23:02:28	11.60	70.0	-6 -8 -5 -6 -7 -4 -4 -4 -4 -3 -2 -2 -4 -4 -3 -2 -2 -2 -2 -2 -3 -3 -4 -3											
23:02:28	10.40	70.0	-6 -8 -6 -7 -7 -4 -5 -4 -4 -2 -2 -4 -5 -4 -3 -2 -2 -3 -2 -2 -3 -3 -4 -3											
23:02:29	9.40	70.0	-6 -8 -7 -8 -8 -5 -5 -4 -3 -2 -2 -5 -5 -4 -3 -2 -2 -3 -3 -2 -3 -3 -3 -2											
23:02:29	8.30	70.0	-8 -8 -6 -8 -8 -7 -4 -3 -3 -2 -2 -3 -5 -4 -2 -2 -2 -3 -2 -2 -2 -3 -3 -2											
23:02:29	7.20	70.0	-7 -7 -8 -9 -9 -8 -3 -2 -2 -2 -2 -3 -3 -3 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2											
23:02:29	6.10	70.0	-8 -7 -8 -10 -9 -7 -3 -2 -2 -1 -1 -2 -2 -2 -2 -2 -1 -1 -2 -1 -1 -2 -1 -1											
23:02:29	5.00	70.0	-8 -8 -9 -11 -9 -8 -4 -2 -2 -1 -1 -2 -2 -2 -1 0 2 1 0 . 1 -1 0 .											
23:02:29	3.90	70.0	-8 -10 -11 -10 -9 -8 -6 -2 -1 -1 0 -1 -2 -1 1 2 0 2 1 2 2 2 3 3											
23:02:29	2.80	70.0	-8 -10 -12 -10 -9 -8 -6 -3 -1 -1 -1 0 0 -1 -1 . -1 2 2 3 3 4 6 5											
23:02:29	1.80	70.0	-9 -11 -10 -11 -8 -8 -6 -3 -1 -1 0 1 1 -2 1 1 2 2 3 3 4 4 4 4											
23:02:29	0.90	70.0	-4 -10 -10 -11 -8 -7 -6 -3 0 -1 1 2 2 2 2 2 2 1 2 2 4 5 5 5											
23:02:29	0.20	70.0	7 -9 -11 -13 -9 -7 -4 -1 0 0 2 2 4 3 2 2 3 1 2 2 4 5 5 5											
Time	Elev	Az	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84	3.08	3.32	3.56

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23: 2:21 Scan:66 Tilt: 6 Product:V / 2

Time	Elev	Az	3.80	4.04	4.28	4.52
23:02:28	16.00	70.0	-4 -5 -4 -4 -5 -4 -4			
23:02:28	14.90	70.0	-4 -4 -4 -4 -4 -4 -5			
23:02:28	13.80	70.0	-4 -3 -4 -4 -4 -4 -4			
23:02:28	12.70	70.0	-4 -4 -4 -4 -4 -3 -3			
23:02:28	11.60	70.0	-3 -3 -4 -4 -4 -2 -2			
23:02:28	10.40	70.0	-4 -3 -4 -3 -2 -2 -2			
23:02:29	9.40	70.0	-2 -2 -3 -2 -2 -2 -2			
23:02:29	8.30	70.0	-2 -2 -2 -2 -2 -2 -2			
23:02:29	7.20	70.0	-2 -2 -2 -2 -1 -1 -1			
23:02:29	6.10	70.0	-1 -1 -1 -1 -1 -1 0			
23:02:29	5.00	70.0	0 1 1 2 2 2 2			
23:02:29	3.90	70.0	3 2 2 2 2 3 2			
23:02:29	2.80	70.0	5 4 3 4 3 3 2			
23:02:29	1.80	70.0	5 5 4 5 4 3 3			
23:02:29	0.90	70 0	5 6 6 5 4 4 4			
23:02:29	0.20	70.0	5 6 6 5 4 5 3			
Time	Elev	Az	3.80	4.04	4.28	4.52

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23: 2:31 Scan:66 Tilt: 7 Product:V / 2

Time	Elev	Az	0.68		0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32	
23:02:31	0.10	75.0	-2	-5	-7	-3	-12	-7	-8	-6	-5	0	-1	-1	1	1	0	0	0	0	-1	-1	1	2	3	5
23:02:31	0.40	75.0	-2	-5	-5	-8	-13	-8	-6	-6	-4	2	-1	-1	1	-1	2	0	-2	-2	-2	-1	1	2	2	5
23:02:31	0.90	75.0	-2	-4	-7	-8	-9	-8	-8	-7	-5	-3	-2	-1	1	-1	-1	-2	-2	-2	-1	-1	1	1	2	2
23:02:31	1.60	75.0	-2	-4	-3	-9	-13	-8	-8	-7	-5	-4	-2	-1	-1	-2	-3	-2	-2	-2	-1	-1	1	1	1	2
23:02:31	2.40	75.0	-2	-5	-8	-8	-12	-8	-9	-7	-4	-4	-2	-1	-2	-4	-3	-2	1	0	-1	-1	0	0	2	2
23:02:31	3.30	75.0	-2	-5	-8	-7	-10	-9	-9	-8	-5	-2	-1	-2	-2	-3	-3	-2	0	-1	-2	-2	-1	0	1	2
23:02:31	4.40	75.0	-3	-5	-8	-13	-9	-13	-9	-8	-5	-2	-2	-2	-2	-4	-4	-2	-2	-2	-2	-2	-1	-1	1	1
23:02:32	5.70	75.0	-4	-4	-8	-10	-9	-10	-9	-7	-5	-2	-2	-2	-3	-3	-2	-3	-4	-3	-2	-2	-2	-2	-1	-1
23:02:32	6.90	75.0	-6	-5	-6	-9	-6	-7	-8	-6	-4	-2	-2	-2	-2	-2	-2	-4	-4	-2	-2	-2	-2	-2	-2	-1
23:02:32	8.00	75.0	-6	-6	-7	-8	-5	-6	-8	-6	-4	-3	-1	-3	-3	-3	-5	-5	-4	-2	-1	-2	-2	-2	-2	-2
23:02:32	9.10	75.0	-7	-5	-4	-7	-5	-5	-7	-6	-4	-3	-3	-2	-3	-5	-5	-6	-4	-3	-2	-1	-2	-3	-2	-2
23:02:32	10.20	75.0	-6	-6	-6	-4	-4	-5	-7	-4	-4	-4	-3	-2	-4	-6	-5	-5	-5	-3	-2	-1	-2	-3	-3	-3
23:02:32	11.30	75.0	-5	-6	-6	-6	-5	-3	-7	-5	-4	-5	-4	-3	-5	-5	-5	-5	-4	-3	-2	-2	-2	-3	-4	-4
23:02:32	12.30	75.0	0	-6	-6	-7	-5	-3	-6	-4	-4	-4	-5	-4	-5	-5	-4	-4	-4	-4	-3	-3	-2	-4	-4	-5
23:02:32	13.40	75.0	-4	-6	-5	-6	-5	-4	-4	-3	-4	-5	-5	-4	-4	-3	-3	-3	-4	-4	-4	-3	-3	-3	-4	-5

Time	Elev	Az	0.68		0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32	

59

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23: 2:31 Scan:66 Tilt: 7 Product:V / 2

Time	Elev	Az	3.56		3.80		4.04		4.28		4.52	
23:02:31	0.10	75.0	5	5	5	6	7	6	4	6	1	
23:02:31	0.40	75.0	4	5	6	6	7	6	6	5	2	
23:02:31	0.90	75.0	3	5	5	6	6	5	5	5	4	
23:02:31	1.60	75.0	4	5	5	6	5	4	4	3	2	
23:02:31	2.40	75.0	4	4	4	4	5	4	2	2	2	
23:02:31	3.30	75.0	2	2	2	2	3	2	2	2	2	
23:02:31	4.40	75.0	1	1	1	1	1	1	2	2	1	
23:02:32	5.70	75.0	-1	-1	0	-1	-1	0	1	1	1	
23:02:32	6.90	75.0	-2	-2	-2	-2	-2	-2	-2	-2	-2	
23:02:32	8.00	75.0	-2	-2	-2	-2	-2	-2	-2	-2	-2	
23:02:32	9.10	75.0	-2	-2	-3	-3	-3	-3	-3	-4	-3	
23:02:32	10.20	75.0	-3	-3	-4	-3	-4	-4	-4	-4	-4	
23:02:32	11.30	75.0	-4	-4	-4	-4	-4	-4	-4	-4	-4	
23:02:32	12.30	75.0	-4	-4	-4	-4	-4	-4	-3	-3	-3	
23:02:32	13.40	75.0	-5	-5	-4	-4	-5	-4	-4	-4	-4	

Time	Elev	Az	3.56		3.80		4.04		4.28		4.52	

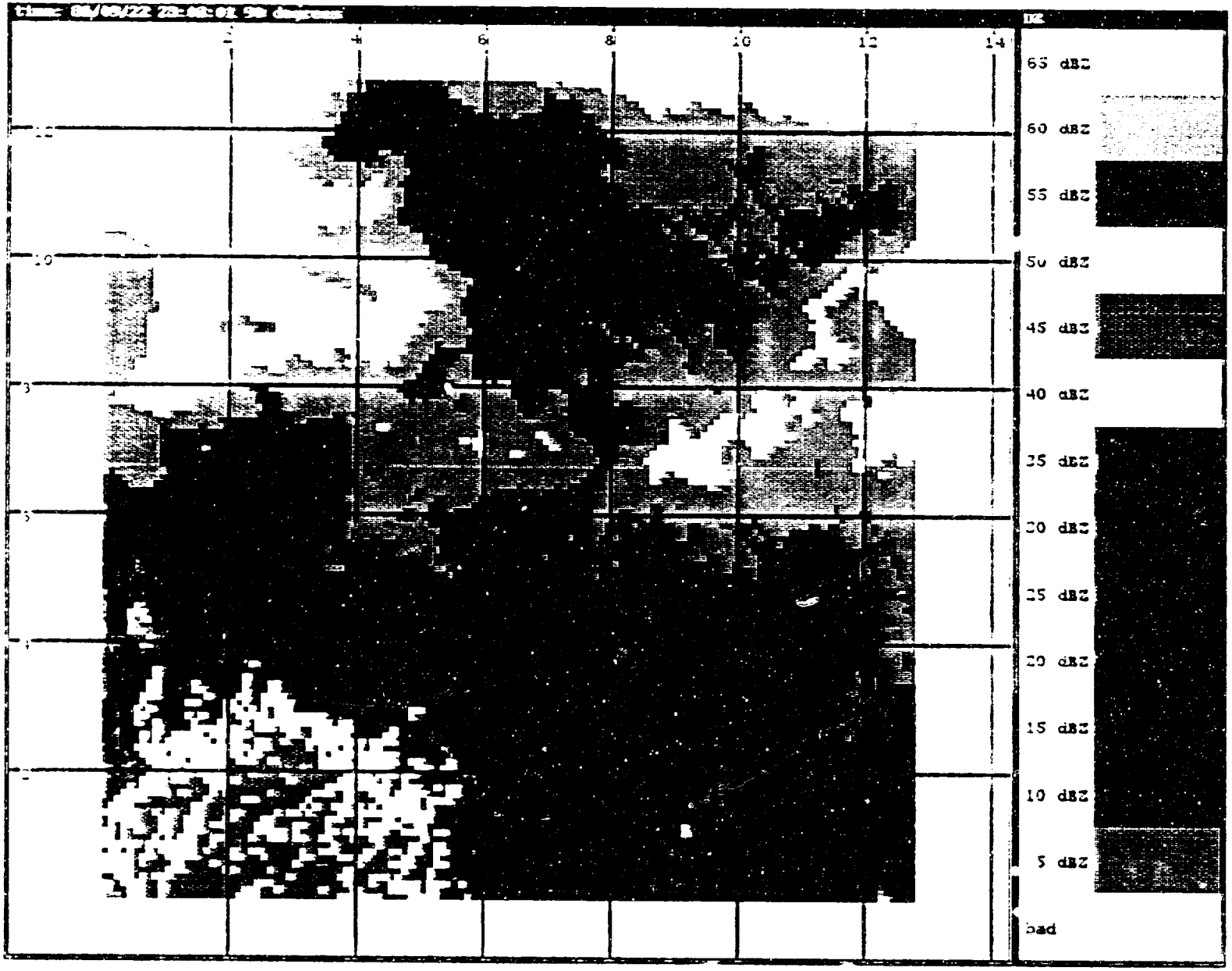

Figure B-17. RHI scan of reflectivity at 0 degrees azimuth during microburst at 20:03:01 UT on Sept. 22, 1986.

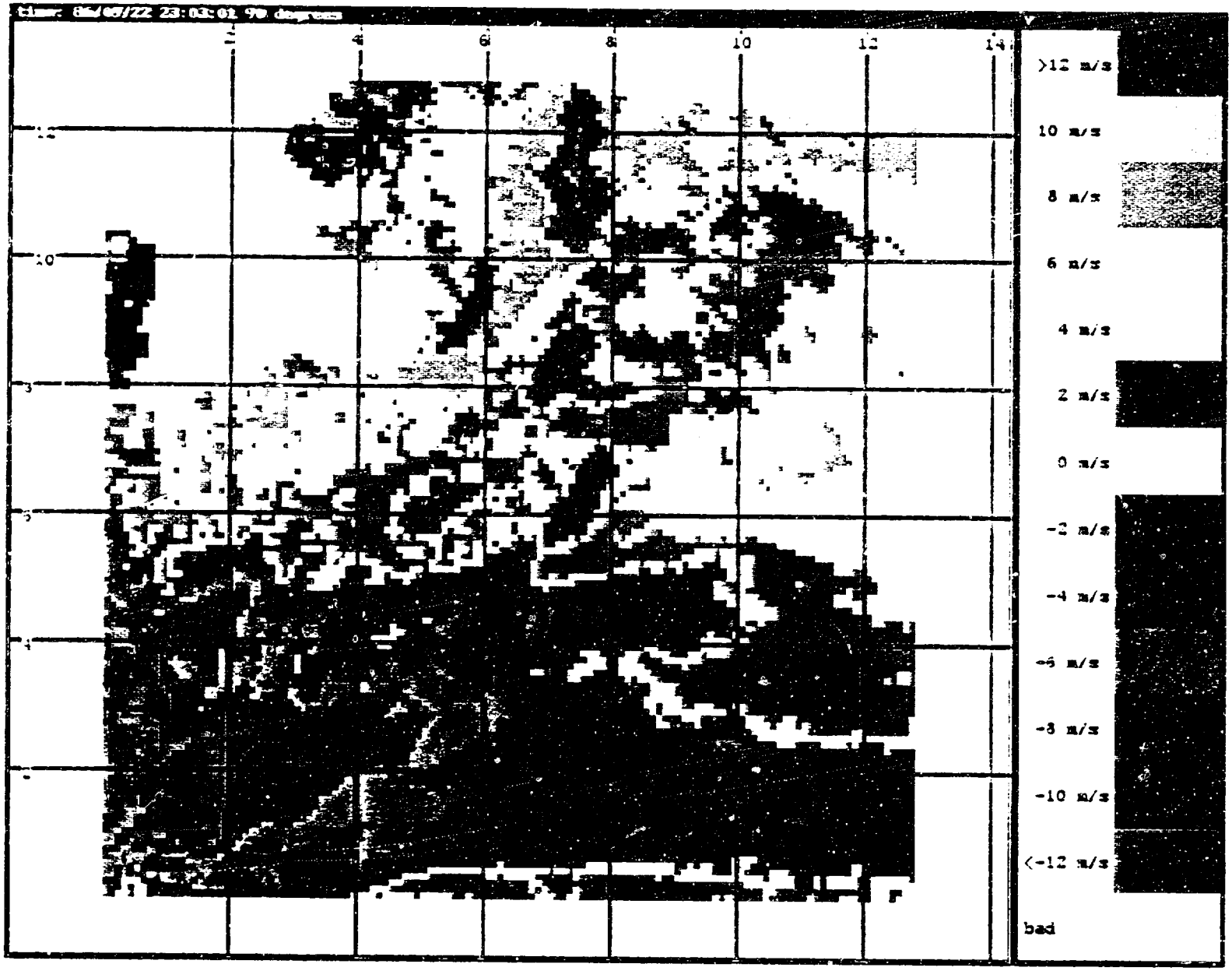

Figure B-18. RHI scan of velocity at 0 degrees azimuth during microburst at 23:03:01 UT on Sept. 22, 1986.

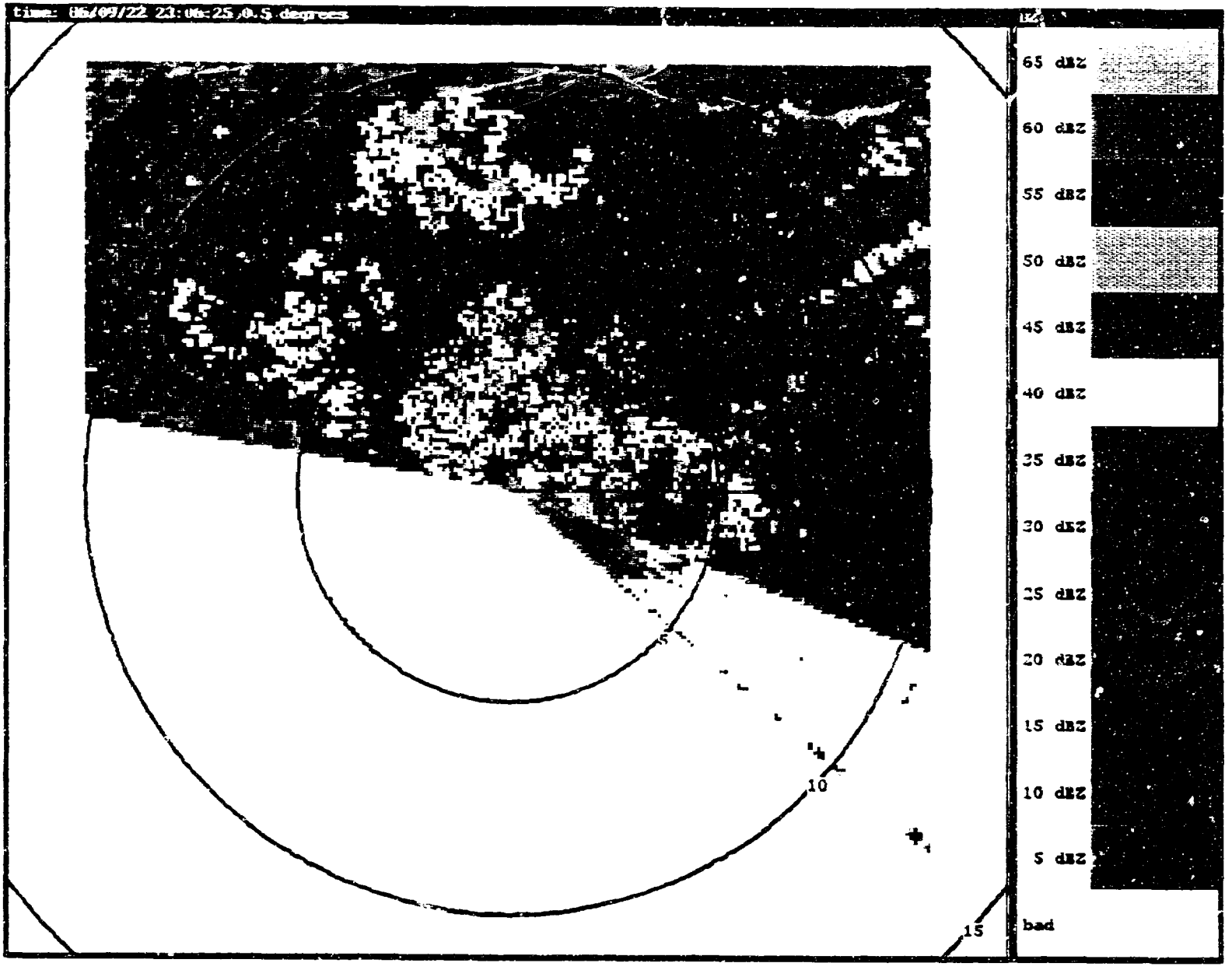

Figure B-19. PPI scan of reflectivity at 0.5 degrees elevation during microburst at 23:06:25 UT on Sept. 22, 1986.

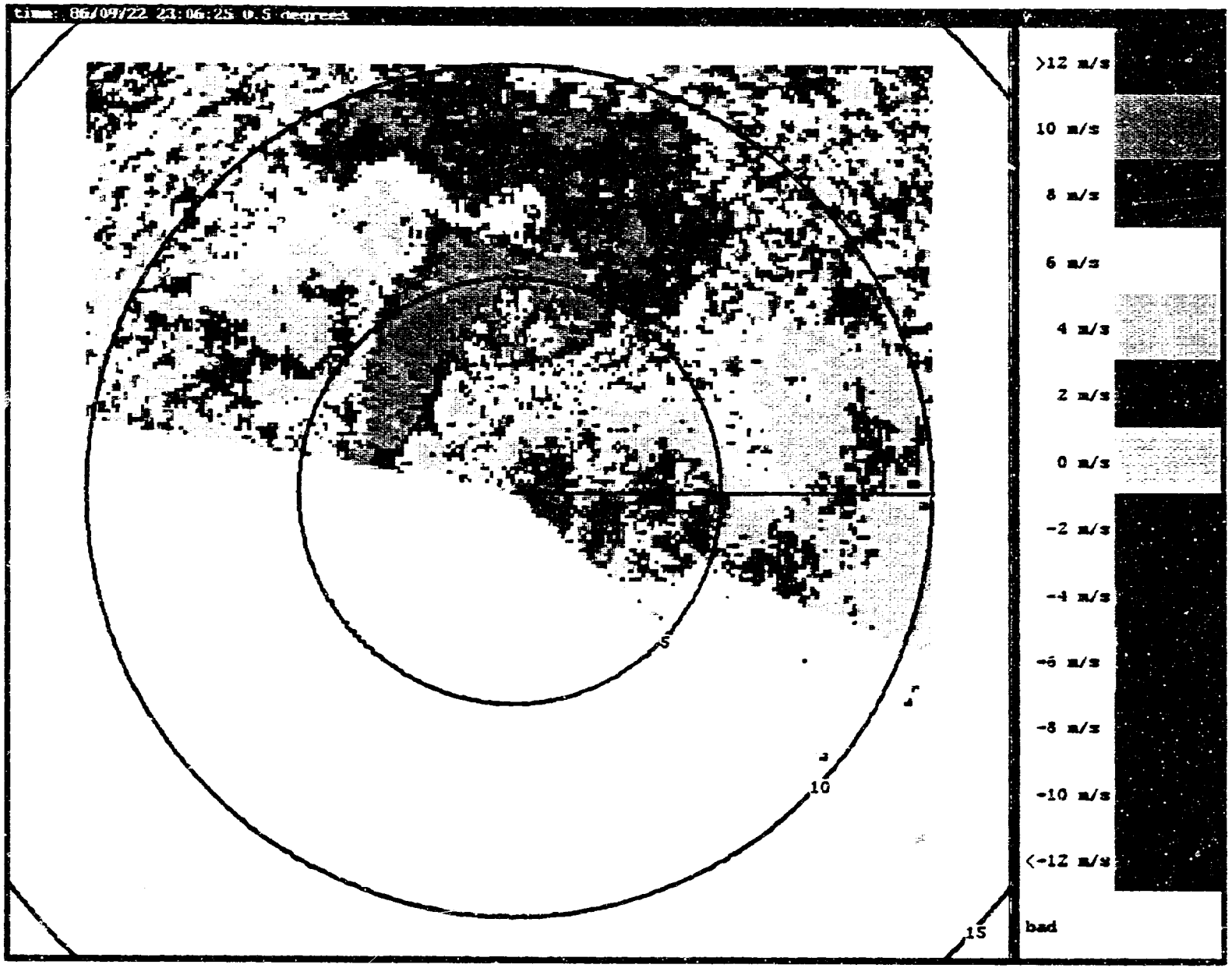

Figure B-20. PPI scan of velocity at 0.5 degrees elevation during microburst at 23:06:25 UT on Sept. 22, 1986.

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23:17:50 Scan:71 Tilt: 2 Product:V / 2

Time	Elev	Az	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84	3.08
23:17:57	16.70	105.0	-9 -10 -12 -8	-5 -4 -6 -2	-5 -3 -4 -4	-5 -7 -7 -8	-8 -9 -10 -11	-10 -10 -9 -9						
23:17:57	15.60	105.0	-9 -11 -27 -11	-6 -5 -6 -6	-5 -5 -4 -4	-6 -7 -7 -8	-9 -9 -10 -10	-10 -9 -8 -8						
23:17:57	14.50	105.0	-15 -11 -20 -10	-3 -6 -7 -5	-1 -5 -4 -5	-7 -7 -7 -8	-8 -9 -9 -9	-9 -9 -8 -7						
23:17:57	13.50	105.0	-10 -11 -14 -11	-9 -4 -6 -5	-5 -5 -4 -5	-7 -7 -6 -8	-8 -8 -9 -9	-7 -7 -6 -6						
23:17:58	12.40	105.0	-10 -13 -11 -12	-15 -5 -6 -1	-5 -5 -5 -6	-7 -7 -6 -6	-7 -7 -8 -8	-7 -7 -7 -6						
23:17:58	11.30	105.0	-12 -19 -18 -16	-16 0 -7 -5	-5 -5 -5 -6	-7 -7 -7 -7	-6 -8 -8 -7	-6 -7 -6 -5						
23:17:58	10.20	105.0	-13 -15 -17 -12	-18 -6 -8 -6	-6 -6 -5 -7	-7 -7 -7 -6	-6 -6 -6 -6	-6 -5 -5 -5						
23:17:58	9.10	105.0	-17 -17 -18 -15	-12 -9 -8 -6	-7 -7 -8 -8	-8 -8 -8 -7	-7 -6 -5 -5	-5 -5 -5 -5						
23:17:58	8.00	105.0	-18 -19 -20 -12	-11 -10 -8 -6	-7 -8 -8 -8	-8 -9 -8 -7	-5 -5 -5 -5	-5 -5 -5 -5						
23:17:58	6.90	105.0	-16 -12 -21 -16	-12 -12 -8 -7	-7 -8 -8 -8	-8 -9 -7 -6	-5 -5 -5 -5	-5 -5 -4 -4						
23:17:58	5.70	105.0	-17 -16 -21 -16	-14 -11 -8 -7	-7 -9 -9 -8	-8 -8 -7 -5	-5 -5 -4 -5	-4 -4 -3 -2						
23:17:58	4.60	105.0	-12 -15 -16 -18	-14 -23 -8 -7	-7 -9 -9 -9	-8 -6 -6 -5	-4 -4 -4 -3	-3 -3 -2 -2						
23:17:58	3.50	105.0	-15 -22 -14 -15	-11 -14 -9 -8	-7 -9 -8 -8	-7 -5 -5 -4	-3 -3 -2 -2	-2 -2 -2 -2						
23:17:58	2.40	105.0	-12 -18 -23 -12	-11 -10 -15 -9	-8 -9 -8 -7	-6 -5 -5 -3	-3 -2 -2 -1	0 1 0 0						
23:17:59	1.40	105.0	-15 -14 -18 -12	-14 -10 -13 -11	-9 -9 -7 -6	-5 -4 -4 -3	-2 -2 1 2	2 2 3 4						
23:17:59	0.60	105.0	-12 -18 -21 -13	-13 -11 -11 -10	-10 0 -7 -6	-5 -4 -2 -2	-2 0 2 0	4 5 7 2						
23:17:59	0.00	105.0	-12 -11 -12 -19	-12 -18 -11 -11	-8 -1 -5 -5	-4 -3 -2 -2	0 1 2 0	5 7 8 8						
Time	Elev	Az	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84	3.08

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23:17:50 Scan:71 Tilt: 2 Product:V / 2

Time	Elev	Az	3.32	3.56	3.80	4.04	4.28	4.52
23:17:57	16.70	105.0	-8 -7 -7 -6	-6 -6 -6 -6	-6 -6 -6 -6	-6 -6 -6 -5		
23:17:57	15.60	105.0	-7 -6 -6 -5	-5 -5 -6 -6	-6 -6 -6 -6	-6 -6 -6 -6		
23:17:57	14.50	105.0	-6 -6 -6 -5	-6 -6 -5 -6	-6 -6 -6 -6	-6 -6 -6 -5		
23:17:57	13.50	105.0	-6 -5 -6 -6	-6 -6 -6 -6	-6 -6 -6 -6	-6 -6 -6 -6		
23:17:58	12.40	105.0	-6 -5 -6 -7	-7 -7 -7 -6	-6 -6 -6 -6	-6 -5 -5 -5		
23:17:58	11.30	105.0	-5 -6 -6 -6	-6 -6 -6 -6	-6 -6 -6 -6	-6 -5 -5 -4		
23:17:58	10.20	105.0	-5 -5 -6 -6	-5 -6 -6 -6	-5 -5 -5 -5	-5 -4 -4 -4		
23:17:58	9.10	105.0	-5 -5 -5 -5	-5 -5 -5 -5	-5 -5 -5 -4	-4 -3 -4 -5		
23:17:58	8.00	105.0	-5 -4 -4 -5	-5 -5 -5 -4	-4 -4 -4 -3	-3 -2 -3 -3		
23:17:58	6.90	105.0	-4 -3 -4 -5	-4 -4 -4 -4	-4 -3 -2 -2	-2 -2 -2 -2		
23:17:58	5.70	105.0	-2 -2 -3 -3	-3 -3 -3 -3	-2 -2 -2 -2	-2 -2 -2 -2		
23:17:58	4.60	105.0	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2	-2 -2 -2 -2		
23:17:58	3.50	105.0	-2 -2 -2 -2	-1 -1 -1 -2	-2 -2 -2 -2	-2 -2 -2 -2		
23:17:58	2.40	105.0	-1 . 0 1	0 1 1 .	0 -1 -2			
23:17:59	1.40	105.0	5 2 2 2	2 2 2 2	2 2 2 2			
23:17:59	0.60	105.0	8 4 4 4	4 3 4 3	3 2 2			
23:17:59	0.00	105.0	9 7 6 5	5 4 4 4	4 4 4			
Time	Elev	Az	3.32	3.56	3.80	4.04	4.28	4.52

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23:18: 0 Scan:71 Tilt: 3 Product:V / 2

Time	Elev	Az	0.20	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84
23:18:00	0.00	107.9	-10 -9 -13 -16 -22 -16 -9 -28 -10 -30	-9	0	-1	-1	-2	-2	-1	-1	2	2	4	2	8	10
23:18:00	0.20	108.0	-9 -9 -17 -11 -18 -23 -11 -12 -17 -9	31	1	-4	0	-2	-2	-1	-2	-1	1	3	5	6	9
23:18:00	0.60	108.0	-9 -9 -12 -2 -13 -15 -24 -12 -14 -9	-11	-8	-7	-2	-3	-3	-2	-2	-1	0	2	3	5	8
23:18:00	1.10	108.0	-9 -9 -15 -16 -21 -15 -11 -15 -17 -9	-8	-8	-8	-6	-4	-4	-3	-2	-2	-1	1	2	3	6
23:18:00	1.80	108.0	-10 -10 -15 -15 -14 -12 -11 -14 -10 -9	-8	-8	-8	-7	-5	-4	-5	-3	-2	-2	-1	1	2	2
23:18:00	2.70	108.0	-10 -11 -13 -13 -22 -12 -11 -17 -11 -8	-7	-8	-8	-8	-5	-5	-5	-4	-3	-2	-2	-1	0	1
23:18:00	3.60	108.0	-11 -15 -12 -14 -25 -25 -19 -16 -9 -7	-7	-9	-9	-8	-7	-6	-6	-5	-4	-3	-3	-3	-2	-2
23:18:01	4.70	108.0	-9 -12 -18 -19 -21 -11 -11 -10 -8 -7	-8	-9	-9	-9	-8	-7	-5	-6	-5	-5	-4	-4	-3	-3
23:18:01	5.90	108.0	-11 -12 -13 -14 -17 -14 -16 -10 -6 -3	-7	-8	-9	-8	-9	-8	-7	-6	-6	-5	-5	-5	-4	-4
23:18:01	7.10	108.0	-11 -12 -17 -20 -14 -19 -12 -11 -7 -4	-5	-8	-8	-9	-8	-8	-8	-7	-7	-6	-5	-5	-5	-5
23:18:01	8.20	108.0	-11 -12 -17 -16 -15 -18 -11 -10 -6 3	-2	-5	-8	-8	-8	-8	-8	-7	-7	-7	-6	-6	-5	-5
23:18:01	9.40	108.0	-10 -11 -16 -13 -18 -29 -12 -9 -7 -5	-5	-5	-7	-7	-7	-7	-7	-8	-8	-8	-7	-6	-6	-6
23:18:01	10.50	108.0	-10 -12 -14 -11 -15 -14 -8 -5 -7 -5	2	-4	-5	-7	-7	-8	-7	-7	-8	-8	-8	-7	-7	-6
23:18:01	11.60	108.0	-10 -11 -15 -12 -14 -23 -10 -6 -5 4	-5	-4	-4	-7	-8	-8	-8	-8	-7	-8	-8	-8	-8	-7
23:18:01	12.70	108.0	-10 -11 -10 -11 -24 -12 -10 -7 -7 -3	-5	-5	-4	-5	-7	-8	-8	-8	-8	-8	-9	-9	-9	-7
Time	Elev	Az	0.20	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84

Proj:FLOWS Site:Huntsville Radar:FL-2 Date: 9-22-86 Time:23:18: 0 Scan:71 Tilt: 3 Product:V / 2

Time	Elev	Az	3.08	3.32	3.56	3.80	4.04
23:18:00	0.00	107.9	11 7 4 9	9	7	6	5	5
23:18:00	0.20	108.0	10 10 10 10	9	7	6	5	5
23:18:00	0.60	108.0	9 9 7 9	6	5	4	3	4
23:18:00	1.10	108.0	8 5 4 5	4	2	3	2	2
23:18:00	1.80	108.0	5 2 1 2	2	1	2	1	1
23:18:00	2.70	108.0	0 -1 -2 -2	-1	0	-1	1	0
23:18:00	3.60	108.0	-2 -2 -2 -2	-2	-2	-2	-2	-2
23:18:01	4.70	108.0	-2 -3 -3 -3	-3	-2	-2	-2	-2
23:18:01	5.90	108.0	-4 -4 -4 -4	-4	-4	-4	-4	-3
23:18:01	7.10	108.0	-5 -4 -4 -4	-5	-4	-4	-4	-4
23:18:01	8.20	108.0	-5 -5 -5 -5	-5	-5	-5	-5	-5
23:18:01	9.40	108.0	-5 -5 -6 -6	-6	-6	-5	-6	-5
23:18:01	10.50	108.0	-6 -6 -6 -6	-6	-6	-6	-6	-6
23:18:01	11.60	108.0	-6 -7 -7 -6	-6	-6	-6	-6	-6
23:18:01	12.70	108.0	-7 -7 -7 -6	-7	-7	-7	-7	-6
Time	Elev	Az	3.08	3.32	3.56	3.80	4.04

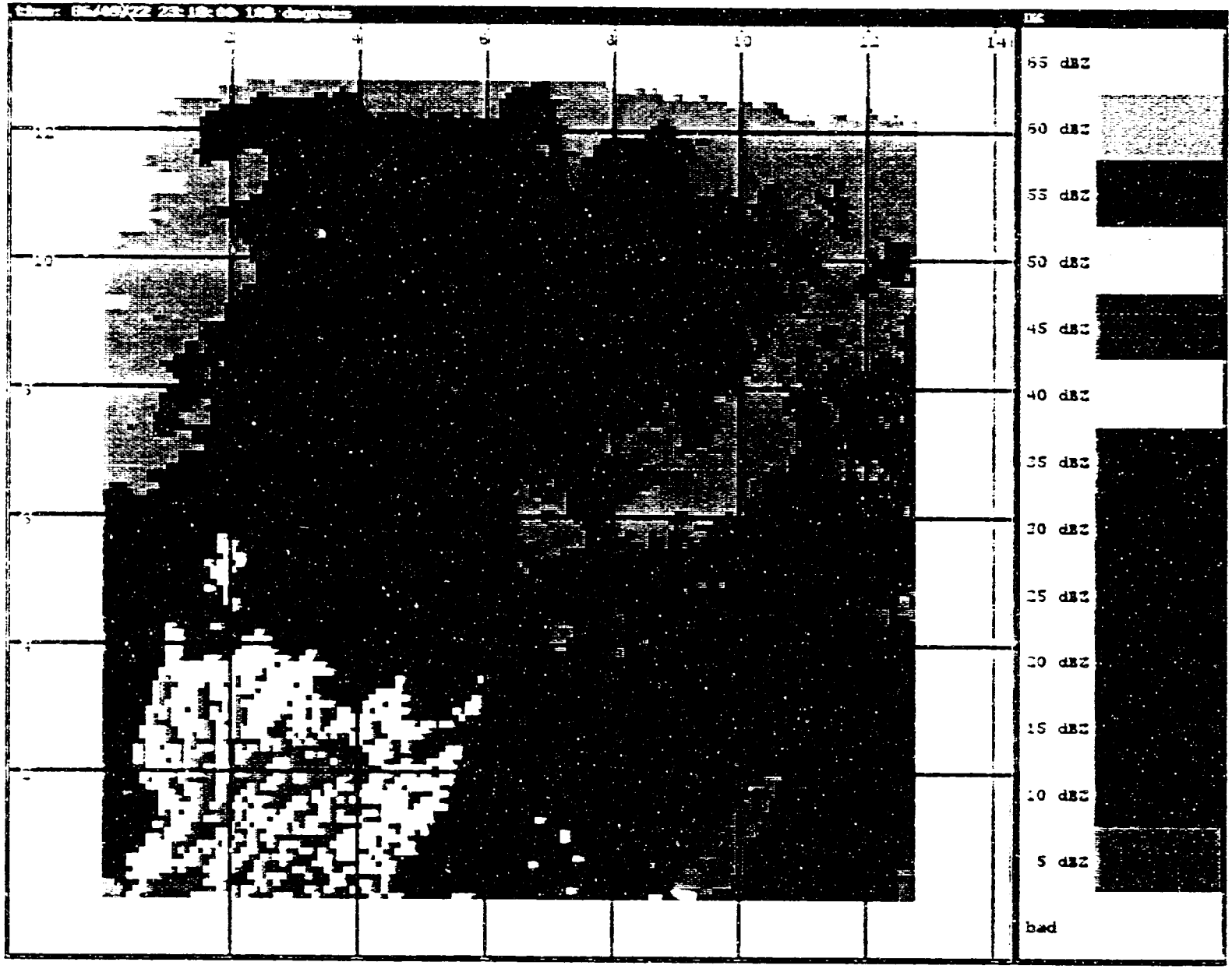

Figure B-25. RHI scan of reflectivity at 108 degrees azimuth during microburst at 23:18:00 UT on Sept. 22, 1986.

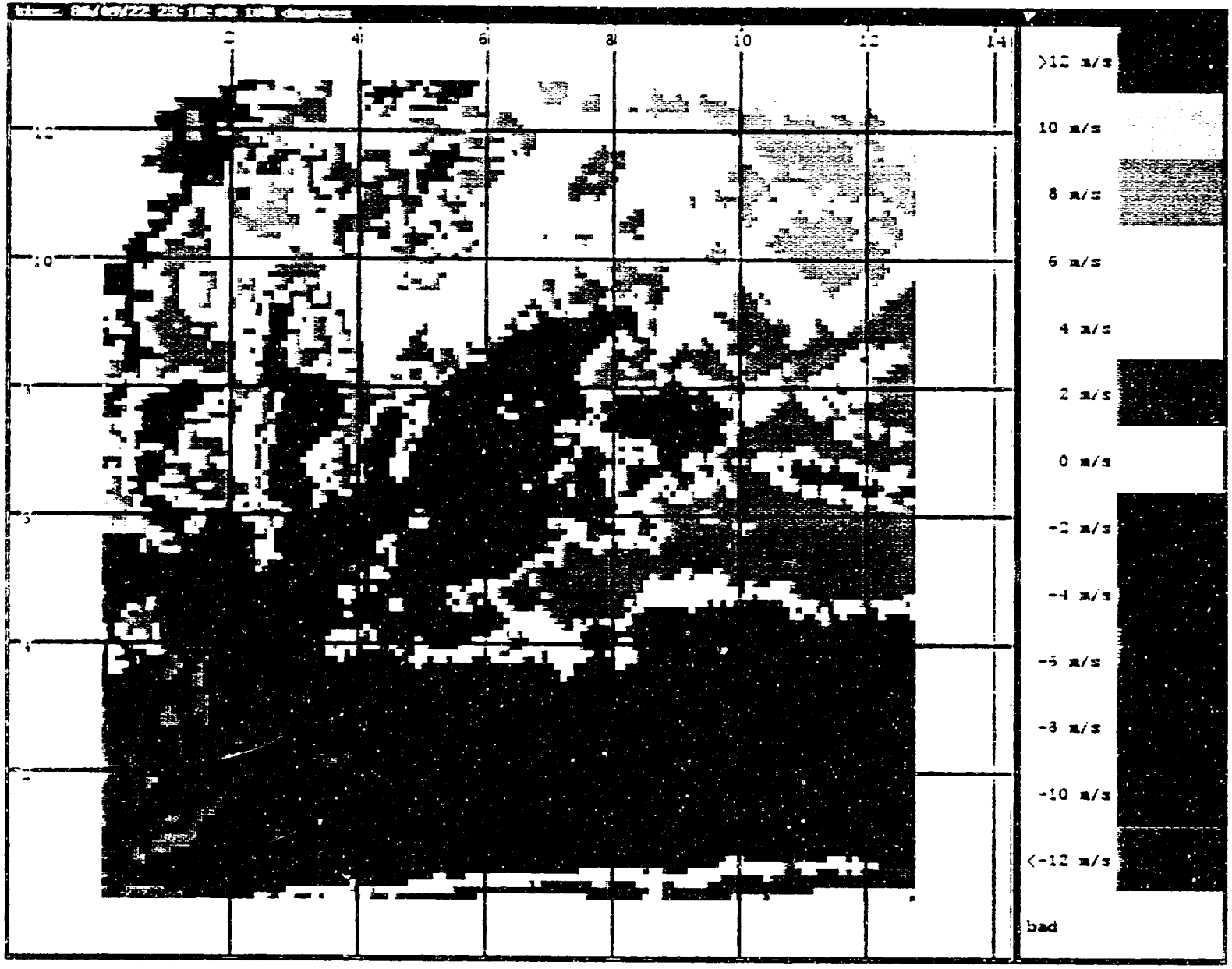

Figure B-26. RHI scan of velocity at 108 degrees azimuth during microburst at 23:18:00 UT on Sept. 22, 1986.

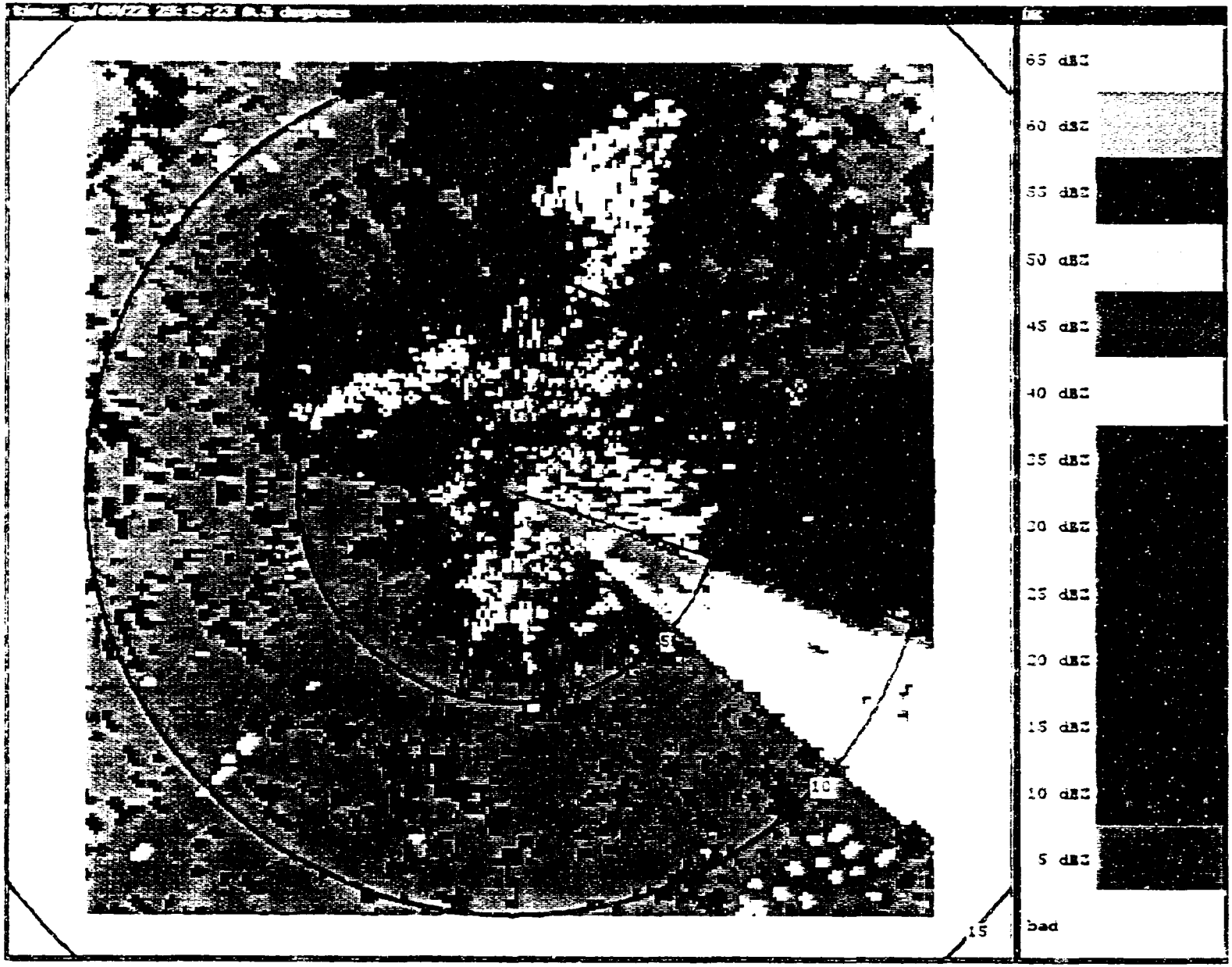

Figure B-27. PPI scan of reflectivity at 0.5 degrees elevation during microburst at 23:19:23 UT on Sept. 22, 1986.

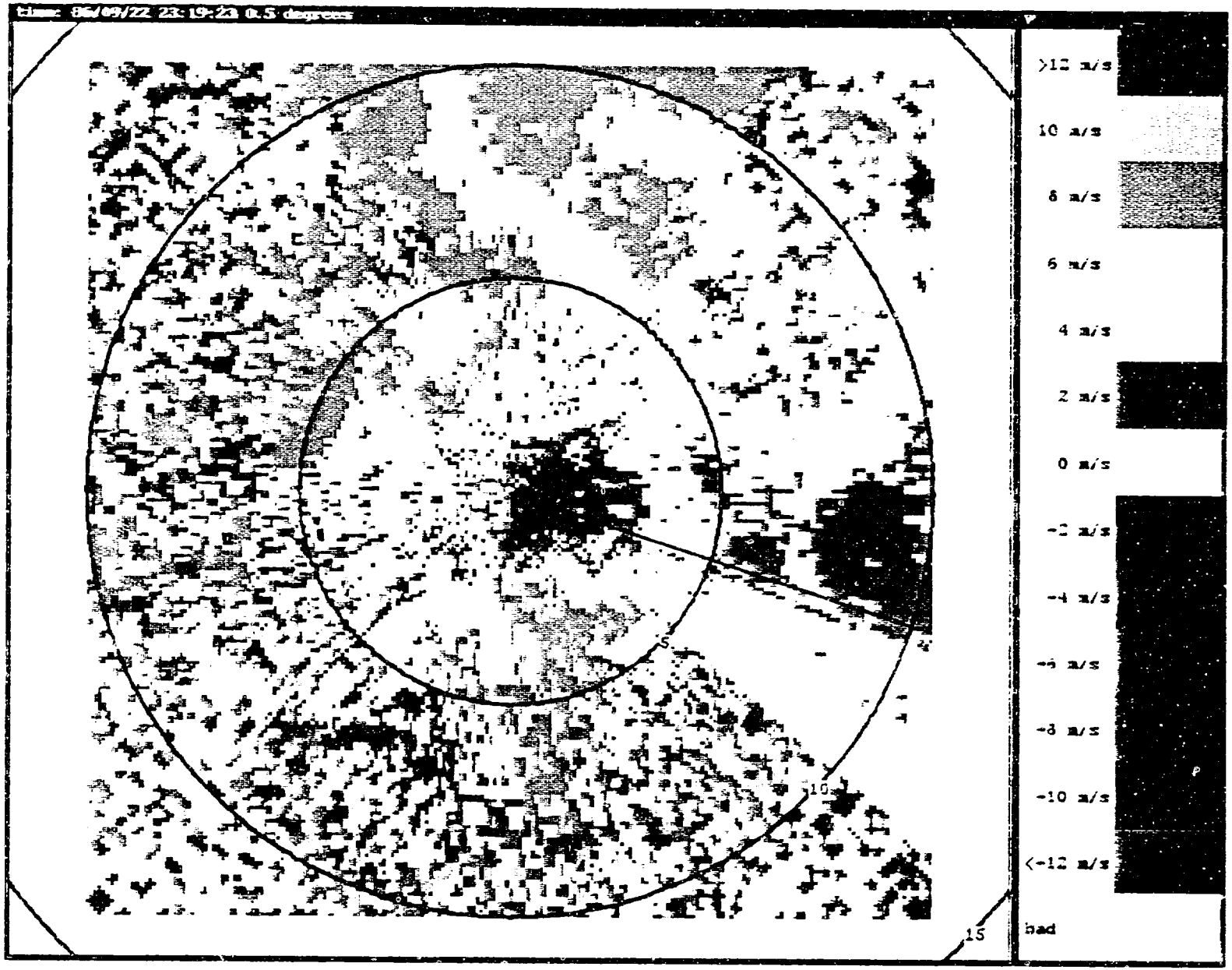

Figure B-28. PPI scan of velocity at 0.5 degrees elevation during microburst at 23:19:23 UT on Sept. 22, 1986.

4. May 17, 1987

Proj:FLOWS Site:Denver Radar:FL-2 Date: 5-17-87 Time:20:46:48 Scan:52 Tilt: 1 Product:V / 2

Time	Elev	Az	5.48		5.72		5.96		6.20		6.44		6.68		6.92		7.16		7.40		7.64		7.88		8.12	
20:46:48	0.00	236.9	-7	-8	-8	-7	-9	-7	-8	-5	-9	-7	-7	-7	-8	-7	-8	-6	-7	-2	-6	-6	-7	-7	-5	-3
20:46:48	0.30	236.9	-8	-9	-9	-9	-9	-9	-8	-8	-8	-7	-8	-8	-8	-8	-8	-8	-8	-7	-6	-7	-8	-5	-4	-3
20:46:48	1.10	236.9	-6	-6	-7	-7	-6	-7	-7	-6	-7	-7	-7	-8	-8	-7	-7	-7	-7	-7	-6	-5	-4	-4	-4	-4
20:46:48	2.10	236.9	-5	-5	-6	-5	-5	-5	-6	-6	-6	-6	-7	-7	-6	-6	-6	-7	-6	-6	-6	-4	-4	-4	-4	-3
20:46:49	3.30	236.9	-4	-4	-4	-4	-4	-4	-4	-5	-6	-5	-5	-5	-5	-5	-6	-5	-5	-5	-5	-4	-3	-3	-3	-3
20:46:49	4.40	236.9	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-5	-5	-6	-6	-5	-4	-4	-2	-3	-3	-4	-4	-3
20:46:49	5.60	236.9	-4	-4	-4	-4	-4	-4	-4	-5	-4	-4	-4	-5	-6	-6	-5	-5	-4	-4	-3	-3	-2	-3	-4	-4
20:46:49	6.60	236.9	-4	-4	-4	-4	-4	-4	-4	-4	-4	-5	-5	-4	-5	-6	-5	-4	-4	-4	-4	-3	-2	-2	-2	-3
20:46:49	7.60	236.9	-4	-4	-4	-4	-4	-4	-3	-3	-3	-3	-4	-4	-4	-3	-4	-3	-4	-4	-4	-3	-2	-2	-2	-3
20:46:49	8.70	236.9	-4	-4	-4	-4	-3	-3	-2	-2	-3	-2	-2	-2	-3	-2	-4	-4	-4	-4	-4	-4	-3	-2	-3	-4
20:46:49	9.70	236.9	-4	-4	-3	-2	-2	-2	-1	-2	-1	-2	-2	-2	-2	-2	-2	-3	-3	-3	-3	-2	-2	-1	-3	-4
20:46:49	10.80	236.9	-3	-3	-2	-2	.	1	1	2	2	0	-2	-1	-1	-1	-1	-2	-3	-2	-2	-2	-2	-4	-4	-4
20:46:50	11.90	236.9	-3	-3	-2	-2	-1	0	1	2	1	1	0	1	1	0	-1	0	0	-2	-3	-4	-3	-3	-2	-4
20:46:50	12.90	236.9	-2	-1	1	0	1	1	2	0	1	1	2	2	2	1	2	2	2	-1	-2	-4	-3	-1	0	-1
20:46:50	13.90	236.9	-1	-1	1	2	2	2	1	-1	1	2	2	1	-1	2	3	4	3	2	-2	-4	-4	-3	-2	-2
20:46:50	15.00	236.9	-1	1	1	2	2	2	3	0	-1	1	2	2	0	-1	-1	1	0	0	-2	-3	-4	-4	-4	-3
20:46:50	16.10	236.9	1	1	1	2	1	2	2	0	-2	0	1	0	-1	-2	-3	-2	-2	-2	-2	-2	-1	-2	-3	-3
20:46:50	17.10	236.9	1	1	2	2	2	2	2	0	-2	-2	-1	-2	-3	-2	-2	-3	-2	-2	-2	0	-2	-5		
20:46:50	18.20	236.9	0	1	2	1	2	2	1	2	0	-1	-2	-1	-1	-2	-3	-3	-3	-4	-3	-3	-3	-3	-2	-5
20:46:51	19.20	236.9	0	1	1	1	2	1	2	2	1	0	-2	-2	-3	-3	-4	-4	-3	-4	-3	-2	-2	-3	-4	-4
20:46:51	20.30	236.9	-1	1	1	1	2	2	2	2	-1	-2	-2	-4	-4	-4	-4	-4	-4	-3	-4	-3	-3	-3	-4	-4
20:46:51	21.30	236.9	-1	0	0	1	2	2	1	1	-1	-3	-4	-4	-4	-4	-4	-4	-4	-6	-5	-5	-4	-4	-3	-4
20:46:51	22.40	236.9	-1	1	0	1	2	2	2	2	-2	-3	-4	-4	-4	-4	-4	-5	-8	-8	-8	-7	-6	-4	-4	-5
20:46:51	23.40	236.9	1	1	1	1	2	2	3	2	-1	-2	-2	-3	-3	-5	-5	-7	-9	-10	-11	-11	-11	-9	-9	-9
20:46:51	24.50	236.9	1	2	2	2	2	2	3	2	0	-1	-2	-2	-2	-4	-6	-8	-9	-12	-12	-11	-10	-12	-12	-10
20:46:51	25.50	236.9	2	3	4	3	2	3	4	3	0	-2	-2	-3	-3	-4	-5	-7	-9	-9	-7	-5	-5	-9	-11	-13
20:46:52	26.60	236.9	4	4	4	3	2	3	4	3	1	-1	-3	-4	-4	-4	-5	-6	-9	-9	-8	-6	-5	-9	-12	-12
20:46:52	27.60	236.9	3	4	3	3	3	3	2	1	.	-1	-4	-4	-4	-5	-6	-7	-9	-9	-11	-11	-11	-10	-10	-6
20:46:52	28.70	236.9	3	2	3	3	4	3	0	0	-1	-1	-4	-4	-5	-7	-7	-8	-11	-10	-8	-8	-10	-9	-6	-4
20:46:52	29.80	236.9	3	2	2	3	3	3	-1	.	0	-2	-3	-5	-7	-8	-7	-8	-9	-8	-7	-6	-6	-4	-3	-1
20:46:52	30.80	236.9	3	2	2	3	2	2	0	0	-1	-2	-4	-5	-7	-8	-8	-6	-6	-6	-5	-4	-3	-3	-1	-2
20:46:52	31.80	236.9	2	1	1	-1	1	1	1	1	.	-1	-5	-8	-9	-9	-7	-8	-7	-6	-4	-4	-3	-5	-6	-6
20:46:52	32.90	236.9	3	-1	-2	-2	-1	0	2	2	0	0	-2	-7	-9	-8	-8	-9	-8	-8	-6	-6	-4	-4	-4	-7
20:46:53	34.00	236.9	3	-1	-2	-3	-2	-1	0	0	-1	-1	-6	-8	-8	-6	-7	-7	-10	-11	-8	-7	-6	-5	-5	-7
20:46:53	35.00	236.9	4	-1	-2	-3	-2	-1	-1	-1	-3	-4	-7	-6	-6	-4	-2	-2	-4	-6	-6	-5	-5	-6	-7	-6
Time	Elev	Az	5.48		5.72		5.96		6.20		6.44		6.68		6.92		7.16		7.40		7.64		7.88		8.12	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 5-17-87 Time:20:46:48 Scan:52 Tilt: 1 Product:V / 2

Time	Elev	Az	8.36		8.60		8.84		9.08		9.32		9.56		9.80		10.04		10.28		10.52		10.76		11.00	
20:46:48	0.00	236.9	-2	1	1	-1	0	1	1	1	0	1	0	0	1	3	3	4	4	4	6	6	6	5	4	5
20:46:48	0.30	236.9	-3	0	-1	-1	-1	1	0	1	-1	1	0	.	1	2	3	4	4	5	6	6	6	5	5	5
20:46:48	1.10	236.9	-4	-4	-4	-3	-2	-2	-1	-1	-1	-1	-1	0	2	2	3	2	3	3	4	4	4	4	5	5
20:46:48	2.10	236.9	-3	-3	-4	-4	-3	-3	-2	-1	-1	-1	-1	1	1	1	1	1	2	2	2	2	2	3	3	3
20:46:49	3.30	236.9	-3	-2	-3	-2	-3	-3	-3	-2	-2	-1	.	0	0	-1	0	1	1	0	1	1	0	-1	-2	-2
20:46:49	4.40	236.9	-2	-3	-4	-3	-3	-4	-3	-3	-2	-2	-2	-2	-2	-3	-2	-2	-2	-3	-2	-3	-3	-3	-4	-3
20:46:49	5.60	236.9	-4	-4	-4	-5	-4	-3	-4	-4	-4	-5	-4	-3	-4	-3	-3	-2	-2	-3	-4	-3	-3	-2	-2	-3
20:46:49	6.60	236.9	-4	-4	-4	-4	-4	-4	-5	-5	-6	-6	-4	-3	-3	-3	-3	-3	-4	-4	-5	-3	-5	-4	-3	-5
20:46:49	7.60	236.9	-3	-3	-4	-4	-4	-4	-4	-4	-5	-5	-5	-3	-4	-3	-3	-3	-3	-4	-5	-5	-4	-5	-6	-5
20:46:49	8.70	236.9	-4	-4	-4	-5	-4	-4	-4	-4	-4	-4	-4	-3	-3	-2	-4	-4	-3	-3	-5	-5	-4	-5	-5	-4
20:46:49	9.70	236.9	-4	-6	-5	-4	-4	-4	-4	-4	-4	-4	-4	-3	-4	-4	-3	-3	-3	-2	-2	-3	-3	-4	-4	-4
20:46:49	10.80	236.9	-4	-6	-5	-4	-3	-3	-4	-3	-3	-4	-4	-5	-7	-6	-5	-4	-4	-4	-3	-2	0	0	0	-1
20:46:50	11.90	236.9	-5	-5	-4	-4	-2	-2	-3	-3	-3	-4	-7	-8	-8	-8	-6	-4	-3	-2	-2	-3	-1	1	2	3
20:46:50	12.90	236.9	-3	-3	-3	-3	-3	-3	-2	-2	-3	-4	-3	-5	-8	-10	-9	-8	-7	-5	-5	-3	-1	1	2	3
20:46:50	13.90	236.9	-4	-3	-3	-4	-4	-4	-3	-2	-3	-4	-4	-5	-7	-8	-8	-8	-7	-6	-6	-2	1	2	2	2
20:46:50	15.00	236.9	-2	-2	-1	-2	-2	-4	-5	-6	-5	-4	-4	-5	-5	-5	-6	-5	-4	-2	-1	1	1	3	3	3
20:46:50	16.10	236.9	-3	-3	-4	-4	-5	-5	-6	-6	-7	-7	-7	-6	-5	-5	-4	-4	-5	-6	-4	-3	-1	2	2	1
20:46:50	17.10	236.9	-5	-5	-7	-7	-8	-7	-7	-8	-9	-8	-7	-4	-4	-5	-6	-5	-4	-5	-4	-3	-2	1	2	0
20:46:50	18.20	236.9	-7	-7	-8	-9	-8	-9	-8	-9	-9	-8	-6	-4	-7	-6	-7	-6	-6	-6	-5	-1	-1	1	2	-1
20:46:51	19.20	236.9	-7	-9	-7	-8	-8	-8	-8	-7	-6	-5	-4	-4	-5	-5	-6	-7	-6	-4	-3	1	1	2	5	3
20:46:51	20.30	236.9	-6	-6	-5	-6	-8	-8	-6	-4	-5	-4	-3	-4	-3	-4	-5	-6	-6	-5	-2	1	3	4	5	6
20:46:51	21.30	236.9	-4	-4	-7	-7	-7	-6	-7	-4	-4	-5	-5	-5	-5	-6	-4	-3	-3	-4	-3	-1	3	4	2	1
20:46:51	22.40	236.9	-6	-6	-9	-9	-8	-7	-6	-4	-3	-3	-2	-2	-2	-2	-2	-2	-2	-2	-1	0	1	-1	-2	-6
20:46:51	23.40	236.9	-10	-10	-10	-11	-10	-8	-6	-5	-3	-2	-2	-2	-1	1	1	0	1	-1	-1	0	2	-1	-5	-6
20:46:51	24.50	236.9	-11	-11	-9	-9	-9	-8	-5	-3	-3	-1	-2	-3	0	2	2	3	2	2	0	1	2	3	0	0
20:46:51	25.50	236.9	-12	-12	-10	-7	-5	-4	-2	-3	-3	-2	-2	1	2	2	2	3	2	4	4	2	-2	-1	3	4
20:46:52	26.60	236.9	-10	-8	-7	-6	-4	-1	0	-1	-2	0	0	2	3	0	-1	-1	-1	1	3	-1	-2	1	2	2
20:46:52	27.60	236.9	-5	-5	-5	-4	-2	-2	-1	0	1	0	-2	-2	-1	-3	-2	-3	-2	-3	-4	-4	-2	-1	-1	0
20:46:52	28.70	236.9	-3	-3	-3	-2	-2	-3	-3	-1	-4	-1	-2	-2	-2	-3	-4	-3	-2	-4	-4	-3	-3	-2	-1	0
20:46:52	29.80	236.9	-2	-1	0	-1	-2	-3	-4	-4	-4	-4	-4	-3	-5	-5	-4	-4	-3	-4	-3	-3	-4	-2	-1	-1
20:46:52	30.90	236.9	-3	-2	-2	-3	-5	-5	-4	-6	-5	-5	-3	-4	-3	-4	-3	-1	-2	-3	-4	-3	-3	-3	-2	0
20:46:52	31.80	236.9	-5	-2	-2	-2	-4	-8	-7	-6	-5	-4	-2	0	-1	-1	-2	-2	-3	-3	-4	-3	-3	-2	-2	.
20:46:52	32.90	236.9	-5	-4	-4	-3	-5	-5	-5	-5	-5	-4	-2	-1	1	0	-3	-3	-3	-4	-2	-1	-2	-1	-1	1
20:46:53	34.00	236.9	-7	-7	-7	-3	-3	-5	-6	-6	-5	-4	-2	-3	-3	-4	-4	-4	-3	-3	-2	-3	-2	-2	-1	0
20:46:53	35.00	236.9	-7	-6	-5	-4	-4	-5	-5	-5	-4	-4	-3	-4	-5	-4	-4	-3	-3	-4	-4	-5	-4	-3	-3	-3
Time	Elev	Az	8.36		8.60		8.84		9.08		9.32		9.56		9.80		10.04		10.28		10.52		10.76		11.00	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 5-17-87 Time:20:46:48 Scan:52 Tilt 1 Product:V / 2

Time	Elev	Az	11.24		11.48		11.72		11.96		12.20		12.44	
20:46:48	0.00	236.9	6	6	6	7	6	7	6	6	7		7	6
20:46:48	0.30	236.9	6	6	6	6	6	6	6	6	7	7	7	6
20:46:48	1.10	236.9	5	4	5	5	5	6	6	6	6	6	6	6
20:46:48	2.10	236.9	3	3	2	2	3	2	3	4	4	3	4	2
20:46:49	3.30	236.9	-2	-2	-3	-3	-2	-2	-2	-2	-2	-2	-2	-2
20:46:49	4.40	236.9	-4	-4	-4	-4	-4	-5	-4	-4	-4	-4	-3	-3
20:46:49	5.60	236.9	-4	-5	-5	-6	-7	-6	-6	-4	-4	-4	-5	-6
20:46:49	6.60	236.9	-6	-7	-6	-7	-7	-7	-7	-5	-4	-4	-3	-4
20:46:49	7.60	236.9	-7	-9	-7	-7	-7	-8	-7	-8	-7	-6	-6	-5
20:46:49	8.70	236.9	-4	-6	-4	-5	-5	-4	-7	-7	-8	-9	-9	-8
20:46:49	9.70	236.9	-3	-2	-2	-2	-3	-3	-4	-6	-7	-9	-9	-9
20:46:49	10.80	236.9	-1	-1	-1	-1	-2	-2	-4	-5	-6	-7	-9	-9
20:46:50	11.90	236.9	.	4	3	3	2	1	-2	-4	-4	-5	-6	-6
20:46:50	12.90	236.9	5	5	3	3	3	2	2	-2	-2	-3	-4	-4
20:46:50	13.90	236.9	2	3	4	4	2	2	2	1	.	-1	-2	-2
20:46:50	15.00	236.9	2	2	3	2	2	3	2	3	1	2	3	4
20:46:50	16.10	236.9	2	2	1	1	2	0	0	0	2	3	1	2
20:46:50	17.10	236.9	-1	1	1	2	0	-2	2	1	3	4	2	2
20:46:50	18.20	236.9	1	2	2	2	2	0	-1	0	2	2	3	4
20:46:51	19.20	236.9	3	3	3	3	2	-1	0	0	1	2	4	5
20:46:51	20.30	236.9	5	4	2	3	4	3	2	.	3	4	4	6
20:46:51	21.30	236.9	0	3	3	5	6	6	5	5	5		5	5
20:46:51	22.40	236.9	-6	-4	-1	2	2	2	3	4	5	4	4	.
20:46:51	23.40	236.9	-6	-4	-2	0	-1	-2	-1	2	4	4	4	5
20:46:51	24.50	236.9	1	0	1	-1	-2	0	-2	2	3	4	5	5
20:46:51	25.50	236.9	4	2	1	.	0	0	1	1	2	2	4	3
20:46:52	26.60	236.9	2	2	2	1	0	1	1	1	0	0	-1	-2
20:46:52	27.60	236.9	0	1	1	0	-1	0	-2	-1	-2	-2	-3	-3
20:46:52	28.70	236.9	-1	1	1	0	0	.	-2	-2	-2	-2	-3	-2
20:46:52	29.80	236.9	0	0	0	0	1	1	0	-1	-2	-4	-5	-6
20:46:52	30.80	236.9	0	1	1	1	1	1	0	-2	-2	-1	-1	1
20:46:52	31.80	236.9	0	1	2	2	2	2	2	1	1	1	3	3
20:46:52	32.90	236.9	.	1	1	1	2	2	2	2	3	2	1	1
20:46:53	34.00	236.9	1	1	.	-2	0	1	2	2	1	2	1	-1
20:46:53	35.00	236.9	-2	-1	-4	-4	-2	-2	-3	-2	-2	1	0	-2

Time Elev Az 11.24 11.48 11.72 11.96 12.20 12.44

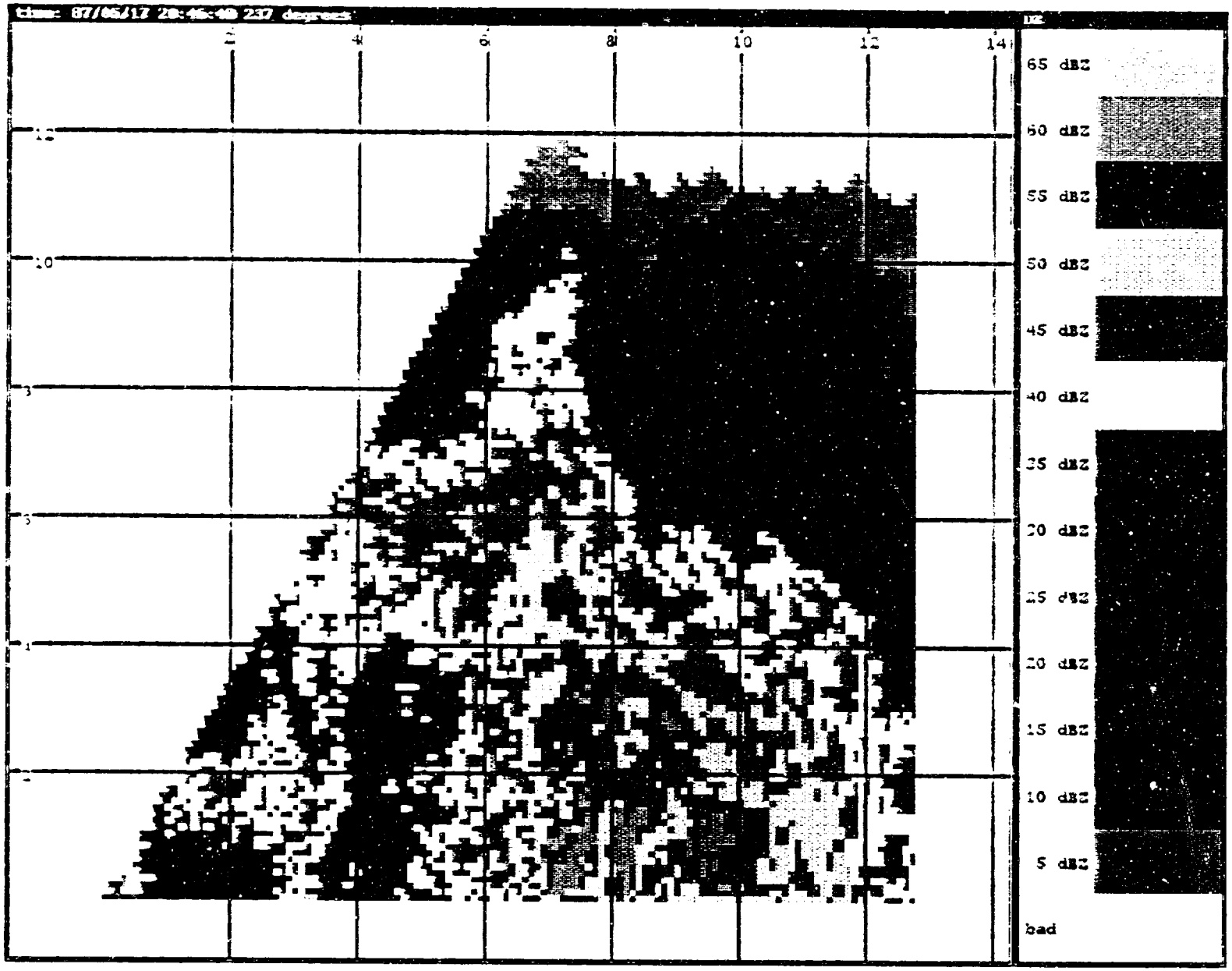

Figure B-29. RHI scan of reflectivity at 237 degrees azimuth during microburst at 20:46:48 UT on May 17, 1987.

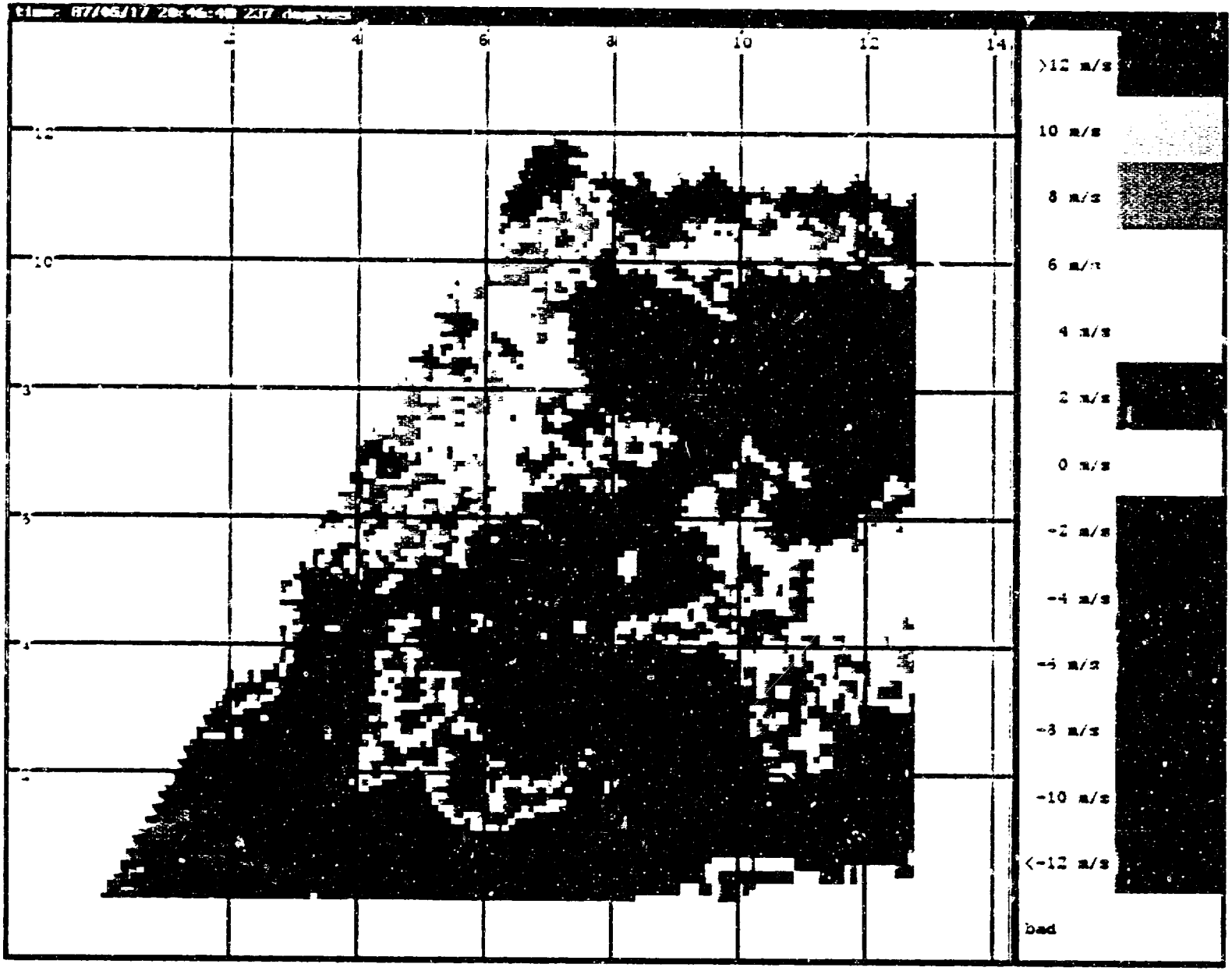

Figure B-30. RHI scan of velocity at 237 degrees azimuth microburst at 20:46:48 UT on May 17, 1987.

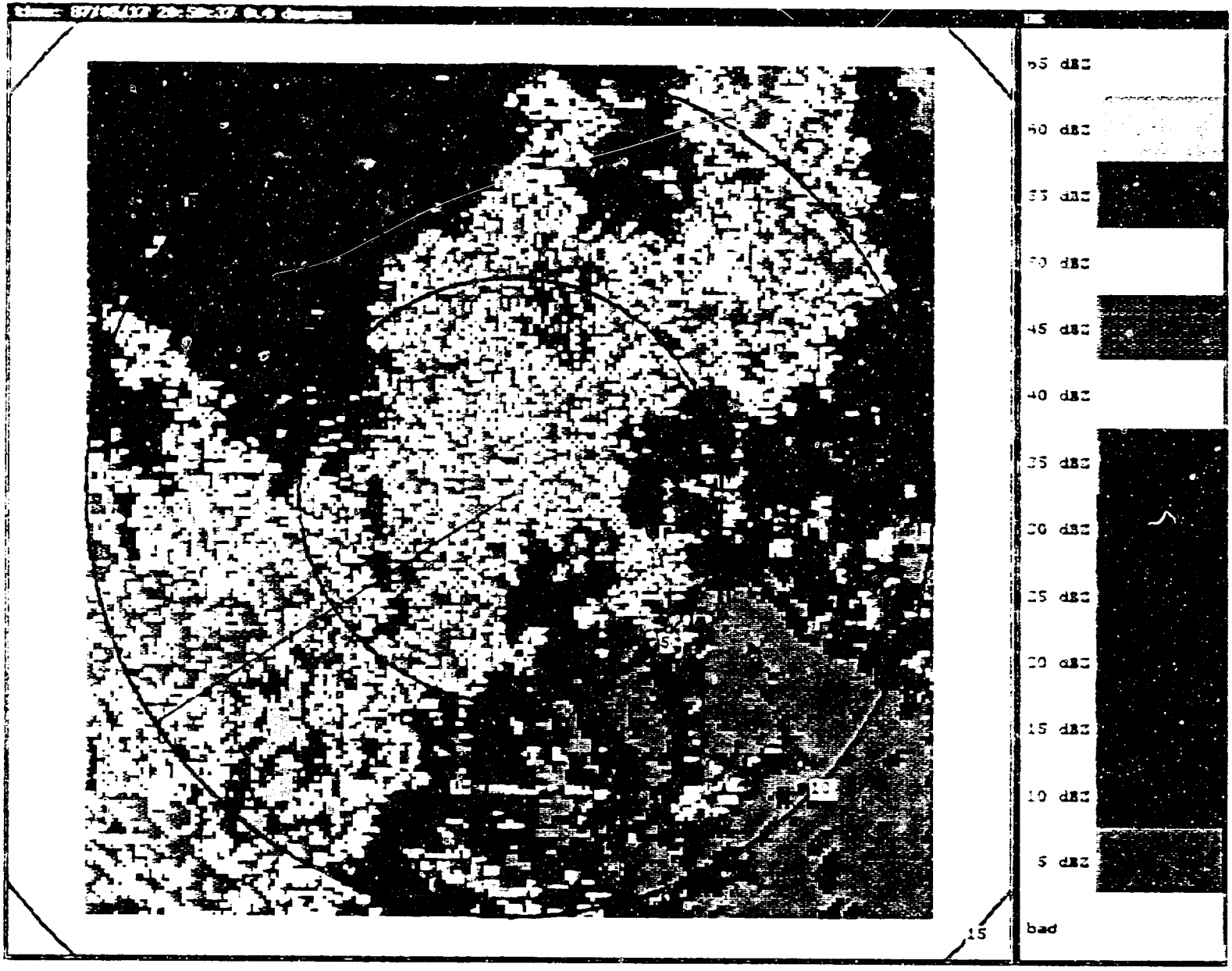

Figure B-31. PPI scan of reflectivity at 0.4 degrees elevation during microburst at 20:30:07 UT on May 17, 1987.

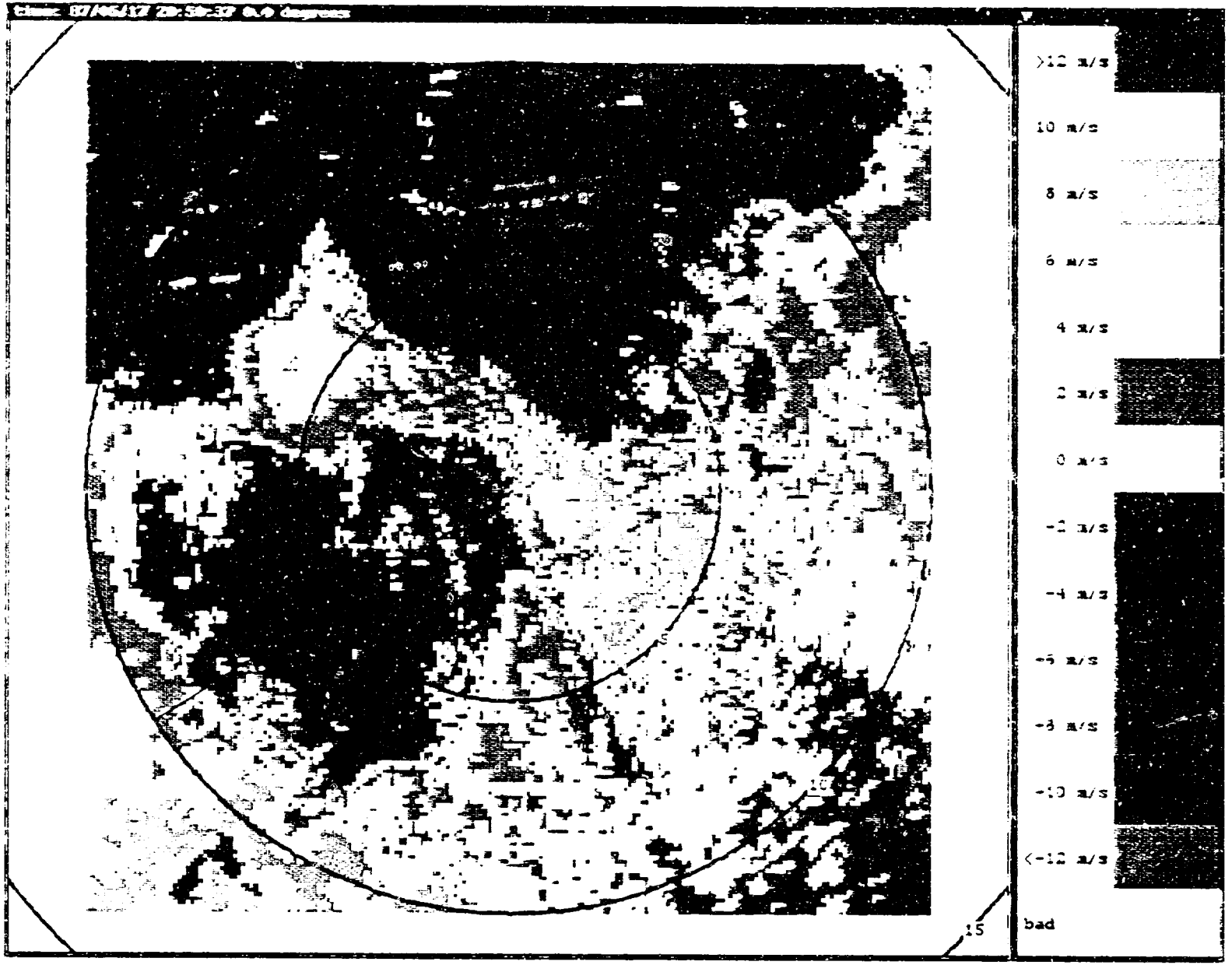

Figure B-32. PPI scan of velocity at 0.4 degrees elevation during microburst at 20:50:37 UT on May 17, 1987.

Proj:FLOWS Site:Denver Radar:FL-2 Date: 5-17-87 Time:20:54:27 Scan:54 Tilt: 3 Product:V / 2

Time	Elev	Az	5.00	5.24	5.48	5.72	5.96	6.20	6.44	6.68	6.92	7.16	7.40	7.64
20:54:27	0.30	241.0	-6 -5 -5 -4	-4 -4 -4 -4	-4 -5 -4 -4	-4 -3 -2 -2	-2 -1 -1 1	0 0 -1 -1	-1					
20:54:27	0.70	241.0	-5 -5 -5 -4	-4 -4 -4 -4	-4 -5 -4 -4	-4 -3 -2 -2	-2 -2 -1 1	1 1 0 -1	-2					
20:54:27	1.60	241.0	-3 -3 -3 -3	-3 -2 -3 -4	-4 -4 -3 -3	-3 -3 -2 -2	-2 -2 -1 0	0 -1 -2 0						
20:54:28	2.80	241.0	-1 -1 -2 -3	-2 -3 -3 -3	-4 -4 -4 -3	-4 -3 -3 -2	-2 -2 -2 -2	-2 -2 -2 -2						
20:54:28	4.00	241.0	-1 -3 -3 -2	-3 -2 -3 -4	-4 -4 -4 -4	-4 -4 -3 -2	-2 -2 -2 -2	-2 -2 -2 -1						
20:54:28	5.10	241.0	-1 -2 -2 -2	-2 -3 -3 -4	-4 -4 -3 -3	-3 -3 -2 -2	-2 -1 -1 -1	-3 -2 -2 -2						
20:54:28	6.10	241.0	-1 1 -1 -1	-2 -2 -2 -3	-3 -3 -3 -3	-3 -2 -2 -1	-1 -2 -3 -3	-4 -5 -5 -4						
20:54:28	7.10	241.0	1 1 . -1	-2 -1 -1 -2	-2 -2 -2 -2	-1 -2 -1 .	. -1 -3 -5	-5 -6 -5 -5	-6					
20:54:28	8.20	241.0	0 -1 -1 -1	-2 -1 -1 -1	-1 -2 -2 -1	-2 -2 -2 -4	-5 -6 -6 -6	-7 -7 -7 -7						
20:54:28	9.30	241.0	0 -1 -1 -1	-1 . -1 -1	-1 -2 -3 -3	-3 -5 -6 -7	-6 -6 -8 -7	-7 -7 -7 -7						
20:54:29	10.30	241.0	0 1 1 2	2 0 -1 -1	-2 -3 -5 -6	-6 -7 -9 -9	-9 -8 -8 -8	-8 -7 -7 -7						
20:54:29	11.40	241.0	-1 1 2 1	0 -2 -1 -2	-3 -3 -5 -7	-7 -8 -9 -8	-8 -9 -9 -11	-10 -10 -9 -9						
20:54:29	12.40	241.0	-1 -1 -1 0	-2 -2 -2 -2	-4 -6 -6 -6	-7 -8 -8 -8	-8 -9 -10 -11	-11 -11 -11 -11						
20:54:29	13.50	241.0	-2 -2 -2 -2	-2 -2 -2 -3	-4 -6 -6 -7	-7 -8 -9 -9	-9 -10 -11 -12	-13 -13 -13 -13						
20:54:29	14.50	241.0	-2 -2 -2 -2	-2 -2 -3 -5	-7 -5 -6 -7	-7 -7 -10 -11	-11 -11 -11 -12	-15 -14 -13 -13						
20:54:29	15.60	241.0	-3 -3 -3 -3	-3 -3 -4 -6	-7 -7 -7 -7	-7 -8 -10 -11	-11 -11 -11 -13	-13 -14 -14 -13						
20:54:29	16.60	241.0	-4 -4 -4 -4	-4 -4 -5 -6	-6 -7 -8 -9	-9 -10 -11 -12	-13 -14 -13 -13	-14 -14 -14 -14						
20:54:30	17.70	241.0	-4 -4 -4 -4	-3 -4 -6 -6	-7 -7 -8 -10	-11 -12 -12 -13	-14 -14 -15 -15	-15 -14 -14 -13						
20:54:30	18.80	241.0	-4 -4 -4 -3	-3 -5 -7 -7	-6 -7 -8 -9	-11 -11 -11 -13	-13 -13 -14 -14	-14 -14 -14 -15	-15					
20:54:30	19.80	241.0	-4 -4 -4 -4	-4 -6 -7 -7	-7 -7 -8 -9	-10 -10 -11 -11	-11 -11 -12 -13	-14 -14 -14 -15						
20:54:30	20.80	241.0	-4 -4 -6 -7	-7 -7 -9 -8	-8 -9 -9 -10	-10 -11 -12 -12	-13 -13 -13 -13	-14 -14 -14 -14						
20:54:30	21.90	241.0	-5 -6 -7 -6	-7 -7 -8 -8	-8 -9 -9 -10	-11 -11 -12 -13	-14 -14 -14 -14	-15 -15 -15 -15						
20:54:30	23.00	241.0	-6 -7 -8 -8	-8 -8 -8 -8	-8 -9 -9 -10	-10 -11 -13 -13	-14 -14 -14 -15	-16 -16 -16 -15						
20:54:30	24.00	241.0	-7 -8 -9 -9	-10 -9 -9 -9	-9 -10 -11 -11	-10 -11 -13 -14	-14 -13 -13 -15	-16 -16 -15 -15						
20:54:31	25.00	241.0	-8 -9 -9 -9	-10 -10 -9 -10	-12 -13 -12 -12	-11 -11 -14 -14	-14 -13 -13 -14	-14 -14 -13 -13						
20:54:31	26.10	241.0	-8 -9 -9 -9	-10 -11 -10 -10	-11 -12 -12 -12	-16 -14 -14 -13	-13 -13 -15 -13	-14 -14 -14 -14						
20:54:31	27.20	241.0	-9 -9 -9 -10	-11 -11 -10 -11	-11 -11 -11 -11	-12 -14 -12 -12	-11 -11 -13 -11	-12 -14 -13 -13						
20:54:31	28.20	241.0	-10 -10 -10 -10	-11 -11 -11 -11	-11 -11 -11 -11	-12 -12 -12 -11	-10 -10 -12 -12	-12 -12 -12 -10						
20:54:31	29.30	241.0	-10 -11 -11 -10	-11 -11 -12 -11	-11 -12 -11 -10	-10 -10 -9 -10	-9 -8 -10 -11	-11 -11 -11 -9						
20:54:31	30.30	241.0	-10 -10 -11 -10	-11 -11 -11 -11	-11 -10 -11 -10	-9 -9 -9 -9	-9 -8 -10 -10	-9 -9 -5 -6						
20:54:31	31.30	241.0	-9 -10 -9 -10	-11 -10 -10 -9	-10 -10 -9 -9	-9 -10 -9 -9	-9 -10 -9 -8	-6 -5 -6 -8						
20:54:32	32.40	241.0	-10 -9 -9 -9	-10 -9 -9 -9	-9 -9 -9 -9	-9 -8 -9 -9	-9 -8 -7 -6	-6 -6 -8						
20:54:32	33.50	241.0	-11 -10 -10 -10	-9 -10 -9 -8	-8 -8 -9 -9	-8 -9 -9 -10	-10 -10 -8 -6	-7 -7 -8 -7						
20:54:32	34.50	241.0	-11 -10 -9 -9	-9 -9 -8 -8	-8 -8 -8 -9	-8 -8 -10 -10	-8 -9 -9 -9	-9 -9 -8 -7						
20:54:32	35.60	241.0	-10 -10 -10 -9	-9 -9 -9 -9	-8 -8 -9 -9	-9 -9 -9 -7	-8 -9 -10 -8	-9 -9 -9 -7						
Time	Elev	Az	5.00	5.24	5.48	5.72	5.96	6.20	6.44	6.68	6.92	7.16	7.40	7.64

Proj:FLOWS Site:Denver Radar:FL-2 Date: 5-17-87 Time:20:54:27 Scan:54 Tilt: 3 Product:V / 2

Time	Elev	Az	7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56		9.80		10.04	
20:54:27	0.30	241.0	-1	.	1	1	0	2	2	2	2	2	2	2	2	3	4	5	5	5	5	
20:54:27	0.70	241.0	0	1	0	1	1	1	2	2	1	2	2	2	2	4	4	4	4	4	5	
20:54:27	1.60	241.0	1	1	-1	-1	0	0	-1	2	.	0	0	1	0	1	2	2	2	2	2	
20:54:28	2.80	241.0	-1	-1	-2	-2	-2	-1	-1	-2	-4	-4	-4	-3	-2	-3	-2	-2	-2	.	0	
20:54:28	4.00	241.0	-1	-1	-2	-3	-3	-2	-3	-3	-4	-4	-4	-5	-4	-4	-4	-4	-4	-3	-4	
20:54:28	5.10	241.0	-2	-3	-3	-3	-3	-4	-4	-4	-5	-5	-6	-6	-6	-6	-5	-5	-5	-5	-5	
20:54:28	6.10	241.0	-4	-4	-4	-4	-4	-3	-4	-5	-6	-6	-6	-6	-7	-7	-6	-7	-6	-6	7	
20:54:28	7.10	241.0	-6	-6	-6	-5	-4	-3	-5	-6	-6	-6	-6	-7	-7	-7	-8	-7	-7	-8	-8	
20:54:28	8.20	241.0	-7	-7	-7	-7	-8	-6	-7	-6	-6	-7	-7	-7	-7	-7	-8	-8	-8	-8	-8	
20:54:28	9.30	241.0	-7	-8	-9	-9	-9	-9	-8	-7	-6	-7	-6	-7	-7	-8	-8	-8	-8	-9	-8	
20:54:29	10.30	241.0	-8	-8	-9	-10	-9	-9	-8	-8	-8	-8	-7	-7	-8	-9	-9	-9	-9	-9	-9	
20:54:29	11.40	241.0	-9	-11	-10	-10	-9	-9	-8	-9	-9	-9	-9	-9	-9	-8	-9	-9	-9	-9	-9	
20:54:29	12.40	241.0	-11	-11	-11	-11	-11	-11	-12	-11	-11	-11	-11	-13	-12	-10	-11	-11	-12	-11	-12	
20:54:29	13.50	241.0	-13	-13	-13	-13	-12	-12	-12	-13	-13	-13	-13	-14	-13	-13	-12	-13	-13	-13	-14	
20:54:29	14.50	241.0	-14	-13	-13	-14	-15	-15	-15	-14	-15	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	
20:54:29	15.60	241.0	-14	-13	-13	-14	-15	-16	-16	-15	-16	-14	-14	-15	-15	-14	-14	-14	-14	-14	-14	
20:54:29	16.60	241.0	-13	-13	-14	-14	-15	-15	-15	-14	-14	-14	-13	-13	-13	-13	-13	-13	-13	-13	-14	
20:54:30	17.70	241.0	-13	-13	-13	-13	-14	-13	-13	-14	-14	-13	-13	-13	-12	-13	-11	-10	-10	-11	-11	
20:54:30	18.80	241.0	-14	-14	-13	-12	-11	-12	-13	-13	-14	-13	-12	-12	-13	-13	-12	-10	-10	-10	-11	
20:54:30	19.80	241.0	-15	-15	-14	-12	-12	-8	-13	-13	-15	-14	-13	-12	-11	-11	-11	-10	-10	-9	-10	
20:54:30	20.80	241.0	-15	-14	-14	-14	-13	-13	-13	-13	-14	-14	-14	-11	-10	-9	-9	-9	-10	-9	-10	
20:54:30	21.90	241.0	-15	-14	-14	-15	-15	-14	-13	-13	-13	-12	-11	-10	-9	-9	-8	-10	-9	-8	-7	
20:54:30	23.00	241.0	-14	-14	-13	-15	-15	-15	-15	-13	-12	-11	-11	-9	-9	-9	-8	-8	-7	-6	-5	
20:54:30	24.00	241.0	-15	-15	-15	-14	-13	-12	-12	-11	-10	-9	-7	-8	-8	-7	-7	-6	-5	-3	-4	
20:54:31	25.00	241.0	-12	-13	-14	-14	-14	-13	-10	-8	-7	-7	-7	-8	-8	-6	-5	-5	-5	-3	-4	
20:54:31	26.10	241.0	-14	-14	-13	-13	-13	-12	-10	-8	-7	-7	-7	-7	-6	-6	-6	-6	-5	-3	-3	
20:54:31	27.20	241.0	-13	-12	-11	-9	-9	-10	-9	-7	-6	-5	-5	-5	-6	-4	-4	-3	-3	-3	-3	
20:54:31	28.20	241.0	-9	-11	-10	-8	-8	-8	-8	-7	-6	-5	-4	-5	-6	-5	-3	-3	-4	-4	-3	
20:54:31	29.30	241.0	-8	-7	-7	-6	-6	-6	-6	-6	-7	-6	-5	-2	-2	-3	-3	-4	-4	-4	-5	
20:54:31	30.30	241.0	-7	-5	-5	-5	-6	-5	-6	-6	-7	-7	-5	-4	-2	-2	-2	-3	-5	-4	-4	
20:54:31	31.30	241.0	-8	-7	-7	-7	-5	-3	-3	-5	-7	-7	-6	-5	-4	-4	-5	-5	-6	-5	-4	
20:54:32	32.40	241.0	-8	-8	-7	-7	-4	-4	-6	-9	-8	-7	-6	-6	-7	-6	-5	-4	-5	-5	-5	
20:54:32	33.50	241.0	-6	-5	-7	-8	-8	-7	-8	-9	-11	-10	-9	-9	-8	-7	-6	-5	-5	-5	-5	
20:54:32	34.50	241.0	-6	-7	-7	-8	-11	-13	-13	-13	-12	-12	-9	-9	-8	-7	-6	-6	-5	-4	-4	
20:54:32	35.60	241.0	-7	-9	-9	-10	-11	-13	-14	-14	-13	-12	-11	-6	-5	-6	-6	-5	-4	-3	-3	

Time	Elev	Az	7.88	8.12	8.36	8.60	8.84	9.08	9.32	9.56	9.80	10.04

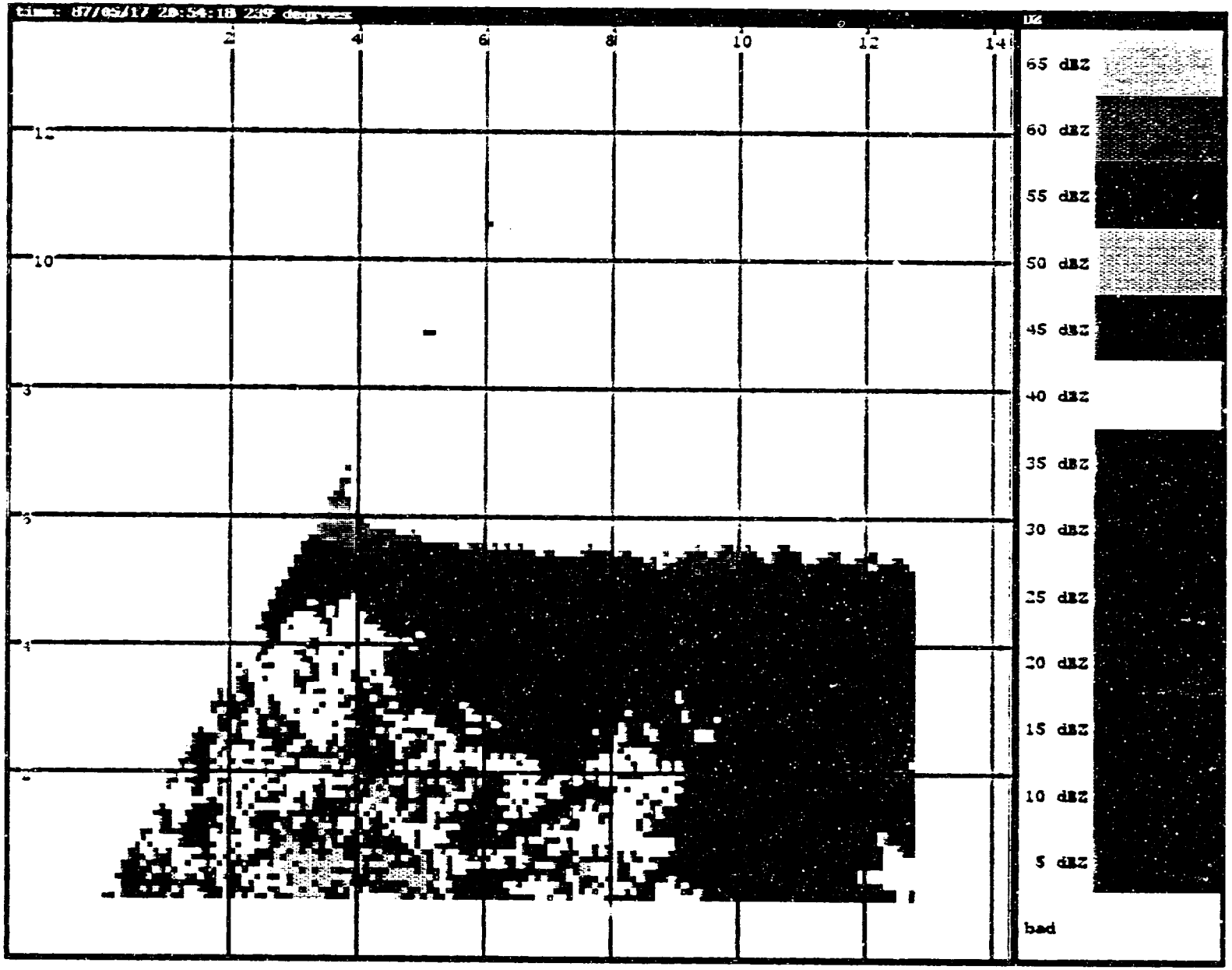

Figure B-33. RHI scan of reflectivity at 239 degrees elevation during microburst at 20:54:18 UT on May 17, 1987.

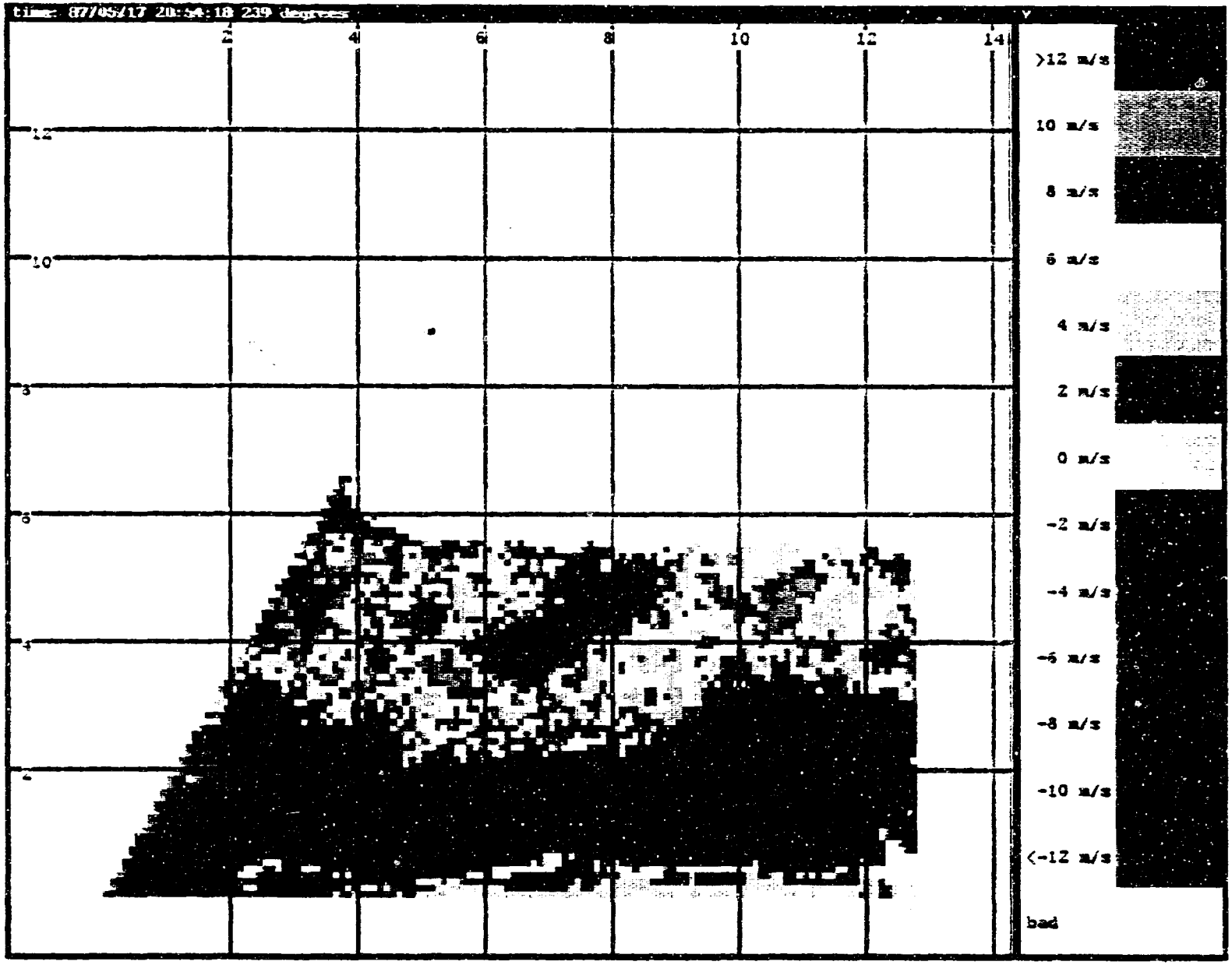

Figure B-34. RHI scan of velocity at 239 degrees elevation during microburst at 20:54:18 UT on May 17, 1987.

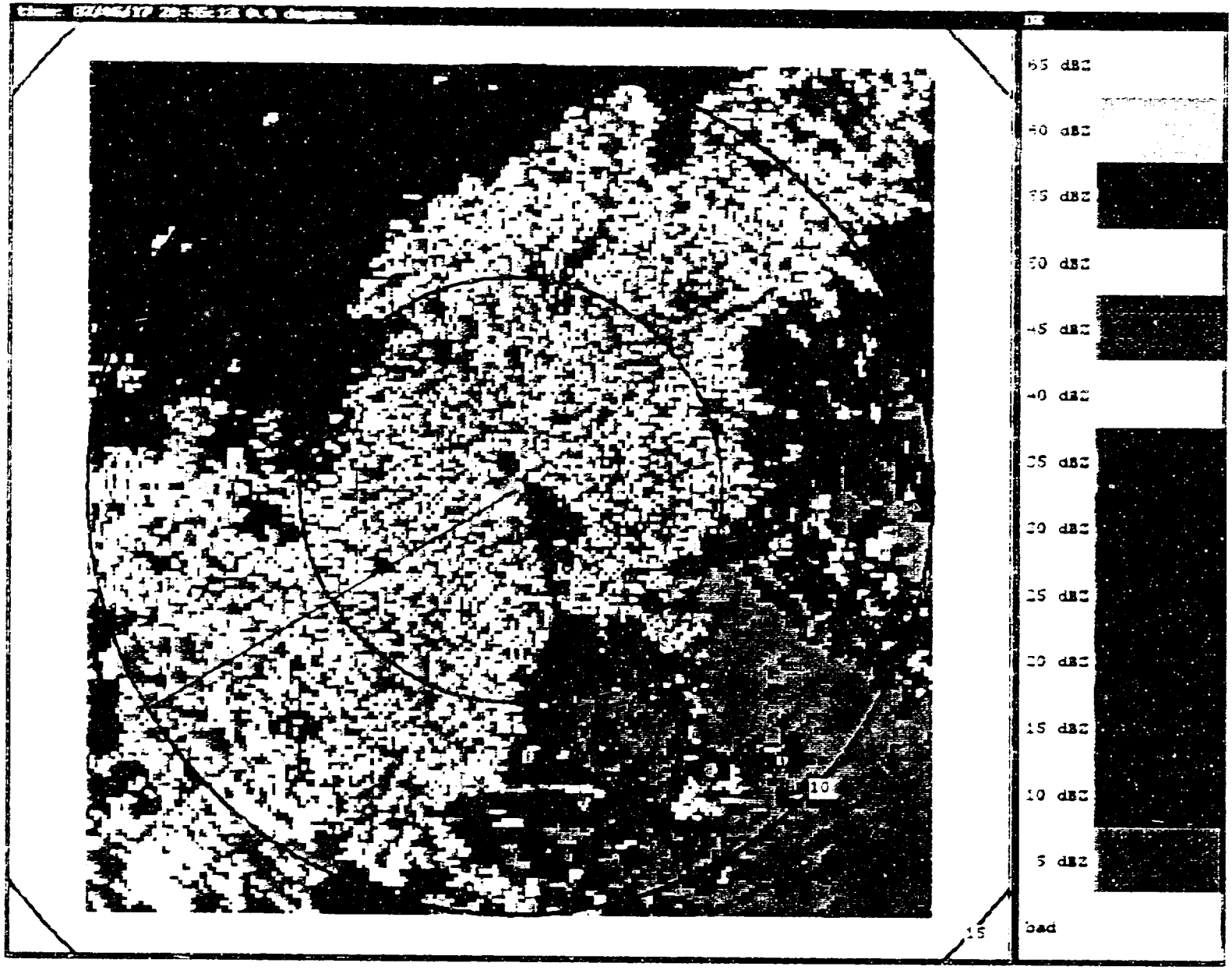

Figure B-35. PPI scan of reflectivity at 0.4 degrees elevation during microburst at 20:55:13 UT on May 17, 1987.

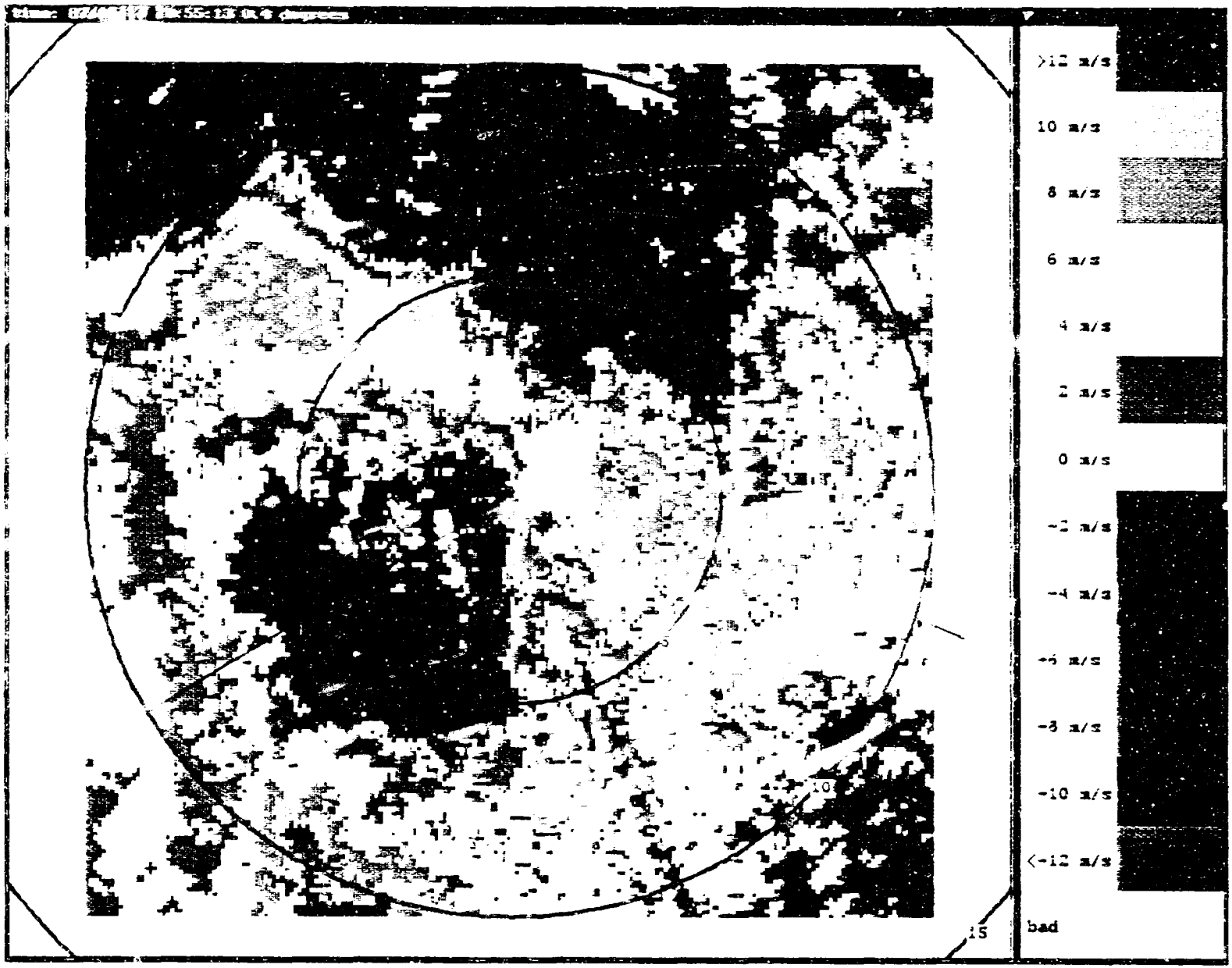

Figure B-36. PPI scan of velocity at 0.4 degrees elevation during microburst at 20:56:13 UT on May 17, 1987.

5. June 8, 1987

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6- 8-87 Time: 1:47:50 Scan: 3 Tilt: 1 Product:V / 2

Time	Elev	Az	6.44		6.68		6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08	
1:47:50	0.10	326.9	-11	-10	-11	-11	-11	-10	-13	-11	-12	-10	-9	-5	-2	2	2	4	4	2	2	5	6	1	2	.
1:47:50	0.10	326.9	-10	-10	-10	-10	-10	-10	-13	-10	-9	-10	-8	-6	-3	2	2	4	5	3	4	4	4	3	5	.
1:47:50	0.30	326.9	-10	-10	-9	-9	-9	-8	-9	-8	-7	-8	-7	-6	-3	0	2	4	4	3	5	4	5	4	5	.
1:47:50	0.70	326.9	-8	1	-7	-8	-8	-7	-7	-7	-6	-6	-7	-5	-2	-1	2	3	4	4	5	4	2	2	4	.
1:47:50	1.10	326.9	-7	5		-7	-6	-5	-5	-5	-4	-4	-6	-5	-2	-1	2	3	2	4	3	3	1	1	2	.
1:47:50	1.60	326.9	-7	5	0	-7	-5	-4	-3	-3	-3	-4	-6	-4	-2	-1	1	1	2	2	1	1	1	1	2	.
1:47:51	2.10	326.9	-7	2	-5	-5	-3	-3	-2	-2	-3	-4	-4	-3	-2	-1	-1	-1	1	1	1	-1	-1	0	2	.
1:47:51	2.80	326.9	-5	-4	-4	-4	-2	-2	-2	-1	-2	-3	-2	-3	-2	-1	-1	-1	-1	1	1	1	2	0	.	.
1:47:51	3.40	326.9	-2	-4	-3	-2	-1	.	-2	-1	-1	-1	0	1	-1	-1	-2	-1	-1	1	2	2	3	1	-1	.
1:47:51	4.10	326.9	-1	-1	-2	-1	1	1	1	1	1	1	1	1	1	-1	-2	0	-1	-1	1	1	.	-1	-2	.
1:47:51	5.10	326.9	.	1	0	2	2	1	1	1	2	2	1	1	-1	-1	-1	-1	0	.	-1	0	-3	-2	-2	.
1:47:51	5.90	326.9	1	1	2	2	2	2	2	1	1	1	1	-1	-1	-1	-2	-1	1	0	0	-1	-2	-2	-1	.
1:47:51	6.90	326.9	1	2	3	2	1	1	2	1	1	1	1	-1	-1	-1	-2	-1	-1	.	.	-1	-4	-1	1	.
1:47:51	8.00	326.9	2	2	2	2	1	1	1	1	1	1	1	.	-1	-1	-2	-2	-2	-1	1	-1	-6	-4	0	.
1:47:51	9.20	326.9	2	2	2	2	1	1	1	1	1	1	1	.	-1	-1	-1	-2	-1	-1	1	-1	-2	-1	-1	.
1:47:51	10.30	326.9	1	1	1	1	1	1	1	1	1	1	1	1	1	0	-1	-1	-1	-1	0	1	0	-1	-1	.
1:47:51	11.40	326.9	1	1	1	1	-1	.	.	1	1	1	1	1	1	1	1	1	0	0	1	1	-1	0	-2	.
1:47:51	12.50	326.9	1	1	.	0	-1	0	0	0	1	1	2	2	2	1	1	1	0	1	1	1	-1	.	-1	.
1:47:51	13.60	326.9	1	1	-1	-1	-1	0	0	0	1	1	1	2	2	2	1	1	1	-1	-1	-1	0	-1	.	.
1:47:51	14.70	326.9	1	.	-1	-1	-1	0	1	1	1	1	2	1	2	2	2	1	1	1	1	0	0	-1	-1	.
1:47:51	15.30	326.9	0	-1	-1	-1	-1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	0	.
1:47:52	16.90	326.9	-1	-1	-2	-1	-1	1	1	1	1	1	2	2	1	1	1	1	1	1	0	2	1	1	1	.
Time	Elev	Az	6.44		6.68		6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08	

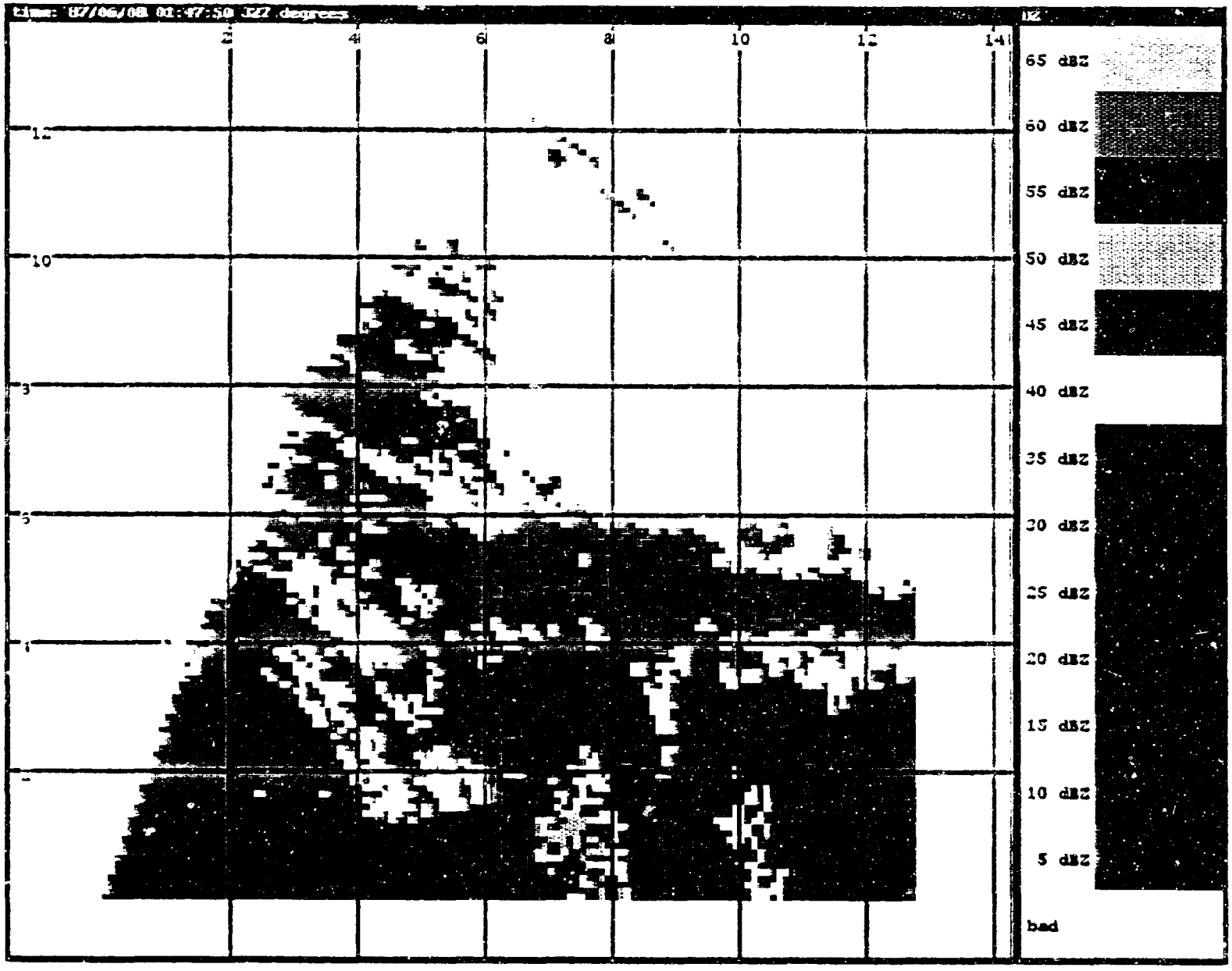

Figure B-37. RHI scan of reflectivity at 327 degrees azimuth during microburst at 01:47:50 UT on June 8, 1987.

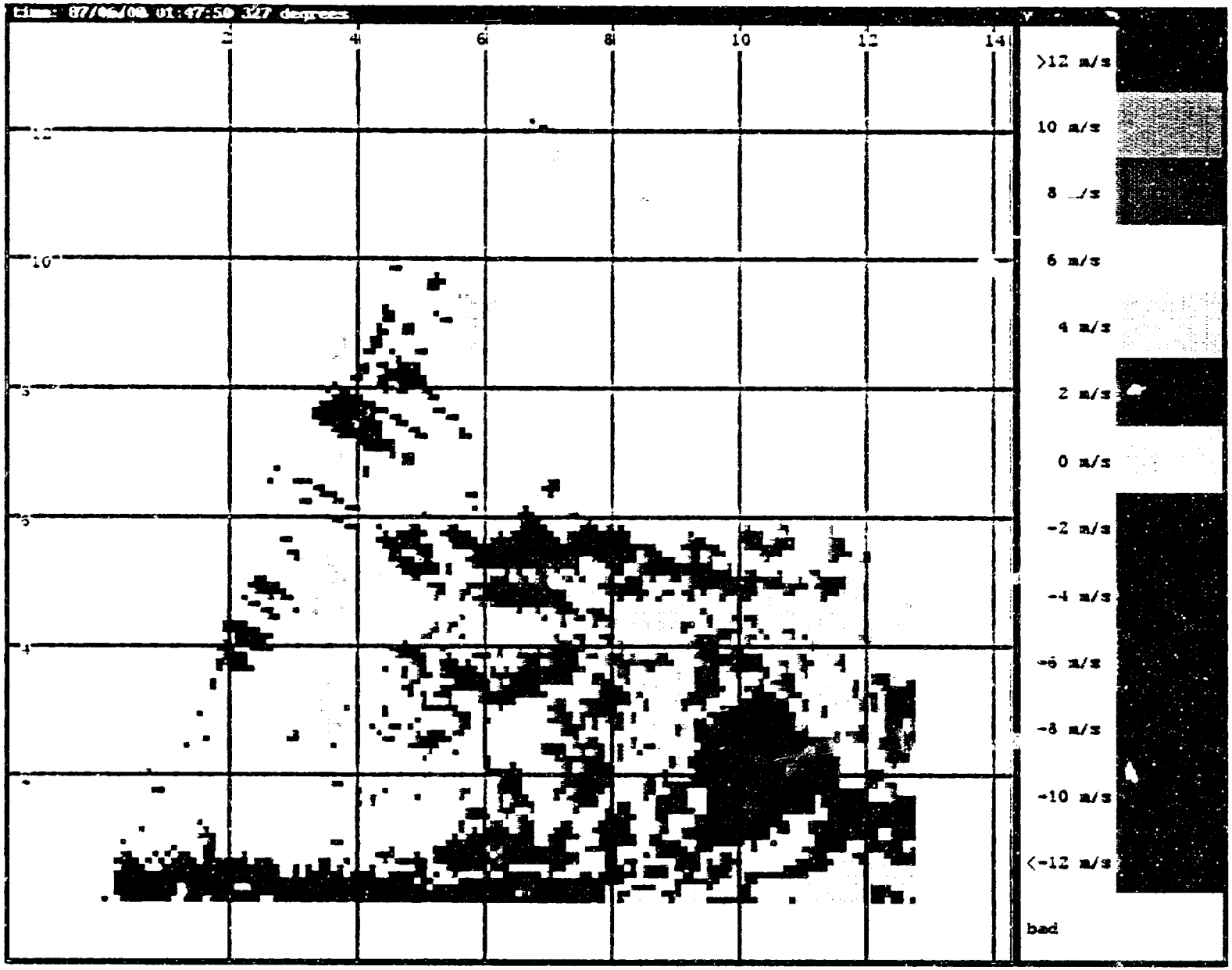

Figure B-38. RHI scan of velocity at 327 degrees azimuth during microburst at 01:47:50 UT on June 8, 1987.

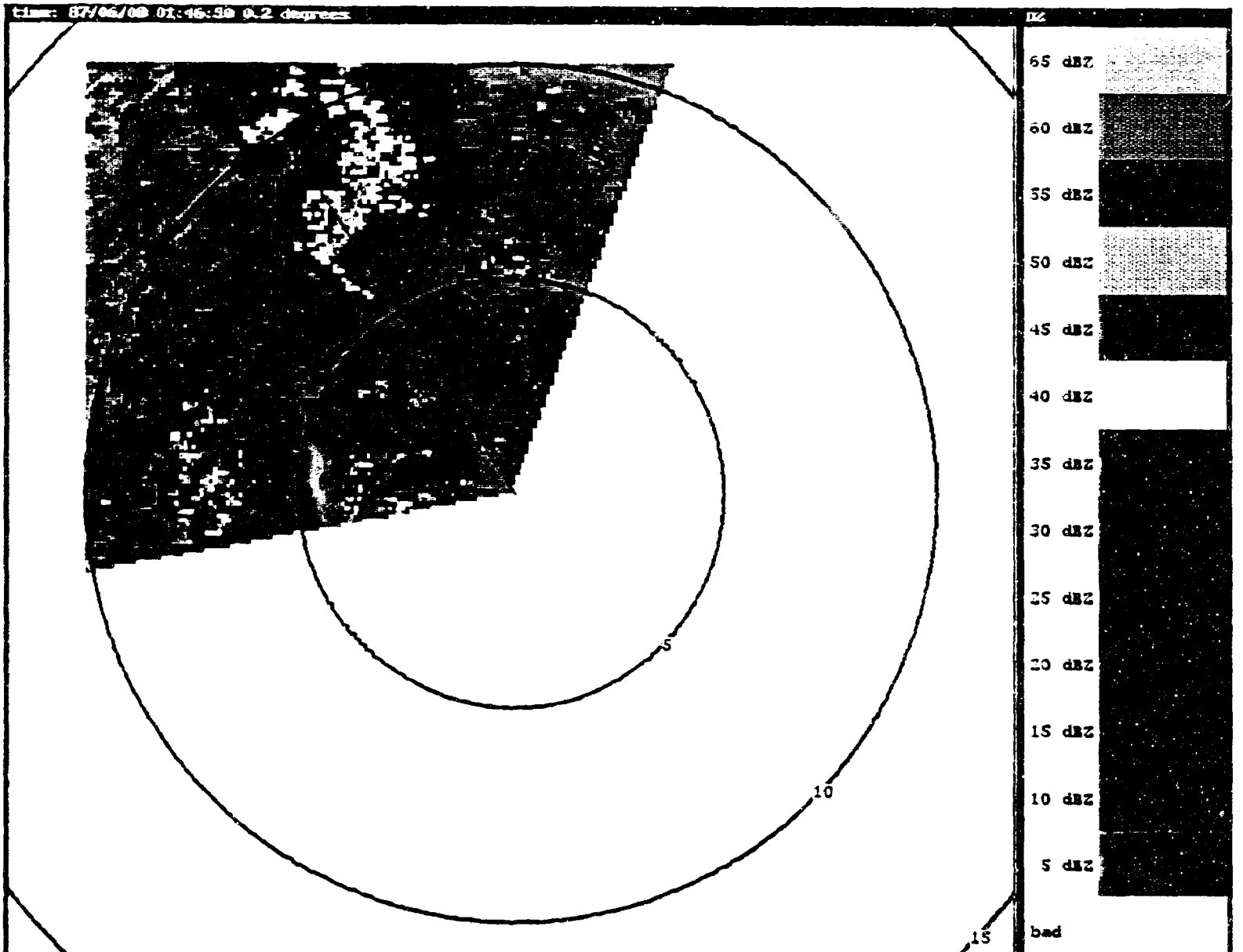

Figure B-39. PPI scan of reflectivity at 0.2 degrees elevation during microburst at 01:46:50 UT on June 8, 1987.

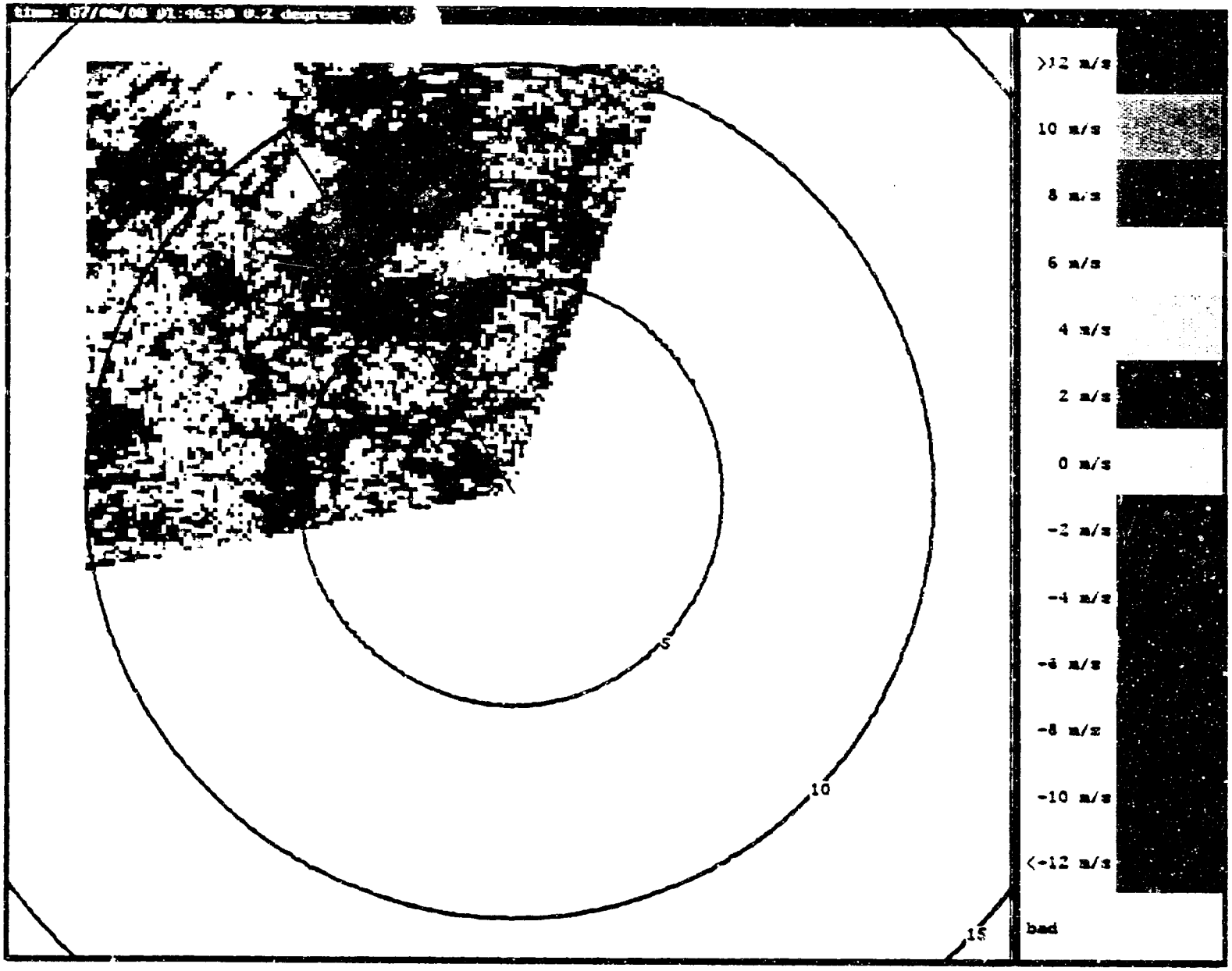

Figure B-40. PPI scan of velocity at 0.2 degrees elevation during microburst at 01:46:50 UT on June 8, 1987.

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6- 8-87 Time: 1:54: 8 Scan: 7 Tilt: 4 Product:V / 2

Time	Elev	Az	6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56	
1:54:12	14.30	323.0	.	0	.	1	0	0	1	1	1	1	2	2	2	2	3	3	2	2	3	3	.	.	.	.
1:54:12	13.30	323.0	.	0	1	0	0	1	1	1	2	2	2	2	2	3	2	2	2	2	4	3	2	.	.	.
1:54:12	12.20	323.0	-1	.	0	1	1	1	1	1	1	2	2	2	3	2	2	2	2	2	2	1	0	-1	.	.
1:54:12	11.10	323.0	.	-1	0	1	1	1	1	1	2	2	2	2	2	2	2	2	3	3	2	2	-1	0	.	.
1:54:12	10.10	323.0	0	0	1	.	1	1	1	1	1	2	2	2	2	2	2	1	2	2	3	2	.	.	.	.
1:54:12	9.00	323.0	1	1	1	1	0	1	1	2	1	2	2	2	2	1	1	1	2	2	0	.	0	-1	.	.
1:54:12	7.80	323.0	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	2	3	0	-1	-2	-2	.
1:54:12	6.80	323.0	2	2	1	2	1	1	1	1	1	1	1	1	1	.	-1	1	-1	2	2	-2	-1	-2	-3	.
1:54:12	5.80	323.0	1	2	1	1	1	1	1	1	1	1	1	1	-1	-2	-1	-3	.	1	1	.	-1	0	-3	.
1:54:12	4.80	323.0	2	1	1	1	1	1	1	1	1	1	2	2	-1	-2	-2	2	1	2	2	.	.	-2	-1	.
1:54:12	4.00	323.0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	4	3	-1	.	1	1	.
1:54:12	3.30	323.0	1	-2	0	1	0	1	1	2	1	1	1	1	1	2	3	2	2	3	2	.	.	1	3	.
1:54:13	2.60	323.0	-1	-1	-1	-1	-1	0	1	1	1	1	1	1	1	3	4	4	5	3	4	1	0	2	.	.
1:54:13	2.10	323.0	-1	-2	-2	-2	-1	-1	-1	-1	-1	-2	-1	1	1	3	4	5	6	4	4	2	1	1	2	.
1:54:13	1.60	323.0	-2	-2	-2	-2	-2	-2	-2	-2	-3	-3	-2	1	1	2	5	5	5	4	4	2	1	1	1	.
1:54:13	1.30	323.0	-3	-3	-3	-2	-2	-3	-3	-4	-5	-5	-2	-1	1	4	5	4	5	4	4	3	1	1	1	.
1:54:13	1.10	323.0	-4	-4	-4	-4	-3	-4	-4	-6	-5	-5	-4	-2	1	3	5	5	6	4	4	3	1	1	2	.
1:54:13	0.80	323.0	-4	-5	-5	-4	-4	-5	-6	-8	-7	-5	-4	-2	1	4	5	6	7	4	4	3	1	2	1	.
1:54:13	0.50	323.0	-5	-7	-7	-5	-7	-8	-8	-9	-7	-5	-4	-2	2	4	5	7	6	5	4	1	1	0	1	.
1:54:13	0.20	323.0	-7	-8	-7	-8	-9	-10	-10	-9	-7	-4	-3	-2	2	4	5	7	5	4	4	1	0	1	1	.
1:54:13	0.00	323.0	-8	-8	-8	-9	-10	-10	-10	-9	-7	-5	-3	-1	2	4	6	7	6	5	5	2	0	1	1	.
Time	Elev	Az	6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56	

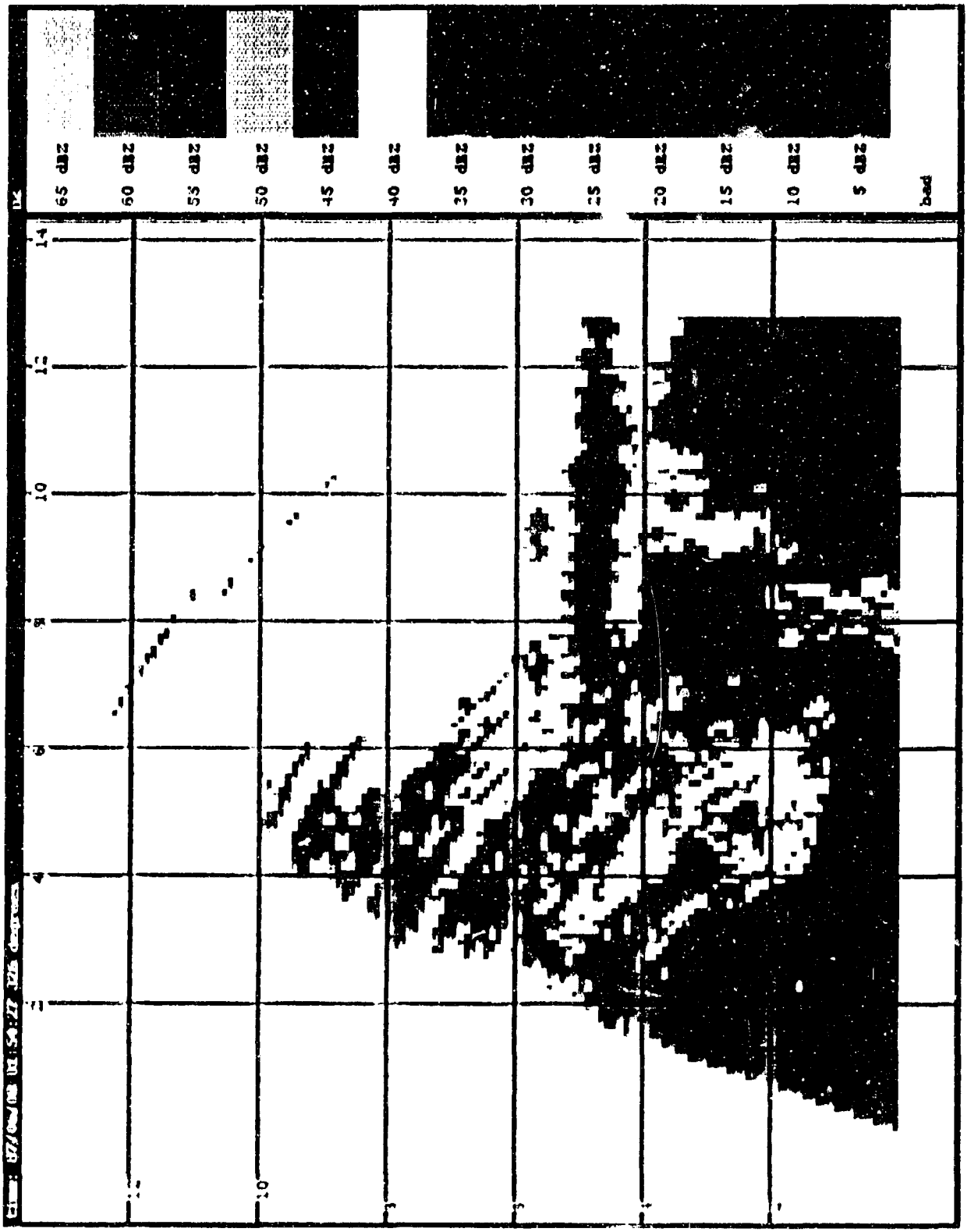

Figure B-41. RHI scan of reflectivity at 326 degrees azimuth during microburst at 01:54:27 UT on June 8, 1987.

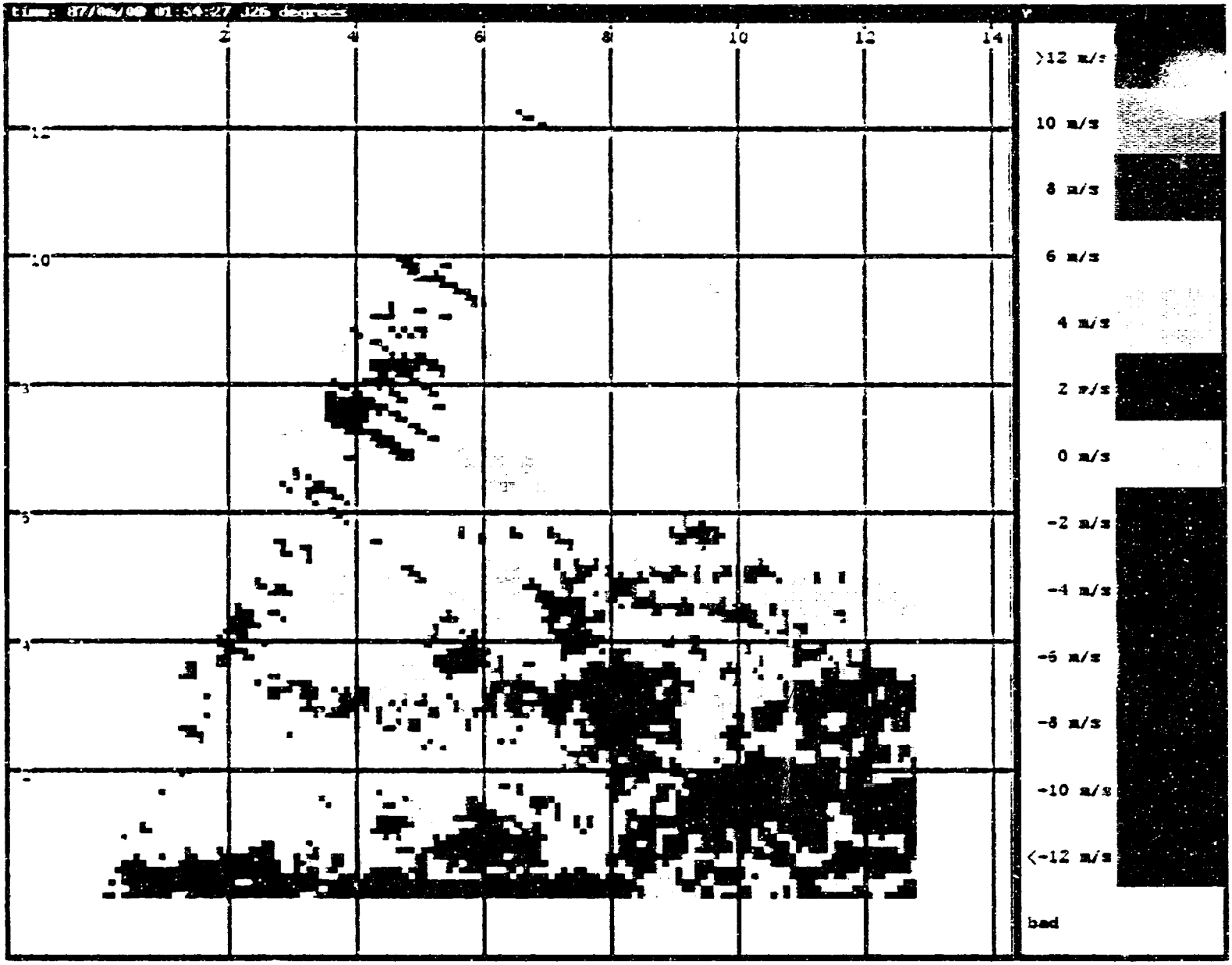

Figure B-42. RHI scan of velocity at 320 degrees azimuth during microburst at 01:54:27 UT on June 8, 1987.

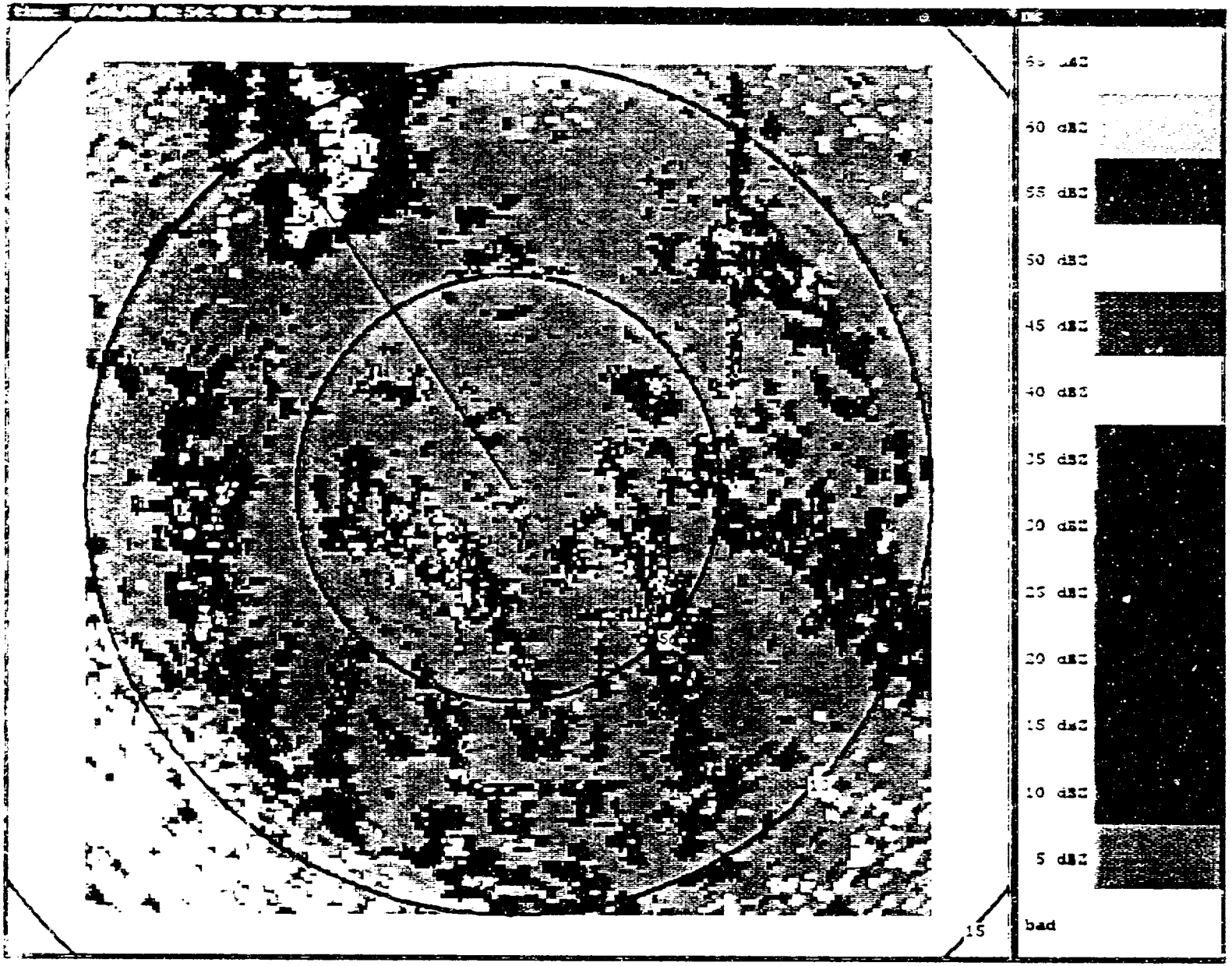

Figure B-43. PPI scan of reflectivity at 0.5 degrees elevation during microburst at 01:54:43 UT on June 8, 1987.

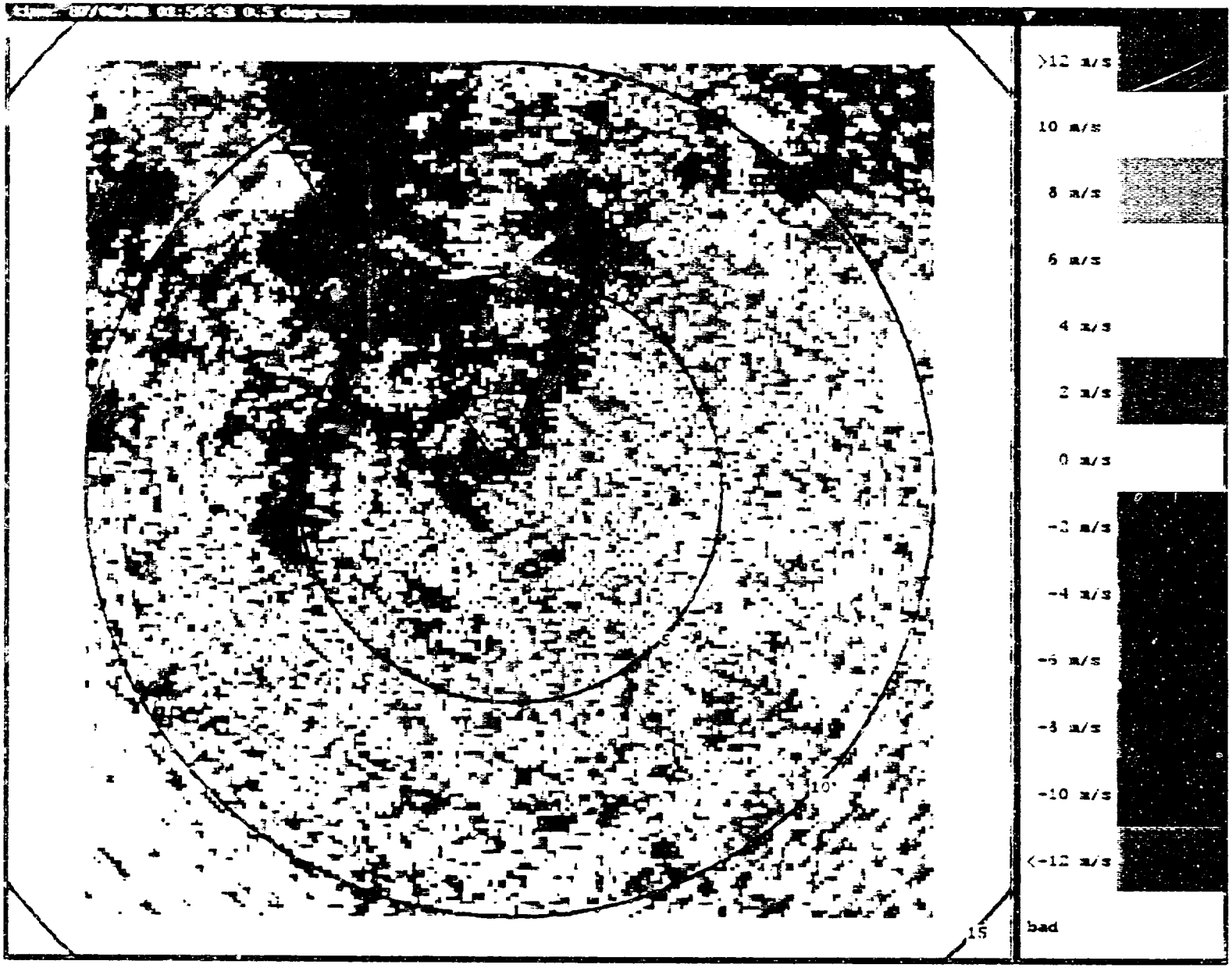

Figure B-44. PPI scan of velocity at 0.5 degrees elevation during microburst at 01:54:43 UT on June 8, 1987.

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6- 8-87 Time: 1:59:50 Scan:11 Tilt: 1 Product:V / 2

Time	Elev	Az	6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56	
1:59:50	0.10	321.9	-1	-3	-1	-8	-11	-11	-9	-9	-3	1	2	4	4	4	6	5	5	2	0	-15	-6	0	0	.
1:59:50	0.20	321.9	-3	-8	-3	-11	-10	-11	-9	-7	-3	1	2	3	5	4	5	5	3	1	2	-14	-1	0	1	.
1:59:50	0.40	321.9	-5	-7	-9	-10	-10	-10	-7	-6	-4	-1	1	3	3	3	5	3	.	-2	-2	-12	0	-1	-1	.
1:59:50	0.80	321.9	-4	-5	-7	-8	-9	-8	-5	-4	-4	-3	-1	.	1	2	5	4	-1	-2	-2	-1	-2	-2	-2	.
1:59:50	1.20	321.9	-2	-2	-4	-4	-5	-4	-3	-3	-4	-3	-4	-2	0	2	4	4	-1	-2	-2	-1	-1	-2	-1	.
1:59:50	1.70	321.9	0	-1	-3	-2	.	-2	-2	-3	-5	-5	-5	-4	-2	1	3	4	0	-2	-2	-2	-2	-1	-2	.
1:59:50	2.30	321.9	0	.	-1	0	1	0	-1	-1	-5	-6	-5	-4	-3	-2	0	2	0	-1	-2	-2	-2	-1	-1	.
1:59:50	3.00	321.9	1	-1	.	1	1	1	0	-1	-3	-5	-5	-4	-3	-3	-2	0	-2	-2	-1	-2	-2	-2	-2	.
1:59:50	3.70	321.9	2	1	1	2	1	1	1	1	-1	-4	-4	-4	-3	-4	-3	-3	-1	-1	-2	-2	-1	-1	-2	.
1:59:50	4.40	321.9	2	2	1	1	1	0	1	1	0	-1	-2	-4	-4	-2	-2	-1	1	1	1	0	-1	0	0	.
1:59:50	5.30	321.9	2	2	2	2	2	2	0	1	1	0	-1	-2	-3	-2	-1	.	0	-1	.	-1	-1	-1	.	.
1:59:50	6.30	321.9	1	1	1	1	2	1	1	1	1	-1	-1	-1	-2	-1	1	1	-1	-1	0	-1	-1	-2	2	.
1:59:51	7.30	321.9	2	3	3	2	2	1	.	1	1	1	-1	-1	-1	.	1	1	2	0	0	0	.	0	2	.
1:59:51	8.40	321.9	1	.	2	2	1	2	-1	1	1	1	1	1	1	0	1	2	3	2	0	-1	.	.	.	.
1:59:51	9.60	321.9	2	1	2	1	1	1	0	2	2	2	2	2	2	2	2	2	3	2	2	3	2	1	.	.
1:59:51	10.70	321.9	.	1	2	1	1	1	1	1	2	1	1	2	2	2	3	2	0	2	3	4	4	1	.	.
1:59:51	11.80	321.9	.	1	1	1	1	1	1	1	1	1	2	2	2	3	4	3	2	2	3	1	2	.	.	.
1:59:51	13.00	321.9	.	.	1	1	1	1	1	1	1	1	1	2	2	3	4	3	3	3	2	0	1	.	.	.
1:59:51	14.00	321.9	.	.	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	2	1	1	.	1	.
Time	Elev	Az	6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56	

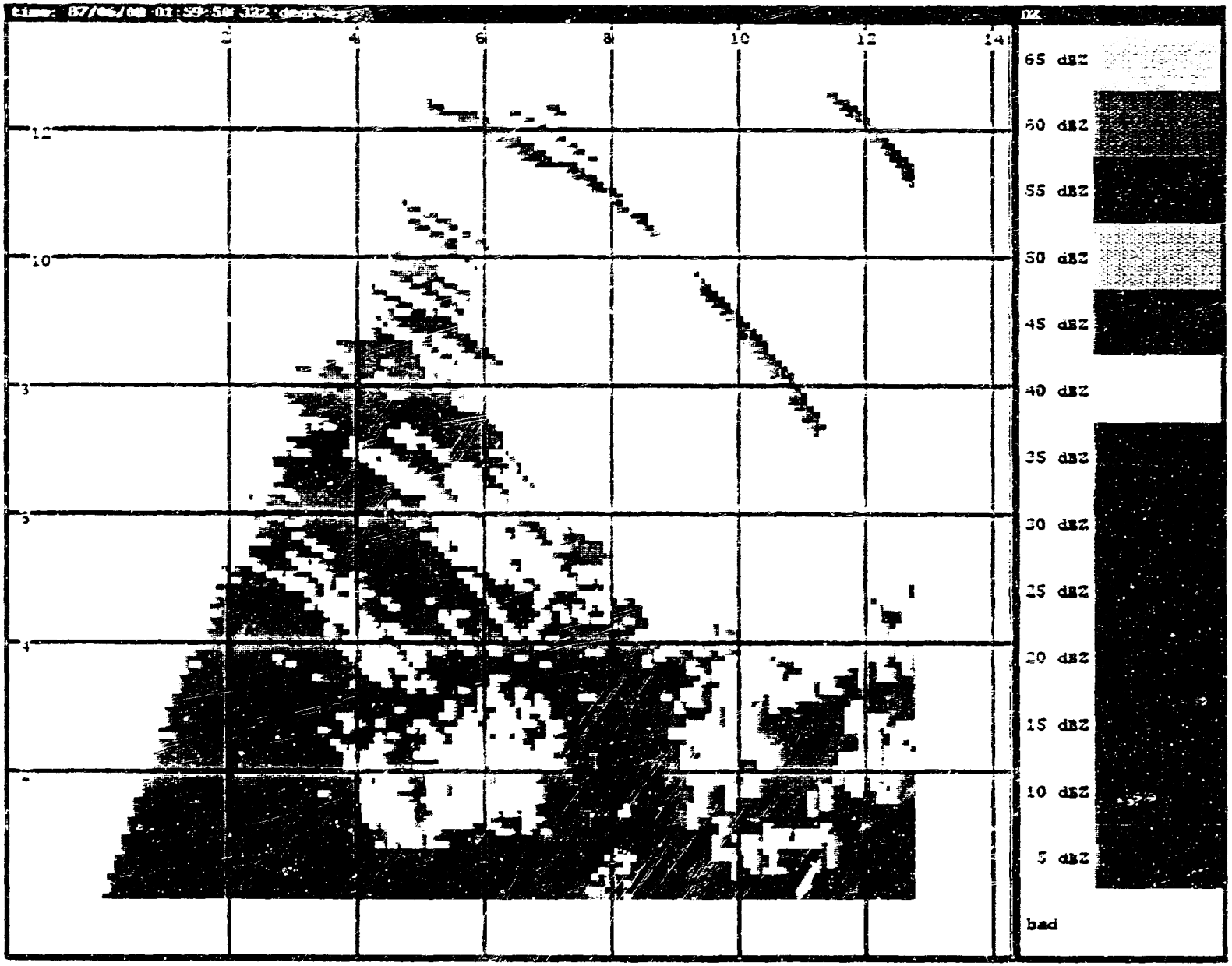

Figure B-45. RHI scan of reflectivity at 322 degrees azimuth during microburst at 01:59:50 UT on June 8, 1987.

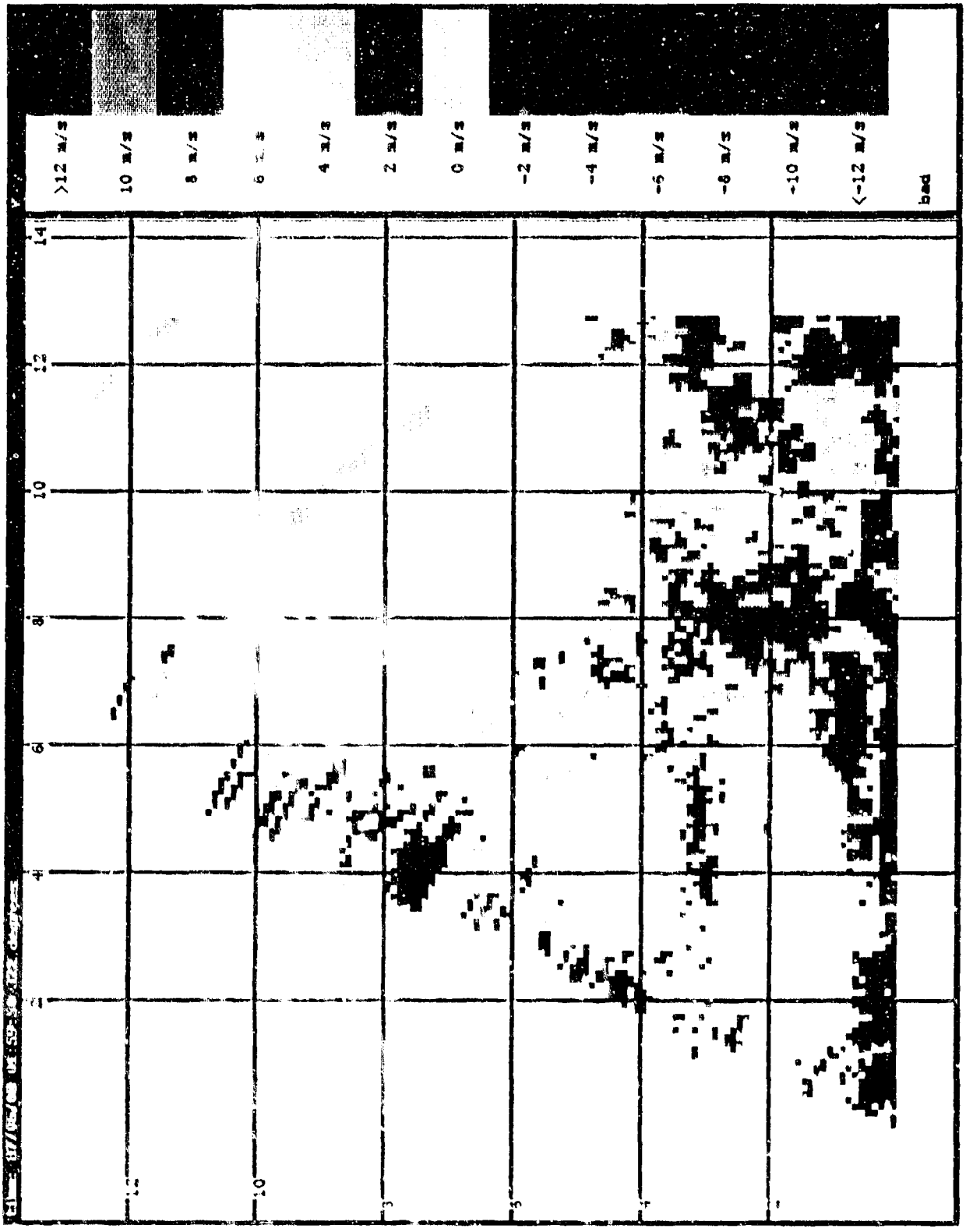

Figure B-46. RHI scan of velocity at 322 degrees azimuth during microburst at 01:59:50 UT on June 8, 1987.

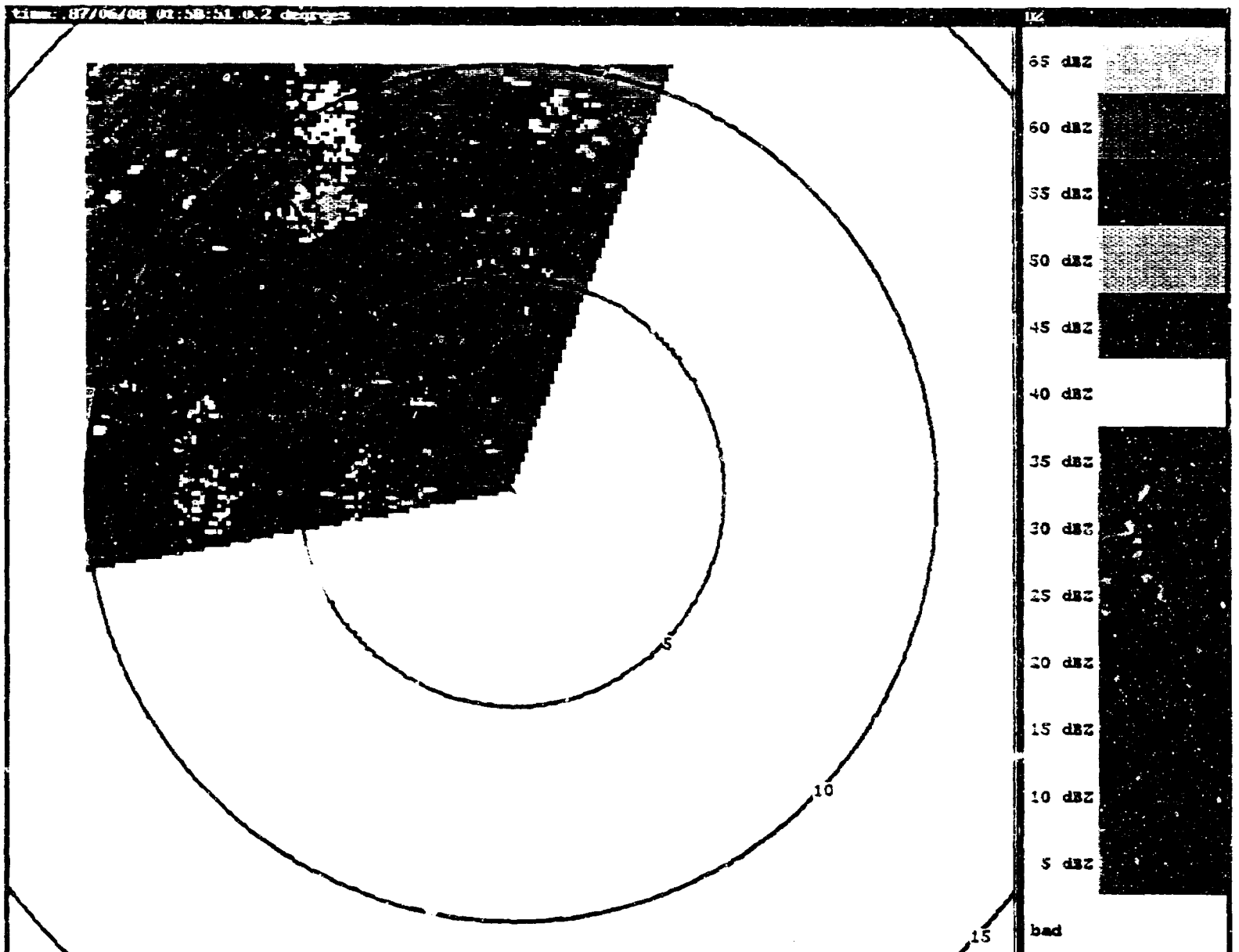

Figure B-47. PPI scan of reflectivity at 0.2 degrees elevation during microburst at 01:58:51 UT on June 8, 1987.

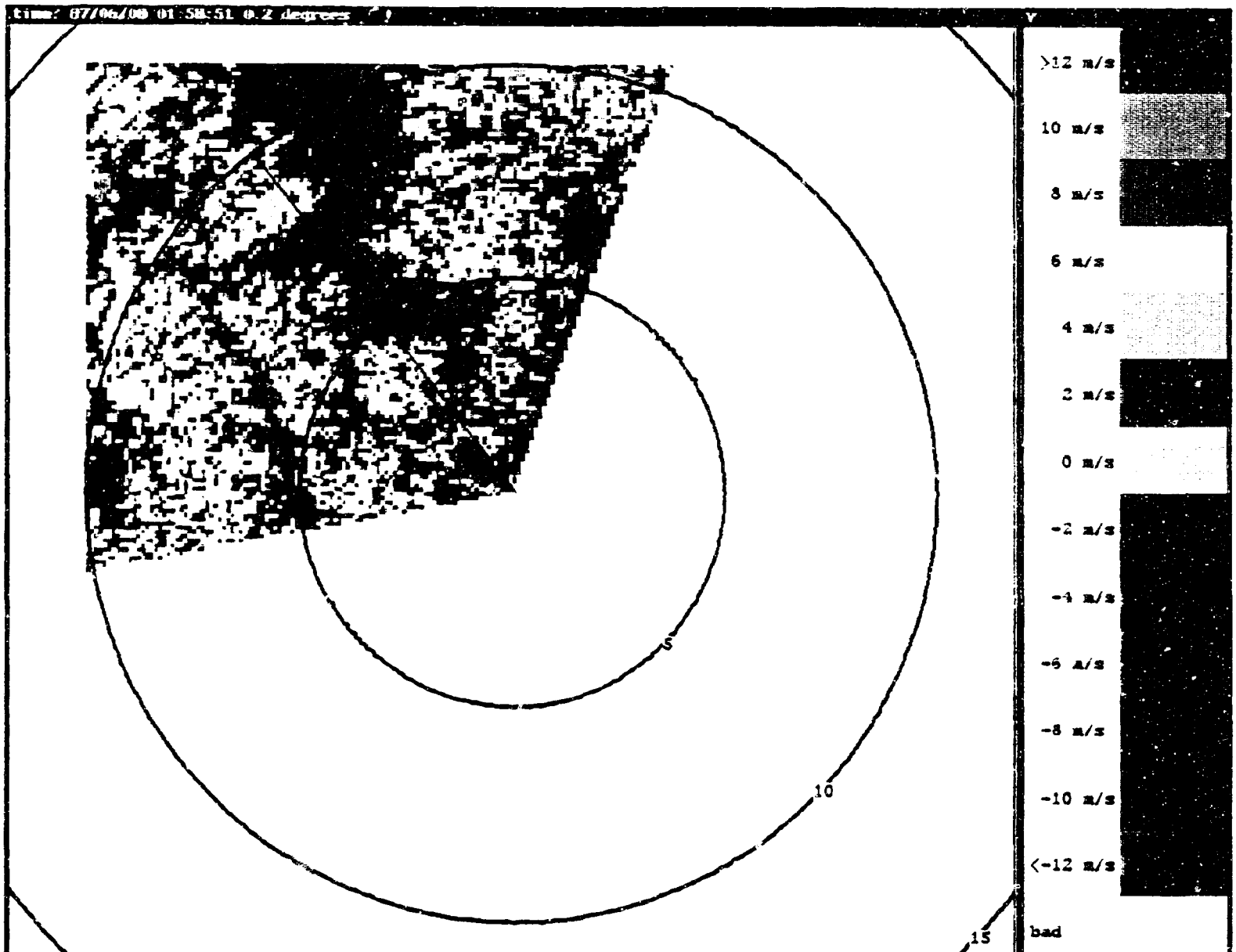

Figure B-48. PPI scan of velocity at 0.2 degrees elevation during microburst at 01:58:51 UT on June 8, 1987.

6. June 12, 1987

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:41:41 Scan:16 Tilt: 4 Product:V / 2

Time	Elev	Az	0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32		3.56	
21:41:43	10.00	289.0	-3	-4	-1	1	2	4	2	.	1	3	0	-1	1	2	3	2	-1	-2	1	1	2	.	1	.
21:41:43	9.00	289.0	-3	-2	-1	1	2	7	2	3	3	2	0	0	2	3	3	1	.	-1	1	2	3	2	1	.
21:41:43	8.00	289.0	-2	-2	-2	.	1	4	3	2	4	2	0	0	2	2	1	2	.	.	2	3	4	2	1	.
21:41:43	6.80	289.0	.	4	0	-1	3	5	4	2	3	3	0	0	3	1	.	.	2	1	2	2	4	2	.	.
21:41:43	5.80	289.0	1	4	0	.	2	3	3	2	3	2	0	0	2	1	1	1	2	3	2	-1	4	4	1	.
21:41:43	4.90	289.0	-3	-1	0	.	2	3	1	2	3	0	1	.	2	3	3	3	.	0	3	2	3	5	1	.
21:41:43	4.00	289.0	-2	0	-1	1	2	2	-5	1	2	0	2	0	1	2	4	5	1	1	1	1	3	4	1	.
21:41:43	3.30	289.0	0	0	0	1	2	3	0	1	1	0	.	-1	-2	1	3	4	1	0	0	0	4	1	1	.
21:41:43	2.60	289.0	3	3	.	-1	1	3	1	3	2	0	.	-1	-1	1	2	3	2	0	2	1	4	1	3	.
21:41:43	2.00	289.0	-1	4	-1	.	1	1	3	3	2	0	0	0	0	2	2	3	2	-1	4	3	4	3	1	.
21:41:44	1.60	289.0	-1	1	.	1	1	3	3	4	1	-1	1	1	1	1	4	3	3	-1	5	5	3	4	4	.
21:41:44	1.20	289.0	1	1	1	1	1	4	3	3	-1	2	2	1	0	2	5	3	1	1	6	4	2	4	5	.
21:41:44	0.90	289.0	3	1	0	1	1	3	2	1	-1	3	3	1	2	2	6	2	3	1	6	3	3	4	5	.
21:41:44	0.60	289.0	3	1	-1	1	1	2	0	0	-2	3	2	2	7	2	6	0	4	0	5	2	2	3	4	.
21:41:44	0.30	289.0	-1	2	.	0	1	.	-5	-1	-3	3	2	1	4	2	7	-2	2	0	4	3	1	2	4	.
21:41:44	0.10	289.0	-2	2	0	0	-2	-1	-7	-3	-4	1	1	1	1	3	4	-2	0	.	4	4	3	2	2	.
Time	Elev	Az	0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32		3.56	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:47:16 Scan:20 Tilt: 3 Product:V / 2

Time	Elev	Az	0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32		3.56	
21:47:16	0.00	288.0	0	-3	-4	-6	-10	-12	-12	-11	-7	-7	-6	-3	-2	3	5	6	1	.	2	8	4	.	.	.
21:47:16	0.20	288.0	-3	-4	-5	-7	-10	-13	-12	-11	-7	-8	-6	-4	-2	3	6	6	5	3	7	7	6	5	3	.
21:47:16	0.40	288.0	-3	-4	-4	-9	-10	-14	-12	-10	-7	-8	-7	-3	-2	3	5	6	6	3	6	8	7	6	2	.
21:47:16	0.70	288.0	-3	-4	-5	-8	-9	-13	-11	-10	-8	-9	-7	-4	-2	2	6	5	4	3	5	7	7	5	1	.
21:47:16	1.20	288.0	-4	-5	-5	-9	-10	-12	-11	-9	-8	-9	-7	-4	-2	3	5	4	5	3	4	6	6	4	.	.
21:47:16	1.60	288.0	-4	-4	-5	-9	-10	-11	-10	-9	-11	-9	-7	-5	-2	2	5	4	3	2	3	3	5	3	2	.
21:47:16	2.10	288.0	-4	-4	-6	-9	-10	-11	-10	-9	-11	-8	-7	-5	-2	-2	3	3	3	2	2	3	4	3	3	.
21:47:16	2.80	288.0	-4	-5	-7	-9	-10	-10	-10	-9	-11	-8	-6	-4	-1	-2	1	3	3	3	2	2	4	3	3	.
21:47:16	3.50	288.0	-5	-6	-7	-9	-11	-10	-9	-9	-9	-9	-6	-4	-2	-2	0	4	3	3	3	3	3	5	2	.
21:47:16	4.20	288.0	-5	-5	-7	-8	-10	-8	-8	-8	-7	-6	-6	-3	-2	-1	-1	2	0	2	3	2	3	5	3	.
21:47:17	5.10	288.0	-5	-5	-7	-7	-8	-7	-7	-6	-5	-7	-6	-3	-4	-2	-2	0	0	2	3	3	4	3	3	.
21:47:17	6.00	288.0	-5	-4	-5	-4	-7	-8	-7	-5	-5	-7	-5	-3	-3	-2	-3	-3	-3	-1	0	4	5	4	3	.
21:47:17	7.00	288.0	-5	-4	-5	-4	-6	-8	-6	-4	-5	-3	-6	-4	-4	-4	-5	-3	-4	-3	0	5	6	6	1	.
21:47:17	8.10	288.0	-4	-5	-5	-4	-5	-8	-5	-2	-3	-2	-5	-5	-5	-6	-7	-5	-5	-5	0	2	3	4	2	.
21:47:17	9.20	288.0	-5	-8	-8	-4	-3	-7	-5	-2	-2	-2	-3	-7	-6	-7	-8	-8	-5	-5	-2	1	2	4	3	.
21:47:17	10.30	288.0	-5	-7	-8	-5	-3	-4	-4	-2	-2	-2	-1	-5	-4	-9	-9	-9	-6	-4	-1	2	3	4	3	.
21:47:17	11.50	288.0	-5	-5	-4	-4	-3	-3	-4	-4	-3	-2	.	-5	-5	-8	-7	-8	-5	-3	0	1	3	4	5	.
Time	Elev	Az	0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32		3.56	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:47:26 Scan:20 Tilt: 5 Product:V / 2

Time	Elev	Az	0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32		3.56	
21:47:26	0.10	290.0	-2	0	-2	-6	-12	-12	-10	-4	-9	-9	-6	-5	-4	-1	3	5	8	2	1	4	5	2	-16	.
21:47:26	0.20	290.0	-3	-4	-5	-9	-13	-12	-11	-8	-9	-8	-8	-6	-5	-2	1	5	9	5	5	6	5	4	-20	.
21:47:26	0.50	290.0	-3	-4	-6	-10	-13	-12	-11	-9	-10	-9	-5	-6	-4	-2	1	5	8	5	5	5	4	2	.	.
21:47:26	0.80	290.0	-4	-5	-8	-9	-12	-12	-11	-10	-10	-9	-6	-6	-4	-2	-1	5	7	3	2	5	4	3	2	.
21:47:26	1.20	290.0	-5	-5	-8	-9	-12	-12	-10	-11	-11	-9	-7	-6	-4	-2	0	2	4	3	3	4	4	4	1	.
21:47:26	1.70	290.0	-4	-5	-7	-10	-12	-12	-9	-12	-11	-10	-8	-5	-4	-3	1	3	3	5	2	4	3	4	-2	.
21:47:26	2.20	290.0	-5	-5	-7	-10	-12	-11	-9	-10	-10	-9	-8	-6	-5	-2	0	3	3	5	4	2	3	2	-2	.
21:47:26	2.90	290.0	-4	-6	-7	-9	-11	-10	-8	-9	-9	-8	-6	-6	-2	-2	-1	-1	2	4	2	3	1	3	2	.
21:47:26	3.60	290.0	-5	-5	-6	-11	-11	-10	-8	-7	-8	-5	-3	-4	-2	-2	-1	-1	2	3	3	3	3	3	3	.
21:47:27	4.30	290.0	-5	-5	-5	-10	-9	-10	-8	-6	-6	-4	-2	-5	-4	-3	-2	0	1	4	3	3	3	3	5	.
21:47:27	5.20	290.0	-5	-5	-5	-9	-10	-9	-5	-7	-5	-7	-5	-3	-4	-4	-3	-2	-1	3	3	2	4	6	5	.
21:47:27	6.10	290.0	-5	-4	-5	-7	-7	-9	-5	-8	-6	-4	0	-4	-3	-3	-4	-5	-4	1	2	3	5	7	5	.
21:47:27	7.10	290.0	-5	-5	-5	-6	-7	-8	-6	-10	-8	-3	.	-3	-3	-5	-6	-8	-6	-1	2	3	5	5	4	.
21:47:27	8.20	290.0	-5	-5	-4	-6	-6	-6	-7	-11	-8	-3	0	-1	-4	-5	-5	-7	-5	-5	-3	3	4	5	4	.
21:47:27	9.30	290.0	-4	-4	-4	-3	-3	-4	-6	-9	-8	-2	.	-2	-2	-4	-5	-6	-4	-3	-3	1	3	5	4	.
21:47:27	10.40	290.0	-4	-4	-4	-3	-2	-2	-4	-7	-7	-3	-1	-2	-2	-3	-5	-5	-3	-2	-1	1	3	5	5	.
21:47:27	11.60	290.0	-5	-4	-5	-2	-2	-2	-2	-3	-5	-1	0	0	-3	-5	-4	-5	-3	-2	0	.	3	4	5	.
Time	Elev	Az	0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84		3.08		3.32		3.56	

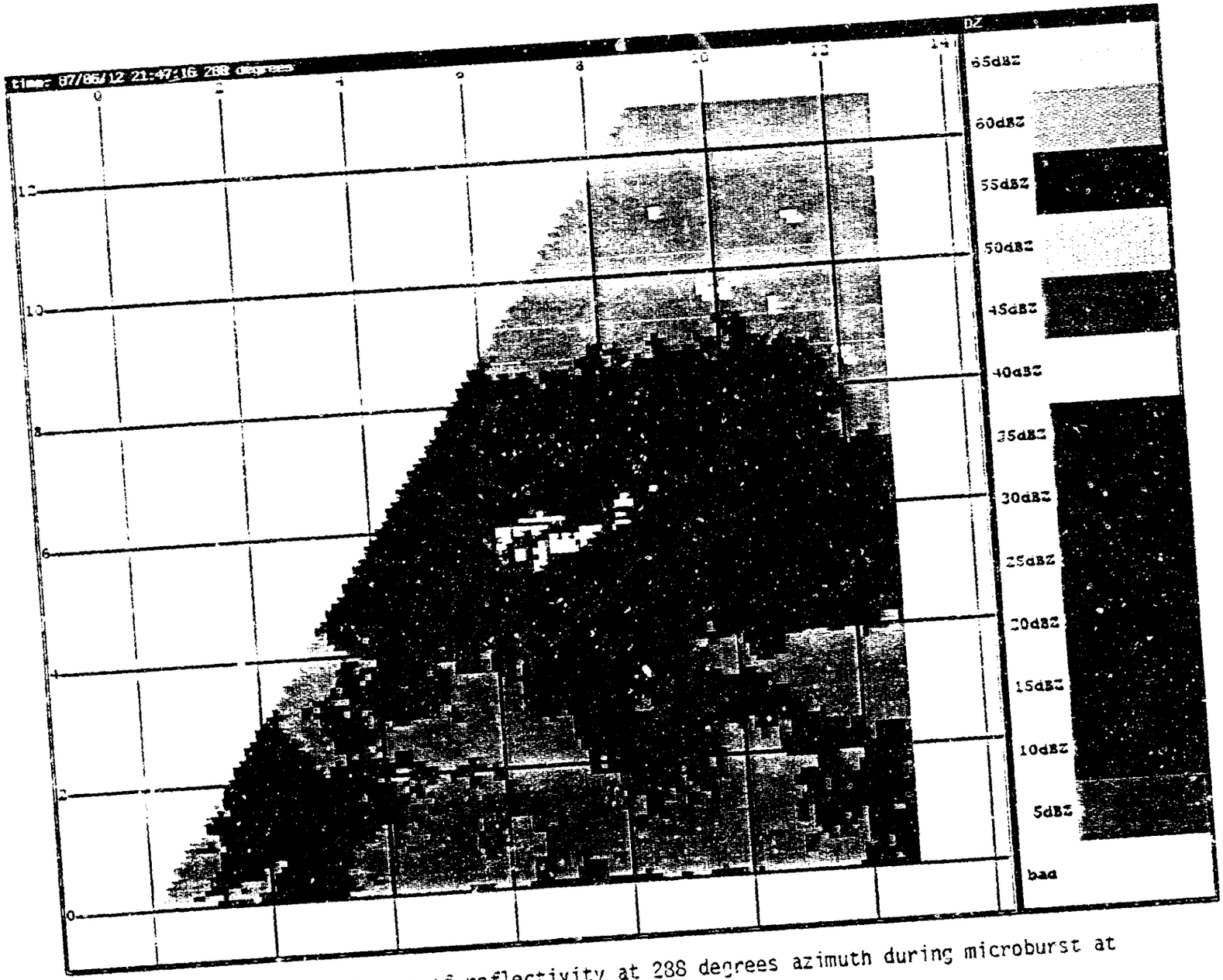

Figure B-49. RHI scan of reflectivity at 288 degrees azimuth during microburst at 21:47:16 UT on June 12, 1987.

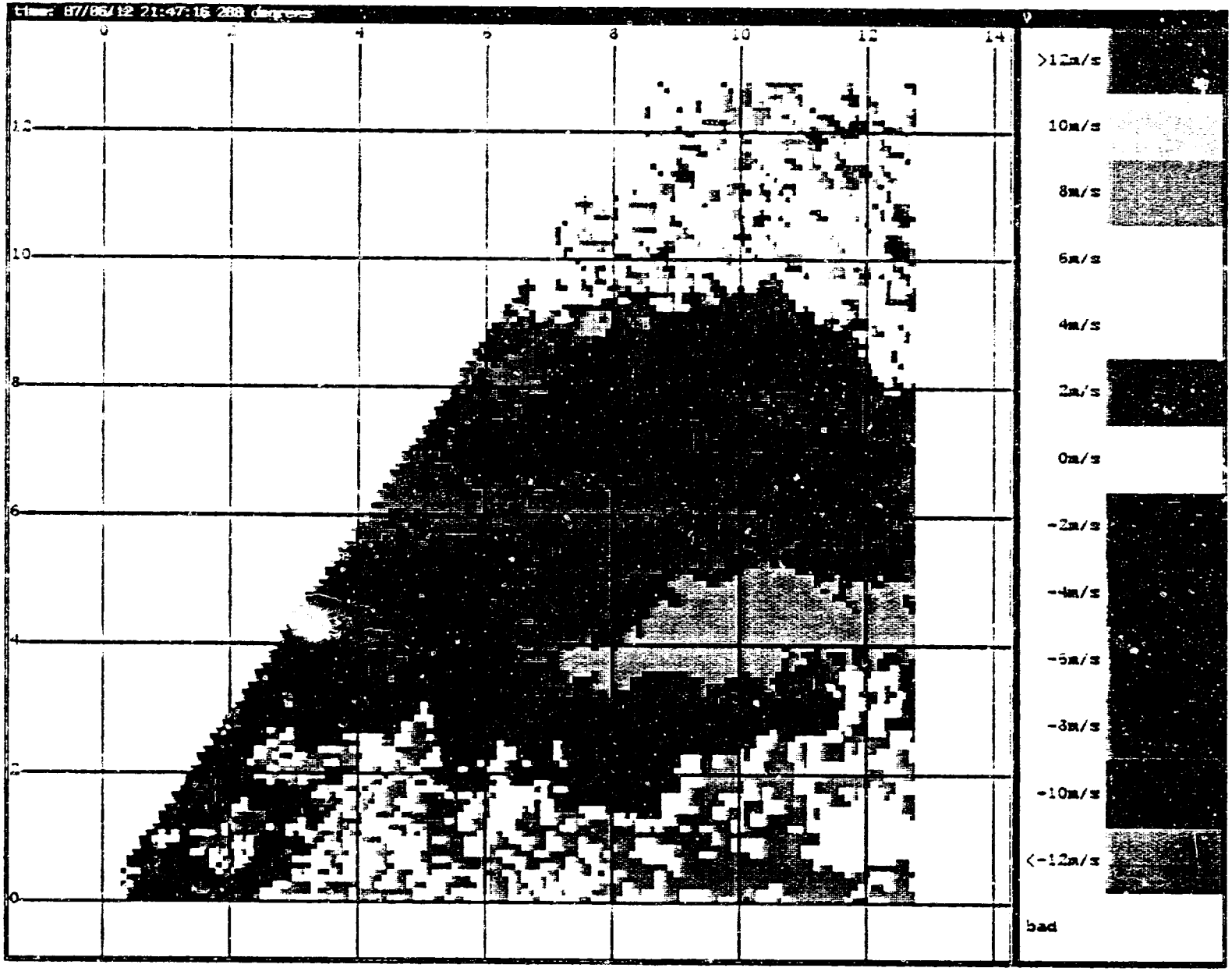

Figure B-50. RHI scan of velocity at 288 degrees azimuth during microburst at 21:47:16 UT on June 12, 1987.

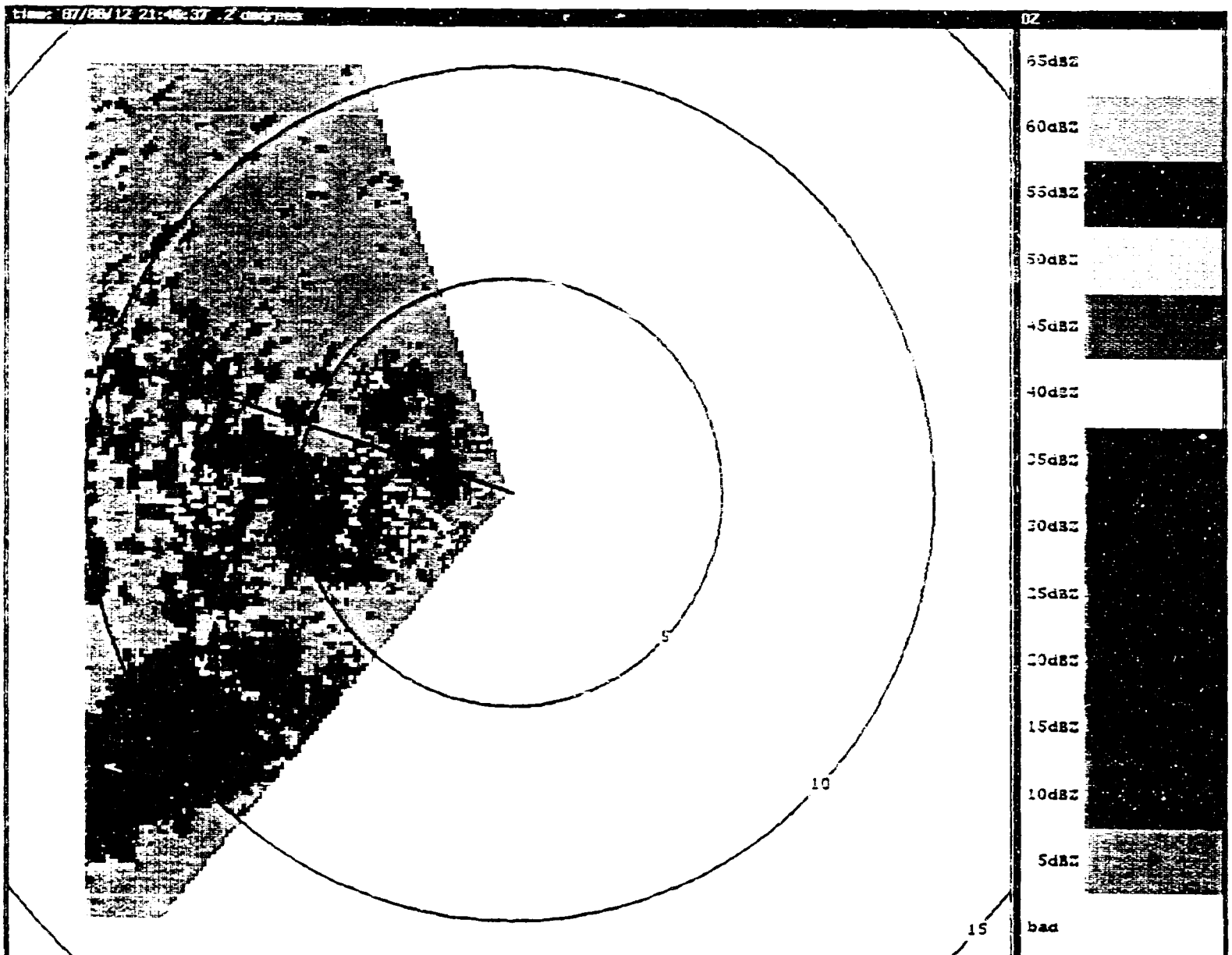

Figure B-51. PPI scan of reflectivity at 0.2 degrees elevation during microburst at 21:46:37 UT on June 12, 1987.

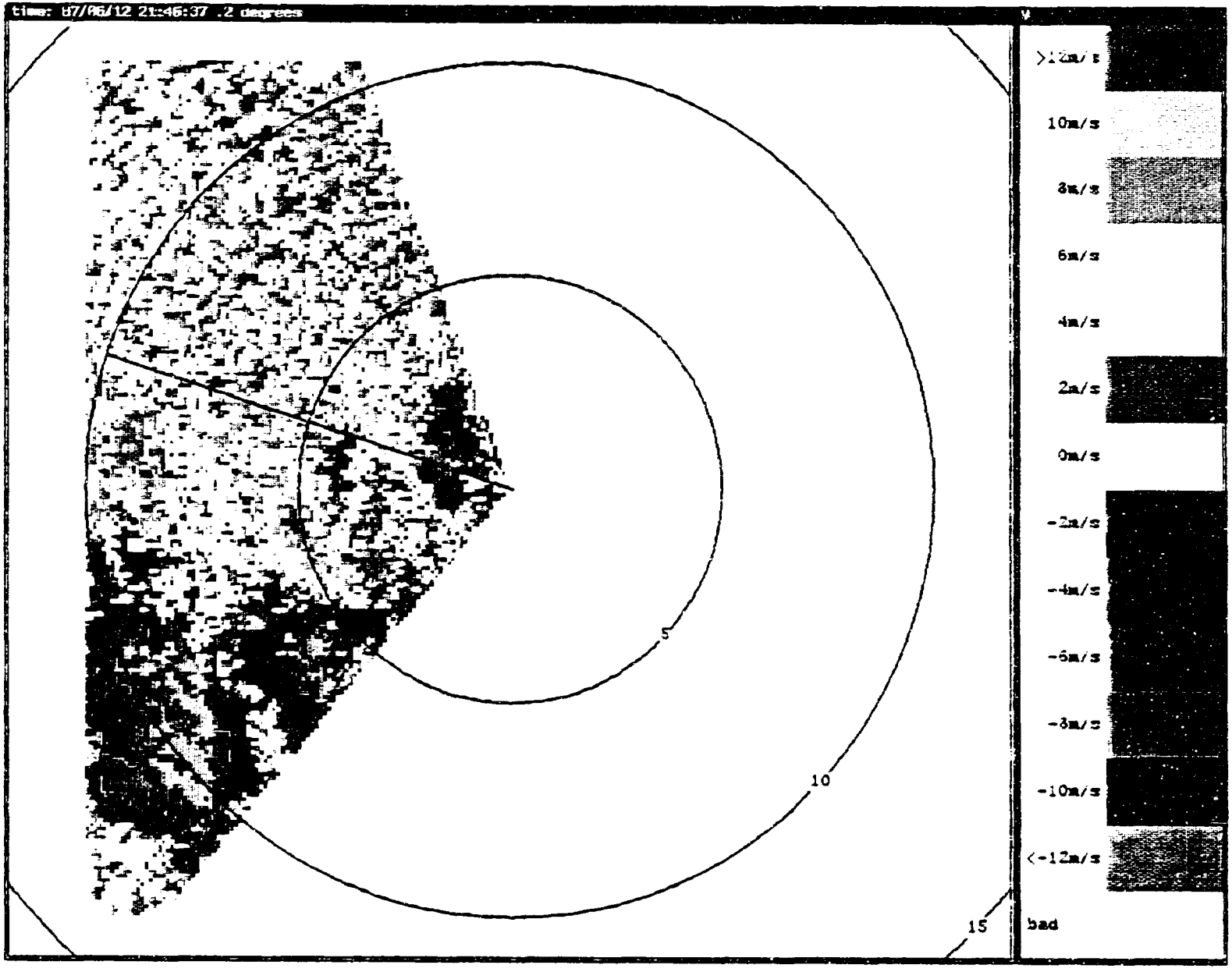

Figure B-52. PPI scan of velocity at 0.2 degrees elevation during microburst at 21:46:37 UT on June 12, 1987.

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:49:22 Scan:22 Tilt: 1 Product:V / 2

Time	Elev	Az	2.96		3.20		3.44		3.68		3.92		4.16		4.40		4.64		4.88		5.12		5.36		5.60	
21:49:22	0.50	262.9	.	.	-7	-6	-2	-1	.	0	-3	-2	-2	0	.	0	.	0	2	5	6	9	9	9	8	8
21:49:22	0.80	262.9	.	-3	-7	-7	-6	-6	-1	-2	-3	-2	-2	-2	-1	-1	-1	0	3	5	6	7	9	10	8	9
21:49:22	1.50	262.9	-4	-5	-7	-6	-6	-6	-5	-4	-2	-2	-2	-2	.	-1	1	0	2	3	4	7	8	8	10	10
21:49:22	2.30	262.9	-4	-4	-6	-4	-5	-6	-4	-3	-2	-1	-1	-2	0	.	0	2	2	3	4	5	5	5	7	9
21:49:22	3.20	262.9	-2	-3	-5	-5	-8	-5	-3	-2	-2	-2	-2	-2	0	0	1	1	3	4	4	4	5	6	7	8
21:49:22	4.40	262.9	-1	-2	-3	-4	-8	-8	-3	-2	-2	-2	-2	-2	0	-1	0	.	-2	1	3	3	4	5	6	7
21:49:22	5.60	262.9	-1	-2	-3	-2	-2	-3	-2	-2	-4	-5	-5	-2	-2	-2	-1	2	2	0	2	2	4	7	8	7
21:49:22	6.70	262.9	-3	-2	-2	-2	-1	-1	-2	-4	-5	-5	-3	-2	-2	-2	-2	0	1	-1	1	3	4	7	8	4
21:49:22	7.80	262.9	-4	-3	-3	-2	1	0	-3	-3	-3	-3	-2	-2	-1	-3	-3	-3	-2	1	2	3	5	6	5	0
21:49:22	8.90	262.9	-3	-3	-1	-1	1	1	-2	-2	-2	-2	-2	-1	0	-3	-3	-3	-2	-2	1	3	5	5	3	-3
21:49:23	10.00	262.9	-3	-3	-3	-1	0	1	-1	0	0	-2	-1	1	-2	.	1	-2	-3	-2	0	3	3	2	-1	-2
21:49:23	11.10	262.9	-4	-4	-4	-1	.	0	0	0	2	-3	-1	-1	-2	0	3	0	-4	-3	-2	0	3	1	-2	-2
Time	Elev	Az	2.96		3.20		3.44		3.68		3.92		4.16		4.40		4.64		4.88		5.12		5.36		5.60	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:49:22 Scan:22 Tilt: 1 Product:V / 2

Time	Elev	Az	5.84		6.08	
21:49:22	0.50	262.9	7	7	4	
21:49:22	0.80	262.9	8	7	7	
21:49:22	1.50	262.9	9	8	9	
21:49:22	2.30	262.9	9	10	10	
21:49:22	3.20	262.9	9	9	10	
21:49:22	4.40	262.9	8	8	6	
21:49:22	5.60	262.9	5	3	5	
21:49:22	6.70	262.9	1	-1	.	
21:49:22	7.80	262.9	-2	-4	-4	
21:49:22	8.90	262.9	-1	-1	-2	
21:49:23	10.00	262.9	0	.	-1	
21:49:23	11.10	262.9	.	0	-1	
Time	Elev	Az	5.84		6.08	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:59:43 Scan:30 Tilt: 4 Product:V / 2

Time	Elev	Az	5.96		6.20		6.44		6.68		6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60	
21:59:47	12.80	222.0	0	1	-2	-1	-2	-1	-1	0	-2	-2	0	2	4	3	2	2	2	2	0	-1	-2	-2	0	-2
21:59:47	11.80	222.0	2	2	3	3	2	2	2	2	1	1	3	3	2	2	2	2	1	-2	-2	-2	-2	-1	-1	-2
21:59:47	10.60	222.0	3	3	3	4	4	4	4	2	2	2	4	3	2	3	2	2	2	-2	-2	-2	0	2	1	-2
21:59:47	9.60	222.0	0	0	2	3	4	3	3	2	4	4	4	3	2	2	2	2	0	0	-1	.	1	1	0	0
21:59:47	8.60	222.0	-2	0	2	2	3	2	3	3	4	4	4	3	2	2	1	.	0	1	1	1	3	3	3	2
21:59:47	7.40	222.0	-4	-1	2	3	2	1	3	4	3	4	4	5	3	3	2	1	2	2	3	3	4	4	4	4
21:59:47	6.40	222.0	-4	-2	2	0	-1	0	2	5	5	4	6	6	4	1	-1	1	2	2	2	3	3	5	5	5
21:59:47	5.40	222.0	-5	-5	-4	-4	-2	2	3	4	3	3	5	6	4	2	1	4	5	2	2	2	3	5	5	5
21:59:47	4.50	222.0	-6	-5	-4	-3	-2	2	5	3	3	3	7	5	5	7	7	5	3	2	2	3	4	5	7	7
21:59:48	3.70	222.0	-7	-5	-5	-3	-2	2	4	5	4	3	4	5	5	7	6	3	2	2	5	7	5	6	6	7
21:59:48	3.00	222.0	-5	-5	-6	-4	-3	0	-2	1	2	2	3	3	5	6	4	-3	0	3	5	4	4	5	6	6
21:59:48	2.30	222.0	-5	-5	-8	-7	-3	-3	-3	-2	.	2	2	3	3	2	0	-1	0	0	2	2	3	5	6	5
21:59:48	1.90	222.0	-5	-5	-7	-6	-5	-4	-3	-2	1	1	1	3	-1	-2	1	1	0	0	-1	-1	3	4	5	5
21:59:48	1.40	222.0	-5	-6	-6	-6	-4	-6	-4	-2	-1	-1	-1	0	-2	-2	1	1	-2	-2	-2	-2	-2	0	3	4
21:59:48	1.00	222.0	-6	-7	-6	-5	-6	-7	-6	-3	-3	-2	-4	-2	-2	-2	0	0	-3	-2	-4	-4	-4	-2	0	3
21:59:48	0.80	222.0	-6	-7	-7	-6	-9	-9	-7	-4	-3	-3	-4	-3	-3	-2	-2	-2	-2	-1	-4	-5	-3	-4	-4	2
21:59:48	0.50	222.0	-1	-4	-7	-7	-10	-9	-7	-5	-4	-5	-4	-4	-2	-3	-3	-2	-2	0	-4	-4	-5	-5	-2	1
21:59:48	0.20	222.0	-3	-2	-7	-8	-10	-10	-7	-5	-5	-5	-5	-4	-4	-3	-2	-2	-1	-1	0	-4	-5	-4	-2	.
21:59:48	0.00	222.0	-2	-3	-7	-8	-11	-10	-6	-6	-4	-5	-4	-3	-3	-2	-2	-1	0	-1	-1	-2	-5	-5	-3	0
Time	Elev	Az	5.96		6.20		6.44		6.68		6.92		7.16		7.40		7.64		7.88		8.12		8.36		8.60	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:21:59:43 Scan:30 Tilt: 4 Product:V / 2

Time	Elev	Az	8.84		9.08		9.32		9.56		9.80	
21:59:47	12.80	222.0	-3	-4	-3	-2	1	2	3	2	1	
21:59:47	11.80	222.0	-2	-5	-4	-2	0	2	2	2	2	
21:59:47	10.60	222.0	-3	-3	-3	-2	0	2	3	3	2	
21:59:47	9.60	222.0	-1	0	-1	0	.	3	2	2	2	
21:59:47	8.60	222.0	2	1	0	0	0	0	.	0	0	
21:59:47	7.40	222.0	4	1	2	1	1	-2	-3	-3	-2	
21:59:47	6.40	222.0	5	4	4	2	-1	-2	-3	-4	-4	
21:59:47	5.40	222.0	6	5	3	-1	-2	-2	-2	-2	-3	
21:59:47	4.50	222.0	5	7	5	4	0	-1	1	0	0	
21:59:48	3.70	222.0	7	7	7	6	4	2	3	2	2	
21:59:48	3.00	222.0	7	7	6	4	4	3	4	4	2	
21:59:48	2.30	222.0	6	7	6	5	5	5	4	4	2	
21:59:48	1.90	222.0	5	7	7	6	8	8	4	3	2	
21:59:48	1.40	222.0	5	7	8	8	8	9	6	4	4	
21:59:48	1.00	222.0	7	7	8	8	10	11	8	6	10	
21:59:48	0.80	222.0	6	5	8	10	11	11	10	9	12	
21:59:48	0.50	222.0	5	5	9	10	11	10	11	12	13	
21:59:48	0.20	222.0	4	4	8	10	10	10	11	13	15	
21:59:48	0.00	222.0	3	3	9	12	11	9	11	13	15	
Time	Elev	Az	8.84		9.08		9.32		9.56		9.80	

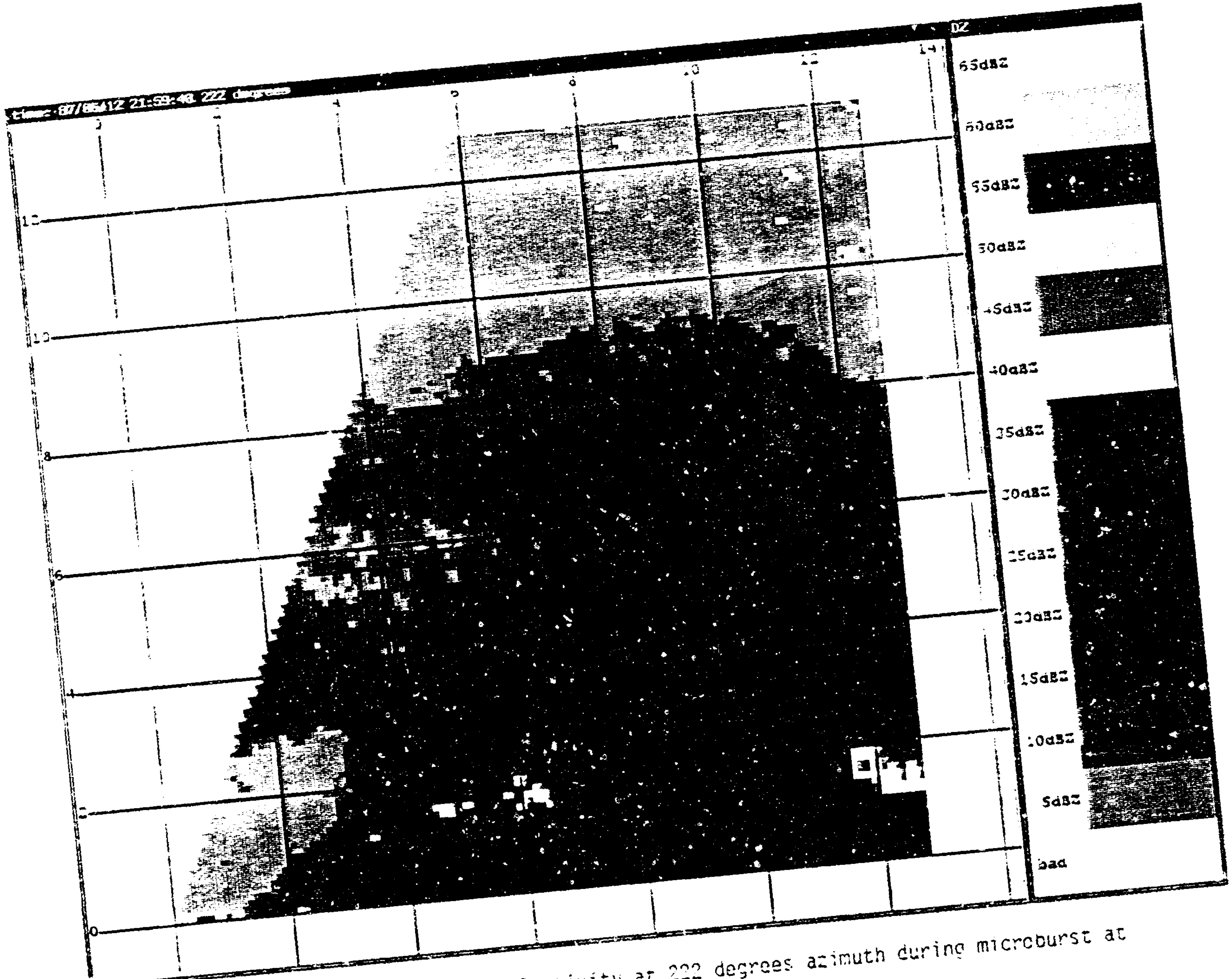

Figure B-53. RHI scan of reflectivity at 222 degrees azimuth during microburst at 21:59:43 UT on June 12, 1987.

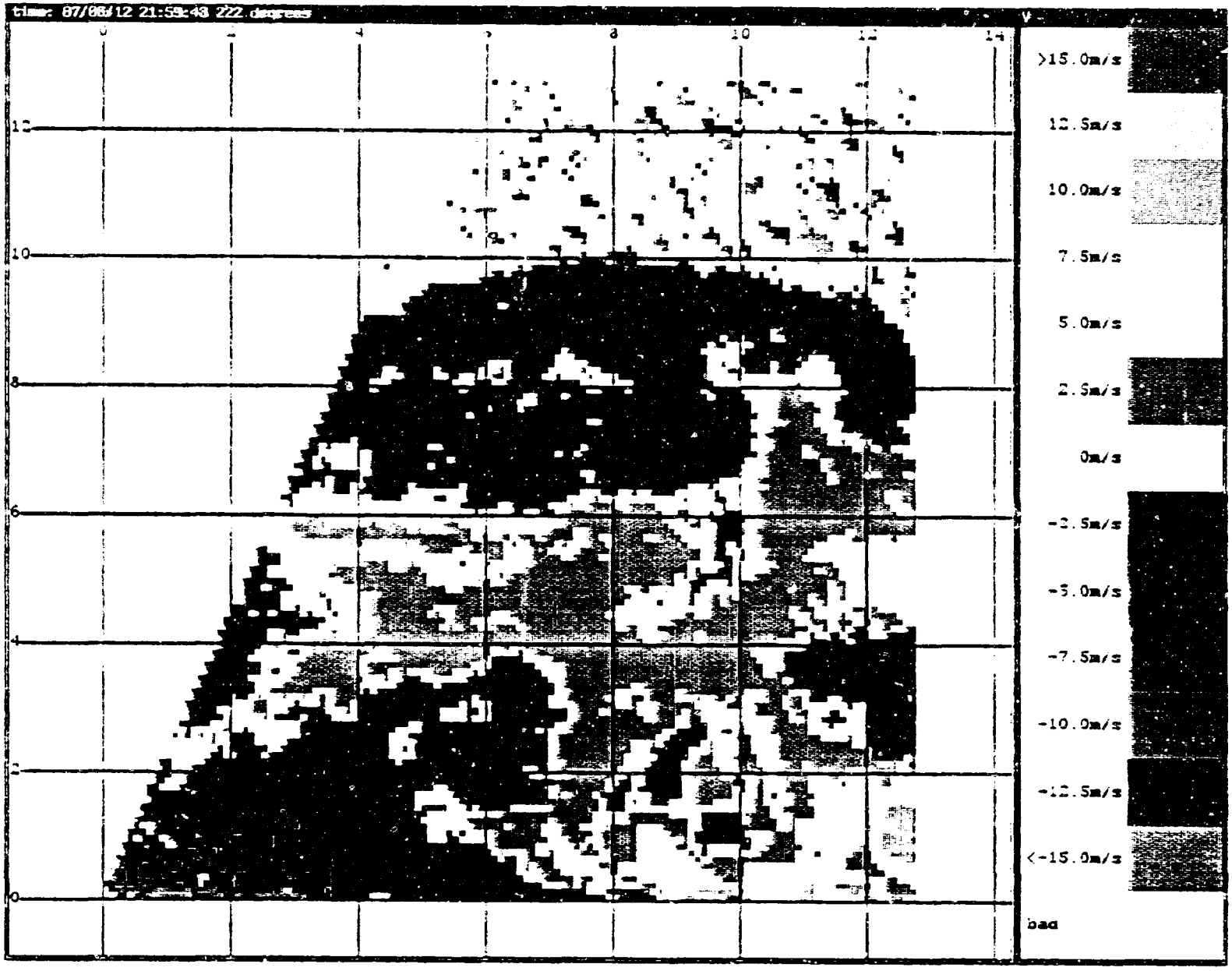

Figure B-54. RHI scan of velocity at 222 degrees azimuth during microburst at 21:59:43 UT on June 12, 1987.

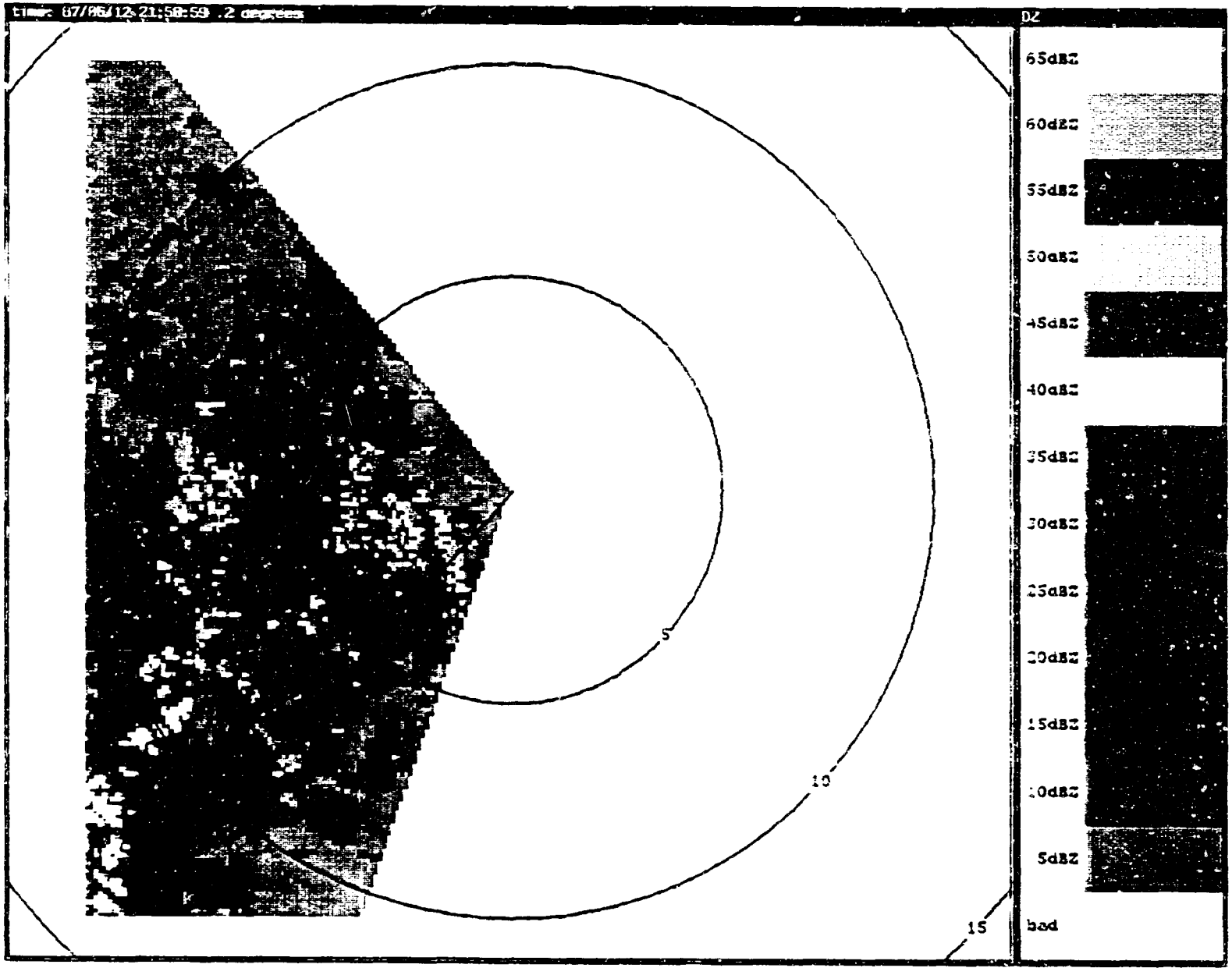

Figure B-55. PPI scan of reflectivity at 0.2 degrees elevation during microburst at 21:58:59 UT on June 12, 1987.

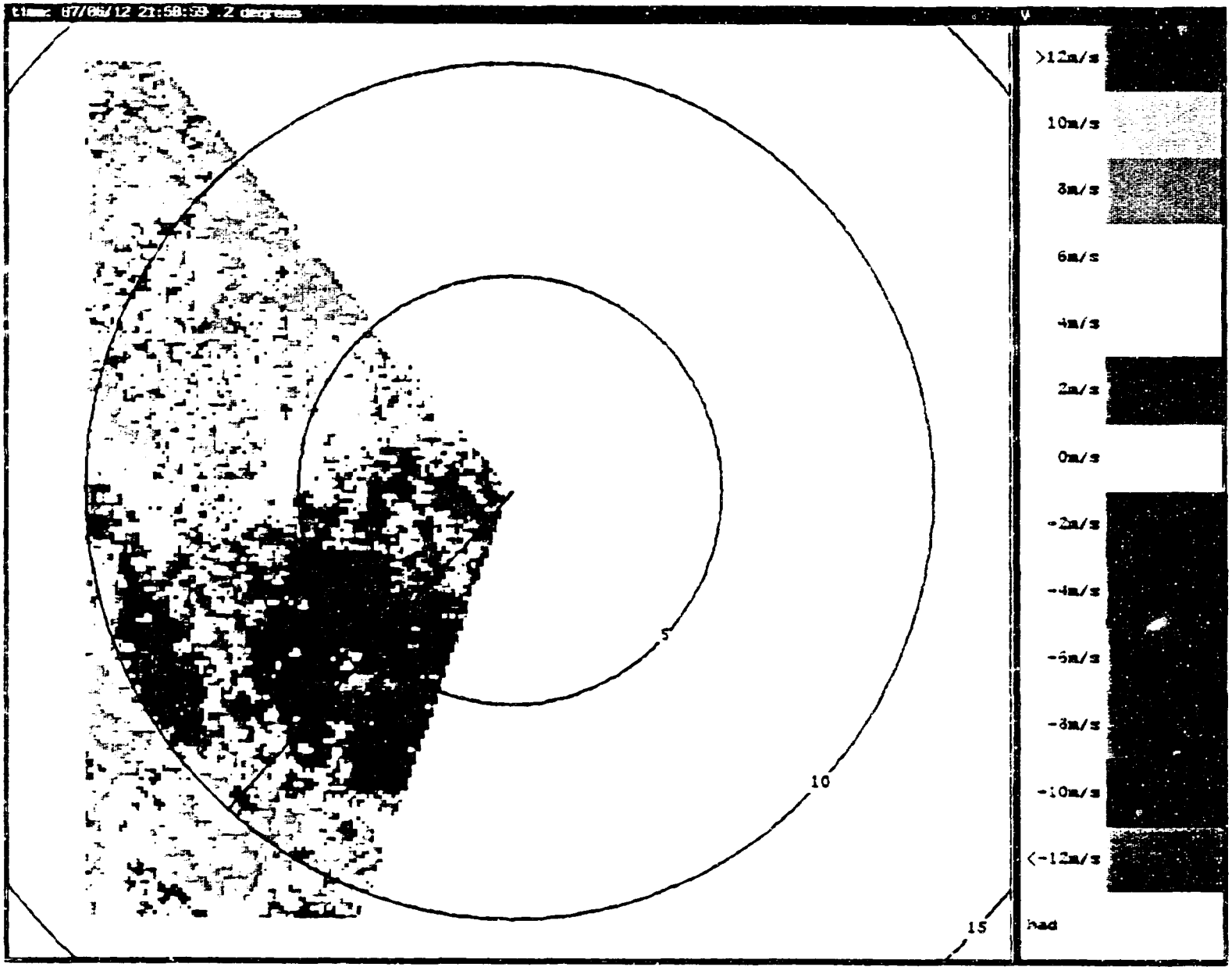

Figure B-56. PPI scan of velocity at 0.2 degrees elevation during microburst at 21:58:59 UT on June 12, 1987.

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:22:13:28 Scan:42 Tilt: 1 Product:V / 2

Time	Elev	Az	3.92	4.16	4.40	4.64	4.88	5.12	5.36	5.60	5.84	6.08	6.32	6.56
22:13:28	0.00	160.9	0 -1 -2 -1	-5 -5 -6 -5	-1 -1 -2 -3	-3 -4 -2 0	0 1 2 0	. .	1 0					
22:13:28	0.20	160.9	-3 -5 -5 -3	-5 -6 -7 -7	-4 -2 -2 -3	-4 -4 -3 0	1 1 5 6	2 1	6 1					
22:13:28	0.40	160.9	-3 -2 -5 -4	-5 -7 -8 -6	-3 -1 -1 -3	-4 -5 0 0	-1 2 5 6	2 1	11 -1					
22:13:28	0.70	160.9	-7 -4 -3 -6	-6 -7 -7 -6	-3 0 -2 -3	-4 -5 -1 .	-1 2 4 6	3 0	7 2					
22:13:28	1.10	160.9	-9 -10 -7 -8	-7 -8 -7 -7	-5 -4 -2 -3	-5 -5 -2 .	-1 0 4 8	2 1	7 3					
22:13:28	1.60	160.9	-8 -7 -7 -6	-8 -7 -7 -7	-6 -5 -3 -3	-4 -6 -5 -2	0 2 4 8	4 0	5 3					
22:13:28	2.10	160.9	-8 -6 -6 -6	-10 -6 -8 -7	-8 -7 -5 -4	-3 -6 -5 -2	1 2 4 8	6 4	4 5					
22:13:28	2.80	160.9	-4 -4 -5 -5	-9 -7 -7 -7	-8 -8 -6 -6	-5 -4 -4 -2	0 2 0 2	7 5	6 6					
22:13:28	3.40	160.9	-4 -4 -5 -5	-6 -6 -6 -8	-8 -8 -6 -7	-5 -5 -3 -2	-1 0 -1 -1	3 5	6 4					
22:13:29	4.10	160.9	-3 -4 -5 -7	-6 -6 -7 -8	-8 -7 -5 -6	-5 -4 -3 -2	-2 -1 -2 -2	-1 3	5 4					
22:13:29	5.00	160.9	-3 -3 -5 -6	-5 -7 -8 -8	-7 -7 -5 -3	-4 -3 -2 -2	-2 -2 -2 -2	-2 -1	1 2					
22:13:29	6.00	160.9	-4 -4 -4 -5	-5 -6 -9 -8	-9 -8 -7 -5	-5 -5 -5 -3	-2 -2 -2 -2	-2 -2	-2 1					
22:13:29	6.90	160.9	-4 -4 -4 -4	-4 -6 -8 -9	-9 -9 -7 -6	-5 -6 -5 -4	-4 -3 -3 -3	-3 -3	-2 -2					
22:13:29	8.00	160.9	-5 -6 -4 -4	-4 -5 -8 -7	-7 -7 -5 -3	-3 -5 -5 -6	-5 -3 -3 -2	-2 -2	-1 -2					
22:13:29	9.10	160.9	-6 -6 -2 -2	-3 -2 -6 -7	-6 -5 -5 -2	0 0 -2 -3	-4 -4 -4 -3	-2 0	0 0					
22:13:29	10.20	160.9	-8 -6 -6 -4	-3 -2 -4 -3	-5 -5 -3 -2	-2 -2 1 .	-4 -5 -5 -4	-3 -1	. -1					
22:13:29	11.50	160.9	-7 -7 -7 -6	-7 -8 -5 -4	-5 -4 -3 -2	-2 -2 0 2	0 -3 -7 -5	-3 -2	-1 -2					
22:13:29	12.60	160.9	-5 -6 -6 -6	-6 -7 -4 -3	-1 -2 -2 -2	-2 -1 2 3	1 -3 -4 -5	-3 -2	0 0					

Time Elev Az 3.92 4.16 4.40 4.64 4.88 5.12 5.36 5.60 5.84 6.08 6.32 6.56

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-12-87 Time:22:13:28 Scan:42 Tilt: 1 Product:V / 2

Time	Elev	Az	6.80	7.04	7.28	7.52
22:13:28	0.00	160.9	3 2 0 3	. . .		
22:13:28	0.20	160.9	4 5 6 5	0 0 7		
22:13:28	0.40	160.9	5 5 5 5	1 1 8		
22:13:28	0.70	160.9	4 5 6 5	0 0 8		
22:13:28	1.10	160.9	5 5 6 5	1 3 9		
22:13:28	1.60	160.9	6 7 7 6	1 2 7		
22:13:28	2.10	160.9	6 6 6 5	5 3 3		
22:13:28	2.80	160.9	5 5 3 4	4 2 2		
22:13:28	3.40	160.9	3 3 2 3	3 3 2		
22:13:29	4.10	160.9	2 1 -2 0	. 1 2		
22:13:29	5.00	160.9	2 0 -1 -1	-2 -1 2		
22:13:29	6.00	160.9	2 1 . -2	-2 -2 0		
22:13:29	6.90	160.9	-1 2 3 -1	-3 -3 -2		
22:13:29	8.00	160.9	-2 0 3 4	1 -1 -1		
22:13:29	9.10	160.9	0 -2 -1 2	3 4 1		
22:13:29	10.20	160.9	-1 -2 -2 -1	2 3 3		
22:13:29	11.50	160.9	-2 -1 -2 -2	-1 0 -2		
22:13:29	12.60	160.9	-1 -1 -2 -3	-2 -2 -2		

Time Elev Az 6.80 7.04 7.28 7.52

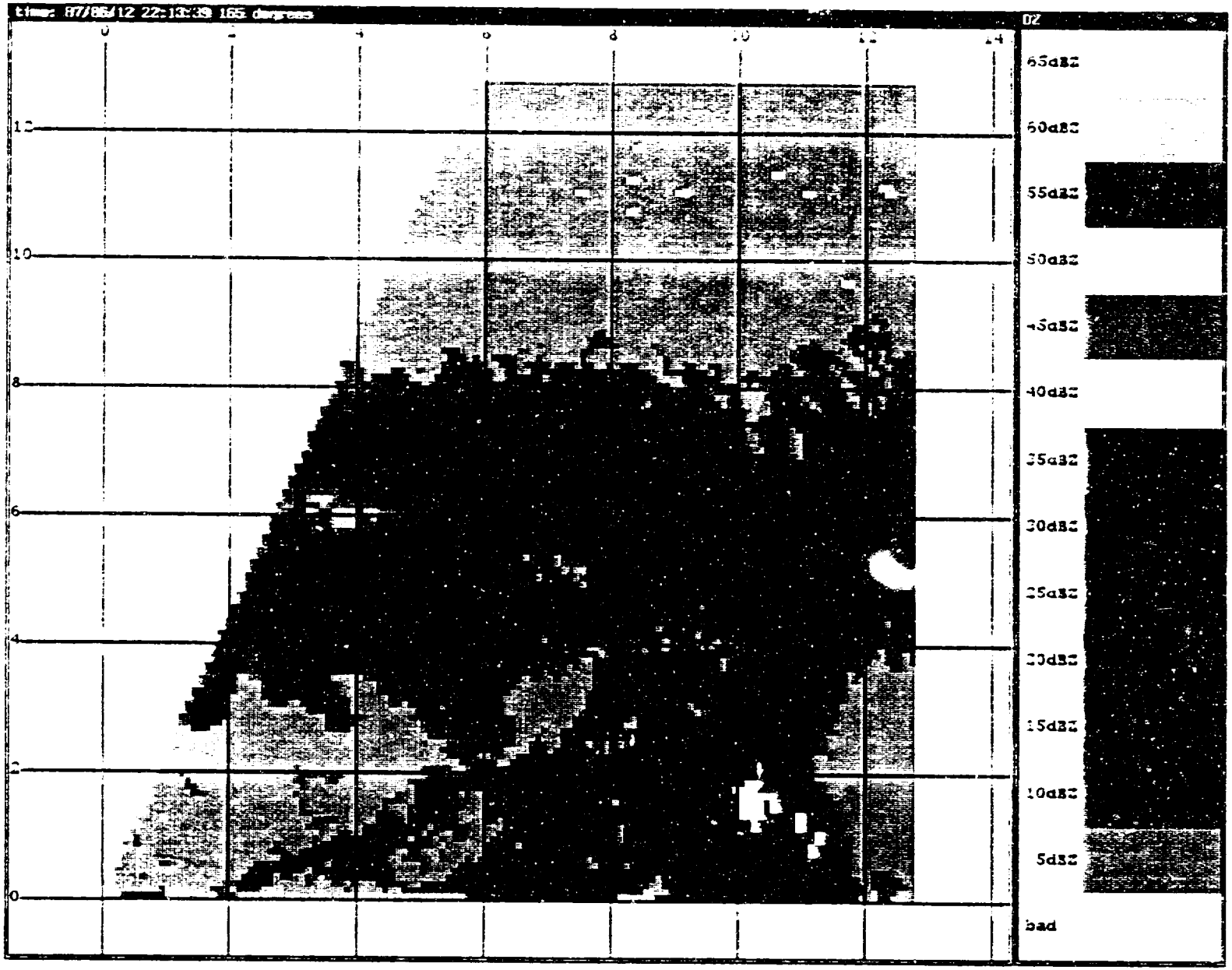

Figure B-57. RHI scan of velocity at 165 degrees azimuth during microburst at 22:13:39 UT on June 12, 1987.

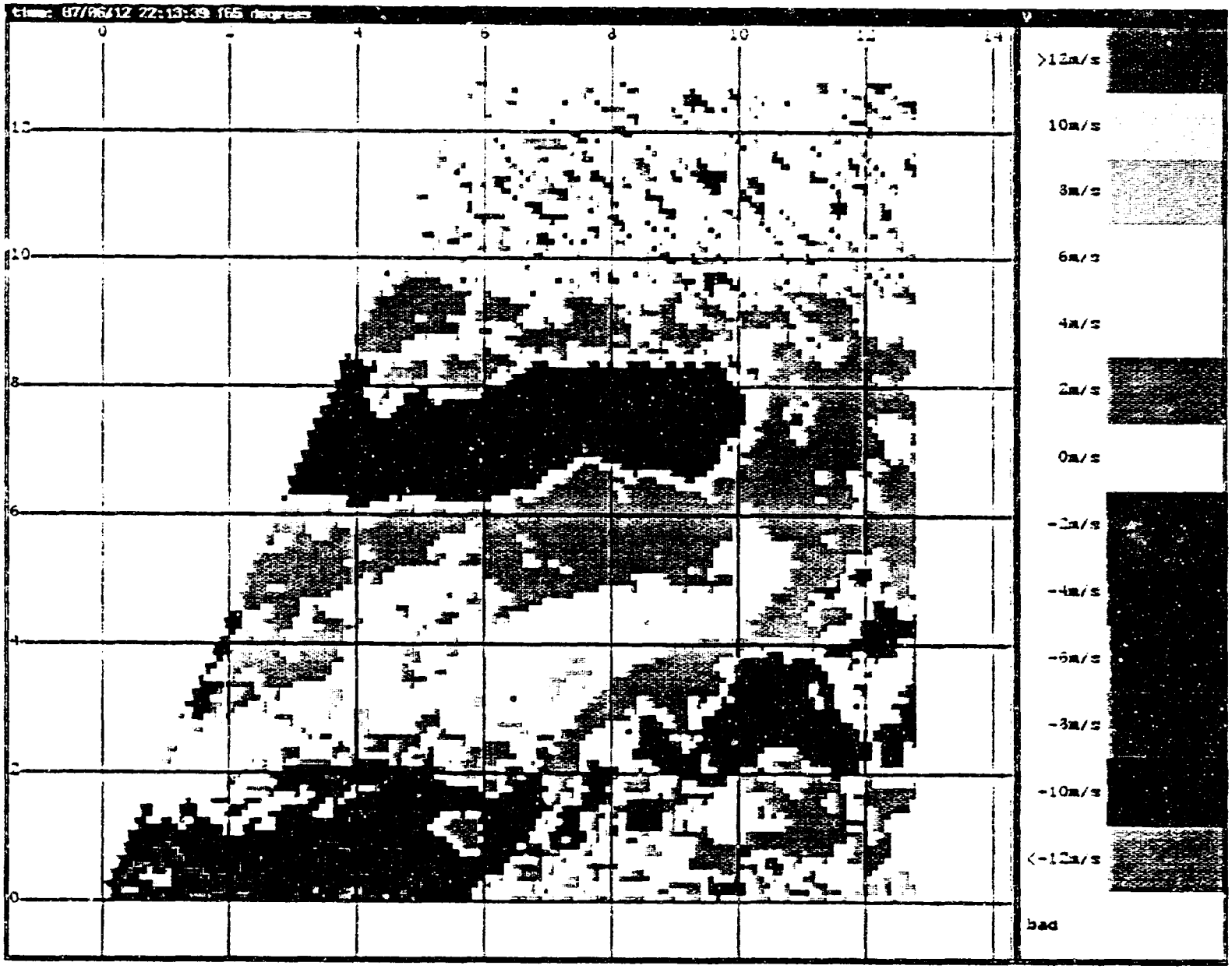

Figure B-58. RHI scan of velocity at 165 degrees azimuth during microburst at 22:13:39 UT on June 12, 1987.

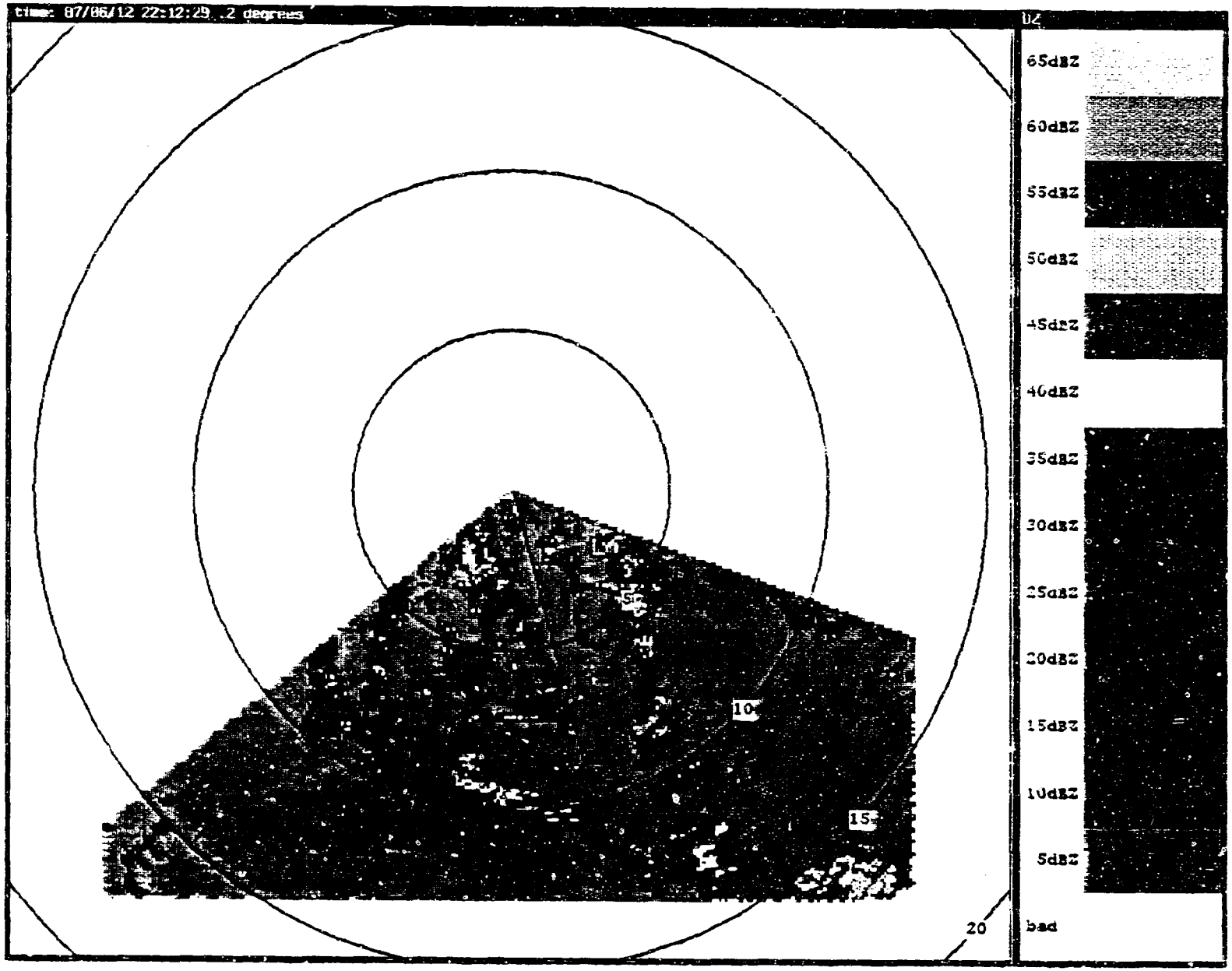

Figure 5-59. PPI scan of reflectivity at 0.2 degrees elevation during microburst at 22:12:29 UT on June 12, 1987.

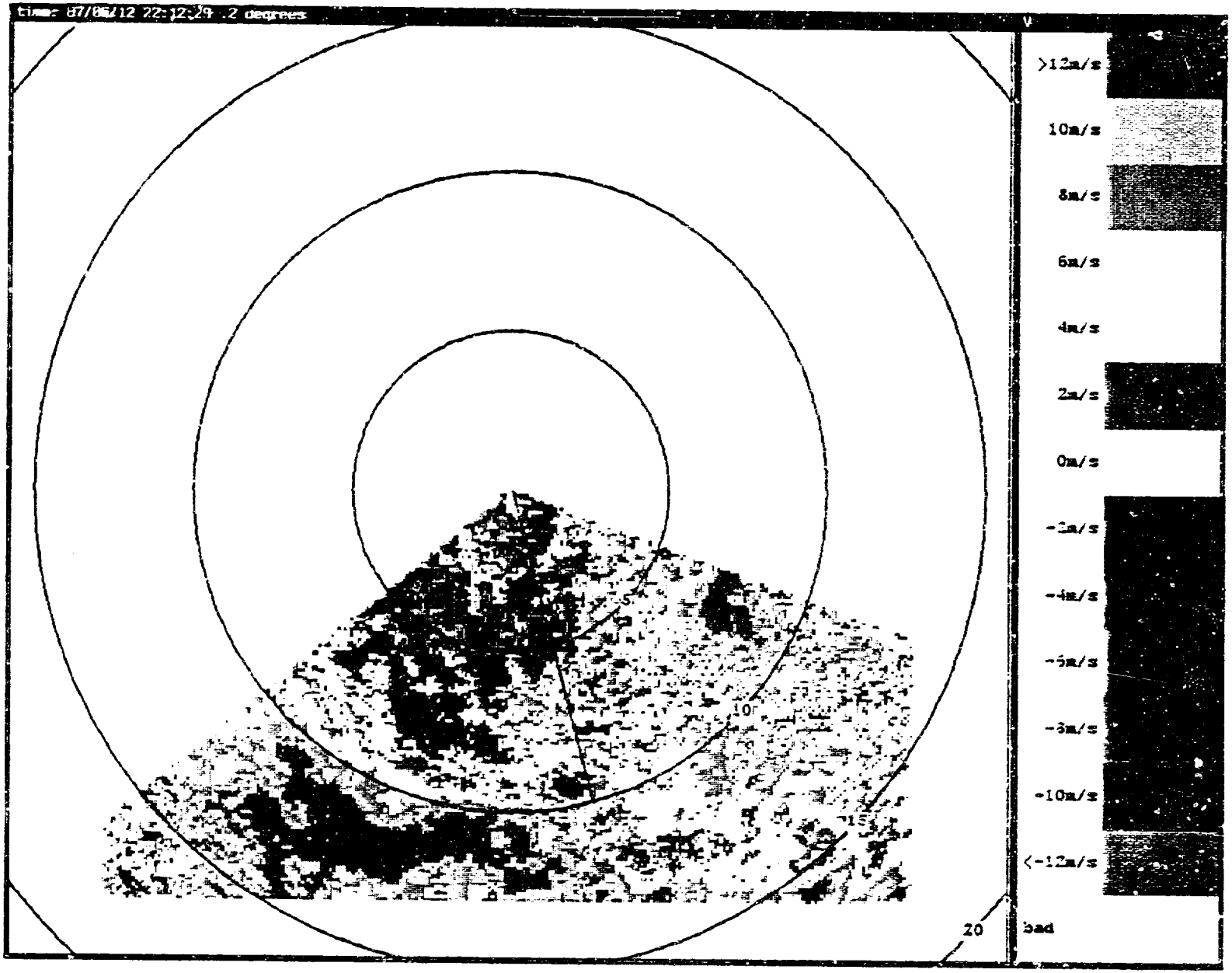

Figure B-60. PPI scan of velocity at 0.2 degrees elevation during microburst at 22:12:29 UT on June 12, 1987.

7. September 13, 1987

Proj:FLOWS Site:Denver Radar:FL-2 Date: 9-14-87 Time: 1: 7:56 Scan:14 Tilt: 6 Product:V / 2

Time	Elev	Az	5.00		5.24		5.48		5.72		5.96		6.20		6.44		6.68		6.92		7.16		7.40		7.64	
1:08:00	16.40	302.9	7	7	5	5	4	3	4	3	3	3	3	3	3	4	4	3	3	3	2	3	3	2	3	3
1:08:00	15.30	302.9	6	7	6	5	4	4	4	4	2	3	2	-1	0	0	3	2	3	3	4	3	2	2	3	3
1:08:00	14.30	302.9	5	6	6	5	4	5	4	3	3	3	2	2	-2	-3	-2	2	2	3	3	2	2	2	2	2
1:08:00	13.20	302.9	6	6	6	5	5	6	4	3	3	3	4	5	2	-2	-1	1	2	3	2	2	2	2	2	2
1:08:00	12.10	302.9	5	7	8	6	5	4	3	3	2	3	2	3	3	3	2	.	1	3	2	2	2	1	2	3
1:08:00	11.00	302.9	6	7	7	6	5	4	4	4	3	3	2	2	3	3	3	2	3	3	1	3	2	3	3	3
1:08:00	9.90	302.9	6	6	6	6	4	4	4	3	-1	2	3	3	3	4	4	3	3	4	3	3	2	3	3	3
1:08:00	8.90	302.9	4	4	3	3	2	1	-2	-2	-2	-1	2	2	4	4	5	4	3	4	2	2	2	2	2	3
1:08:00	7.80	302.9	-3	-3	0	-2	-2	-3	-2	-2	-2	-2	-2	-1	-1	-2	0	0	1	-2	-2	-2	1	2	2	2
1:08:01	6.70	302.9	-4	-4	-4	-4	-4	-3	-3	-3	-3	-2	-1	-2	-2	-2	-3	-3	-2	-3	-3	-3	-1	2	2	3
1:08:01	5.70	302.9	-6	-6	-6	-7	-7	-5	-3	-6	-4	-5	-4	-3	-3	-4	-3	-3	-3	-2	-2	-2	2	3	3	3
1:08:01	4.80	302.9	-8	-7	-7	-7	-7	-7	-6	-6	-6	-5	-5	-5	-5	-5	-4	-3	-3	0	3	2	2	3	3	3
1:08:01	4.00	302.9	-9	-10	-10	-9	-7	-7	-8	-8	-7	-7	-6	-4	-5	-6	-5	-4	-2	2	3	1	2	3	3	3
1:08:01	3.30	302.9	-10	-9	-9	-8	-6	-7	-8	-7	-9	-9	-6	-5	-5	-6	-4	-3	-3	.	1	0	3	3	3	3
1:08:01	2.70	302.9	-10	-8	-7	-6	-6	-7	-7	-7	-9	-8	-7	-6	-6	-6	-6	-5	-3	-3	-3	-1	2	3	3	2
1:08:01	2.20	302.9	-10	-8	-7	-5	-7	-7	-7	-9	-10	-9	-8	-7	-7	-7	-7	-6	-4	-4	-4	-3	-2	.	0	-2
1:08:01	1.70	302.9	-9	-9	-7	-5	-7	-8	-9	-12	-11	-11	-10	-8	-8	-7	-7	-7	-6	-4	-4	-3	-3	-5	-3	-3
1:08:01	1.40	302.9	-9	-9	-7	-6	-9	-9	-10	-12	-14	-13	-12	-11	-9	-8	-8	-7	-6	-5	-5	-4	-5	-5	-4	-3
1:08:01	1.20	302.9	-9	-9	-8	-7	-10	-10	-9	-13	-13	-13	-12	-12	-9	-9	-8	-7	-6	-5	-6	-6	-5	-5	-4	-3
1:08:01	0.90	302.9	-9	-9	-10	-9	-10	-11	-10	-12	-13	-14	-13	-12	-10	-10	-9	-7	-7	-6	-5	-7	-5	-5	-4	-3
1:08:01	0.60	302.9	-9	-10	-10	-12	-12	-12	-12	-13	-14	-14	-14	-13	-11	-11	-9	-8	-7	-6	-6	-7	-6	-5	-4	-3
1:08:01	0.30	302.9	-8	-9	-2	-10	-13	-13	-12	-13	-14	-14	-15	-11	-12	-9	-10	-10	-9	-7	-6	-6	-6	-5	-4	-3
Time	Elev	Az	5.00		5.24		5.48		5.72		5.96		6.20		6.44		6.68		6.92		7.16		7.40		7.64	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 9-14-87 Time: 1: 7:56 Scan:14 Tilt: 6 Product:V / 2

Time	Elev	Az	7.88		8.12		8.36		8.60		8.84		9.08
1:08:00	16.40	302.9	3	2	3	3	3	4	5	5	4	4	6
1:08:00	15.30	302.9	2	3	2	3	2	3	5	5	5	5	4
1:08:00	14.30	302.9	3	0	0	2	2	3	3	4	5	4	3
1:08:00	13.20	302.9	2	.	-2	0	1	-2	-2	-2	2	3	3
1:08:00	12.10	302.9	2	2	3	2	-1	-3	-2	-2	2	3	3
1:08:00	11.00	302.9	4	3	4	3	3	2	-1	0	1	-1	2
1:08:00	9.90	302.9	4	4	4	4	4	3	3	3	2	3	-2
1:08:00	8.90	302.9	3	4	5	5	5	4	4	4	3	3	3
1:08:00	7.80	302.9	3	4	5	5	5	5	5	5	5	4	3
1:08:01	6.70	302.9	3	3	3	4	4	4	5	6	5	5	4
1:08:01	5.70	302.9	3	4	3	3	3	5	6	5	5	5	5
1:08:01	4.80	302.9	3	3	3	3	5	5	6	6	5	5	6
1:08:01	4.00	302.9	3	2	-1	2	4	6	6	6	5	5	5
1:08:01	3.30	302.9	2	1	-1	2	3	4	7	6	6	5	5
1:08:01	2.70	302.9	-2	-2	2	3	3	5	6	5	5	5	5
1:08:01	2.20	302.9	-2	-2	3	4	4	6	6	5	4	5	4
1:08:01	1.70	302.9	-2	1	3	4	4	6	6	6	4	5	6
1:08:01	1.40	302.9	-2	2	3	4	5	5	5	5	5	7	10
1:08:01	1.20	302.9	-2	3	3	4	5	5	5	6	5	8	9
1:08:01	0.90	302.9	0	3	3	5	5	5	6	5	7	9	7
1:08:01	0.60	302.9	0	3	3	4	6	6	7	7	8	5	5
1:08:01	0.30	302.9	-2	1	3	4	5	5	8	7	7	4	4
Time	Elev	Az	7.88		8.12		8.36		8.60		8.84		9.08

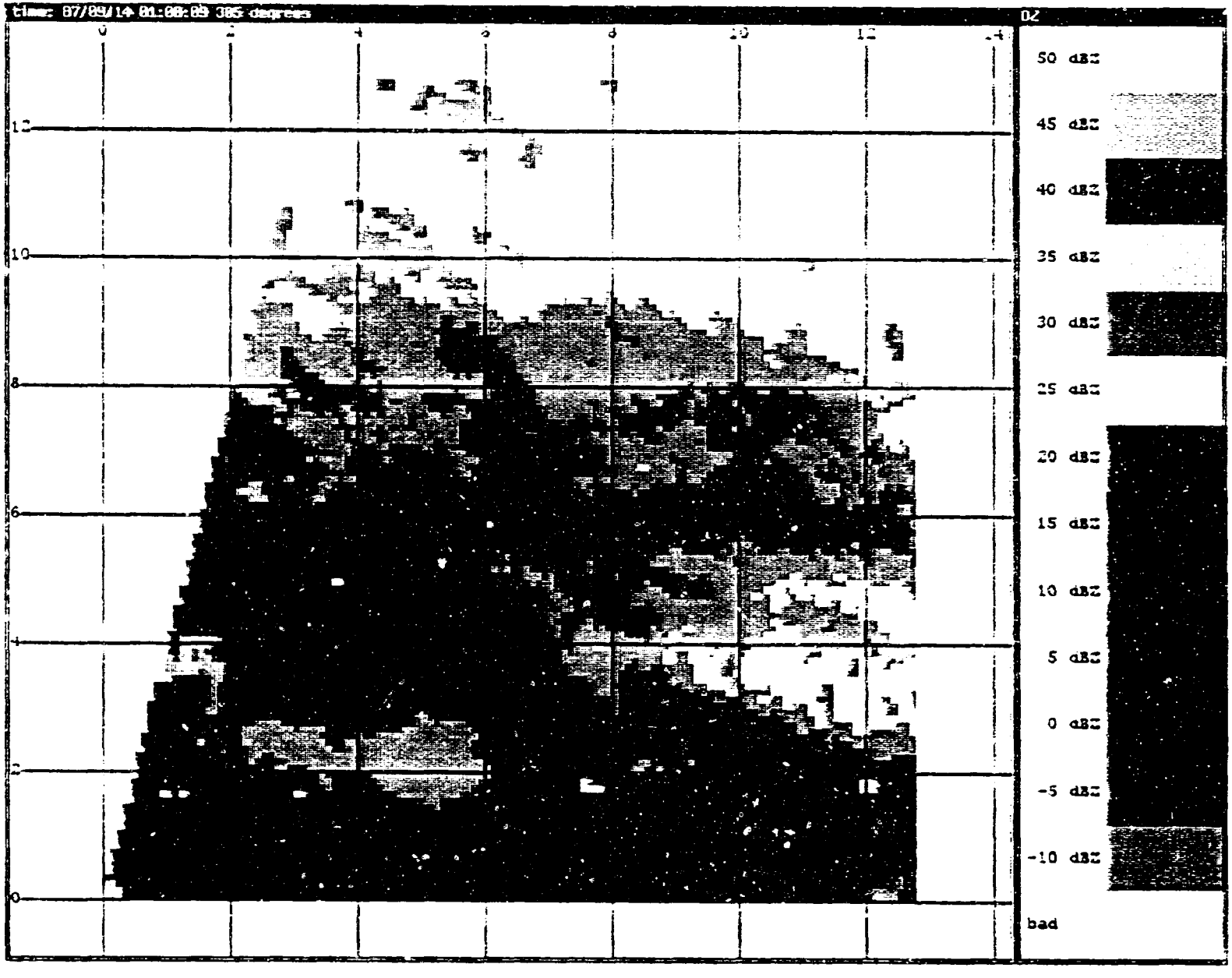

Figure B-01. RHI scan of velocity at 305 degrees azimuth during microburst at 01:08:09 UT on Sept. 13, 1987.

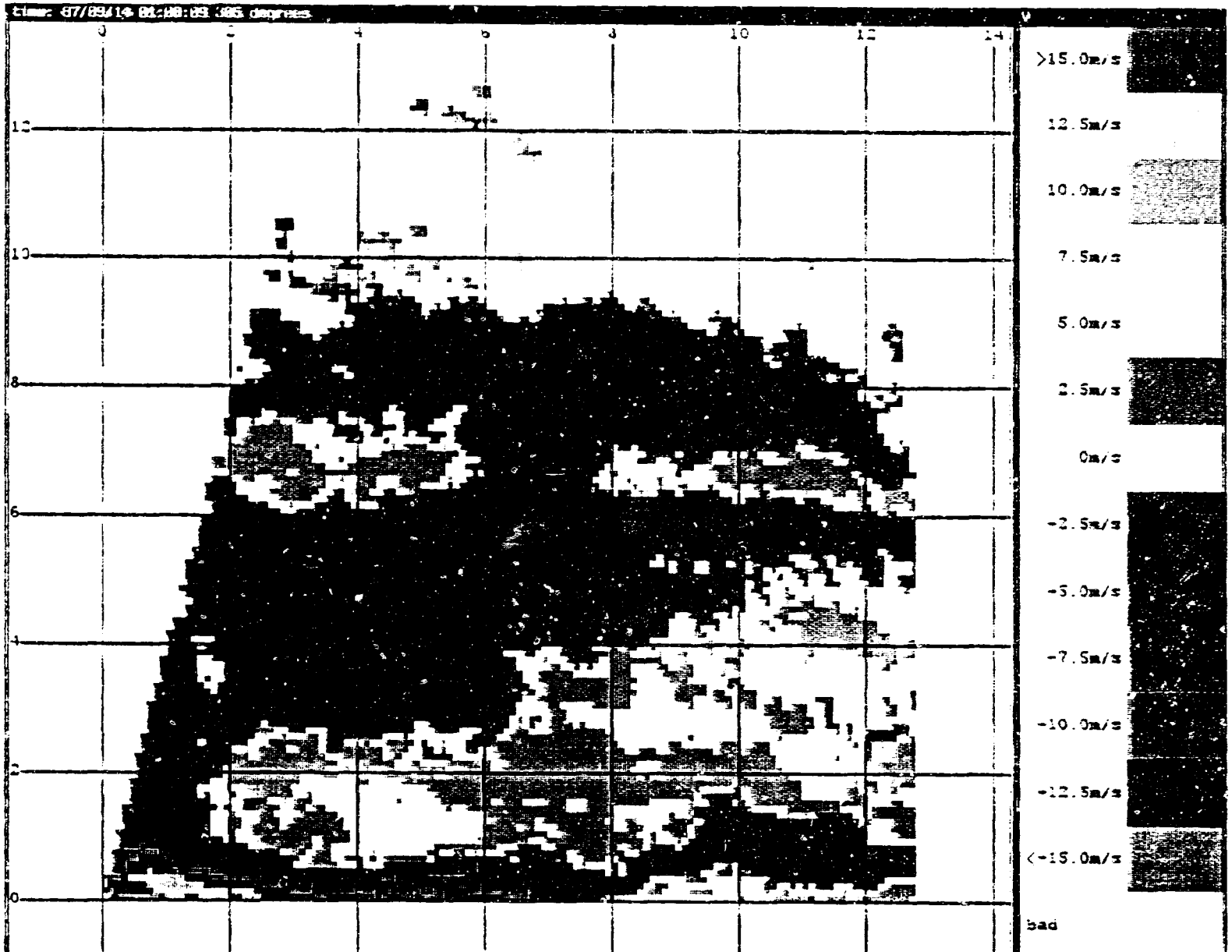

Figure B-62. RHI scan of velocity at 305 degrees azimuth during microburst at 01:08:09 UT on Sept. 13, 1987.

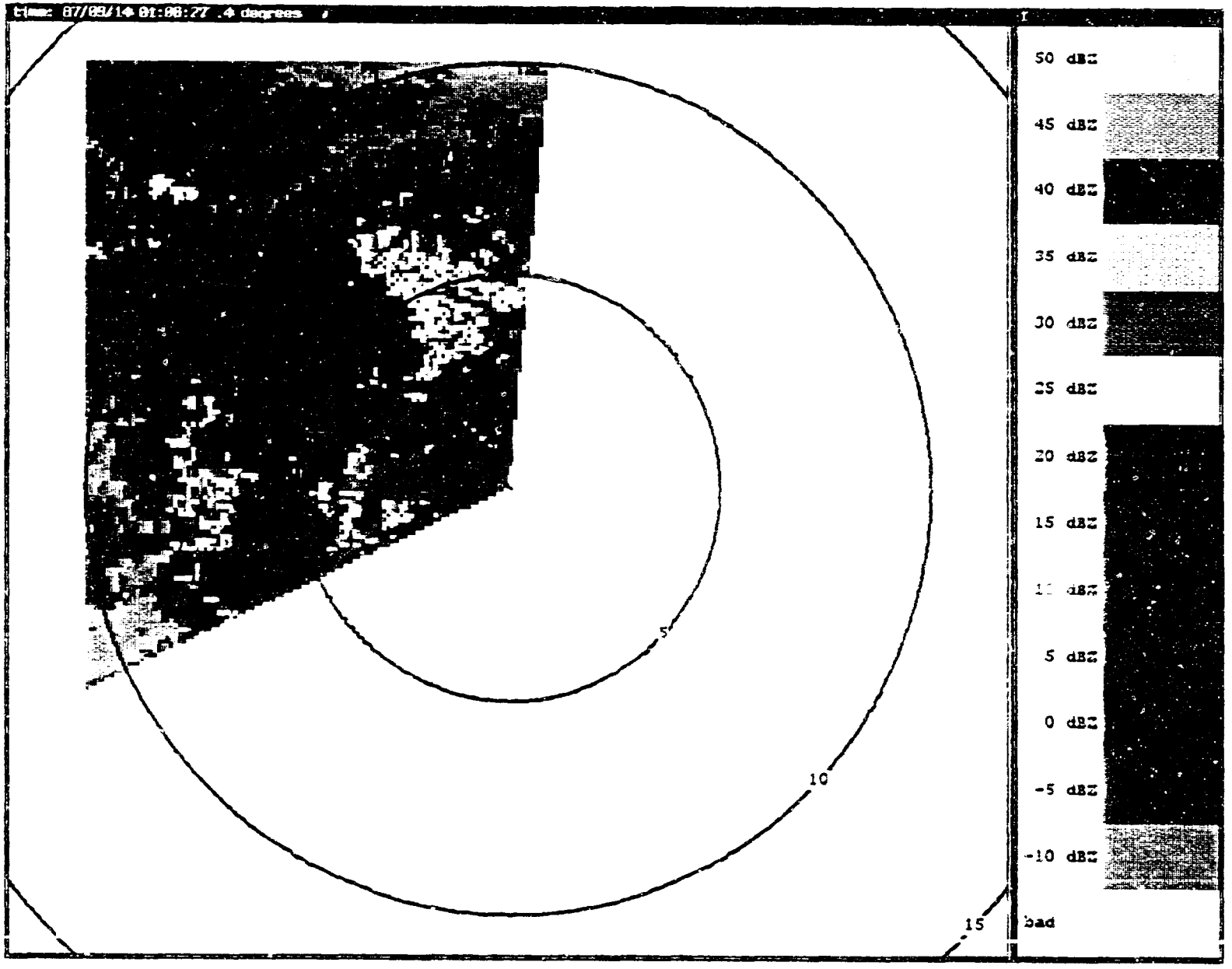

Figure B-63. PPI scan of reflectivity at 0.4 degrees elevation during microburst at 01:06:27 UT on Sept. 13, 1987.

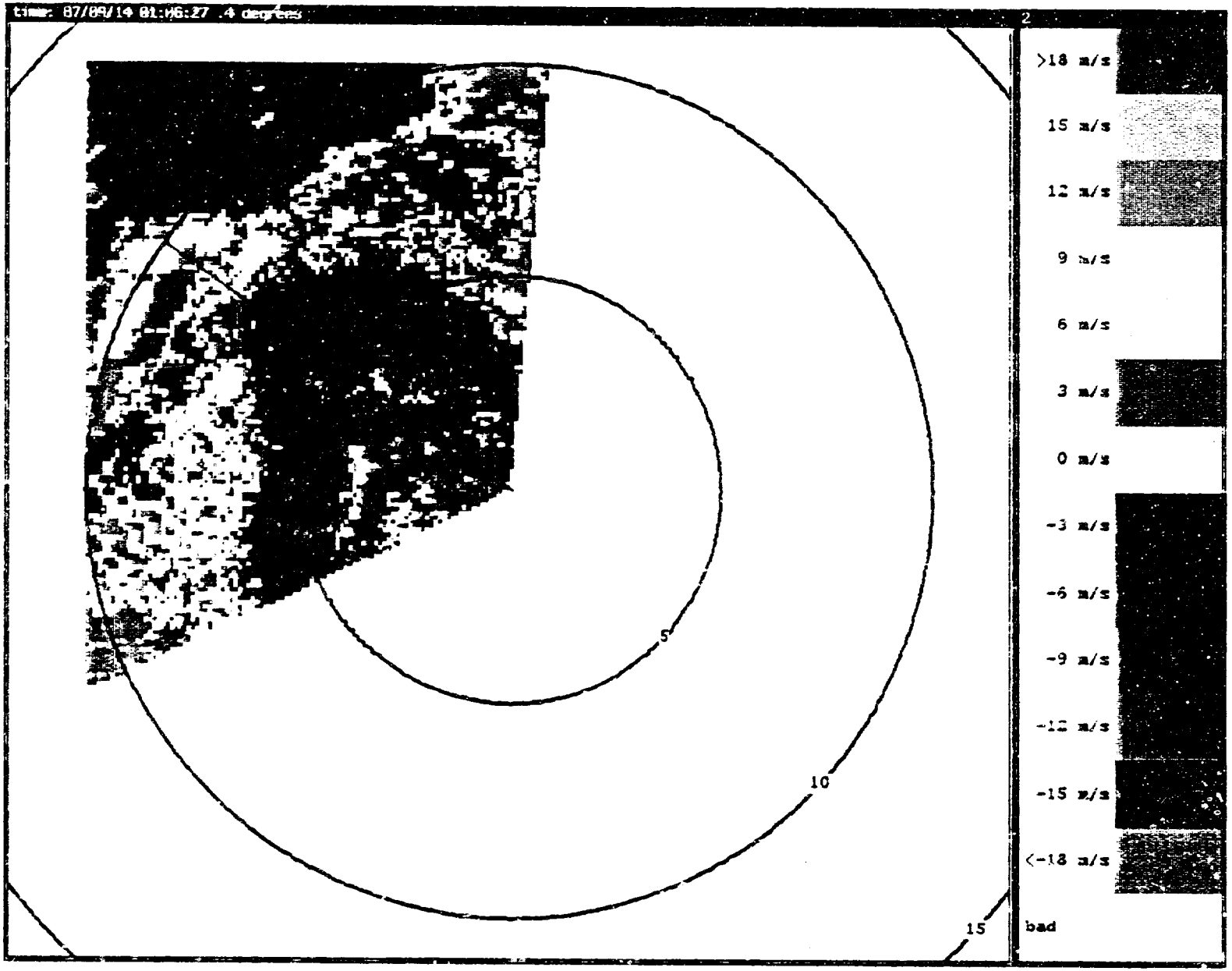

Figure B-64. PPI scan of velocity at 0.4 degrees elevation during microburst at 01:06:27 UT on Sept. 13, 1987.

Proj:FLOWS Site:Denver Radar:FL-2 Date: 9-14-87 Time: 1:16:54 Scan:21 Tilt: 4 Product:V / 2

Time	Elev	Az	0.20		0.44		0.68		0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84	
1:16:58	16.00	356.9	-2	-4	-8	-6	-5	-4	-3	1	3	.	-2	-5	-7	-6	-4	-2	3	3	3	3	4	5	4	.
1:16:58	14.90	356.9	-1	-4	-7	-7	-6	-5	-3	2	3	0	-2	-3	-7	-7	-5	-1	3	3	4	3	5	5	3	.
1:16:58	13.90	356.9	1	-4	-7	-7	-6	-4	-2	2	3	-2	-2	-1	-6	-7	-5	-1	3	3	4	3	4	3	3	.
1:16:58	12.80	356.9	-2	-4	-7	-9	-5	-4	.	2	3	-1	0	2	-3	-5	-5	-2	3	3	2	3	3	3	3	.
1:16:58	11.70	356.9	-2	-3	-5	-9	-5	-4	2	3	3	1	0	-3	-3	-4	-4	-3	2	3	3	3	3	3	4	.
1:16:58	10.60	356.9	0	-4	-6	-9	-5	-5	3	4	3	1	2	-2	-2	-3	-4	-3	1	1	2	2	3	4	3	.
1:16:58	9.60	356.9	-1	-3	-6	-9	-4	-5	-1	3	3	3	3	3	-2	-1	-3	-2	1	-1	-1	1	3	4	4	.
1:16:58	8.50	356.9	-2	-3	-5	-8	-4	-4	-2	3	3	2	3	4	2	2	2	-2	-2	-3	-2	0	2	3	3	.
1:16:58	7.40	356.9	-3	-3	-5	-7	-5	-4	-3	3	3	3	3	3	3	4	3	2	-2	-3	-2	-2	1	2	-2	.
1:16:58	6.30	356.9	-3	-3	-4	-6	-4	-2	-2	3	3	3	3	3	3	3	3	2	-1	-4	-3	-3	-4	-3	-4	.
1:16:58	5.40	356.9	-2	-3	-4	-7	-4	-2	0	3	3	4	3	4	4	4	3	2	1	-3	-4	-3	-5	-3	-3	.
1:16:59	4.60	356.9	-2	-4	-5	-7	-4	-2	1	4	4	4	3	4	5	4	3	.	.	-5	-4	-5	-4	-4	-5	.
1:16:59	3.90	356.9	-1	-4	-4	-8	-4	-2	3	4	4	5	3	3	5	5	3	0	-2	-5	-4	-4	-4	-4	-4	.
1:16:59	3.20	356.9	-3	-3	-5	-7	-4	-2	3	5	5	5	5	3	5	5	4	2	-2	-4	-4	-3	-4	-4	-3	.
1:16:59	2.60	356.9	-1	-3	-5	-7	-3	-2	3	4	5	6	5	3	6	6	3	0	-2	-4	-4	-4	-3	-2	-3	.
1:16:59	2.20	356.9	-1	-3	-5	-6	-3	-2	2	4	5	6	5	3	6	7	4	2	-2	-3	-3	-3	-3	-3	-3	.
1:16:59	1.80	356.9	-1	-3	-5	-6	-3	-2	2	5	6	6	5	3	5	6	4	1	-2	-3	-3	-3	-3	-2	-2	.
1:16:59	1.60	356.9	-3	-3	-6	-7	-3	-2	3	5	6	7	5	3	5	5	4	0	-2	-4	-4	-2	-2	-3	-3	.
1:16:59	1.30	356.9	-1	-3	-6	-7	-3	-2	3	5	5	7	5	3	6	5	5	-2	-3	-3	-3	-2	-2	-3	-3	.
1:16:59	1.00	356.9	-2	-3	-7	-7	-4	-2	3	5	6	7	5	3	5	5	3	-2	-3	-3	-4	-2	2	-3	-3	.
1:16:59	0.70	356.9	-3	-3	-7	-7	-4	-2	3	5	6	6	5	3	4	4	3	-2	-3	-4	-3	-2	3	-1	-3	.
1:16:59	0.30	356.9	-3	-3	-6	-8	-4	-2	2	5	6	6	4	2	4	4	2	-3	-3	-3	-3	0	3	1	-2	.
Time	Elev	Az	0.20		0.44		0.68		0.92		1.16		1.40		1.64		1.88		2.12		2.36		2.60		2.84	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 9-14-87 Time: 1:16:54 Scan:21 Tilt: 4 Product:V / 2

Time	Elev	Az	7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56		9.80		10.04	
1:16:58	16.00	356.9	.	3	3	.	5	5	5	5	6	7	7	4	3	3	4	6	7	8	7	7	6	6	6	6
1:16:58	14.90	356.9	3	.	5	0	3	4	5	5	4	4	3	4	3	4	5	4	5	6	6	6	6	5	5	5
1:16:58	13.90	356.9	2	3	8	3	5	4	4	3	3	3	4	4	3	4	4	.	5	5	5	4	4	3	3	3
1:16:58	12.80	356.9	3	6	5	3	3	3	2	2	3	3	4	3	3	3	3	4	3	3	4	4	3	3	2	2
1:16:58	11.70	356.9	3	5	6	4	3	3	3	3	3	3	2	3	3	3	2	3	3	3	2	2	3	2	2	2
1:16:58	10.60	356.9	3	3	4	4	3	3	2	3	3	3	3	2	2	2	2	3	3	3	2	1	0	0	-3	-3
1:16:58	9.60	356.9	3	3	3	2	3	3	3	0	0	0	-2	-2	-3	0	0	-2	-2	-3	-2	-3	-4	-3	-5	-5
1:16:58	8.50	356.9	-2	2	0	.	-1	2	-1	-2	-3	-2	-3	-4	-3	-3	-4	-3	-5	-5	-5	-8	-6	-7	-6	-6
1:16:58	7.40	356.9	-2	-2	-2	-2	-4	-5	-4	-5	-4	-4	-3	-4	-6	-5	-6	-5	-5	-4	-6	-8	-7	-5	-5	-5
1:16:58	6.30	356.9	-2	-2	-3	-3	-5	-6	-8	-8	-6	-8	-5	-5	-5	-5	-5	-6	-6	-6	-7	-8	-7	-6	-6	-6
1:16:58	5.40	356.9	-3	-3	-4	-3	-5	-6	-7	-8	-7	-7	-6	-6	-6	-6	-5	-4	-5	-6	-5	-3	-5	-6	-6	-6
1:16:59	4.60	356.9	-4	-5	-4	-4	-5	-6	-6	-7	-7	-7	-6	-7	-5	-5	-5	-3	-3	-3	-4	-3	-4	-5	-5	-6
1:16:59	3.90	356.9	-3	-3	-3	-4	-4	-5	-4	-4	-5	-6	-6	-5	-5	-4	-5	-5	-4	-3	-4	-4	-3	-5	-5	-5
1:16:59	3.20	356.9	-5	-3	-3	-3	-3	-2	-3	-2	-3	-3	-2	2	2	3	-2	-4	-5	-3	-4	-3	-3	-4	-4	-4
1:16:59	2.60	356.9	-5	-6	-3	-3	-2	0	-3	-2	2	3	3	4	5	5	-2	-3	-3	-4	-3	-3	-4	-3	-4	-3
1:16:59	2.20	356.9	-7	-6	-4	-3	-2	-2	-2	1	3	3	5	4	4	4	-2	-3	-3	-4	-3	-3	-2	-2	-2	-2
1:16:59	1.80	356.9	-7	-7	-5	-4	-2	-2	-2	2	23	4	4	3	1	3	0	-3	-3	-3	-3	-3	-3	-1	-1	.
1:16:59	1.60	356.9	-7	-6	-4	-3	-2	-2	-2	1	3	4	3	1	-3	-2	-3	-3	-2	-2	-3	-3	-2	1	3	3
1:16:59	1.30	356.9	-6	-6	-4	-3	-3	-3	-3	.	2	2	-1	-4	-5	-3	0	-2	-3	-3	-2	-3	-1	2	3	5
1:16:59	1.00	356.9	-6	-6	-4	-3	-3	-3	-3	1	1	-1	-3	-5	-4	-4	-2	-2	-3	-3	-2	-2	-1	4	4	5
1:16:59	0.70	356.9	-6	-5	-4	-4	-3	-3	-3	-2	-2	-3	-4	-6	-6	-4	-2	0	-2	-3	-2	3	2	4	4	7
1:16:59	0.30	356.9	-6	-5	-3	-3	-3	-3	-2	.	-3	-4	-5	-7	-6	-3	-1	3	2	3	6	5	5	6	8	8
Time	Elev	Az	7.40		7.64		7.88		8.12		8.36		8.60		8.84		9.08		9.32		9.56		9.80		10.04	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 9-14-87 Time: 1:16:54 Scan:21 Tilt: 4 Product:V / 2

Time	Elev	Az	10.28		10.52		10.76		11.00		11.24		11.48	
1:16:58	16.00	356.9	6	6	6	5	6	6	6	6	6	5	7	7
1:16:58	14.90	356.9	5	4	4	3	3	3	4	3	3	3	4	4
1:16:58	13.90	356.9	3	3	3	3	3	3	3	3	3	2	3	2
1:16:58	12.80	356.9	2	2	3	3	3	3	3	.	-2	-2	-2	-2
1:16:58	11.70	356.9	2	1	2	3	2	-1	-2	-1	-2	-2	-3	-3
1:16:58	10.60	356.9	-4	-3	-3	-3	-3	-2	-2	2	3	3	3	-2
1:16:58	9.60	356.9	-5	-4	-5	-5	-3	-4	-3	-3	.	2	2	3
1:16:58	8.50	356.9	-5	-5	-6	-4	-3	-4	-4	-5	-4	-2	-2	-2
1:16:58	7.40	356.9	-5	-5	-4	-4	-4	-4	-4	-5	-4	-4	-3	-3
1:16:58	6.30	356.9	-7	-5	-4	-4	-4	-3	-1	-3	-6	-6	-4	-3
1:16:58	5.40	356.9	-7	-5	-5	-4	-3	-3	0	0	-4	-5	-3	-2
1:16:59	4.60	356.9	-5	-5	-5	-3	-3	-2	-2	-1	-1	-2	-2	-5
1:16:59	3.90	356.9	-4	-5	-5	-5	-5	-6	-4	-4	-5	-5	-3	-7
1:16:59	3.20	356.9	-4	-5	-5	-6	-7	-8	-7	-5	-4	-5	-4	-3
1:16:59	2.60	356.9	-3	-3	-4	-4	-4	-5	-5	-4	-4	-4	-3	-2
1:16:59	2.20	356.9	-3	-1	-1	0	1	1	-3	-4	-3	-3	-2	2
1:16:59	1.80	356.9	-1	2	4	3	3	2	2	1	3	2	3	3
1:16:59	1.60	356.9	2	4	5	5	4	3	3	5	4	5	5	4
1:16:59	1.30	356.9	4	6	5	6	5	5	5	5	4	6	5	5
1:16:59	1.00	356.9	5	6	8	7	7	5	6	5	6	5	5	6
1:16:59	0.70	356.9	7	8	9	8	7	7	6	5	7	7	7	6
1:16:59	0.30	356.9	11	13	11	10	7	7	7	7	7	8	8	6
Time	Elev	Az	10.28		10.52		10.76		11.00		11.24		11.48	

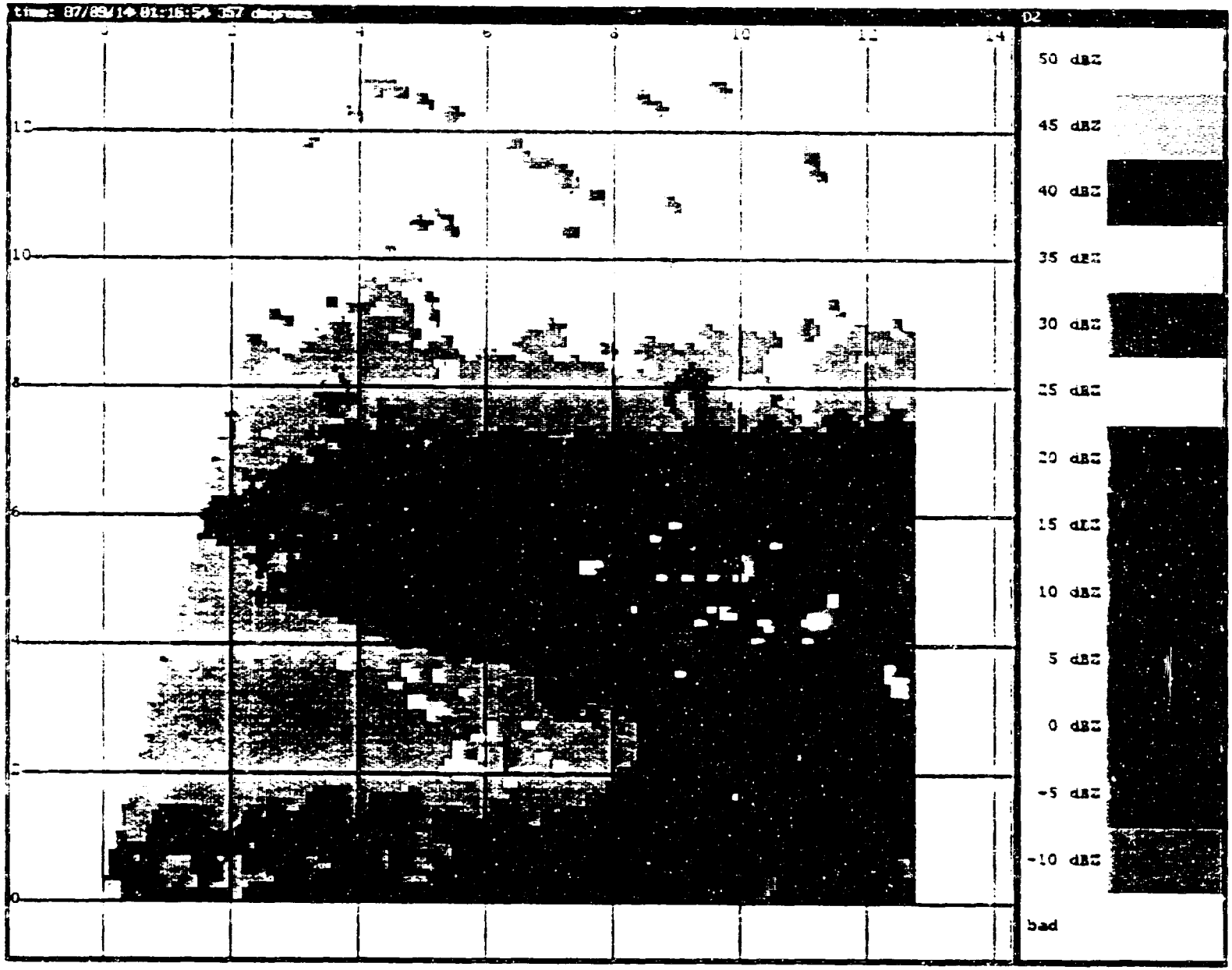

Figure B-65. RHI scan of reflectivity at 357 degrees azimuth during microburst at 01:16:54 UT on Sept. 13, 1987.

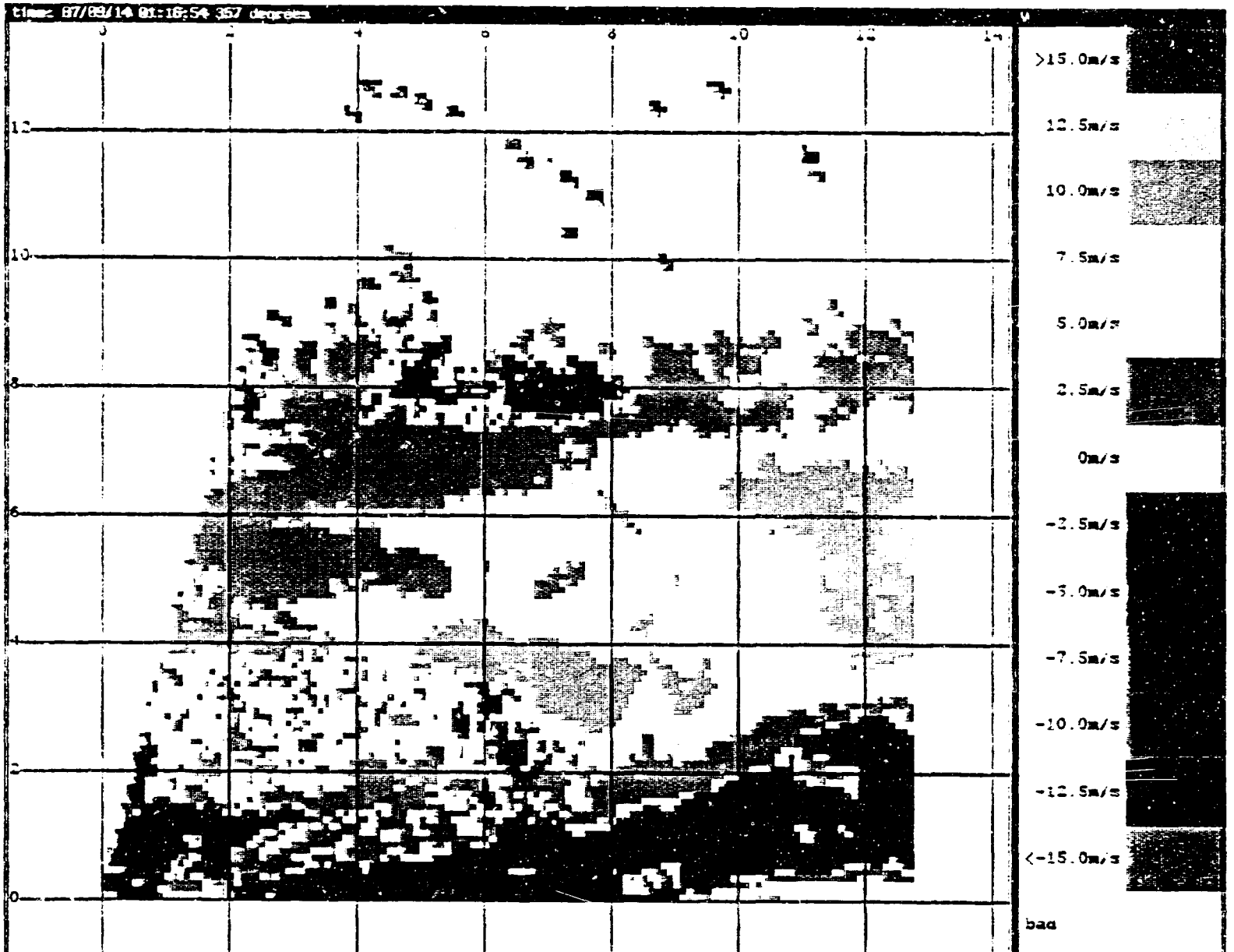

Figure B-66. RHI scan of velocity at 357 degrees azimuth during microburst at 01:16:54 UT on Sept. 13, 1987.

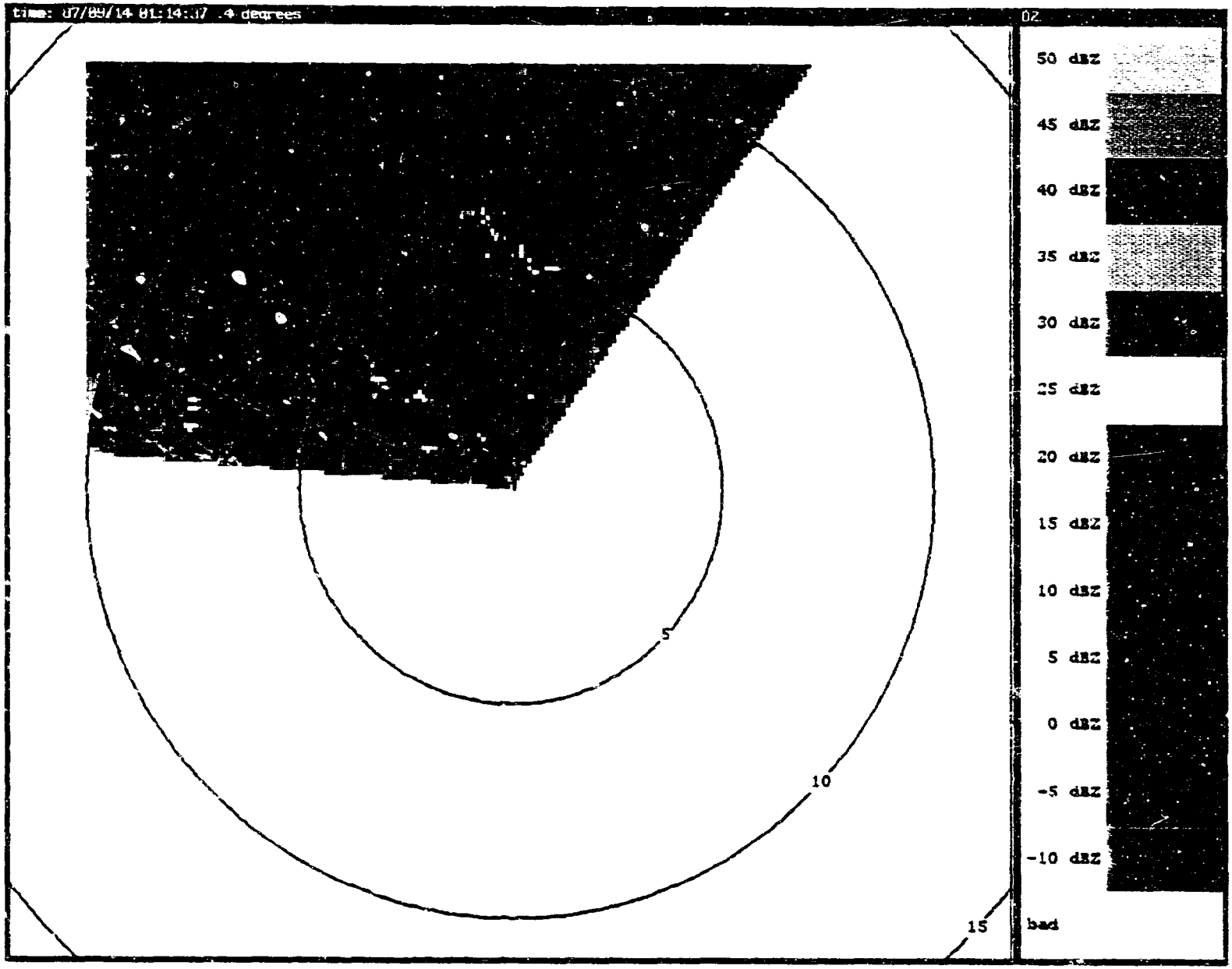

Figure B-67. PPI scan of reflectivity at 0.4 degrees elevation during microburst at 01:14:37 UT on Sept. 13, 1987.

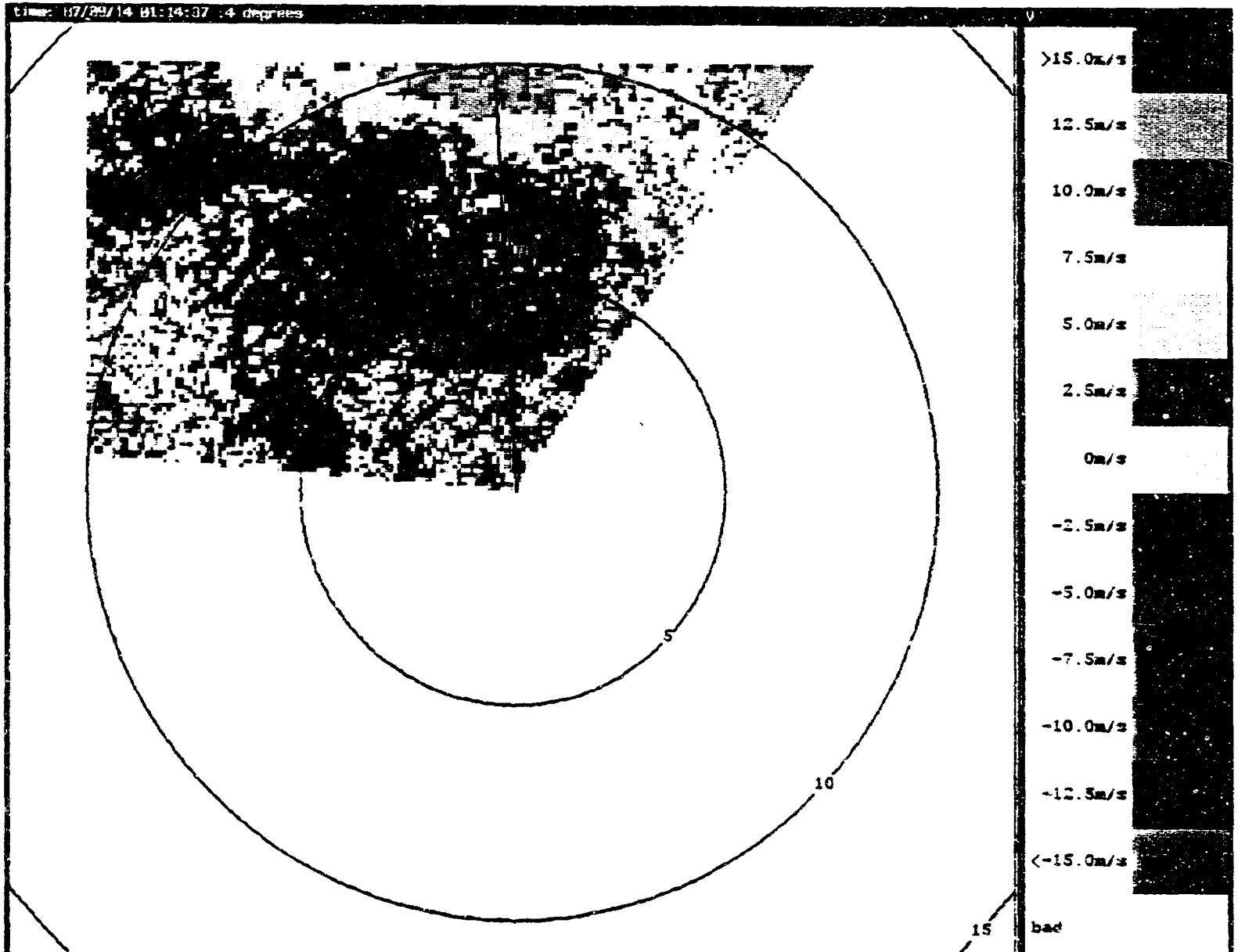

Figure B-68. PPI scan of velocity at 0.4 degrees elevation during microburst at 01:14:37 UT on Sept. 13, 1987.

8. June 25, 1988

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-25-88 Time:19:37: 5 Scan: 5 Tilt: 4 Product:V / 2

Time	Elev	Az	0.20	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84
19:37:08	14.20	99.9	-12 -13 -12 -13 -12 -6	-6 -6 -5	-4 -3 -3	3 -4	2 3 3	3 -3 -6	-7 -9 -11	-10
19:37:08	13.10	100.0	-11 -14 -13 -14 -14 -8	-6 -4 -5	-3 -3 -2	. -4	-1 3 3	3 -1 -5	-7 -9 -12	-10
19:37:09	12.00	100.0	-12 -13 -13 -14 -13 -10	-7 -5 -4	-3 -3 -3	-4 -4	. 3 3	3 -4 -5	-8 -9 -12	
19:37:09	10.90	100.0	-12 -12 -14 -15 -16 -10	-7 -5 -3	-3 -3 -3	-4 -5	3 2 1	3 3 .	-5 -7 -8	-10
19:37:09	9.80	100.0	-12 -13 -12 -15 -17 -11	-10 -6 -3	-3 -3 -2	-4 -3	-1 -2 3	4 4 3	-4 -6 -6	-5
19:37:09	8.70	100.0	-11 -12 -12 -15 -18 -13	-13 -6 -4	-2 -3 -1	-1 -3	-2 0 4	4 4 5	-3 -4 -4	-4
19:37:09	7.60	100.0	-11 -11 -11 -15 -19 -14	-12 -6 -4	-3 -3 -1	-2 0	-1 3 4	4 4 4	4 -3 -3	0
19:37:09	6.50	99.9	-12 -12 -11 -15 -18 -15	-12 -7 -4	-3 -2 -1	-3 3	3 4 4	4 5 4	4 3 3	6
19:37:09	5.50	99.9	-11 -12 -11 -14 -20 -15	-11 -8 -5	-4 -3 -2	1 3	2 3 3	5 5 4	4 4 4	7
19:37:09	4.60	99.9	-12 -12 -11 -14 -19 -15	-11 -9 -7	-5 -4 -3	-1 3	-1 -3 3	6 6 5	6 5 6	8
19:37:09	3.80	99.9	-11 -12 -11 -13 -19 -16	-13 -10 -8	-5 -4 -4	-4 3	-2 -4 3	5 7 7	8 5 9	10
19:37:09	3.00	99.9	-11 -11 -11 -13 -19 -17	-16 -12 -8	-8 -4 -6	-5 -2	5 0 4	4 5 7	9 8 11	11
19:37:09	2.40	99.9	-10 -11 -11 -12 -19 -17	-17 -14 -10	-9 -5 -6	-5 -3	4 4 4	3 4 6	9 10 11	11
19:37:09	1.80	99.9	-10 -11 -11 -11 -19 -19	-19 -16 -11	-9 -7 -5	-5 -3	4 4 5	5 4 6	9 11 12	11
19:37:09	1.40	99.9	-10 -11 -11 -11 -19 -19	-20 -17 -12	-8 -6 -5	-4 -3	4 5 6	5 4 6	9 11 13	10
19:37:09	1.10	99.9	-10 -10 -11 -10 -18 -19	-21 -17 -12	-9 -6 -4	-4 -3	4 6 7	6 4 7	9 11 12	10
19:37:09	0.80	99.9	-9 -9 -10 -9 -19 -20	-22 -17 -13	-9 -7 -5	-3 -2	5 7 7	7 6 7	10 11 11	11
19:37:10	0.50	99.9	-9 -9 -10 -8 -18 -20	-23 -18 -13	-10 -6 -4	-3 .	5 8 8	8 7 7	10 11 11	11
19:37:10	0.30	99.9	-10 -10 -10 -8 -17 -20	-23 -19 -13	-10 -7 -4	-2 3	6 9 8	8 7 7	11 11 12	12
19:37:10	0.10	99.9	-8 -9 -10 -9 -18 -20	-24 -19 -14	-11 -7 -4	-1 2	6 9 8	7 7 8	7 12 12	13
Time	Elev	Az	0.20	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84

19:37:08 15.30

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-25-88 Time:19:37: 5 Scan: 5 Tilt: 4 Product:V / 2

Time	Elev	Az	3.08	3.32	3.56
19:37:08	15.30	99.9	-10 -12 -12 -12 -10
19:37:08	14.20	99.9	-10 -12 -12 -12 -11
19:37:08	13.10	100.0	-11 -11 -11 -11 -10
19:37:09	12.00	100.0	-10 -11 -10 -11 -10
19:37:09	10.90	100.0	-10 -10 -10 -9 -10
19:37:09	9.80	100.0	-7 -8 -8 -9 -8
19:37:09	8.70	100.0	-5 -8 -7 -7 -6
19:37:09	7.60	100.0	-1 -6 -5 -4 -4
19:37:09	6.50	99.9	5 4 -5 -3 1
19:37:09	5.50	99.9	6 4 4 5 5
19:37:09	4.60	99.9	9 7 7 7 7
19:37:09	3.80	99.9	10 9 9 10 9
19:37:09	3.00	99.9	10 10 11 10 11
19:37:09	2.40	99.9	10 11 11 10 11
19:37:09	1.80	99.9	11 12 11 10 11
19:37:09	1.40	99.9	12 12 12 10 12
19:37:09	1.10	99.9	12 12 11 11 12
19:37:09	0.80	99.9	12 11 11 11 12
19:37:10	0.50	99.9	11 11 12 12 12
19:37:10	0.30	99.9	1 11 12 12 12
19:37:10	0.10	99.9	. 10 12 13 12
Time	Elev	Az	3.08	3.32	3.56

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-25-88 Time:19:37:11 Scan: 5 Tilt: 5 Product:V / 2

Time	Elev	Az	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84	3.08
19:37:11	0.30	102.0	-10 -12 -20 -21	-23 -17 -12 -11	-7 -4 -3 4	6 9 9 10	8 7 9 11	12 12 8 10
19:37:11	0.50	102.0	-10 -12 -21 -20	-23 -16 -13 -10	-8 -4 -4 4	6 9 8 10	8 7 10 11	12 12 11 11
19:37:11	0.80	102.0	-11 -13 -20 -21	-23 -16 -11 -10	-8 -4 -4 3	5 8 7 9	8 7 9 11	12 12 11 10
19:37:11	1.30	102.0	-11 -16 -20 -20	-23 -14 -10 -9	-7 -4 -4 2	4 8 7 10	8 7 9 11	11 11 11 11
19:37:11	1.80	102.0	-11 -15 -19 -19	-21 -13 -10 -8	-7 -4 -4 -1	4 6 5 8	7 7 9 11	12 11 11 10
19:37:11	2.40	102.0	-11 -15 -19 -18	-19 -11 -9 -8	-6 -3 -4 2	4 3 5 6	7 5 9 11	11 10 11 11
19:37:11	3.10	102.0	-11 -15 -19 -18	-15 -9 -8 -7	-6 -4 -4 3	4 3 4 4	4 6 8 10	10 9 9 9
19:37:11	3.80	102.0	-11 -17 -19 -17	-12 -8 -7 -5	-4 -4 -4 3	4 3 4 4	5 7 7 8	9 9 7 7
19:37:11	4.60	102.0	-11 -16 -18 -15	-10 -7 -6 -5	-3 -3 -2 1	4 0 4 4	6 6 5 6	9 9 5 5
19:37:11	5.50	102.0	-11 -14 -18 -14	-9 -7 -5 -4	-3 3 3 3	4 1 3 5	6 5 4 5	6 7 4 5
19:37:11	6.40	102.0	-11 -16 -18 -14	-9 -6 -4 -4	-3 2 3 2	3 3 4 4	4 4 4 3	5 5 4 -1
19:37:11	7.40	102.0	-11 -17 -18 -15	-10 -4 -4 -3	-3 -2 . -2	2 3 4 3	4 4 3 3	3 4 3 -4
19:37:11	8.50	102.0	-10 -16 -19 -13	-11 -6 -4 -3	-1 -3 -3 -4	2 0 2 3	4 5 2 -4	-4 -3 -5 -5
19:37:12	9.60	102.0	-11 -15 -18 -11	-9 -5 -3 -3	-2 -1 -4 -5	-3 -2 0 4	4 4 -3 -5	-4 -5 -7 -5
19:37:12	10.80	102.0	-10 -15 -17 -10	-7 -4 -4 -3	-3 -2 -4 -4	-4 . 2 3	3 3 -5 -6	-5 -7 -7 -5
19:37:12	11.90	102.0	-11 -14 -13 -9	-5 -4 -4 -3	-3 -2 -1 -4	-4 2 3 3	3 -1 -6 -7	-7 -9 -8 -6
19:37:12	13.00	102.0	-12 -13 -10 -8	-6 -4 -5 -3	-3 0 3 -4	-2 0 3 3	1 -4 -7 -8	-9 -8 -10 -10
19:37:12	14.10	102.0	-13 -14 -10 -7	-6 -5 -5 -3	-3 -2 3 -2	-2 2 3 1	-4 -6 -7 -8	-11 -10 -10 -11
19:37:12	15.20	102.0	-12 -12 -8 -6	-7 -7 -5 -4	-3 -3 2 2	1 1 0 1	-6 -7 -7 -8	-10 -11 -9 -11
19:37:12	16.20	102.0	-11 -12 -7 -6	-7 -7 -5 -5	-4 -3 2 3	3 -2 -2 -4	-5 -8 -8 -9	-9 -10 -10 -13
19:37:12	17.30	102.0	-12 -11 -6 -7	-8 -8 -6 -6	-4 -3 -4 .	2 -3 -4 -4	-8 -8 -8 -9	-10 -10 -10 -11
19:37:12	18.30	102.0	-14 -11 -5 -7	-8 -8 -6 -7	-5 -4 -4 -3	-1 -4 -5 -6	-8 -8 -9 -9	-10 -9 -10 -11
19:37:12	19.40	102.0	-13 -10 -5 -7	-8 -9 -6 -6	-4 -4 -4 -4	-2 -3 -4 -7	-8 -8 -9 -9	-9 -9 -10 -12
19:37:12	20.40	102.0	-13 -10 -5 -8	-8 -10 -8 -5	-5 -4 -4 -3	-3 -2 -4 -8	-8 -9 -9 -10	-10 -10 -11 -12
19:37:12	21.60	102.0	-11 -10 -5 -8	-9 -11 -10 -6	-5 -5 -4 -3	-3 -3 -5 -9	-10 -10 -11 -10	-10 -9 -11 -12
19:37:12	22.60	102.0	-10 -9 -4 -9	-9 -12 -12 -7	-5 -4 -4 -3	-4 -4 -7 -8	-10 -10 -11 -11	-10 -10 -11 -11
19:37:12	23.70	102.0	-10 -9 -5 -9	-10 -13 -13 -10	-6 -5 -5 -4	-3 -4 -7 -8	-10 -11 -9 -10	-10 -10 -10 -10
19:37:12	24.80	102.0	-8 -9 -6 -11	-12 -14 -13 -10	-7 -5 -7 -5	-5 -6 -7 -8	-11 -12 -10 -10	-9 -8 -9 -10
19:37:13	25.80	102.0	-8 -8 -7 -12	-12 -14 -13 -11	-7 -6 -6 -7	-7 -7 -7 -8	-10 -10 -10 -10	-9 -9 -9 -11
19:37:13	26.90	102.0	-7 -8 -7 -13	-13 -13 -14 -11	-8 -5 -8 -9	-7 -9 -9 -9	-10 -10 -11 -10	-10 -10 -9 -10
19:37:13	27.90	102.0	-7 -6 -7 -13	-13 -13 -14 -12	-8 -5 -8 -9	-8 -11 -11 -10	-11 -10 -12 -11	-11 -11 -8 -12
19:37:13	29.00	102.0	-7 -7 -8 -11	-13 -14 -15 -11	-8 -9 -11 -12	-11 -11 -12 -11	-11 -11 -12 -11	-11 -11 -9 -13
19:37:13	30.10	102.0	-7 -6 -7 -11	-14 -13 -15 -12	-10 -10 -10 -12	-14 -13 -12 -12	-14 -11 -12 -11	-10 -12 -12
19:37:13	31.10	102.0	-7 -6 -8 -11	-13 -14 -14 -12	-10 -12 -13 -14	-14 -14 -13 -14	-11 -12 -12 -12	-11 -9 -13 -12
19:37:13	32.20	102.0	-7 -7 -8 -10	-14 -14 -14 -12	-10 -12 -15 -15	-14 -15 -12 -14	-12 -12 -12 -12	-11 -10 -13 -12
Time	Elev	Az	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84	3.08

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-25-88 Time:19:37:11 Scan: 5 Tilt: 5 Product:V / 2

Time	Elev	Az	3.32		3.56		3.80		4.04		4.28		4.52	
19:37:11	0.30	102.0	11	12	12	12	10	8	7	7	9	9	5	
19:37:11	0.50	102.0	11	13	13	12	10	8	7	8	9	9	5	
19:37:11	0.80	102.0	11	12	12	10	10	8	8	8	8	8	0	
19:37:11	1.30	102.0	12	12	12	10	9	10	9	9	8	3	-4	
19:37:11	1.80	102.0	12	12	12	9	9	11	10	8	6	-3	-4	
19:37:11	2.40	102.0	11	12	11	8	7	10	9	6	5	-2	-4	
19:37:11	3.10	102.0	9	11	9	7	7	8	8	5	3	-3	-4	
19:37:11	3.80	102.0	8	9	8	7	6	7	5	4	-3	-3	-4	
19:37:11	4.60	102.0	7	8	8	8	5	3	-5	-5	-4	-4	-4	
19:37:11	5.50	102.0	5	6	8	6	4	-3	-6	-6	-4	-4	-5	
19:37:11	6.40	102.0	-2	4	6	4	-3	-6	-7	-6	-6	-5	-5	
19:37:11	7.40	102.0	-4	-4	-4	-4	-5	-7	-7	-7	-7	-6	-6	
19:37:11	8.50	102.0	-4	-4	-4	-5	-7	-8	-9	-8	-8	-8	-7	
19:37:12	9.60	102.0	-4	-6	-5	-7	-8	-9	-10	-10	-9	-9	-8	
19:37:12	10.80	102.0	-6	-8	-8	-9	-10	-10	-12	-10	-11	-11	-10	
19:37:12	11.90	102.0	-8	-8	-9	-10	-11	-11	-12	-13	-13	-12	-12	
19:37:12	13.00	102.0	-11	-10	-11	-10	-11	-12	-14	-15	-13	-13	-12	
19:37:12	14.10	102.0	-11	-11	-11	-12	-13	-14	-15	-15	-14	-13	-12	
19:37:12	15.20	102.0	-11	-11	-10	-11	-13	-14	-15	-15	-14	-13	-12	
19:37:12	16.20	102.0	-12	-11	-10	-12	-13	-14	-15	-15	-13	-11	-11	
19:37:12	17.30	102.0	-12	-12	-12	-13	-15	-15	-14	-14	-13	-12	-11	
19:37:12	18.30	102.0	-12	-12	-13	-15	-14	-15	-13	-13	-12	-12	-12	
19:37:12	19.40	102.0	-11	-12	-12	-13	-14	-14	-13	-13	-14	-13	-13	
19:37:12	20.40	102.0	-11	-12	-11	-14	-15	-14	-13	-14	-14	-13	-13	
19:37:12	21.60	102.0	-11	-10	-11	-15	-14	-13	-13	-14	-14	-13	-14	
19:37:12	22.60	102.0	-12	-11	-13	-15	-14	-14	-14	-14	-14	-14	-14	
19:37:12	23.70	102.0	-12	-12	-13	-14	-14	-14	-15	-15	-15	-15	-15	
19:37:12	24.80	102.0	-12	-12	-13	-14	-14	-14	-15	-15	-15	-15	-15	
19:37:13	25.80	102.0	-13	-12	-14	-14	-14	-14	-15	-15	-16	-16	-14	
19:37:13	26.90	102.0	-12	-12	-14	-14	-14	-14	-15	-16	-18	-17	-15	
19:37:13	27.90	102.0	-12	-12	-13	-14	-14	-14	-16	-16	-18	-17	-17	
19:37:13	29.00	102.0	-12	-11	-13	-14	-14	-14	-16	-17	-18	-18	-17	
19:37:13	30.10	102.0	-11	-12	-14	-14	-14	-14	-15	-18	-18	-18	-18	
19:37:13	31.10	102.0	-11	-14	-14	-14	-14	-15	-16	-19	-19	-18	-17	
19:37:13	32.20	102.0	-12	-14	-14	-15	-15	-14	-18	-20	-21	-16	-14	
Time	Elev	Az	3.32		3.56		3.80		4.04		4.28		4.52	

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-25-88 Time:19:37:52 Scan: 6 Tilt: 2 Product:V / 2

Time	Elev	Az	0.20	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84
19:37:56	20.00	95.9	-19 -22 -21 -16 -11 -17 -11	-8 -8 -7 -5 -4 -5 -8	-5 -5 -7 -7 -5 -7 -6	-8 -8 -8								
19:37:56	18.90	95.9	-19 -22 -21 -16 -13 -17 -10	-7 -7 -6 -4 -4 -4 -5	-4 -4 -5 -5 -5 -5 -5	-5 -7 -7								
19:37:56	17.80	95.9	-18 -23 -21 -16 -13 -15 -10	-8 -7 -5 -4 -4 -3 -3	-3 -3 -4 -5 -5 -4 -3	-4 -5 -7								
19:37:56	16.70	95.9	-19 -23 -23 -15 -14 -14 -10	-6 -6 -4 -3 -4 -3 -3	-1 2 -4 -3 -4 -4 -3	-3 -4 -6								
19:37:56	15.60	95.9	-20 -25 -22 -16 -13 -14 -11	-5 -5 -4 -3 -3 -1 3	3 4 1 -3 -4 -4 -3	-3 -5 -7								
19:37:56	14.60	95.9	-19 -24 -23 -16 -12 -12 -12	-7 -4 -4 -4 -3 -1 4	3 4 3 2 -3 -3 -3	-3 -5 -7								
19:37:56	13.50	95.9	-20 -26 -24 -15 -11 -13 -13	-6 -3 -4 -4 -1 2 3	3 3 3 4 3 -2 -3	-4 -6 -7								
19:37:56	12.40	95.9	-20 -26 -24 -15 -11 -13 -13	-7 -5 -4 -3 2 3 4	4 4 3 4 3 3 -3	-4 -6 -8								
19:37:56	11.30	95.9	-19 -28 -25 -16 -11 -13 -14	-8 -5 -4 -4 3 3 4	4 4 4 4 5 4 3	-3 -5 -5								
19:37:56	10.20	95.9	-19 -26 -25 -15 -11 -11 -13	-10 -5 -4 -4 3 3 4	4 5 4 5 7 4 3	-3 -4 -4								
19:37:56	9.10	95.9	-18 -26 -26 -17 -11 -10 -12	-11 -5 -4 -4 4 4 4	4 4 4 5 6 5 3	-1 -4 -4								
19:37:56	8.00	95.9	-17 -25 -27 -17 -12 -10 -11	-10 -4 -3 -2 4 4 3	4 4 5 6 5 5 3	. -1 -4								
19:37:56	6.90	95.9	-16 -23 -26 -19 -14 -7 -9	-8 -3 -3 -2 3 3 3	5 6 5 4 4 6 4	3 5 -2								
19:37:56	5.80	95.9	-19 -20 -25 -20 -14 -8 -7	-7 -5 -4 -3 3 4 4	7 8 7 4 4 6 4	5 5 6								
19:37:56	4.90	95.9	-18 -20 -23 -19 -16 -10 -5	-6 -4 -3 -2 4 4 5	6 7 5 4 4 6 7	7 6 7								
19:37:57	4.00	95.9	-18 -21 -23 -21 -16 -12 -6	-7 -2 -3 -2 3 5 6	6 4 4 4 4 9 8	8 6								
19:37:57	3.20	95.9	-18 -19 -22 -21 -17 -15 -7	-4 -4 -4 0 3 4 7	4 2 2 4 3 4 8	8 7 7								
19:37:57	2.60	95.9	-17 -18 -20 -23 -16 -14 -6	-4 -6 -4 -2 4 4 7	4 4 3 4 4 4 7	7 7 7								
19:37:57	2.00	95.9	-16 -19 -18 -23 -17 -11 -5	-4 -6 -4 -5 3 4 7	4 5 4 4 5 5 7	6 8 8								
19:37:57	1.50	95.9	-17 -18 -18 -22 -17 -12 -6	-4 -7 -4 -5 3 4 7	6 5 5 4 5 5 6	6 8 8								
19:37:57	1.10	95.9	-15 -18 -16 -24 -17 -12 -7	-4 -7 -5 -5 3 4 8	5 5 5 4 5 5 6	7 7 8								
19:37:57	0.80	95.9	-12 -17 -16 -24 -18 -11 -6	-3 -7 -5 -5 3 4 8	5 5 4 5 4 5 6	7 7 9								
19:37:57	0.60	95.9	-15 -17 -15 -23 -17 -10 -8	-4 -7 -5 -4 3 4 8	5 5 4 5 5 6 7	7 8 9								
19:37:57	0.30	95.9	-14 -18 -16 -23 -17 -10 -7	-4 -6 -5 -4 3 4 8	6 5 4 4 5 5 7	8 8 6								
19:37:57	0.20	95.9	-12 -17 -16 -23 -17 -10 -9	-3 -6 -4 -3 3 4 7	5 5 4 4 5 5 7	8 8 2								
19:37:57	0.10	95.9	-14 -18 -16 -22 -16 -10 -8	-3 -6 -4 -3 3 5 6	5 6 4 5 4 5 7	8 8 6								
Time	Elev	Az	0.20	0.44	0.68	0.92	1.16	1.40	1.64	1.88	2.12	2.36	2.60	2.84

Proj:FLOWS Site:Denver Radar:FL-2 Date: 6-25-88 Time:19:37:52 Scan: 6 Tilt: 2 Product:V / 2

Time	Elev	Az	3.08		3.32		3.56
19:37:56	20.00	95.9	-8	-9	-11	-12	-12
19:37:56	18.90	95.9	-9	-8	-10	-12	-12
19:37:56	17.80	95.9	-8	-7	-9	-11	-12
19:37:56	16.70	95.9	-7	-7	-7	-10	-12
19:37:56	15.60	95.9	-6	-8	-7	-10	-11
19:37:56	14.60	95.9	-8	-8	-10	-9	-10
19:37:56	13.50	95.9	-10	-10	-10	-8	-8
19:37:56	12.40	95.9	-8	-10	-10	-9	-8
19:37:56	11.30	95.9	-7	-9	-9	-9	-8
19:37:56	10.20	95.9	-7	-9	-8	-8	-8
19:37:56	9.10	95.9	-5	-8	-8	-8	-8
19:37:56	8.00	95.9	-5	-5	-8	-8	-8
19:37:56	6.90	95.9	-4	-4	-7	-7	-7
19:37:56	5.80	95.9	2	-2	-4	-6	-6
19:37:56	4.90	95.9	4	3	2	-4	-5
19:37:57	4.00	95.9	6	4	3	0	-1
19:37:57	3.20	95.9	9	6	4	4	5
19:37:57	2.60	95.9	9	8	5	5	7
19:37:57	2.00	95.9	9	10	7	7	7
19:37:57	1.50	95.9	9	12	10	9	9
19:37:57	1.10	95.9	10	13	12	11	10
19:37:57	0.80	95.9	11	14	14	14	11
19:37:57	0.60	95.9	10	14	15	14	12
19:37:57	0.30	95.9	10	13	15	13	11
19:37:57	0.20	95.9	12	14	15	14	12
19:37:57	0.10	95.9	11	14	15	11	11
Time	Elev	Az	3.08		3.32		3.56

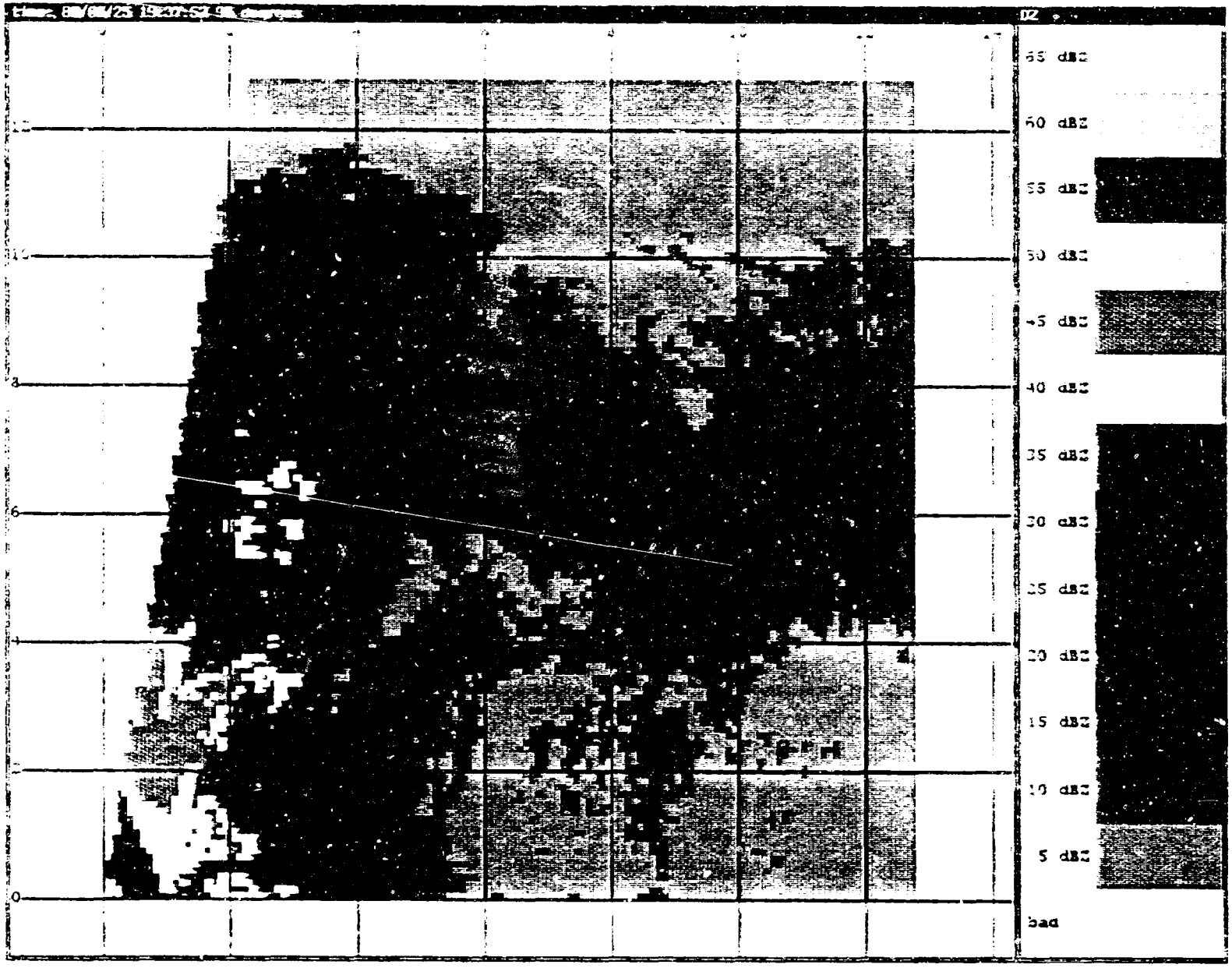

Figure B-69. RHI scan of reflectivity at 96 degrees azimuth during microburst at 19:07:52 UT on June 25, 1988.

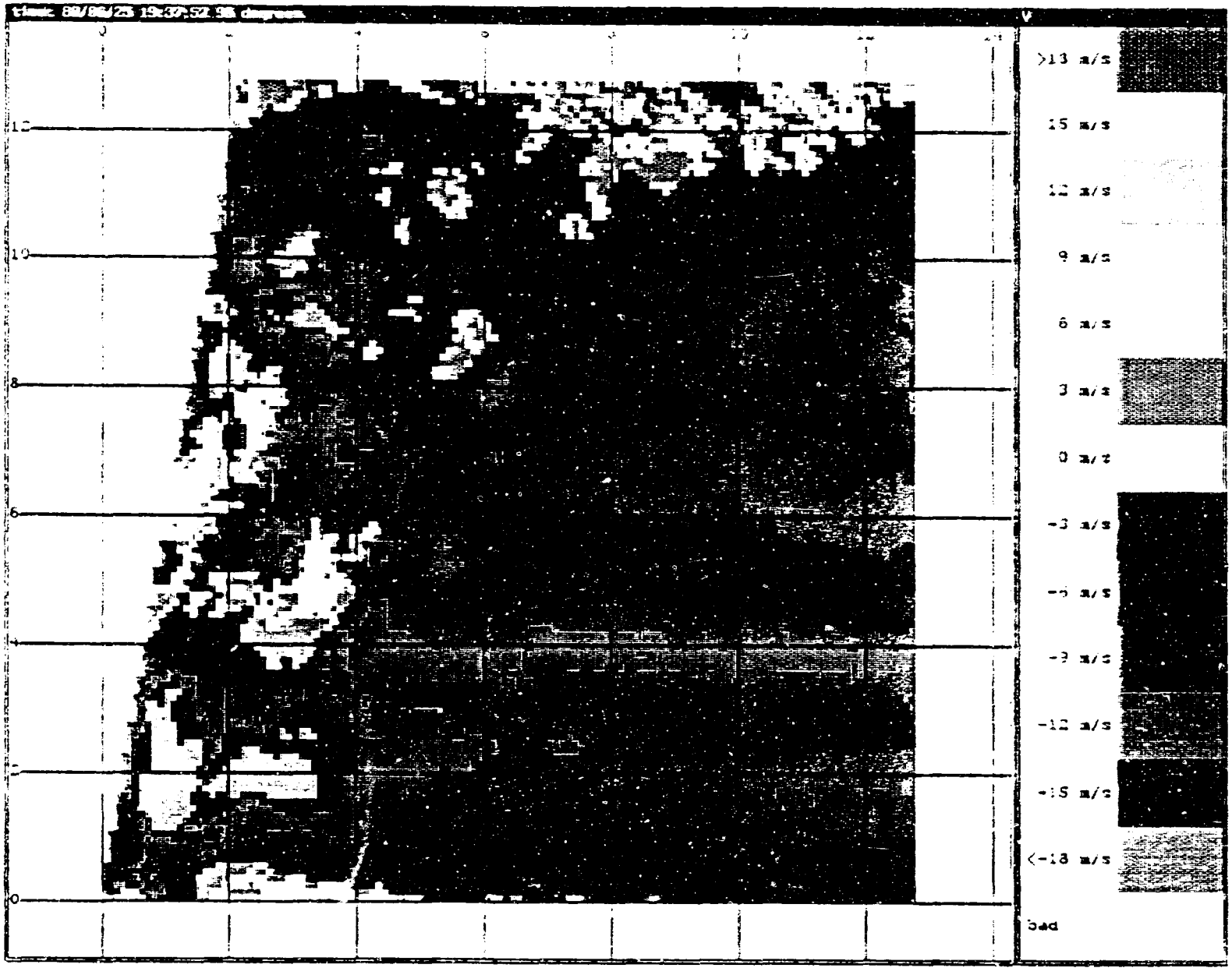

Figure 8-70. RHI scan of velocity at 96 degrees azimuth during microburst at 19:37:52 UT on June 25, 1983.

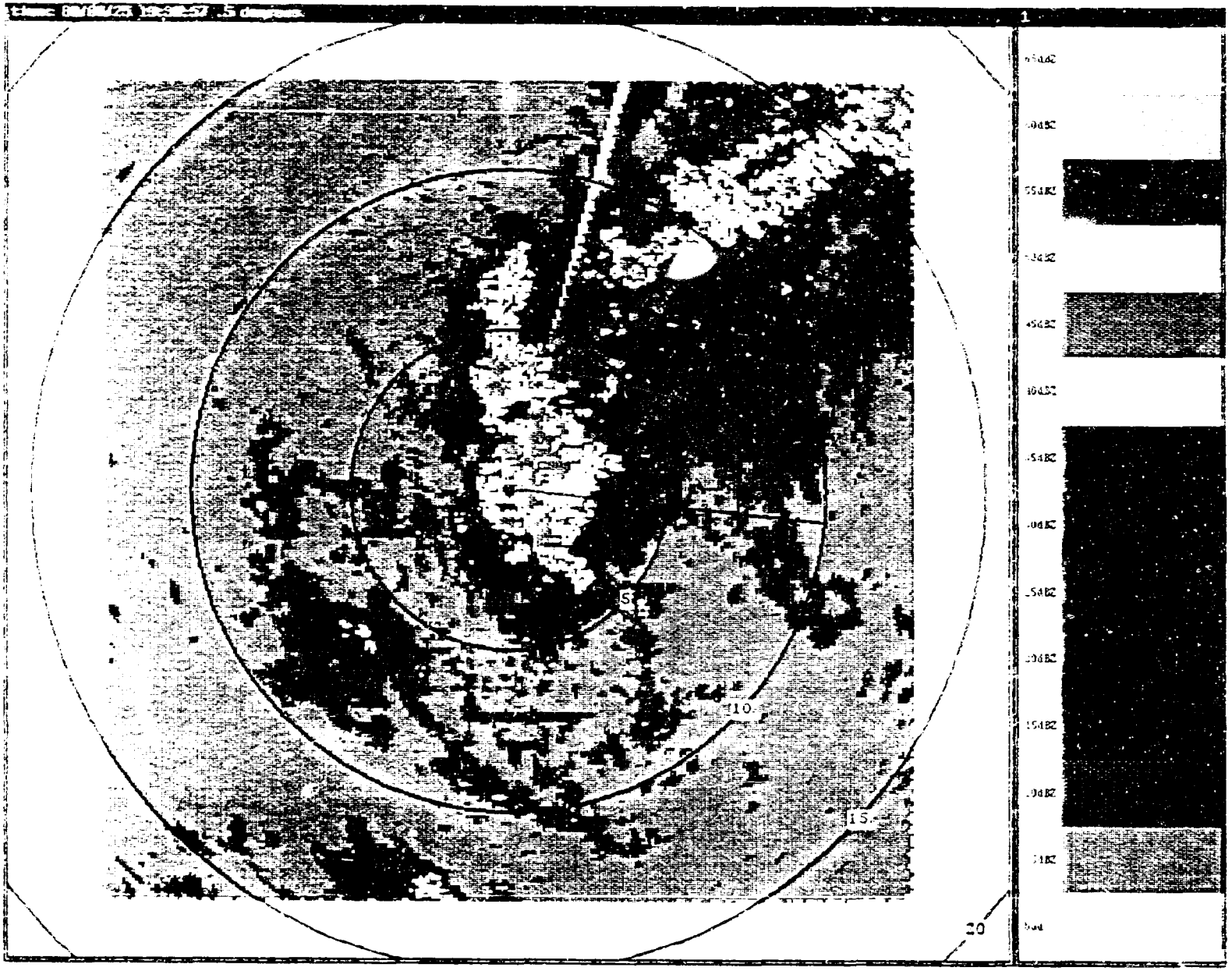

Figure B-72. PPI scan of reflectivity at 0.5 degrees elevation during microburst at 19:08:57 UT on June 25, 1988.

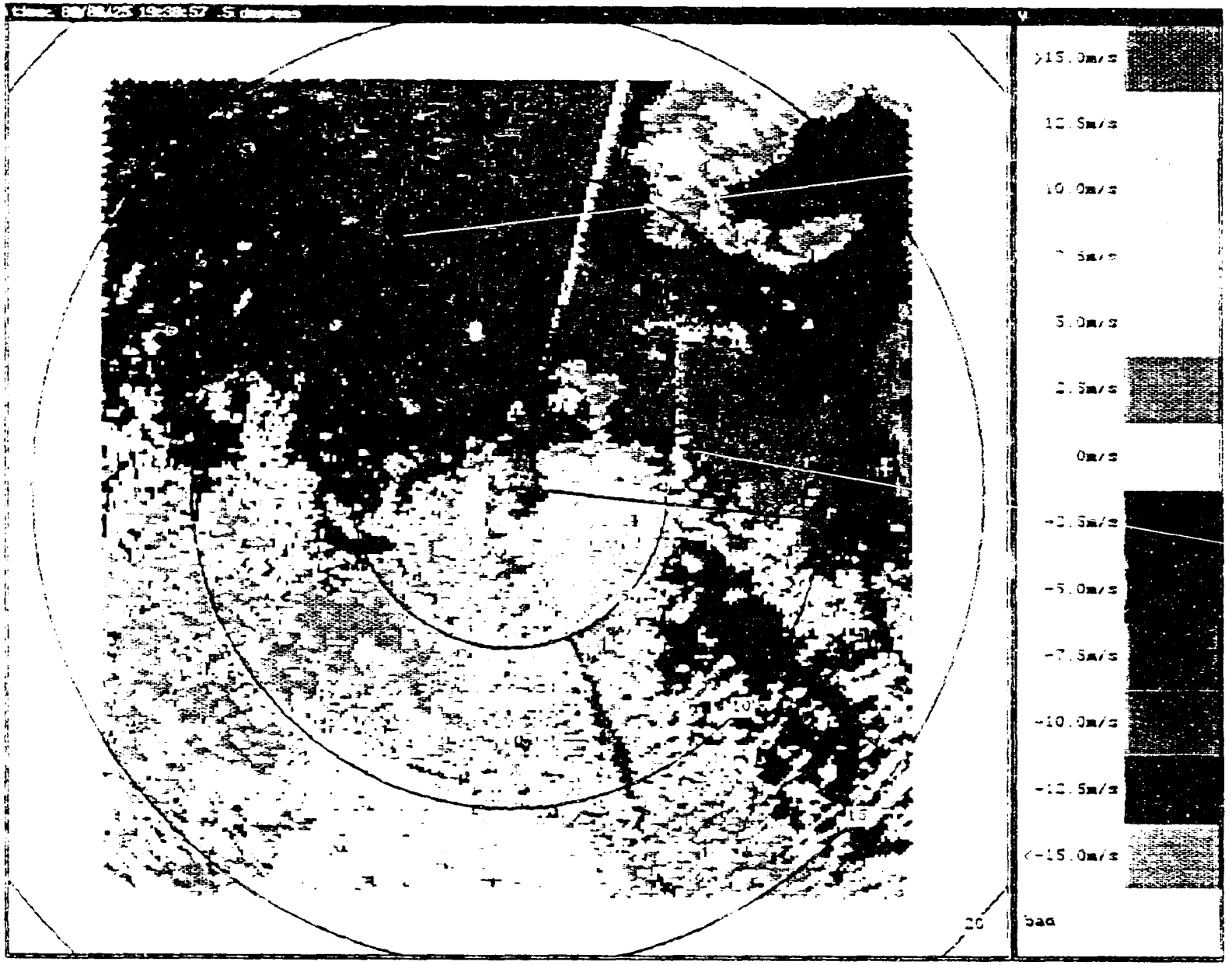

Figure B-72. PPI scan of velocity at 0.6 degrees elevation during microburst at 19:38:57 UT on June 25, 1988

APPENDIX C: GLOSSARY OF TERMS

DELTAV– Radial velocity differential across the outflow.

HEIGHT Vmax– Height in kilometers of the maximum approaching or receding velocity.

DEPTH out– Height in kilometers to one–half of the maximum approaching or receding velocity.

MAXZ core– Maximum reflectivity in dBz within the core above the outflow.

HEIGHT 20dBz– Height in kilometers of the top of the 20 dBz contour.

Zres– The radar resolution in the vertical (eg. range X beamwidth.