

PORTALES VALLEY, NEW MEXICO FALL OF 13 JUNE 1998: ANOMALOUS FRAGMENT DISTRIBUTION AND COMPOSITION. J.F.McHone¹, M. Killgore², and E. Killgore², ¹Astro and Solar System Physics Program, Dept. of Physics, University of Alabama at Birmingham, Birmingham, AL 35294-1170 jmchone@hotmail.com; ²Southwest Meteorite Laboratory, P.O.Box 95, Payson, AZ 85547 swmtlab@goodnet.com.

Introduction:..The Portales Valley meteorite shower occurred during daylight over eastern New Mexico near the border with Texas. At 07:45 Hrs local time, on 13 June 1998, a brilliant fireball appeared in the clear sky south of the town of Portales in Roosevelt County. Alerted by the sound of aerial explosions, numerous witnesses spread over a broad area watched the bolide glide rapidly from SW to NE. As the projectile traced a flight path parallel to local Santa Fe railroad tracks and to US Highway 70, it continued to emit loud detonations and began to break into smaller bodies. Some fragments began spewing spiral dust or smoke trails as they crashed into surrounding fields covered in summer crops.

Distribution Ellipse: Recovery of the fallen meteorites began almost immediately and, as of January 1999, some fifty specimens ranging in mass from 35 kg to less than 50 g have been retrieved. The resulting distribution ellipse is centered at about north latitude 34 degrees 10.2 minutes and west longitude 103 degrees 17.5 minutes and lies along an axis oriented 60 degrees east of north. It now covers an area about 11 km long and more than 2 km wide. The size distribution pattern of recovered specimens is reversed from the usual situation in which larger masses typically travel longer trajectories to fall further down range than do smaller pieces. In contrast, the majority of recovered Portales meteorites become larger and less numerous toward the southwest; *in their up range direction!*

Portales strewnfield is covered by growing crops and is underlain by Quaternary and Tertiary alluvium, sands, and travertines. Both ends of the fall area are bounded by karst zones of shallow, gentle sided sinkholes. Several meteorites were found lying directly on paved farm roads and some were associated with crater-like percussion pits in asphalt. Additional finds continue to appear as searchers examine the strewnfield of wintertime fields cleared of standing crops.

Meteorite Identification: At LPSC-99 submittal time, typing of the parent Portales Valley meteorite is still unsettled. Early on, one fragment was tentatively typed as an H-6 ordinary chondrite but considerable variation occurs among individual specimens. More recent evaluations suggest an IIE composition. Some cut faces reveal angular clasts of chondritic masses separated by a matrix of metal veins up to 2 cm wide. Furthermore, polished metal veins display acid etch patterns more characteristic of a medium-to-fine octahedrite.

RECOVERY LOCATIONS OF KNOWN

PORTALES VALLEY METEORITES

No & Mass	Twonshp & Range	UTM Zone 13	Northing Easting	
1. 12 g	sec 6 T2S	R35E	37 80 73	6 55 20
2. 60 g	sec 24 T1S	R35E		
3. 70 g	sec 27-34 T1S	R35E		
4. 72 g	sec 33 T1S	R35E	37 83 12	6 59 47
5. 80 g	sec 24 T1S	R35E		
6. 88 g	sec 27 T1S	R35E		
7. 113 g	sec 27-34 T1S	R35E		
8. 128 g	sec 27 T1S	R35E	37 84 02	6 60 65
9. 145 g	sec 27 T1S	R35E		
10. 170 g	sec 27-34 T1S	R35E		
11. 198 g	sec 28 T1S	R35E	37 84 10	6 59 27
12. 202 g	sec 27 T1S	R35E		
13. 202 g	sec 27-34 T1S	R35E		
14. 204 g	sec 27-34 T1S	R35E		
15. 208 g	sec 33 T1S	R35E	37 82 82	6 59 32
16. 248 g	sec 27 T1S	R35E	37 84 02	6 60 15
17. 290 g	sec 27 T1S	R35E		
18. 293 g	sec 27-34 T1S	R35E		
19. 305 g	sec 34 T1S	R35E		
20. 326 g	sec 33 T1S	R35E	37 83 60	6 58 92
21. 342 g	sec 27 T1S	R35E	37 84 07	6 60 40
22. 347 g	sec 27 T1S	R35E		
23. 370 g	sec 27-34 T1S	R35E		
24. 395 g	sec 33 T1S	R35E	37 82 81	6 59 57
25. 398 g	sec 34 T1S	R35E	37 83 37	6 60 27
26. 399 g	sec 34 T1S	R35E	37 83 80	6 60 62
27. 427 g	sec 34 T1S	R35E	37 83 79	6 60 52
28. 474 g	sec 27-34 T1S	R35E		
29. 491 g	sec 34 T1S	R35E		
30. 526 g	sec 34 T1S	R35E		
31. 530 g	sec 28 T1S	R35E	37 84 00	6 59 67
32. 551 g	sec 6 T2S	R35E	37 82 25	6 55 07
33. 608 g	sec 34 T1S	R35E		
34. 628 g	sec 33 T1S	R35E	37 83 07	6 59 82
35. 711 g	sec 4 T2S	R35E	37 82 33	6 59 49
36. 932 g	sec 3 T1S	R35E	37 83 68	6 60 28
37. 956 g	sec 4 T1S	R35E	37 82 33	6 59 39
38. 1129 g	sec 33 T1S	R35E	37 82 73	6 59 32
39. 1394 g	sec 5 T2S	R35E	37 81 29	6 56 72
40. 1472 g	sec 27 T1S	R35E		
41. 1589 g	sec T1S	R35E	37 82 33	6 59 55
42. 1620 g	sec 5 T2S	R35E	37 82 25	6 58 26
43. 1835 g	sec 32 T1S	R35E	37 83 30	6 57 37
44. 1887 g	sec 32 T1S	R35E	37 82 32	6 57 72
45. 2530 g	sec 6 T2S	R35E	37 81 97	6 56 72
46. 5107 g	sec 32 T1S	R35E	37 82 50	6 57 53
47. 6532 g	sec 6 T2S	R35E	37 81 50	6 55 40
48. 16521 g	sec 12 T2S	R34E	37 80 56	6 53 68
49. 17750 g	sec 1 T2S	R34E	37 81 37	6 54 93
50. 34000 g	sec 6 T2S	R35E	37 80 93	6 55 93