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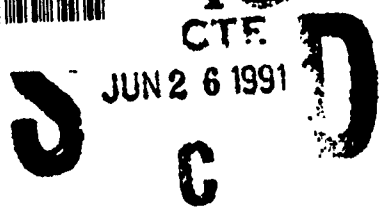


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Technical Report

P-3 SAR CALIBRATION ACTIVITY AT ANDROS ISLAND

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D. Gineris
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Advanced Concepts Division
Center for Earth Sciences

FEBRUARY 1991



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<p>From 26 May 1990 through 9 June 1990 the NADC/ERIM P-3/SAR collected calibration data over Andros Island. Several calibration reflectors were deployed on the ground at Andros town. The P-3/SAR typically imaged the reflectors during one pass at the start of each day's flight and one pass at the end of the day. These images were quickly processed to verify focussing and linearity of the SAR. The calibration activity demonstrated that the P-3/SAR was operating properly during the mission and that the data is calibratable.</p>					
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1.0 INTRODUCTION

From 26 May 1990 through 9 June 1990 the NADC/ERIM P-3/SAR collected calibration data over Andros Island. Several calibration reflectors were deployed on the ground at Andros town. The P-3/SAR typically imaged the reflectors during one pass at the start of each day's flight and one pass at the end of the day. These images were quickly processed to verify focussing and linearity of the SAR. The calibration activity demonstrated that the P-3/SAR was operating properly during the mission and that the data is calibratable.

2.0 GROUND TRUTH FOR CALIBRATION ARRAY AT ANDROS ISLAND

A map of Andros town is given in Figure 1. The reflectors were deployed in the water catch area indicated on the figure. Trihedrals were deployed in two configurations: (1) a radiometric array to be observed in stripmap mode and (2) two large reflectors to be observed in spotlight L-band mode.

The radiometric array consisted of triangular trihedral reflectors ranging in size from 45 cm to 90 cm on a side; a map of this array is shown in Figure 2. The reflectors were set on the smooth concrete slabs (level to within 1 degree) which comprised the water catch area. They were then oriented to a precision of ± 0.5 degree for a radar look direction of $270^\circ T$. A picture of the water catch area with the trihedrals deployed is presented in Figure 3.

In Figure 4 a map of the spotlight mode reflector array is shown. This array consisted of two large triangular trihedrals (42" long edges) which were deployed for a radar look direction of $10^\circ T$. They did not interfere with the radiometric array because when viewed from the backside the trihedrals have a very low radar cross section (RCS).

3.0 CALIBRATION ANALYSIS

The calibration analysis consisted at two main studies: (1) a detailed image quality and linearity study for one pass and (2) a daily system calibration pass analyses.

3.1 DETAILED IMAGE QUALITY AND LINEARITY STUDY: JUNE 3, 1990

A detailed image quality and system linearity study was done for June 3, 1990 pass #36. In Figures 5, 6, 7, and 8 the X-VV, L-VV, C-VV, and L-HH channel images of the radiometric calibration array at Andros town and some surrounding areas are presented.

The images all appear to be focused and to verify this an impulse response (IPR) analysis of the trihedrals in the radiometric array was performed for each image. In Figure 9, the IPR listing is given for the X-VV channel. In Figures 10, 11, 12, and 13 azimuth and range cuts of the IPR are plotted for the largest and smallest reflectors. This analysis was repeated for the L-VV, C-VV and L-HH imagery and the results are presented in Figures 14 through 28. The image quality was good for all the images and the resolution (as defined by 3 dB widths) was approximately 2m in range and 3m in azimuth. The X- and C-band focused slightly better than L-band.

A system linearity study was also performed for all the images from pass #36 on June 3, 1990. The linearity of the radar system can be examined by comparing the normalized intensity of a reflector to the expected RCS of the reflector. The normalized intensity is the intensity of the reflector integrated over the region of the response greater than one-half the peak intensity and then corrected for the antenna pattern, range falloff, background clutter level, transmitted power, and system attenuator setting. When the normalized intensity of several reflectors in the image is plotted versus the theoretical RCS of the reflectors a linear relationship should be observed. A non-linear relationship would indicate that the system is saturating, the receiver

is non-linear, or the signal is in the noise floor of the system. In Figure 29 a plot of the reflectors theoretical RCS vs. normalized intensity is presented. This plot illustrates that the SAR is operating properly. In Figure 30 a computed list is presented with the reflector data and the results of a least-square linear fit. This fit indicates a slope of 1.019 (close to the ideal of one) and a mean square error from the fitted line of 0.34 dB. This analysis was repeated for L-VV, C-VV, and L-HH and the results are presented in Figure 31 through 36. The system was operating linearly for all the data examined.

3.2 DAILY SYSTEM CALIBRATION PASSES

In Tables 1 through 10 each pass over the calibration array at Andros Island is examined. Typically the impulse response listing for a large and small reflector from each channel is presented. This provides a quick check of focusing and linearity on a daily basis. It appears the system operated properly during the mission. From these tables the focusing of the system can be verified by examining the 3 dB widths of the IPR. The linearity of the system can be verified by comparing the relative 3 dB energy of the reflectors to the theoretical RCS of the reflectors and showing the two are linearity proportional.

4.0 CONCLUSION

The image quality and linearity measures indicated the P-3 system operated properly during the mission from 26 May 1990 through 9 June 1990.

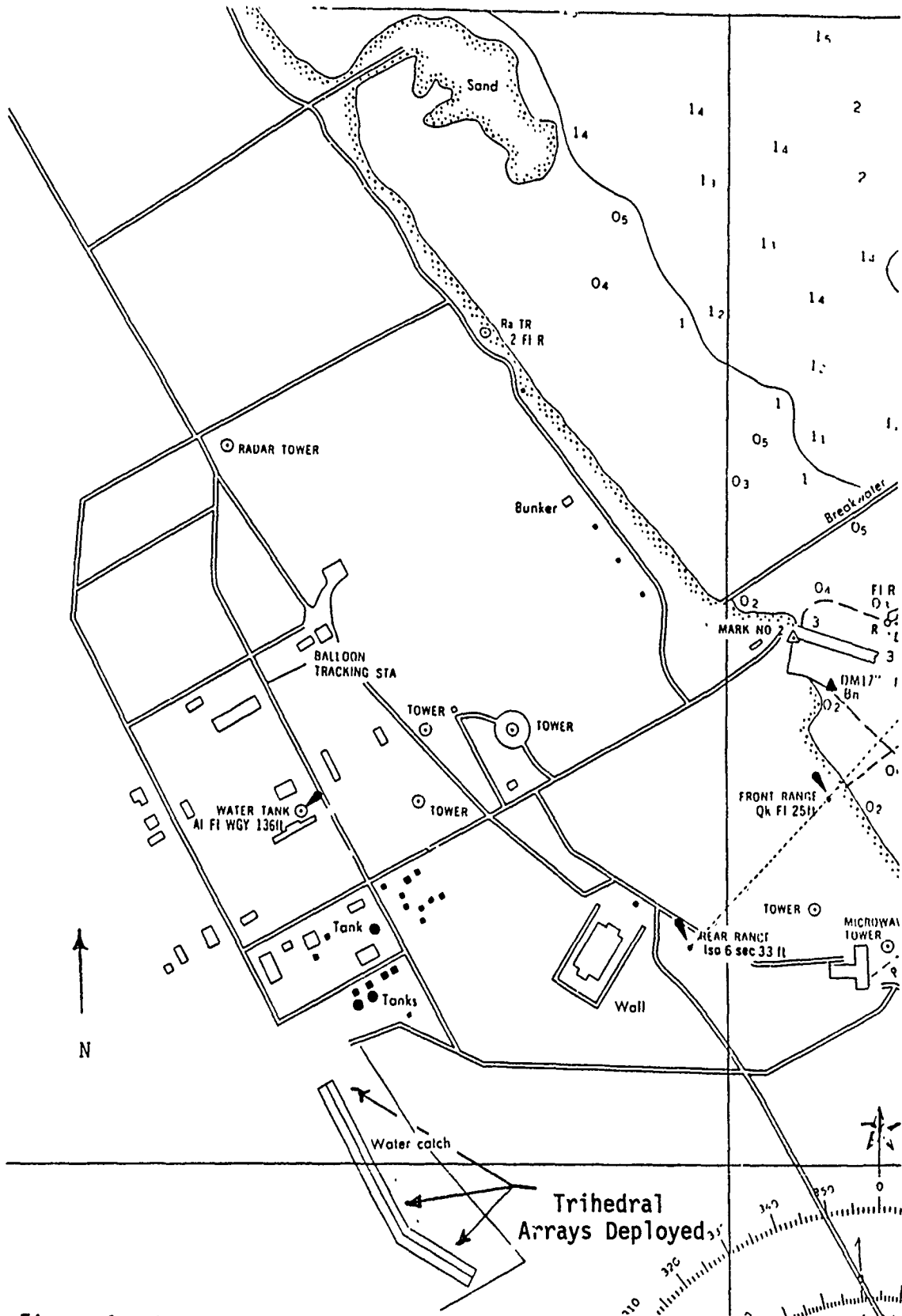


Figure 1. Map of Andros Town Indicating Where Equipment was Located

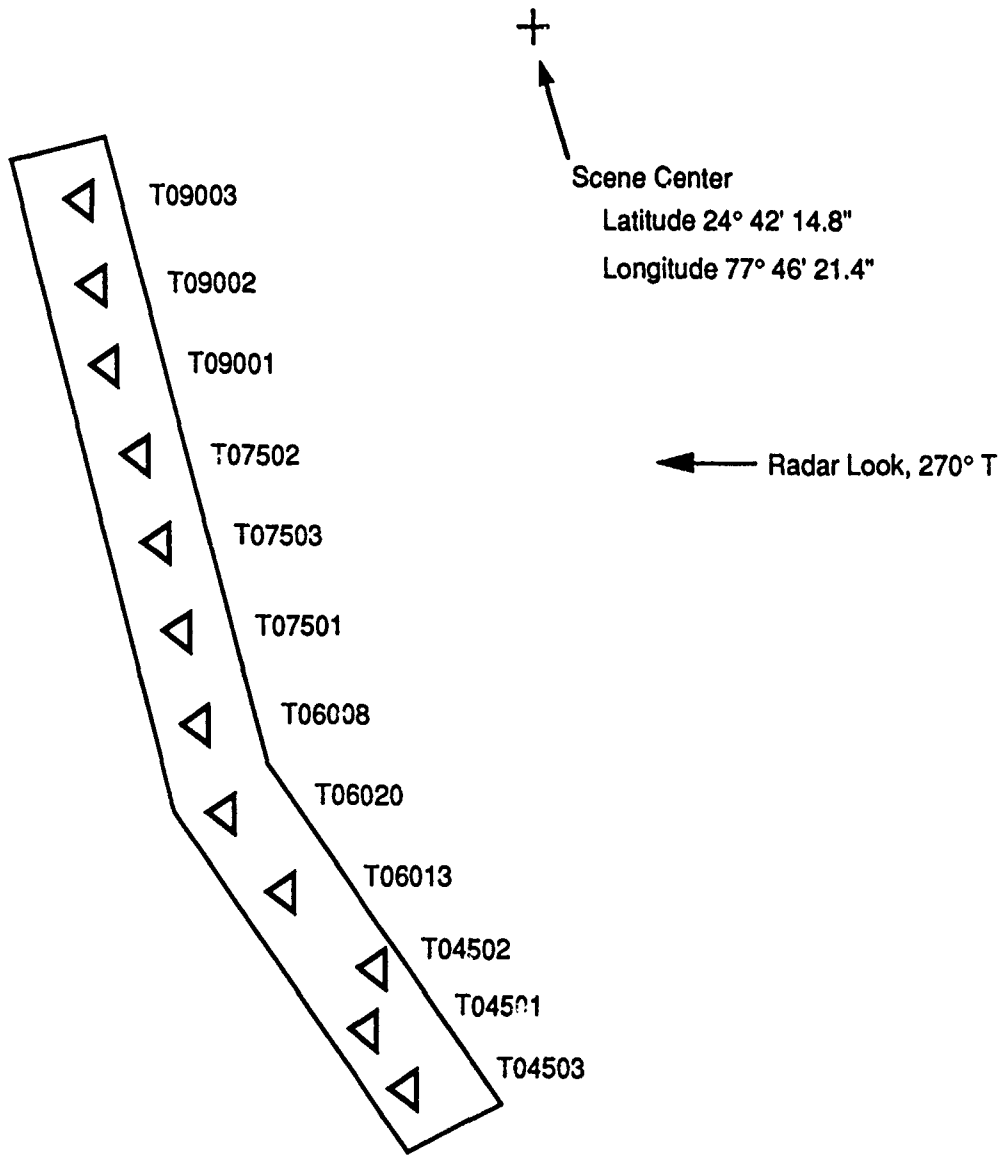


Figure 2. Radiometric Array for Stripmap Passes



Figure 3. Photographs of the Radiometric Array for Stripmap Passes

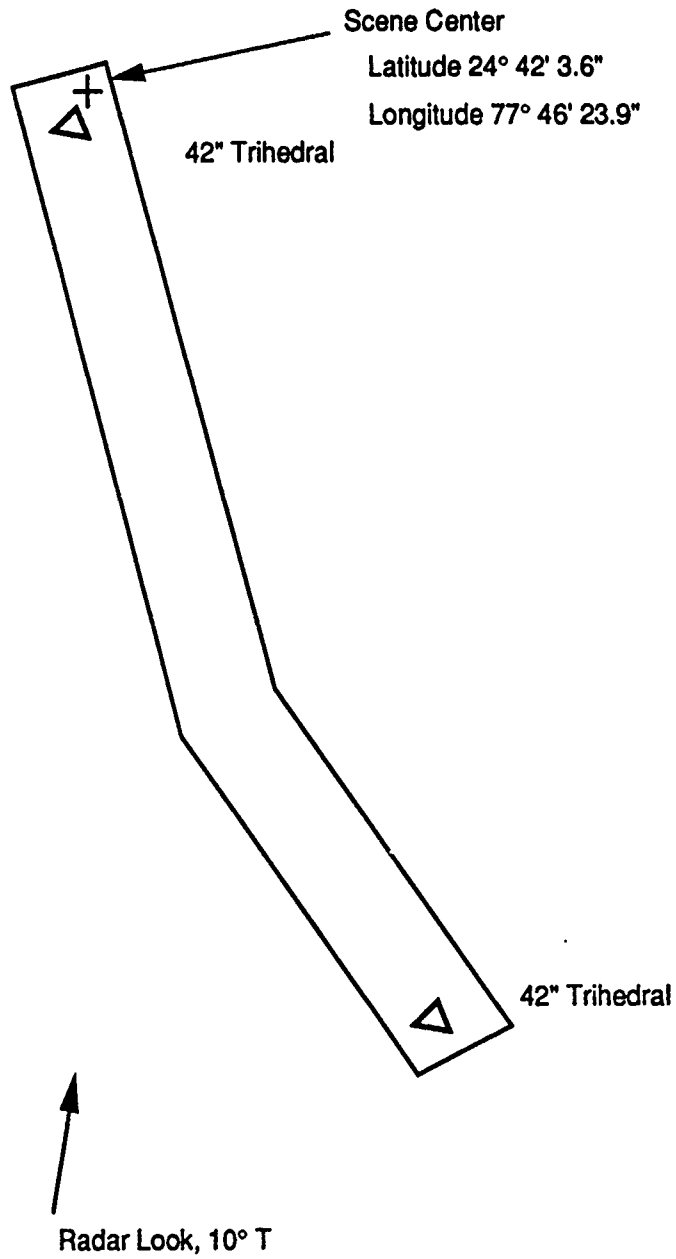


Figure 4. Spotlight Mode Trihedral Array at the Water Catch Area

P3T1003 X-VV
JAX Calibration Array
June 3, 1990 Pass 36

Line Length = 2048 Margin = 0 Line Reps = 1 Pixel Width = 1 Text Size = 2 White = 255 b=8 g=8 c=8 7774



Figure 5. JAX Calibration Array X-VV (located at Andros Town)

P3T1004 L-VV
JAX Calibration Array
June 3, 1990 Pass 36

Line Length = 2048 Margin = 0 Line Reqs = 1 Pixel Width = 1 Text Size = 2 White = 255 b=8 g=8 c=8 7774

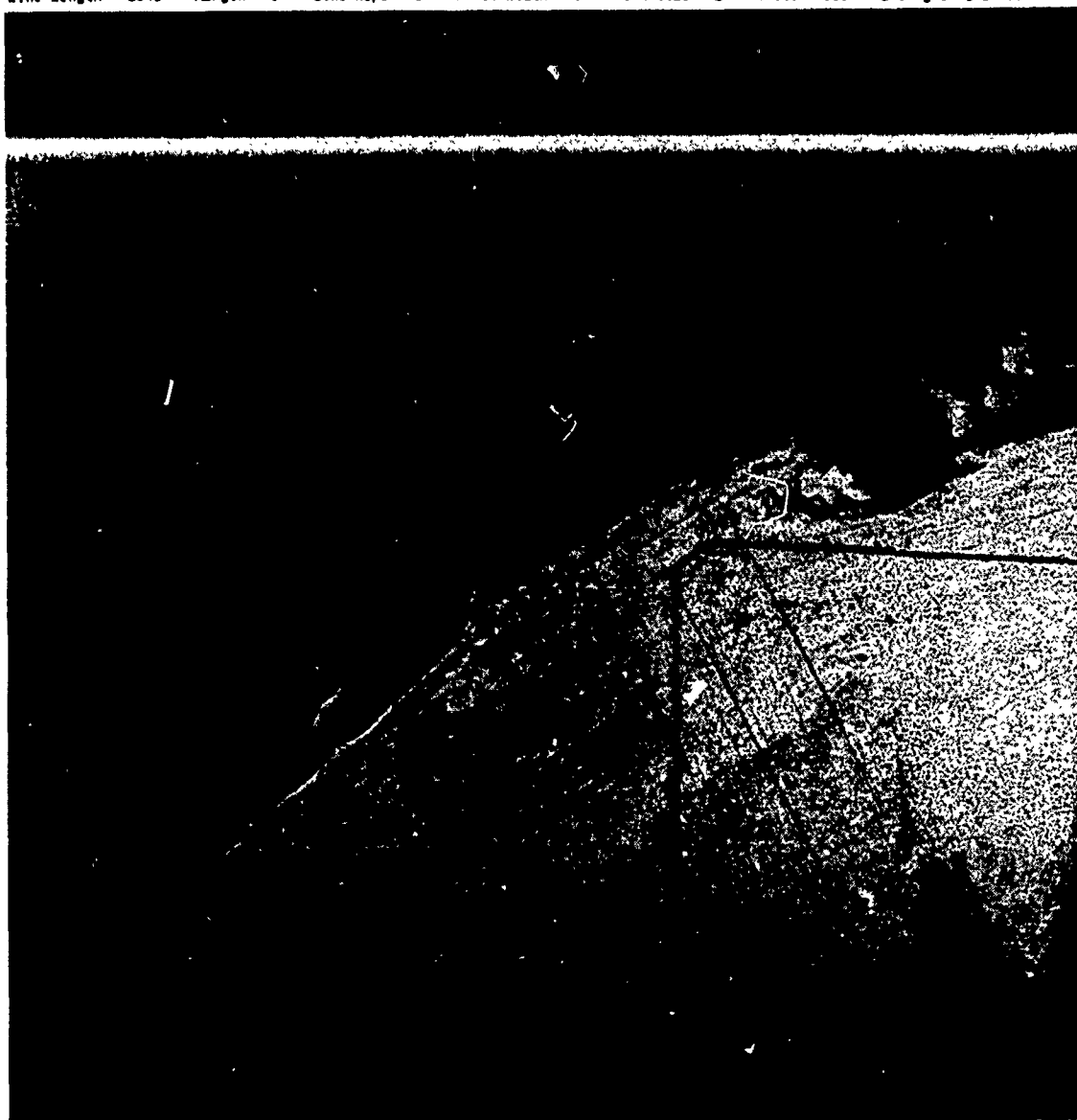


Figure 6. JAX Calibration Array L-VV (located at Andros Town)

P3T1005 C-VV
JAX Calibration Array
June 3, 1990 Pass 36

Line Length = 2048 Margin = 0 Line Reps = 1 Pixel Width = 1 Text Size = 2 White = 255 b=8 g=8 c=8 7774

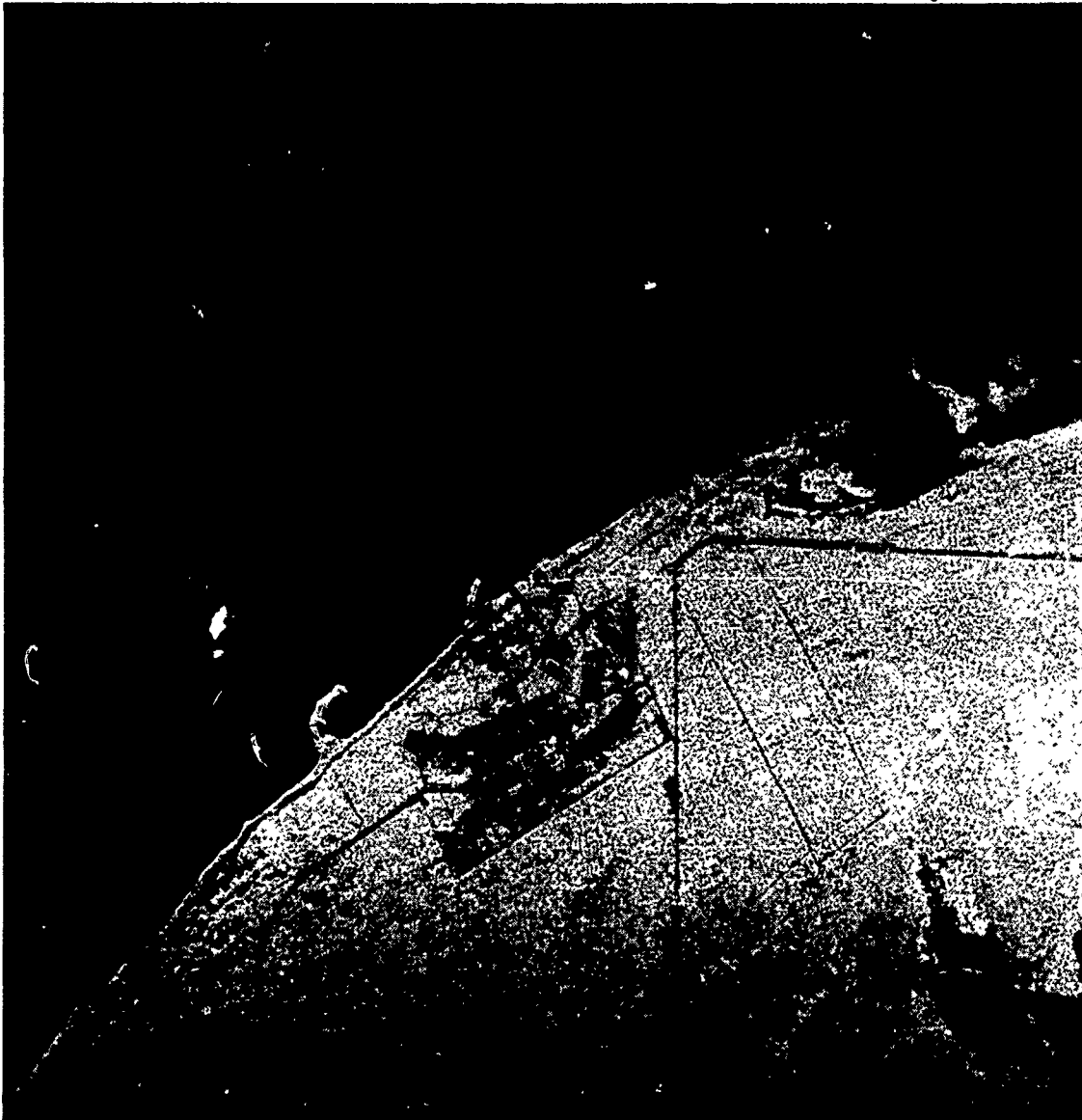


Figure 7. JAX Calibration Array C-VV (located at Andros Town)

F3T1006 L-HH
JAX Calibration Array
June 3, 1990 Pass 36

Line Length = 2048 Margin = 0 Line Reps = 1 Pixel Width = 1 Text Size = 2 White = 255 b=8 g=8 c=8 7774



Figure 8. JAX Calibration Array L-HH (located at Andros Town)

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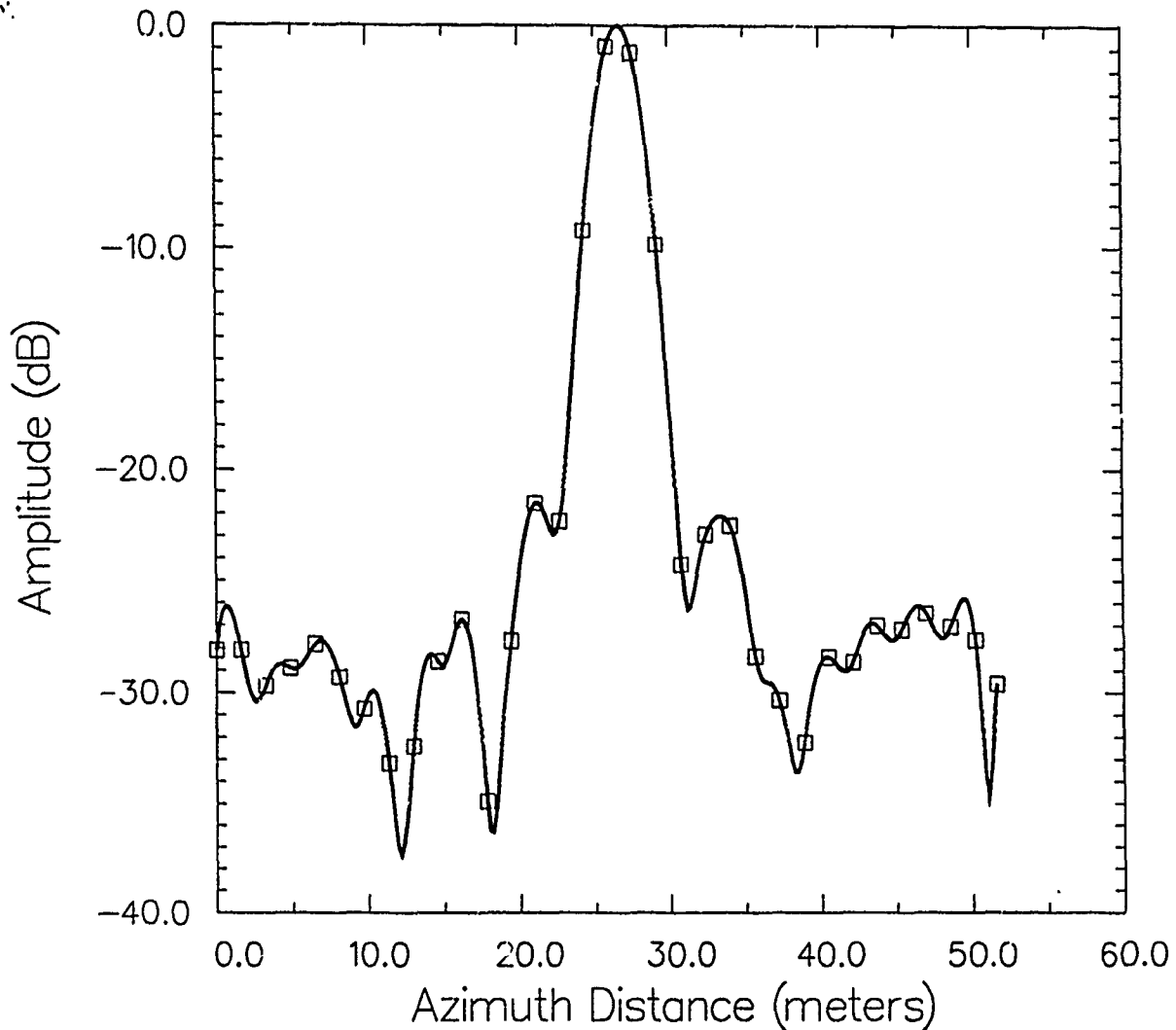
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Environmental Research Institute of Michigan
 Impulse Response Analysis Session Log
 Executed 22-AUG-90 at 10:23:08.

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P3T1003.CI	2702.125		2276.750		1.620	1.200	2.764	1.559	.33142E+09	.62988E+09	10772.	41.80	90.02
P3T1003.CI	2684.500		2294.375		1.620	1.200	2.741	1.566	.36541E+09	.69392E+09	11322.	42.24	90.01
P3T1003.CI	2674.500		2316.875		1.620	1.200	2.726	1.571	.15551E+09	.31692E+09	7384.	38.52	75.02
P3T1003.CI	2665.875		2334.500		1.620	1.200	2.743	1.564	.17114E+09	.41067E+09	7746.	38.94	75.03
P3T1003.CI	2656.375		2351.000		1.620	1.200	2.729	1.574	.17387E+09	.59974E+09	7798.	39.00	75.01
P3T1003.CI	2640.875		2360.000		1.620	1.200	2.743	1.590	.52438E+08	.40465E+09	4274.	33.77	60.08
P3T1003.CI	2629.250		2366.375		1.620	1.200	2.718	1.585	.56343E+08	.33116E+09	4442.	34.11	60.20
P3T1003.CI	2621.875		2373.000		1.620	1.200	2.755	1.577	.61591E+08	.28021E+09	4638.	34.48	60.13
P3T1003.CI	2616.250		2384.000		1.620	1.200	2.807	1.574	.25339E+08	.23088E+09	2962.	30.59	45.01
P3T1003.CI	2601.750		2382.000		1.620	1.200	2.770	1.571	.23645E+08	.10783E+09	2872.	30.32	45.02
P3T1003.CI	2588.500		2399.875		1.620	1.200	2.751	1.583	.24353E+08	.66246E+08	2911.	30.44	45.93

Figure 9. Impulse Response Listing for X-VW Channel

Impulse Response, Azimuth

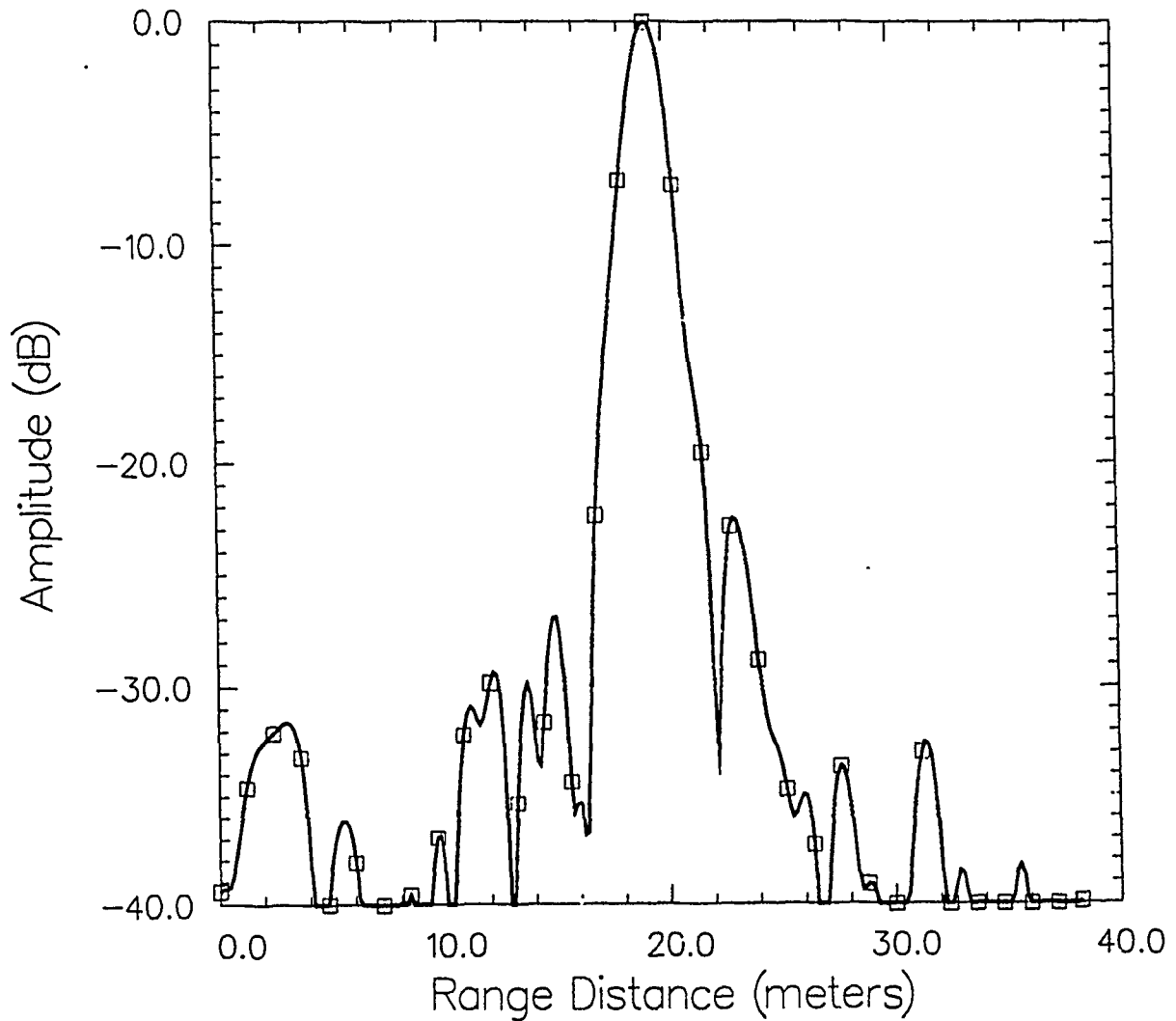


File: P3T1003.CI
 Rec: 2716.0000
 Elem: 2258.5000
 Azimuth 3dB width: 2.738m
 Range 3dB width: 1.544m
 Peak Amplitude: 10449.8
 Signal/Background: 92.48

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 3.097×10^5
 2D Total Energy: 5.819×10^8
 Comment: 3JUN90P36L

Figure 10. Impulse Response, Azimuth, X-VV Channel, Large Reflector

Impulse Response, Range



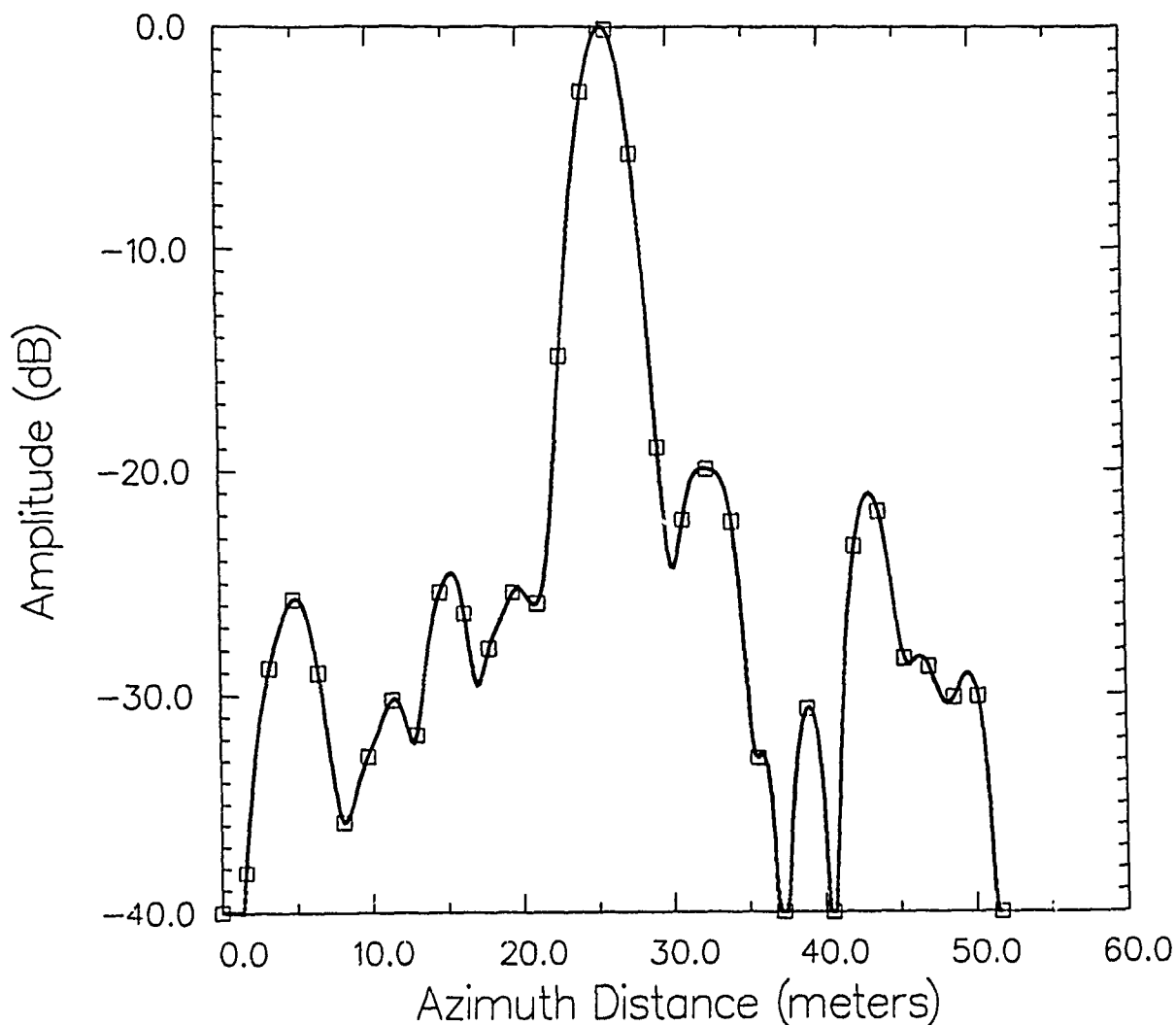
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 Elem: 2258.5000
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 Range 3dB width: 1.544m
 Peak Amplitude: 10449.8
 Signal/Background: 92.48

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 3.097×10^8
 2D Total Energy: 5.819×10^8

Comment: 3JUN90P36L

Figure 11. Impulse Response, Range, X-VV Channel, Large Reflector

Impulse Response, Azimuth

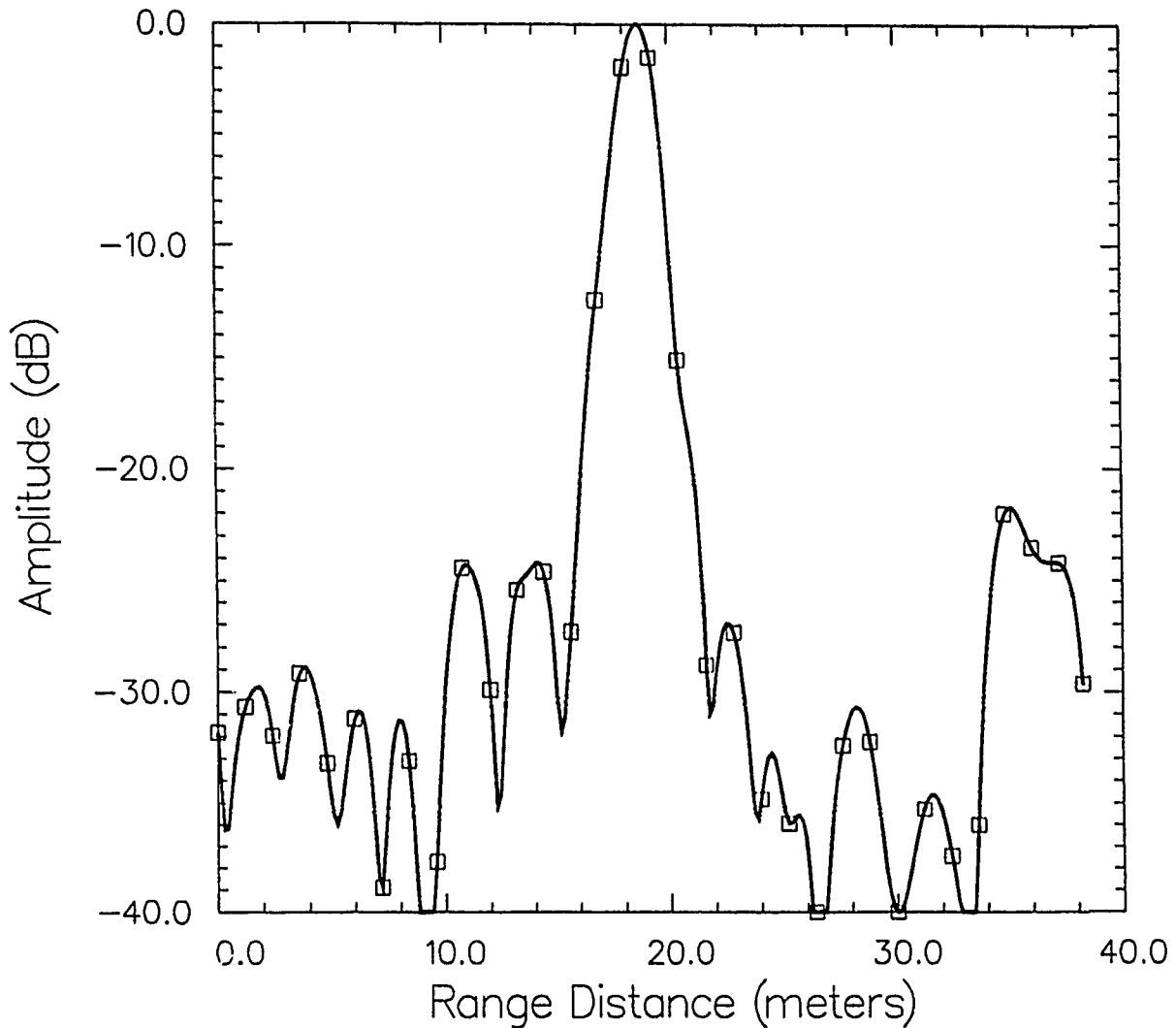


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 Rec: 2588.5000
 Elem: 2399.8750
 Azimuth 3dB width: 2.751m
 Range 3dB width: 1.583m
 Peak Amplitude: 2911.4
 Signal/Background: 25.76

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 2.435×10^7
 2D Total Energy: 6.625×10^7
 Comment: 3JUN90P36S

Figure 12. Impulse Response, Azimuth, X-VV Channel, Small Reflector

Impulse Response, Range



File: P3T1003.CI
 Rec: 2588.5000
 Elem: 2399.8750
 Azimuth 3dB width: 2.751m
 Range 3dB width: 1.583m
 Peak Amplitude: 2911.4
 Signal/Background: 25.76

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 2.435×10^7
 2D Total Energy: 6.625×10^7
 Comment: 3JUN90P36S

Figure 13. Impulse Response, Range, X-VV Channel, Small Reflector

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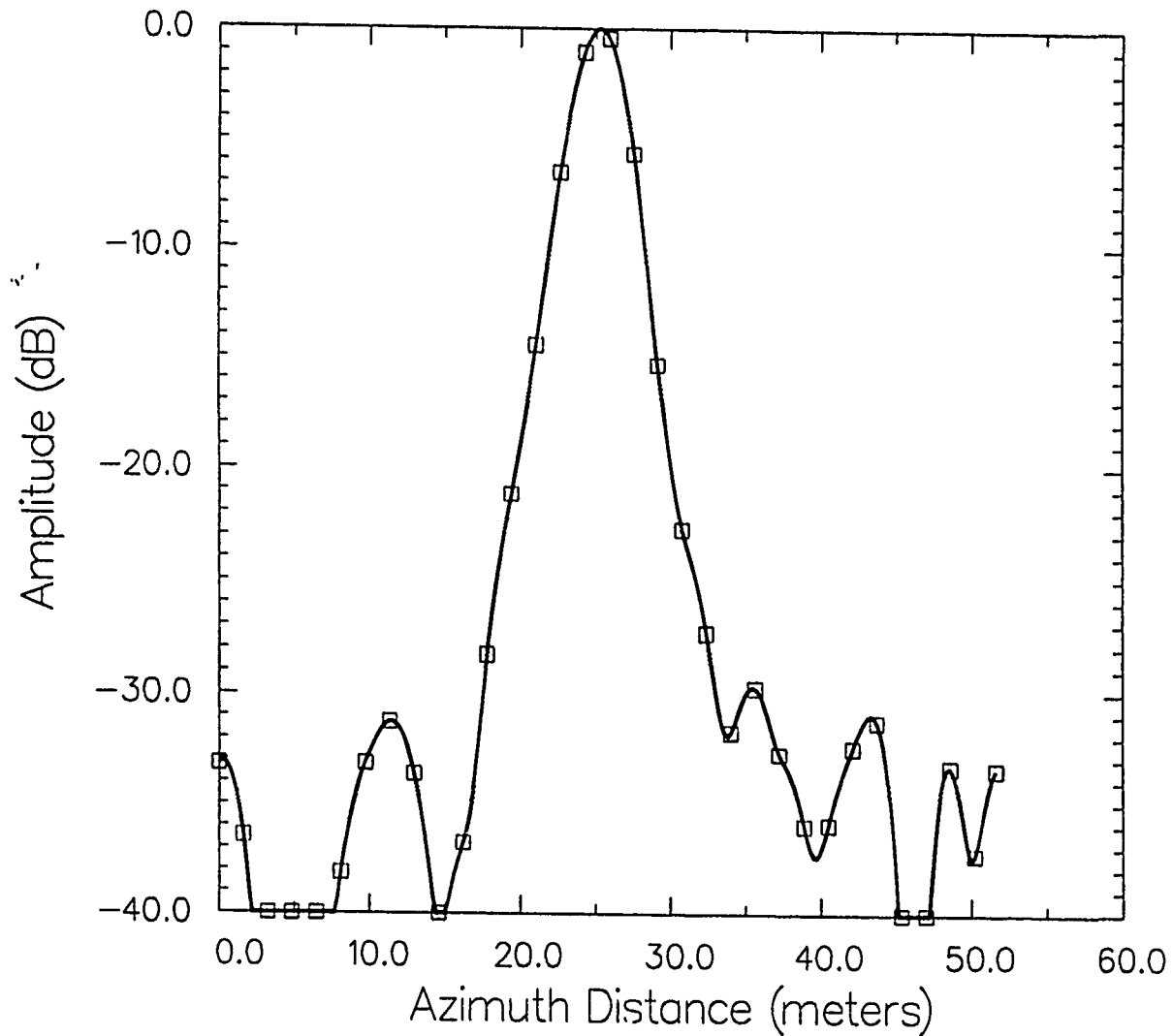
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Environmental Research Institute of Michigan
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P3T1004.CI	2699.625	2276.875	1.620	1.200	3.475	1.926	1.926	1.8911E+07	36820E+07	655.	36.88	90.02	
P3T1004.CI	2682.000	2294.500	1.620	1.200	3.542	1.874	1.874	1.8052E+07	34313E+07	646.	36.77	90.01	
P3T1004.CI	2672.000	2316.875	1.620	1.200	3.360	1.926	1.926	1.6674E+06	15282E+07	391.	32.40	75.02	
P3T1004.CI	2663.375	2334.625	1.620	1.200	3.342	1.933	1.933	1.0164E+07	27890E+07	482.	34.22	75.03	
P3T1004.CI	2654.000	2351.000	1.620	1.200	3.288	1.924	1.924	1.2715E+07	43134E+07	542.	35.23	75.01	
P3T1004.CI	2638.375	2360.125	1.620	1.200	3.246	1.928	1.928	1.4713E+06	25101E+07	331.	30.94	60.08	
P3T1004.CI	2626.750	2366.500	1.620	1.200	3.268	1.915	1.915	1.4619E+06	27456E+07	328.	30.87	60.20	
P3T1004.CI	2619.250	2373.250	1.620	1.200	3.334	1.935	1.935	1.4810E+06	20754E+07	332.	30.97	60.20	
P3T1004.CI	2623.875	2409.875	1.620	1.200	4.271	1.928	1.928	1.8511E+06	55535E+07	186.	25.96	45.01	
P3T1004.CI	2599.375	2382.250	1.620	1.200	3.253	1.976	1.976	50536.	55816E+06	108.	21.18	45.02	
P3T1004.CI	2558.500	2401.500	1.620	1.200	3.171	1.967	1.967	1.1240E+06	10186E+08	176.	25.46	45.03	

Figure 14. Impulse Response Listing for L-VV Channel

Impulse Response, Azimuth

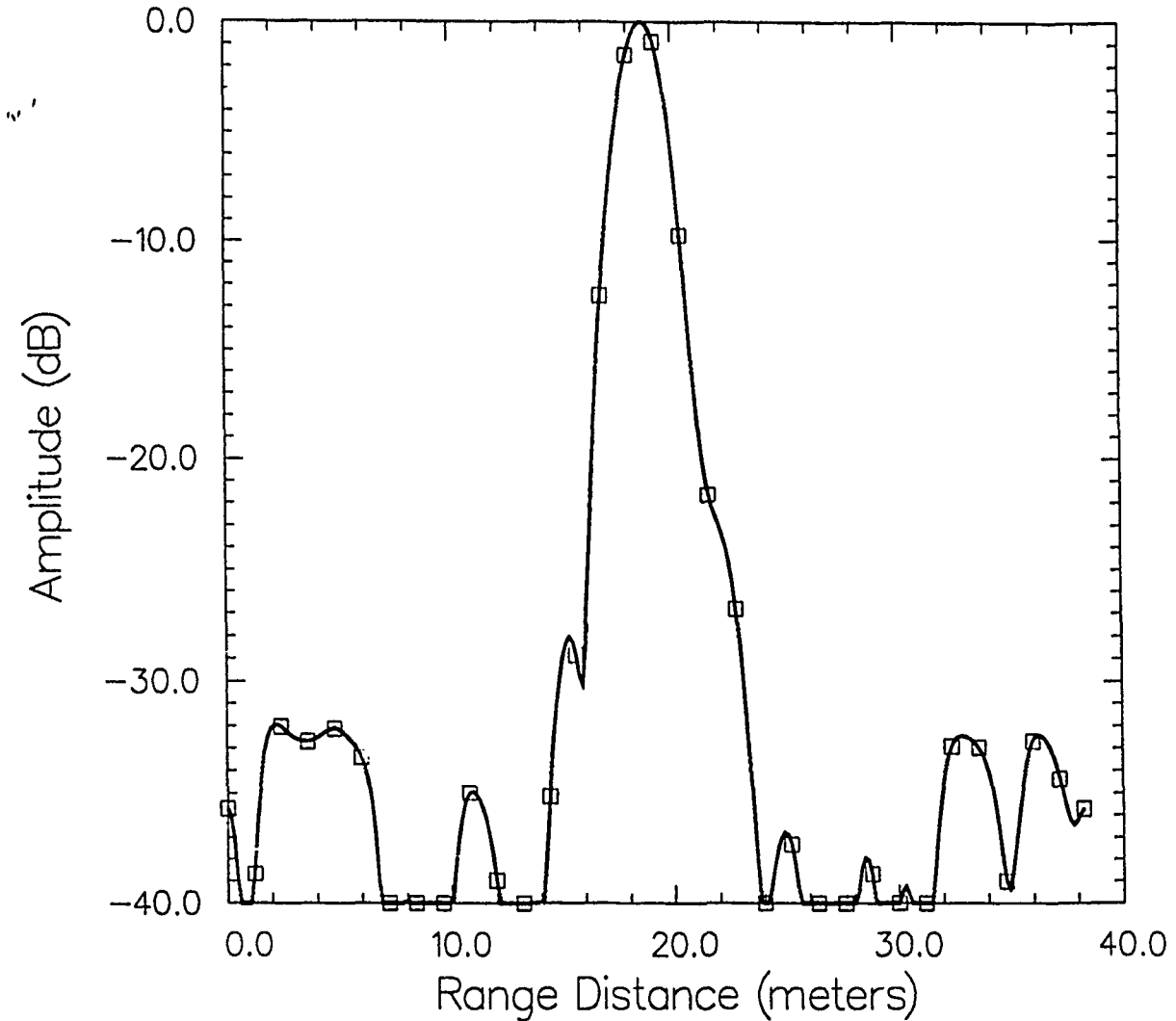


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 Elem: 2258.6250
 Azimuth 3dB width: 3.356m
 Range 3dB width: 1.920m
 Peak Amplitude: 637.1
 Signal/Background: 45.50

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.768×10^6
 2D Total Energy: 3.400×10^8
 Comment: 3JUN90P36L

Figure 15. Impulse Response, Azimuth, L-VV Channel, Large Reflector

Impulse Response, Range

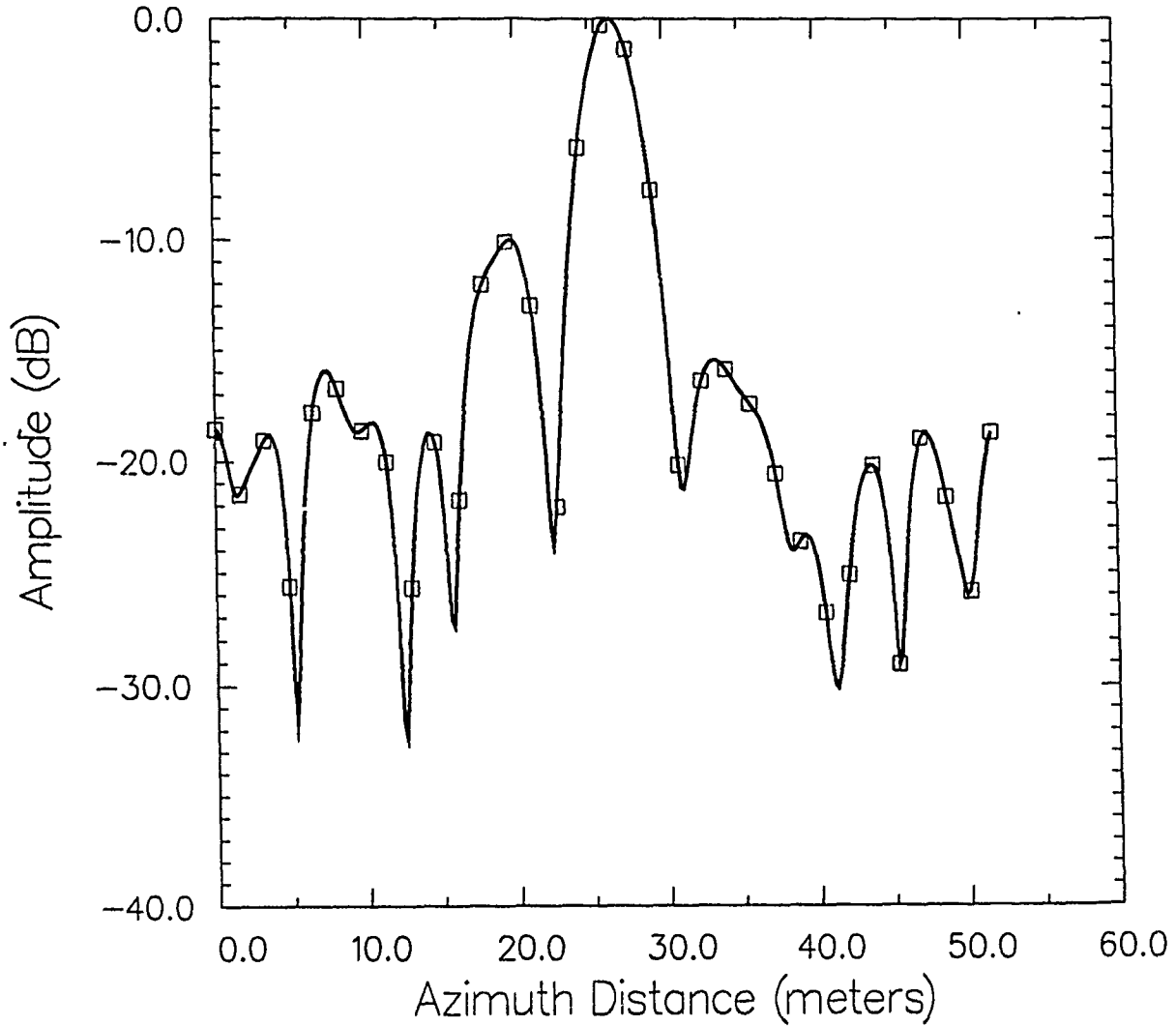


File: P3T1004.CI
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 Elem: 2258.6250
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 Range 3dB width: 1.920m
 Peak Amplitude: 637.1
 Signal/Background: 45.50

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.768×10^6
 2D Total Energy: 3.400×10^6
 Comment: 3JUN90P36L

Figure 16. Impulse Response, Range, L-VV Channel, Large Reflector

Impulse Response, Azimuth

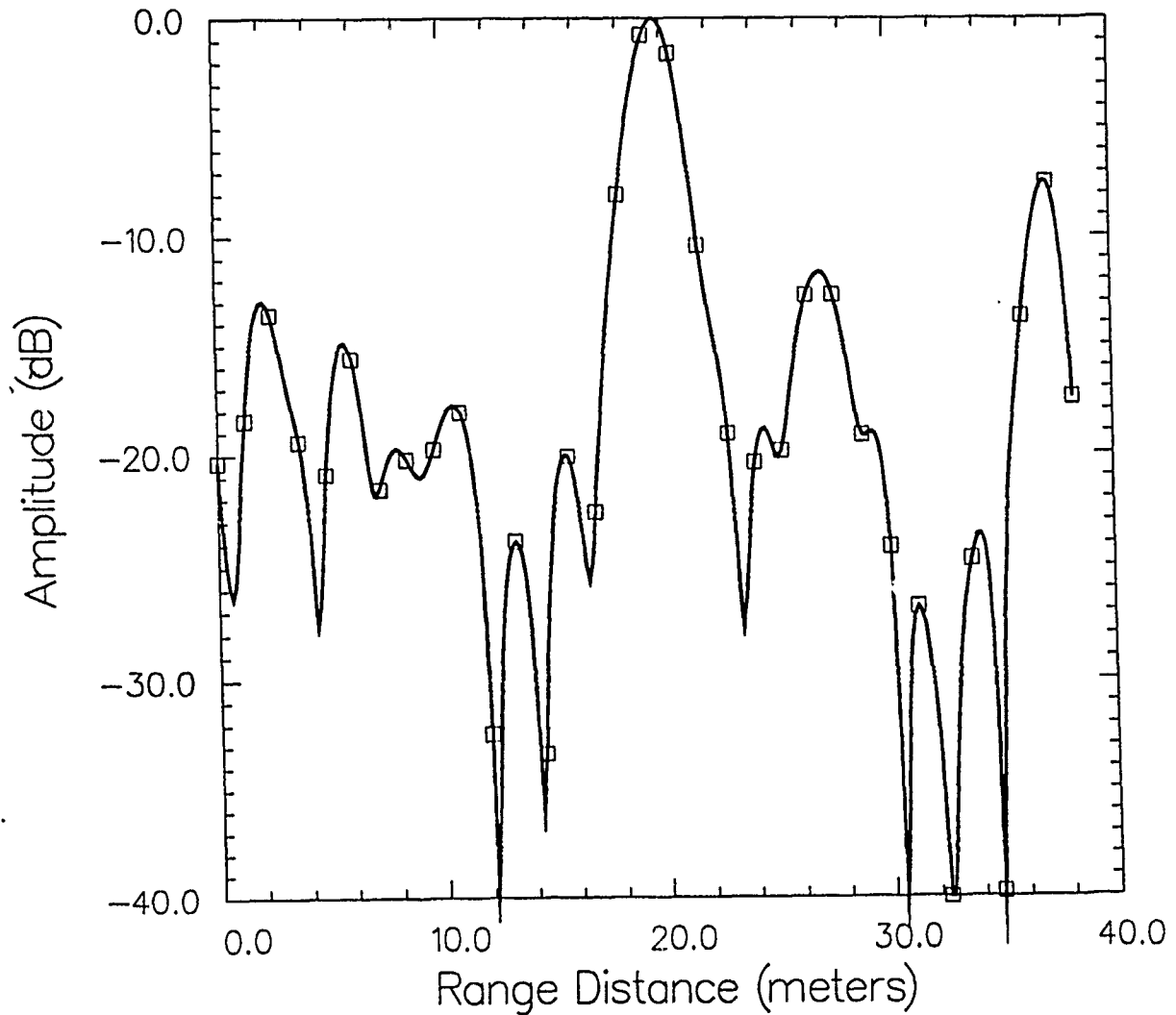


File: P3T1004.CI
 Rec: 2599.3750
 Elem: 2382.2500
 Azimuth 3dB width: 3.253m
 Range 3dB width: 1.976m
 Peak Amplitude: 107.5
 Signal/Background: 7.68

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 5.054×10^4
 2D Total Energy: 5.582×10^5
 Comment: 3JUN90P36S

Figure 17. Impulse Response, Azimuth, L-VV Channel, Small Reflector

Impulse Response, Range



File: P3T1004.CI
 Rec: 2599.3750
 Elem: 2382.2500
 Azimuth 3dB width: 3.253m
 Range 3dB width: 1.976m
 Peak Amplitude: 107.5
 Signal/Background: 7.68

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: $5.054 \cdot 10^4$
 2D Total Energy: $5.582 \cdot 10^5$
 Comment: 3JUN90P36S

Figure 18. Impulse Response, Range, L-VV Channel, Small Reflector

22-AUG-1990 14:58

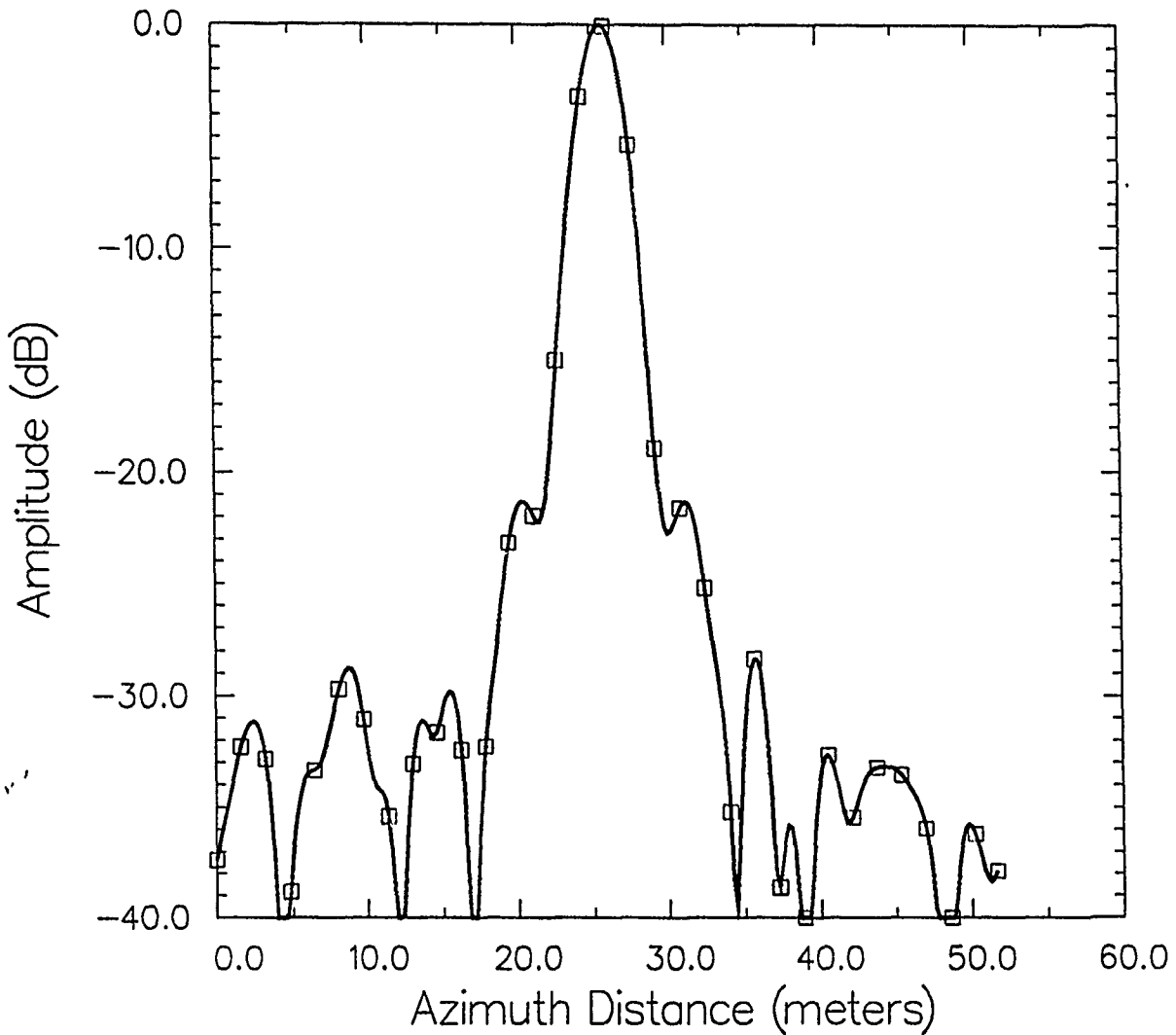
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Environmental Research Institute of Michigan
 Impulse Response Analysis Session Log
 Executed 22-AUG-90 at 14:54:38.

Filename	Peak	Rec	Peak	Elm	AzSpa	RgSpa	Az3dB	Rg3dB	Energy3dB	EnerTotal	Peak	Sig/Back	Comment
P3TI005.CI	2715.250	2258.875	1.620	1.200	2.744	1.564	1.2456E+09	-22814E+09	6598.	41.09	90.03		
P3TI005.CI	2701.375	2277.125	1.620	1.200	2.797	1.541	1.2822E+09	-23663E+09	6693.	41.22	90.02		
P3TI005.CI	2683.625	2294.875	1.620	1.200	2.781	1.544	1.2844E+09	-23455E+09	6702.	41.23	90.01		
P3TI005.CI	2673.750	2317.250	1.620	1.200	2.770	1.546	51424E+08	-10534E+09	4244.	37.26	75.02		
P3TI005.CI	2665.125	2335.000	1.620	1.200	2.723	1.558	.66849E+08	-14029E+09	4845.	38.41	75.03		
P3TI005.CI	2655.625	2351.375	1.620	1.200	2.784	1.569	.67932E+08	-24669E+09	4859.	38.44	75.01		
P3TI005.CI	2640.125	2360.375	1.620	1.200	2.737	1.567	.18624E+08	-12095E+09	2550.	32.84	60.20		
P3TI005.CI	2628.500	2366.875	1.620	1.200	2.709	1.583	.16519E+08	-10299E+09	2401.	32.81	60.20		
P3TI005.CI	2621.000	2373.500	1.620	1.200	2.750	1.574	.17047E+08	-85406E+08	2437.	32.44	60.13		
P3TI005.CI	2615.500	2384.375	1.620	1.200	2.801	1.568	.81461E+07	-78998E+08	1681.	29.22	45.01		
P3TI005.CI	2601.000	2382.500	1.620	1.200	2.841	1.543	.85105E+07	-39761E+08	1646.	29.04	45.02		
P3TI005.CI	2587.750	2400.250	1.620	1.200	2.760	1.546	.95928E+07	-35451E+08	1832.	29.96	45.03		

Figure 19. Impulse Response Listing for C-W Channel

Impulse Response, Azimuth

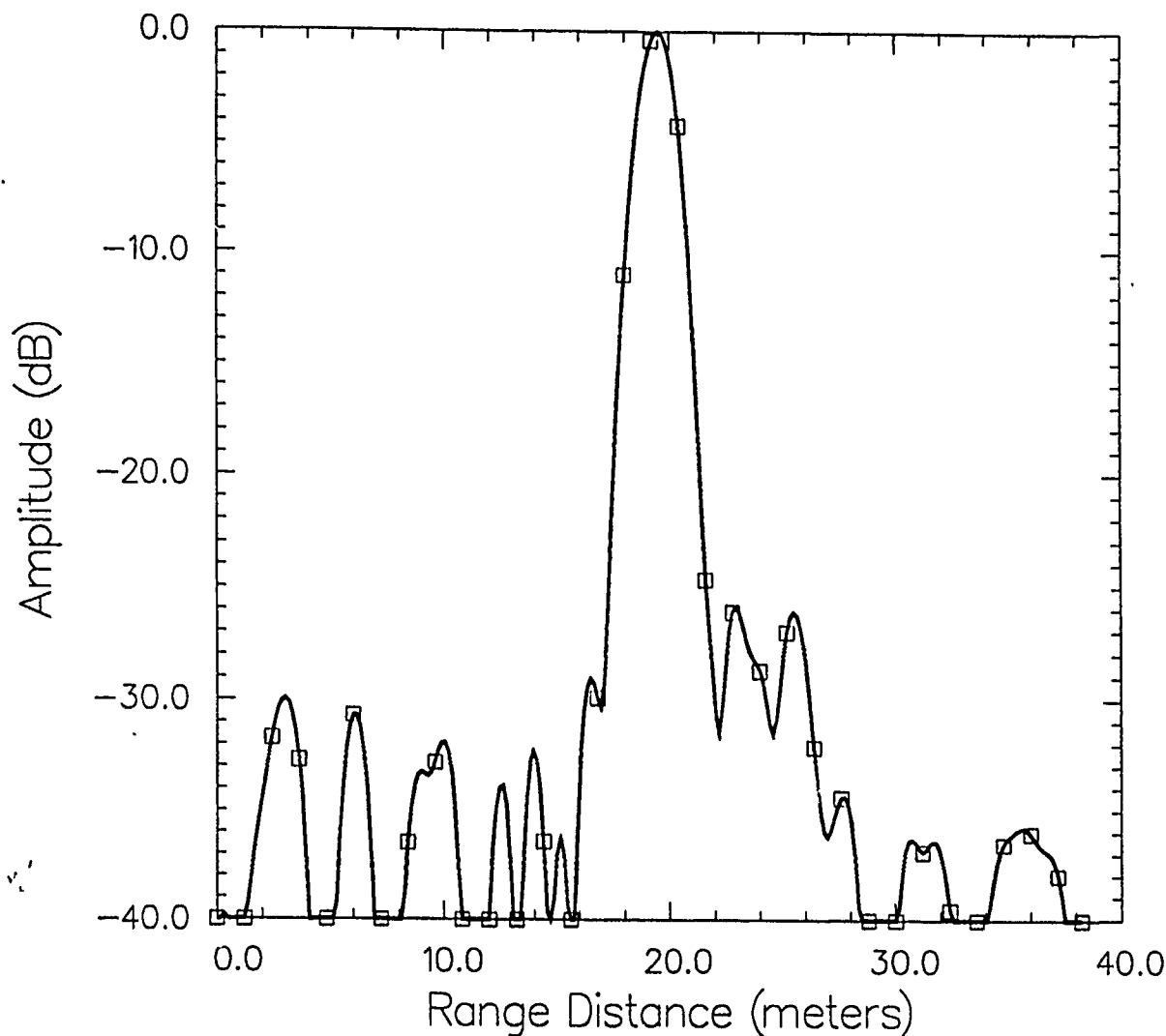


File: P3T1005.CI
 Rec: 2715.2500
 Elem: 2258.8750
 Azimuth 3dB width: 2.744m
 Range 3dB width: 1.564m
 Peak Amplitude: 6598.3
 Signal/Background: .77.17

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.246×10^8
 2D Total Energy: 2.281×10^8
 Comment: 3JUN90P36L

Figure 20. Impulse Response, Azimuth, C-VV Channel, Large Reflector

Impulse Response, Range

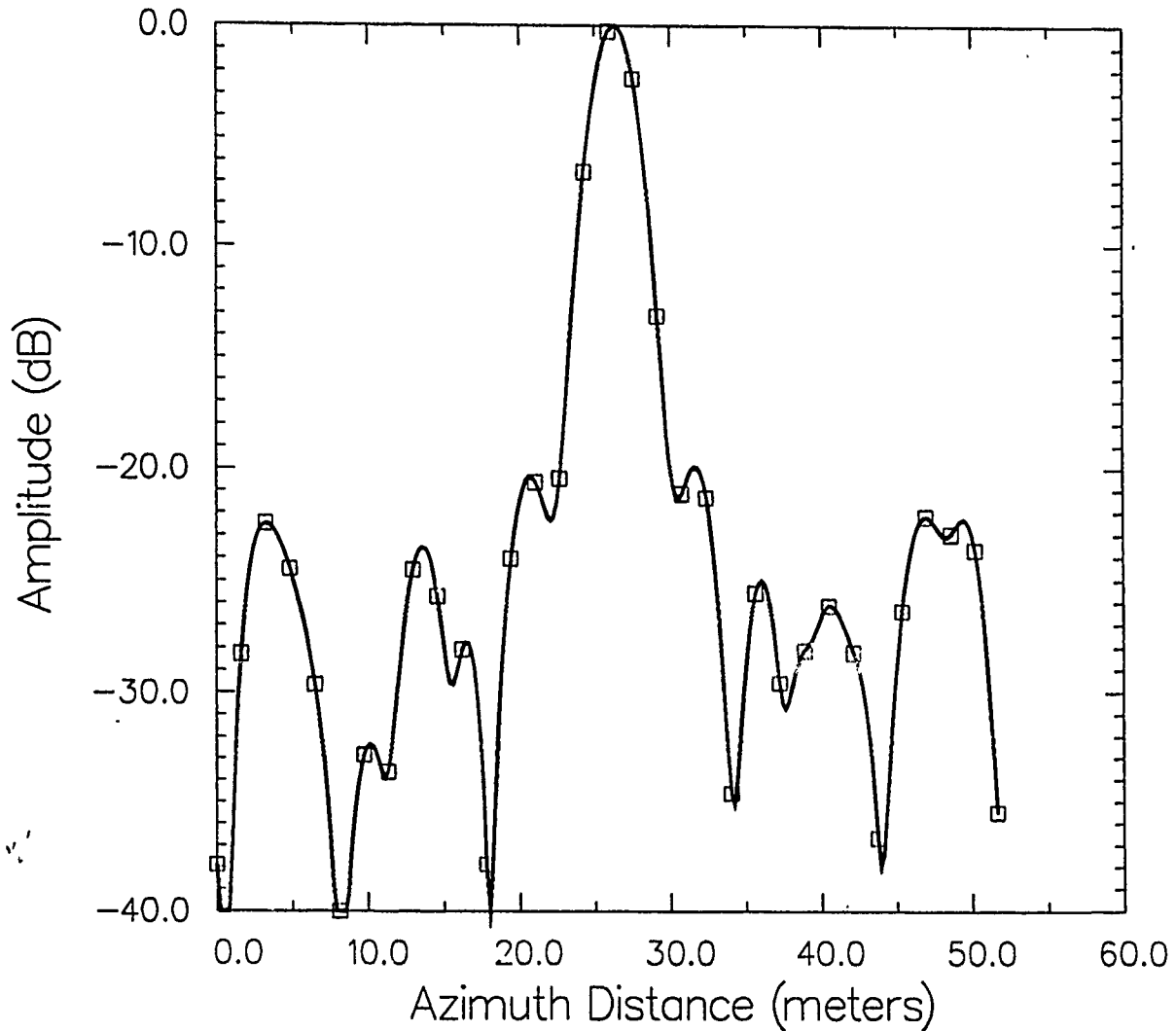


File: P3T1005.CI
 Rec: 2715.2500
 Elem: 2258.8750
 Azimuth 3dB width: 2.744m
 Range 3dB width: 1.564m
 Peak Amplitude: 6598.3
 Signal/Background: 77.17

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.246×10^8
 2D Total Energy: 2.281×10^8
 Comment: 3JUN90P36L

Figure 21. Impulse Response, Range, C-VV Channel, Large Reflector

Impulse Response, Azimuth

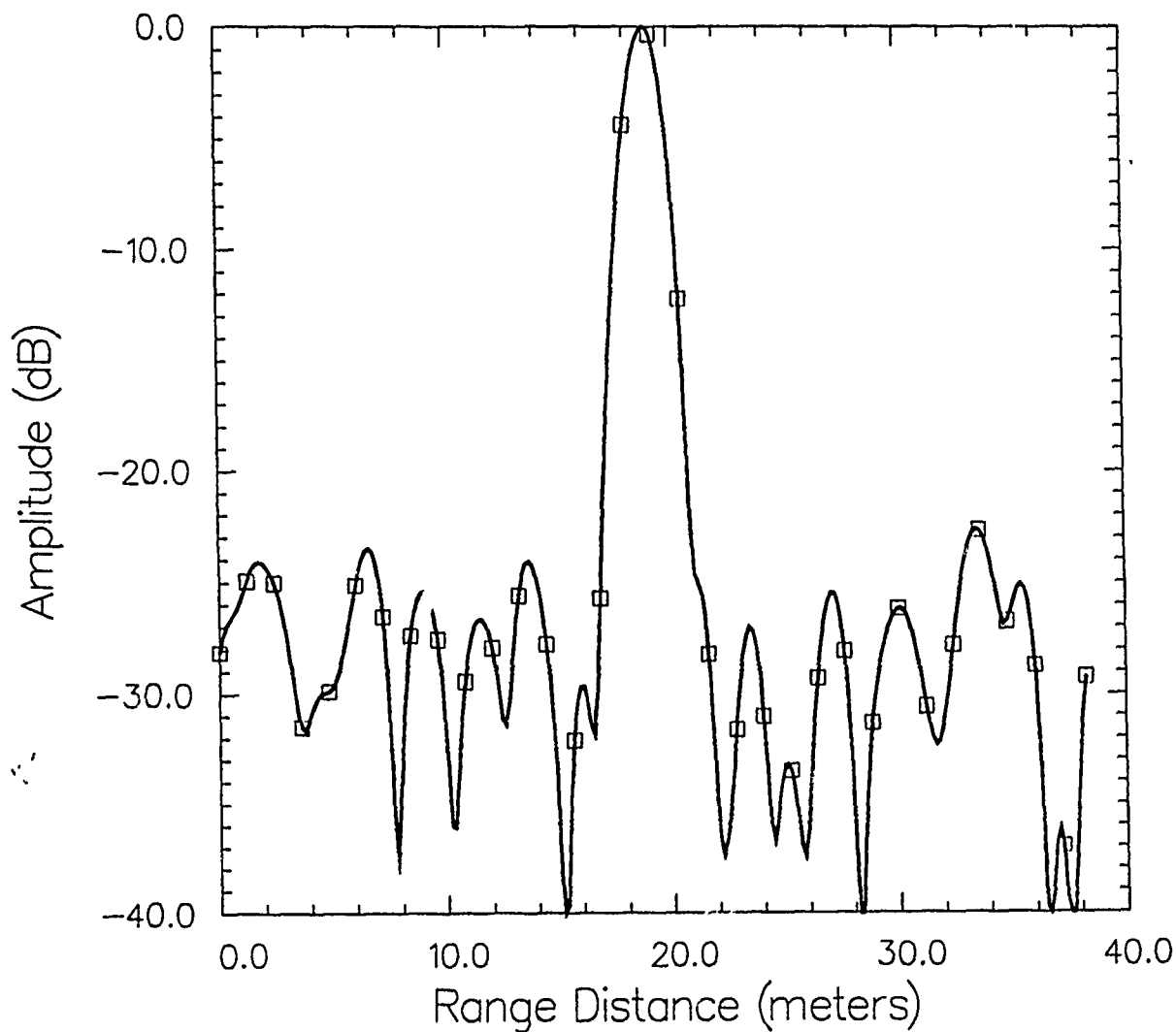


File: P3T1005.CI
 Rec: 2587.7500
 Elem: 2400.2500
 Azimuth 3dB width: 2.760m
 Range 3dB width: 1.546m
 Peak Amplitude: 1831.9
 Signal/Background: 21.43

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 9.593×10^6
 2D Total Energy: 3.545×10^7
 Comment: 3JUN90P36S

Figure 22. Impulse Response, Azimuth, C-VV Channel, Small Reflector

Impulse Response, Range



File: P3T1005.CI
 Rec: 2587.7500
 Elem: 2400.2500
 Azimuth 3dB width: 2.760m
 Range 3dB width: 1.546m
 Peak Amplitude: 1831.9
 Signal/Background: 21.43

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 9.593×10^6
 2D Total Energy: 3.545×10^7
 Comment: 3JUN90P36S

Figure 23. Impulse Response, Range, C-VV Channel, Small Reflector

22-AUG-1990 14:50

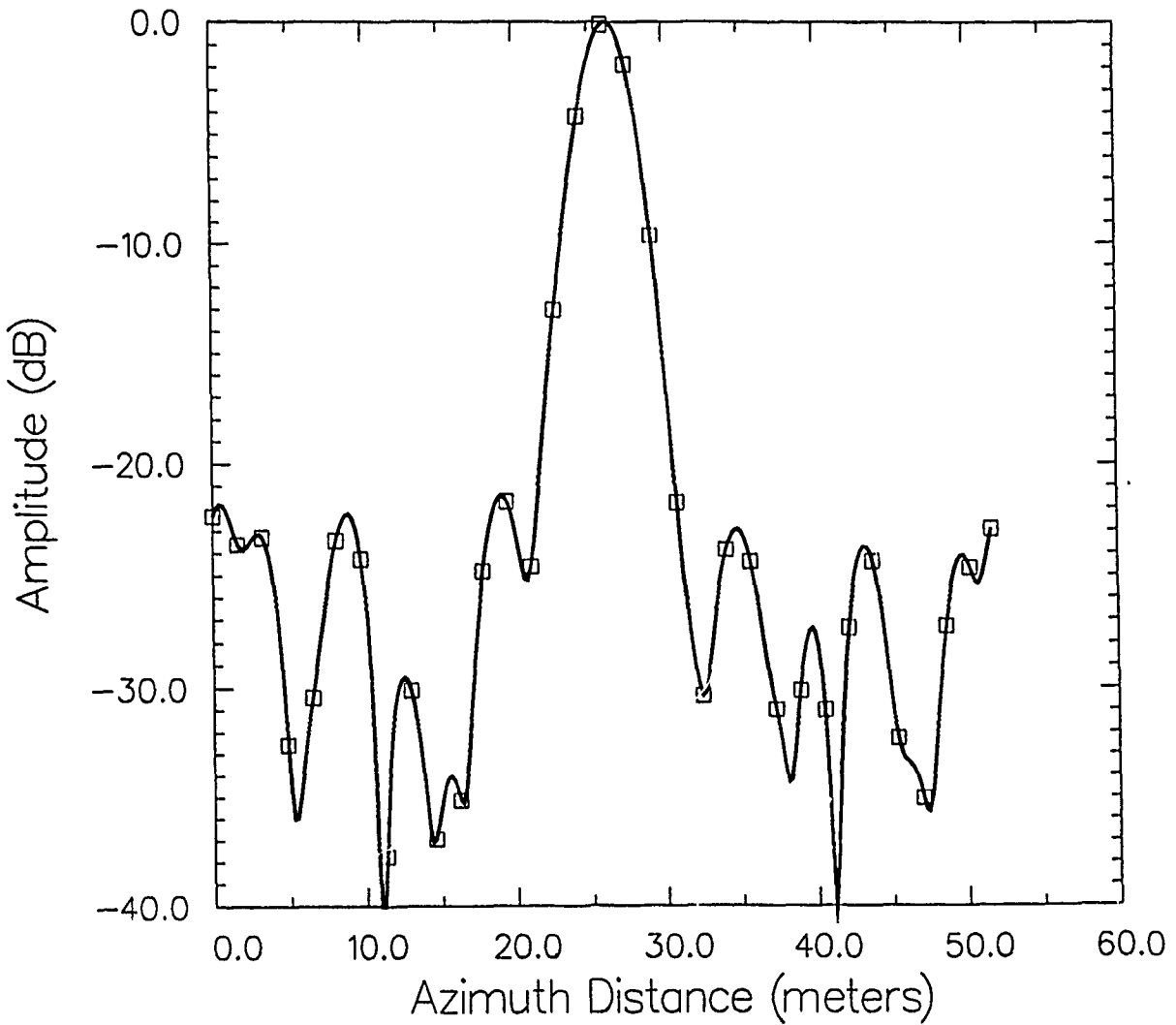
_ARIES\$DRA2:[RSL\NERIS]P3TI006.IPR;2

Environmental Research Institute of Michigan
 Impulse Response Analysis Session Log
 Executed 22-AUG-90 at 14:44:51.

Filename	Peak	Rec	Peak	Elm	AzSpa	RgSpa	Az3dB	Rg3dB	Energy3dB	EnerTotal	Peak	Sig/Back	Comment
P3TI006.CI	2713.625		2258.625	1.620	1.200	3.471	1.959	1.5915E+07	.33542E+07		599.	37.91	90.73
P3TI006.CI	2699.750		2276.875	1.620	1.200	3.454	1.926	.16580E+07	.33465E+07		613.	38.10	90.02
P3TI006.CI	2682.125		2294.500	1.620	1.200	3.450	1.929	.15808E+07	.29988E+07		598.	37.89	90.01
P3TI006.CI	2672.125		2316.875	1.620	1.200	3.484	1.930	.82963E+06	.16430E+07		433.	35.08	75.02
P3TI006.CI	2663.500		2334.625	1.620	1.200	3.357	1.967	.10378E+07	.24937E+07		486.	36.09	75.03
P3TI006.CI	2654.000		2351.125	1.620	1.200	3.360	1.948	.11215E+07	.39395E+07		505.	36.42	75.01
P3TI006.CI	2638.500		2366.250	1.620	1.200	3.367	1.974	.47944E+06	.32985E+07		330.	32.71	60.08
P3TI006.CI	2626.875		2366.625	1.620	1.200	3.347	1.948	.48202E+06	.26599E+07		332.	32.77	60.20
P3TI006.CI	2619.500		2373.125	1.620	1.200	3.465	1.958	.48484E+06	.20031E+07		330.	32.73	60.13
P3TI006.CI	2627.000		2410.750	1.620	1.200	3.309	1.694	.32134E+06	.53856E+07		294.	31.73	45.01
P3TI006.CI	2599.375		2382.250	1.620	1.200	3.271	1.995	.11355E+06	.46246E+06		161.	26.46	45.02
P3TI006.CI	2601.375		2412.375	1.620	1.200	4.608	1.732	.19304E+06	.42816E+07		196.	28.18	45.03

Figure 24. Impulse Response Listing for L-HH

Impulse Response, Azimuth

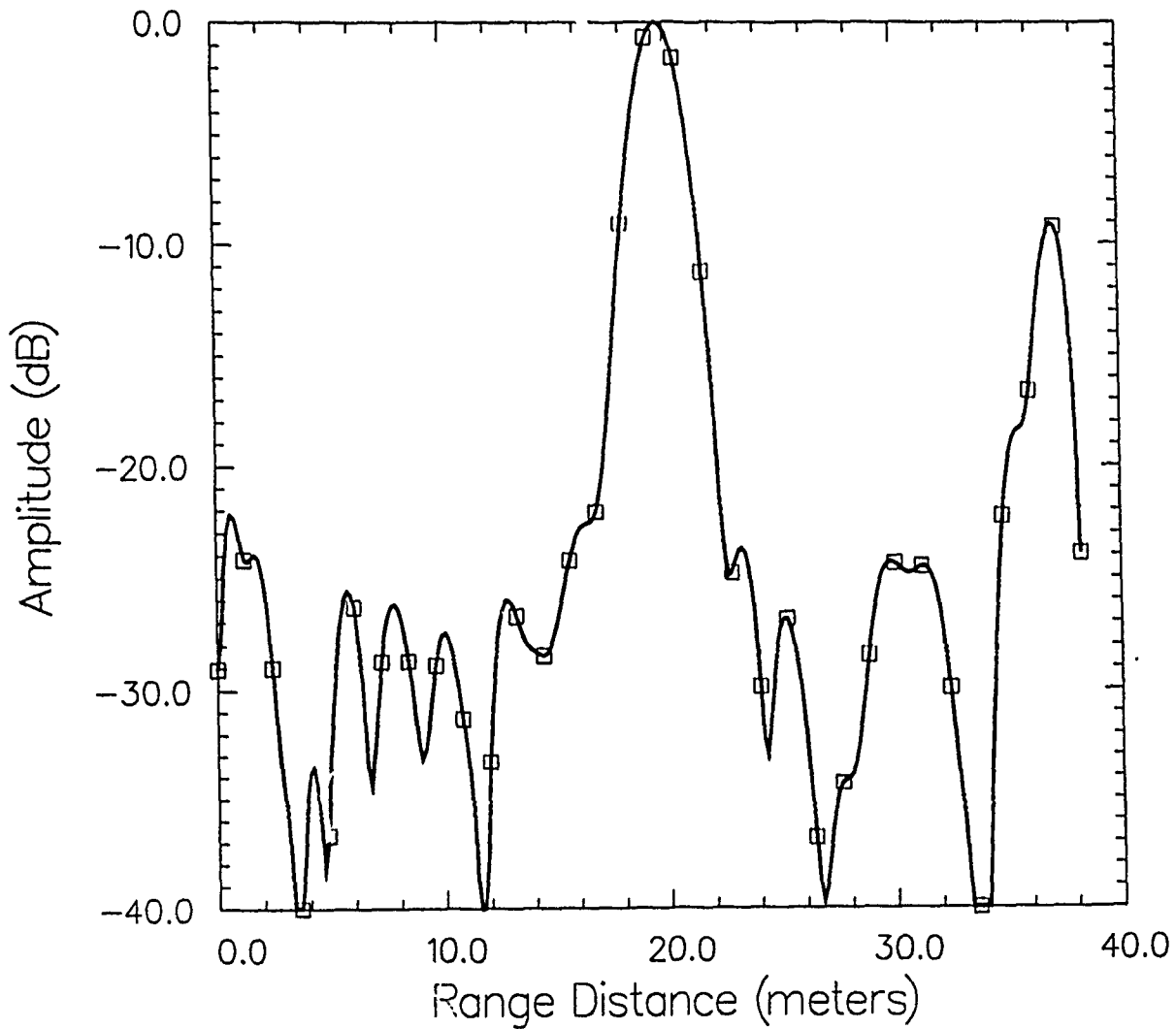


File: P3T1006.Cl
 Rec: 2599.3750
 Elem: 2382.2500
 Azimuth 3dB width: 3.271m
 Range 3dB width: 1.995m
 Peak Amplitude: 160.5
 Signal/Background: 18.03

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.135×10^5
 2D Total Energy: 4.625×10^5
 Comment: 3JUN90P36S

Figure 25. Impulse Response, Azimuth, L-VV Channel, Large Reflector

Impulse Response, Range

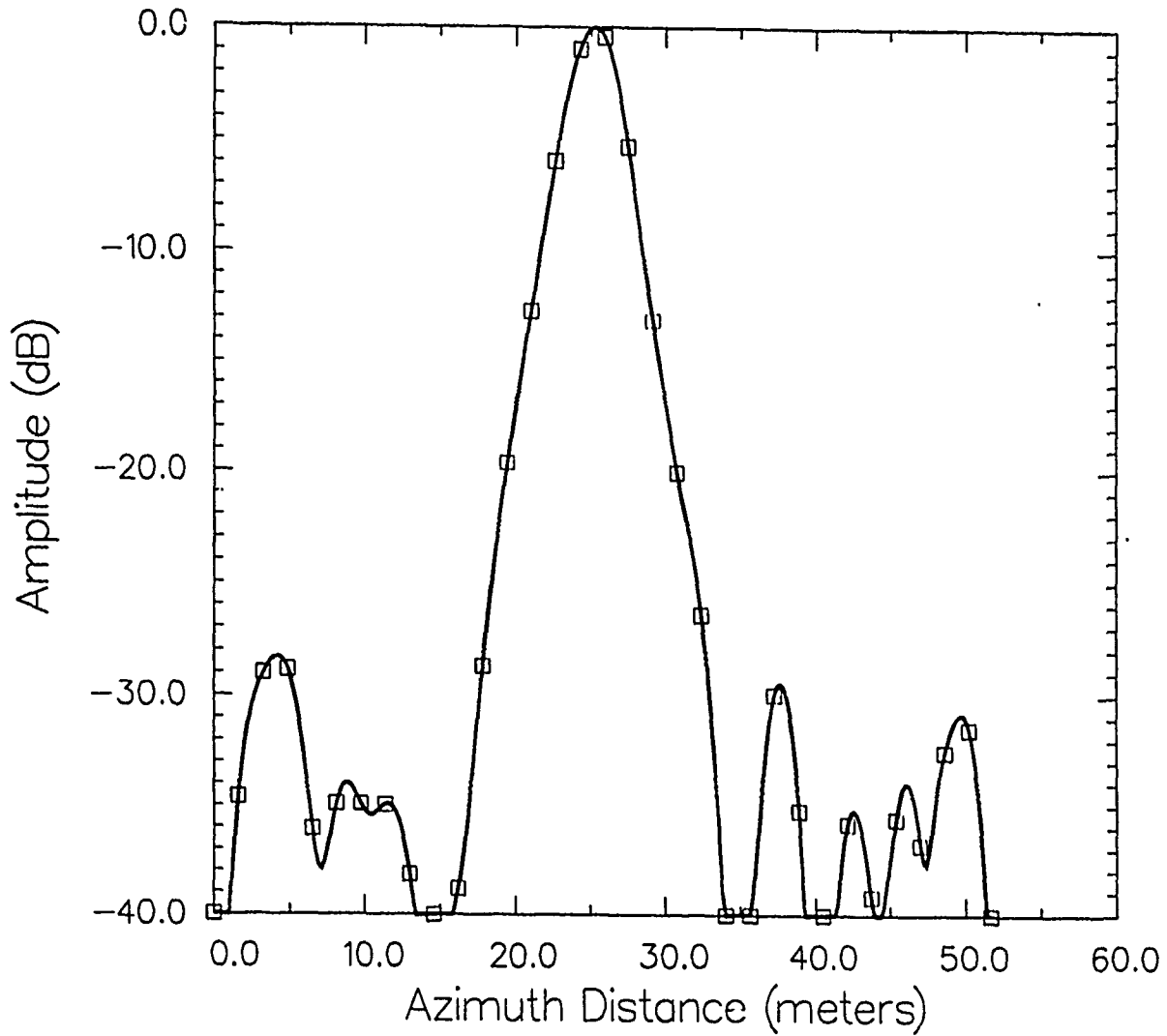


File: P3T1006.CI
 Rec: 2599.3750
 Elem: 2382.2500
 Azimuth 3dB width: 3.271m
 Range 3dB width: 1.995m
 Peak Amplitude: 160.5
 Signal/Background: 18.03

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.135×10^5
 2D Total Energy: 4.625×10^5
 Comment: 3JUN90P36S

Figure 26. Impulse Response, Range, L-VV Channel, Large Reflector

Impulse Response, Azimuth

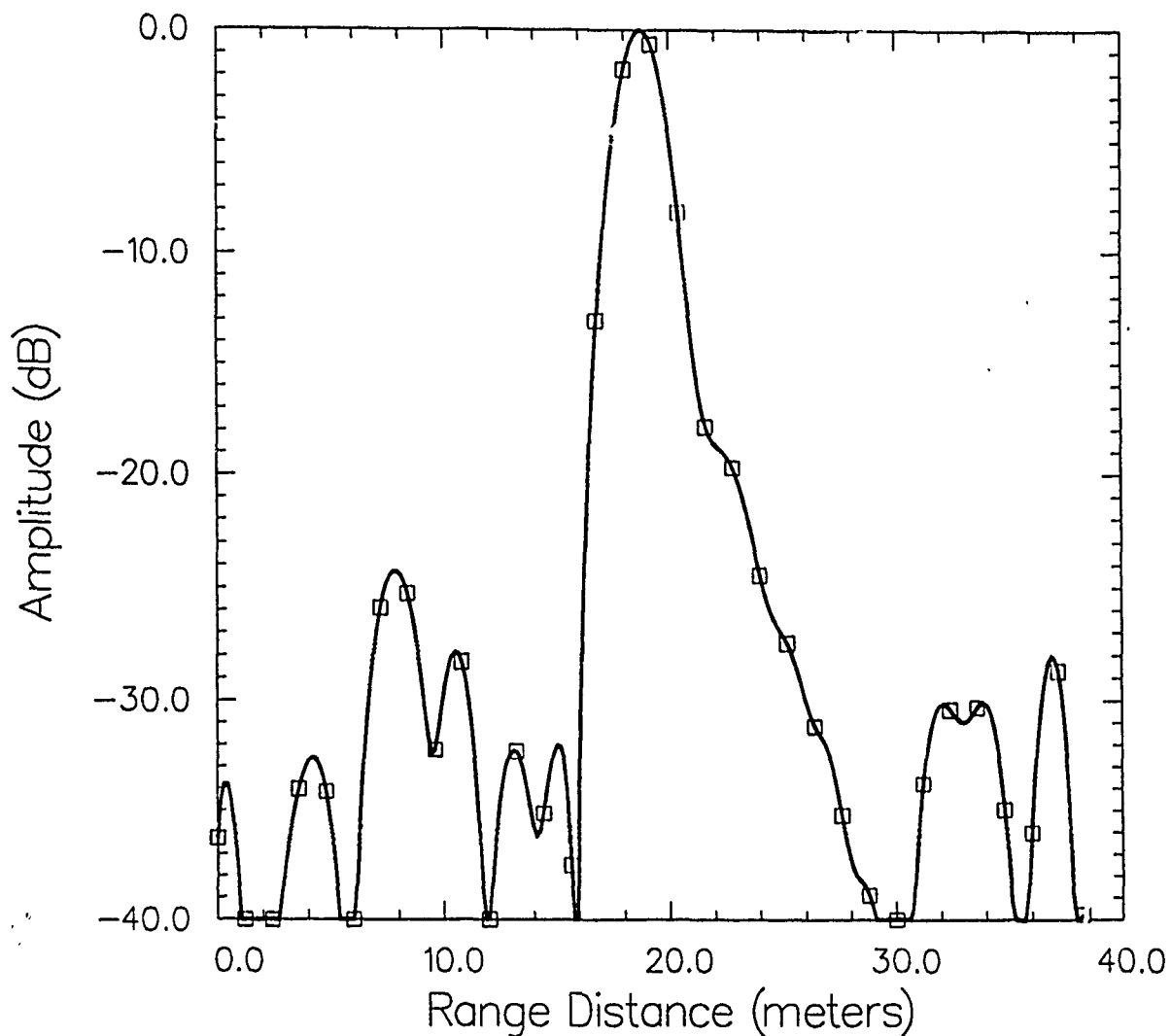


File: P3T1006.CI
 Rec: 2713.6250
 Elem: 2258.6250
 Azimuth 3dB width: 3.471m
 Range 3dB width: 1.959m
 Peak Amplitude: 599.5
 Signal/Background: 67.36

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.592×10^6
 2D Total Energy: 3.354×10^6
 Comment: 3JUN90P36L

Figure 27. Impulse Response, Azimuth, L-VV Channel, Small Reflector

Impulse Response, Range



File: P3T1006.CI
 Rec: 2713.6250
 Elem: 2258.6250
 Azimuth 3dB width: 3.471m
 Range 3dB width: 1.959m
 Peak Amplitude: 599.5
 Signal/Background: 67.36

Azimuth Spacing: 1.62m
 Range Spacing: 1.20m
 2D 3dB Energy: 1.592×10^6
 2D Total Energy: 3.354×10^6
 Comment: 3JUN90P36L

Figure 28. Impulse Response, Range, L-VV Channel, Small Reflector

X-VV

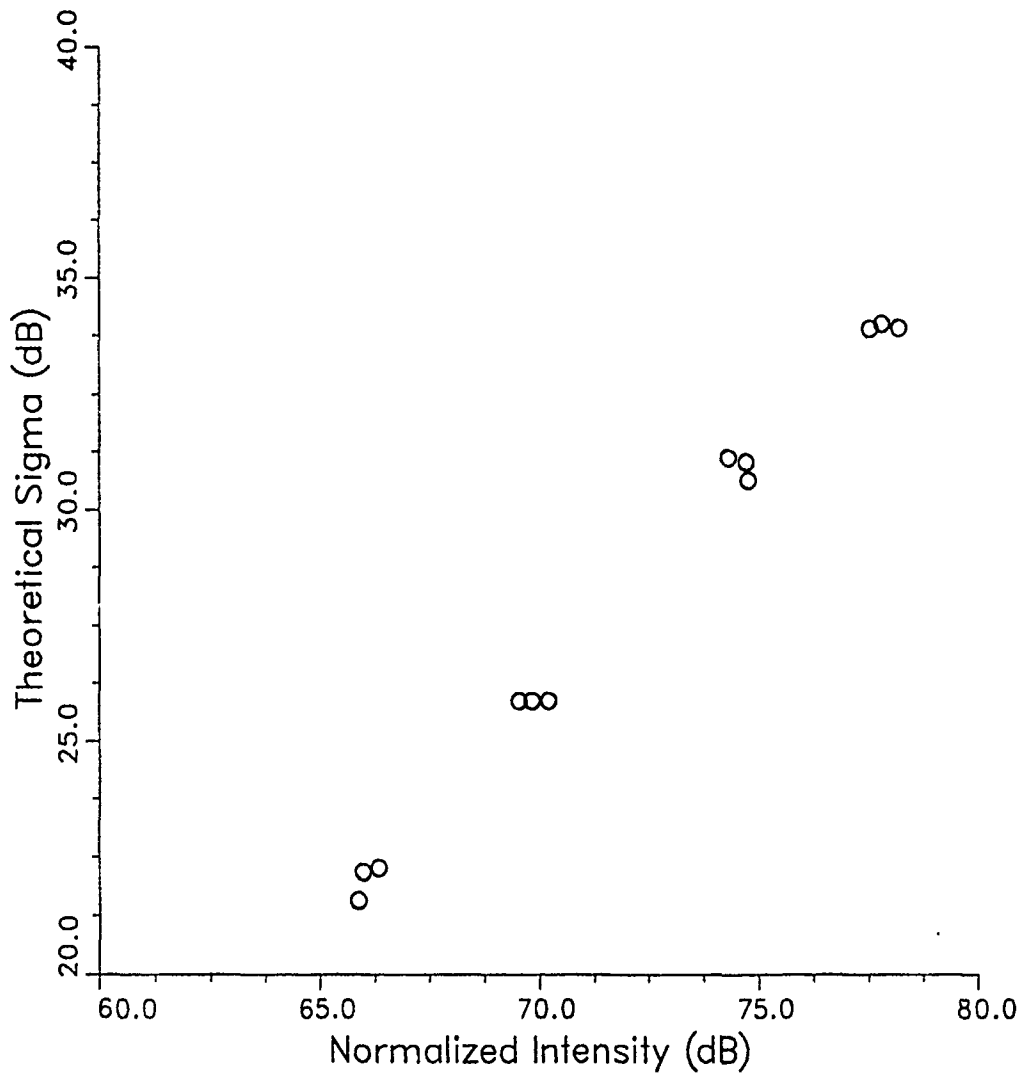


Figure 29. Normalized Intensity L-VV (Measured) Versus Theoretical RCS

P3F: S7:P3T1003.L AZSPA: 1.620 RCSPA: 1.700 TD: 16.799 ALTA: 2899.65 STRG: 7519.85

REFL	PARC	AZ3DB	PG3DB	ENG3DB	TOTENG	ATTN	XPOW	EORC	RIQPT	THCK	BACK	SIGDB	SIG3B	NOISE3DB
90.03	2716.000	2.738	1.544	0.30969E+09	0.58191E-09	12.0	-32.5	25.0	5777.9	59.592	87.500	33.915	27.654	77.550
90.02	2702.125	2.764	1.559	0.32112E-09	0.63986E-09	12.0	-32.5	25.0	5761.2	59.896	87.500	34.022	27.678	77.819
90.01	2694.500	2.741	1.526	0.32541E-09	0.63793E-09	12.0	-32.5	25.0	5780.1	59.774	87.500	33.930	27.603	78.212
72.02	2674.500	2.726	1.571	0.35531E-09	0.31692E-09	12.0	-32.5	25.0	5722.1	59.704	87.500	31.135	24.818	78.330
72.03	2663.575	2.743	1.564	0.35531E-09	0.31692E-09	12.0	-32.5	25.0	5717.7	59.643	87.500	31.039	24.714	78.731
72.01	2636.375	2.729	1.574	0.37375E-09	0.40678E-09	12.0	-32.5	25.0	5706.3	59.572	87.500	30.613	24.313	74.752
60.08	2640.875	2.743	1.590	0.32435E-08	0.40463E-09	12.0	-32.5	25.0	5697.7	59.456	87.500	25.859	19.473	69.436
60.20	2629.250	2.718	1.585	0.36343E-08	0.33116E+09	12.0	-32.5	25.0	5673.8	59.383	87.500	25.874	19.511	69.837
60.13	2621.875	2.755	1.577	0.61551E-08	0.28021E-09	12.0	-32.5	25.0	5664.9	59.280	87.500	25.872	19.498	70.310
45.01	2616.250	2.807	1.571	0.25339E-08	0.23088E-09	12.0	-32.5	25.0	5664.9	59.280	87.500	25.872	19.498	68.339
45.02	2601.750	2.770	1.574	0.23645E-08	0.10783E-09	12.0	-32.5	25.0	5640.8	59.184	87.500	21.568	15.181	65.324
45.03	2588.500	2.751	1.583	0.24335E-08	0.66246E+08	12.0	-32.5	25.0	5624.9	59.087	87.500	22.174	15.784	63.353

ORIGINAL SLOPE = 1.019
 ORIG Y-INTERCEPT = -45.273
 CRIG MSE = 0.119
 MOD Y-INTERCEPT = -43.909
 MOD MSE = 0.116
 MOD RMSE = 0.340

TAPE	DATE	PA	MEAN THETA	MEAN RANGE	RES ATTE	TRANS PWR	MAX SCR	MIN SCR	AVG SCR
S7:P3T1003.	030690	36	59.527	5698.4	12.0	-32.5	11118.94	709.69	4441.03

PROCESSING SCALE FACTOR
 -0.830
 RES SCALE FACTOR
 0.000

Figure 30. Computer Listing with the Calculation of the Slope of the Least-Squares Fitted Line for the Theoretical RCS (sigma in dB) Versus the Normalized 3 dB Energy (in dB) of the Trihedral Corner Reflectors for the X-W Channel

L-VV

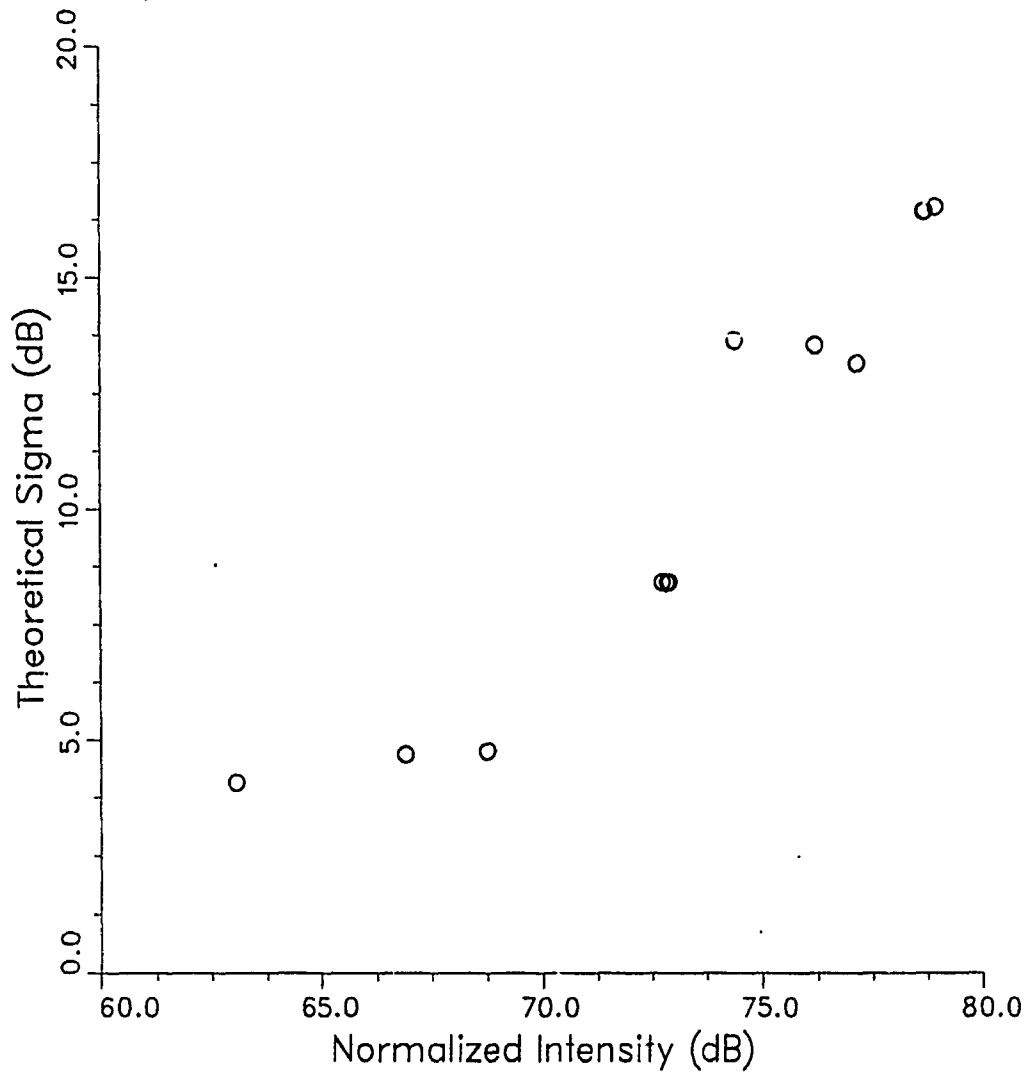


Figure 31. Normalized Intensity L-VV (Measured) Versus Theoretical RCS

P3f: s7:p3c1004f. AZSPA: 1.620 RGSPA: 1.200 TD: 16.799 ALTM: 2889.65 STRG: 2519.85

REFL	PKREC	AZ3DB	RG3DB	ERG3DB	TOTENG	ATTN	XFOV	BORC	RHGPT	IRCC	BACK	SC3DB	SIG09B	MOREN3DB
90.03	2713.500	3.356	1.920	0.17678E-07	0.33996E-07	38.0	-30.4	25.0	5774.9	59.975	9.380	16.416	8.325	78.742
90.02	2699.625	3.435	1.926	0.18911E-07	0.36820E-07	38.0	-30.4	25.0	5758.2	59.879	9.380	16.523	8.317	79.010
90.01	2682.000	3.342	1.874	0.18052E+07	0.34313E+07	38.0	-30.4	25.0	5737.1	59.756	9.380	16.432	8.464	78.776
75.02	2672.000	3.360	1.926	0.56746E-06	0.15282E+07	38.0	-30.4	25.0	5725.1	59.686	9.380	13.636	5.526	74.436
75.03	2663.375	3.342	1.933	0.10164E-07	0.27890E-07	38.0	-30.4	25.0	5714.7	59.625	9.380	13.540	5.438	76.248
75.01	2654.000	3.288	1.924	0.12715E-07	0.43134E-07	38.0	-30.4	25.0	5703.5	59.559	9.380	13.145	5.133	77.204
60.08	2638.375	3.246	1.928	0.47130E-06	0.25101E-07	38.0	-30.4	25.0	5684.7	59.448	9.380	8.407	0.442	72.862
60.20	2676.750	3.268	1.915	0.46195E-06	0.27456E+07	38.0	-30.4	25.0	5670.8	59.365	9.380	8.412	0.448	72.753
60.13	2619.250	3.334	1.935	0.48109E-06	0.20754E-07	38.0	-30.4	25.0	5661.8	59.311	9.380	8.415	0.319	72.916

ORIGINAL SLOPE	=	1.241
ORIG Y-INTERCEPT	=	-81.422
ORIG MSE	=	1.410
MOD Y-INTERCEPT	=	-63.113
MOD MSE	=	1.650
MOD RISE	=	1.287

TAPE	DATE	PA	MEAN THETA	MEAN RANGE	RES ATTE	TRANS PWR	MAX SCR	MIN SCR	AVG SCR
s7:p3c1004f	030690	36	59.623	5714.5	38.0	-30.4	3276.00	838.95	1936.71

PROCESSING SCALE FACTOR	RES SCALE FACTOR
-0.830	0.000

Figure 32. Computer Listing with the Calculation of the Slope of the Least-Squares Fitted Line for the Theoretical RCS (sigma in dB) Versus the Normalized 3 dB Energy (in dB) of the Trihedral Corner Reflectors for the L-W Channel

C-VV

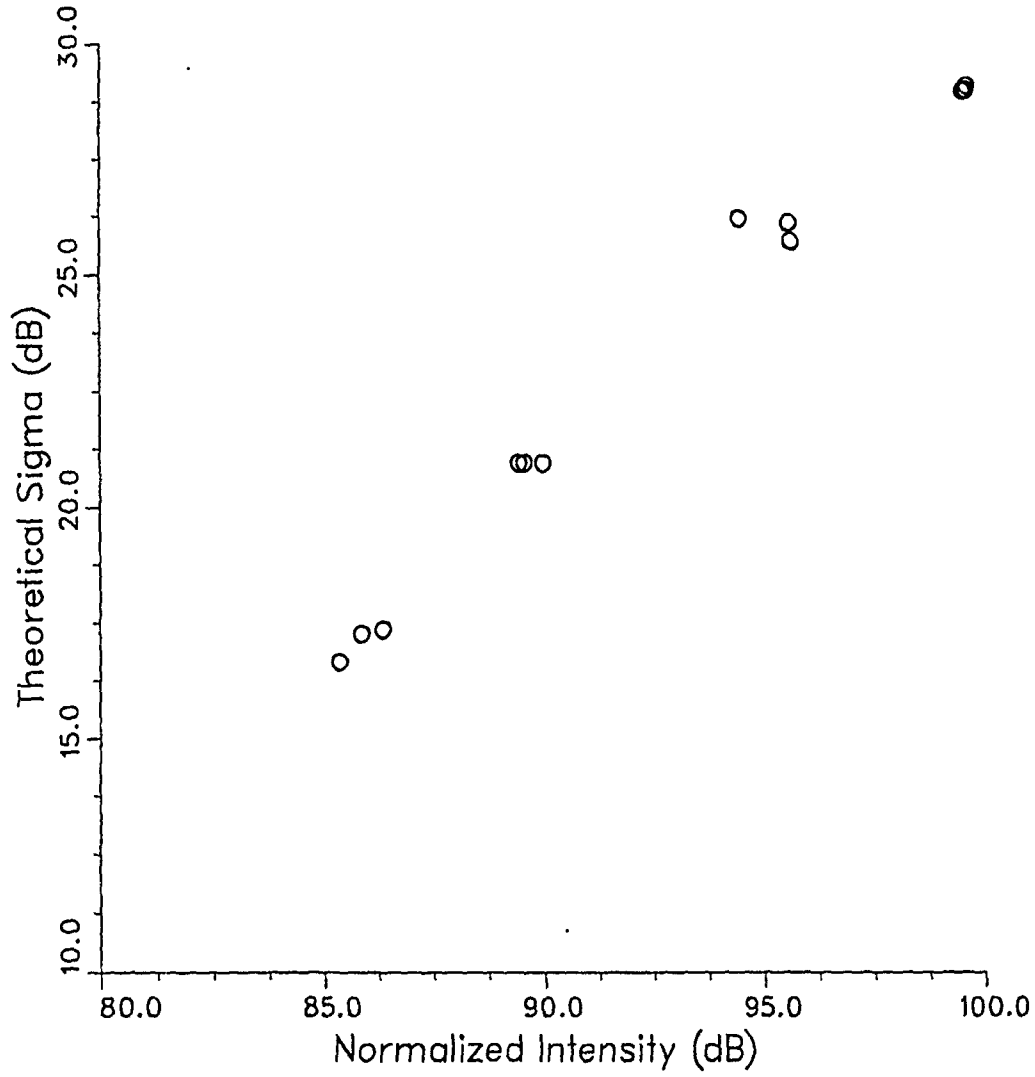


Figure 33. Normalized Intensity C-VV (Measured) Versus Theoretical RCS

PJ#: S7:PJT1005.L R3SPA: 1.620 R3SPB: 1.200 TD: 16.799 A:TM: 2889.65 STRG: 2519.85

REFL	PAREC	AJ3DB	RG3DB	ENG3DB	TOTENG	ATTN	XPOW	BORC	RNGPT	INCC	B-CA	SIGdB	SIGdB	NOREM3dB
90.03	2715.250	2.744	1.564	0.12456E+09	0.22814E+09	23.0	-38.4	25.0	5777.0	59.987	58.200	29.015	22.669	99.544
90.02	2701.375	2.797	1.541	0.12822E+09	0.23663E+09	23.0	-38.4	25.0	5760.3	59.891	58.200	29.122	22.777	99.614
50.01	2683.625	2.781	1.544	0.12844E+09	0.23455E+09	23.0	-38.4	25.0	5739.0	59.767	58.200	29.031	22.702	99.620
75.02	2673.750	2.770	1.546	0.11424E+08	0.10534E+09	23.0	-38.4	25.0	5727.1	59.698	58.200	26.235	19.919	94.771
75.03	2665.125	2.723	1.558	0.56849E+08	0.14039E+09	23.0	-38.4	25.0	5716.8	59.639	58.200	26.139	19.863	95.595
75.01	2655.625	2.784	1.569	0.67332E+08	0.24669E+09	23.0	-38.4	25.0	5705.4	59.571	58.200	25.744	19.341	95.648
60.08	2640.125	2.737	1.567	0.18524E+08	0.12095E+09	23.0	-38.4	25.0	5686.8	59.460	58.200	20.958	14.635	89.997
60.20	2628.500	2.709	1.583	0.16519E+08	0.10299E+09	23.0	-38.4	25.0	5672.9	59.377	58.200	20.964	14.641	89.554
60.13	2621.000	2.750	1.574	0.17047E+08	0.85406E+08	23.0	-38.4	25.0	5663.9	59.323	58.200	20.967	14.604	89.577
45.01	2615.000	2.801	1.568	0.91461E+07	0.78998E+08	23.0	-38.4	25.0	5657.3	59.284	58.200	17.362	10.935	86.356
45.02	2601.000	2.841	1.543	0.85105E+07	0.39761E+08	23.0	-38.4	25.0	5639.9	59.179	58.200	16.668	10.250	85.365
45.03	2587.750	2.760	1.546	0.95928E+07	0.35451E+08	23.0	-38.4	25.0	5624.0	59.082	58.200	17.274	10.473	85.861

ORIGINAL SLOPE = 0.871
 ORIG Y-INTERCEPT = -57.321
 ORIG MSE = 0.260
 MOD Y-INTERCEPT = -69.104
 MOD MSE = 0.759
 MOD RMSE = 0.871

TAPE DATE PA MEAN THETA MEAN RANGE RES ATTE TRANS PWR MAX SCR MIN SCR AVG SCR
 S7:PJT1005. 030690 36 59.521 5697.5 23.0 -38.4 8830.92 547.58 3694.73

PROCESSING SCALE FACTOR RES SCALE FACTOR
 -0.830 0.000

Figure 34. Computer Listing with the Calculation of the Slope of the Least-Squares Fitted Line for the Theoretical RCS (sigma in dB) Versus the Normalized 3 dB Energy (in dB) of the Trihedral Corner Reflectors for the C-VV Channel

L-HH

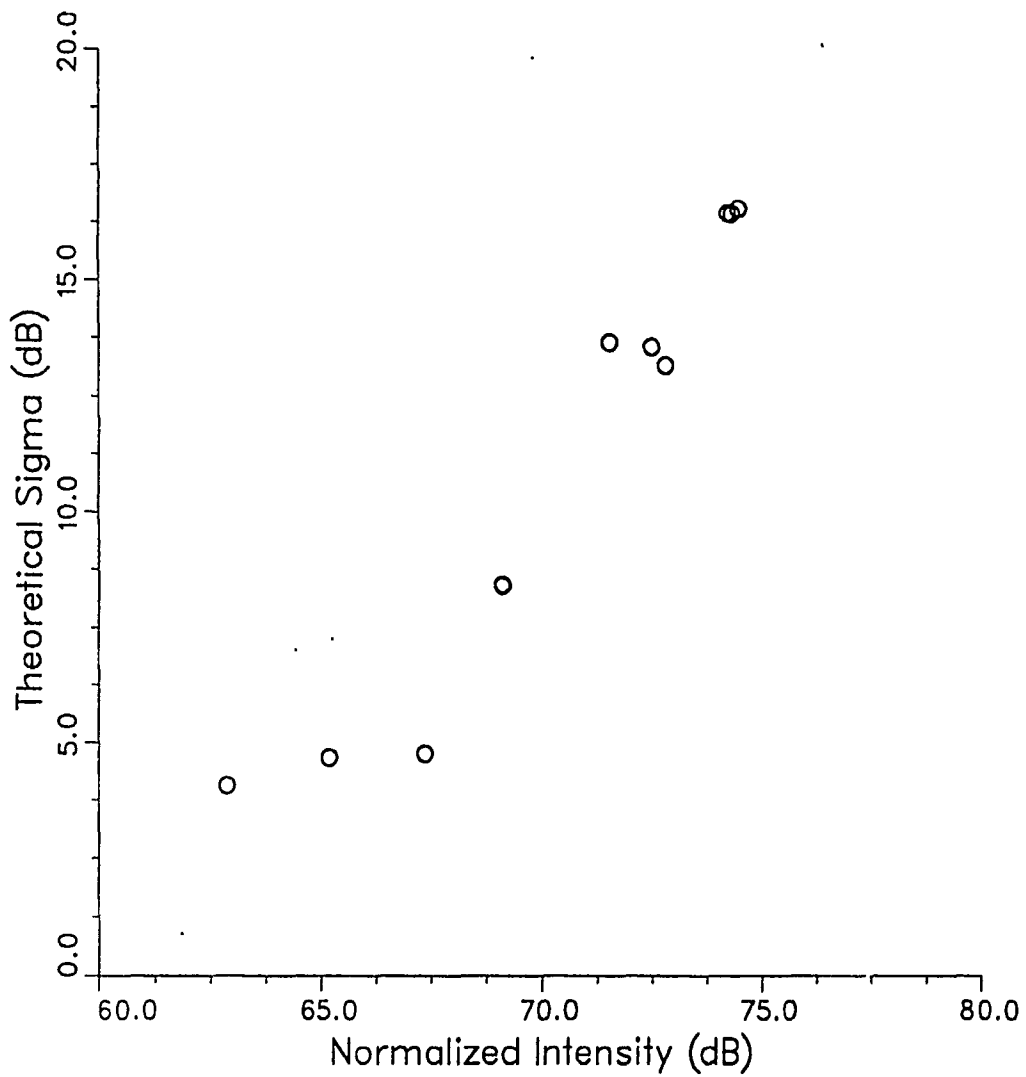


Figure 35. Normalized Intensity L-HH (Measured) Versus Theoretical RCS

P34: S7:P371006.t WSPA 1 170 POSPA- 1 200 TD: 16.749 ALTM: 2889.65 STPS 2519.85

REFL	PARREC	VE3DB	R3253	ERG3E5	TOTENG	ATTN	XPOW	BO%	KRGPT	IRCC	BACA	STGGB	SIGGB	NC4E438B
90.03	2713.625	3.471	1.959	0.15915E-07	0.33542E-07	33.0	-30.4	25.0	5775.0	59.975	7.630	16.416	8.091	74.566
90.02	2699.750	3.454	1.956	0.16590E-07	0.33446E-07	33.0	-30.4	25.0	5758.4	59.880	7.630	16.523	8.293	74.514
90.01	2682.125	3.450	1.959	0.15908E-07	0.29992E-07	33.0	-30.4	25.0	5737.2	59.757	7.630	16.431	8.200	74.280
75.02	2672.125	3.484	1.950	0.82863E-06	0.16430E-07	33.0	-30.4	25.0	5725.2	58.687	7.630	13.636	5.364	71.759
75.03	2663.500	3.357	1.947	0.10378E-07	0.24937E-07	33.0	-30.4	25.0	5714.9	59.676	7.630	13.540	5.343	72.516
75.01	2654.000	3.360	1.949	0.11215E-07	0.35395E-07	33.0	-30.4	25.0	5703.5	59.559	7.630	13.145	2.925	72.536
60.08	2638.500	3.367	1.974	0.47944E-06	0.32995E-07	33.0	-30.4	25.0	5684.9	59.449	7.630	9.407	0.181	66.115
60.20	2626.875	3.347	1.948	0.49202E-06	0.26599E-07	33.0	-30.4	25.0	5670.9	58.366	7.630	9.412	0.270	69.117
60.13	2619.500	3.465	1.958	0.48484E-06	0.20091E-07	33.0	-30.4	25.0	5662.1	58.313	7.630	9.415	0.100	69.129
45.01	2627.000	3.309	1.694	0.32134E-06	0.53856E-07	33.0	-30.4	25.0	5671.1	59.367	7.630	4.757	-2.729	67.255
45.02	2599.375	3.271	1.955	0.11355E-06	0.46246E-06	33.0	-30.4	25.0	5637.9	59.167	7.630	4.069	-4.677	62.875
45.03	2601.375	4.608	1.732	0.19304E-06	0.42816E-07	33.0	-30.4	25.0	5640.3	59.131	7.630	4.668	-4.352	63.199

TAPE	DATE	PA	MEAN	THETA	MEAN	RANGE	RES	ATTE	TRANS	PWR	MAX	SCR	MIN	SCR	AVG	SCR
S7:P371006.	030690	36	59.527		5698.4	33.0		-30.4	4281.11		298.89				2131.62	

PROCESSING SCALE FACTOR	RES SCALE FACTOR
-0.830	0.000

ORIGINAL SLOPE = 1.225
 ORIG Y-INTERCEPT = -75.321
 ORIG MSE = 1.774
 MOD Y-INTERCEPT = -59.536
 MOD MSE = 2.325
 MOD RMSE = 1.528

Figure 36. Computer Listing with the Calculation of the Slope of the Least-Squares Fitted Line for the Theoretical RCS (sigma in dB) Versus the Normalized 3 dB Energy (in dB) of the Trihedral Corner Reflectors for the L-V Channel

Table 1.

AUTEC Calibration Array
26 May '90 Pass 2

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RgSpa</u>	<u>Az3dB</u>	<u>Rg3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T960.Cl	2231.625	2046.625	1.620	1.200	3.667	1.673	9.831E+06	4.269E+07	1588.	N/A	X-VV Large
P3T960.Cl	2146.000	2118.625	1.620	1.200	3.709	1.740	1.156E+06	6.781E+06	540.	N/A	X-W Small
P3T961.Cl	2229.000	2046.375	1.620	1.200	5.893	1.732	2.224E+06	8.495E+06	593.	29.65	L-VV Large
P3T961.Cl	2143.250	2118.250	1.620	1.200	5.027	1.846	8.350E+04	8.975E+05	114.	5.72	L-VV Small
P3T962.Cl	2230.875	2046.375	1.620	1.200	2.796	1.625	7.466E+06	3.079E+07	1600.	N/A	C-VV Large
P3T962.Cl	2145.250	2118.500	1.620	1.200	2.822	1.627	3.463E+05	2.513E+06	344.	N/A	C-VV Small
P3T963.Cl	2229.000	2046.375	1.620	1.200	4.030	1.680	5.713E+05	2.026E+06	334.	60.72	L-HH Large
P3T963.Cl	2143.375	2118.250	1.620	1.200	4.620	1.752	4.339E+04	2.271E+05	92.	16.71	L-HH Small

Table 2.

AUTEC Calibration Array
28 May '90 Pass1

Filename	Peak_Rec	Peak_Elm	AzSpa	RgSpa	Az3dB	Rg3dB	Energy3dB	EnerTotal	Peak	Sig/Back	Comment
P3T965.CI	2433.625	2121.875	1.620	1.200	2.805	1.533	1.700E+07	8.697E+07	2446.	33.51	X-W Large
P3T965.CI	2347.000	2195.875	1.620	1.200	2.671	1.559	3.330E+06	2.192E+07	1088.	14.90	X-W Small
P3T966.CI	2431.125	2122.250	1.620	1.200	4.935	1.941	4.389E+06	1.798E+07	821.	17.85	L-W Large
P3T966.CI	2344.875	2196.375	1.620	1.200	4.388	2.086	1.349E+05	4.217E+06	151.2	3.29	L-W Small
P3T967.CI	2432.750	2122.625	1.620	1.200	2.841	1.602	1.132E+08	3.819E+08	5960.	60.82	C-W Large
P3T967.CI	2346.250	2196.500	1.620	1.200	2.839	1.539	6.041E+06	3.601E+07	1388.	14.16	C-W Small
P3T968.CI	2431.250	2122.625	1.620	1.200	4.400	1.873	2.779E+06	1.438E+07	711.	20.32	L-HH Large
P3T968.CI	2344.875	2196.750	1.620	1.200	4.031	1.833	2.291E+05	4.387E+06	217.	6.19	L-HH Small

Table 3.

AUTEC Calibration Array
28 May '90 Pass 31

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RgSpa</u>	<u>Az3dB</u>	<u>Rg3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T976.CI	2763.500	2047.875	1.620	1.200	2.733	1.816	.10658E+07	.50095E+07	564.	30.50	X-VV Large
P3T976.CI	2675.250	2123.125	1.620	1.200	2.630	1.675	.12200E+06	.11869E+07	206.	11.12	X-VV Small
P3T977.CI	2760.750	2048.250	1.620	1.200	3.352	1.997	1.7670E+06	7.4900E+06	632.	25.28	L-VV Large
P3T977.CI	2672.875	2123.250	1.620	1.200	3.783	2.098	1.3420E+05	1.5080E+06	164.	6.55	L-VV Small
P3T978.CI	2762.500	2048.000	1.620	1.200	2.755	1.583	.61724E+08	.23534E+09	4633.	77.22	C-VV Large
P3T978.CI	2674.250	2123.125	1.620	1.200	2.802	1.570	.42295E+07	.20897E+08	1211.	20.18	C-VV Small
P3T979.CI	2760.750	2048.125	1.620	1.200	3.475	2.017	.24613E+07	.93081E+07	740.	46.26	L-HH Large
P3T979.CI	2664.250	2128.500	1.620	1.200	3.631	1.889	34702.	.13521E+07	88.	5.51	L-HH Small

Table 4.

AUTEC Calibration Array
31 May '90 Pass 24

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RqSpa</u>	<u>Az3dB</u>	<u>Rq3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T981.CI	2512.625	2360.875	1.620	1.200	2.700	1.785	8.518E+06	3.670E+07	1698.	65.31	X-VV Large
P3T981.CI	2426.125	2434.375	1.620	1.200	2.800	1.635	7.954E+05	4.008E+06	523.	20.11	X-VV Small
P3T982.CI	2510.000	2361.500	1.620	1.200	4.922	1.684	1.063E+06	3.803E+06	440.	N/A	L-VV Large
P3T982.CI	2423.500	2434.750	1.620	1.200	6.355	1.708	4.238E+04	4.821E+05	77.6	N/A	L-VV Small
P3T983.CI	2511.750	2361.250	1.620	1.200	2.793	1.530	5.058E+07	1.866E+08	4218.	N/A	C-VV Large
P3T984.CI	2510.000	2361.500	1.620	1.200	4.935	1.643	6.066E+05	1.983E+06	334.	N/A	L-HH Large
P3T984.CI	2415.250	2440.250	1.620	1.200	6.366	1.569	6.577E+03	2.729E+05	32.	N/A	L-HH Small

Table 5.

AUTEC Calibration Array
2 June '90 Pass 6

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RgSpa</u>	<u>Az3dB</u>	<u>Rg3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T991.CI	1994.125	2312.000	1.620	1.200	2.767	1.647	.24594E+09	.48439E+09	9180.	212.99	X-VV Large
P3T991.CI	1881.000	2451.250	1.620	1.200	2.798	1.676	.14205E+08	.42385E+08	2195.	50.92	X-W Small
P3T992.CI	1991.500	2312.000	1.620	1.200	3.189	1.853	.13257E+07	.35146E+07	583.	45.32	L-VV Large
P3T992.CI	1924.625	2411.500	1.620	1.200	3.157	1.812	.31157E+06	.30659E+07	284.	22.08	L-VV Med.
P3T992.CI	1856.375	2454.875	1.620	1.200	3.454	1.831	.22640E+06	.86321E+07	229.	17.76	L-W Small
P3T993.CI	1993.375	2312.250	1.620	1.200	2.725	1.611	.80051E+08	.15252E+09	5268.	148.40	C-VV Large
P3T993.CI	1880.250	2451.500	1.620	1.200	2.806	1.600	.52239E+07	.20411E+08	1341.	37.77	C-W Small

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Table 6.

AUTEC Calibration Array
3 June '90 Pass 2

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RgSpa</u>	<u>Az3dB</u>	<u>Rg3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T997.CI	1596.625	2840.750	1.620	1.200	2.639	1.846	.86909E+06	.50780E+07	518.	17.87	X-VV Large
P3T997.CI	1515.625	2952.000	1.620	1.200	2.838	1.428	.25780E+06	.28729E+07	309.	10.66	X-VV Small
P3T998.CI	1593.875	2841.250	1.620	1.200	3.416	1.719	.13625E+07	.39180E+07	599.	29.96	L-VV Large
P3T998.CI	1513.125	2952.125	1.620	1.200	2.918	1.730	.13320E+06	.14806E+07	201.	10.03	L-VV Small
P3T999.CI	1595.875	2841.375	1.620	1.200	2.722	1.574	.36715E+08	.70812E+08	3586.	59.77	C-VV Large
P3T999.CI	1515.125	2952.250	1.620	1.200	2.813	1.579	.60773E+07	.32192E+08	1449.	24.16	C-VV Small
P3T1000.CI	1593.750	2841.000	1.620	1.200	3.834	1.592	.64868E+06	.38780E+07	398.	13.28	L-HH Large
P3T1000.CI	1512.875	2952.000	1.620	1.200	3.304	1.428	.10092E+06	.30827E+06	181.	6.02	L-HH Small

RS-90-124-3

Table 7.

AUTEC Calibration Array
3 June '90 Pass 36

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RqSpa</u>	<u>Az3dB</u>	<u>Rq3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T1003.Cl	2716.000	2258.500	1.620	1.200	2.738	1.544	.30969E+09	.58191E+09	10450.	92.48	X-VV Large
P3T1003.Cl	2588.500	2399.875	1.620	1.200	2.751	1.583	.24353E+08	.66246E+08	2911.	25.76	X-VV Small
P3T1004.Cl	2713.500	2258.625	1.620	1.200	3.356	1.920	.17678E+07	.33996E+07	637.	45.50	L-VV Large
P3T1004.Cl	2599.375	2382.250	1.620	1.200	3.253	1.976	50536.	.55816E+06	108.	7.68	L-VV Small
P3T1005.Cl	2715.250	2258.875	1.620	1.200	2.744	1.564	.12456E+09	.22814E+09	6598.	77.17	C-VV Large
P3T1005.Cl	2587.750	2400.250	1.520	1.200	2.760	1.546	.95928E+07	.35451E+08	1832.	21.43	C-VV Small
P3T1006.Cl	2713.625	2258.625	1.620	1.200	3.471	1.959	.15915E+07	.33542E+07	599.	67.36	L-HH Large
P3T1006.Cl	2599.375	2382.250	1.620	1.200	3.271	1.995	11355E+06	.46246E+06	161.	18.03	L-HH Small

Table 8.

AUTEC Calibration Array
4 June '90 Pass 35

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RgSpa</u>	<u>Az3dB</u>	<u>Rg3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T1008.CI	2460.875	2094.625	1.620	1.200	2.713	1.591	.17925E+09	.34743E+09	7921.	110.01	X-VV Large
P3T1008.CI	2339.438	2232.688	1.620	1.200	2.786	1.577	.10825E+08	.36852E+08	1941.	26.96	X-VV Small
P3T1009.CI	2462.500	2094.750	1.620	1.200	3.172	1.798	.12703E+07	.29733E+07	606.	37.87	L-VV Large
P3T1009.CI	2341.000	2232.250	1.620	1.200	6.549	1.780	31122.	.6554E+06	66.	6.58	L-VV Small
P3T1010.CI	2460.750	2094.625	1.620	1.200	2.715	1.556	.12122E+09	.22170E+09	6533.	82.70	C-VV Large
P3T1010.CI	2339.313	2231.563	1.620	1.200	2.893	1.534	.79142E+07	.35019E+08	1587.	20.09	C-VV Small
P3T1011.CI	2463.250	2094.500	1.620	1.200	3.175	1.719	.10228E+07	.23239E+07	548.	54.77	L-HH Large
P3T1011.CI	2341.875	2232.000	1.620	1.200	6.627	1.612	76676.	.15327E+06	105.	10.49	L-HH Small

Table 9.

AUTEC Calibration Array
5 June '90 Pass 1

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RgSpa</u>	<u>Az3dB</u>	<u>Rg3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T1014.Cl	3037.125	2346.500	1.620	1.200	2.772	1.520	2.188E+07	4.940E+07	2783.	33.75	X-VV Large
P3T1014.Cl	2907.250	2482.875	1.620	1.200	2.932	1.558	7.191E+05	3.985E+06	473.	12.36	X-VV Small
P3T1015.Cl	3034.750	2346.250	1.620	1.200	5.579	1.661	1.206E+06	2.551E+06	451.	31.32	L-VV Large
P3T1015.Cl	2918.500	2466.000	1.620	1.200	4.742	1.778	4.404E+04	3.730E+05	92.	17.52	L-VV Small
P3T1016.Cl	3036.375	2346.750	1.620	1.200	2.830	1.549	9.134E+07	1.747E+08	5635.	36.57	C-VV Large
P3T1016.Cl	2920.125	2466.000	1.620	1.200	2.821	1.549	8.090E+06	3.561E+07	1680.	26.06	C-VV Small
P3T1017.Cl	3034.875	2346.375	1.620	1.200	5.740	1.717	9.024E+05	1.955E+06	376.	35.47	L-HH Large
P3T1017.Cl	2918.625	2466.000	1.620	1.200	5.044	1.743	6.307E+04	3.189E+05	106.	24.47	L-HH Small

Table 10.

AUTEC Calibration Array
7 June '90 Pass 6

<u>Filename</u>	<u>Peak Rec</u>	<u>Peak Elm</u>	<u>AzSpa</u>	<u>RqSpa</u>	<u>Az3dB</u>	<u>Rq3dB</u>	<u>Energy3dB</u>	<u>EnerTotal</u>	<u>Peak</u>	<u>Sig/Back</u>	<u>Comment</u>
P3T1025.CI	2609.625	2174.625	1.620	1.200	2.747	1.532	.11160E+09	.21861E+09	6283.	35.97	X-VV Large
P3T1025.CI	2482.375	2307.250	1.620	1.200	2.833	1.605	.22118E+08	.85927E+08	2760.	28.82	X-VV Small
P3T1026.CI	2607.125	2174.500	1.620	1.200	3.243	1.831	.12817E+07	.24233E+07	552.	31.61	L-VV Large
P3T1026.CI	2480.000	2308.000	1.620	1.200	4.436	1.627	28631.	.14449E+07	79.	14.68	L-VV Small
P3T1027.CI	2608.750	2174.875	1.620	1.200	2.706	1.496	.65696E+08	.13808E+09	5162.	34.71	C-VV Large
P3T1027.CI	2481.625	2307.500	1.620	1.200	3.041	1.558	.78084E+07	.33652E+08	1558.	24.31	C-VV Small
P3T1028.CI	2607.250	2174.625	1.620	1.200	3.182	1.896	.10005E+07	.20584E+07	504.	35.59	L-HH Large
P3T1028.CI	2480.000	2307.625	1.620	1.200	7.567	1.708	61162.	.97940E+06	86.	20.23	L-HH Small