RJM Corporation
Ten Roberts Lane
Ridgefield, CT 06877
203 438-6198

RJM

January 21, 1992

Mr. Aaron Nissen
Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, UT 84624

Ref: IPSC Unit No. 2 Balancing Report
RJM Project No. 911368

Dear Aaron:

Enclosed are five (5) copies of the above referenced report for IPSC Unit No. 2 airflow balancing program.

If you have any comments or questions, please feel free to give me a call.

Very truly yours,

Richard J. Monro
President

RJM/sv
Ipscunt2.ltr

Enclosures

INTERMOUNTAIN

UNIT NO. 2 BALANCING

REPORT

for

Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, UT 84624

Attn: Mr. Aaron Nissen

Reliability and performance solutions

Project No. 911368
January 20, 1992
Ipscunt2.rep/sv

By
RJM Corporation
Ten Roberts Lane
Ridgefield, CT 06877
203 438-6198

Prepared By

Richard J. Monro

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6.0 APPENDIX

1.0 INTRODUCTION

The Intermountain Power Service Corporation (IPSC) has requested that RJM Corporation (RJM) perform an airflow balancing program on IPSC's Unit No. 2. This unit is an 850 MW Babcock & Wilcox coal-fired boiler with 48 burners. The unit is opposed-fired with 24 burners on the front wall and 24 burners on the rear wall. There are four elevations of burners on both the front and back walls. The unit has 8 pulverizers. Each pulverizer feeds 6 burners. Each elevation of burners is split and compartmentalized with dampers at both ends supplying secondary and air to the burners. Each coal burner has primary and secondary air zones. The secondary air zone has an inner and outer zone. The inner secondary air zone has RJM flame stabilizers and was tested with the flame stabilizers in place. The outer zone has register doors to control swirl.

On November 27, 1991 RJM performed a baseline air distribution analysis on all 48 burners. Balancing work on the 48 burners and comparison test work on 12 burners was conducted on November 28, 1991. Work was discontinued on November 28, 1991 because of schedule requirements to bring the unit back on line. This report presents the results of this effort.

2.0 AIRFLOW CRITERIA

Proper operation of utility power boilers for economic, pollution control, maintenance and safety reasons requires that the secondary combustion airflows to the burners meet the following criteria:

- Total airflow to each burner should be within ±5% of the average airflow for all the burners in the unit. If NO_x control or low excess air operation are not critical requirements, total airflow to each burner within a ±10% range would be acceptable.

- The perimeter loading (around the radius of the burner) for an individual burner should fall within ±10% of the average perimeter loading value for the burner.

- Individual data point high velocities should not vary from the burner peak velocity by more than 10%. Exceeding this limit can indicate a blockage in flow to the burner.

- The minimum velocity at a data point should not vary by more than 20% from the peak velocity for a data point. Data which exceeds this limit indicates severely disturbed flow of the secondary air to the burner. This is generally caused by vortex eddies.

3.0 CONCLUSIONS

With the above criteria in mind, the following conclusions are drawn from the air distribution analysis and balancing test data collected on Unit No. 2:

1. A savings of $1 to 1.5 million can be achieved by balancing airflows to the burners instead of installing airflow measuring equipment in each windbox. Balancing can be achieved by airflow modeling and installation of corrective devices. The estimated costs for modeling and installation is estimated to be between $175,000 and $275,000.

2. The possibility exists for long-term, localized overheating of boiler tubes, support hangers, etc. in finishing superheater and reheater areas due to extremes in airflows to burners. Long-term tube wastage may also occur due to oxidizing/reducing reactions localized around burners with severe perimeter loading problems.

3. Flame scanning can be improved by correcting current perimeter loading distribution deviation problems.

4. The secondary airflows to both the inner and outer zones of all burners are severely disturbed. Almost all test data points within each burner show clear evidence of severely disturbed flow. It is suspected that airflow entering each windbox from the ductwork is experiencing flow separation at the inner corners. This flow separation is resulting in large vortex eddies which appear to be cascading through the windbox.

5. The magnitude of the disturbed flow is also indicated by the perimeter loading of the secondary air to both zones of the burners. The average perimeter loading on the outer zone is +25%, -27%. The minimum range is +15%, -16%. The maximum range is +41%, -43%. The inner zones shows more severely disturbed flow than the outer zones. This is perhaps due to the fact that the outer zone air doors tend to correct large vortex eddies. Inner zone perimeter loading distribution deviations have maximum values of +67% and -45%. Both inner and outer zones have clear indications of interrupted flow across the air door and air vanes.

6. Each windbox exhibits a definite side-to-side imbalance -i.e., one side has a high airflow which graduates down to low flow on the other side. The side-to-side imbalance ranges from 6% to 13% for outer zone airflows and 10% to 15% for the inner zone airflows. Not all windboxes have the high flow point on the same side.

7. There is a top-to-bottom airflow imbalance between windboxes. Typically, the bottom windboxes (B and G rows) have the lowest airflows in the unit. The highest airflow windboxes are the third row elevations (A and H rows). Using outer zone airflow measurements, the front windbox, A level, has an airflow that is 1.3% higher than the average of all windboxes in the unit, while the B elevation has airflow which is 8.5% less than all windboxes in the unit. In the rear windbox, the H elevation has an airflow deviation of +9.3% while the G elevation has a -2.9% flow deviation.

8. On average, the burners in the rear of the boiler have a 4% higher total airflow than the burners on the front of the boiler.

9. Twelve prebalanced burner inner zones met RJM's optimum airflow distribution criteria of ±5%. Twenty-six met the post balancing criteria. For the outer zones, 28 burners met the prebalance criteria of ±5% while 31 met the criteria after balancing.

10. RJM's criteria for the minimum acceptable airflow deviation is ±10%. In the prebalanced condition for inner zone airflows, 30 burners met the ±10% criteria. After balancing, 46 burners met the criteria. On the outer zones, 41 burners met the prebalanced criteria and 44 postbalanced.

11. Changing windbox damper position to control airflow has little or no effect on airflow balance between burners. The total flow deviation between the highest and lowest flow burner with the windbox dampers 100% open was 14.45%. With the windbox dampers open to the 55% open position, the total flow deviation changed only slightly to 12.1%. Flow deviations on a burner-by-burner basis remained relatively the same as well.

12. A comparison of the perimeter loading distribution deviations on the H windbox burners for the two windbox damper loadings highlights how disturbed the airflow patterns in the windbox are. Normally, if windbox airflow patterns are uniform, perimeter loading distribution deviations remain the same within $\pm 2\%$. In the case of the H windbox test, significant changes in perimeter loading distribution deviations occurred indicating that windbox patterns are shifting with time, most likely due to movement of large windbox vortices.

13. Tests of the B windbox burners in a simulated, out-of-service condition indicates that airflow through the out-of-service burners is approximately 27% of the airflow at full load. Burner flow deviations, while following a similar profile across the windbox, show more extreme percentage differences indicating that one windbox damper may be closing at a slightly higher rate than the other windbox damper.

14. Windbox dampers do not appear synchronized with each other. The lack of synchronization creates side-to-side imbalances which may increase in magnitude as load is dropped.

4.0 RECOMMENDATIONS

1. It is strongly recommended that the severely disturbed airflow conditions on the IPSC units be corrected using a fluid dynamics model of the unit from the air heater outlet to the furnace nose. The model should be used to locate and correct the flow separations and vortex eddies which are the causes of the severely disturbed windbox flow patterns. Flow conditions should be corrected to the following criteria:

- Maximum Flow Deviations Between Burners - ±5%.

- Perimeter Loading Distribution Deviations Within Burners
  - ±5% for 80% of the test points
  - ±10% for 100% of the test points

The reasons for the fluid dynamic model recommendation are as follows:

a. Balancing airflows to burner via modeling and installation of flow correcting devices can be achieved for less than 25% of the cost of installing windbox airflow meters. The long-term maintenance costs of airflow meters are also avoided. Also, some airflow metering devices such as pitot tubes and air foils require uniform airflow (i.e., modeled airflow) to work correctly.

b. The very large variations in mass flow between burners and within burners can potentially lead to localized overheating and eventual long-term failure in finishing superheater and reheater tubes and support hangers.

c. The severe perimeter loading distribution deviations in the burners creates an oscillating, oxidizing, reducing atmosphere condition on the burner walls. Long-term tube wastage around such burners has occurred on other units due to this phenomenon.

d. The perimeter loading fluctuations make flame scanning more difficult. Improving the perimeter loading to the burners will increase flame scanning reliability. Balancing

the flow deviations between burners will also provide more uniform light flux levels to the scanners.

e. Airflow balancing by banding is not reliable under such severely disturbed flow conditions. Also, perimeter loading distribution deviation problems of the magnitude seen on Unit 2 cannot be corrected by burner banding.

2. Synchronize all windbox dampers over their turndown ranges.

5.0 DISCUSSION

5.1 Report Overview

Tables 1-6 summarize the air distribution and balancing data for each of the six tests performed on Intermountain Unit No. 2. Tables 1-4 summarize the data collected at 1152 data points in 48 burners. Tables 5-6 summarize data collected at 288 data points in 12 burners in two different windboxes. Tables 3-6 are found in the Appendix. The following identifies Tables 1-6:

- Table 1 - Post Balancing Outer Zone Air Distribution
- Table 2 - Post Balancing Inner Zone Air Distribution
- Table 3 - Baseline Outer Zone Air Distribution
- Table 4 - Baseline Inner Zone Air Distribution
- Table 5 - "B" Windbox/Burner Distribution in Out-Of-Service Mode
- Table 6 - "H" Windbox/Burner Distribution - 100% Open Damper Position

AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Table 1

Summary

Average Velocity All Burners =	3290.42 fpm
Maximum High Flow Deviation =	15.08 %
Minimum Low Flow Deviation =	-12.08 %
Total Flow Deviation =	27.16 %

Condition	Code	Trigger Level %
Blocked Flow	*****	10
Vortex Action	VVVVV	20
Flow & Vortex Action	*V*V*	

Test Point Velocities (Feet/Minute)

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FE6																											
High -	3906	3891	3814	4517	4694	4587	4097	3545	4605	4552	4113	4162	3347	3306	3197	3738	3431	3403	3040	3502	3502	3768	4278	4097			4694
Low -	3066	3171	2264	2663	2606	2675	2804	2629	2865	3722	3158	3211	2441	2506	2652	2757	3092	2539	2108	2356	2398	2686	3079	3002			
Average -	3515	3542	2993	4018	3128	3509	3545	3027	4116	4012	3481	3724	2960	2799	3048	3289	3231	3085	2472	3109	2818	3182	3936	3360	3329	1.18	
PLD% -	6	6	-10	21	-6	5	6	-9	24	21	5	12	-11	-16	-8	-1	-3	-7	-26	-7	-15	-4	18	1			
Code -	*V*V	****	*V*V	VVVV	VVVV	VVVV	*V*V	*V*V	VVVV		*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V			
BURNER FE5																											
High -	4228	3829	4130	4017	4113	4001	3938	3224	3906	3663	4162	4049	3118	3306	3171	3459	3753	3891	3753	3158	4081	4130	3678	4162			4228
Low -	3066	2606	2829	2989	2024	2185	3171	2006	2136	2484	2430	2865	2294	2841	2561	2539	2769	2804	2098	2315	2517	3144	2841	3158			
Average -	3638	3240	3484	3539	2646	3410	3446	2479	3365	2937	3745	3344	2741	3083	2855	2943	3350	3435	2540	2720	3434	3776	3313	3717	3216	-2.26	
PLD% -	13	1	8	10	-18	6	7	-23	5	-9	16	4	-15	-4	-11	-8	4	7	-21	-15	7	17	3	16			
Code -	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV		*V*V	VVVV	*V*V	VVVV	VVVV	*V*V	****	****	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV			
BURNER FE4																											
High -	3768	3488	4212	4535	4261	3829	4033	3875	3985	3953	3738	3459	3238	3618	3738	3403	3648	3361	2804	3604	3783	4482	4179	4049			4535
Low -	2652	2409	2757	3753	2853	2939	2629	2829	2804	3171	3015	2583	2136	2185	3066	2640	3028	2356	2024	2006	2804	3028	2550	2165			
Average -	3295	2941	3747	4114	3547	3369	3346	3302	3388	3612	3332	3005	2556	3303	3511	3024	3353	2847	2336	3163	3407	3840	3364	3133	3285	-0.17	
PLD% -	0	-10	14	25	8	3	2	1	3	10	1	-9	-22	1	7	-8	2	-13	-29	-4	4	17	2	-5			
Code -	*V*V	*V*V	VVVV		VVVV	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			
BURNER FE3																											
High -	3814	3459	3545	3431	3829	3829	3545	3158	3131	2914	2663	3798	3798	3574	3633	4081	3938	4228	4261	4179	4295	4195	4261	4130			4295
Low -	2769	2539	2495	2606	2841	3079	2495	2264	2136	2194	1961	2080	2977	2377	2305	3278	2792	2964	3459	3238	2964	2816	3040	3265			
Average -	3362	3142	2842	3053	3409	3469	3138	2680	2373	2488	2208	3340	3395	2759	3246	3653	3308	3774	3824	3829	3512	3606	3883	3764	3252	-1.15	
PLD% -	3	-3	-13	-6	5	7	-4	-18	-27	-24	-32	3	4	-15	-0	12	2	16	18	18	8	11	19	16			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V		VVVV	VVVV		VVVV	VVVV	VVVV	VVVV	VVVV			
BURNER FE2																											
High -	3389	3092	4245	4081	3753	4312	4130	3953	4065	4146	3829	3459	3574	4065	3891	3633	3633	3488	3403	4245	4179	4500	4414	4017			4500
Low -	2146	1848	2015	2769	3053	3040	2721	3251	3488	3184	2865	2675	3197	3389	2346	2430	2964	2108	2098	2194	3066	2865	3347	1782			
Average -	2707	2578	3503	3388	3382	3939	3222	3592	3820	3703	3298	3011	3394	3900	2745	3193	3329	2933	2595	3671	3599	3728	3735	2172	3297	0.21	
PLD% -	-18	-22	6	3	3	19	-2	9	16	12	0	-9	3	18	-17	-3	1	-11	-21	11	9	13	13	-34			
Code -	*V*V	*V*V	VVVV	VVVV	****	VVVV	VVVV	****		VVVV	*V*V	*V*V	****		*V*V	*V*V	****	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V			
BURNER FE1																											
High -	4162	3347	4641	4676	4658	4500	4396	4362	4345	3707	3502	3722	3618	3753	3459	3238	3375	3814	3722	4694	4049	4179	4658	4312			4694
Low -	2977	2640	2572	3389	3459	3738	2595	2769	3053	2617	2641	3028	2769	3028	2710	2572	2388	2214	2367	2829	2698	2572	3347	2640			
Average -	3601	3014	3917	4179	4003	4226	3174	3893	3579	2959	3239	3360	3175	3351	3092	2816	2867	2817	3184	3945	3158	3580	4012	3272	3434	4.36	
PLD% -	5	-12	14	22	17	23	-8	13	4	-14	-6	-2	-8	-2	-10	-18	-16	-18	-7	15	-8	4	17	-5			
Code -	*V*V	*V*V	VVVV	VVVV	VVVV		VVVV	VVVV	VVVV	*V*V	****	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV			

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AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FA6																											
High -	4570	4858	4969	5063	4988	4748	4379	4552	4295	3633	3678	2757	3131	4146	3938	3459	3474	3224	2745	2769	3265	3211	4605	5007			5063
Low -	4162	4195	4605	4605	4465	3753	3197	3474	2617	2769	2356	2284	2484	3002	3144	3002	2769	2234	2015	2070	2398	2441	2792	4130			
Average -	4398	4604	4752	4930	4686	4081	3782	4137	3215	3348	3726	2527	2910	3509	3473	3282	3073	2646	2344	2439	2864	2807	3977	4612	3547	7.79	
PLD% -	24	30	34	39	32	15	7	17	-9	-6	-23	-29	-18	-1	-2	-7	-13	-25	-34	-31	-19	-21	12	30			
Code -						VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV				
BURNER FA5																											
High -	3265	3753	4448	4245	4766	4431	3953	3663	4097	3389	3306	3722	3692	3618	3545	3560	3306	3265	3403	3875	4278	4001	3768	3502			4766
Low -	2640	2829	3053	2721	2927	3278	3015	2841	2733	2698	2927	2780	3002	2473	2583	3040	2495	2733	2686	3040	3197	3389	2841	2780			
Average -	2997	3351	4036	3283	4082	3716	3473	3286	3287	3006	3511	3106	3456	2787	3165	3284	2768	2936	3113	3580	3730	3682	3189	3156	3332	1.28	
PLD% -	-10	1	21	-1	22	12	4	-1	-1	-10	5	-7	4	-16	-5	-1	-17	-12	-7	7	12	10	-4	-5			
Code -	****	*V*V	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V			
BURNER FA4																											
High -	3648	3238	3144	3618	4033	4097	3516	3604	3707	4535	4482	3798	2914	2816	4065	4379	4345	3502	4570	4431	4065	4081	3783	3753			4570
Low -	2780	2335	2156	2335	3015	2733	2388	2451	2367	2356	2335	2156	2305	1891	2264	3445	2367	2335	2595	3306	3105	2356	2325	2914			
Average -	3286	2789	[illegible]	[illegible]	3637	3288	2863	3016	2685	3733	2886	2852	2552	2256	3459	4005	2786	2881	3898	3583	3742	3110	3129	3416	3151	-4.25	
PLD% -	4	-11	[illegible]	[illegible]	15	4	-9	-4	-15	18	-8	-9	-19	-28	10	27	-12	-9	24	14	19	-1	-1	8			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V			
BURNER FA3																											
High -	3814	3633	3560	3922	4081	4195	4162	4162	5236	5198	4658	4641	3531	4097	4146	4362	4228	3131	3768	3361	3707	4396	4641	4641			5236
Low -	2816	2617	2495	3002	3224	3015	3079	2156	2506	1874	2204	2388	2528	2495	1900	1891	2335	2244	2617	2484	2652	2733	3814	2914			
Average -	3204	3115	3137	3467	3686	3628	3883	2627	4671	2645	4004	3026	3080	3530	2355	3560	2889	2609	3124	2798	3217	3628	4229	3395	3313	0.68	
PLD% -	-3	-6	-5	5	11	10	17	-21	41	-20	21	-9	-7	7	-29	7	-13	-21	-6	-16	-3	10	28	2			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V			
BURNER FA2																											
High -	3618	3648	3604	3663	3768	4228	4245	3844	3707	3417	2989	2733	3105	3648	3560	3066	3459	3953	3707	3604	3722	3860	4049	4179			4245
Low -	2964	3040	2902	2841	3144	3251	2733	2686	2733	2146	2127	2234	2315	2710	2698	2595	2462	2927	2517	2398	2964	3211	2853	3158			
Average -	3337	3354	3205	3205	3500	3847	3431	3101	3207	2530	2552	2433	2770	3215	3005	2826	3096	3441	2927	3230	3373	3564	3564	3940	3194	-2.94	
PLD% -	4	5	0	0	10	20	7	-3	0	-21	-20	-24	-13	1	-6	-12	-3	8	-8	1	6	12	12	23			
Code -	****	****	****	*V*V	****	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	VVVV	*V*V	*V*V	*V*V		VVVV	VVVV			
BURNER FA1																											
High -	4641	4587	4876	4570	3431	3251	3829	3648	3753	3891	3953	3938	4081	3891	4017	4552	4345	4195	4278	3829	4065	4345	4212	4179			4876
Low -	3860	3474	3545	3066	2652	2816	2652	1663	1970	3431	2430	2640	3197	1710	1848	3707	2710	2792	2595	2686	2890	3105	3663	3678			
Average -	4269	4067	4239	3470	3009	3040	3330	2110	3178	3704	2803	3485	3742	2187	3287	4194	3230	3744	3251	3309	3486	3899	3927	3967	3455	5.01	
PLD% -	24	18	23	0	-13	-12	-4	-39	-8	7	-19	1	8	-37	-5	21	-7	8	-6	-4	1	13	14	15			
Code -		VVVV	VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V		*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****			
BURNER FF6																											
High -	3417	3738	3560	3906	4179	3347	3131	3545	3844	3707	4097	4212	2617	3224	3922	3938	3560	3589	2829	3829	3692	3692	4195	4179			4212
Low -	2853	3028	2640	2792	2098	2254	2108	2294	3028	2377	2952	2156	2070	2224	3066	2214	2686	2006	2127	2194	2528	2865	2877	2939			
Average -	3105	3464	3000	3357	2700	2827	2422	3080	3490	2897	3686	2546	2347	2942	3591	2729	3057	2369	2450	3319	3072	3328	3773	3435	3041	-7.58	
PLD% -	2	14	-1	10	-11	-7	-20	1	15	-5	21	-16	-23	-3	18	-10	1	-22	-19	9	1	9	24	13			
Code -	****	****	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV			
BURNER FF5																											
High -	3648	3265	3722	3211	3184	3224	2964	4146	4146	4162	4228	3906	3251	3692	3753	4146	4001	3891	4448	4212	4245	4001	3347	3211			4448
Low -	2757	2315	2451	2356	2409	1917	1926	2675	2528	2473	3361	2108	2098	2733	2964	3361	2757	2939	3144	2939	3459	2572	2663	2506			
Average -	3190	2784	2989	2671	2762	2238	2537	3519	2881	3687	3794	2490	2889	3442	3246	3859	3276	3311	3750	3650	3891	3062	2984	2801	3154	-4.14	
PLD% -	1	-12	-5	-15	-12	-29	-20	12	-9	17	20	-21	-8	9	3	22	4	5	19	16	23	-3	-5	-11			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V		*V*V	*V*V	VVVV	VVVV		*V*V	*V*V	*V*V			

IP7_000860

AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FF4																											
High -	3488	4065	4049	3361	3938	4482	4379	3860	3938	3431	3707	4130	3251	3545	3545	3545	4113	3953	3707	3953	3633	4113	4001	4001			4482
Low -	2042	1848	2294	2305	2419	2305	2865	2890	2595	2890	2745	2780	2528	2721	2377	2254	2977	2451	2686	2952	2780	2663	3028	1798			
Average -	2376	3347	2797	2695	3056	3926	3234	3477	3261	3163	3151	3641	2926	3100	2745	2972	3779	3068	3200	3418	3182	3307	3550	2299	3153	-4.18	
PLD% -	-25	6	-11	-15	-3	25	3	10	3	0	-0	15	-7	-2	-13	-6	20	-3	1	8	1	5	13	-27			
Code -	*V*V	VVVV	VVVV	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	****	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V			
BURNER FF3																											
High -	4097	2780	3197	3891	4396	4500	3829	4517	4895	4748	4097	3860	3604	3211	3306	4146	4535	4362	4278	4179	3891	4431	4431	3891			4895
Low -	1997	1908	2204	2430	3184	2539	2890	3278	3938	3459	2640	2804	2583	2335	2136	2792	3347	2964	2989	2792	2495	3319	2629	2244			
Average -	2699	2395	2588	3182	3955	3098	3435	3994	4589	3912	3038	3444	2911	2879	2891	3613	4265	3481	3778	3582	3212	3904	3554	3092	3396	3.19	
PLD% -	-21	-29	-24	-6	16	-9	1	18	35	15	-11	1	-14	-15	-15	6	26	3	11	5	-5	15	5	-9			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	VVVV		VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			
BURNER FF2																											
High -	3814	3589	3417	3692	3648	4362	4431	4278	4245	4162	4097	4049	4448	4605	4448	3783	3516	4535	4785	4676	4658	5102	4605	4065			5102
Low -	2006	1970	2136	2305	2175	2325	3798	2792	2804	2583	2550	3459	3738	3985	2792	2939	2640	2769	4146	3417	2409	2733	2294	2015			
Average -	2459	2817	2511	3082	2603	3775	4131	3297	3832	3011	3584	3859	4166	4275	3226	3365	3090	4084	4489	4298	3111	4177	2876	3307	3476	5.64	
PLD% -	-29	[illegible]	[illegible]	-11	-25	9	19	-5	10	-13	3	11	20	23	-7	-3	-11	17	29	24	-10	20	-17	-5			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****		*V*V	*V*V	*V*V	*V*V		VVVV	VVVV	VVVV	VVVV	*V*V			
BURNER FF1																											
High -	3938	3707	4162	4517	4623	4694	4448	3265	3604	3403	3292	3891	3692	3560	3875	3969	3938	4179	3938	3814	4001	3969	3663	3531			4694
Low -	3224	3197	3184	3692	3844	3969	2473	2388	2377	2792	2305	2398	3292	1943	1970	2977	2829	2964	2561	3144	3171	2804	2865	2927			
Average -	3574	3473	3838	4168	4255	4371	3208	2644	3014	3172	2555	3482	3500	2274	3286	3293	3551	3496	3142	3460	3627	3275	3169	3274	3379	2.70	
PLD% -	6	3	14	23	26	29	-5	-22	-11	-6	-24	3	4	-33	-3	-3	5	3	-7	2	7	-3	-6	-3			
Code -	****	****	*V*V				VVVV	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****			
BURNER FB6																											
High -	3574	3053	3829	3953	3860	3604	3829	3633	3445	3692	3678	3663	3618	3278	3053	2890	2663	2451	2989	2652	2675	2853	3922	3707			3953
Low -	2224	2214	2733	2865	2964	2853	3105	2841	2346	2430	1848	1988	2792	2606	2274	2430	1943	1742	1952	2224	2024	2108	2539	2675			
Average -	2547	2731	3465	3721	3388	3184	3526	3194	2682	3352	2263	3323	3118	2854	2527	2742	2233	2136	2551	2384	2294	2397	3501	3318	2893	-12.08	
PLD% -	-12	-6	20	29	17	10	22	10	-7	16	-22	15	8	-1	-13	-5	-23	-26	-12	-18	-21	-17	21	15			
Code -	VVVV	*V*V	VVVV	VVVV	VVVV	VVVV		VVVV	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	VVVV	VVVV			
BURNER FB5																											
High -	3375	3306	3488	4212	4179	3953	3738	3829	3560	2989	3079	3604	3488	2989	2939	3092	3028	3333	3389	3768	4049	3985	3574	3516			4212
Low -	2640	2356	2484	2710	3118	2108	2204	2939	2204	2185	2080	2640	2745	2264	2595	2550	2377	2550	2652	3002	3238	3053	2939	2792			
Average -	3099	2715	2924	3724	3621	2549	3108	3406	2837	2556	2785	3338	2922	2676	2776	2853	2644	2957	3093	3397	3671	3455	3197	3144	3060	-6.99	
PLD% -	1	-11	-4	22	18	-17	2	11	-7	-16	-9	9	-5	-13	-9	-7	-14	-3	1	11	20	13	4	3			
Code -	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	****	*V*V			
BURNER FB4																											
High -	3560	3618	3707	3445	3604	3545	3459	3445	3560	3403	3265	2890	2804	3092	3079	3184	3618	3474	3445	3829	3604	3292	3531	3333			3829
Low -	3118	2890	2841	2451	2841	2757	2430	2506	2733	2698	2165	2006	2204	2264	2583	2528	2745	2902	2550	2890	2506	2506	2528	2721			
Average -	3319	3331	3302	2948	3196	3157	2927	2906	3238	3009	2696	2331	2381	2691	2829	2843	3327	3162	3011	3453	2894	2887	3206	3017	3003	-8.75	
PLD% -	11	11	10	-2	6	5	-3	-3	8	0	-10	-22	-21	-10	-6	-5	11	5	0	15	-4	-4	7	0			
Code -		VVVV	VVVV	*V*V	VVVV	VVVV	VVVV	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV		*V*V	VVVV	VVVV	*V*V	VVVV	****			
BURNER FB3																											
High -	3545	3516	3860	3768	3589	3459	3224	3333	3798	3738	3053	3574	3375	2977	3798	3560	3251	3753	3663	3079	2989	4278	4081	3516			4278
Low -	2335	2829	3040	2780	2964	2804	2721	2804	3002	2652	2617	2506	2234	2367	2572	2640	1891	2033	2080	2204	1970	2506	2356	2284			
Average -	3041	3140	3590	3099	3296	3053	2945	3063	3565	2965	2800	3114	2613	2680	3397	3139	2336	3076	2709	2538	2436	3364	2978	3211	3006	-8.64	
PLD% -	1	4	19	3	10	2	-2	2	19	-1	-7	4	-13	-11	13	4	-22	2	-10	-16	-19	12	-1	7			
Code -	*V*V	****	VVVV	*V*V	****	****	****	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			

IP7_000861

AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RB2																											
High -	3171	3144	3053	3066	3040	2804	3158	2745	2606	3488	3347	3707	3545	3053	3375	3474	3875	3753	3985	4097	3969	3875	3938	3860			4097
Low -	2528	2517	2430	2254	2080	1961	2156	2325	1900	1961	2146	2234	2652	2388	2430	3118	3224	3066	3171	3403	3197	2517	2877	1908			
Average -	2871	2772	2705	2728	2447	2278	2697	2503	2138	3052	2430	3251	2899	2726	3056	3312	3562	3427	3627	3861	3680	3022	3678	2553	2970	-9.74	
PLD% -	-3	-7	-9	-8	-18	-23	-9	-16	-28	3	-18	9	-2	-8	3	12	20	15	22	30	24	2	24	-14			
Code -	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	****			VVVV			VVVV	VVVV	VVVV			
BURNER RB1																											
High -	3783	3783	3891	3844	3604	3459	3265	3105	3184	3028	3028	3105	2829	3158	3040	3184	3753	3938	3829	3618	4113	4065	3938	4065			4113
Low -	3265	3197	3238	2792	2583	2829	1742	1790	2462	2572	2315	2274	2175	2204	2165	2294	2780	3333	2675	2804	3131	3417	3560	3633			
Average -	3552	3471	3619	3308	2914	3125	2073	2731	2720	2884	2552	2810	2386	2852	2491	2839	3419	3666	3017	3355	3846	3737	3738	3850	3123	-5.08	
PLD% -	14	11	16	6	-7	0	-34	-13	-13	-8	-18	-10	-24	-9	-20	-9	9	17	-3	7	23	20	20	23			
Code -				VVVV	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV	*V*V	VVVV						
Bu[illegible]																											
	[illegible]	3361	3417	3633	3860	3953	3783	3798	4212	4212	4065	3814	3144	3922	4001	4065	3692	3618	2890	3906	4113	3875	3278	3389			4212
Low -	2441	2451	2689	[illegible]	2769	2640	2080	2214	2829	2495	2595	2506	2572	2583	3158	2964	3028	2377	2294	2204	3079	2572	2194	2204			
Average -	2905	2994	3109	[illegible]	3162	3502	2541	3271	3844	2901	3706	2861	2861	3552	3642	3351	3394	2792	2613	3283	3689	3215	2708	2945	3163	-3.86	
PLD% -	-8	-5	-2	-3	-0	11	-20	3	22	-8	17	-10	-10	12	15	6	7	-12	-17	4	17	2	-14	-7			
Code -	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	****	VVVV	VVVV	VVVV	****	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	*V*V			
BURNER RD2																											
High -	3798	3604	3663	4049	3875	3197	4049	3922	3502	4113	3969	3105	3158	3028	3066	3574	3403	4049	3829	4245	4748	4431	4081	3844			4748
Low -	3144	2780	2595	2473	2346	2325	2652	2052	2335	2409	2780	2117	2346	2572	2274	2606	2419	2473	2595	2698	3502	3574	3053	3079			
Average -	3505	3265	3006	3445	2769	2794	3598	2615	2858	3533	3099	2530	2820	2830	2789	3171	2819	3508	3048	3635	4259	3913	3509	3524	3202	-2.69	
PLD% -	9	2	-6	8	-14	-13	12	-18	-11	10	-3	-21	-12	-12	-13	-1	-12	10	-5	14	33	22	10	10			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		*V*V	****			
BURNER RD3																											
High -	3403	3251	3814	3633	3648	3333	3589	3238	4097	3783	3545	3722	3502	4017	3922	3768	3417	4065	4414	4858	4535	4345	4195	3197			4858
Low -	2733	2015	2254	3040	2769	2640	2792	1857	1997	2865	2356	2305	2388	2629	3197	2841	2710	2902	3633	3783	3516	3531	2484	2070			
Average -	3015	2525	3276	3339	3162	2974	3193	2348	3241	3243	2851	3070	2878	3384	3474	3311	3084	3693	3987	4365	3959	4013	3030	2658	3253	-1.13	
PLD% -	-7	-22	1	3	-3	-9	-2	-28	-0	-0	-12	-6	-12	4	7	2	-5	14	23	34	22	23	-7	-18			
Code -	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V		VVVV	VVVV	****	*V*V	*V*V			
BURNER RD4																											
High -	3953	4552	4130	4212	4097	4623	4379	4312	4414	4278	4587	4065	3618	3445	2989	4179	4097	4033	4748	4345	3985	3445	3692	3985			4748
Low -	3079	3131	3184	3502	3333	3319	3474	3417	3389	3131	3184	2325	2430	2769	2409	2517	3319	2710	3040	3144	2194	2274	2595	2640			
Average -	3580	3844	3718	3876	3784	4138	3848	3966	4061	3371	3780	2686	3187	3120	2745	3629	3681	3160	4055	3731	2987	2866	3070	3386	3511	6.71	
PLD% -	2	9	6	10	8	18	10	13	16	-4	8	-24	-9	-11	-22	3	5	-10	15	6	-15	-18	-13	-4			
Code -	*V*V	VVVV	*V*V	****	****	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	****	****	*V*V	****	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V			
BURNER RD5																											
High -	3953	4001	3707	4049	4049	3969	3953	3531	3531	3251	3648	3361	3319	2710	3502	4065	3906	3618	3783	3618	3648	4766	4676	4379			4766
Low -	2377	3053	3040	3211	3292	3251	3184	3002	2377	2629	3066	2804	2315	1734	1798	2721	2042	2080	2451	2484	2506	3066	3445	2430			
Average -	3332	3443	3382	3694	3638	3620	3536	3250	2701	3023	3427	2989	2821	1913	2971	3444	2512	3128	3075	2961	3181	4417	4018	2934	3225	-1.97	
PLD% -	3	7	5	15	13	12	10	1	-16	-6	6	-7	-13	-41	-8	7	-22	-3	-5	-8	-1	37	25	-9			
Code -	*V*V	*V*V	****	*V*V	****	****	****	****	*V*V	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV			
BURNER RD6																											
High -	3906	4081	4195	3875	3604	3738	3768	3375	3333	3875	3545	3197	3648	3589	3292	3906	4146	4081	4049	3722	3278	3389	3459	4245			4245
Low -	3292	3238	3361	3211	2721	2792	2274	2185	2629	2595	2583	2745	2927	2506	2462	2952	3292	2214	2686	2583	2409	2550	2583	2877			
Average -	3669	3625	3776	3513	3095	3355	2698	2937	2873	3463	3001	3002	3391	2849	2986	3602	3668	2881	3649	3085	2936	2849	3003	3788	3237	-1.62	
PLD% -	13	12	17	9	-4	4	-17	-9	-11	7	-7	-7	5	-12	-8	11	13	-11	13	-5	-9	-12	-7	17			
Code -		VVVV			*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	****	****	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV			

IP7_000862

AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RH1																											
High -	4130	4097	4803	4712	4570	4396	4766	4730	3814	4570	4278	3753	2914	3545	3431	3814	3738	3015	2989	3403	3574	4641	4465	4362			4803
Low -	3502	3131	3333	3375	3531	3459	3707	3502	3118	3171	3403	2305	2305	2652	3028	3292	2234	2335	2146	2284	2853	2640	3891	3144			
Average -	3855	3631	4266	3909	4047	3883	4421	4046	3353	4216	3685	2773	2629	3220	3176	3610	2646	2741	2412	3056	3197	4065	4127	3506	3520	6.96	
PLD% -	10	3	21	11	15	10	26	15	-5	20	5	-21	-25	-9	-10	3	-25	-22	-31	-13	-9	15	17	-0			
Code -	****	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	****	VVVV	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV			
BURNER RH2																											
High -	3768	3783	4278	4113	3985	4500	4245	4065	3663	4414	4362	4329	4295	3488	4162	4195	4535	4448	3738	3707	3589	3663	4431	3906			4535
Low -	2572	2561	3015	2698	3118	3238	3251	2473	2430	2710	2595	2792	3053	1943	2006	2146	2224	2792	3171	2686	2927	2816	3066	3144			
Average -	3058	3195	3710	3310	3437	3677	3764	2941	2878	3890	2989	3802	3370	2341	3547	2531	4007	3399	3477	3258	3268	3198	3772	3572	3350	1.80	
PLD% -	-9	-5	11	-1	3	10	12	-12	-14	16	-11	14	1	-30	6	-24	20	1	4	-3	-2	-5	13	7			
Code -	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	VVVV	VVVV	****	*V*V	****	*V*V	VVVV	****			
BURNER RH3																											
High -	3574	3814	4261	4261	3829	4517	4379	4482	4913	4895	4431	4379	3985	3829	4228	4195	4641	4081	3814	3361	3618	4396	4329	3922			4913
Low -	2952	3053	3306	2816	3092	3265	2890	3333	3459	3171	3545	3663	3417	2108	2629	3171	3197	3474	2877	2816	2675	2804	2890	2769			
[illegible] -	3142	3466	3934	3397	3437	4043	3458	3900	4612	3687	4103	3933	3628	2745	3925	3452	4148	3786	3293	3046	2953	3911	3255	3410	3611	9.75	
	-13	-4	9	-6	-5	12	-4	8	28	2	14	9	0	-24	9	-4	15	5	-9	-16	-18	8	-10	-6			
Code -	****	****	*V*V	*V*V	****	VVVV	*V*V	VVVV	VVVV	VVVV		****	****	*V*V	*V*V	*V*V	VVVV	****	*V*V	****	*V*V	*V*V	*V*V	*V*V			
BURNER RH4																											
High -	4245	[illegible]	[illegible]	[illegible]	[illegible]	4517	4212	4113	5044	5044	4641	4587	3783	3604	4195	3678	3798	4587	4431	4065	4785	4821	4730	4162			5044
Low -	3574	2356	2804	3171	2419	3814	3066	2989	2745	3171	3844	2939	2305	2572	2721	2769	2964	3105	2484	2640	3474	4195	2698	3053			
Average -	3899	3208	3233	4189	3597	4196	3844	3457	4393	3841	4305	3787	2705	3112	3356	3111	3329	4102	2955	3741	4450	4551	3300	3735	3683	11.94	
PLD% -	6	-13	-12	14	-2	14	4	-6	19	4	17	3	-27	-16	-9	-16	-10	11	-20	2	21	24	-10	1			
Code -	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	VVVV	VVVV		VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV		VVVV	*V*V			
BURNER RH5																											
High -	4113	4049	4535	4261	4623	4858	4694	4162	4605	4658	3118	4748	4676	3663	4895	4785	4712	4500	4500	4482	4895	4895	4605	4431			4895
Low -	2927	2430	2952	3158	3053	3474	3516	3574	3648	2194	2409	2583	2780	2853	3389	3333	3545	3278	2721	2816	4033	3922	2964	2865			
Average -	3572	3008	3838	3602	3914	4443	3866	3823	4306	2663	2895	4176	3229	3247	4424	3871	4127	3856	3313	3987	4667	4395	3714	3944	3787	15.08	
PLD% -	-6	-21	1	-5	3	17	2	1	14	-30	-24	10	-15	-14	17	2	9	2	-13	5	23	16	-2	4			
Code -	*V*V	*V*V	VVVV	*V*V	VVVV	VVVV	VVVV	****	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV			VVVV	VVVV			
BURNER RH6																											
High -	4162	3738	3648	3985	5082	4988	3829	4362	4212	3403	4414	4097	3969	3184	4500	4179	4362	4694	4552	4535	4482	4362	4785	4605			5082
Low -	2539	2325	2733	2977	3678	3265	2356	2398	2127	2561	3131	3678	2865	2710	2629	2769	3516	3860	2964	2902	3333	3265	3516	3211			
Average -	3108	3084	3066	3679	4623	3789	2725	3977	2641	3155	4014	3903	3196	2931	4022	3404	4000	4202	3507	4014	4002	3864	4241	3887	3626	10.21	
PLD% -	-14	-15	-15	1	27	4	-25	10	-27	-13	11	8	-12	-19	11	-6	10	16	-3	11	10	7	17	7			
Code -	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	****		*V*V	*V*V	*V*V	*V*V	VVVV	VVVV			
BURNER RC1																											
High -	4130	4130	4179	3860	4329	4396	4623	4605	4500	3829	4658	4641	3618	4431	4465	2710	4517	4623	4146	4465	3798	4517	4162	4212			4658
Low -	2977	2902	2816	3105	3224	3066	3015	3053	2841	2964	3574	3333	3040	2853	2495	1687	2356	3292	3171	3238	2952	3002	3015	3445			
Average -	3426	3362	3520	3518	3726	3904	3327	3963	3292	3495	4380	3631	3281	3676	2954	2021	4064	3705	3513	3870	3268	3890	3490	3752	3543	7.67	
PLD% -	-3	-5	-1	-1	5	10	-6	12	-7	-1	24	3	-7	4	-17	-43	15	5	-1	9	-8	10	-1	6			
Code -	*V*V	*V*V	*V*V	****	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	****	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	VVVV	*V*V	VVVV	*V*V				
BURNER RC2																											
High -	3158	3985	3829	4245	4146	3938	3417	4587	4278	4329	4278	4146	3389	4195	4212	3844	4535	4587	4312	4295	4130	3545	3333	3053			4587
Low -	1874	2052	2194	2506	2473	2462	2462	2495	2841	3079	3618	2136	2070	3040	2451	2419	3306	3197	3516	3545	3278	2804	2430	2398			
Average -	2354	3310	2745	3232	3126	3046	2840	3998	3149	3864	3877	2513	3003	3811	3052	3205	4212	3747	3990	3891	3734	3180	2825	2738	3310	0.60	
PLD% -	-29	-0	-17	-2	-6	-8	-14	21	-5	17	17	-24	-9	15	-8	-3	27	13	21	18	13	-4	-15	-17			
Code -	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	VVVV	VVVV	VVVV		VVVV	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV			VVVV	*V*V	*V*V	*V*V			

IP7_000863

AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RC3																											
High -	3333	3488	4245	4448	4414	4379	4396	3985	4179	4414	4312	4195	3211	3560	3474	3238	3197	3574	3906	3604	3783	3604	4623	4641			4641
Low -	2185	2146	2804	3375	3066	2539	2451	2865	3053	2964	3238	2473	2264	2335	2595	2710	2484	2473	2506	2561	2792	2663	2710	2042			
Average -	2699	2764	3486	4132	3742	3150	3362	3233	3822	3930	3926	3137	2715	3044	2981	2980	2779	2801	3294	3011	3373	3137	3893	2742	3256	-1.06	
PLD% -	-17	-15	7	27	15	-3	3	-1	17	21	21	-4	-17	-7	-8	-8	-15	-14	1	-8	4	-4	20	-16			
Code -	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV			
BURNER RC4																											
High -	3474	3545	4362	4033	3969	4245	4552	4228	4049	4081	3265	3474	3238	3545	3985	3663	3431	3488	3574	3197	3875	3891	3417	3445			4552
Low -	2804	2484	2841	3333	3015	3144	2595	3131	3251	2829	2572	2377	2495	2640	2952	2792	2745	2015	2528	2274	2606	2388	2108	2388			
Average -	3120	2983	3784	3690	3443	3783	3326	3758	3488	3396	2932	2981	2874	3142	3516	3278	3060	2984	2911	2650	3246	2857	2646	3030	3203	-2.65	
PLD% -	-3	-7	18	15	7	18	4	17	9	6	-8	-7	-10	-2	10	2	-4	-7	-9	-17	1	-11	-17	-5			
Code -	****	*V*V	VVVV	****	*V*V	VVVV	VVVV	VVVV	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V			
BURNER RC5																											
High -	4431	3722	3953	3922	4658	4517	4113	4245	4245	4017	3251	4605	4500	3118	4278	4517	3844	3875	3753	3306	4001	3938	3516	4312			4658
Low -	2264	2334	2841	2964	2902	3333	3211	3474	3678	3251	2136	1997	2583	1848	1997	3488	2244	2346	2721	2606	2617	2841	2816	2769			
Average -	2844	3150	3481	3461	4100	3859	3743	3912	3973	3552	2611	3959	3253	2223	3674	4121	2611	3294	3041	2996	3265	3319	3227	3743	3392	3.09	
PLD% -	-16	-7	3	2	21	14	10	15	17	5	-23	17	-4	-34	8	21	-23	-3	-10	-12	-4	-2	-5	10			
Code -	VVVV	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			****	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	VVVV			
BURNER RC6																											
High -	4587	4362	4396	4448	4261	4312	3604	3361	3604	2377	3015	3722	3953	3516	3251	3184	4587	4535	4001	4988	5159	4969	4876	4329			5159
Low -	3015	3028	3105	3131	3211	2816	1934	2024	1774	1952	2098	2561	3292	2841	2561	2451	2462	3265	3040	3707	3738	3678	3692	3131			
Average -	3572	3766	3650	3856	3800	3265	2444	2984	2191	2157	2603	3424	3582	3148	2824	2719	4114	3694	3593	4521	4612	4291	4119	3798	3447	4.76	
PLD% -	4	9	6	12	10	-5	-29	-13	-36	-37	-24	-1	4	-9	-18	-21	19	7	4	31	34	24	19	10			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V			
BURNER RG1																											
High -	3783	3906	3922	4431	4130	4195	4179	4552	4228	3589	4081	4017	3265	4162	4097	3618	3560	3502	3678	4049	3753	3891	4517	4312			4552
Low -	2675	2792	2640	2757	2388	2804	3028	3131	2675	2698	3171	1766	1766	3002	2640	2629	2675	2640	2757	3197	3184	2989	3663	3197			
Average -	3156	3433	3234	3853	3190	3288	3530	4170	3004	3184	3829	2144	2864	3762	3046	3247	3227	2910	3236	3629	3471	3512	4222	3613	3365	2.26	
PLD% -	-6	2	-4	15	-5	-2	5	24	-11	-5	14	-36	-15	12	-9	-3	-4	-14	-4	8	3	4	25	7			
Code -	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V		VVVV			
BURNER RG2																											
High -	4033	4228	4065	3953	4033	3618	4396	4081	3829	3092	4345	4278	3678	3545	3604	3574	4081	3531	3969	4785	4396	3906	3574	3768			4785
Low -	3306	3574	2721	2792	2769	2388	2583	2829	2606	2156	2441	1774	1943	2484	2629	2675	2780	2902	3002	3431	2698	2841	2841	3079			
Average -	3754	3868	3297	3538	3252	2881	3827	3504	2971	2469	3816	2253	3034	2940	3155	3177	3178	3175	3552	4247	3100	3382	3223	3358	3290	-0.02	
PLD% -	14	18	0	8	-1	-12	16	7	-10	-25	16	-32	-8	-11	-4	-3	-3	-3	8	29	-6	3	-2	2			
Code -	****	****	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV	VVVV	*V*V	*V*V	****			
BURNER RG3																											
High -	2792	2977	2952	3306	3238	3251	3502	3028	3040	3053	3278	3184	2792	3278	3224	3319	3707	4329	4312	4065	3488	3633	3361	3184			4329
Low -	2335	2367	2462	2495	2224	2629	2539	2367	1970	2254	2451	2686	2441	2506	2325	2356	2721	3105	2989	3131	2733	2517	2528	2561			
Average -	2592	2649	2646	2915	2830	2874	3054	2649	2437	2664	2866	2923	2617	2886	2597	2957	3185	3954	3690	3633	3070	3036	2968	2769	2936	-10.77	
PLD% -	-12	-10	-10	-1	-4	-2	4	-10	-17	-9	-2	-0	-11	-2	-12	1	8	35	26	24	5	3	1	-6			
Code -	****	*V*V	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	****			
BURNER RG4																											
High -	4295	3663	3738	4179	4587	3417	3171	4587	4049	3969	3844	3417	3985	3768	3197	3474	3292	3648	3722	3431	4228	4130	4212	4362			4587
Low -	2927	2902	3105	2939	2305	2733	2451	2721	2462	2539	2388	2398	2430	2146	2194	2572	2484	2640	2136	2430	2733	3417	3648	3768			
Average -	3288	3309	3508	3679	3066	3058	2781	3670	3000	3088	2803	2842	3374	2569	2706	3073	2745	3272	2687	2906	3823	3701	3870	4138	3206	-2.55	
PLD% -	3	3	9	15	-4	-5	-13	14	-6	-4	-13	-11	5	-20	-16	-4	-14	2	-16	-9	19	15	21	29			
Code -	VVVV	*V*V	****	VVVV	VVVV	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV						

IP7_000864

AIR DISTRIBUTION ANALYSIS
POST BALANCE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RG5																											
High -	3445	3618	3663	4146	3969	3891	3829	3678	3692	4081	4001	2927	3053	2721	3445	4162	3829	3922	4448	4431	4033	3969	4001	4001			4448
Low -	2865	2939	3118	3158	3431	3445	2675	2902	2214	2356	2315	1710	1900	2070	2127	3053	3040	2780	2977	3184	2853	2964	3445	2769			
Average -	3081	3252	3392	3788	3681	3641	3049	3247	2688	3625	2693	2259	2331	2252	3012	3625	3490	3331	3961	3667	3328	3495	3729	3206	3243	-1.45	
PLD% -	-5	0	5	17	14	12	-6	0	-17	12	-17	-30	-28	-31	-7	12	8	3	22	13	3	8	15	-1			
Code -	****	****	****	VVVV	****	****	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	****	*V*V			
BURNER RG6																											
High -	3648	3516	3389	3783	3985	3860	3891	3238	3753	3278	3502	4033	3985	2865	3722	3502	3953	3768	3417	4146	4017	3488	4465	4278			4465
Low -	2089	2388	2070	2156	3066	2902	2356	2346	2710	2804	2865	3144	1734	1807	2335	2325	2640	2356	2484	2675	2829	2606	2927	3079			
Average -	2692	3195	2534	3357	3590	3349	2784	2891	3353	3005	3238	3773	2172	2515	2947	2665	3472	2922	2898	3556	3507	3073	3862	3587	3122	-5.11	
PLD% -	-14	2	-19	8	15	7	-11	-7	7	-4	4	21	-30	-19	-6	-15	11	-6	-7	14	12	-2	24	15			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV			

IP7_000865

AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Table 2

Summary	
Average Velocity All Burners =	2964.82 fpm
Maximum High Flow Deviation =	12.41 %
Minimum Low Flow Deviation =	-12.64 %
Total Flow Deviation =	25.05 %

Condition	Code	Trigger Level %
Blocked Flow	*****	10
Vortex Action	VVVVV	20
Flow & Vortex Action	*V*V*	

Test Point Velocities (Feet/Minute)

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FE6																											
High -	3095	3419	3848	4405	4225	4684	4533	3982	3434	2754	2780	3449	3496	3496	4120	4102	3782	3558	3181	3373	3181	2928	3284	3196			4684
Low -	2689	2741	2942	3496	3621	3782	3669	3225	2613	1768	1914	2465	3109	3109	3343	3637	3343	3081	2638	2794	2741	2539	2794	1904			
Average -	2861	3108	3321	4005	3858	4187	3911	3455	2960	2037	2432	3100	3303	3344	3825	3847	3508	3259	2868	3059	2936	2702	3047	2369	3221	8.64	
PLD% -	-11	-4	3	24	20	30	21	7	-8	-37	-24	-4	3	4	19	19	9	1	-11	-5	-9	-16	-5	-26			
Code -	****	****	*V*V	VVVV				****	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	****	****	*V*V			
BURNER FE5																											
High -	2969	3388	4172	4278	4155	5425	4857	3343	3701	3574	2359	3210	3982	4034	3109	3167	3138	3039	2955	2969	3053	3434	3298	3388			5425
Low -	2406	2638	3081	3881	3750	3915	2820	3025	3123	1955	1904	2006	3067	2887	2794	2807	2689	2715	2626	2702	2820	2887	2807	2526			
Average -	2674	3120	3783	4080	3969	4581	3250	3218	3377	2346	2159	2860	3687	3190	2967	2977	2882	2864	2807	2829	2922	3136	3024	2931	3151	6.29	
PLD% -	-15	-1	20	29	26	45	3	2	7	-26	-31	-9	17	1	-6	-6	-9	-9	-11	-10	-7	-0	-4	-7			
Code -	****	*V*V	*V*V	****	****	VVVV	*V*V	****	****	*V*V	****	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	*V*V			
BURNER FE4																											
High -	4386	5279	5015	4589	4552	4350	3701	3434	2860	2266	2244	3637	3196	3558	3558	3511	2901	2914	3025	2874	3167	3701	4405	4085			5279
Low -	3558	3799	3832	3766	4102	2613	2576	2551	1731	1649	1649	2166	2490	2502	2942	2588	1845	1965	2576	2551	2551	2997	3419	2983			
Average -	4006	4602	4170	4230	4346	3104	3302	2864	2038	1871	2071	3081	2851	2994	3335	2935	2093	2666	2808	2682	2950	3361	4070	3533	3165	6.76	
PLD% -	27	45	32	34	37	-2	4	-10	-36	-41	-35	-3	-10	-5	5	-7	-34	-16	-11	-15	-7	6	29	12			
Code -	****	VVVV	VVVV	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	****	****	****	*V*V	*V*V			
BURNER FE3																											
High -	2741	3589	3284	2874	2833	2887	2651	2664	2539	2441	2406	2551	2833	3932	3750	2715	3313	3733	3574	4813	4627	4386	4155	2983			4818
Low -	2233	2394	2551	2266	2359	2233	2266	2289	2101	2144	2080	2027	2233	2335	2301	1855	1874	2833	3053	3542	3915	3653	2741	2221			
Average -	2421	3013	2805	2435	2634	2480	2509	2437	2316	2286	2232	2259	2545	3329	2796	2124	2811	3424	3355	4437	4265	4080	3136	2550	2862	-3.48	
PLD% -	-15	5	-2	-15	-8	-13	-12	-15	-19	-20	-22	-21	-11	16	-2	-26	-2	20	17	55	49	43	10	-11			
Code -	****	*V*V	*V*V	*V*V	****	*V*V	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	VVVV			*V*V	*V*V			
BURNER FE2																											
High -	2807	3605	3589	2613	3434	3527	3685	3480	2502	2728	3637	3637	3750	3434	3109	4051	3621	3865	3254	3881	3898	3605	2847	2794			4051
Low -	2221	2301	2133	2101	2037	2754	3225	2133	2048	2048	2441	3196	3181	2638	2122	2490	2928	2794	2266	2502	3298	2563	1874	2166			
Average -	2504	3130	2560	2370	2920	3300	3362	2535	2243	2467	3204	3390	3468	3040	2451	3458	3142	3147	2737	3499	3538	2896	2251	2556	2924	-1.39	
PLD% -	-14	7	-12	-19	-0	13	15	-13	-23	-16	10	16	19	4	-16	18	7	8	-6	20	21	-1	-23	-13			
Code -	*V*V	*V*V	*V*V	****	*V*V	*V*V		*V*V	****	*V*V	*V*V	****		*V*V	*V*V	VVVV	****	VVVV	*V*V	VVVV		*V*V	*V*V	*V*V			
BURNER FE1																											
High -	2601	3542	3358	3138	3039	3167	3419	3404	3254	2807	2382	2221	2807	2794	1965	2928	3832	3865	3653	4278	4207	4068	2689	2677			4278
Low -	2101	2188	2754	2613	2664	2539	2551	3025	2080	2069	1740	1914	2027	1622	1676	1694	2794	3404	2702	2689	3558	2490	1944	2069			
Average -	2271	3073	2944	2879	2865	2729	3173	3268	2624	2343	2907	2036	2568	1910	1801	2629	3506	3578	3049	3788	3932	2924	2224	2374	2771	-6.55	
PLD% -	-18	11	6	4	3	-1	15	18	-5	-15	-28	-27	-7	-31	-35	-5	27	29	10	37	42	6	-20	-14			
Code -	****	*V*V	****	****	****	****	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	*V*V		*V*V	VVVV		VVVV	*V*V	*V*V			

IP7_000866

AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FA6																											
High -	3225	3284	3717	3932	4571	4722	4608	4137	3685	3210	2942	3039	3025	2347	3210	3574	3558	3434	2613	2563	2833	3138	3669	3637			4722
Low -	2551	2928	3095	3605	3653	4296	3799	3358	3011	2289	2324	2563	2016	1985	2048	2901	3152	2335	2382	1985	2006	2551	2914	2969			
Average -	2765	3122	3498	3751	4356	4483	3989	3561	3268	2538	2698	2762	2378	2171	2816	3319	3360	2622	2489	2148	2571	2872	3425	3189	3090	4.21	
PLD% -	-11	1	13	21	41	45	29	15	6	-18	-13	-11	-23	-30	-9	7	9	-15	-19	-30	-17	-7	11	3			
Code -	*V*V	****	****	****	VVVV			****	****	*V*V	*V*V	****	*V*V	****	*V*V	****	****	*V*V	****	*V*V	*V*V	****	*V*V	****			
BURNER FA5																											
High -	3419	3011	3480	4016	4646	4760	4627	3733	3915	3373	3465	3799	4051	4016	3434	3343	3225	3039	3465	3388	3138	3558	3750	3750			4760
Low -	2626	2715	2689	3081	3799	4137	3434	3298	3284	2563	2754	2997	3343	3025	3123	3123	2563	2664	2914	2728	2794	2901	3358	2551			
Average -	2878	2836	3123	3776	4327	4440	3750	3482	3583	2914	3133	3411	3759	3346	3260	3222	2836	2915	3283	2973	2980	3367	3597	2795	3333	12.41	
PLD% -	-14	-15	-6	13	30	33	13	4	8	-13	-6	2	13	0	-2	-3	-15	-13	-2	-11	-11	1	8	-16			
Code -	*V*V	****	*V*V	*V*V			VVVV	****	****	*V*V	*V*V	*V*V	****	*V*V	****	****	*V*V	****	****	****	****	****	****	*V*V			
BURNER FA4																											
High -	3269	3404	3865	4207	4350	5015	4608	4441	4478	3815	3527	3669	3815	3701	2887	2780	2677	2874	2942	2914	3053	3621	3653	3527			5015
Low -	2477	3081	3067	3717	3799	3999	2780	2715	3527	3138	2847	3053	3123	2406	2514	2347	2370	2406	2490	2155	2221	2942	3181	2539			
Average -	3006	3223	3601	3938	4158	4576	3322	3988	3846	3418	3241	3401	3408	2787	2717	2560	2499	2697	2698	2366	2829	3438	3456	3032	3258	9.90	
PLD% -	-8	-1	11	21	28	40	2	22	18	5	-1	4	5	-14	-17	-21	-23	-17	-17	-27	-13	5	6	-7			
Code -	*V*V	****	*V*V	****	****	VVVV	VVVV	*V*V	*V*V	****	****	****	****	*V*V	****	****	****	****	****	*V*V	*V*V	****	****	*V*V			
BURNER FA3																											
High -	2754	3766	3881	3669	3865	3932	3685	3717	3358	3373	2969	3343	3313	2244	2266	2874	3589	3480	3915	4160	4478	4368	3434	3081			4478
Low -	2359	2588	3152	3123	3343	3210	3254	2928	2406	2526	2166	2347	1797	1649	1845	1965	2588	2860	3039	3358	3982	3039	2210	2289			
Average -	2590	3385	3442	3424	3589	3589	3445	3251	2713	2979	2505	2734	2181	1888	2038	2470	3210	3082	3495	4098	4198	3438	2490	2721	3040	2.53	
PLD% -	-15	11	13	13	18	18	13	7	-11	-2	-18	-10	-28	-38	-33	-19	6	1	15	35	38	13	-18	-10			
Code -	****	*V*V	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	VVVV		VVVV	*V*V	*V*V			
BURNER FA2																											
High -	2465	2860	3574	3589	3685	3669	3527	2942	2820	2429	2601	2626	3239	3123	2324	3138	3766	3848	3637	4665	4627	4533	3653	2820			4665
Low -	2122	2155	2651	2477	2613	3269	2177	2199	2210	2112	2221	2244	2278	2177	1874	1985	2847	3343	2901	2942	4225	3081	2312	2048			
Average -	2265	2574	3284	2736	3354	3435	2533	2731	2423	2255	2403	2400	2914	2413	2016	2831	3512	3627	3187	4178	4422	3622	2904	2282	2929	-1.20	
PLD% -	-23	-12	12	-7	14	17	-14	-7	-17	-23	-18	-18	-1	-18	-31	-3	20	24	9	43	51	24	-1	-22			
Code -	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	****	****	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	VVVV		VVVV	*V*V	*V*V			
BURNER FA1																											
High -	2502	3373	3373	3210	3095	3011	2887	3011	2942	2874	2847	2780	2820	3039	2807	2394	3081	4386	4386	4515	4515	4172	3449	2874			4515
Low -	2122	2144	3039	2514	2526	2255	2370	2664	2526	2406	2453	2359	2359	2429	2080	1914	2048	2807	3067	2983	4068	3419	2563	2289			
Average -	2309	3001	3212	2755	2848	2605	2708	2847	2762	2621	2598	2559	2591	2747	2378	2100	2843	3921	3453	4195	4282	3714	2837	2446	2930	-1.16	
PLD% -	-21	2	10	-6	-3	-11	-8	-3	-6	-11	-11	-13	-12	-6	-19	-28	-3	34	18	43	46	27	-3	-17			
Code -	****	*V*V	****	*V*V	****	*V*V	****	****	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV			*V*V	*V*V			
BURNER FF6																											
High -	2394	2651	3053	4314	4190	4423	4172	3898	3898	3343	2702	3138	3605	3915	4423	4368	3815	3733	3685	3496	3239	3239	3328	3239			4423
Low -	2048	2166	2477	2914	3621	3750	2551	2576	3181	2453	2166	2188	2689	3404	3733	3558	3254	3210	3067	2563	2702	2767	2728	1855			
Average -	2231	2470	2904	3871	3891	4014	2775	3515	3402	2789	2368	2850	3355	3740	4192	3831	3494	3523	3379	2947	2888	2933	3087	2129	3191	7.62	
PLD% -	-30	-23	-9	21	22	26	-13	10	7	-13	-26	-11	5	17	31	20	10	10	6	-8	-9	-8	-3	-33			
Code -	****	****	****	VVVV			VVVV	*V*V	****	*V*V	****	*V*V	*V*V	****			****	****	****	*V*V	****	****	****	*V*V			
BURNER FF5																											
High -	2860	3081	3167	3832	4627	4441	3527	3167	3782	3750	3373	3419	3605	3750	3717	3589	3496	3328	3404	3196	3181	3053	3419	3717			4627
Low -	2312	2394	2728	2780	3527	2969	1544	1703	2887	2601	2728	2588	2754	3123	3343	3254	3067	2887	2969	2613	2715	2539	2626	3095			
Average -	2570	2715	2951	3536	4298	3681	2093	2833	3472	2922	3061	2879	3183	3569	3484	3412	3274	3055	3155	2859	2947	2802	3021	3358	3130	5.59	
PLD% -	-18	-13	-6	13	37	18	-33	-10	11	-7	-2	-8	2	14	11	9	5	-2	1	-9	-6	-10	-4	7			
Code -	****	*V*V	****	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	****	****	****	****	****	****	****	****	*V*V	****			

IP7_000867

AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FF4																											
High -	3685	3328	3404	4051	4857	4838	3123	4155	4068	3480	2221	2144	3210	3123	2767	2887	2833	2677	3095	3011	3011	3653	3815	3915			4857
Low -	2588	2301	3011	3269	3750	2539	2324	2429	3123	1750	1334	1327	1975	2502	2453	2453	2048	2069	2301	2767	2677	2847	3210	3419			
Average -	2959	3053	3229	3826	4607	3053	2654	3712	3378	2167	1512	1898	2807	2652	2611	2651	2309	2361	2849	2886	2868	3254	3628	3625	2940	-0.85	
PLD% -	1	4	10	30	57	4	-10	26	15	-26	-49	-35	-4	-10	-11	-10	-21	-20	-3	-2	-2	11	23	23			
Code -	*V*V	*V*V	****	****	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	*V*V	*V*V	*V*V	****	****	*V*V	****	****			
BURNER FF3																											
High -	2969	3799	3701	3621	3496	3449	2928	3167	3181	2613	2514	2638	3210	3225	2969	2664	4068	4243	3965	5035	4722	4261	4068	3254			5035
Low -	2490	2601	3138	3239	3109	2638	2539	2689	2312	2266	2058	2090	2477	2588	1640	1703	2289	3558	3284	3605	3832	3733	2860	2539			
Average -	2739	3370	3342	3401	3314	2957	2738	2949	2512	2410	2282	2344	2863	2955	1943	2257	3572	3941	3655	4622	4126	3987	3217	2836	3097	4.46	
PLD% -	-12	9	8	10	7	-5	-12	-5	-19	-22	-26	-24	-8	-5	-37	-27	15	27	18	49	33	29	4	-8			
Code -	****	*V*V	****	****	****	*V*V	****	****	*V*V	****	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	****	VVVV		****	*V*V	*V*V			
BURNER FF2																											
High -	3167	3269	3605	3558	2860	3181	3196	3225	2955	2794	3081	3167	3095	3081	2983	2289	2820	3574	3621	3313	4120	4350	4350	3138			4350
Low -	2613	2847	2833	2347	2490	2601	2874	2728	2441	2477	2441	2689	2651	2551	1740	1676	1676	2441	3067	1759	2069	3766	2677	2429			
Average -	2900	3022	3265	2692	2663	2945	3019	2889	2756	2622	2764	2922	2902	2850	2111	1834	2461	3303	3442	2368	3659	4157	3123	2762	2893	-2.43	
PLD% -	0	4	13	-7	-8	2	4	-0	-5	-9	-4	1	0	-1	-27	-37	-15	14	19	-18	26	44	8	-5			
Code -	****	****	*V*V	*V*V	****	****	****	****	****	****	*V*V	****	****	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV		VVVV	*V*V			
BURNER FF1																											
High -	2638	2702	3181	3109	2794	2677	2860	3685	3669	2997	2928	3011	3480	3465	2741	2588	3449	3898	3865	4034	4172	4068	3982	3067			4172
Low -	2233	2382	2370	2490	2429	1914	1904	2651	2601	2382	2441	2359	2514	2406	2037	1965	2210	3011	2689	2689	3669	3527	2677	2266			
Average -	2493	2529	2859	2706	2594	2118	2588	3453	3007	2659	2639	2680	3183	2738	2231	2265	2983	3581	3032	3577	3938	3784	2987	2457	2878	-2.92	
PLD% -	-13	-12	-1	-6	-10	-26	-10	20	4	-8	-8	-7	11	-5	-22	-21	4	24	5	24	37	31	4	-15			
Code -	****	****	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV			VVVV	*V*V			
BURNER FB6																											
High -	2526	2847	2969	3701	3766	3733	3343	3527	3589	3527	2576	2441	3496	4243	4190	3733	3067	2820	2301	1996	2406	3284	3152	2969			4243
Low -	1613	1768	2417	2833	3343	3011	2255	2347	3067	2278	1965	1996	2244	3239	3404	2626	2613	2122	1778	1685	1865	2090	2780	1613			
Average -	2133	2425	2812	3433	3513	3265	2545	3227	3333	2545	2156	2273	3171	3987	3716	2935	2805	2315	1921	1843	2217	2997	2936	1956	2769	-6.60	
PLD% -	-23	-12	2	24	27	18	-8	17	20	-8	-22	-18	15	44	34	6	1	-16	-31	-33	-20	8	6	-29			
Code -	*V*V	*V*V	****	*V*V	****	****	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	VVVV		*V*V	****	*V*V	*V*V	****	*V*V	*V*V	****	*V*V			
BURNER FB5																											
High -	2794	2301	2901	3848	4102	3932	3832	3932	3815	3210	2490	2080	3095	3109	3284	3404	3358	3269	3388	3434	3358	3343	3254	2955			4102
Low -	1955	1934	2155	2441	3496	2928	3210	3284	2969	2221	1826	1722	1884	2601	2651	2833	2382	2539	3025	3039	3067	2983	2754	2477			
Average -	2160	2149	2561	3428	3787	3423	3498	3543	3257	2496	2084	1889	2744	2905	3064	3219	2625	3028	3214	3237	3219	3152	2970	2696	2931	-1.14	
PLD% -	-26	-27	-13	17	29	17	19	21	11	-15	-29	-36	-6	-1	5	10	-10	3	10	10	10	8	1	-8			
Code -	*V*V	****	*V*V	VVVV		VVVV			VVVV	*V*V	*V*V	****	*V*V	****	****	****	*V*V	*V*V	****	****	****	****	****	****			
BURNER FB4																											
High -	2539	3637	3782	4137	4068	4102	3932	3865	3574	3449	3138	2955	3449	3138	2677	2638	2874	3138	3123	2833	2914	2901	3152	2664			4137
Low -	2133	2080	3181	3419	3717	3542	3225	3167	2914	2860	1826	1924	2767	2406	2255	2301	2394	2551	2539	2526	2626	2588	2563	2199			
Average -	2288	3078	3461	3754	3898	3864	3533	3458	3245	3184	2097	2610	3080	2682	2456	2451	2632	2921	2702	2681	2774	2723	2790	2399	2948	-0.56	
PLD% -	-22	4	17	27	32	31	20	17	10	8	-29	-11	4	-9	-17	-17	-11	-1	-8	-9	-6	-8	-5	-19			
Code -	****	*V*V							****	****	*V*V	*V*V	****	*V*V	****	****	****	****	****	****	****	****	****	****			
BURNER FB3																											
High -	3053	3067	3011	3152	2955	2465	2983	2233	2664	2563	2477	2199	2289	2266	2210	2638	4016	3965	4051	4368	4225	3965	2576	3025			4368
Low -	1874	2490	2613	2754	2048	2058	1944	1768	1787	2210	1934	1855	1787	1865	1894	1904	2058	3284	3269	3465	3685	2576	2058	2112			
Average -	2677	2739	2800	2977	2318	2306	2629	1876	2385	2393	2069	2034	2042	2041	2031	2094	3442	3513	3717	4140	3913	2869	2247	2791	2669	-9.99	
PLD% -	0	3	5	12	-13	-14	-1	-30	-11	-10	-22	-24	-23	-24	-24	-22	29	32	39	55	47	8	-16	5			
Code -	*V*V	****	****	****	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	****	****	*V*V	VVVV			VVVV		VVVV	*V*V	*V*V			

IP7_000868

AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FB2																											
High -	2613	2244	3313	3298	2983	2406	1924	2101	2370	2359	2441	2429	2651	2874	2715	2588	3181	3898	3982	4760	4646	4423	3210	2638			4760
Low -	1750	1835	2144	2820	2177	1544	1578	1722	1816	1924	2006	2133	2266	2417	1787	1806	2347	2942	3284	3419	4102	2983	2144	2133			
Average -	2073	2055	2890	2980	2388	1679	1760	1927	2245	2073	2246	2324	2471	2657	1987	2251	2911	3665	3601	4390	4349	3300	2384	2368	2624	-11.50	
PLD% -	-21	-22	10	14	-9	-36	-33	-27	-14	-21	-14	-11	-6	1	-24	-14	11	40	37	67	66	26	-9	-10			
Code -	*V*V	****	*V*V	****	*V*V	*V*V	****	****	*V*V	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	****	VVVV		VVVV	*V*V	****			
BURNER FB1																											
High -	2983	3109	2983	2563	2576	2133	2210	2233	2188	2394	2860	2689	2601	2465	1806	2188	3196	3898	3733	4207	4261	3766	3434	3269			4261
Low -	2188	2210	2155	1955	1578	1552	1722	1955	1884	1924	2233	2199	2266	1561	1587	1631	1874	2997	2847	2955	3574	3298	2874	2741			
Average -	2521	2830	2556	2281	2091	1748	1951	2112	2004	2229	2647	2396	2428	1765	1707	1889	2776	3660	3225	3941	3838	3450	3138	2981	2590	-12.64	
PLD% -	-3	9	-1	-12	-19	-33	-25	-18	-23	-14	2	-7	-6	-32	-34	-27	7	41	25	52	48	33	21	15			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	*V*V	****	****	*V*V	****	*V*V	*V*V	VVVV	*V*V	VVVV		****	****	****			
BURNER RD1																											
High -	3298	3109	4243	4207	4172	4137	3982	3449	3685	3527	2453	2969	3685	3685	2969	2928	3081	3298	3196	3095	3067	3152	3053	3558			4243
Low -	1996	2417	2754	3685	3766	3480	2651	2588	3254	2477	1955	1934	2601	2664	2453	2490	2754	2833	2928	2715	2651	2794	2794	2820			
Average -	2339	2851	3731	3956	4003	3823	3110	3199	3428	2878	2185	2560	3356	3001	2638	2706	2942	3146	3083	2846	2939	2972	2929	3210	3076	3.76	
PLD% -	-24	-7	21	29	30	24	1	4	11	-6	-29	-17	9	-2	-14	-12	-4	2	0	-7	-4	-3	-5	4			
Code -	*V*V	*V*V	VVVV				VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	*V*V			
BURNER RD2																											
High -	7560	3011	3167	3832	3750	4102	3815	3210	3496	3269	2754	3449	3881	3782	3269	3621	2539	2588	2780	2997	3239	3167	3254	3653			7560
Low -	1722	2563	2887	2887	3358	3358	2133	2221	3011	2210	2199	2289	3053	2638	2767	2997	2301	2255	2370	2563	2794	2847	2901	3167			
Average -	2860	2852	3045	3571	3603	3625	2498	2947	3238	2527	2417	2941	3602	3034	2977	3361	2423	2408	2560	2802	3076	3005	3121	3447	2998	1.11	
PLD% -	-5	-5	2	19	20	21	-17	-2	8	-16	-19	-2	20	1	-1	12	-19	-20	-15	-7	3	0	4	15			
Code -	VVVV	****	****	*V*V	****	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	****			
BURNER RD3																											
High -	3701	3167	3799	4155	4120	4405	4034	3750	3669	3053	2133	3138	3480	3542	3404	3123	2689	2928	2807	2715	2754	2715	3527	3848			4405
Low -	2289	2394	2820	3152	3404	3328	2490	2563	2833	1865	1797	1965	2741	2955	2651	2188	2266	2417	2255	2221	2155	2359	2335	3313			
Average -	2685	2836	3414	3806	3798	3961	2952	3395	3061	2125	1985	2704	3069	3214	3055	2480	2459	2675	2513	2394	2413	2554	3194	3561	2929	-1.20	
PLD% -	-8	-3	17	30	30	35	1	16	5	-27	-32	-8	5	10	4	-15	-16	-9	-14	-18	-18	-13	9	22			
Code -	*V*V	*V*V	*V*V	VVVV		VVVV	VVVV	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	*V*V	****	****	****	****	*V*V	****	*V*V	****			
BURNER RD4																											
High -	3239	3328	3496	3196	3109	2406	2429	2702	2820	2928	3225	3269	3343	3152	2370	3558	2359	3298	4423	4261	4665	4571	4068	3982			4665
Low -	2715	2860	2887	2563	2144	1855	1865	2188	2177	2266	2347	2860	2551	1544	1396	1460	1685	2027	3109	3039	3123	3449	3480	2780			
Average -	2973	3075	3101	2846	2486	2137	2138	2403	2455	2597	2815	3037	3049	2041	1700	1866	2058	2858	3979	3477	4235	3872	3765	3268	2843	-4.11	
PLD% -	5	8	9	0	-13	-25	-25	-15	-14	-9	-1	7	7	-28	-40	-34	-28	1	40	22	49	36	32	15			
Code -	****	****	****	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	****	*V*V			
BURNER RD5																											
High -	2955	3558	3621	3011	2780	2526	2453	2588	2563	2914	3138	3011	2626	2728	2526	1904	2860	3343	3419	2928	4207	5095	4955	3298			5095
Low -	2289	2551	2794	2539	2312	2266	2080	2112	2199	2188	2677	2301	2221	2233	1578	1587	1703	2477	2453	1934	2301	2588	2983	2335			
Average -	2603	3362	3066	2720	2576	2374	2198	2417	2331	2637	2838	2588	2497	2440	1803	1766	2408	3009	2915	2470	3391	4336	3428	2686	2702	-8.85	
PLD% -	-4	24	13	1	-5	-12	-19	-11	-14	-2	5	-4	-8	-10	-33	-35	-11	11	8	-9	25	60	27	-1			
Code -	*V*V	*V*V	*V*V	****	****	****	****	****	****	*V*V	****	*V*V	****	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			
BURNER RD6																											
High -	2638	3343	3419	3313	3480	3225	3239	3225	3404	3701	3542	2983	2983	2874	3404	3167	3313	3328	3685	4102	4296	4207	2754	2664			4296
Low -	2166	2301	2887	2820	2901	2874	2874	2677	2794	2955	2754	2429	2551	1865	1865	1703	2563	2626	2901	3328	3898	2417	2037	2233			
Average -	2437	2984	3161	3079	3169	3050	3041	2882	3190	3381	2943	2670	2769	2056	2315	2550	3120	2924	3253	3841	4100	2975	2296	2454	2943	-0.73	
PLD% -	-17	1	7	5	8	4	3	-2	8	15	-0	-9	-6	-30	-21	-13	6	-1	11	30	39	1	-22	-17			
Code -	****	*V*V	****	****	****	****	****	****	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V			VVVV	*V*V	****			

IP7_000869

AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RH1																											
High -	2441	2626	2942	3284	4314	5035	4838	3999	4243	4296	3123	3574	3589	3511	3053	3123	3358	3527	3669	3621	2983	3109	3011	2942			5035
Low -	2144	2255	2370	2715	3039	4051	3511	3480	3701	2539	2477	2741	3181	2860	2638	2702	2914	3109	3343	2780	2626	2807	2728	1996			
Average -	2322	2442	2687	3117	3947	4625	3812	3752	4042	3024	2747	3286	3360	3106	2863	2935	3135	3374	3498	2975	2790	2929	2872	2232	3161	6.63	
PLD% -	-27	-23	-15	-1	25	46	21	19	28	-4	-13	4	6	-2	-9	-7	-1	7	11	-6	-12	-7	-9	-29			
Code -	****	****	****	****	*V*V		VVVV	****	****	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	*V*V	****	****	****	*V*V			
BURNER RH2																											
High -	3067	2887	3210	3511	4261	4571	4460	4085	4016	3685	3167	2429	3388	3388	3239	3621	3558	3254	3239	3138	3025	2955	3067	3225			4571
Low -	2347	2278	2539	2928	3358	4051	2780	2754	3343	2874	2048	1816	1975	3039	2874	2983	3109	2969	2969	2874	2728	2728	2702	2874			
Average -	2609	2630	2978	3242	4002	4403	3139	3779	3560	3108	2277	2012	3064	3146	3048	3334	3264	3114	3120	3013	2898	2844	2916	3026	3105	4.73	
PLD% -	-16	-15	-4	4	29	42	1	22	15	0	-27	-35	-1	1	-2	7	5	0	0	-3	-7	-8	-6	-3			
Code -	*V*V	*V*V	*V*V	****	VVVV		VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	****	****			
BURNER RH3																											
High -	3025	3373	3313	4405	4515	4496	2767	3685	3653	2767	2983	3210	3685	3637	3449	3373	2728	2794	2983	2955	2514	2576	3053	3109			4515
Low -	2233	2359	2651	2820	4051	1436	1570	2037	2324	1914	2289	2233	2465	2901	2942	2394	2266	2370	2526	2301	2058	2069	2382	2502			
Average -	2667	3025	2921	3975	4253	2044	2210	3327	2765	2344	2590	2743	3291	3230	3171	2708	2478	2590	2795	2505	2247	2402	2820	2787	2829	-4.59	
PLD% -	-6	7	3	41	50	-28	-22	18	-2	-17	-8	-3	16	14	12	-4	-12	-8	-1	-11	-21	-15	-0	-1			
Code -	*V*V	*V*V	****	VVVV		VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	****	****	*V*V	****	****	*V*V	****			
BURNER RH4																											
High -	3210	3025	3621	3465	2563	3123	3404	3404	3948	3915	3685	3701	3965	3434	2601	2502	3815	3982	3449	3328	4496	4332	3999	3138			4496
Low -	2465	2406	2715	2394	2166	2266	2780	2626	2997	3196	2754	3011	2955	1996	1845	1865	2210	3196	2969	1667	1685	3574	2539	2441			
Average -	2840	2722	3289	2623	2335	2709	3133	2930	3546	3604	3166	3418	3421	2422	2095	2243	3352	3370	3172	2415	3777	3899	2955	2863	3013	1.61	
PLD% -	-6	-10	9	-13	-22	-10	4	-3	18	20	5	13	14	-20	-30	-26	11	12	5	-20	25	29	-2	-5			
Code -	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	VVVV		*V*V	*V*V			
BURNER RH5																											
High -	2601	2601	2914	2997	3109	3081	3210	3095	2664	3011	3025	2997	3081	3284	2928	2155	2874	3621	3449	4016	4155	4207	4155	3225			4207
Low -	2255	2188	2370	2551	2651	2601	2702	2406	2301	2465	2453	2490	2551	2664	1914	1649	1768	2255	2576	2112	2289	3766	2942	2441			
Average -	2397	2439	2745	2800	2874	2821	2947	2614	2472	2744	2774	2741	2864	2997	2153	1834	2431	3118	2969	2565	3676	4006	3276	2646	2788	-5.98	
PLD% -	-14	-13	-2	0	3	1	6	-6	-11	-2	-1	-2	3	8	-23	-34	-13	12	7	-8	32	44	18	-5			
Code -	****	****	****	****	****	****	****	*V*V	****	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV		VVVV	*V*V			
BURNER RH6																											
High -	2465	3095	2997	2833	2794	2702	2874	3225	3181	2715	2502	2155	1884	2090	2289	2860	3865	4350	4296	4496	4722	4515	3542	2490			4722
Low -	1934	1965	2347	2539	2441	2133	2155	2588	2441	2324	1955	1587	1452	1561	1835	1965	2588	3239	3449	3574	4190	3419	2221	2101			
Average -	2140	2686	2567	2671	2646	2296	2668	3016	2644	2465	2132	1828	1648	1879	2083	2580	3417	4044	3823	4208	4526	3659	2493	2303	2768	-6.65	
PLD% -	-23	-3	-7	-3	-4	-17	-4	9	-4	-11	-23	-34	-40	-32	-25	-7	23	46	38	52	64	32	-10	-17			
Code -	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	VVVV		VVVV		VVVV	*V*V	****			
BURNER RC1																											
High -	2626	2514	3196	4120	4225	4722	4722	4314	4314	2983	3637	3574	3717	3685	3269	3053	3225	3898	3881	3343	3181	3637	3605	2969			4722
Low -	2080	2255	2289	2983	3799	3832	2901	2847	2780	2244	2335	3152	3225	2767	2754	2677	2887	3152	3167	2539	2613	2983	2702	2177			
Average -	2345	2376	2930	3822	4011	4316	3164	3968	3103	2461	3322	3352	3434	3037	3069	2901	3052	3703	3424	2727	3006	3446	2923	2392	3178	7.20	
PLD% -	-26	-25	-8	20	26	36	-0	25	-2	-23	5	5	8	-4	-3	-9	-4	16	8	-14	-5	8	-8	-25			
Code -	*V*V	****	*V*V	*V*V	****		VVVV	VVVV	VVVV	*V*V	*V*V	****	****	*V*V	****	****	****	****	****	*V*V	****	****	*V*V	*V*V			
BURNER RC2																											
High -	3449	2833	2638	3167	4051	4896	4243	4225	4102	3313	2651	2664	3313	3750	3701	3496	2969	3109	3167	3081	3123	3496	3496	3527			4896
Low -	2324	2429	2335	2429	2702	3915	3152	3254	2887	2324	2037	2166	2539	3152	3167	2638	2539	2702	2860	2702	2807	3039	3167	2767			
Average -	2609	2581	2488	2787	3750	4514	3591	3924	3202	2677	2255	2496	3080	3508	3387	2908	2777	2932	3005	2877	3024	3339	3304	3061	3086	4.10	
PLD% -	-15	-16	-19	-10	22	46	16	27	4	-13	-27	-19	-0	14	10	-6	-10	-5	-3	-7	-2	8	7	-1			
Code -	*V*V	****	****	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	****	*V*V	****	****	****	****	****	****	****	*V*V			

IP7_000870

AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RC3																											
High -	3343	3210	3269	4102	4627	5055	4741	3881	3404	3095	2502	3284	3419	3152	3480	3496	3269	3081	3095	3123	3138	3373	3404	3717			5055
Low -	2728	2563	2514	2887	4085	3799	3095	3138	2820	2289	1587	1676	2794	2728	2728	2767	2563	2406	2767	2741	2767	2997	2874	3123			
Average -	2953	2908	2964	3713	4355	4570	3490	3419	3035	2541	1842	2822	3122	2961	3220	3233	2788	2807	2930	2925	2989	3139	3192	3378	3137	5.82	
PLD% -	-6	-7	-6	18	39	46	11	9	-3	-19	-41	-10	-0	-6	3	3	-11	-11	-7	-7	-5	0	2	8			
Code -	****	*V*V	*V*V	*V*V		VVVV	VVVV	****	****	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****			
BURNER RC4																											
High -	3081	4102	3932	3733	3167	3210	2664	2526	2477	2539	2664	2601	3039	2969	2058	2347	3039	3965	3848	4571	4646	4608	4368	3254			4646
Low -	2417	2689	3269	2820	2754	2233	2301	2006	1640	1731	2199	1955	2080	1703	1712	1740	2122	2860	2928	3025	3999	3915	3039	2382			
Average -	2793	3628	3534	3154	2981	2507	2473	2141	1904	2208	2440	2216	2611	2049	1895	2056	2723	3419	3436	4217	4347	4191	3371	2753	2877	-2.97	
PLD% -	-3	26	23	10	4	-13	-14	-26	-34	-23	-15	-23	-9	-29	-34	-29	-5	19	19	47	51	46	17	-4			
Code -	*V*V	*V*V	****	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	VVVV			VVVV	*V*V			
BURNER RC5																											
High -	2860	3181	3081	3109	2794	2601	2767	2767	2664	2728	3138	3298	3434	3109	2983	2394	2914	3982	3832	4441	4665	4722	3982	2983			4722
Low -	2514	[illegible]	2767	2441	2490	2058	2080	2394	1975	2080	2563	2754	2807	2526	2122	1845	1894	2702	3181	3210	3982	3766	2901	2359			
Average -	2680	[illegible]	[illegible]	2680	2627	2240	2570	2545	2120	2519	2885	3004	3173	2853	2419	2021	2495	3493	3476	3986	4337	4130	3179	2685	2914	-1.72	
PLD% -	-8	-2	2	-8	-10	-23	-12	-13	-27	-14	-1	3	9	-2	-17	-31	-14	20	19	37	49	42	9	-8			
Code -	****	*V*V	****	*V*V	****	*V*V	*V*V	****	*V*V	*V*V	****	****	****	****	*V*V	*V*V	*V*V	*V*V	****	VVVV		VVVV	*V*V	*V*V			
BURNER RC6																											
High -	3239	3388	2969	3081	2833	2689	2901	2887	2677	2514	2394	2429	2370	2490	2406	1835	2016	3865	3982	3915	4314	4460	4314	3865			4460
Low -	2453	2689	2601	2539	2563	2289	2370	2526	2058	2155	2037	1884	1924	1985	1631	1342	1342	1894	3358	3152	3388	3848	3284	2807			
Average -	2806	3048	2812	2794	2707	2407	2637	2720	2258	2344	2193	2155	2166	2251	1932	1513	1737	3313	3671	3476	3925	4262	3590	3238	2748	-7.31	
PLD% -	2	11	2	2	-2	-12	-4	-1	-18	-15	-20	-22	-21	-18	-30	-45	-37	21	34	26	43	55	31	18			
Code -	*V*V	*V*V	****	****	****	****	****	****	*V*V	****	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	VVVV		VVVV	*V*V			
BURNER RG1																											
High -	2702	2741	3095	3932	4225	4332	4243	4137	3388	2741	2715	3865	3848	3701	3766	3574	3358	3239	3138	3254	3284	3298	3480	3343			4332
Low -	2312	2417	2417	2969	3733	3815	3750	3095	2514	2006	2155	2563	3269	3284	3239	3109	3081	2969	2626	2860	2914	2887	2983	2048			
Average -	2479	2549	2919	3696	4043	4042	3999	3379	2845	2216	2523	3499	3559	3455	3483	3319	3219	3109	2853	3108	3072	3070	3266	2295	3167	6.81	
PLD% -	-22	-19	-8	17	28	28	26	7	-10	-30	-20	10	12	9	10	5	2	-2	-10	-2	-3	-3	3	-28			
Code -	****	****	*V*V	VVVV				VVVV	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	****	****	*V*V			
BURNER RG2																											
High -	2833	2860	3621	3815	4423	4760	4571	4051	3932	3105	2335	2677	3558	3605	3605	3558	3465	2914	3123	3109	3167	3358	3404	3480			4760
Low -	2601	2588	2601	3511	3527	4243	2754	2780	2874	2069	2027	2080	2526	3081	3210	3269	2502	2417	2702	2638	2664	3039	3039	2613			
Average -	2703	2727	3211	3643	4229	4511	3120	3725	3081	2287	2189	2454	3285	3382	3444	3377	2731	2793	2952	2815	3018	3216	3256	2854	3125	5.41	
PLD% -	-14	-13	3	17	35	44	-0	19	-1	-27	-30	-21	5	8	10	8	-13	-11	-6	-10	-3	3	4	-9			
Code -	****	****	*V*V	****	VVVV		VVVV	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	****	****	*V*V	****	****	****	****	****	****	*V*V			
BURNER RG3																											
High -	2715	3210	3254	3685	3832	4137	4102	3637	3239	2807	2677	3637	3832	4085	3965	3717	3605	3637	3750	3685	3465	3434	3621	3343			4137
Low -	2188	2359	2626	2794	3496	3574	2955	2997	2539	1955	1996	2502	3025	3373	3284	3095	3053	3269	3269	2983	2969	2754	2860	1965			
Average -	2546	2897	2831	3423	3671	3868	3277	3264	2867	2153	2432	3325	3482	3794	3610	3373	3364	3520	3509	3333	3170	2996	3212	2442	3182	7.31	
PLD% -	-20	-9	-11	8	15	22	3	3	-10	-32	-24	5	9	19	13	6	6	11	10	5	-0	-6	1	-23			
Code -	****	*V*V	****	*V*V			VVVV	****	*V*V	*V*V	*V*V	*V*V	VVVV			****	****	****		****	****	****	*V*V	*V*V			
BURNER RG4																											
High -	2741	2983	3653	3511	2807	2860	2406	2741	2728	2626	2588	2780	2833	3152	2794	2199	2969	3799	3915	4916	4780	4478	3701	2715			4916
Low -	2324	2347	2514	2588	2394	2037	1996	2289	2324	2221	2233	2382	2382	2601	1965	1797	2069	2767	2847	2820	4296	3284	2514	2144			
Average -	2520	2632	3279	2860	2571	2324	2186	2482	2580	2439	2381	2541	2586	2907	2271	1997	2627	3560	3249	4473	4458	3670	2789	2355	2822	-4.80	
PLD% -	-11	-7	16	1	-9	-18	-23	-12	-9	-14	-16	-10	-8	3	-20	-29	-7	26	15	58	58	30	-1	-17			
Code -	****	*V*V	*V*V	*V*V	****	*V*V	****	****	****	****	****	****	****	****	*V*V	****	*V*V	*V*V	*V*V	VVVV		VVVV	*V*V	*V*V			

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AIR DISTRIBUTION ANALYSIS
POST BALANCE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RG5																											
High -	2677	2820	3298	3167	2887	2780	2563	2928	2754	2563	2754	2860	2477	2754	2702	2278	2754	3621	3965	5075	4760	4665	3815	3358			5075
Low -	2335	2453	2502	2638	2638	2080	2101	2278	2048	2112	2233	2112	2069	2144	2080	1914	1914	2502	3419	3701	4120	3733	2983	2301			
Average -	2551	2620	3045	2799	2755	2235	2390	2721	2258	2355	2542	2342	2273	2487	2345	2051	2451	3305	3730	4563	4516	4002	3271	2596	2842	-4.15	
PLD% -	-10	-8	7	-2	-3	-21	-16	-4	-21	-17	-11	-18	-20	-13	-17	-28	-14	16	31	61	59	41	15	-9			
Code -	****	****	*V*V	****	****	*V*V	****	*V*V	*V*V	****	****	*V*V	****	*V*V	*V*V	****	*V*V	*V*V	****	VVVV			*V*V	*V*V			
BURNER RG6																											
High -	2090	1975	2626	2613	2359	2465	2874	2860	2689	3343	3303	3254	3095	2638	2101	3225	3685	4332	4314	4936	4896	4207	3167	2244			4936
Low -	1806	1722	1816	2210	2069	2122	2255	2406	2210	2651	3109	2741	2406	2006	1527	1658	2335	3496	2069	2037	3832	3053	1845	1934			
Average -	1913	1860	2438	2407	2191	2284	2701	2625	2454	3163	3229	2910	2579	2154	1713	2846	3400	4093	2945	4211	4086	3402	2148	2096	2744	-7.46	
PLD% -	-30	-32	-11	-12	-20	-17	-2	-4	-11	15	18	6	-6	-21	-38	4	24	49	7	53	49	24	-22	-24			
Code -	****	****	*V*V	****	****	****	*V*V	****	****	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV	VVVV	*V*V	*V*V	****			

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The following definitions apply to the Air Distribution Analysis Tables:

Burner Average - The Point Average velocities (24 for each burner) are integrated averages over time for the individual point. It is not the average of the maximum and minimum values.

Deviation - This is the difference between the Average Velocity For All the Burners (shown on the upper left hand corner of the Air Distribution Analysis Tables) and the Burner Average for the specific burner being analyzed.

Average Velocity For All Burners - This average is calculated from the values in the Burner Average Column.

Maximum High Flow Deviation - The percentage, maximum high flow deviation is the greatest difference between the highest positive Burner Average and the Average Velocity for All Burners.

Minimum Low Flow Deviation - This percentage is the greatest difference between the Lowest Burner Average Velocity and the Average Velocity for All Burners. A negative sign indicates a burner receiving less than the average airflow.

Total Flow Deviation - This number is the total deviation difference in airflow between the burner receiving the maximum airflow and the burner receiving the minimum airflow.

Each test point was also analyzed for two conditions as follows:

1. A deviation from the peak velocity reading for the burner.
2. A deviation between the high and low velocity readings.

A 10% deviation is used as the set point for the blocked flow and 20% for vortex action analysis. These deviations are noted on the Code Line for each test point. An asterisk (*) indicates a greater than 10% deviation from the peak burner velocity. A (V) symbol indicates that there is a greater than 20% deviation between the high and low velocity readings and indicates a vortex eddy. An asterisk and V (*V) combination code indicates that both conditions are occurring simultaneously. If one of these codes is listed below a test point it indicates one of these factors is influencing the perimeter loading of the burner.

The three-dimensional figures (see Appendix) are produced from the average velocity data and pictorially represent the burner velocity air cones. In addition to the composite burner three-dimensional figures, the velocity profiles are also presented in topographical format. See appendix.

The XY coordinates for all figures designate horizontal and vertical location dimensions along the boiler (these dimensions are in inches). The lower left corner of the windbox is the origin for the XY coordinates.

5.2 Airflow Balancing

Baseline testing showed that significant airflow deviations existed between burners and within windboxes. Deviations varied from 22.6% to -44.3% for the inner zone and from 22.5% to -13% for the outer zone. These flow deviation ranges clearly indicate a need for airflow balancing in the burners.

However, baseline data also revealed extreme disturbed flow conditions were occurring in every burner. The most likely cause of these extreme flow disturbances is probably flow separation occurring at the inner corner of the entrance of the secondary air into each windbox. Flow separation causes large-scale eddies which cascade through the windbox and show up as rapid velocity

fluctuations at each data point. When large-scale flow disturbances are noted like this, balancing airflows by adjusting inlet air ratios by adjusting backplates or banding outer zone air doors becomes extremely difficult and unreliable because the flow patterns do not repeat identically from test to test. In view of these conditions the plant personnel were notified that balancing objective of ±5% flow deviation would not be possible on the unit without flow modeling. However, in view of the extreme variation in flow deviations, both IPSC and RJM Corporation decided that adjusting backplates and the airflow bands on the outer zones would be helpful in narrowing the airflow deviation range.

Because of changes in the outage critical path schedules, only one day was allocated for making adjustments and retesting. Tables 1 and 2 show the results of airflow balancing after the first series of outer zone band adjustments and inner backplate adjustments. Based on the results of Test 3 (Tables 1 and 2), an additional set of adjustments was made for further balancing. However, there was insufficient time remaining in the schedule for retesting the unit. It is the opinion of RJM Corporation that the second series of test results improved flow deviations and that actual performance results are better than indicated by Tables 1 and 2.

After the unit was brought on-line, additional burner flow modeling work was done to improve flame stability patterns. This work necessitated additional adjustments in the backplate positions to correct mass flow imbalances between inner and outer zones. The adjustments were made on a proportional basis so the airflow deviations on the inner and outer zones can be considered unchanged. The final settings for the inner two burners are shown in Table 7.

Test 3 results (Tables 1 and 2) shows that the deviation range has been narrowed to ±12.5% for the inner zone and +8.2%, -21.3% for the outer zone respectively. Please note that final band and backplate adjustments have further

Table 7

FINAL BURNER SETTING

Burner ID	Inner Zone Opening	Outer Zone Opening
FE6	2.96	5.79
FE5	2.93	5.99
FE4	2.98	5.91
FE3	3.79	6.46
FE2	3.62	6.08
FE1	3.95	5.26
FA6	3.17	5.29
FA5	2.65	5.64
FA4	2.75	5.90
FA3	3.57	5.73
FA2	4.27	5.98
FA1	3.69	5.54
FF6	3.13	6.71
FF5	3.05	6.26
FF4	3.55	6.40
FF3	3.37	6.25
FF2	3.84	6.27
FF1	3.95	5.86
FB6	3.87	7.58
FB5	3.37	6.82
FB4	3.43	7.13
FB3	4.92	6.93
FB2	4.93	7.51
FB1	4.84	6.52
RD1	2.90	6.63
RD2	3.03	6.55
RD3	3.36	6.57
RD4	3.26	5.45
RD5	3.91	6.11
RD6	3.44	6.34
RH1	2.86	5.15
RH2	2.94	5.64
RH3	3.55	4.63
RH4	3.11	4.42
RH5	3.73	4.19
RH6	3.99	4.75
RC1	2.76	5.42
RC2	2.67	5.85
RC3	2.82	5.84
RC4	3.23	6.01
RC5	6.22	5.80
RC6	3.41	5.39
RG1	2.87	6.27
RG2	2.94	5.76
RG3	2.59	6.25
RG4	3.82	5.87
RG5	3.83	5.72
RG6	4.21	6.03

narrowed this range. However, there is no test data by which we can quantify the reduction.

5.3 Airflow Deviation Analysis

Tables 8 and 9 summarize the airflow deviations between burners and between windboxes based on Test 3 (Tables 1 and 2) results.

Each windbox exhibits a side-to-side flow imbalance. For the outer zones of the burners the flow imbalance ranges from 6.7% to 13.3%. The inner zone deviation ranges are more extreme and range from 10.6% to 15.2%. There are clear side-to-side imbalances in each windbox. However, the pattern is not uniform -i.e., all windboxes high on the left side and low on the right, etc. Since the windbox dampers were throttled to 55% open position, it is possible that some of this deviation variance is due to slight differences in the damper positions on each end of the windbox. However, since the slope of the deviation pattern is not uniform across the windbox, it is clear that variations in damper positions are not the sole cause or primary cause of the airflow deviations between burners.

A significant indication of the degree of airflow disturbance within the windboxes is shown by the fact that the windbox-to-windbox airflow deviations are different for inner and outer zones. For instance, the front windbox-to-windbox deviations vary from -7.1% to 4.5% for the inner zones and 1.3% to -8.5% for the outer zones. In the rear windbox-to-windbox deviations, the inner zone flow deviations range from 0.8% to -1.7% and 9.3% to -2.9% for the outer zone. If the airflow patterns in the windbox were uniform and undisturbed, it would be expected that inner and outer zone airflow deviations on a burner-to-burner and windbox-to-windbox basis would be approximately the same.

Table 8

INNER ZONE AIRFLOW DEVIATION SUMMARY
Test 3

Front Windbox

Burner Row	Burner-To-Burner Deviation % Burner Column 6	5	4	3	2	1	Total Windbox Flow Deviation Range %	Windbox-To-Windbox Deviation %
E	8.6	6.3	6.8	-3.5	-1.4	-6.6	15.2	1.7
A	4.2	12.4	9.9	2.5	-1.2	-1.2	13.6	4.5
F	7.6	5.6	-0.9	4.5	-2.4	-2.9	10.6	1.9
B	-6.6	-1.1	-0.6	-10.0	-11.5	-12.6	12.0	-7.1

Rear Windbox

Burner Row	Burner-To-Burner Deviation % Burner Column 1	2	3	4	5	6	Total Windbox Flow Deviation Range %	Windbox-To-Windbox Deviation %
D	3.8	1.1	-1.2	-4.1	-8.9	-.73	12.7	-1.7
H	6.6	4.7	-4.6	1.6	-6.0	-6.7	13.3	-0.7
C	7.2	4.1	5.8	-3.0	-1.7	-7.3	14.5	0.8
G	6.8	5.4	7.3	-4.0	-4.2	-7.5	14.8	0.5

Table 9

OUTER ZONE AIRFLOW DEVIATION SUMMARY
Test 3

Front Windbox

Burner Row	Burner-To-Burner Deviation % Burner Column 6	5	4	3	2	1	Total Windbox Flow Deviation Range %	Windbox-To-Windbox Deviation %
E	1.2	-2.3	-.17	-1.2	.21	4.4	6.7	0.4
A	7.8	1.3	-4.3	.68	-2.9	5.0	13.1	1.3
F	-7.6	-4.2	-4.2	3.2	5.6	2.7	13.2	-0.7
B	-12.1	-7.0	-8.7	-8.6	-9.7	-5.1	7.0	-8.5

Rear Windbox

Burner Row	Burner-To-Burner Deviation % Burner Column 1	2	3	4	5	6	Total Windbox Flow Deviation Range %	Windbox-To-Windbox Deviation %
D	-3.9	-2.7	-1.1	6.7	-2.0	-1.6	10.6	-0.8
H	7.0	1.8	9.8	11.9	15.1	10.21	13.3	9.3
C	7.7	0.6	-1.1	-2.7	3.1	4.8	10.4	2.1
G	2.3	-.02	-10.8	-2.6	-1.5	-5.1	13.1	-2.9

It is also clear that the middle two windboxes, and especially the third windbox up on each side of the unit, have higher total mass flows that either the top or the bottom windboxes on either side. The bottom windboxes exhibit the most air starved conditions.

5.4 Perimeter Loading Distribution Deviations

Perimeter loading distribution deviations on Unit No. 2 are extreme. Ideally, burner perimeter loading distribution deviations, which are deviations in airflow around the circumference of the burner, should fall within $\pm 5\%$ for optimum operation. Acceptable perimeter loading distribution deviations are less than $\pm 10\%$. However, on Unit 2 no burner falls within these ranges. Minimum values are +15% and -16%. Maximum values are +41% and -43% for the outer zone and +67% and -40% for the inner zone.

Examination of the 3-D velocity profile cones in the Appendix for each burner graphically shows how extreme the airflow variances can be within burners such as C6, H6 and B2.

Distortion of the burner backplates and outer zone front and backplates may be contributing to the extremes in perimeter loading distribution deviations. However, it is the opinion of RJM Corporation that the most significant cause of the perimeter loading distribution deviation problems are windbox vortex eddies which are cascading down onto the burners and interrupting flow patterns. It is clear from the topographical diagrams contained within the Appendix that these windbox eddies are also disrupting flow over the air doors and air vanes as indicated by the regularity of peaks and valleys around the perimeter of the burner.

The only acceptable solution for correcting the perimeter loading distribution deviations is to conduct and airflow model study to locate the origin of, and to eliminate the incidence of windbox vortex eddies.

5.5 Potential Problems

All of the segregated windbox units that RJM Corporation has tested to date have exhibited severely disturbed flow patterns shown on Unit No. 2. However, Unit No. 2 has the most severely disturbed flow patterns of all units test to date. The degree of airflow disturbance raises potential problems in three areas as follows:

1. Airflow Measurement - IPSC is considering installing airflow metering equipment on each windbox in order to balance airflows. The cost for installing such equipment and integrating it into the control system is estimated at from $1 million to $1.5 million. Possible equipment choices include pitot tube arrays, air foils and stacked hot-wire anemometer arrays. Air foils and pitot tube arrays require uniform airflows for accurate reading. Pitot tube and air foil systems will not work accurately in the disturbed flow fields on Unit No. 2. These systems utilize common manifolds for sensing taps. Large variations in static pressure or velocity pressure from one tap to another sets up internal flows in the manifold resulting in significant airflow measurement error.

   Hot-wire anemometer arrays are subject to error when the potential for reverse flow conditions occurs such as can be found in turbulent vortex eddy wakes. These wakes occur when there is flow separation such as is suspected on Unit No. 2. The reason that error occurs in the hot-wire anemometer arrays is that they are not directionally sensitive -i.e., they cannot measure whether the direction is into or out of the windbox. Therefore, a hot-wire anemometer sensing probe in the wake of a vortex

may actually be measuring a velocity vector which is moving in the opposite direction from the secondary airflow moving into the windbox. However, the sensing array does not recognize the direction and, therefore, averages this velocity point into the total average as if it were in the correct direction.

In reality, airflow sensing or metering equipment for each windbox is not needed on Unit No. 2. If the airflows to the burners are balanced to within ±5% the need for direct metering of air to individual windboxes becomes unnecessary.

Balancing the airflows to the burners requires a one-time charge estimated to be between $175,000 to $275,000 inclusive of all modeling and installation charges. This is equal to less than 25% of the capital cost for installing metering equipment which is estimated to be between $1 million and $1.5 million installed. Balancing the burners in lieu of installing individual airflow metering equipment also would eliminate the need for ongoing maintenance and calibration of the metering equipment.

2. Tube Wastage - The possibility exists for long-term tube wastage due to oxidizing/reducing atmosphere reactions. Wastage areas will be located locally around burners which have extreme perimeter loading distribution deviations. The high excess air portions of these burners will have highly oxidizing atmospheres. However, the low airflow sections of these burners will have strong reducing atmospheres. The natural recirculation pattern from the flame envelope to the front wall in the immediate region around the throat means that these oxidizing and reducing atmospheres will be constantly sweeping furnace wall generating tubes around the burner discharge. It is the boundary between the oxidizing and reducing atmospheres where the tube wastage will occur. The oxidizing and

reducing atmosphere boundary will oscillate somewhat. In the oxidizing mode tube metal surface will oxidize and produce an oxide coating. When subject to the reducing atmosphere this coating is stripped away and re-entrained in the flue gas as fly ash. As a result, tube metal surface has lost a layer of metal a few molecules thick. Over a five-to-fifteen year period of time the wastage problem can be significant enough to result in water wall failures. Ultimately, entire sections of the water wall may have to be replaced.

In view of the above long-term phenomenon, it is important that perimeter loading distribution deviations be normalized so that an oxidizing atmosphere is retained throughout the entire perimeter of the burner. This can be achieved by airflow modeling and balancing.

3. Superheater and Reheater Hot Spots - Burners having high airflow deviation, especially towards the middle of the windbox and in the lower elevations of burners, have the potential for creating localized hot spots in superheater and reheater steam outlet tube bundles.

These burners have high gas mass flows and because they are shielded from radiating to the water wall tubes by surrounding burners they also have very high temperatures exiting the furnace. The flows from burners do not mix in the furnace. They stream tube throughout the entire boiler. Therefore, a high mass flow, high temperature stream tube from a burner generates a very high heat flux in a small localized area going into the superheater or reheater tube bundles. If the superheater tube outlet temperature is at or near its maximum design operating temperature, it is possible that this localized overheating will exceed safe operating tube metal temperatures. It has been found in some units that long term, such localized overheating ultimately leads to tube failure.

Balancing airflows between burners to within ±5% will eliminate the potential for this type of problem occurring. It will also normalize temperature and mass flow profiles across the unit which improves unit heat absorption efficiencies.

5.6 Out-of-Service Burners

A single test was run on the B windbox burners simulating an out-of-service burner condition. Windbox dampers were set at 30% open and a complete air distribution test series was run on the six burners. Test results are summarized in Table 5.

Analysis indicates that the out-of-service damper setting passes 27% of the flow as compared to a 100% open damper setting. (The 55% B windbox damper velocities were prorated up to 100% damper velocities using H windbox test data at 100% and 55% loads.)

At the 55% damper setting, airflow balance within the windbox was within +3.8%, -3.9%. However, in the out-of-service condition, flow deviations range expanded to +8.2%, -21.3%. A review of the data shows that there was a dramatic reduction in airflow to the B1 burner. A possible cause of the shift in this flow pattern may be due to the fact that the windbox damper on the B1 burner side is closing at a faster rate or does not have the same true percent open area as the windbox dampers on the other side.

It is recommended that IPSC carefully review the synchronization of all windbox dampers over their normal operating range. The full 48 burner tests also indicate that windbox damper synchronization may be a problem.

5.7 One Hundred Percent Airflow Test

A single test was run on all six burners on the H windbox with airflows at the 100% open position. At the 55% damper position, the airflow deviations between burners was +7%, -7.42%. At the 100% open position, airflow deviations ranged from +5.3% to -6.9%. An examination of the change in flow deviation from burner to burner at these two different damper settings indicates that the flow patterns are the same while the magnitude of the flow deviation tends to decrease somewhat at the 100% damper position. However, the extreme flow disturbances noted in the windbox remain and the small change in total flow deviations might be due to variances in this disturbed flow condition.

Perimeter loading distribution deviations on individual burners at 55% and 100% damper settings are essentially the same. The percentage variation of the perimeter loading distribution deviations shifts up or down regardless of damper setting. This indicates that there are disturbances in the windbox that are driving the perimeter loading problems.

5.8 Burner Settings

Air door positions were set by plant personnel from inside the windbox to the following positions:

Spin Vanes	=	100% open
Inner Zone Exit Plane	=	RJM Swirler
Outer Zone	=	100% open

5.9 Test Apparatus

Coal pipe elbows were removed and support tubes of 2½" Schedule 40 pipe with two sets of 3 support legs were inserted into the burner PC tube. The probe was

inserted through the support tube and positioned perpendicular to the burners axis via mechanical linkage in the plane of the burner throat. The test probe has a sensing unit which integrates data over a 3" element length. Data is collected clockwise in 15° increments in the burner throat around the burner axis as viewed from the firing isle. The 0° data position is at the top dead center position in the burner. A separate probe setup was used for each air zone (inner and outer) in the burner.

The probe output is the actual velocity compensated for the windbox temperature. Upon achieving stabilized probe readings, a microprocessor captures a ten second data window and calculates the average, minimum and maximum values. The probe has a one-second response rate and can measure velocity values on airflow vectors which are within ±50° of an axial flow vector. The repeatability of the apparatus is 0.25% with an absolute value reading accuracy of ±1.5%.

5.10 Validity of Test Results

The question frequently arises as to how accurately cold flow test results resemble actual secondary airflow conditions under normal firing conditions at full load and at lower loads. To assure that cold flow test results will accurately predict actual unit performance, RJM Corporation adheres to the flow modeling standards regarding geometric, dynamic and kinematic similarity.

Geometric similarity requires that the model being tested have the same linear, area and volumetric ratios as the full-scale unit. Since RJM Corporation uses your unit as our test model, a geometric scaling factors are exactly equal for both cold and hot flow tests.

Dynamic similarity requires that the force ratios acting on the fluid particles throughout the flow pattern be the same. Since the same fluid (air) is being used on the full-scale unit, the dynamic similarity is the same for hot and cold flow.

Kinematic similarity exists between the model and the unit when their streamlines are geometrically similar. The standard for the industry is to use Reynolds number limits for kinematic similarity. When Reynolds numbers exceed 20,000 the flow is fully turbulent. Therefore, the streamlines in the test unit and the actual unit will react in the same fashion. The Reynolds numbers for cold flow and actual full load and minimum load conditions for Unit No. 2 far exceed the minimum number of 20,000 and are shown below.

$$R_{70} = 2.04 \times 10^6$$

$$R_{\text{Full Load}} = 0.5 \times 10^6$$

$$R_{\text{Minimum Load}} = 0.2 \times 10^6$$

Since geometric, dynamic and kinematic similarity has been preserved throughout the testing, the results contained in this report accurately depict the actual flow conditions in the unit under normal firing operation.

5.11 Unit Test Conditions

The FD and ID fans were brought up to load with flows balanced through each by equalizing fan amperages. Total flows through the unit were regulated by windbox dampers.

For baseline testing of the inner and outer zone air distributions and for post balancing tests of the inner and outer air zone distributions (Tables 1-4), the windbox air dampers were set at the 55% open position.

For the B windbox burner distribution in out-of-service mode, the B windbox dampers were set to 30% open. See Table 5.

For Table 6 the H windbox dampers were set to the 100% open position while all other burner windboxes were set to 55% open position.

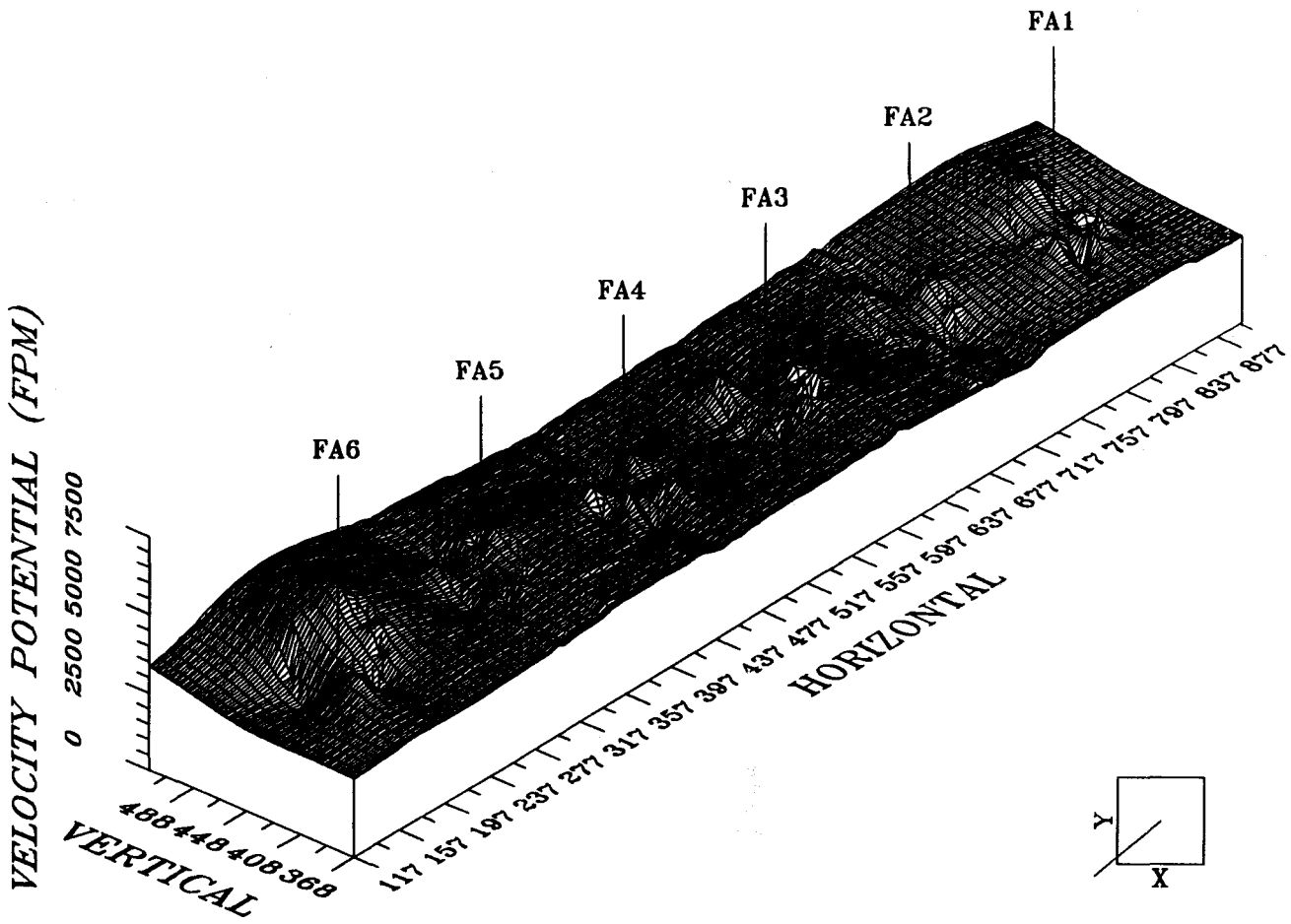
6.0 APPENDIX

Tables 1 and 2 3-D Graphics

Velocity Potential Profiles

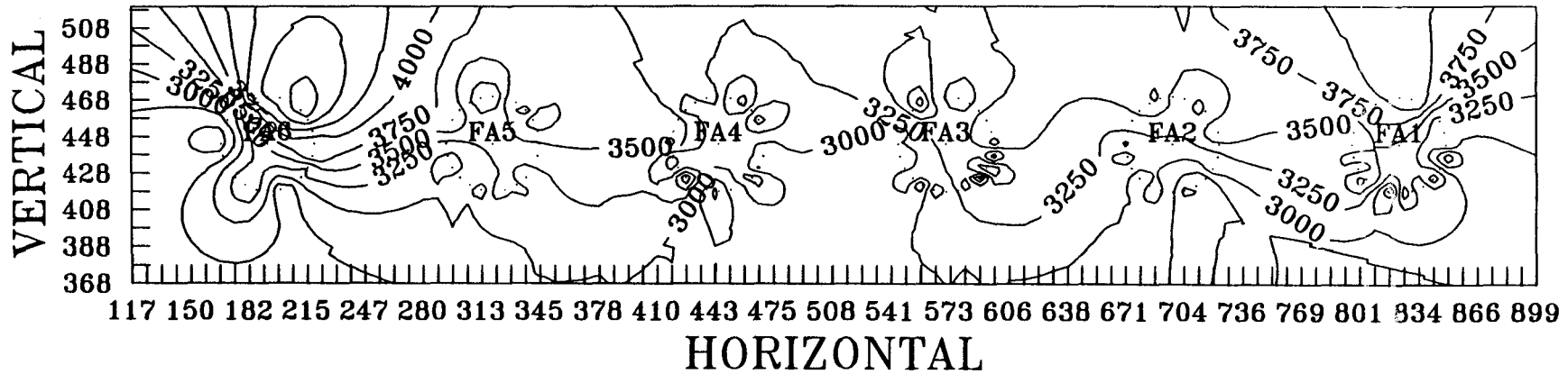
Topographic Diagrams

Velocity Profiles



A WINDBOX VELOCITY POTENTIAL PROFILE

A WINDBOX TOPOGRAPHICAL DIAGRAM



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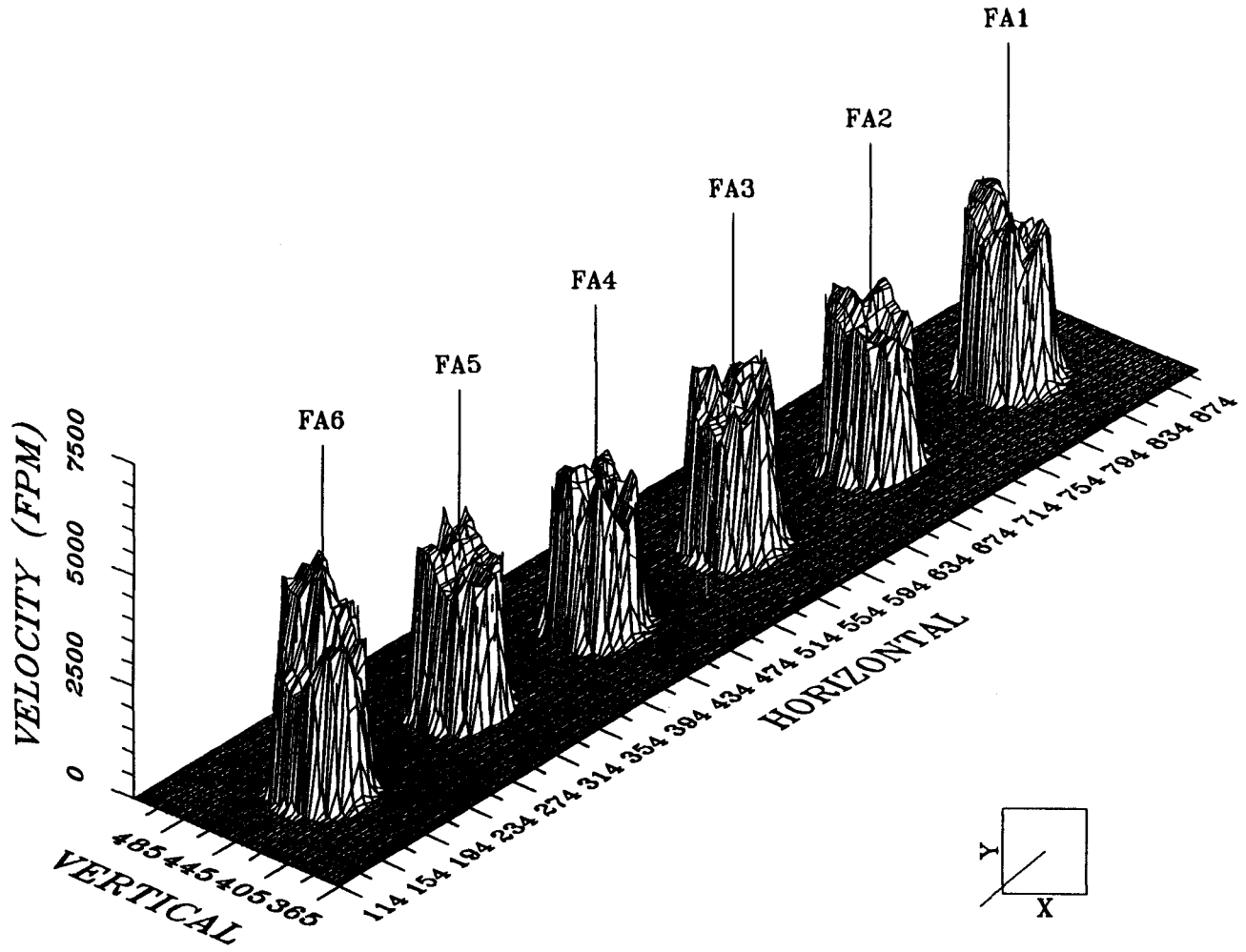

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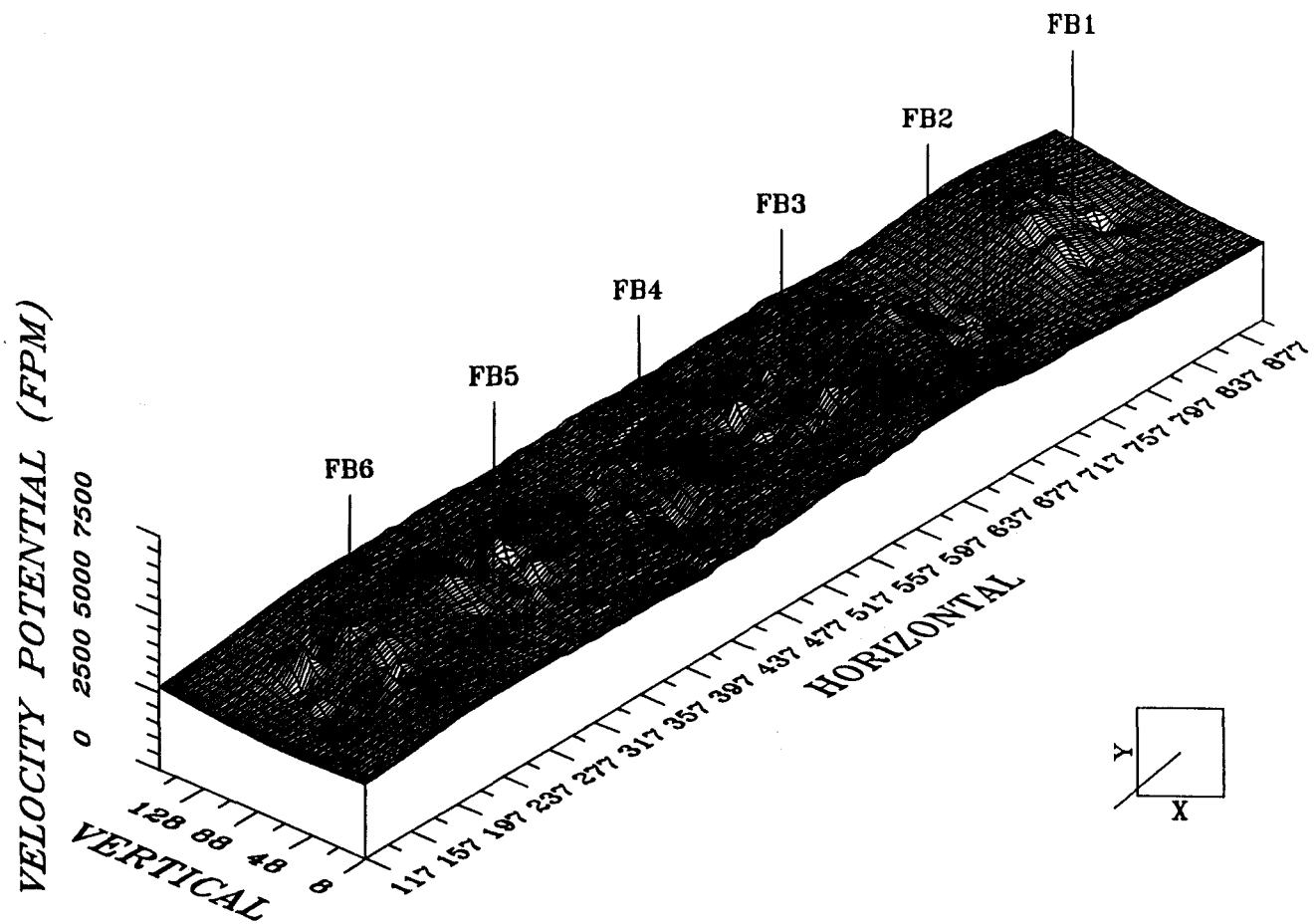
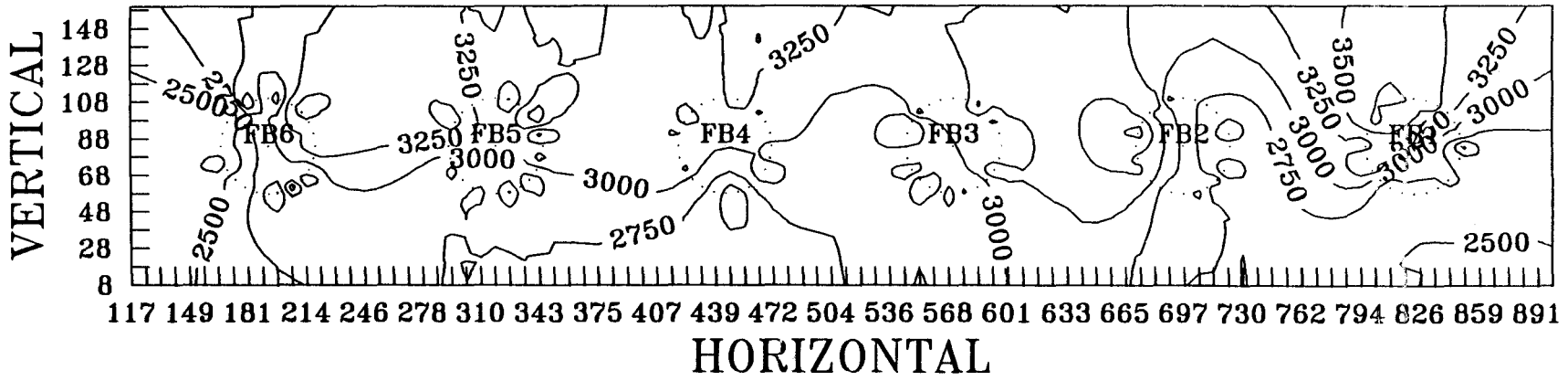


B WINDBOX VELOCITY POTENTIAL PROFILE

B WINDBOX TOPOGRAPHICAL DIAGRAM



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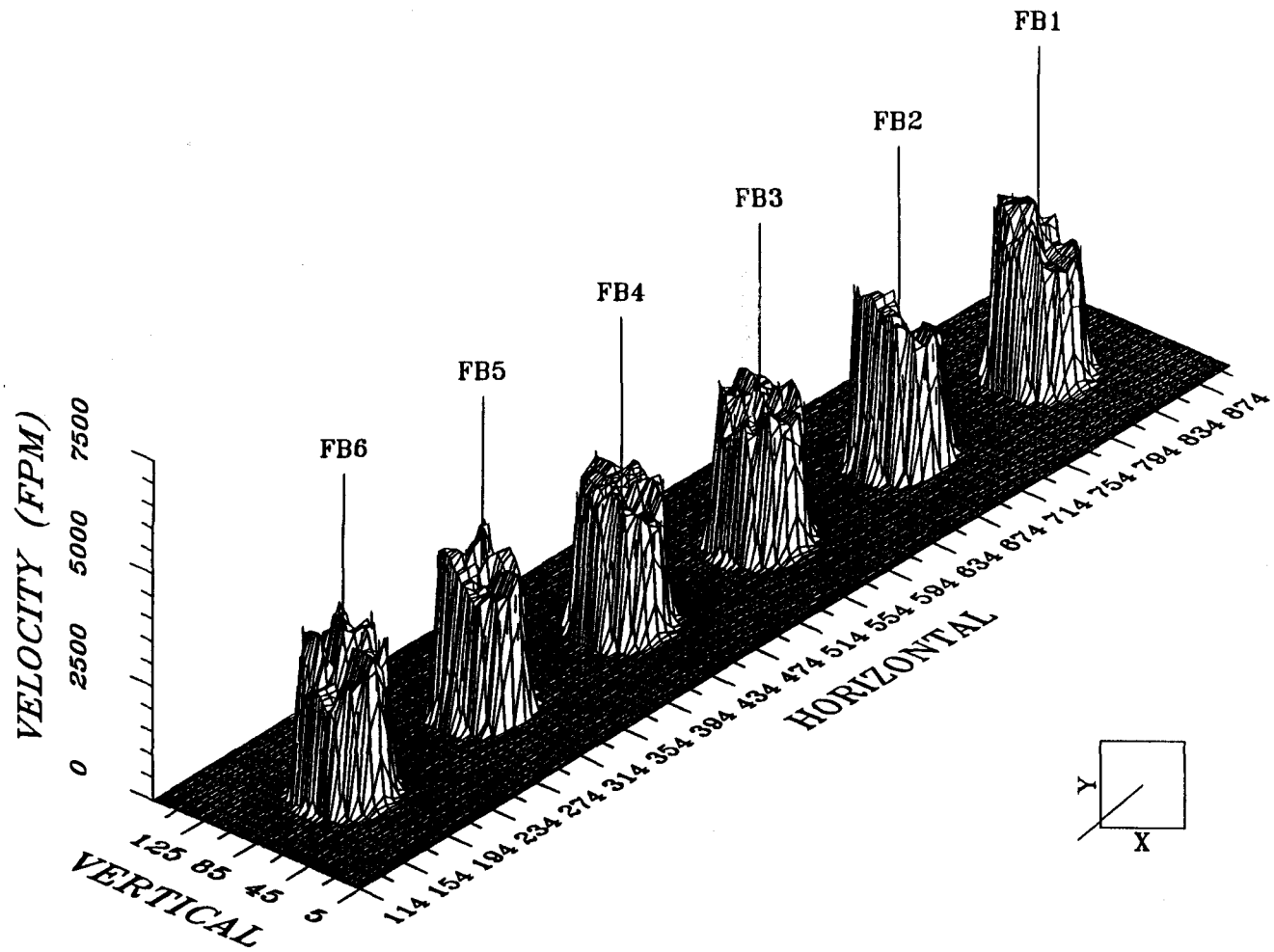

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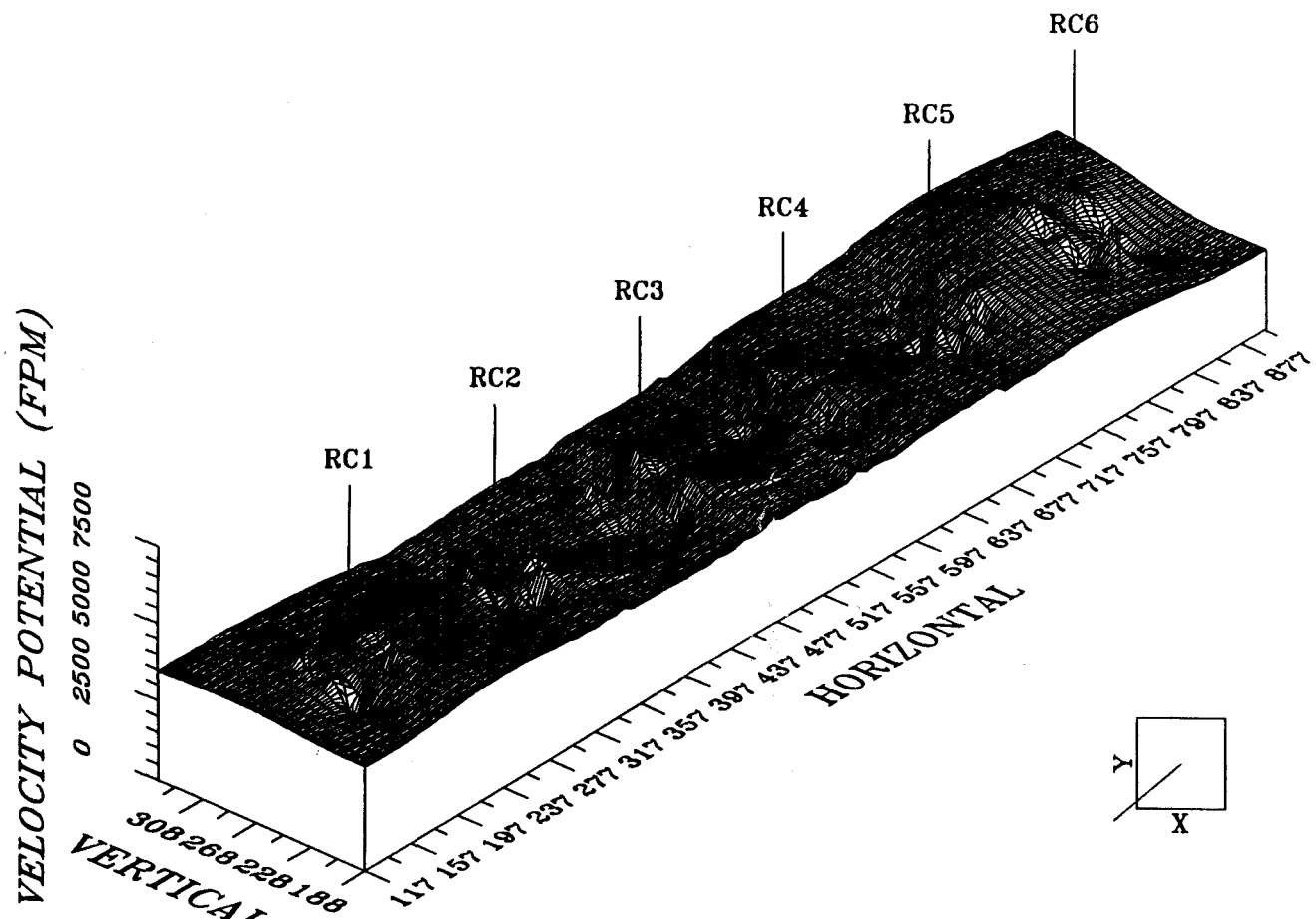
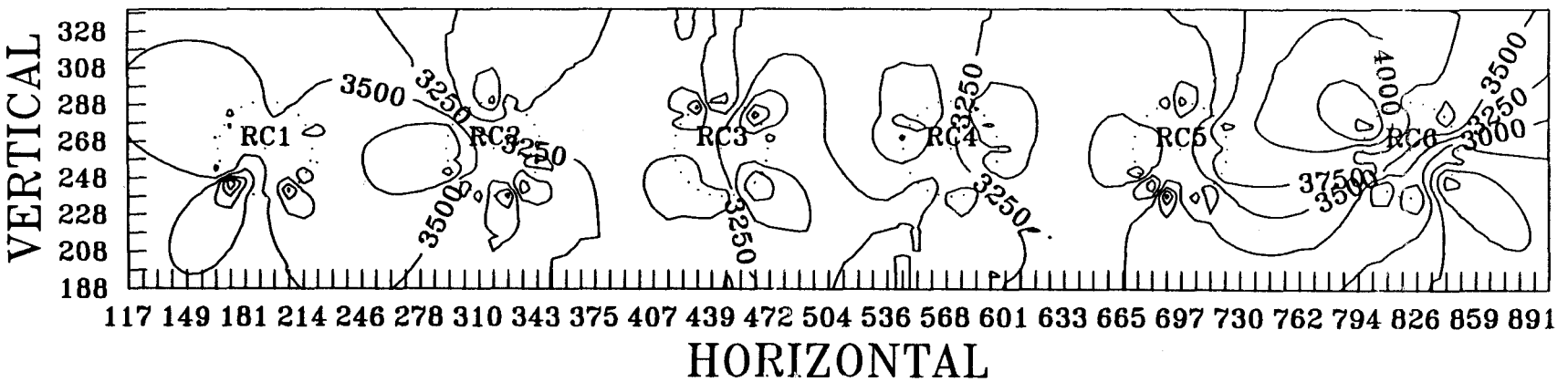


C WINDBOX VELOCITY POTENTIAL PROFILE

C WINDBOX TOPOGRAPHICAL DIAGRAM



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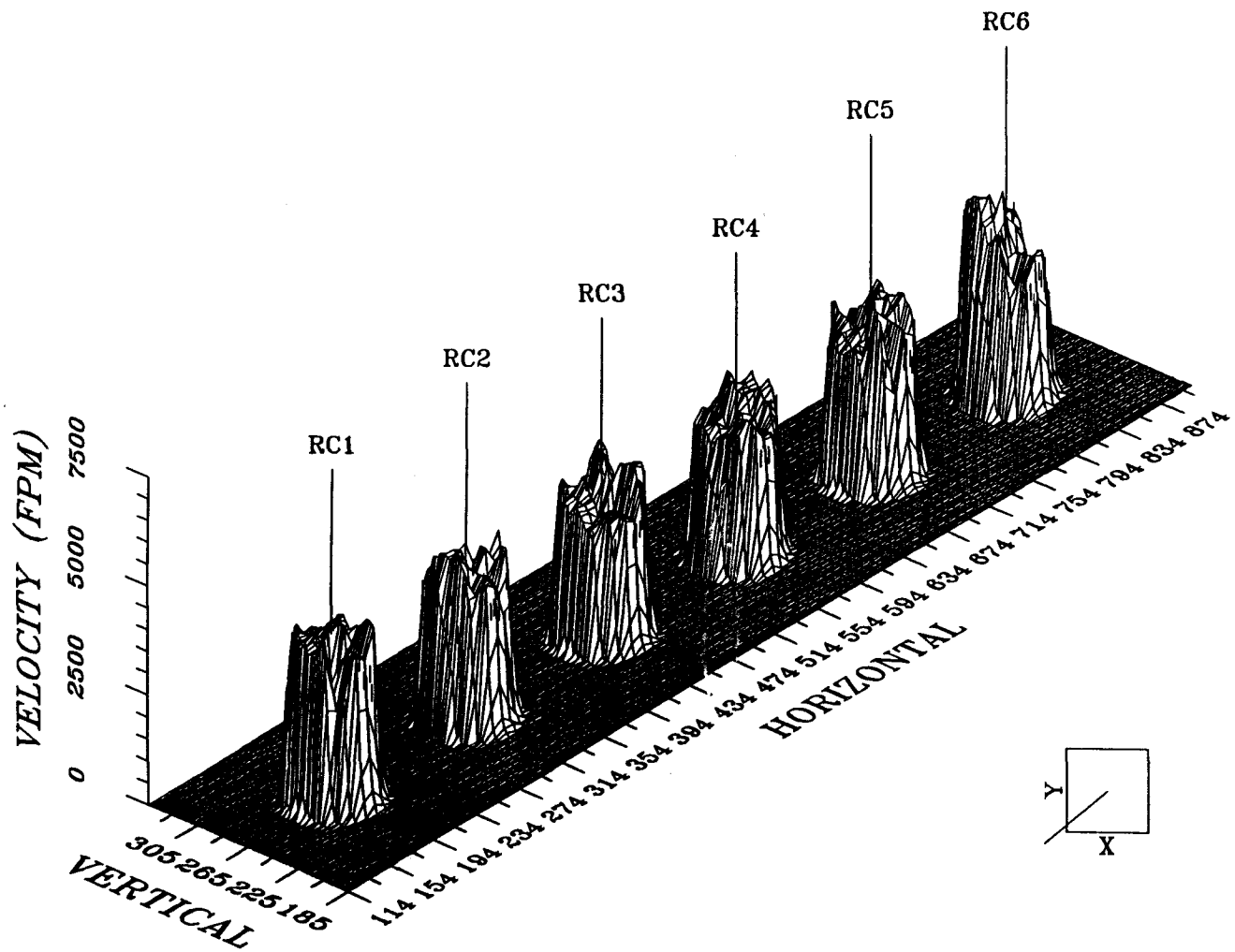

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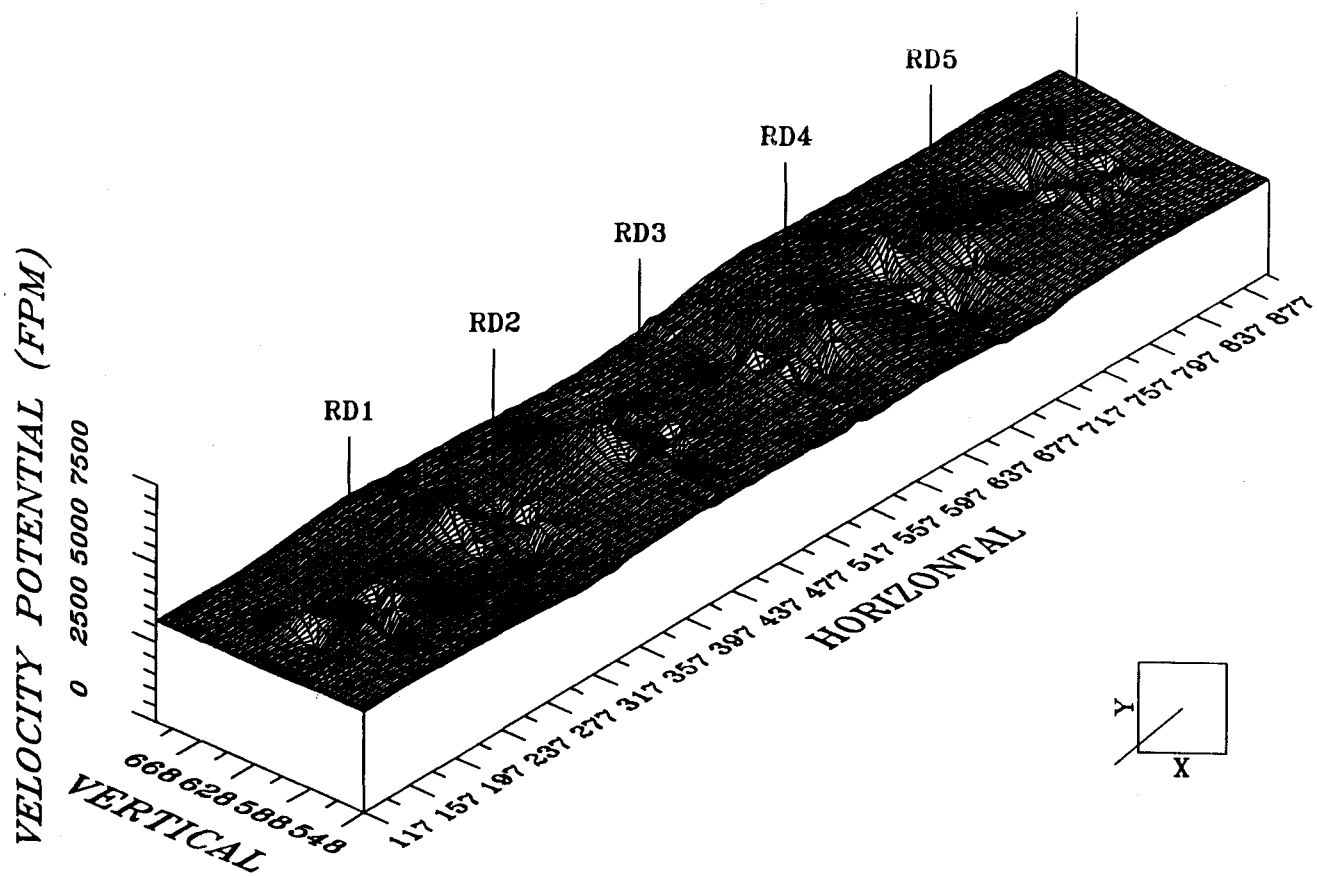
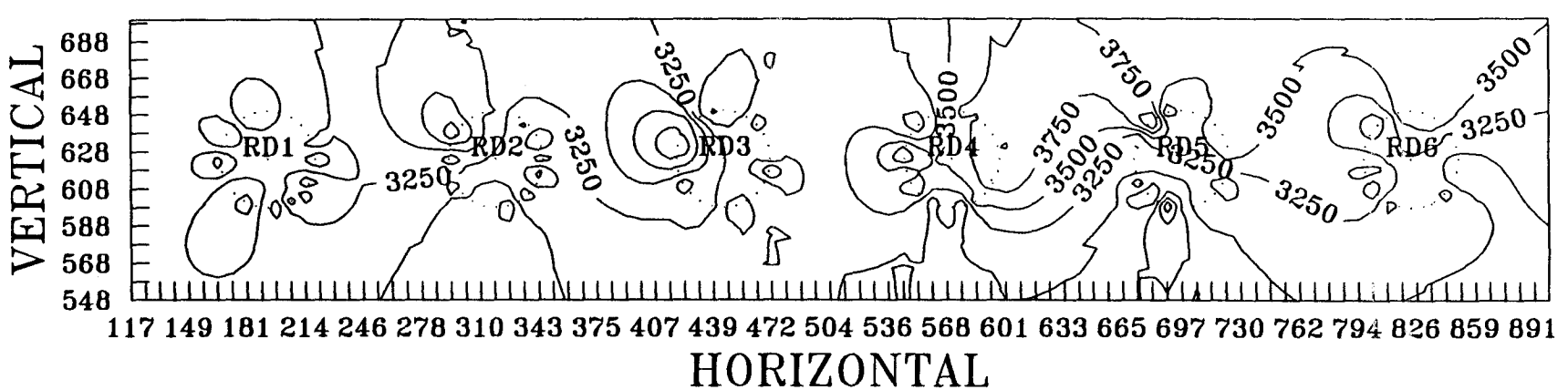
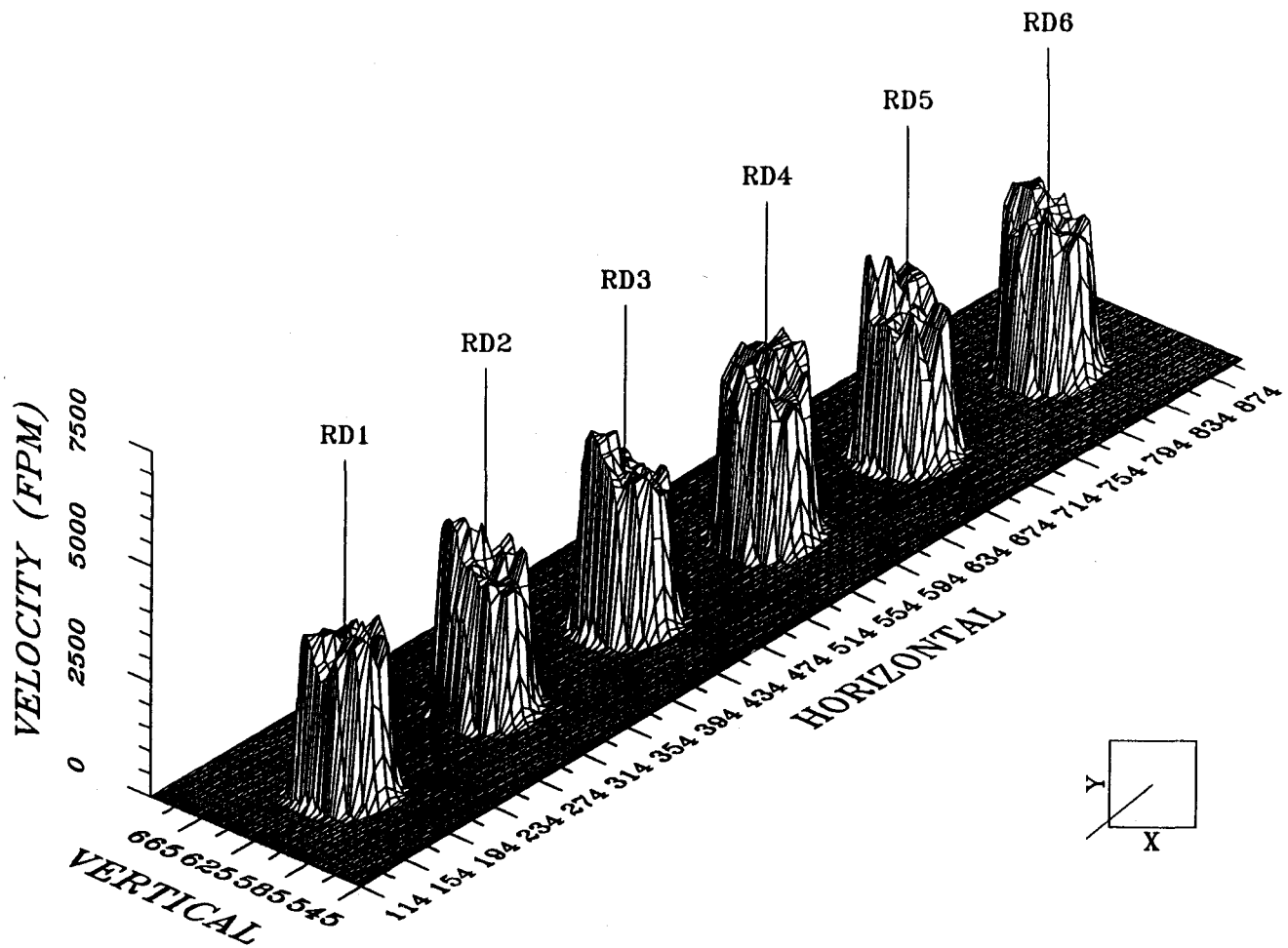


D WINDBOX VELOCITY POTENTIAL PROFILE

D WINDBOX TOPOGRAPHICAL DIAGRAM





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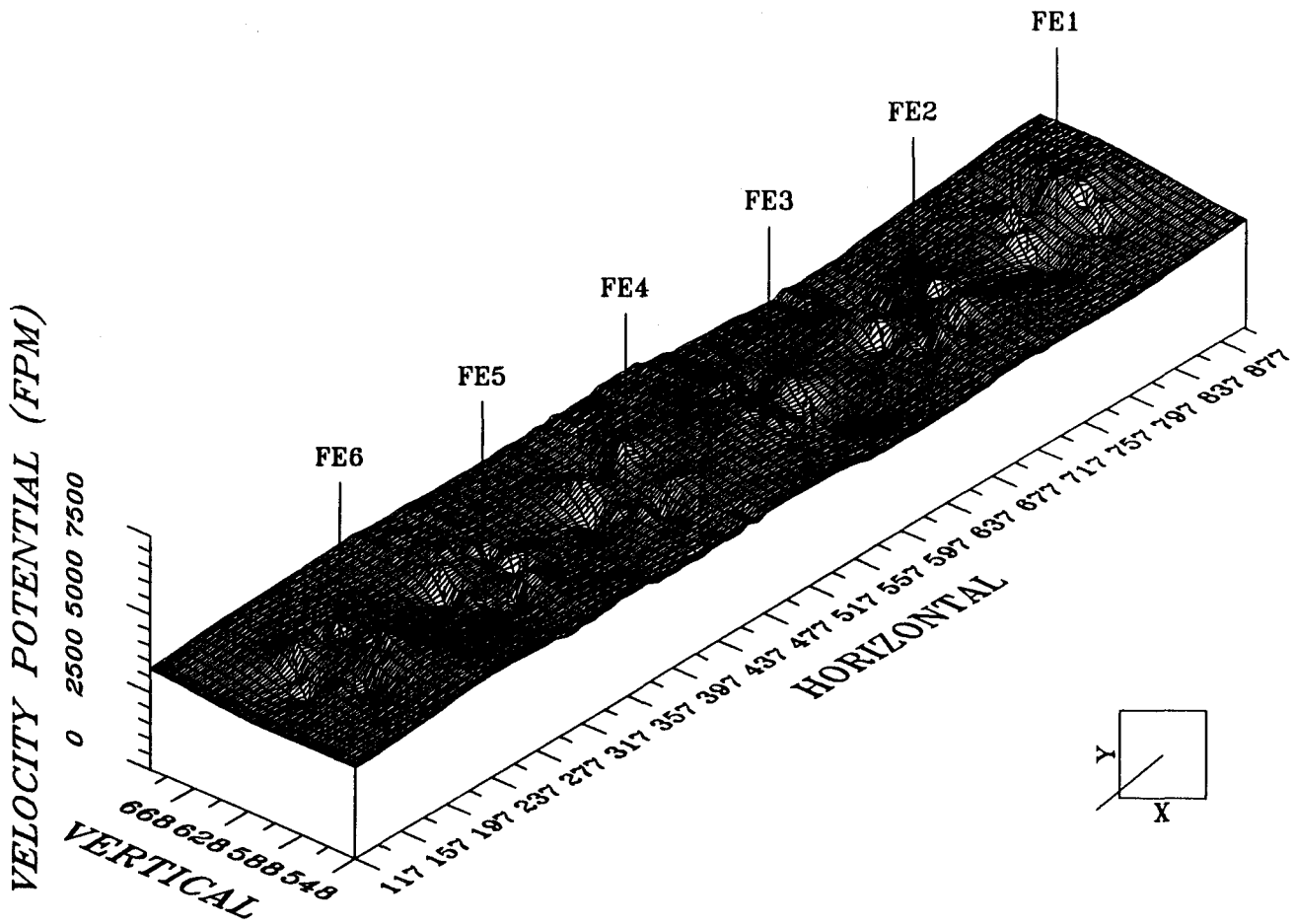
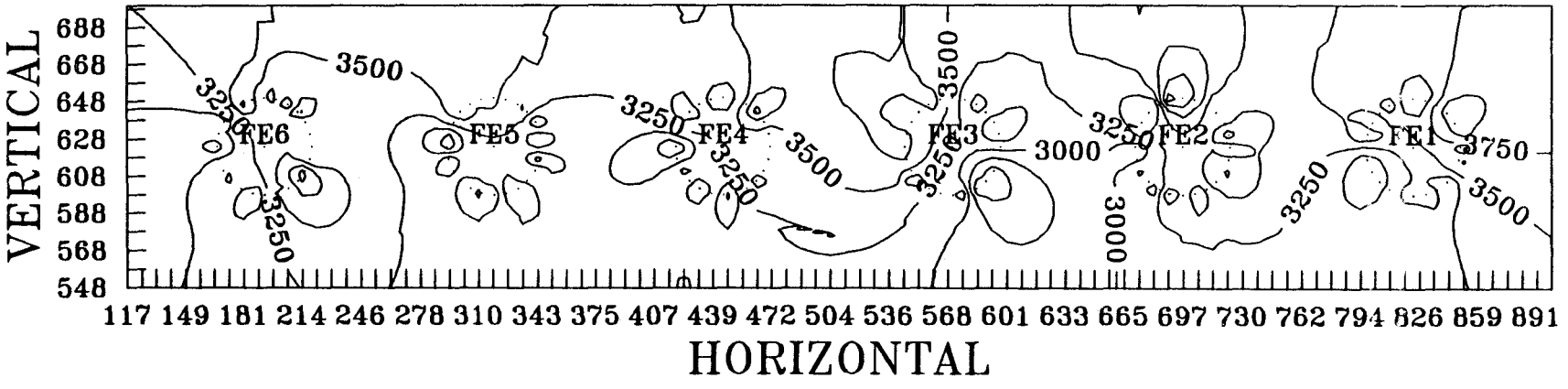


E WINDBOX VELOCITY POTENTIAL PROFILE

E WINDBOX TOPOGRAPHICAL DIAGRAM



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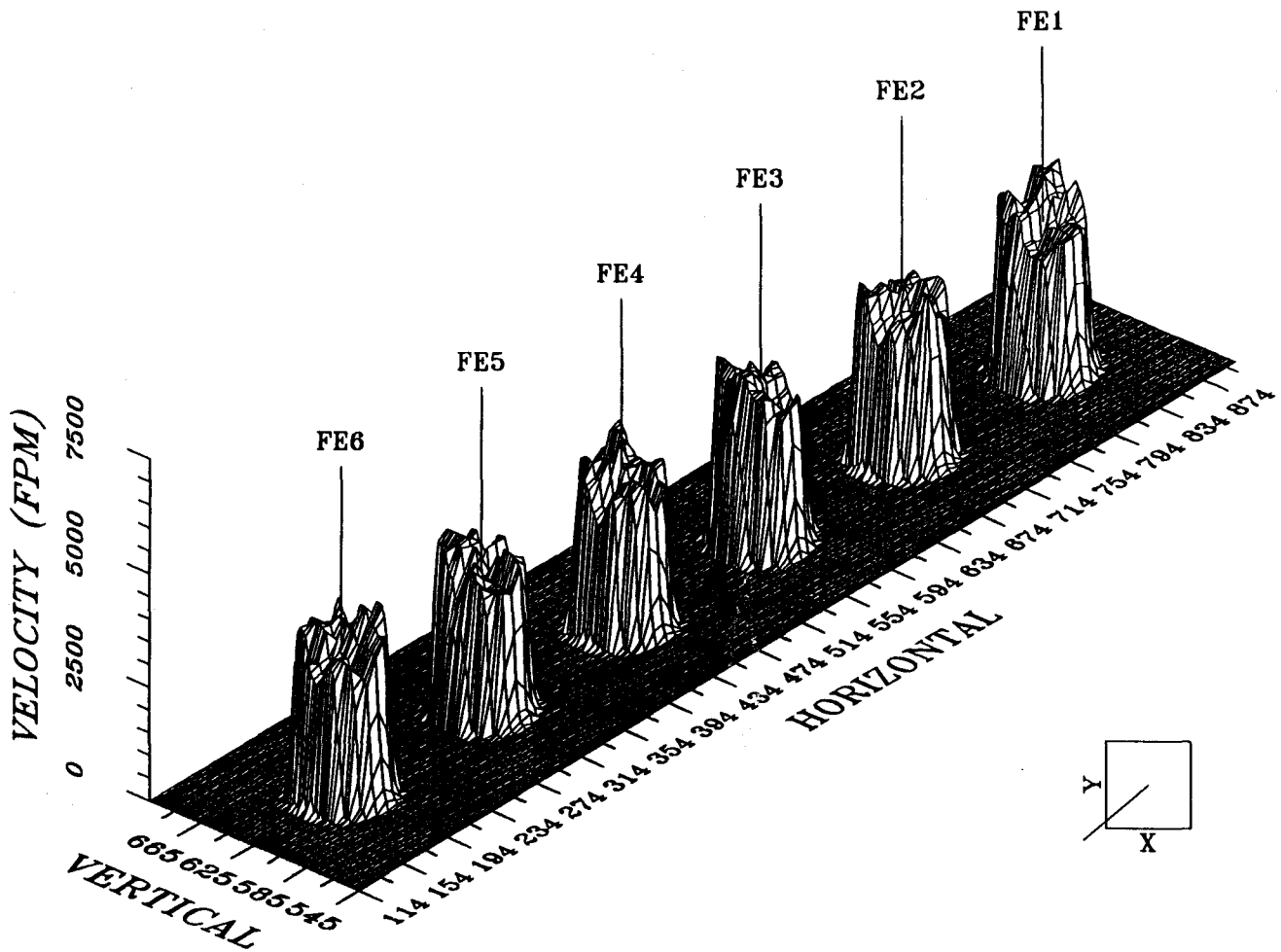

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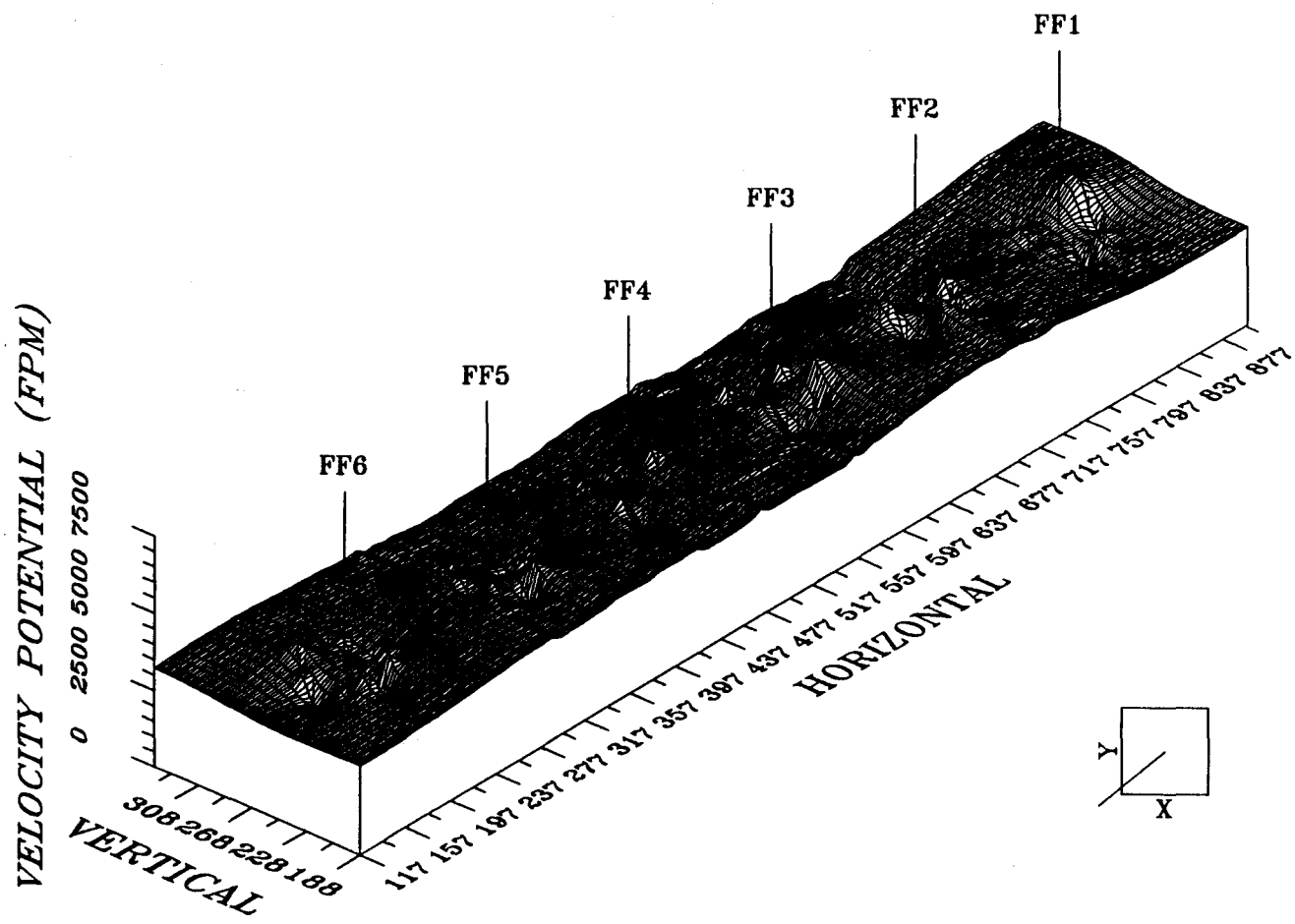

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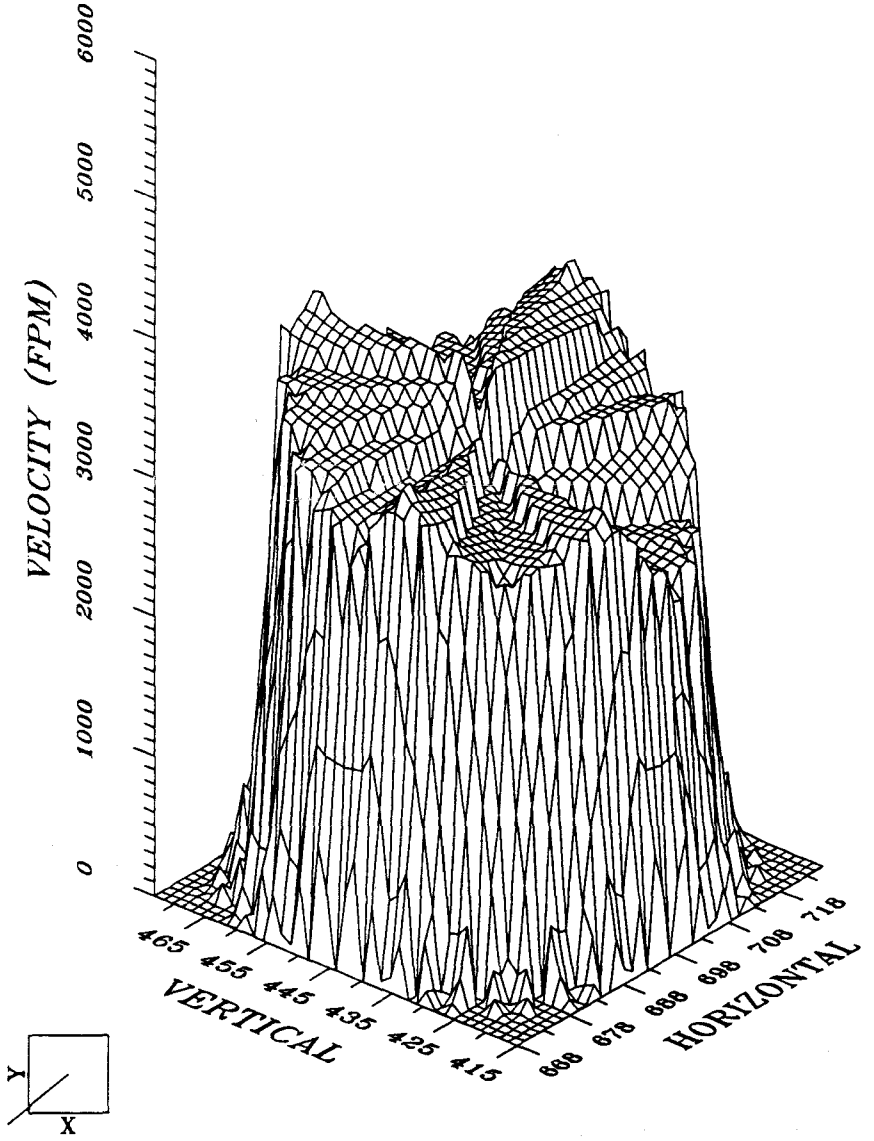

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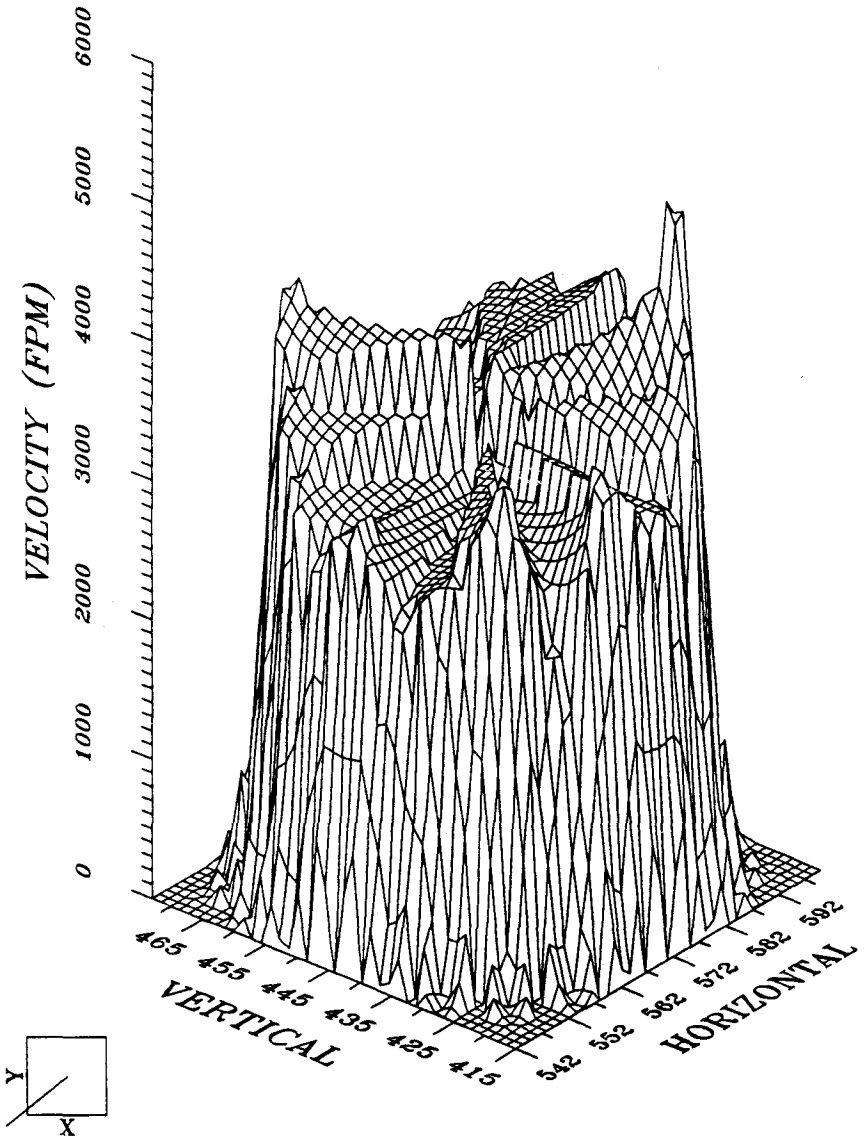

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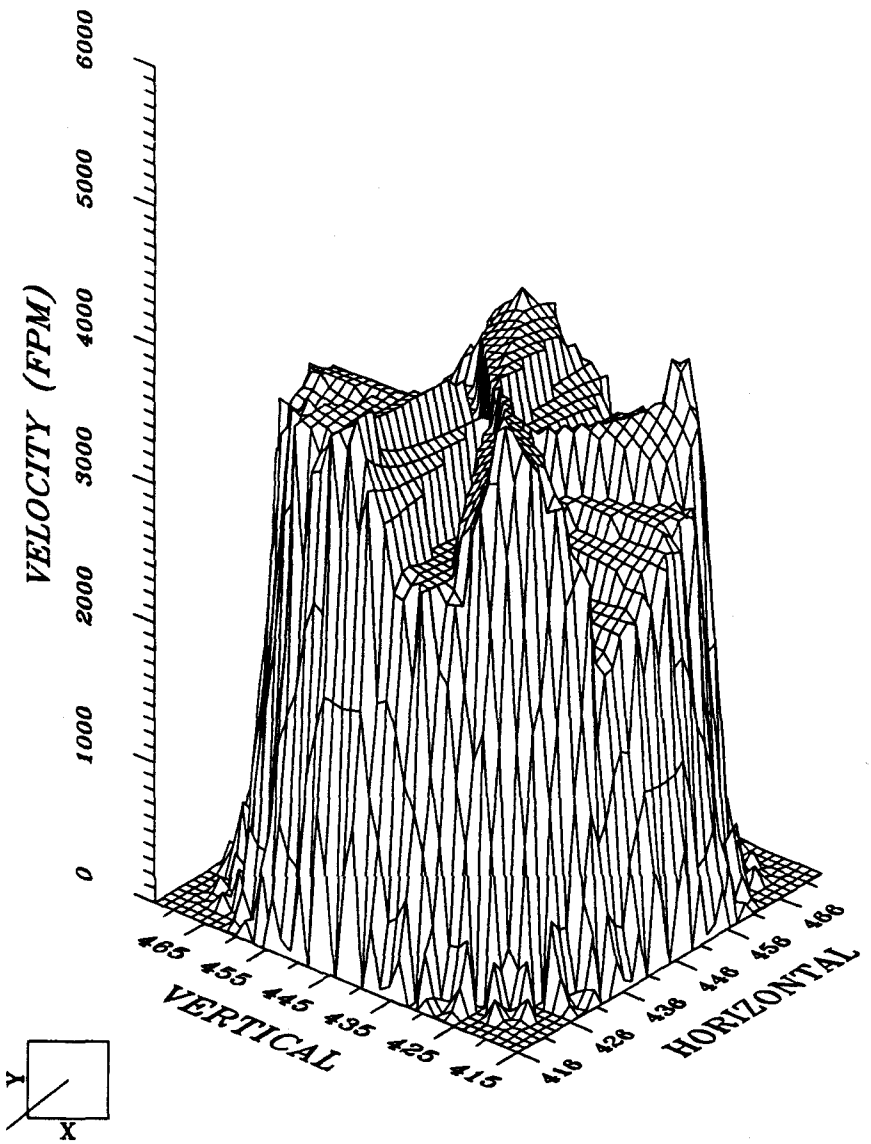

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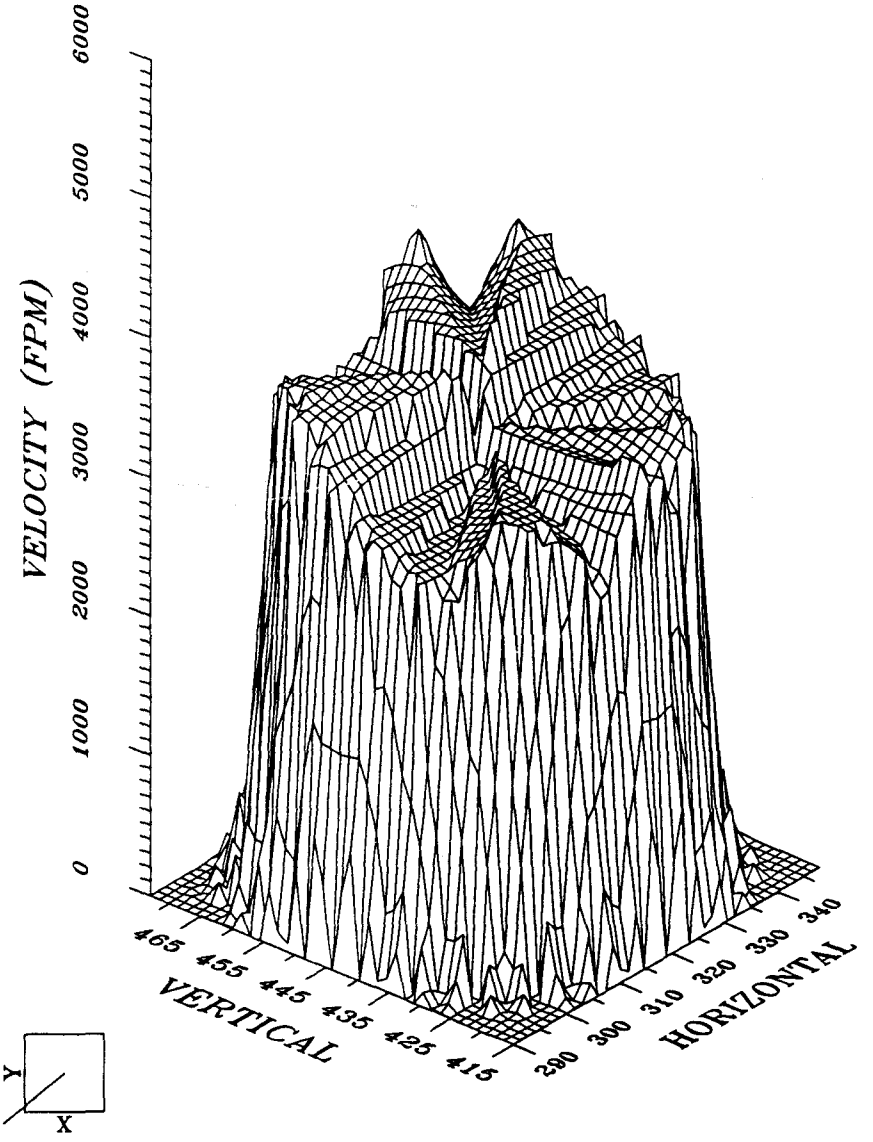

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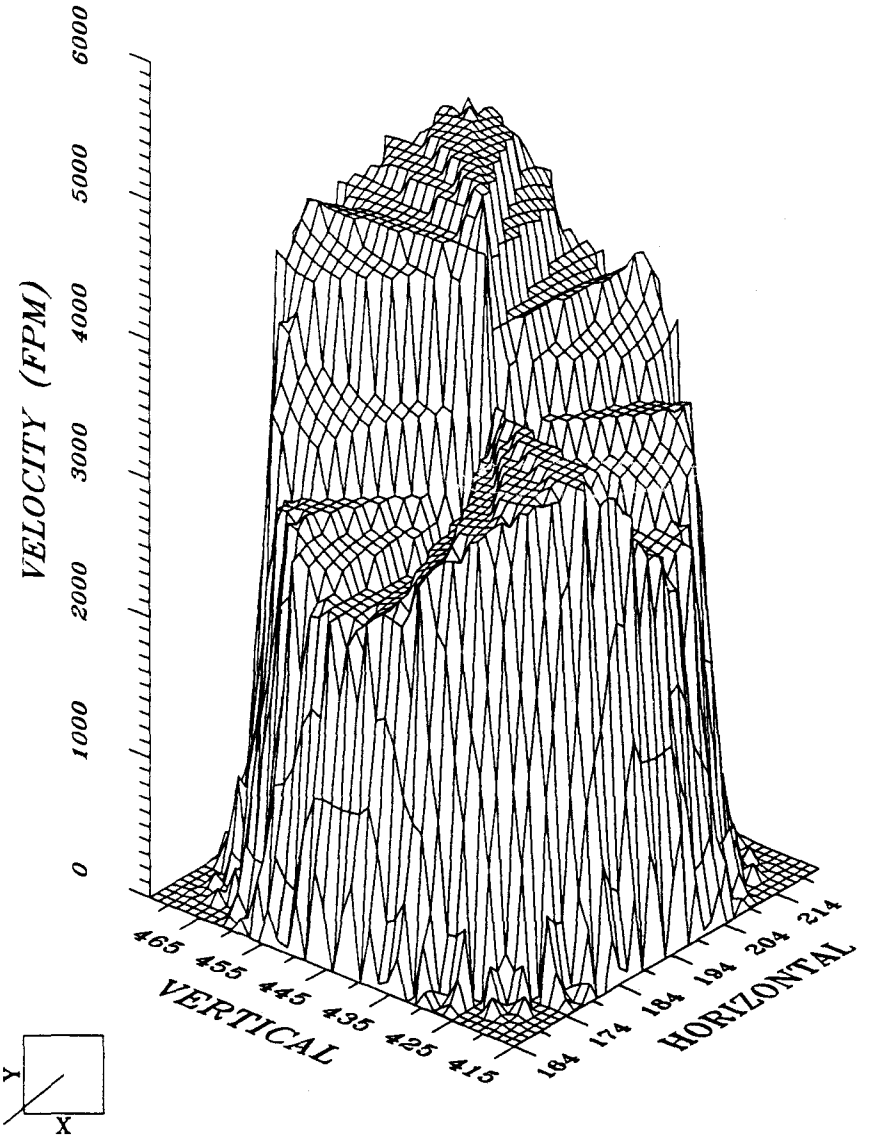

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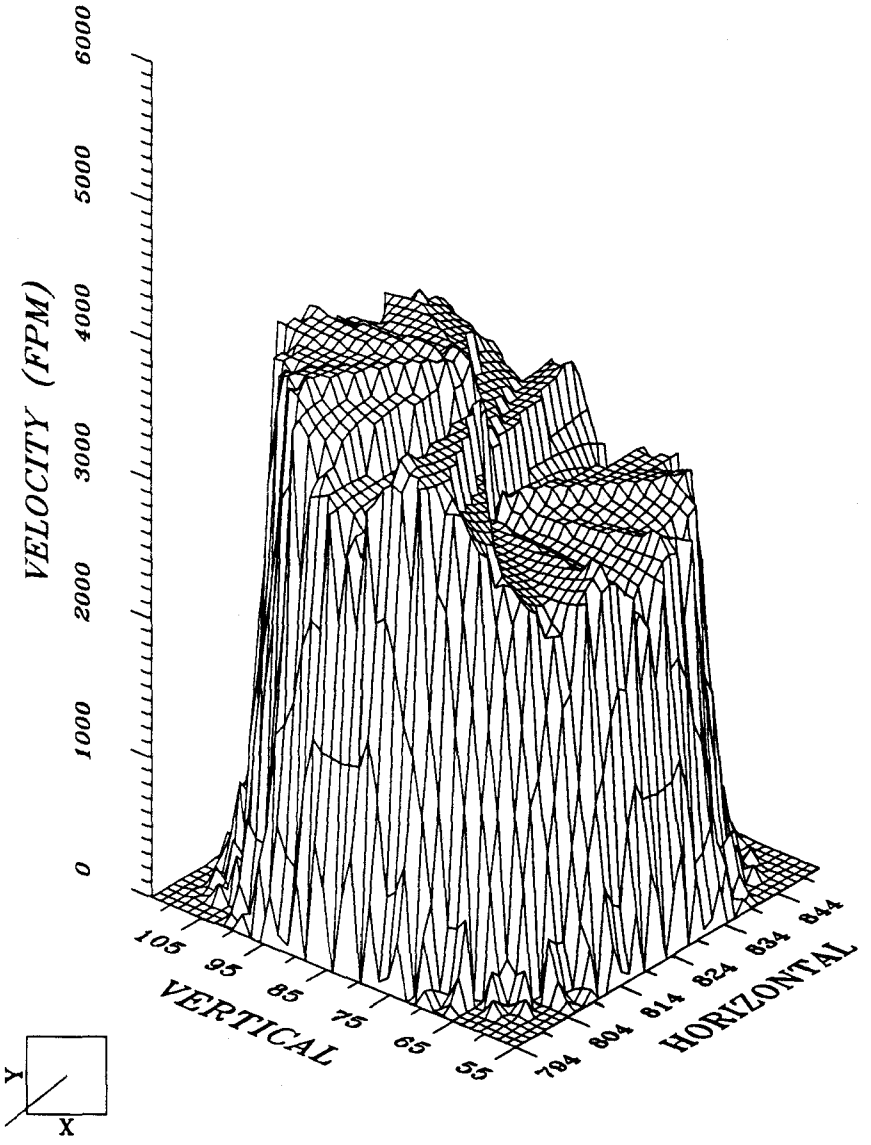

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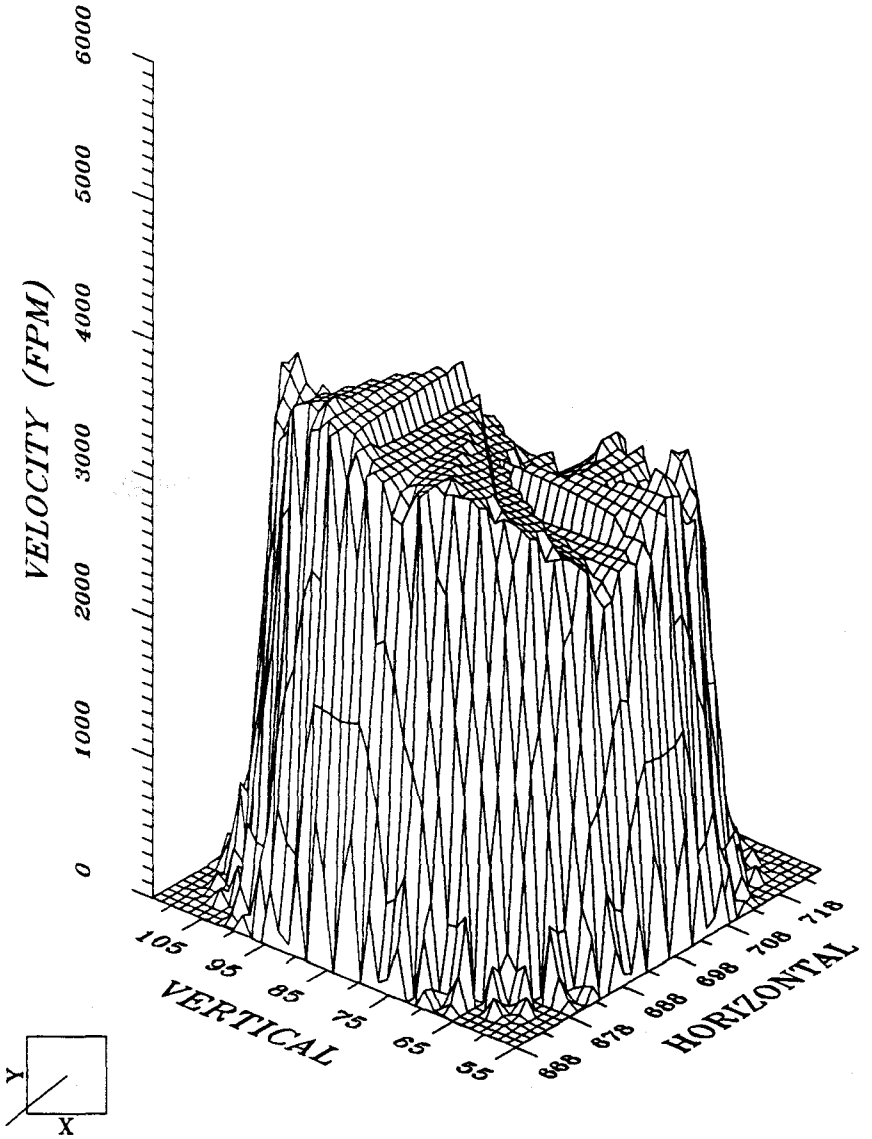

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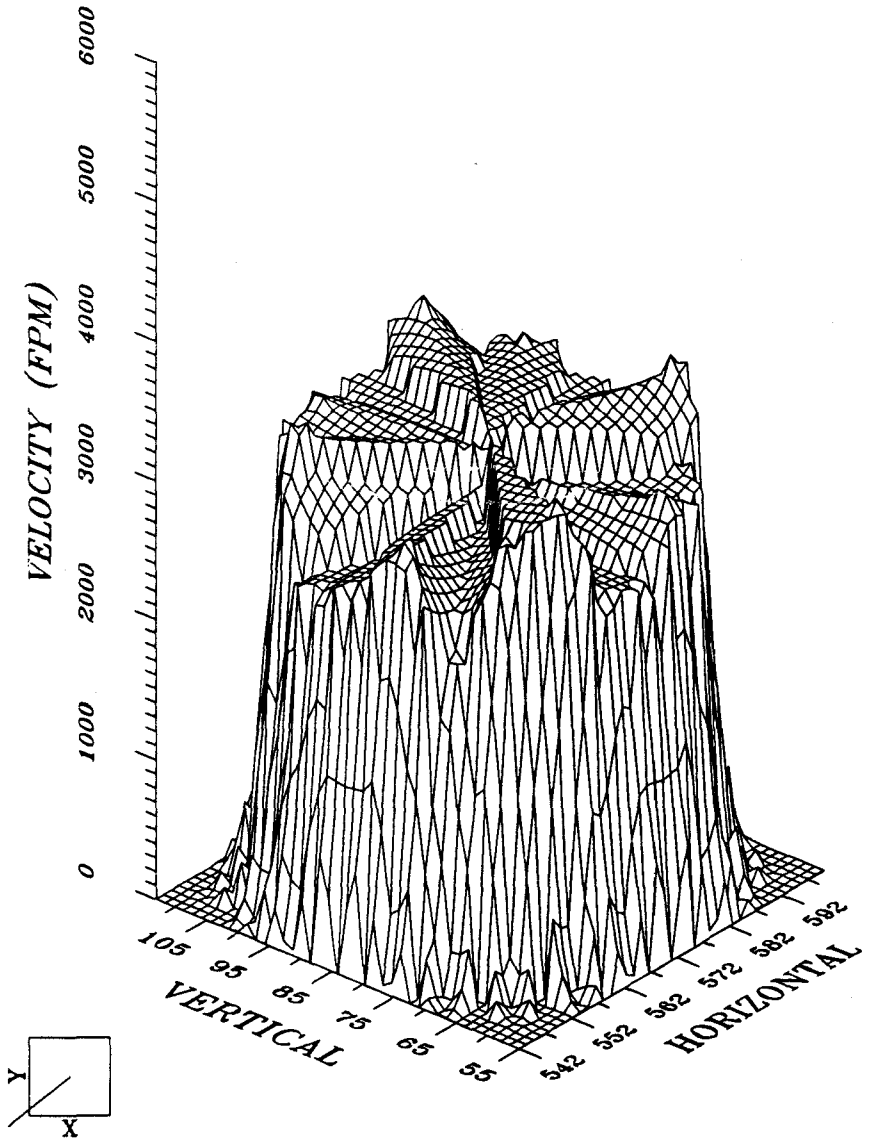

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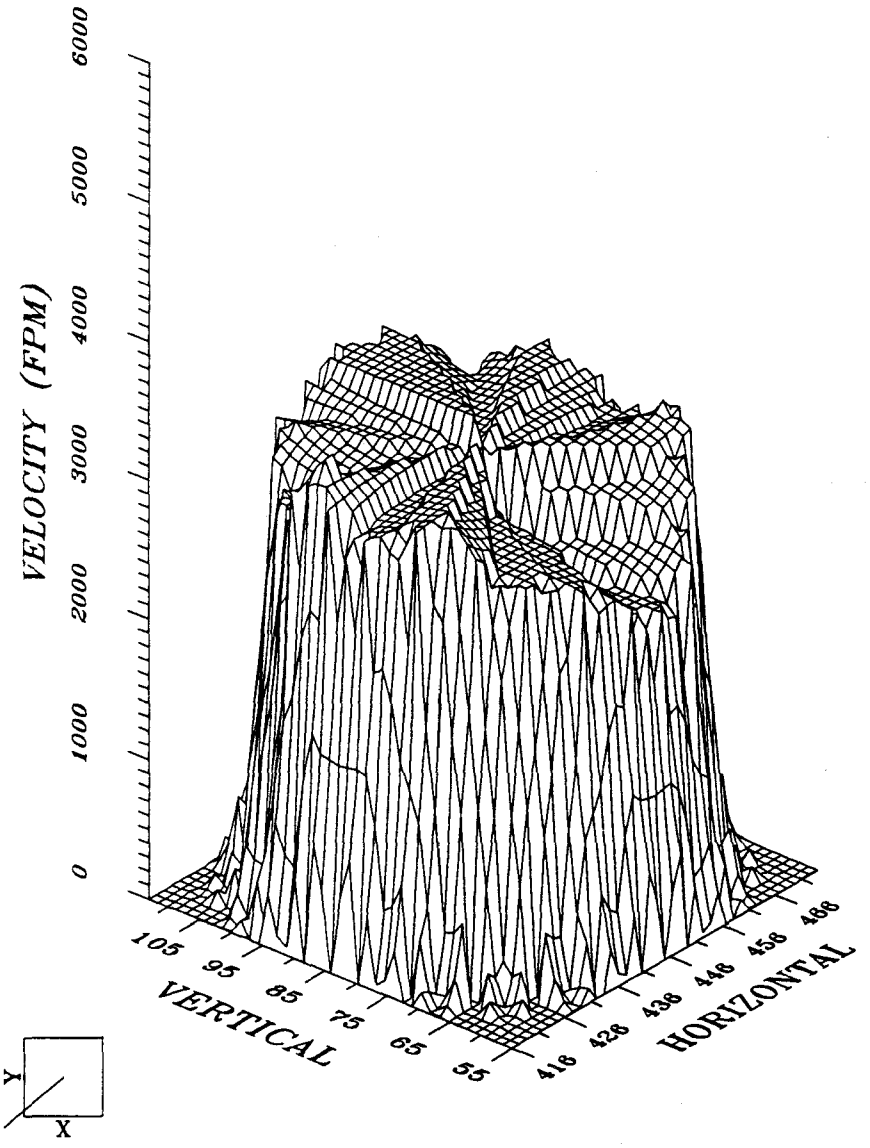

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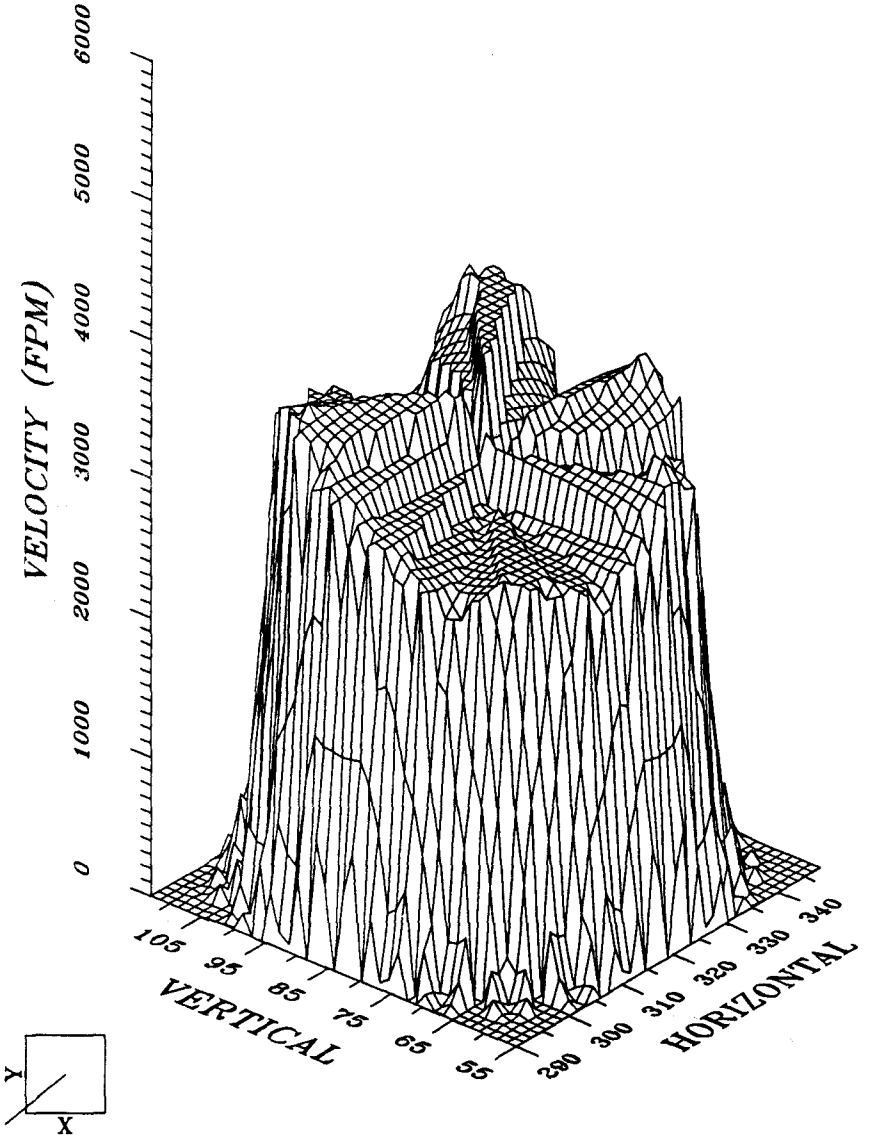

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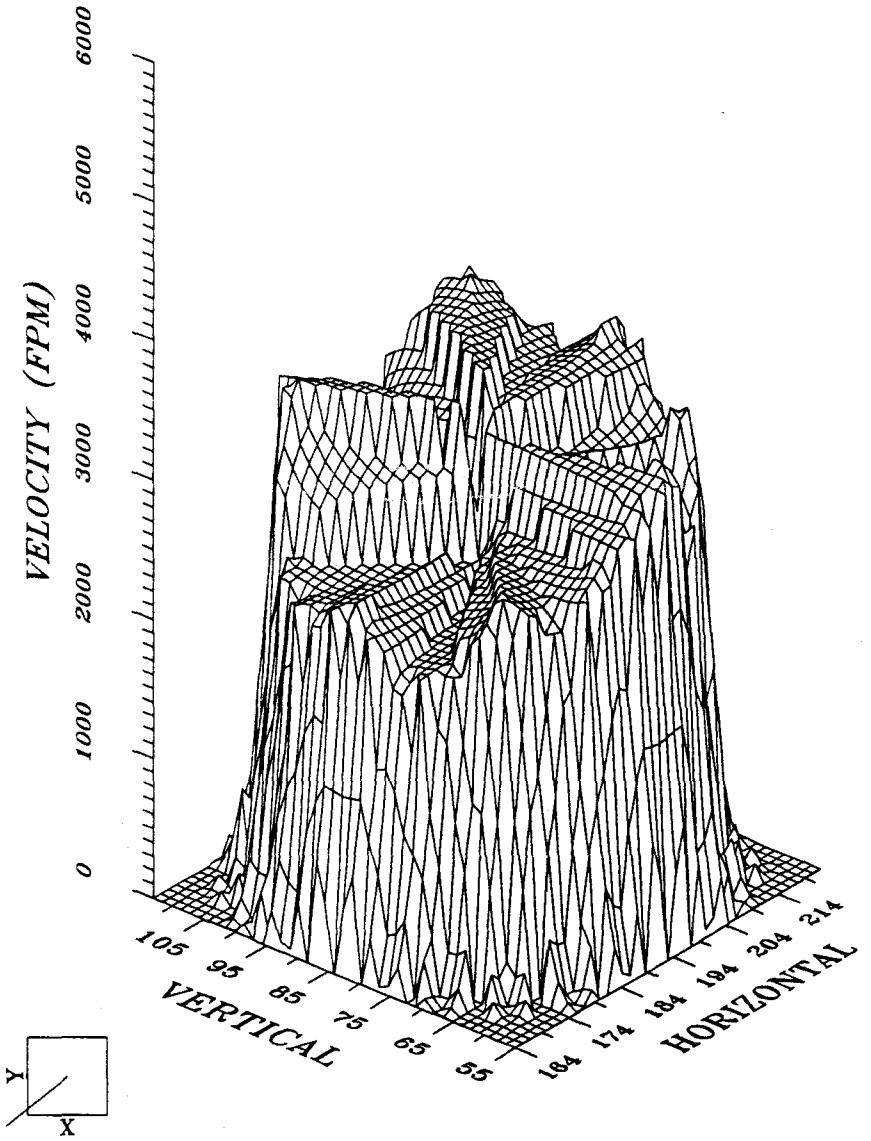

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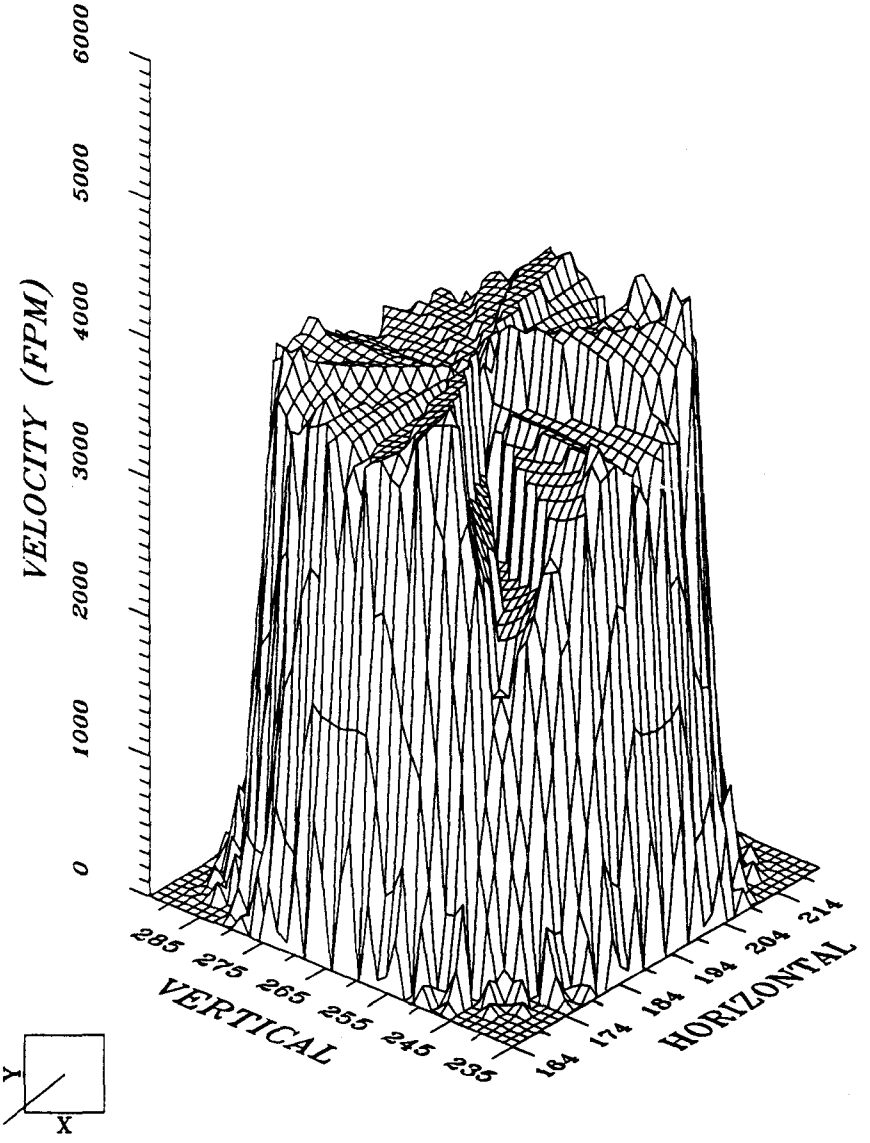

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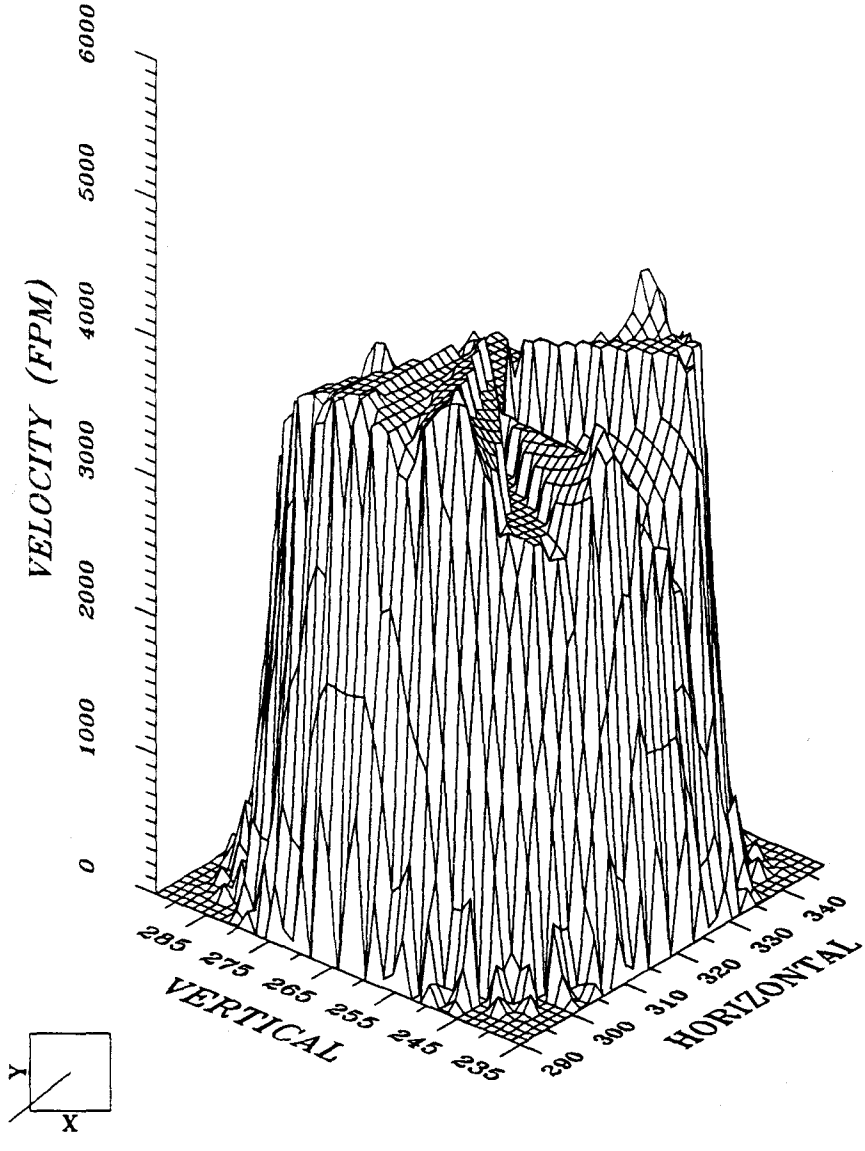

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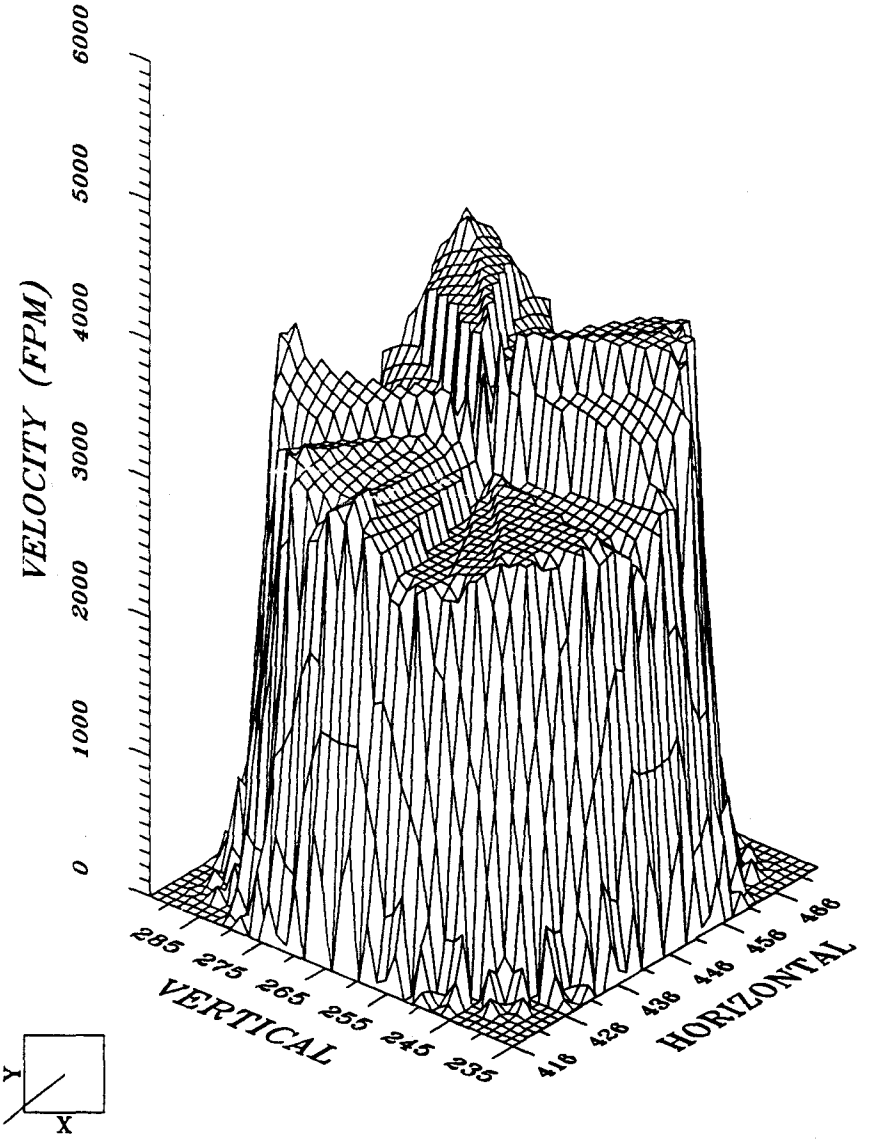

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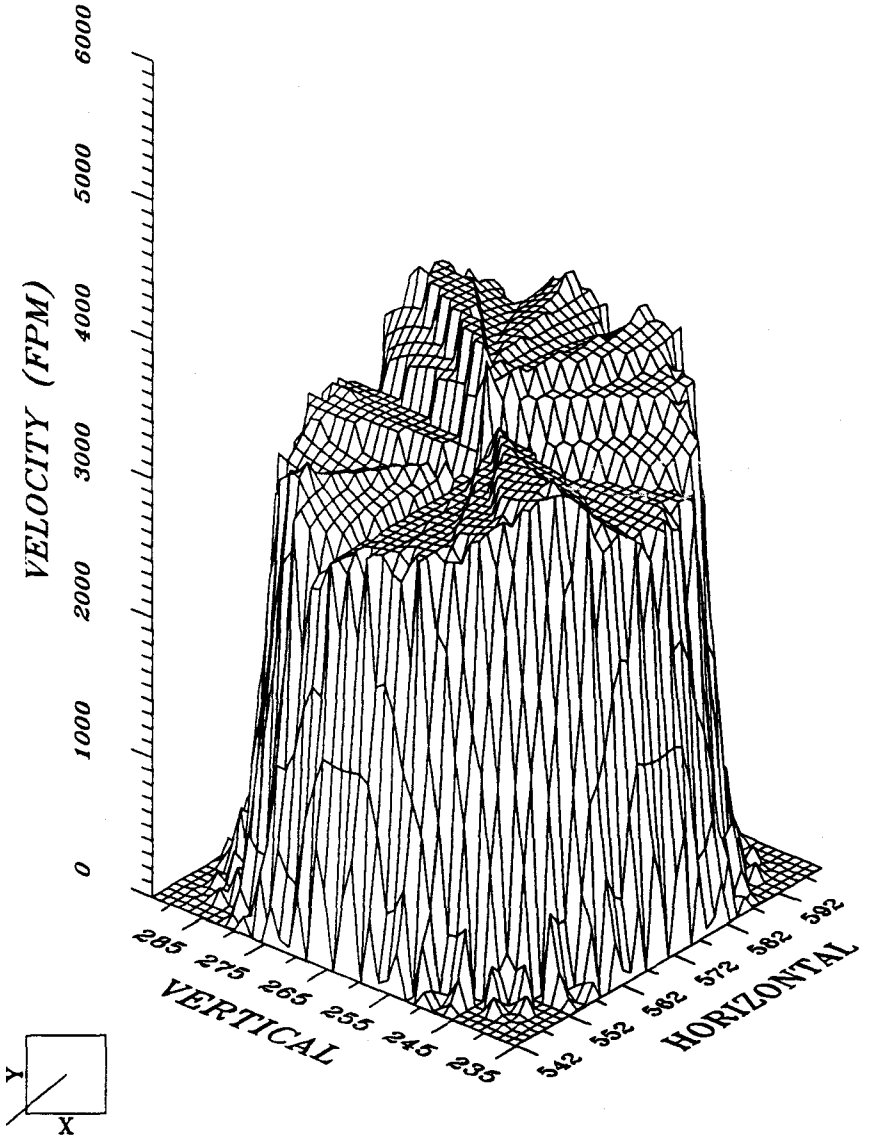

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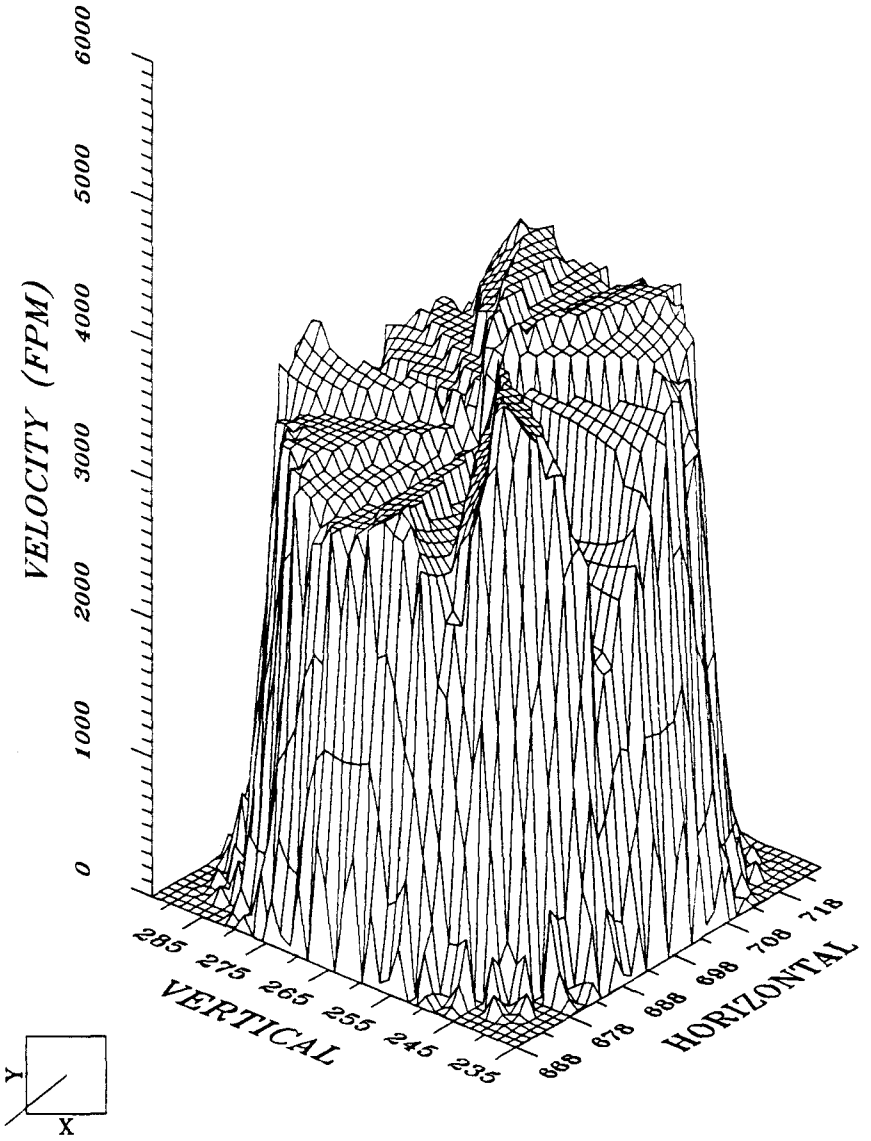

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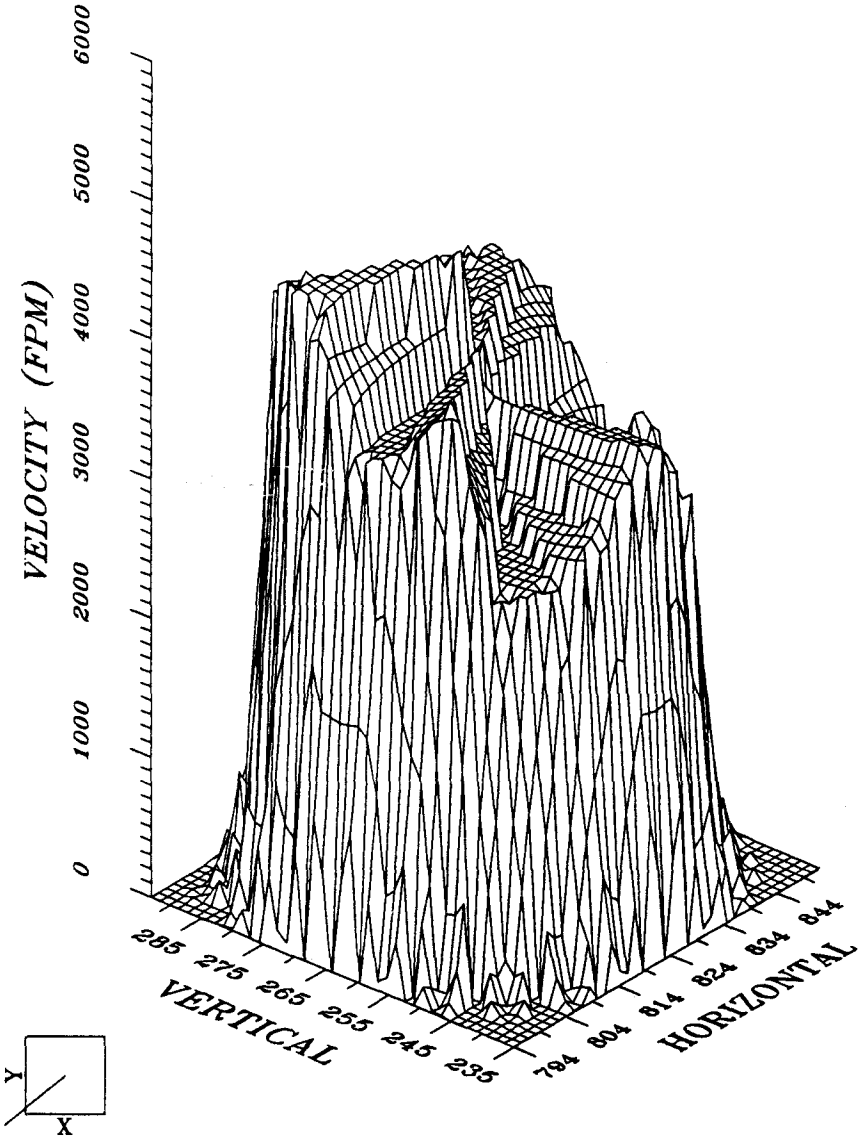

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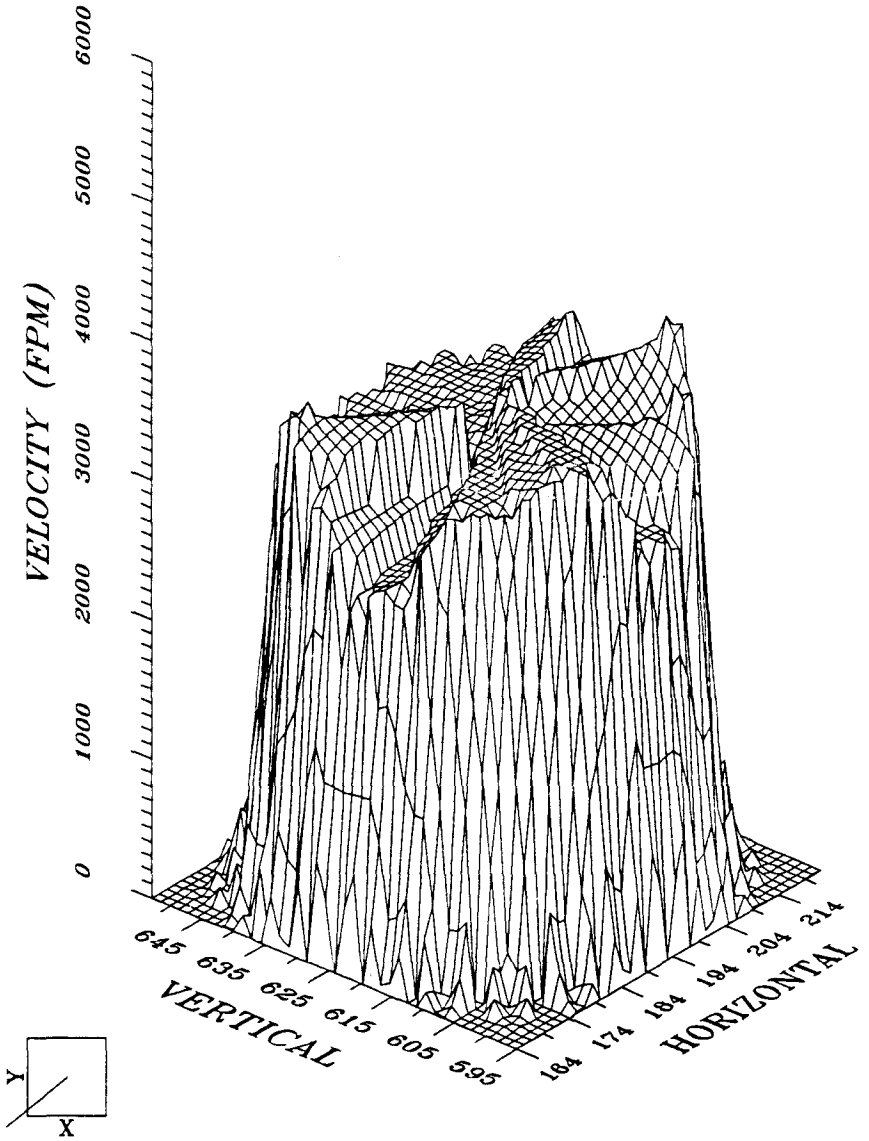

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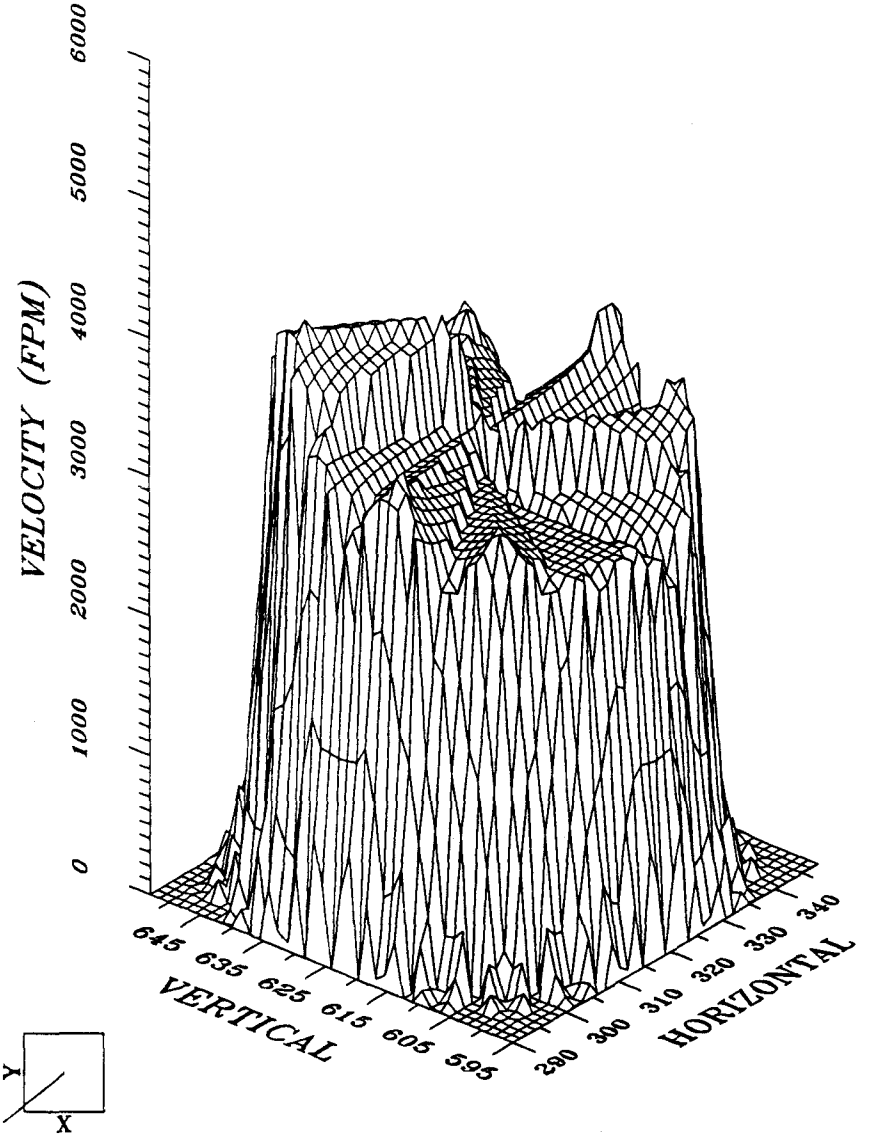

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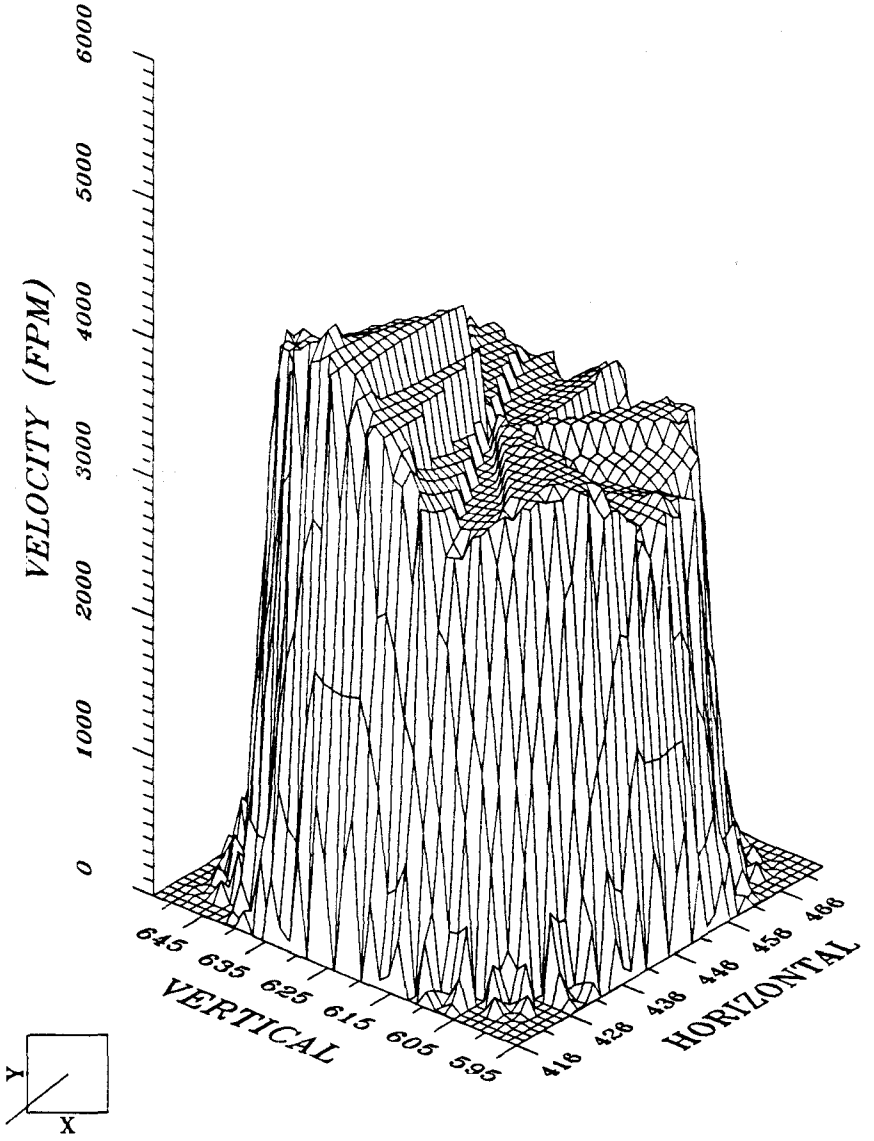

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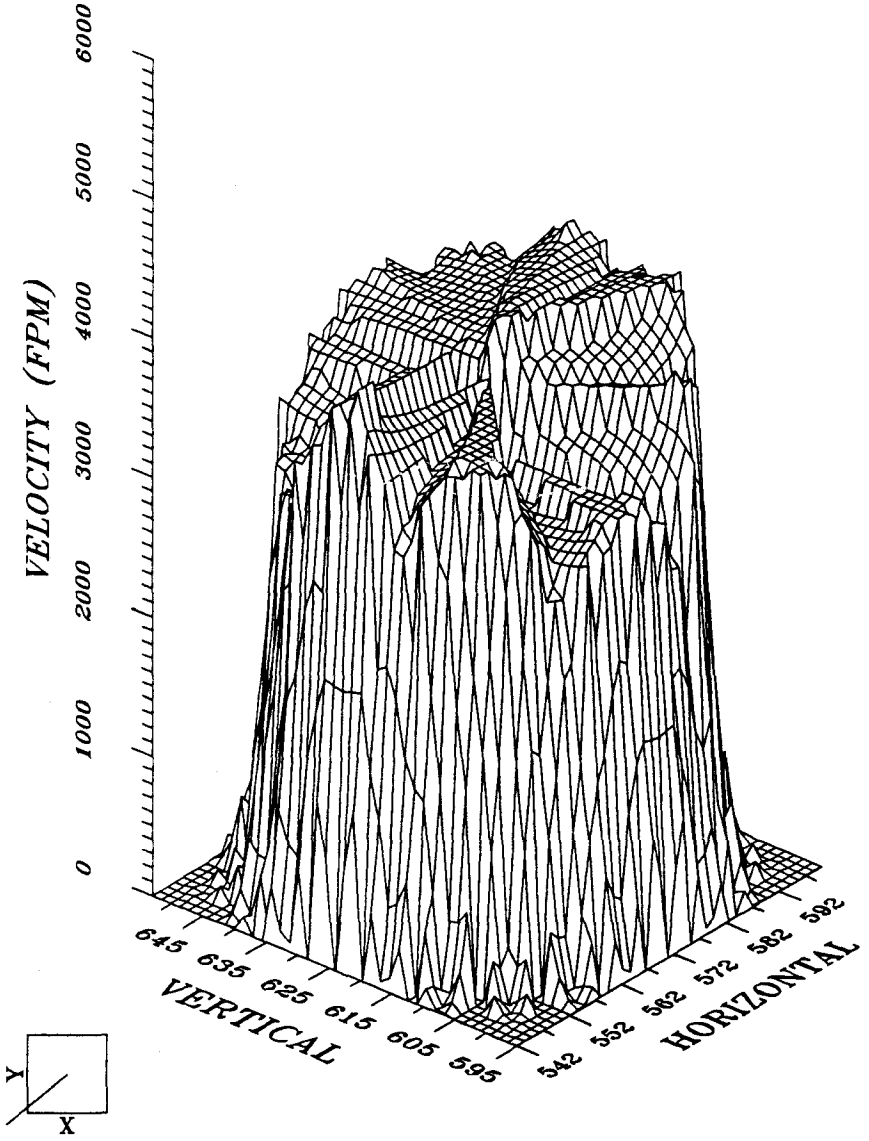

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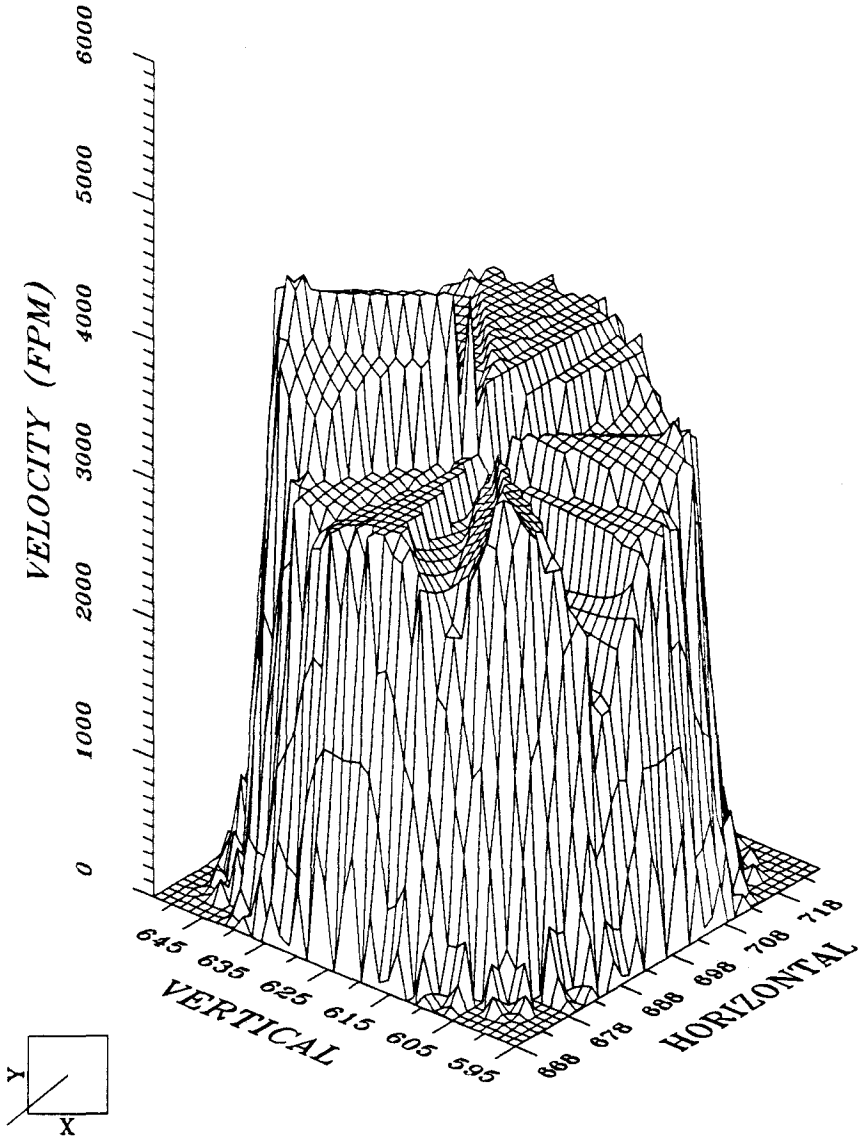

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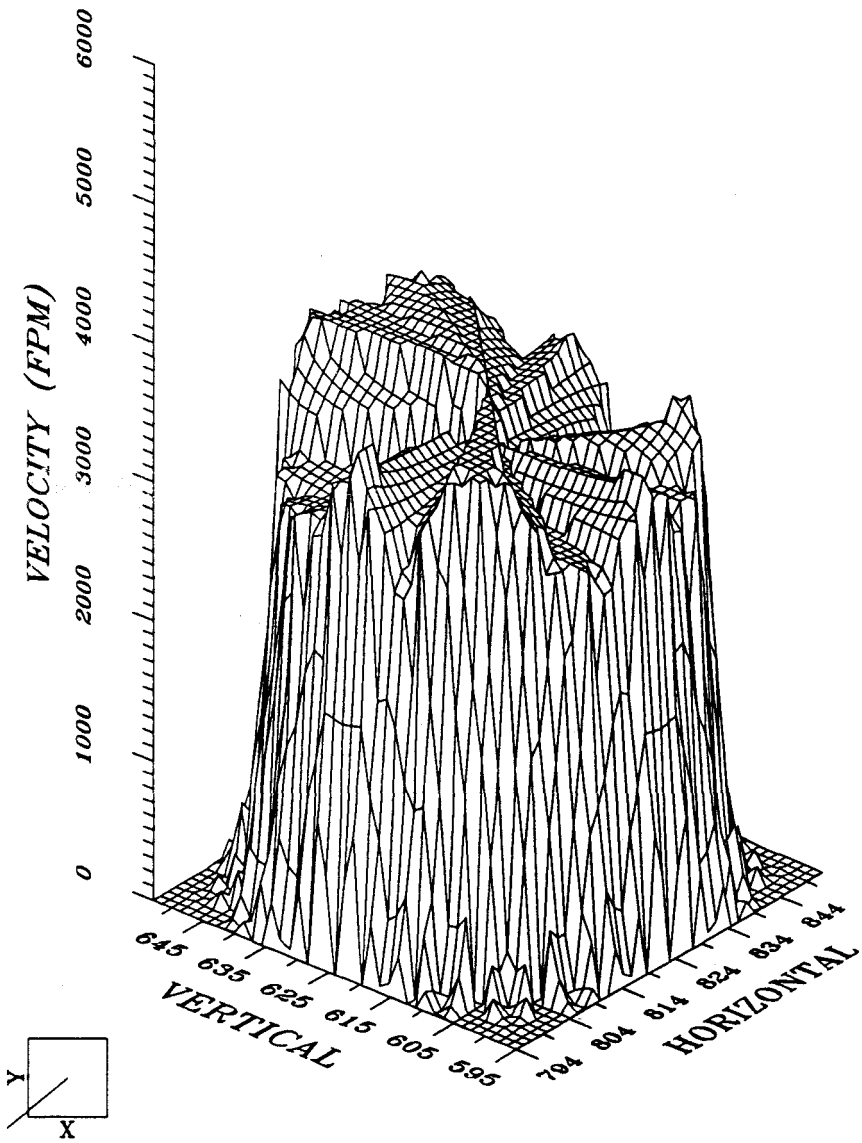

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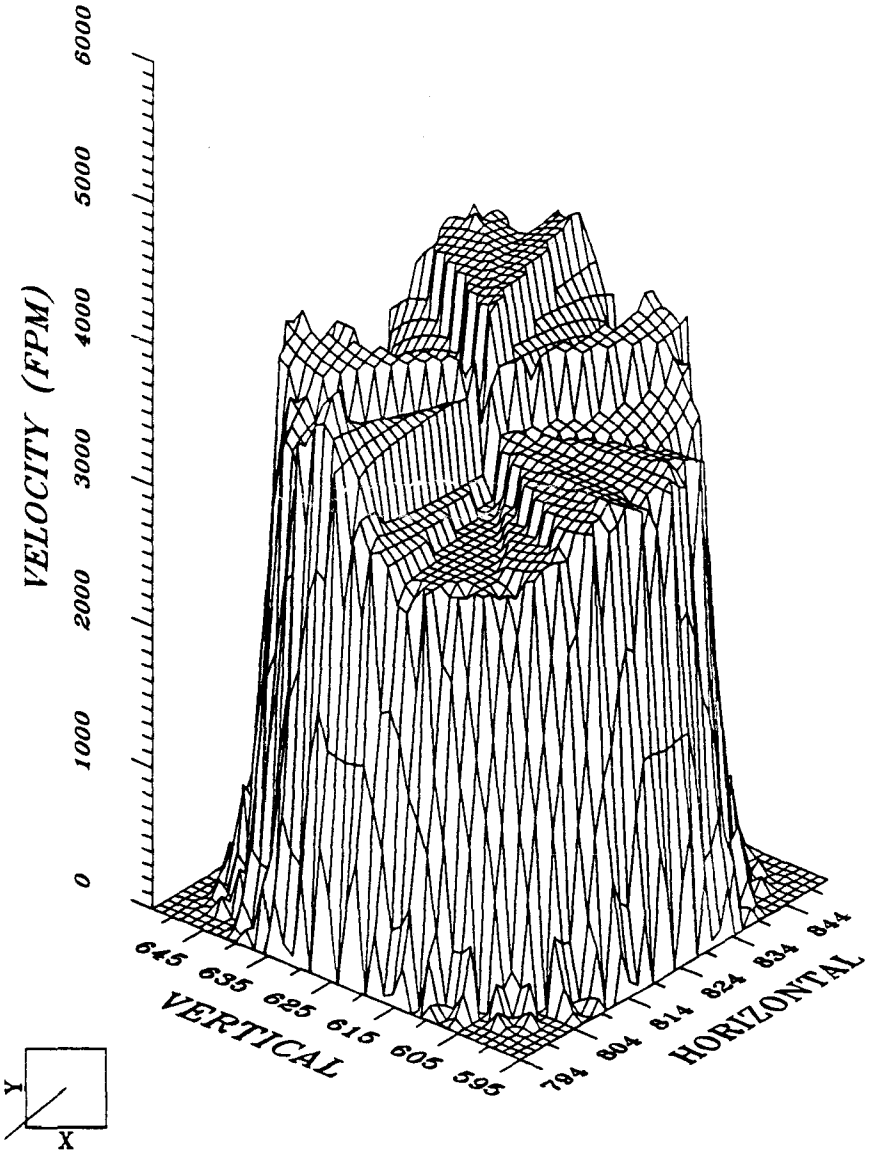

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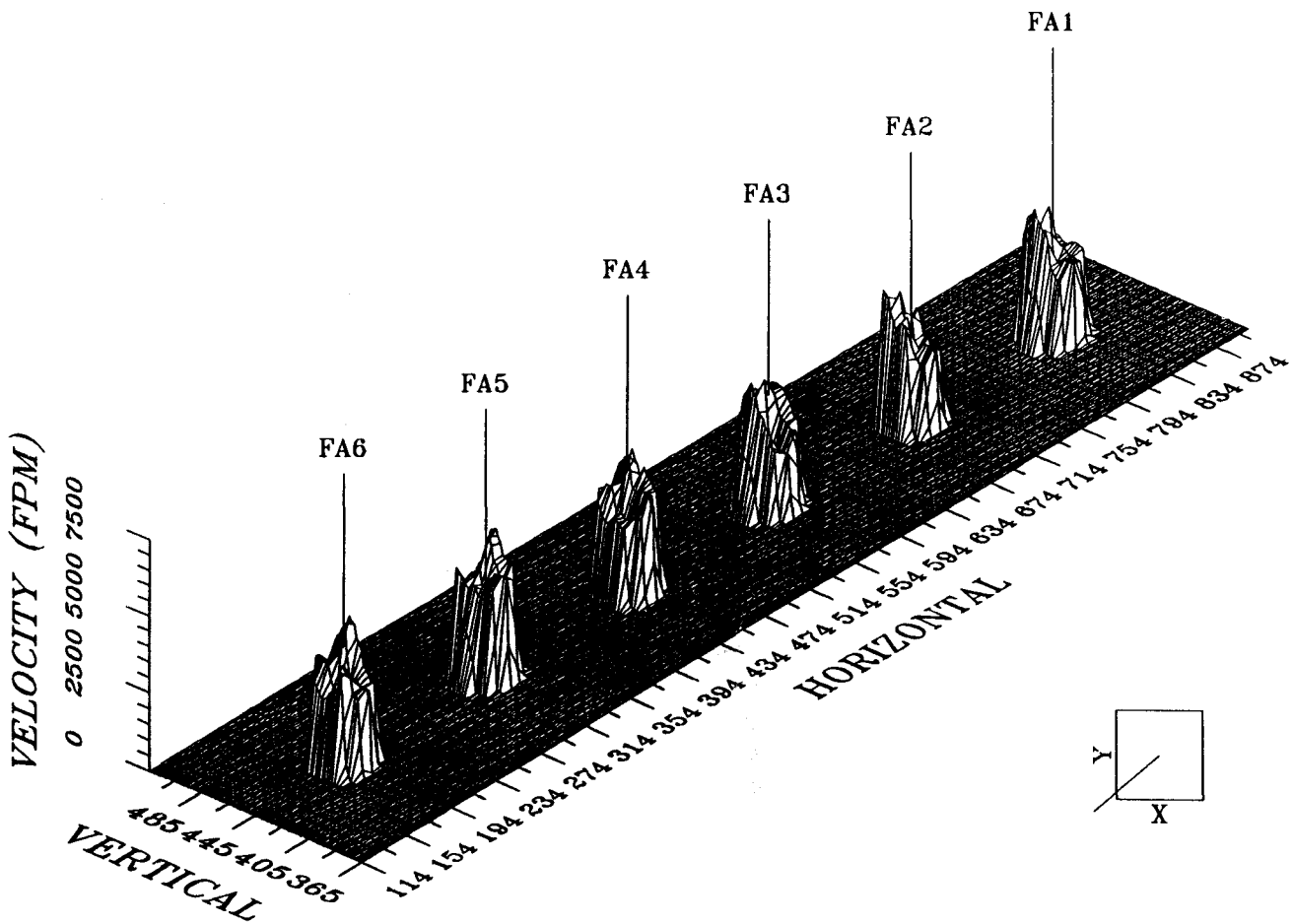
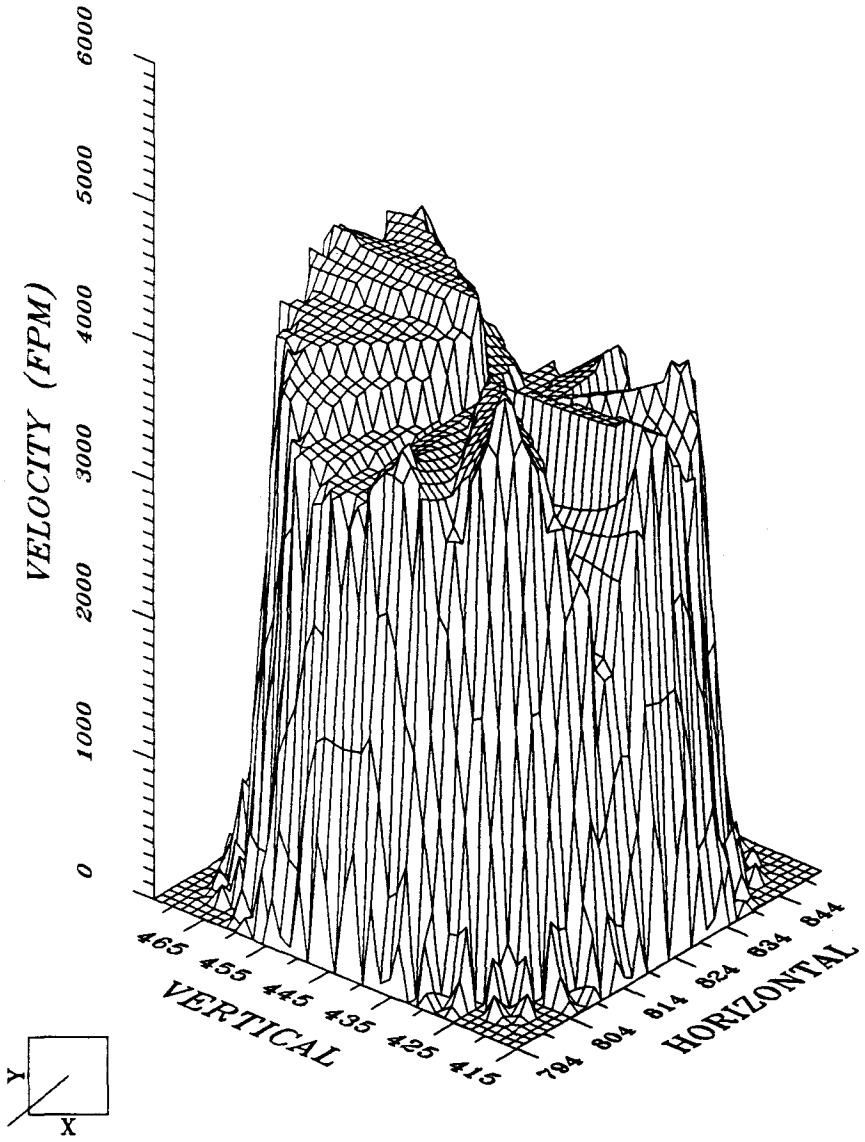
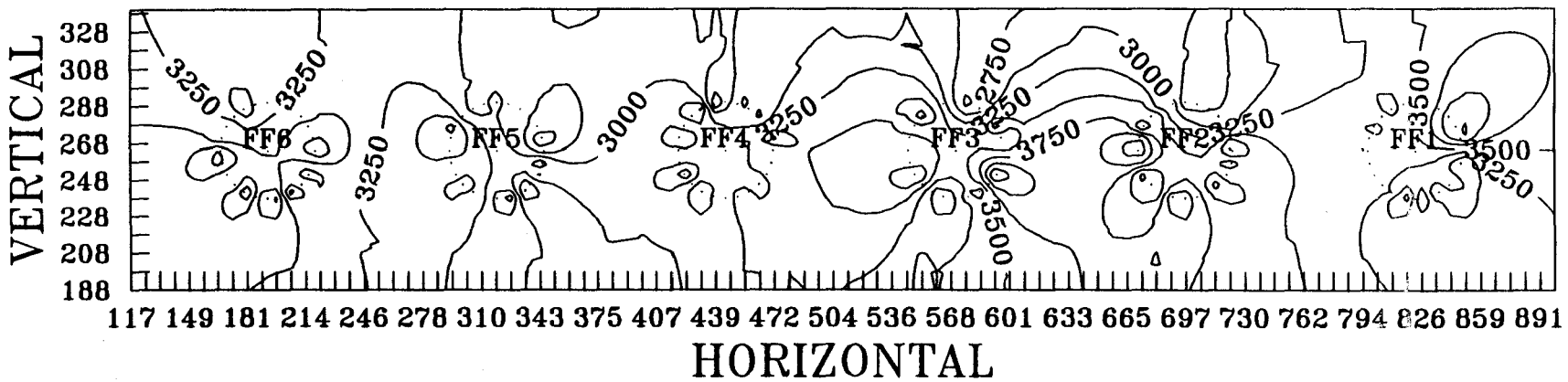


A WINDBOX VELOCITY PROFILE



BURNER A1 OUTER ZONE VELOCITY PROFILE

F WINDBOX TOPOGRAPHICAL DIAGRAM



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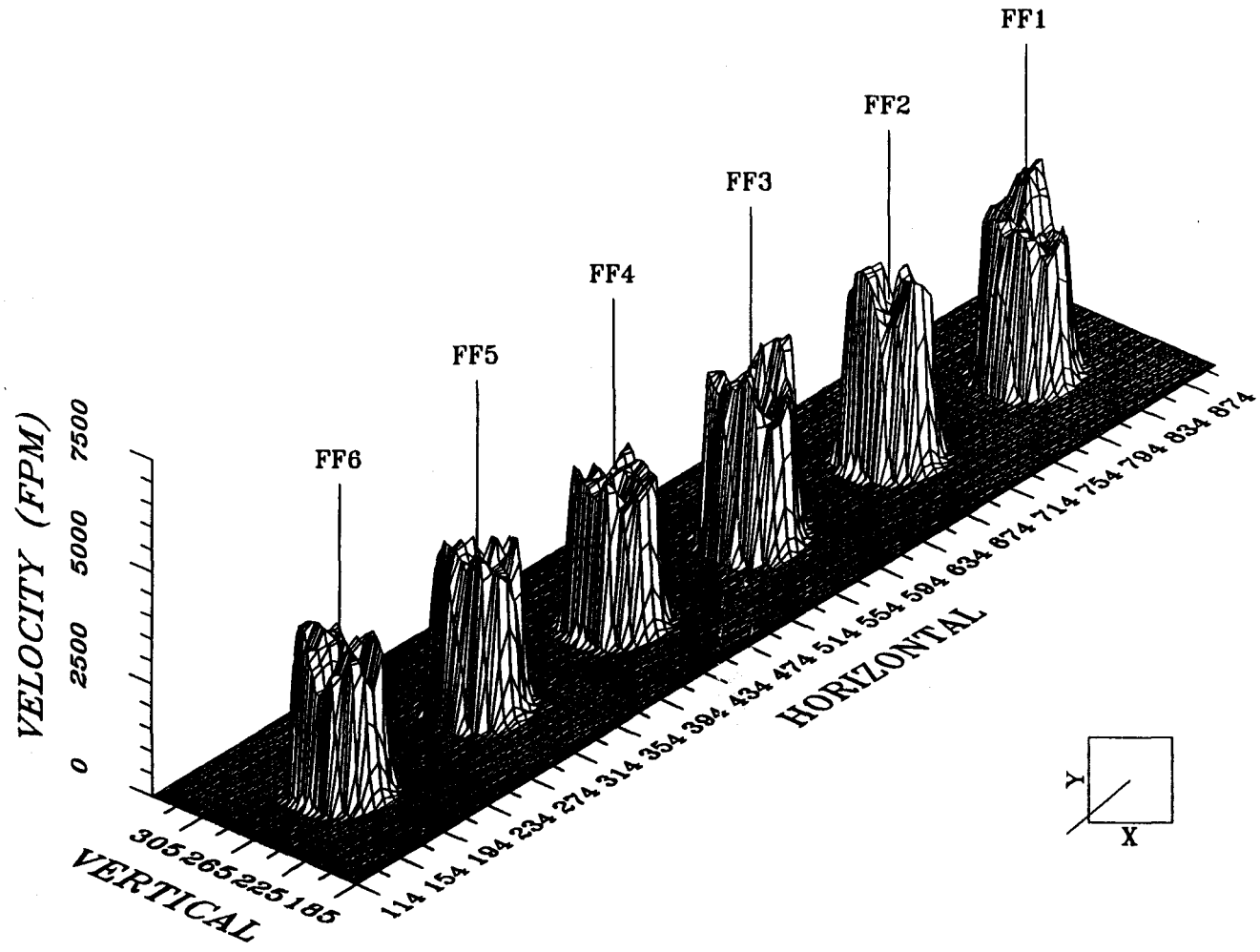
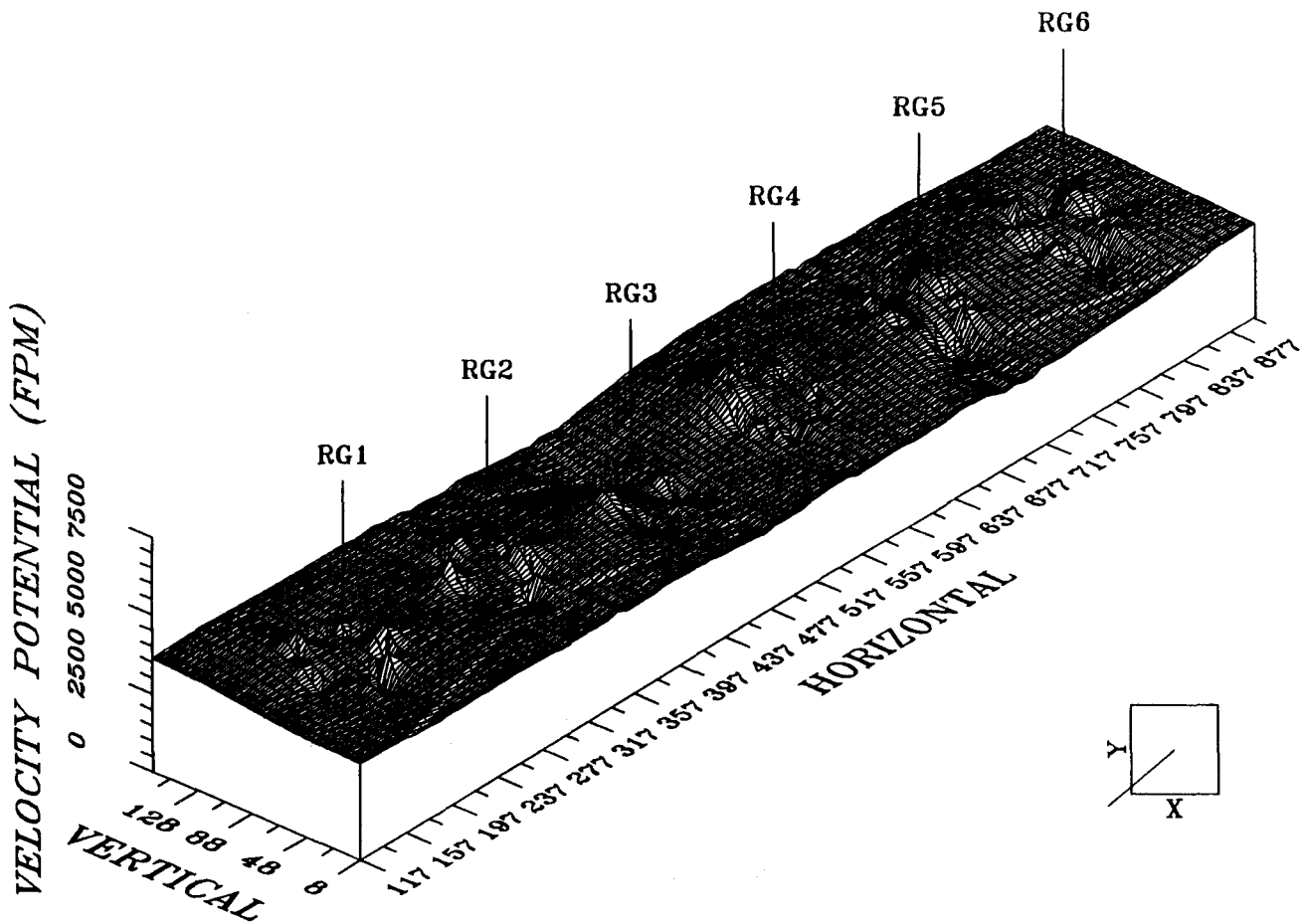
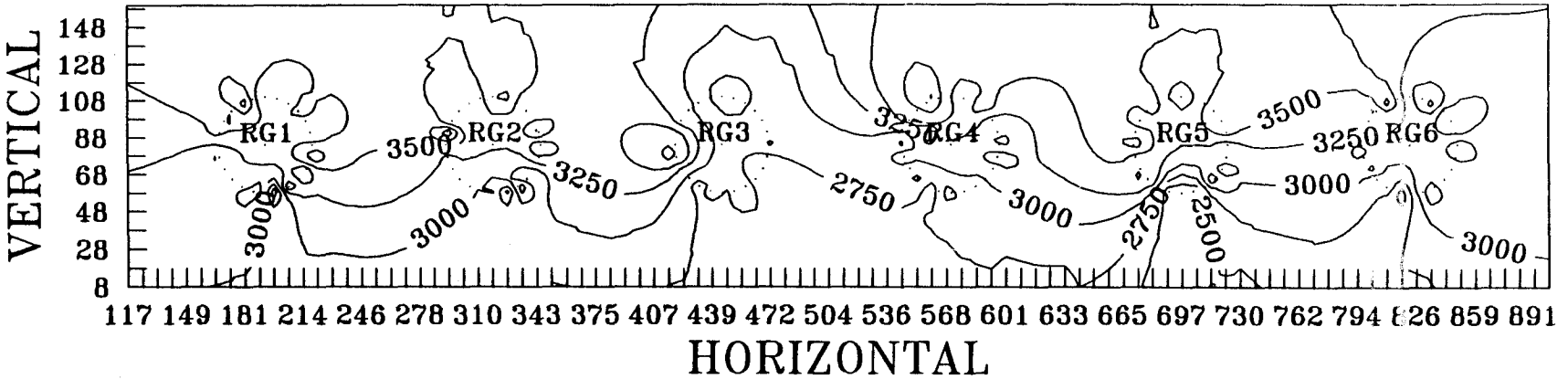


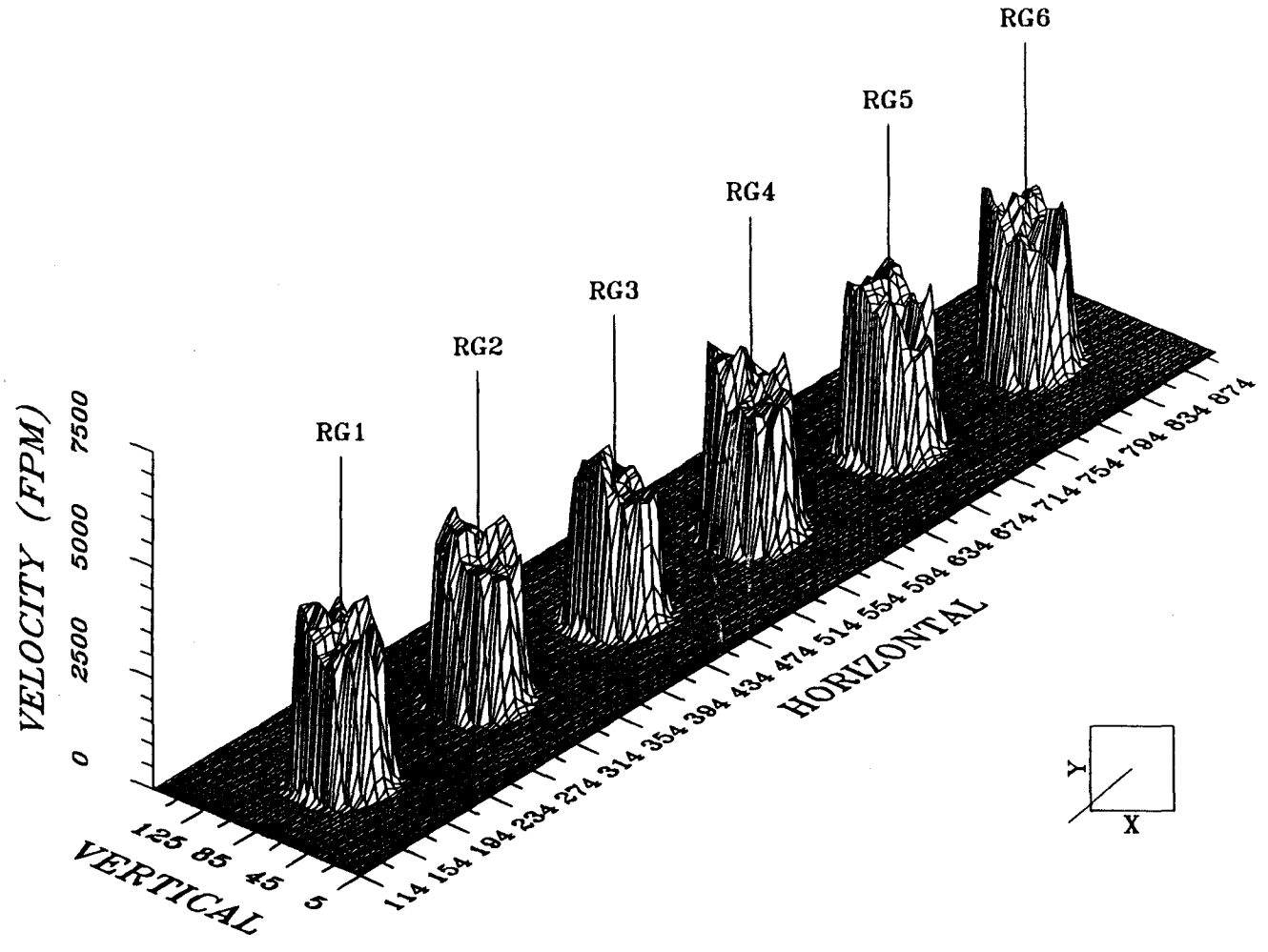
F WINDBOX VELOCITY PROFILE



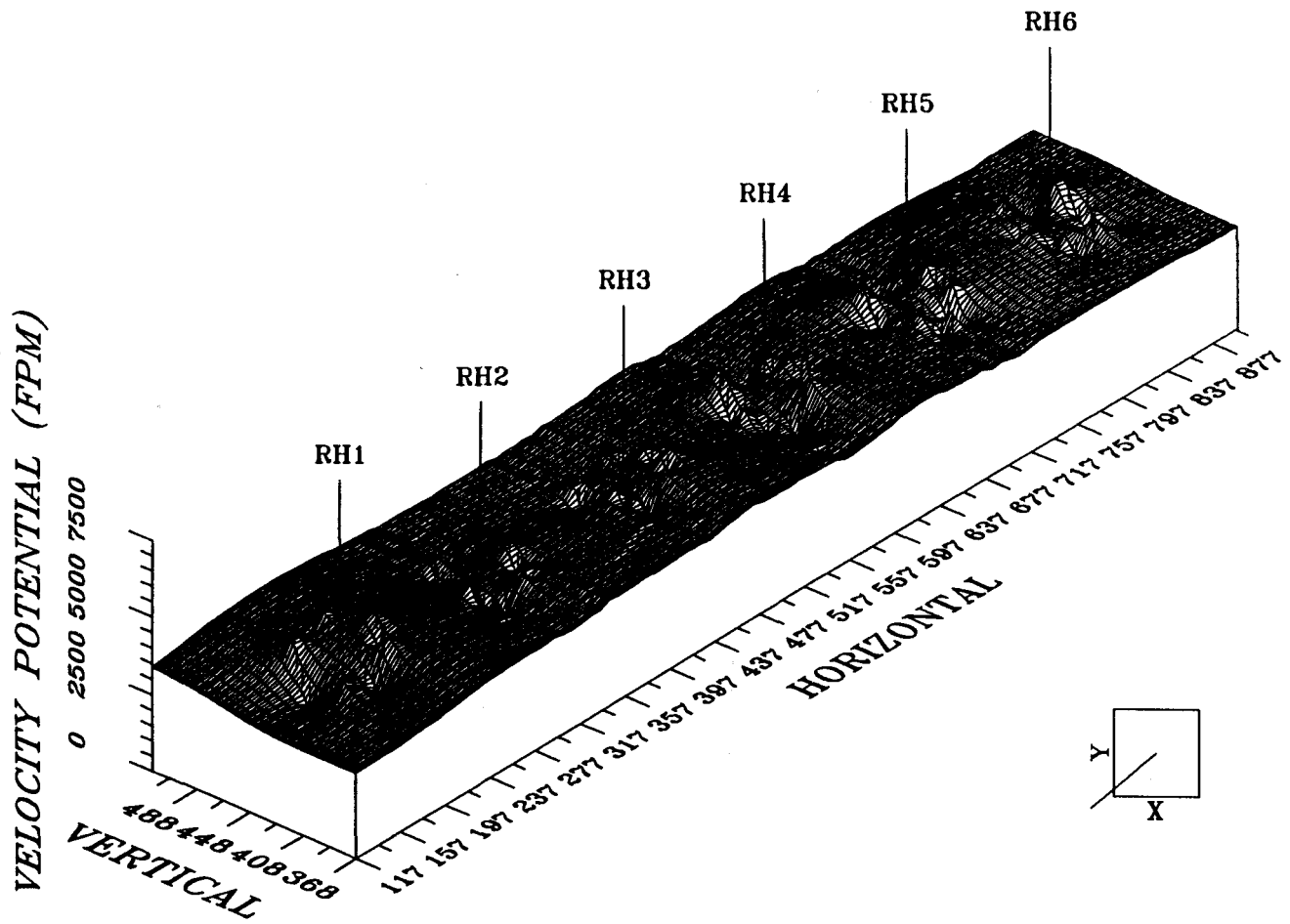
G WINDBOX VELOCITY POTENTIAL PROFILE

G WINDBOX TOPOGRAPHICAL DIAGRAM





G WINDBOX VELOCITY PROFILE



H WINDBOX VELOCITY POTENTIAL PROFILE

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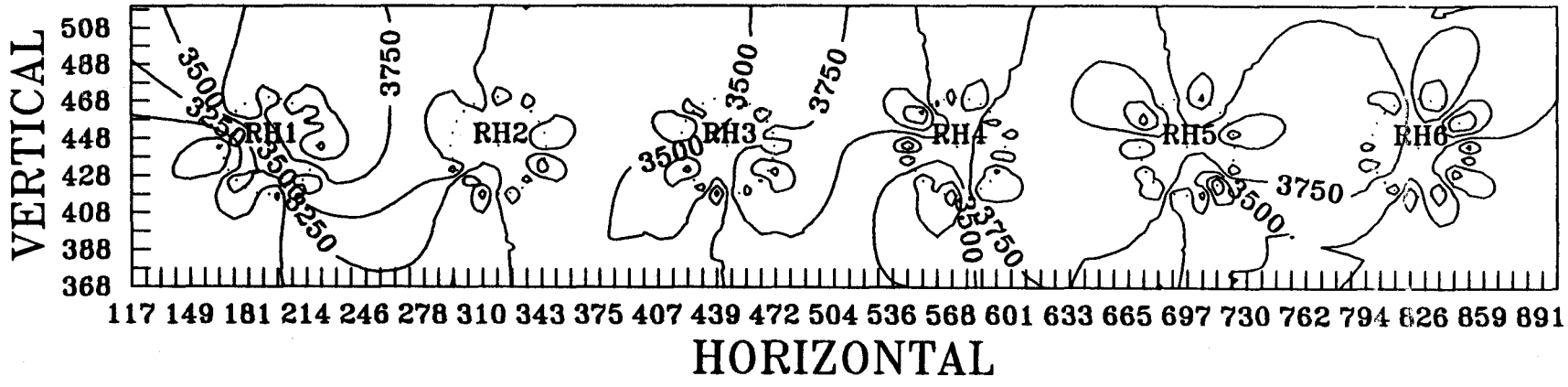

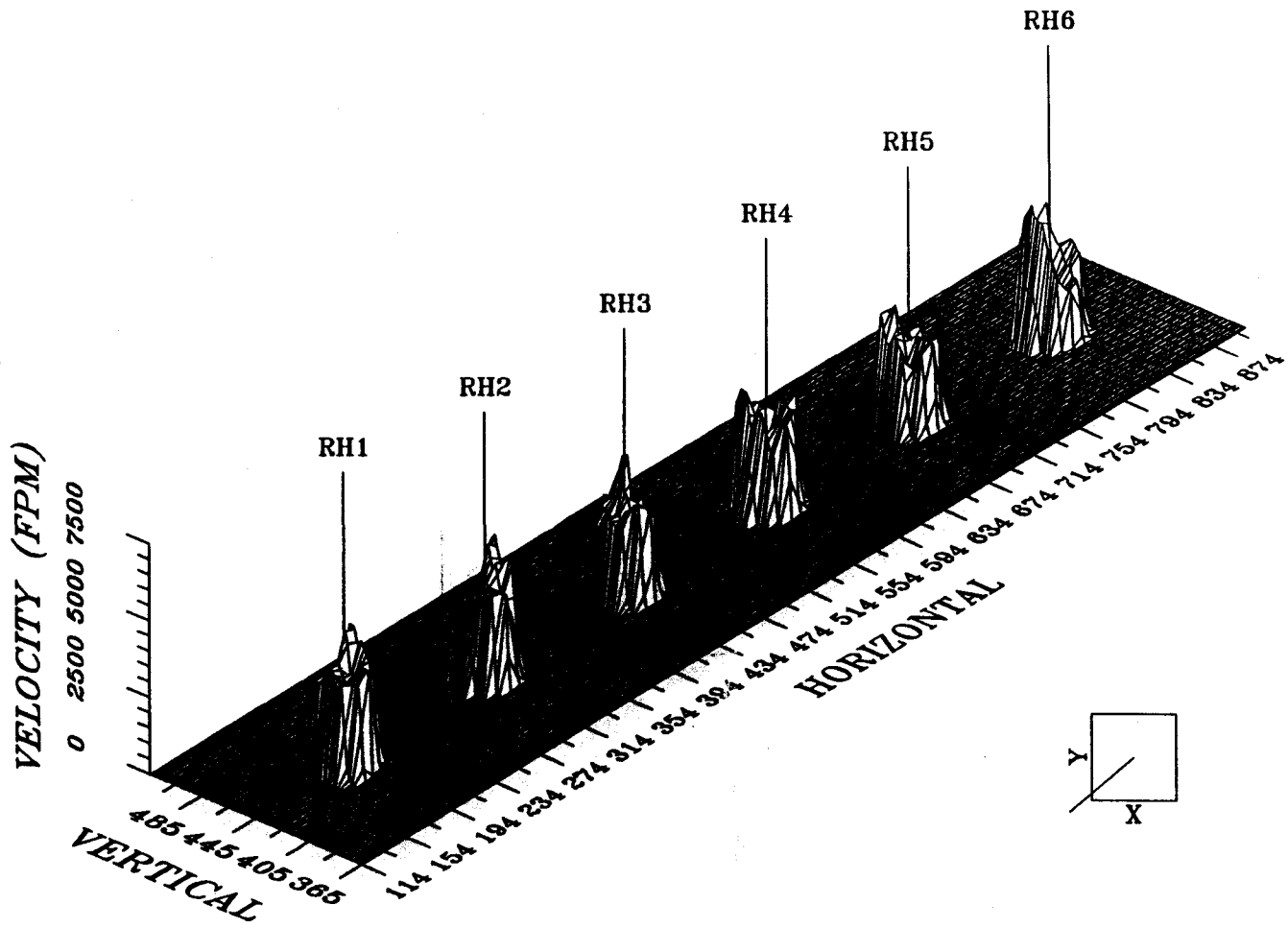

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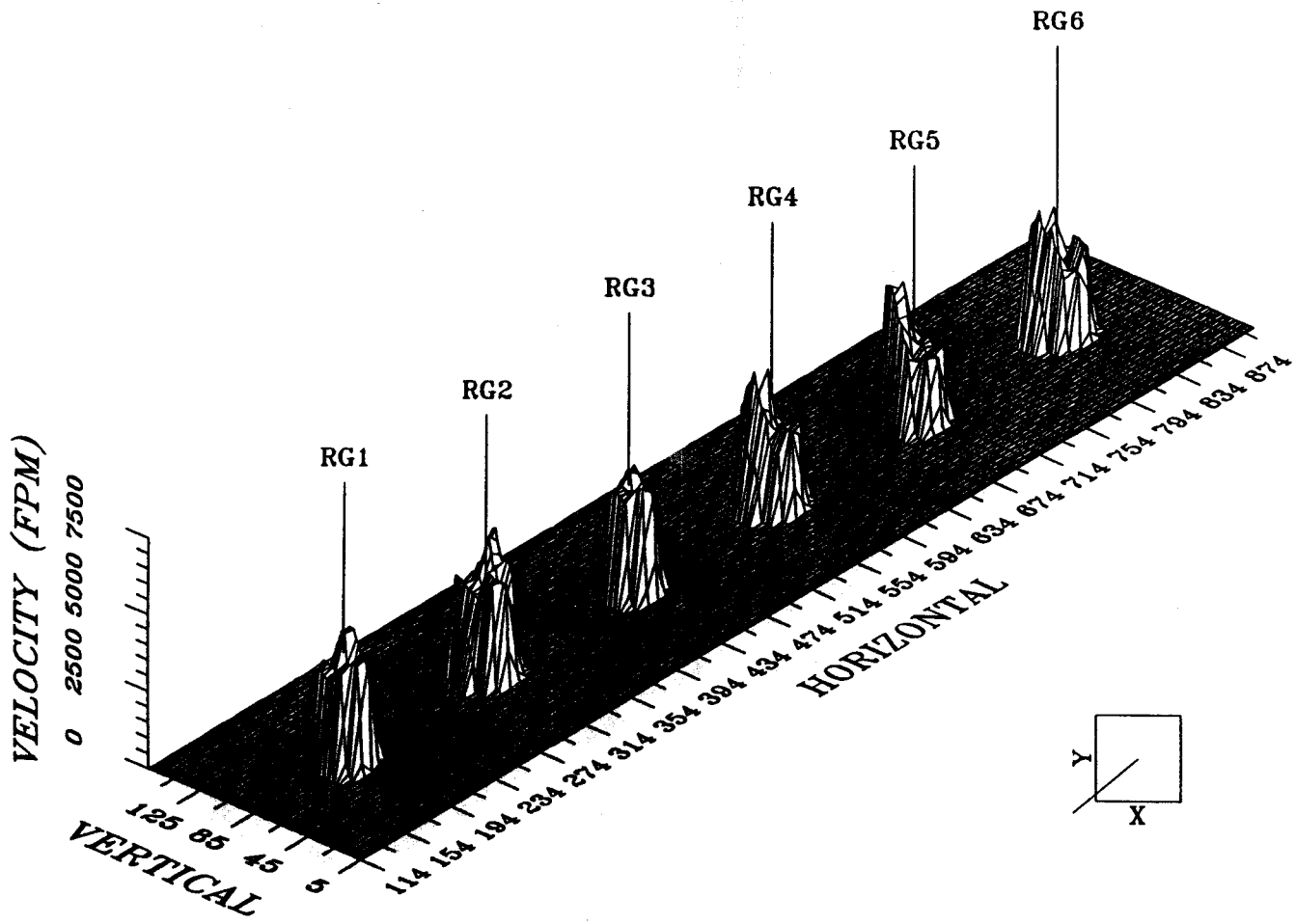

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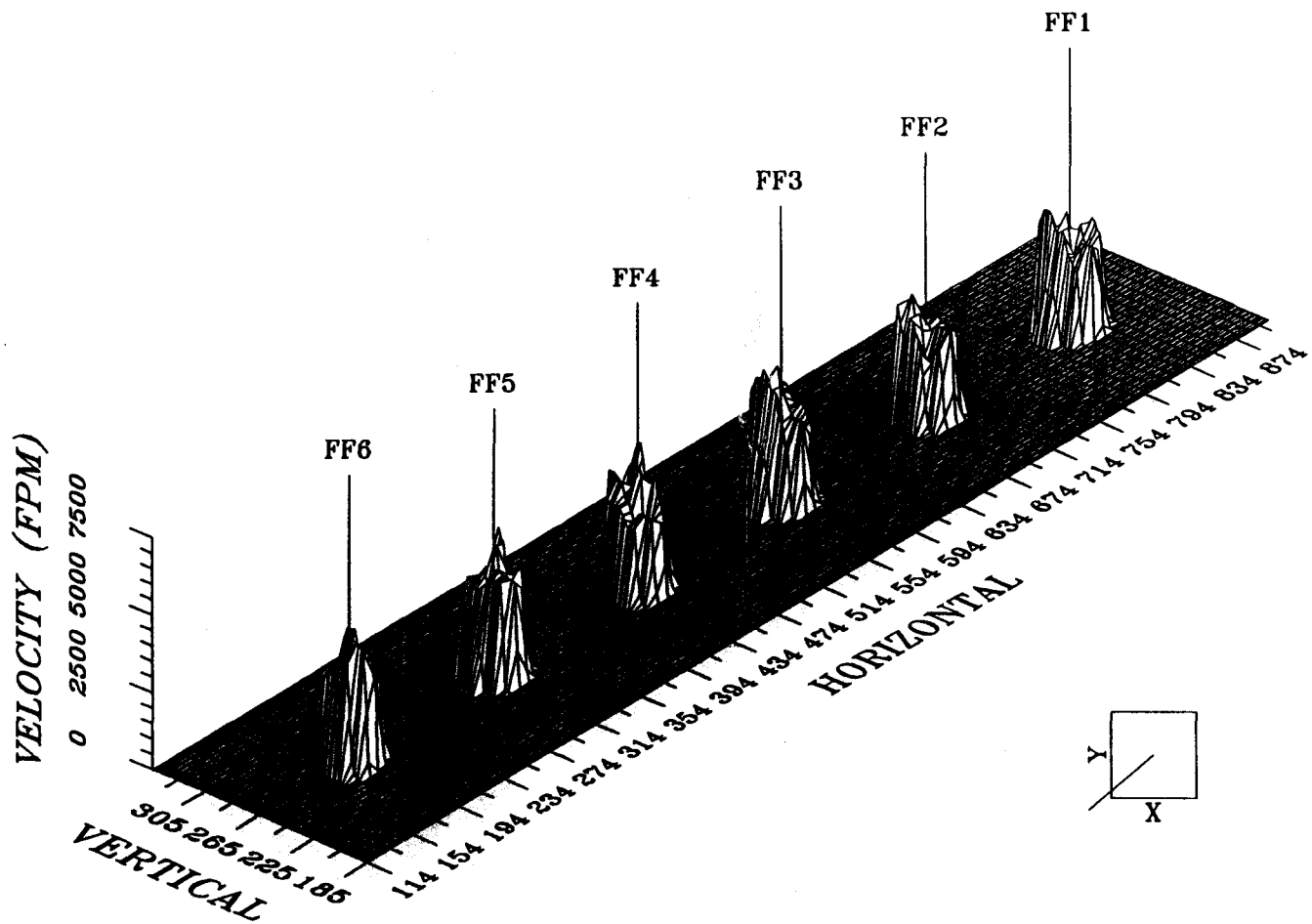

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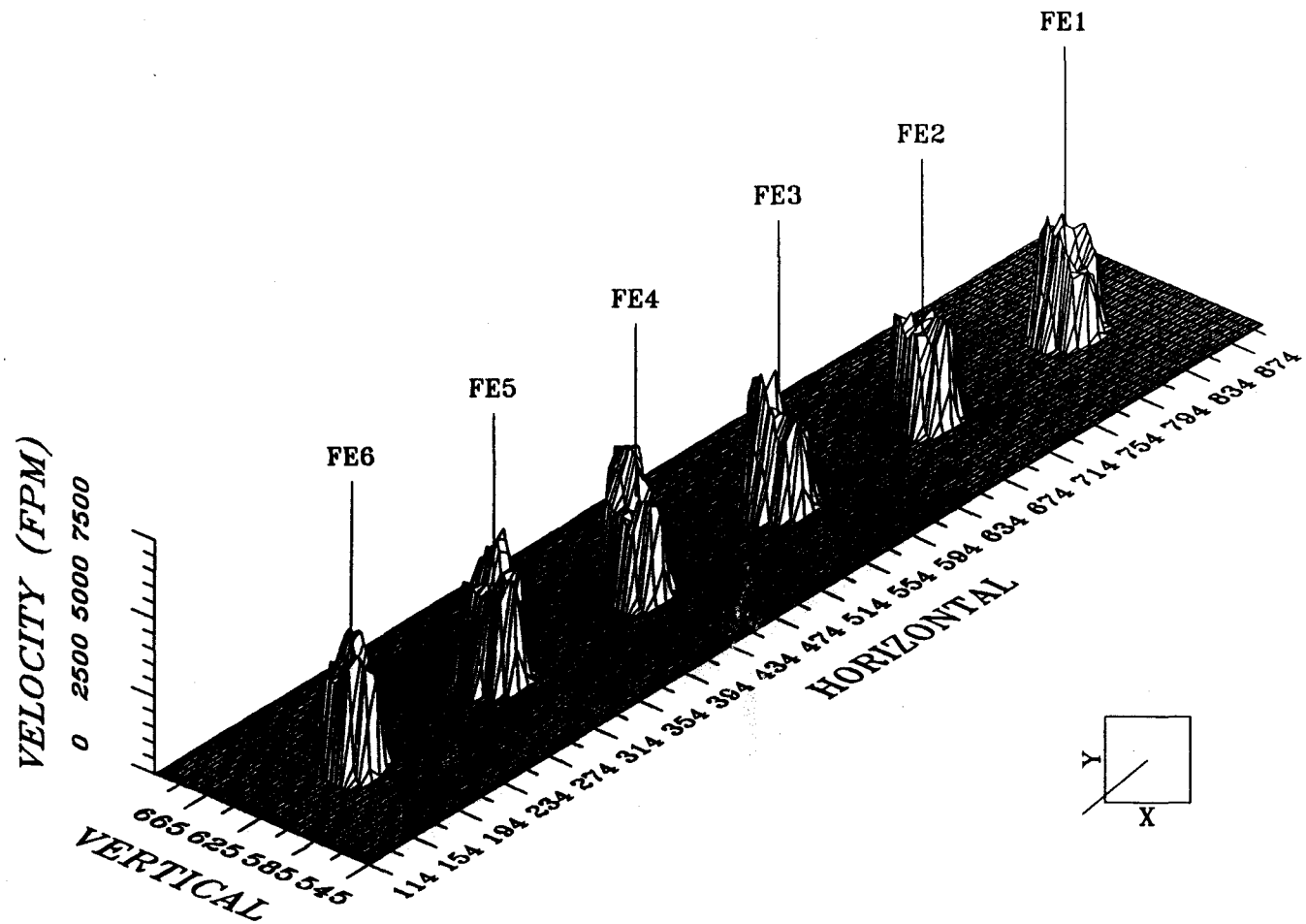

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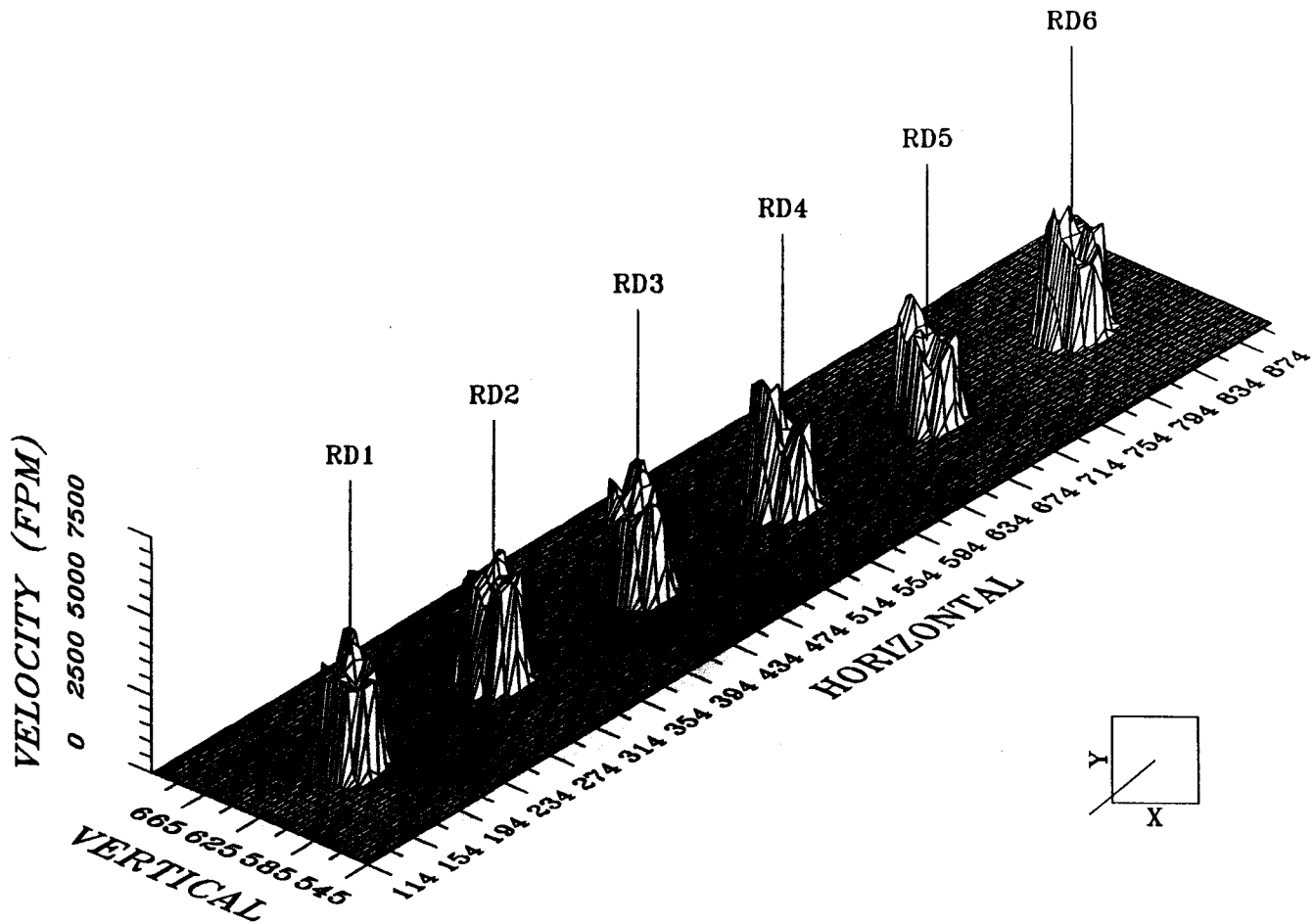

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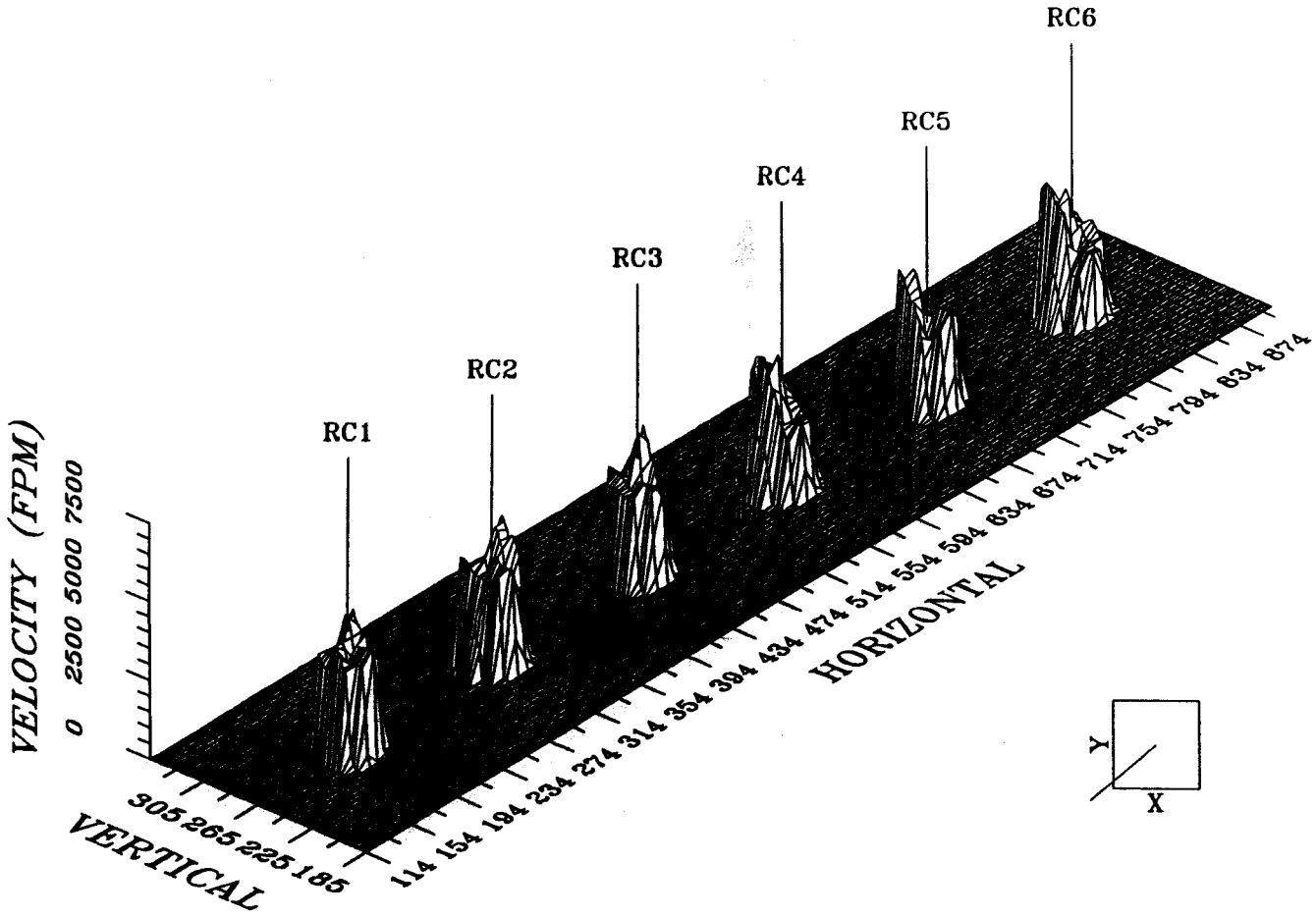

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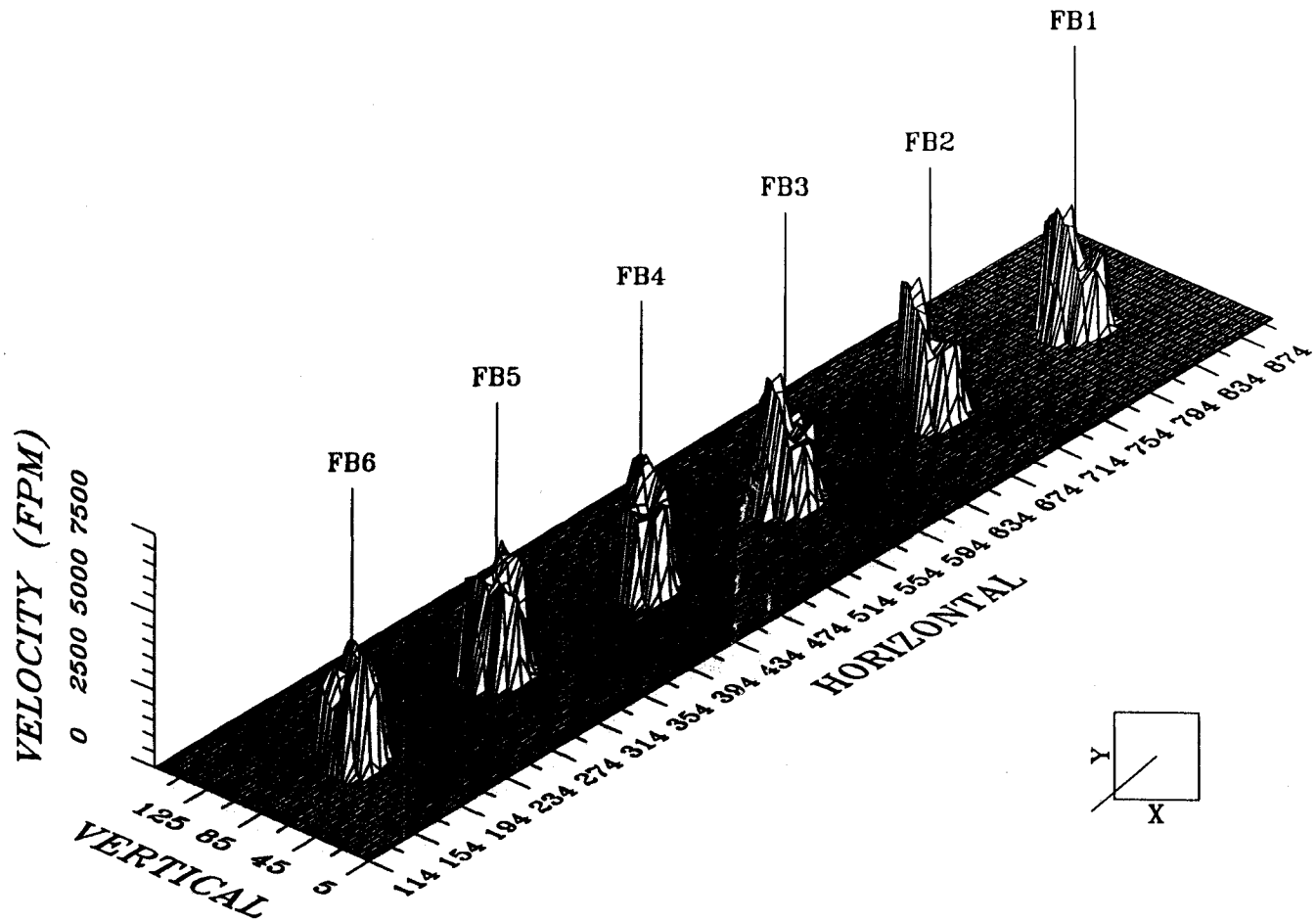

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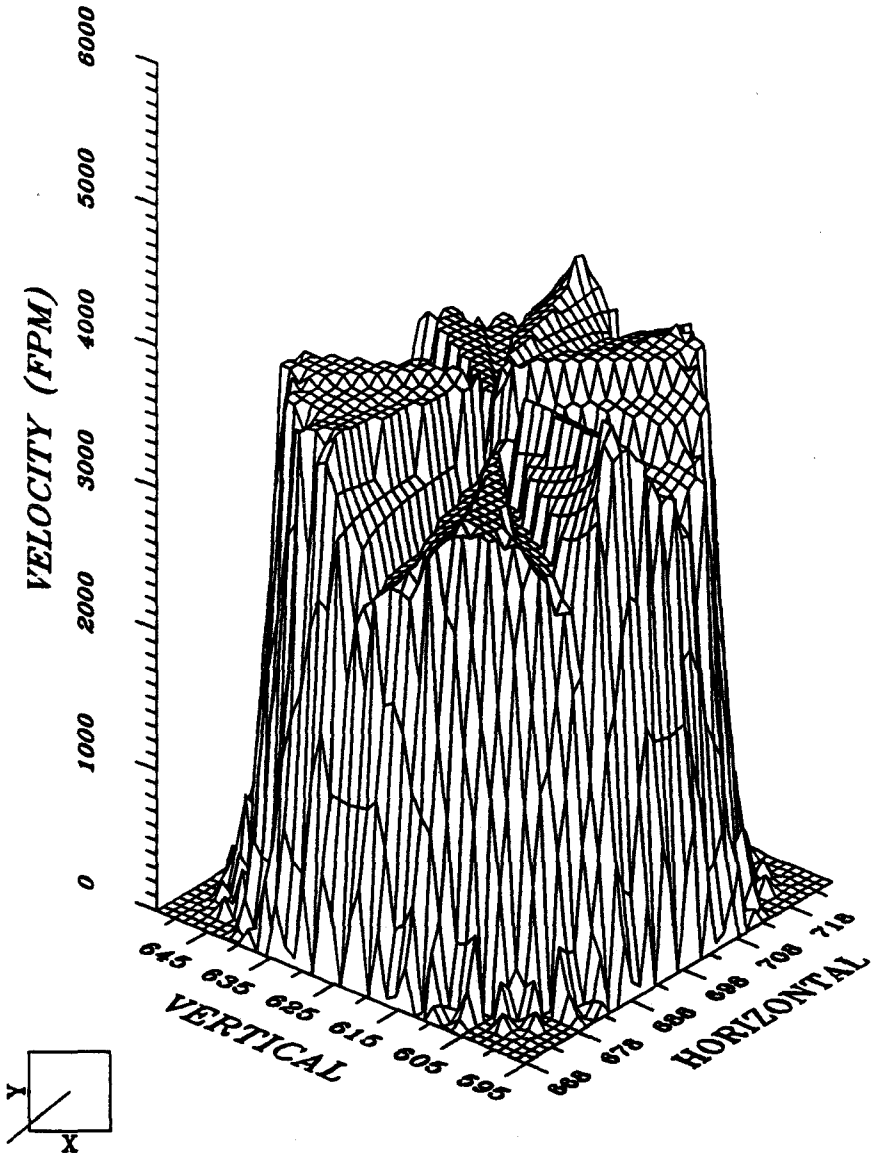

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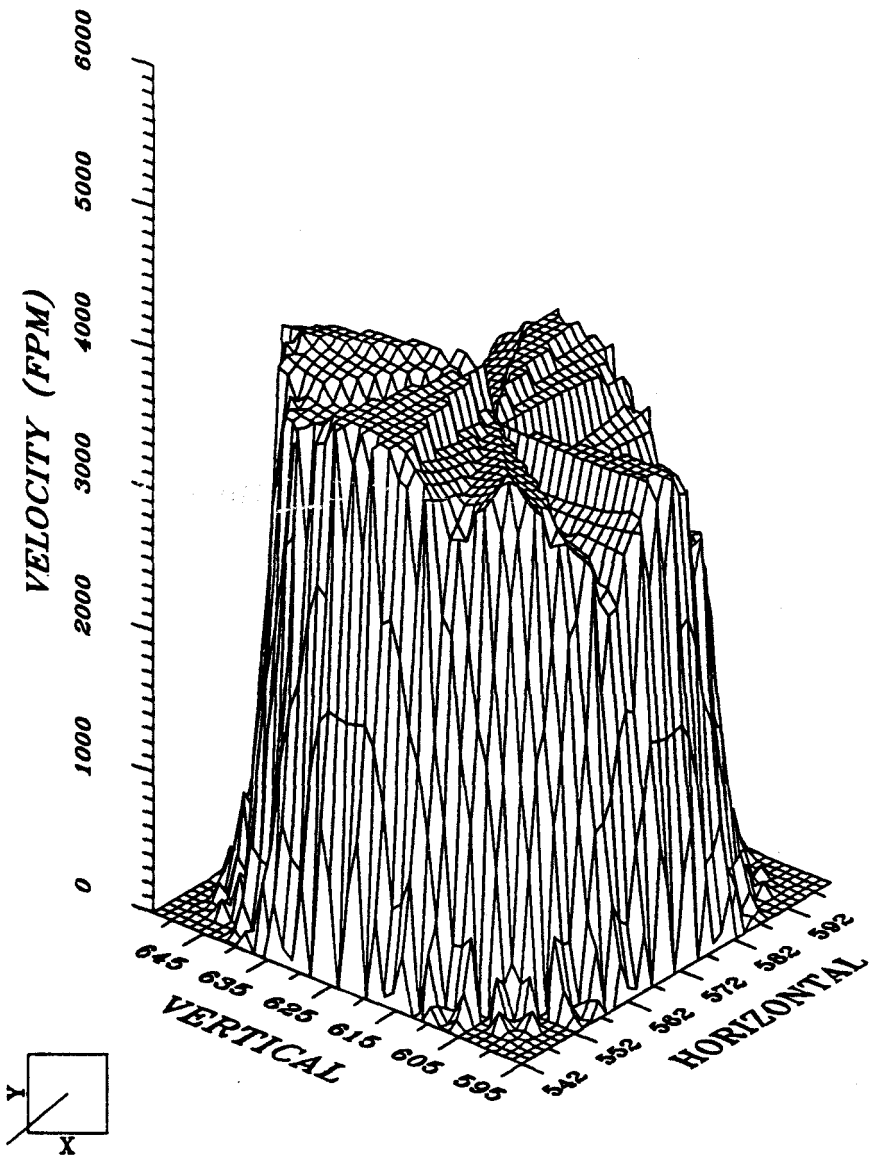

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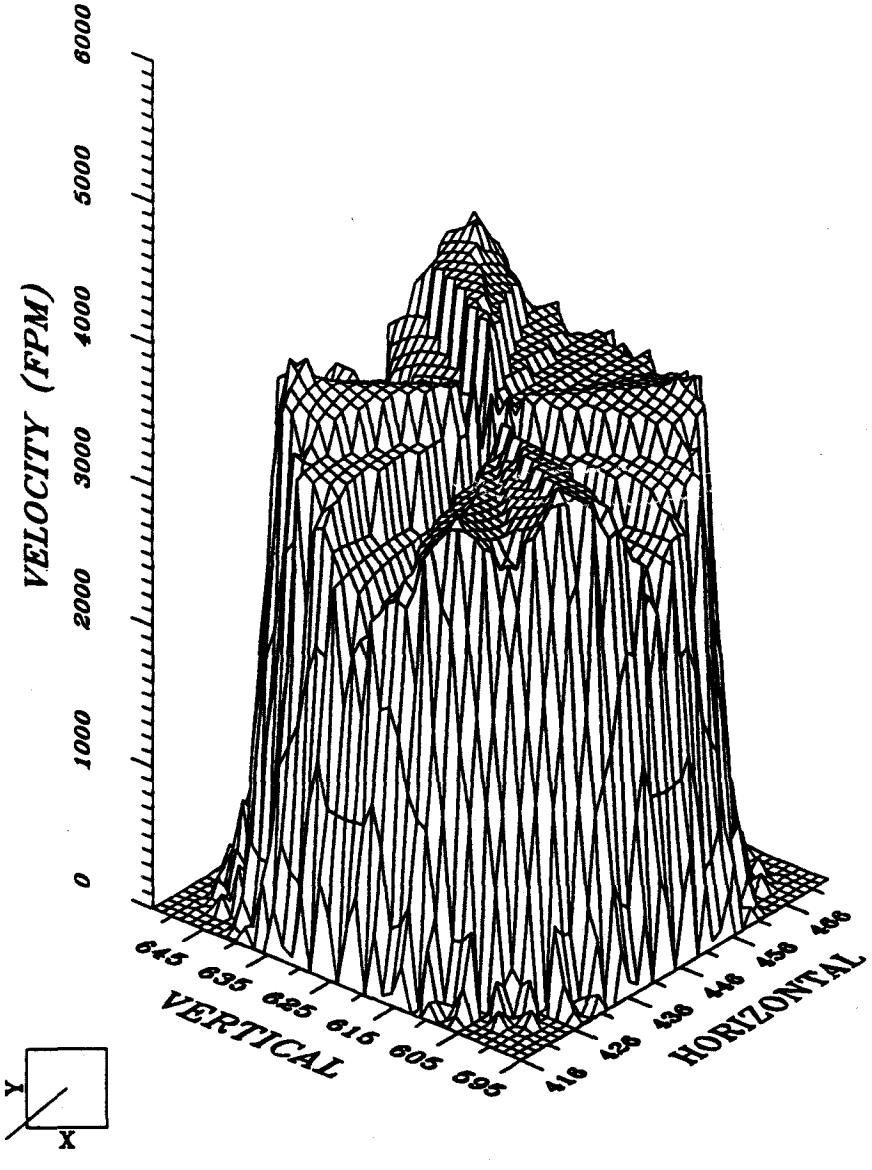

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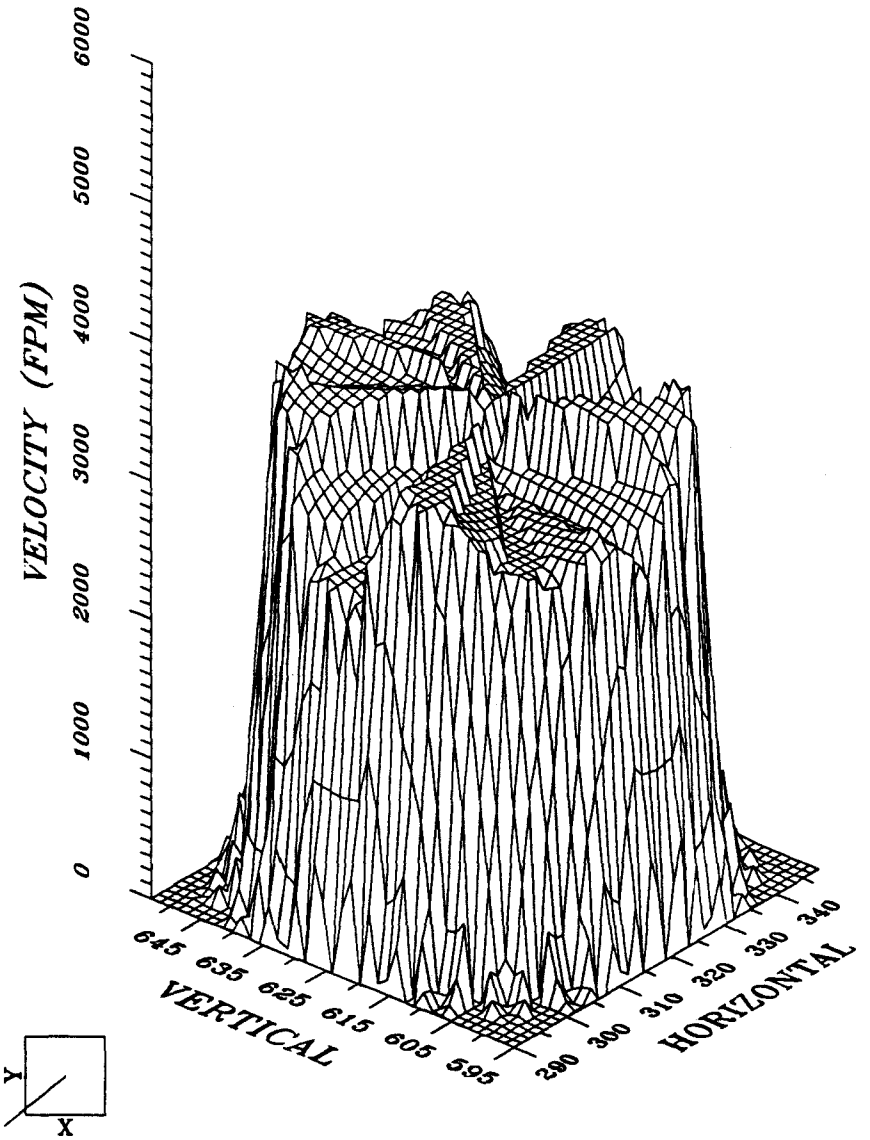

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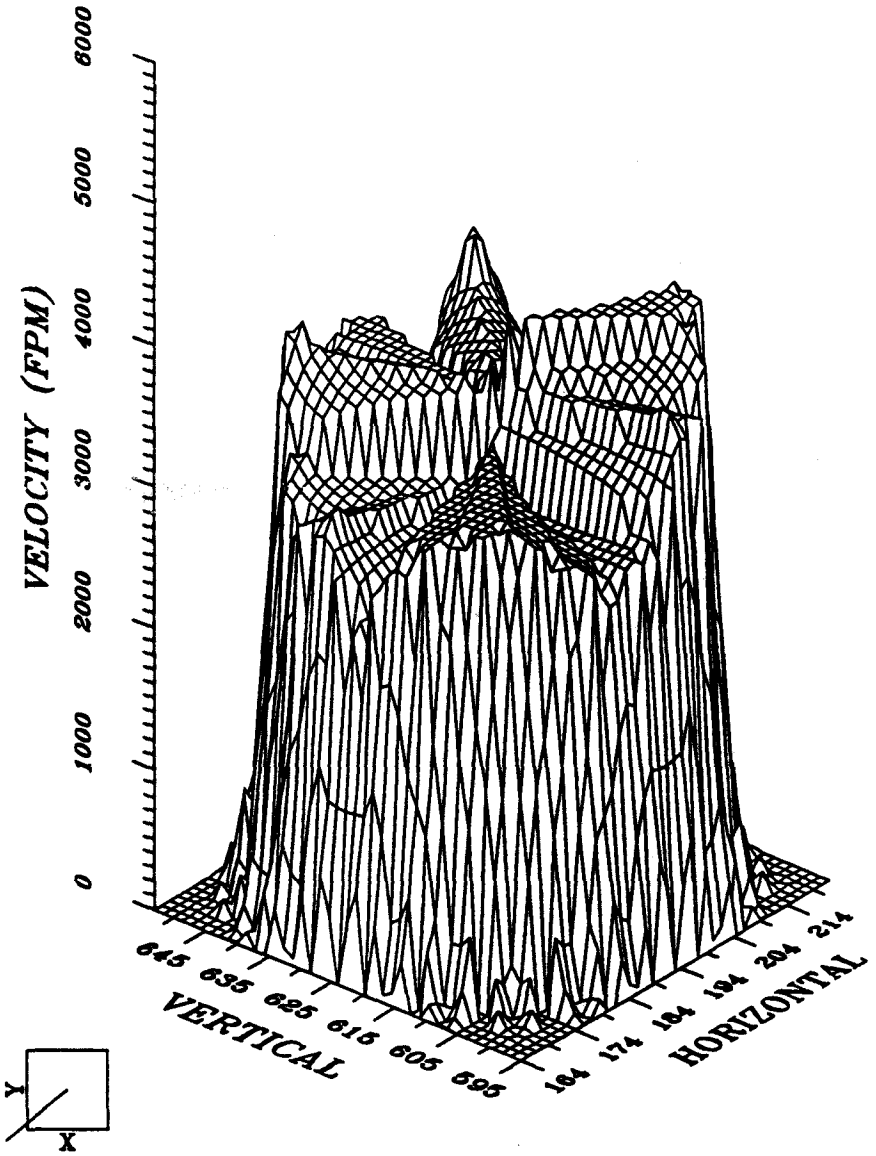

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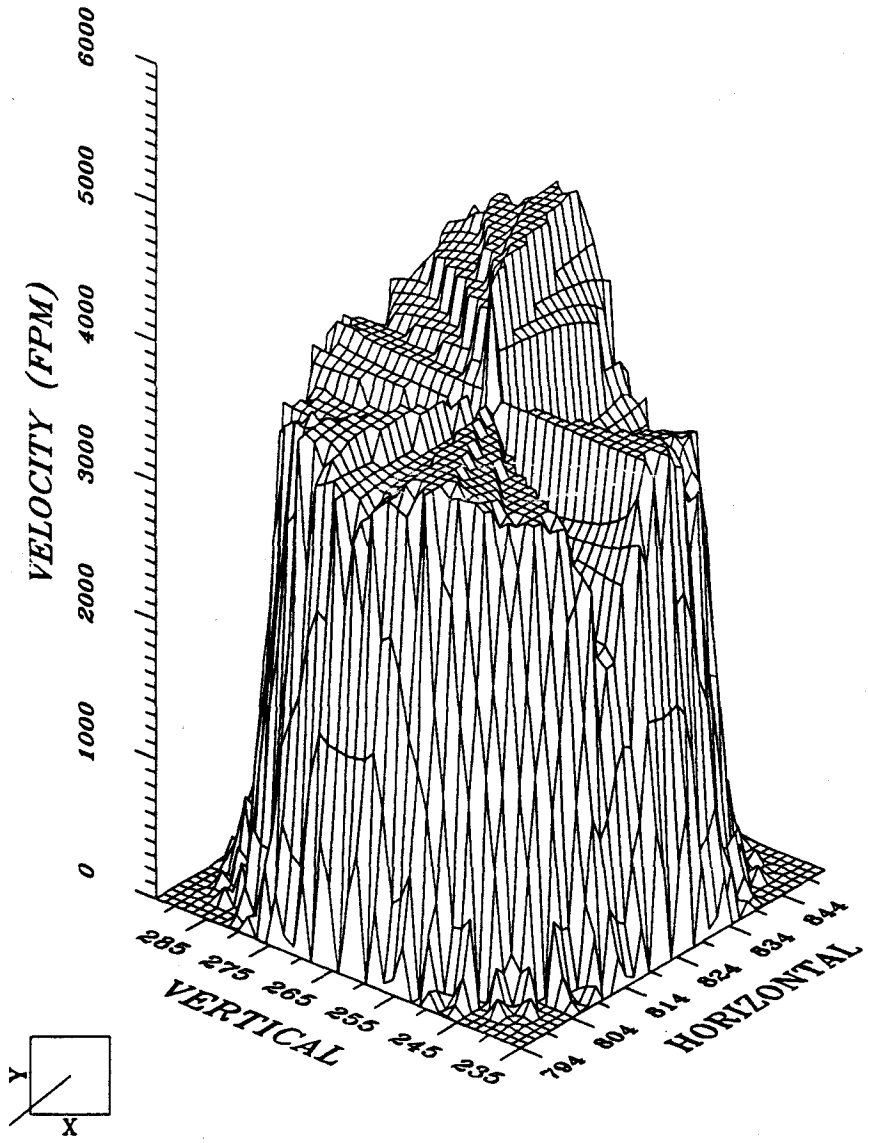

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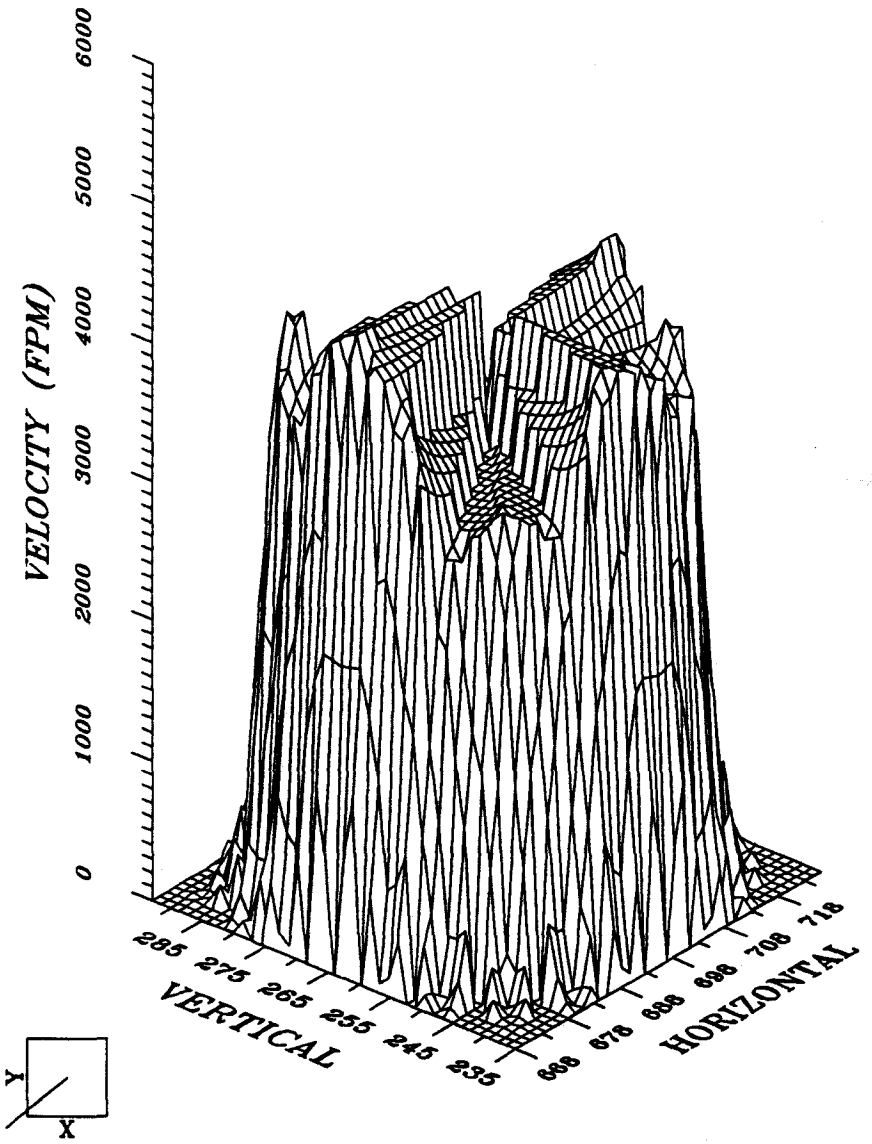

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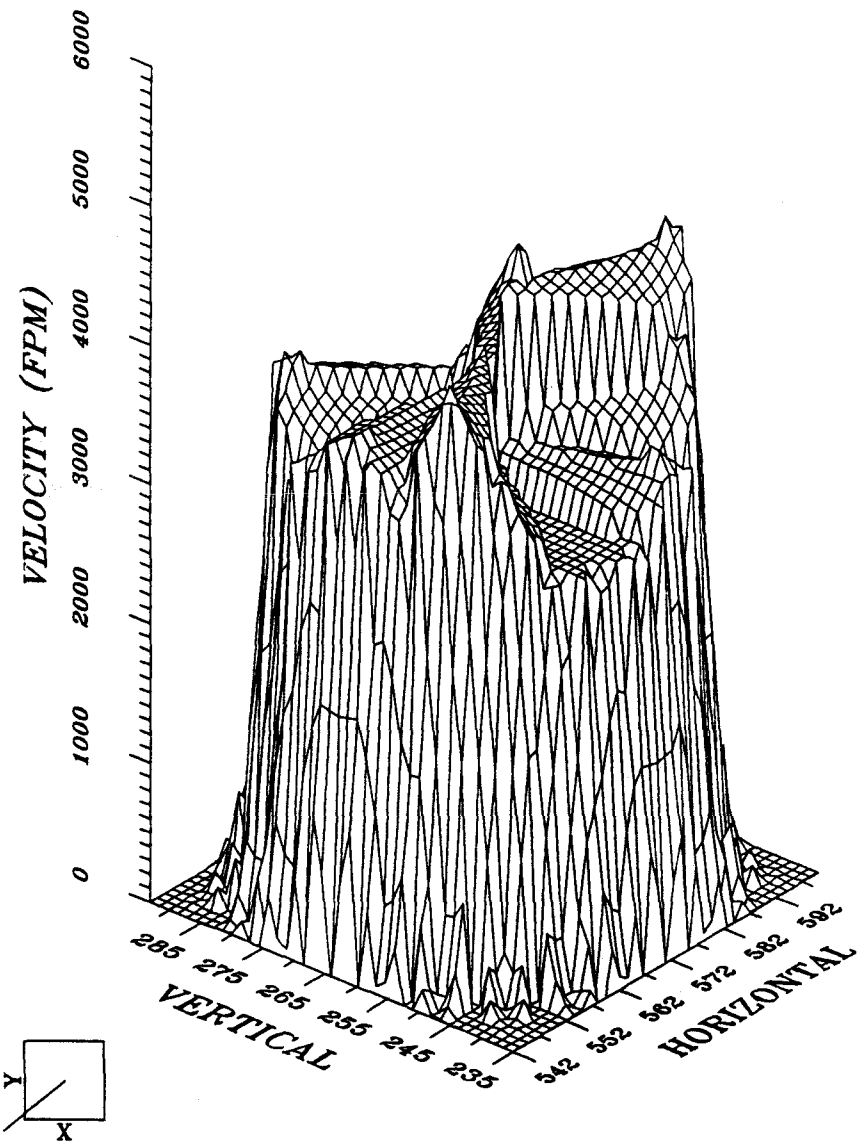

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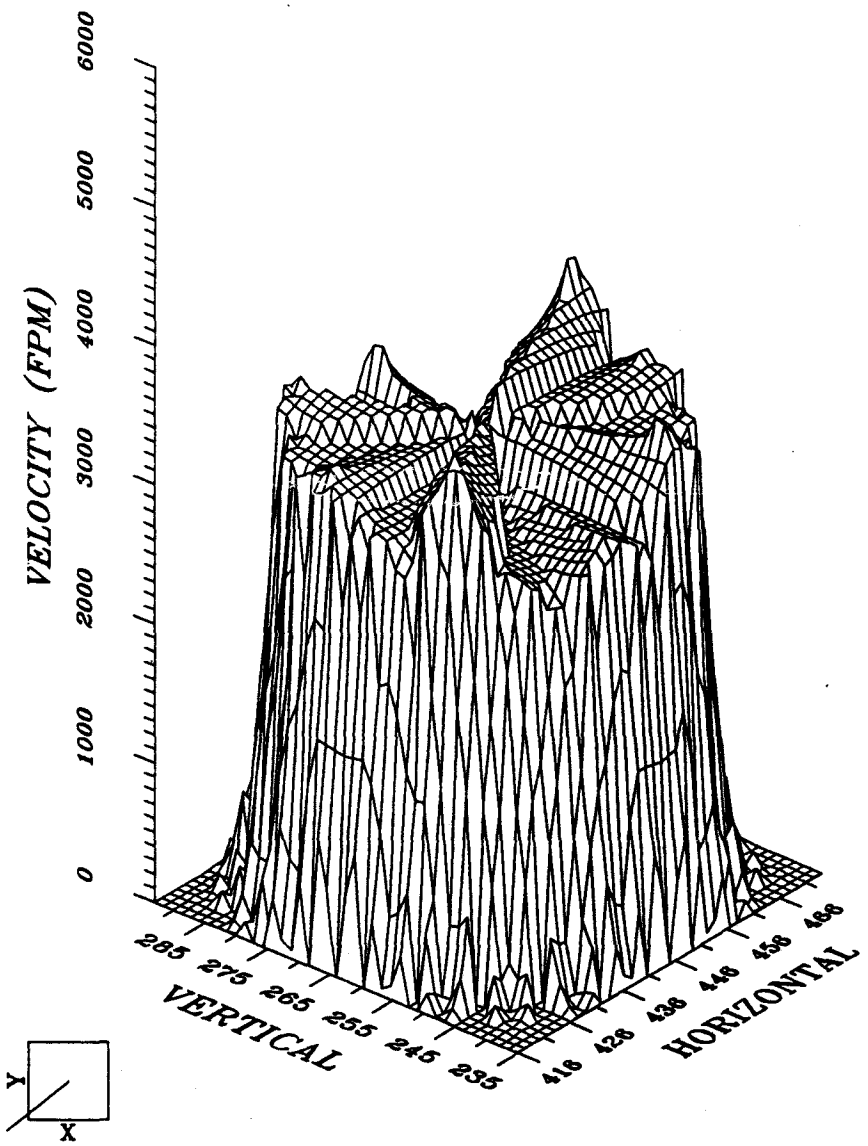

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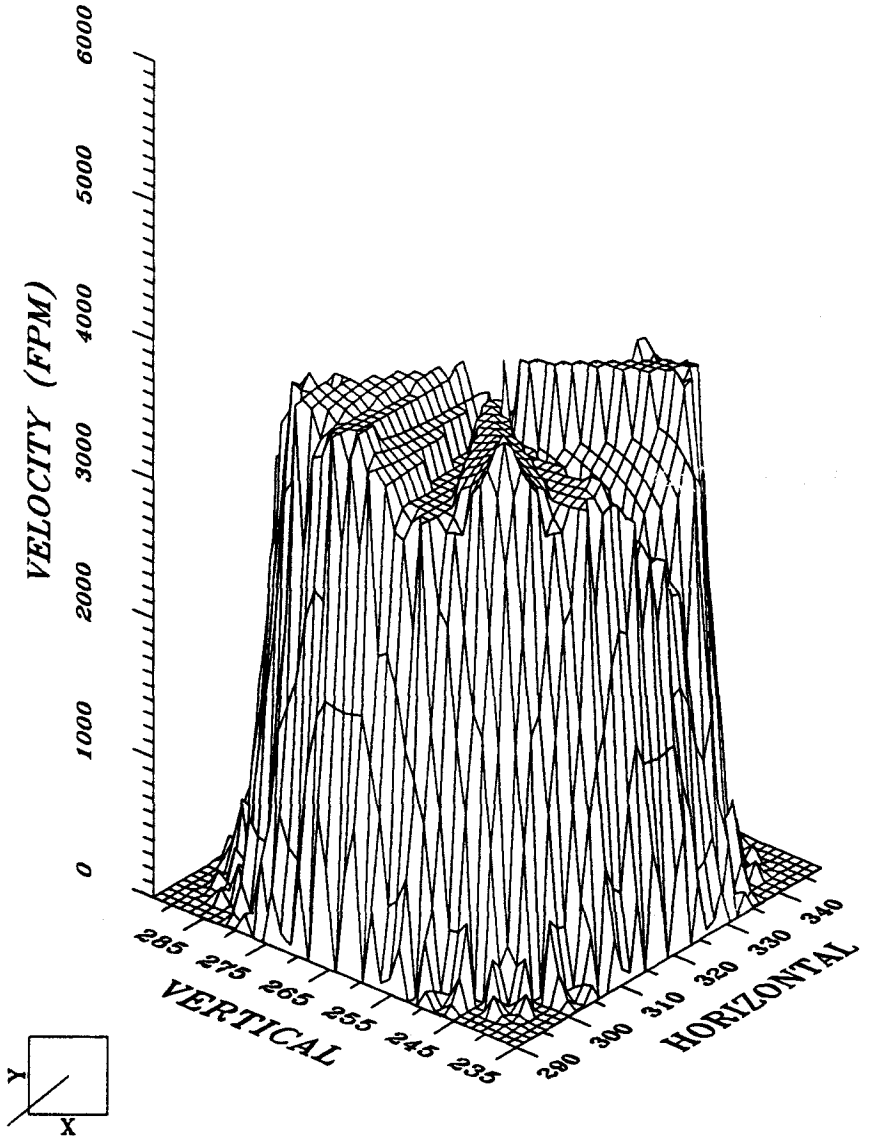

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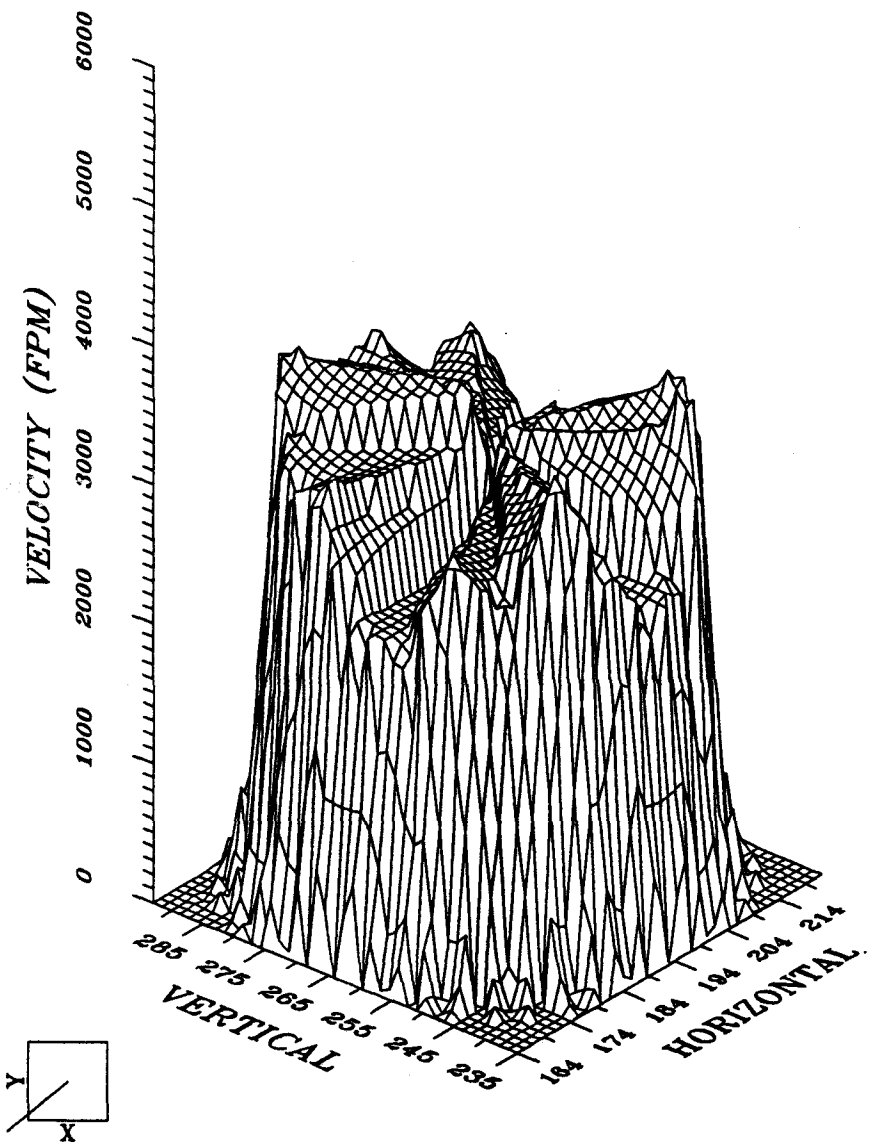

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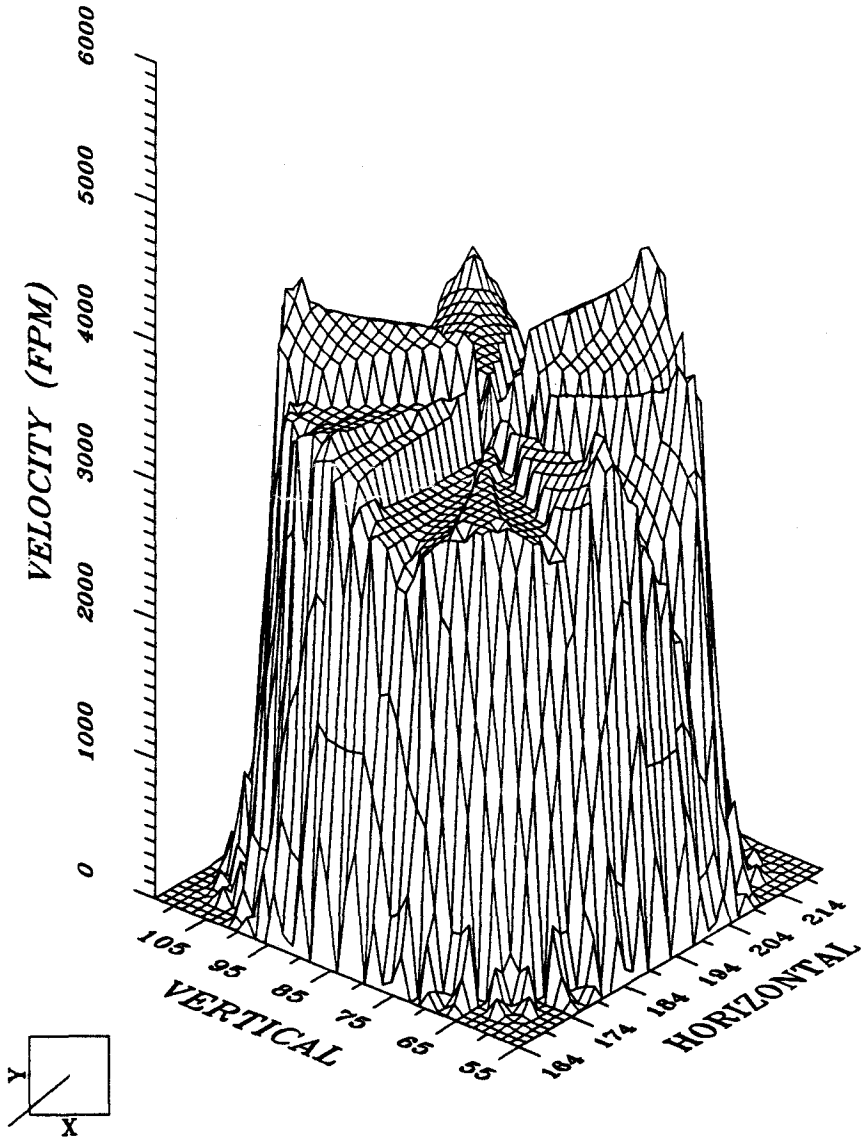

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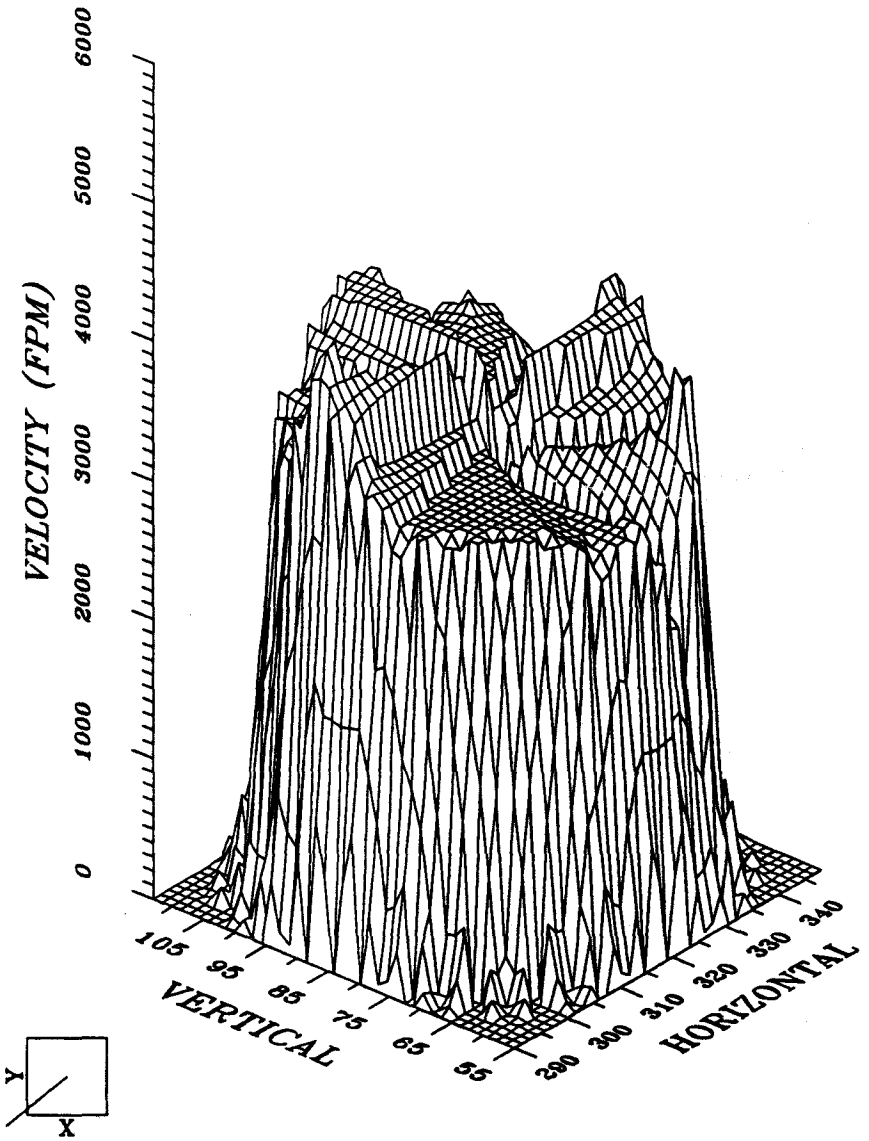

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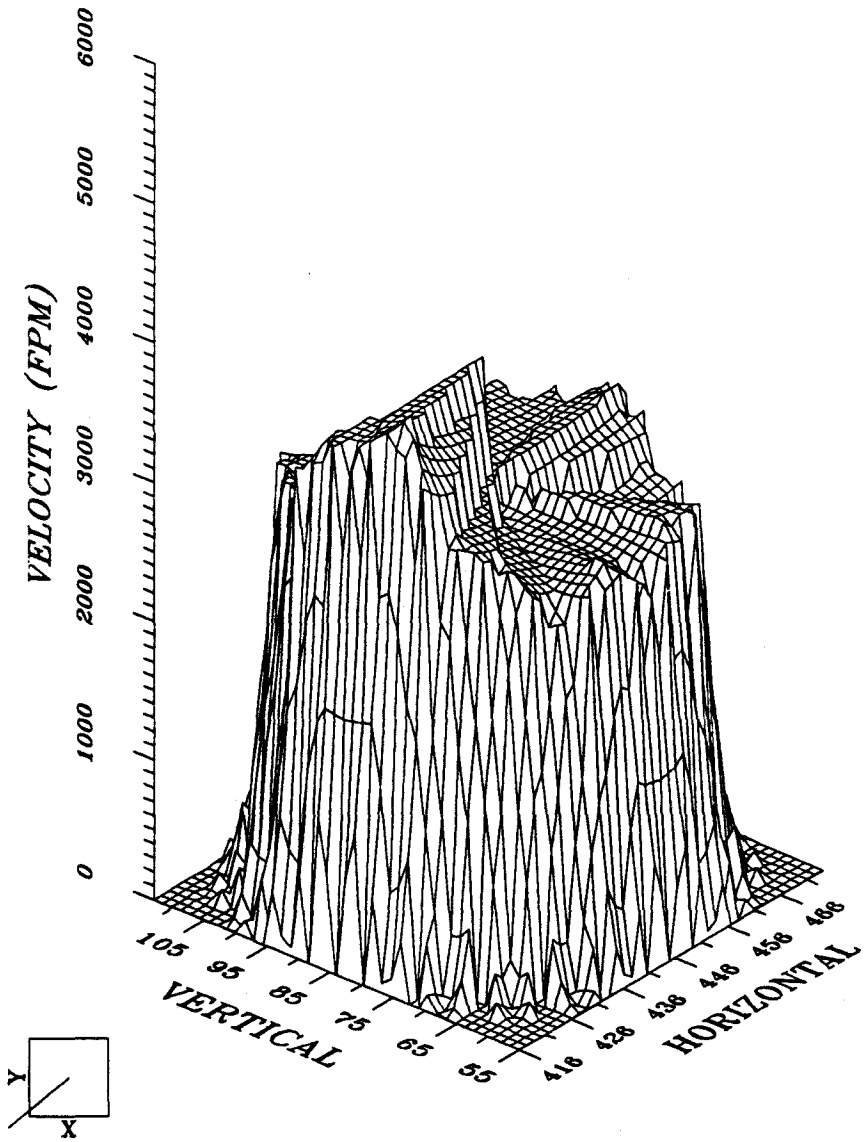

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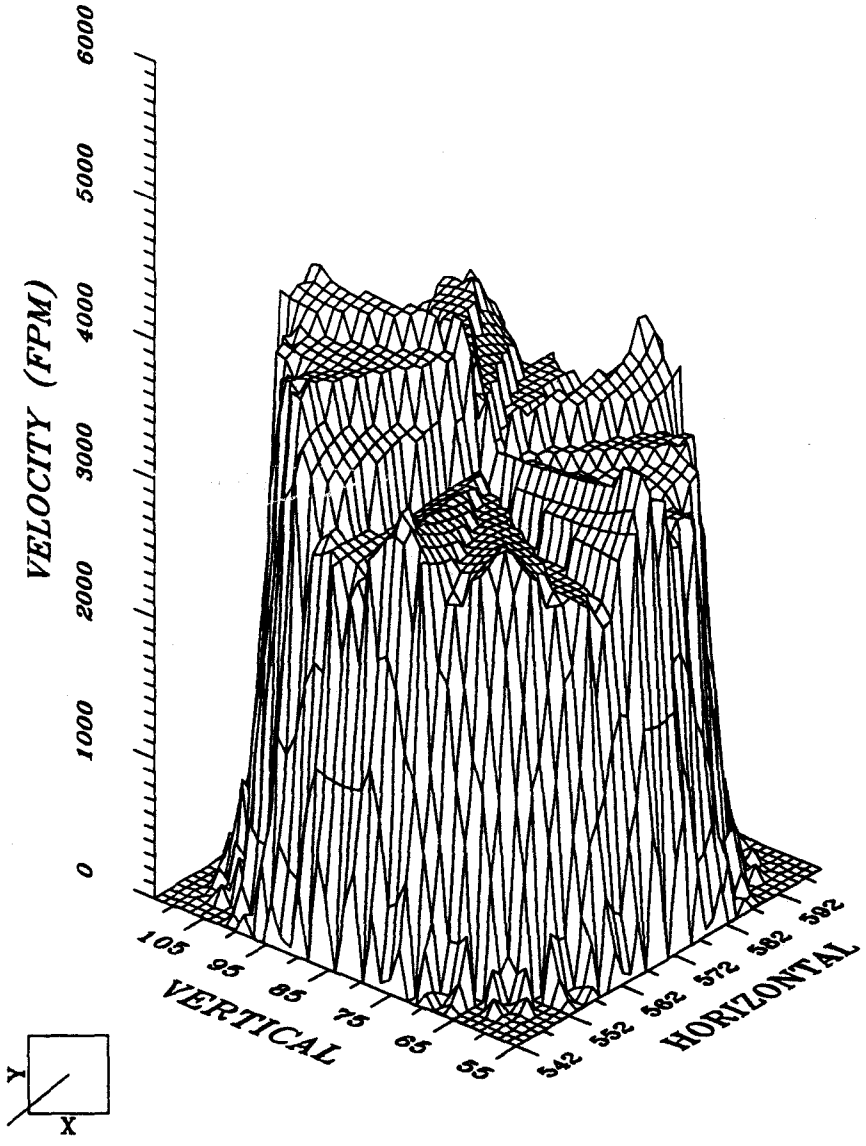

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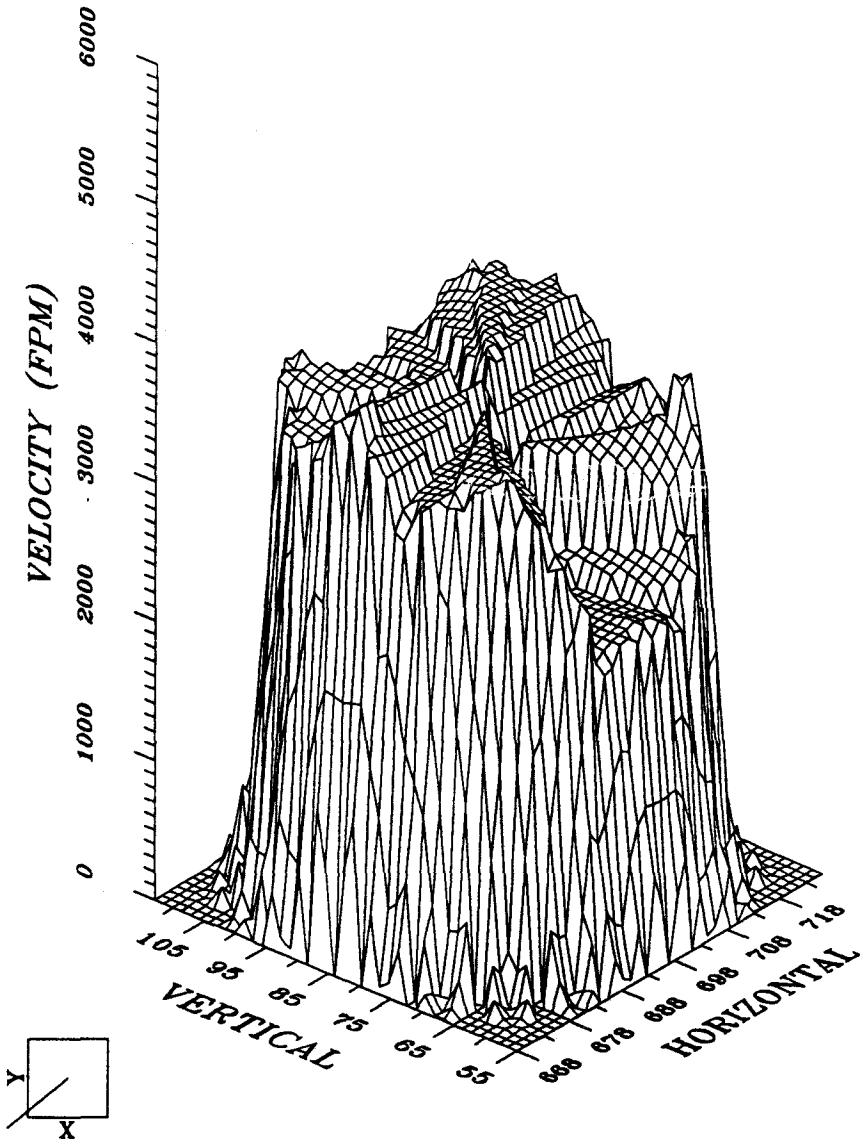

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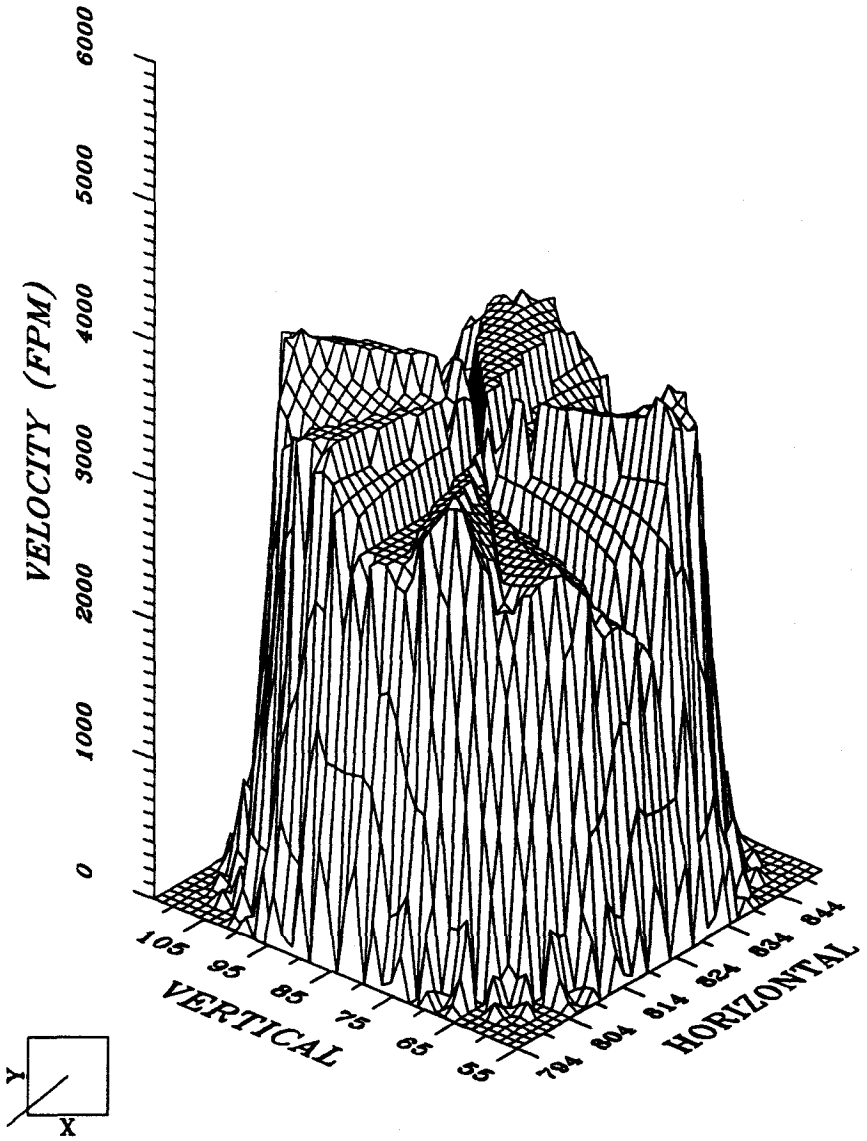

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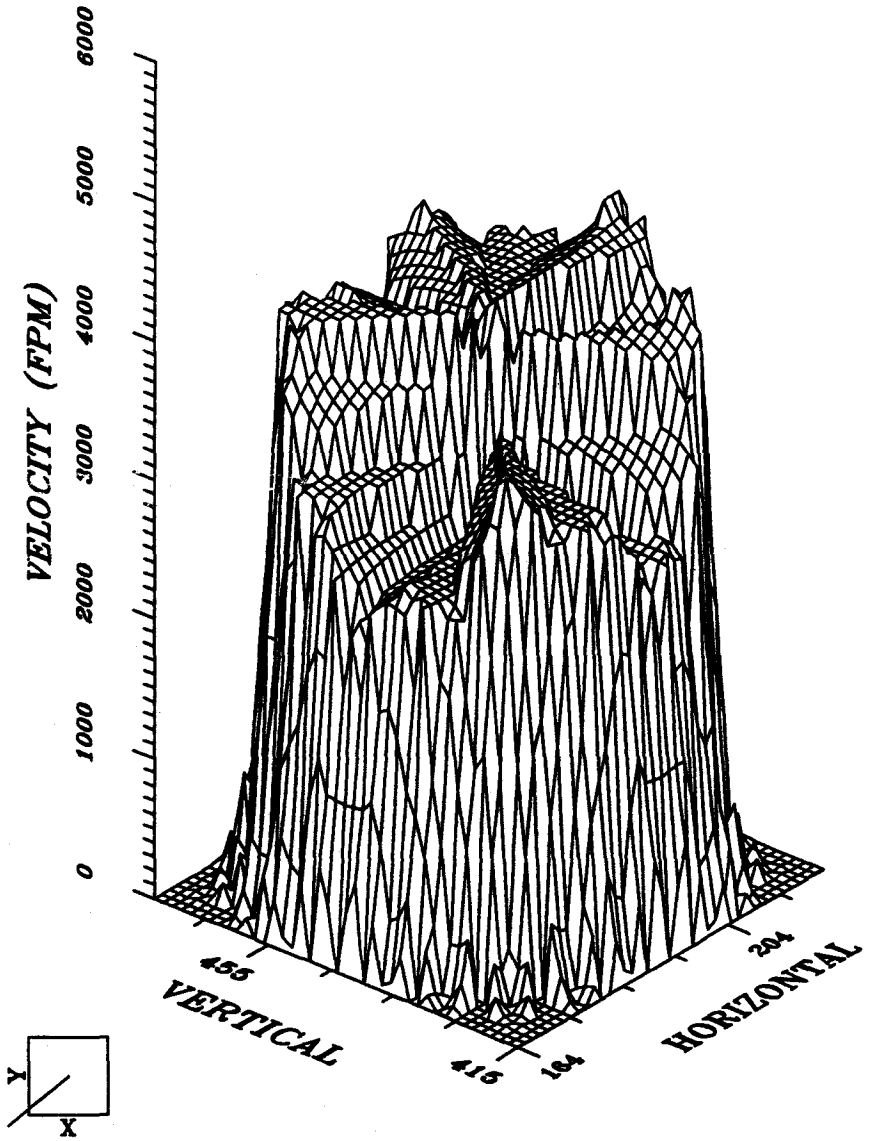

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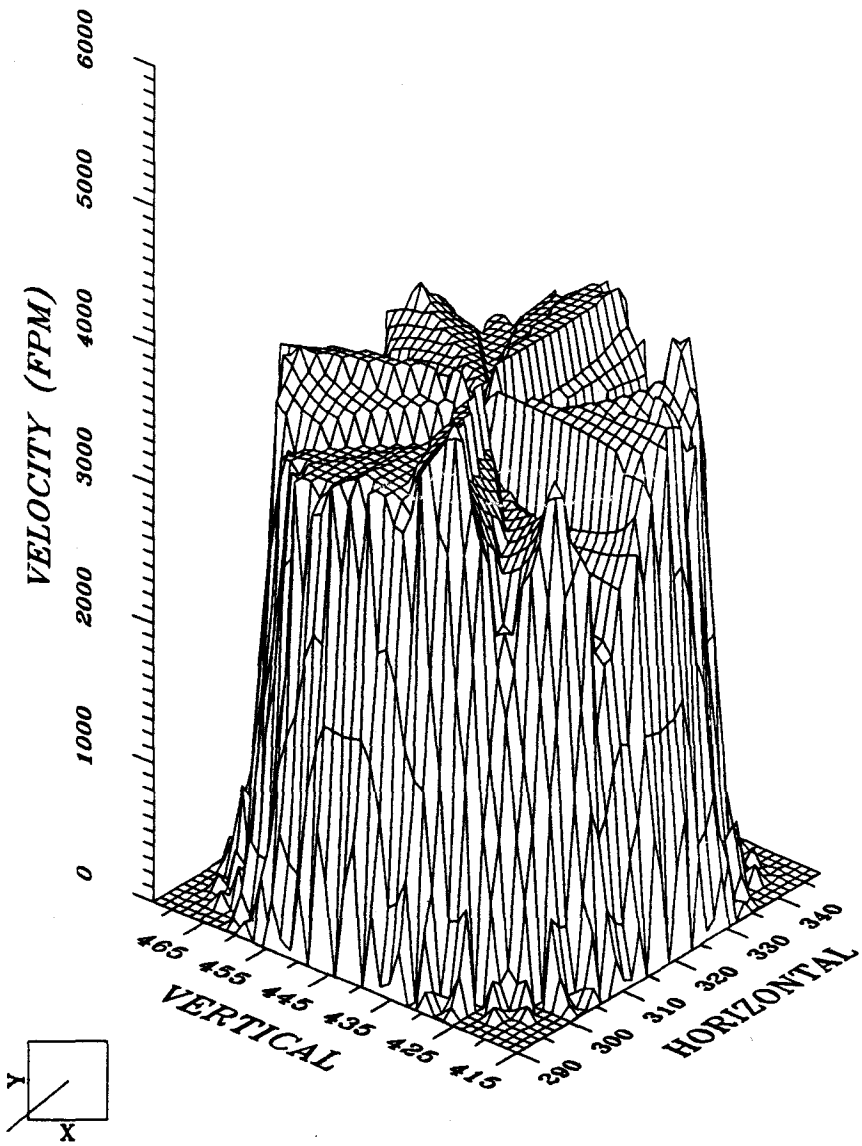

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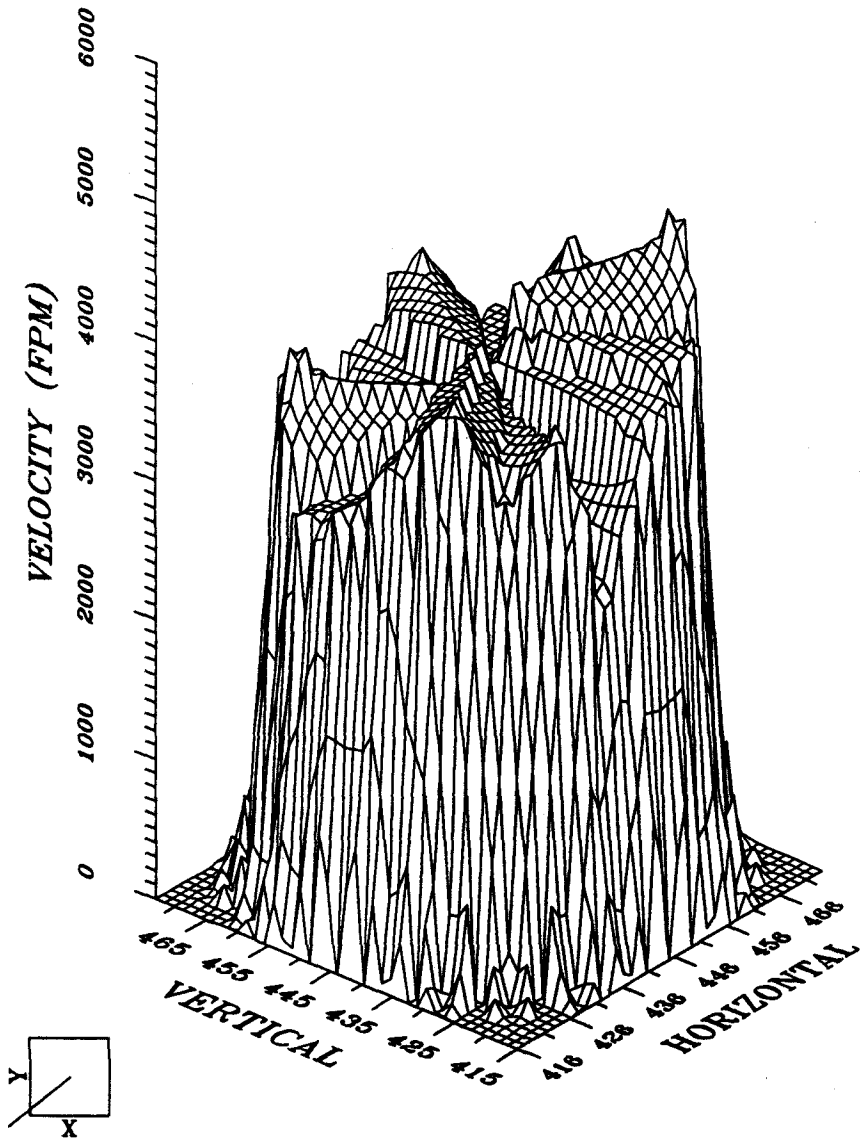

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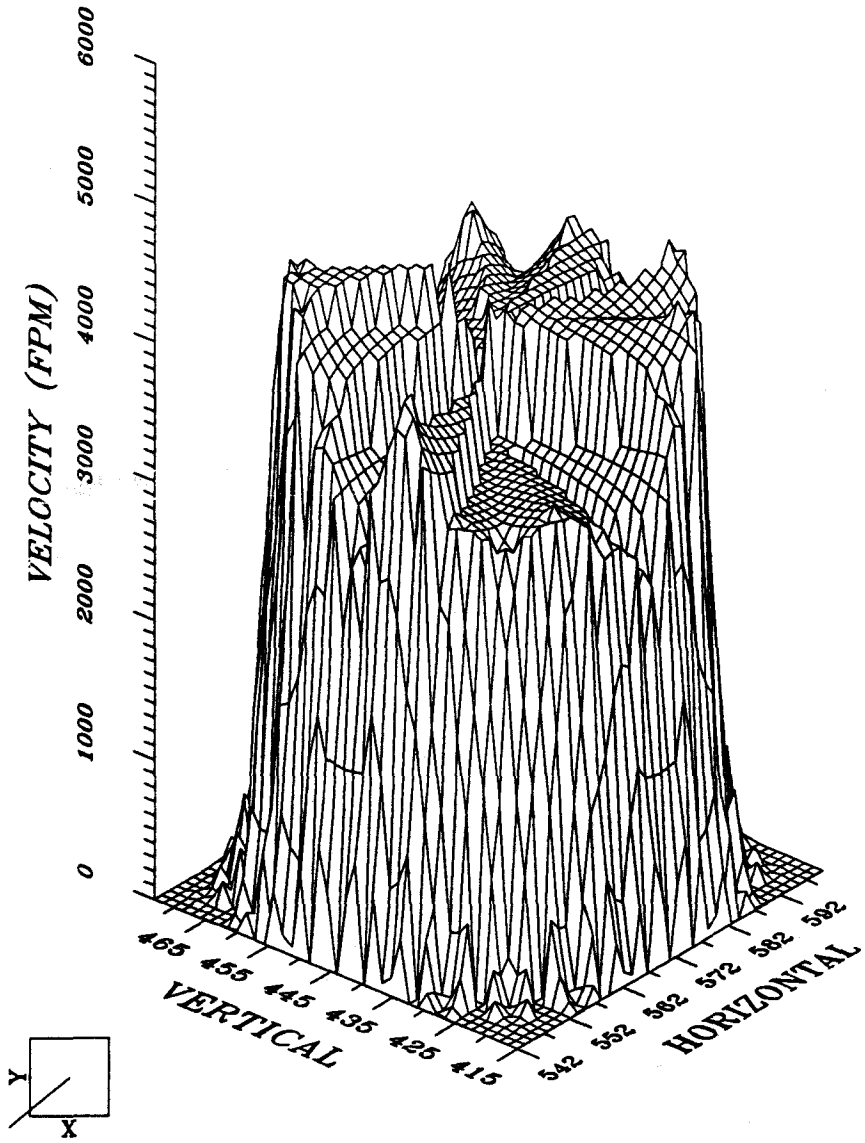

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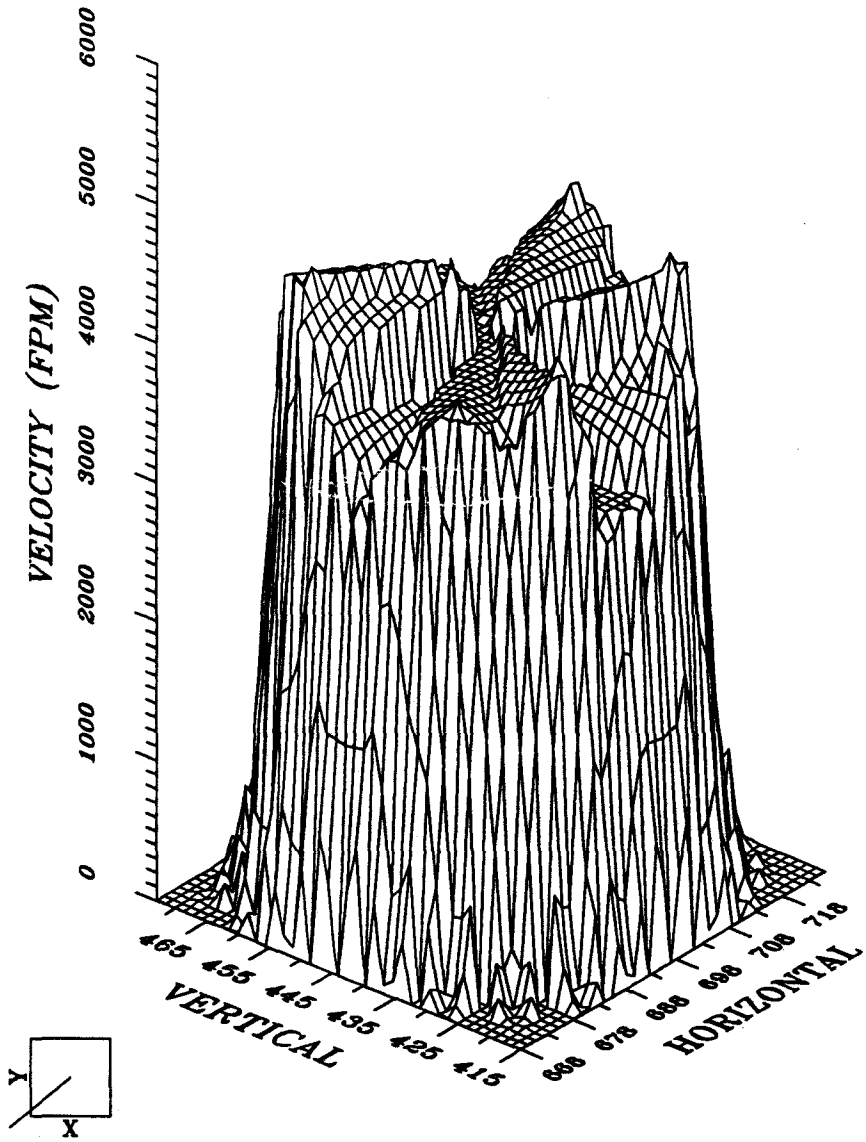

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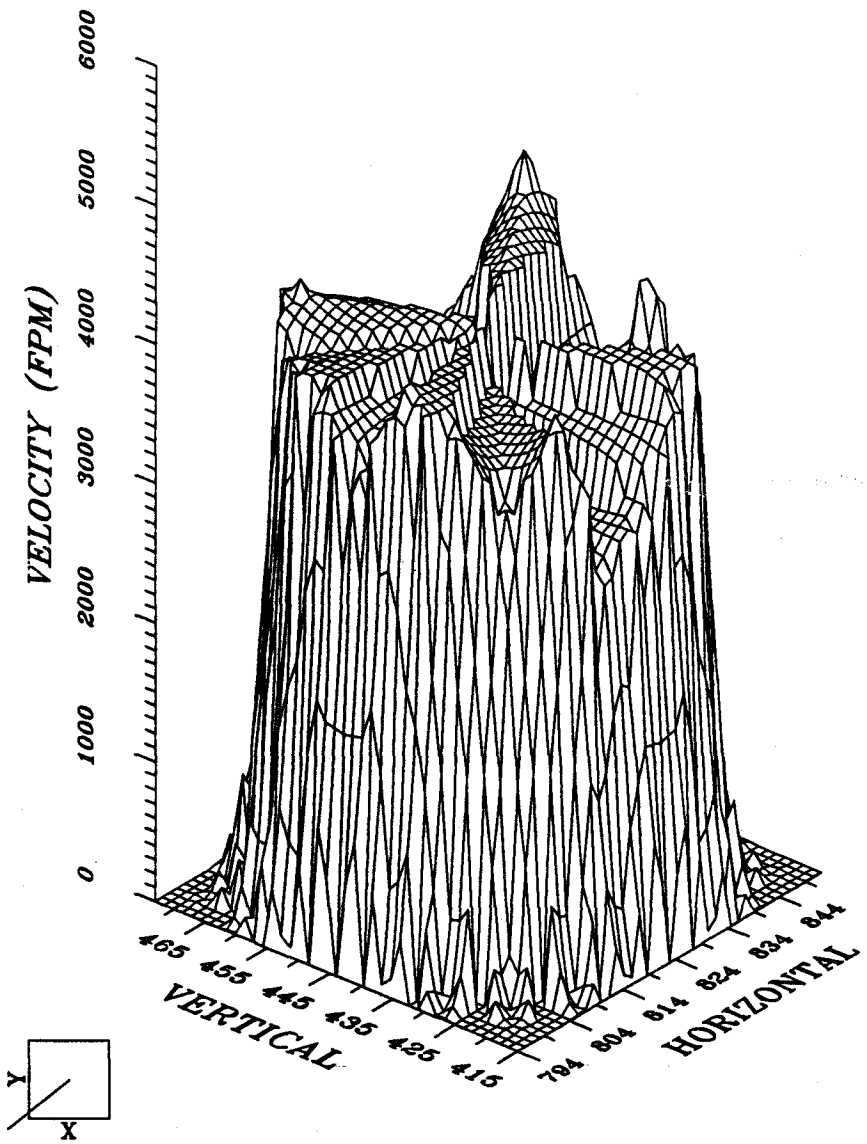

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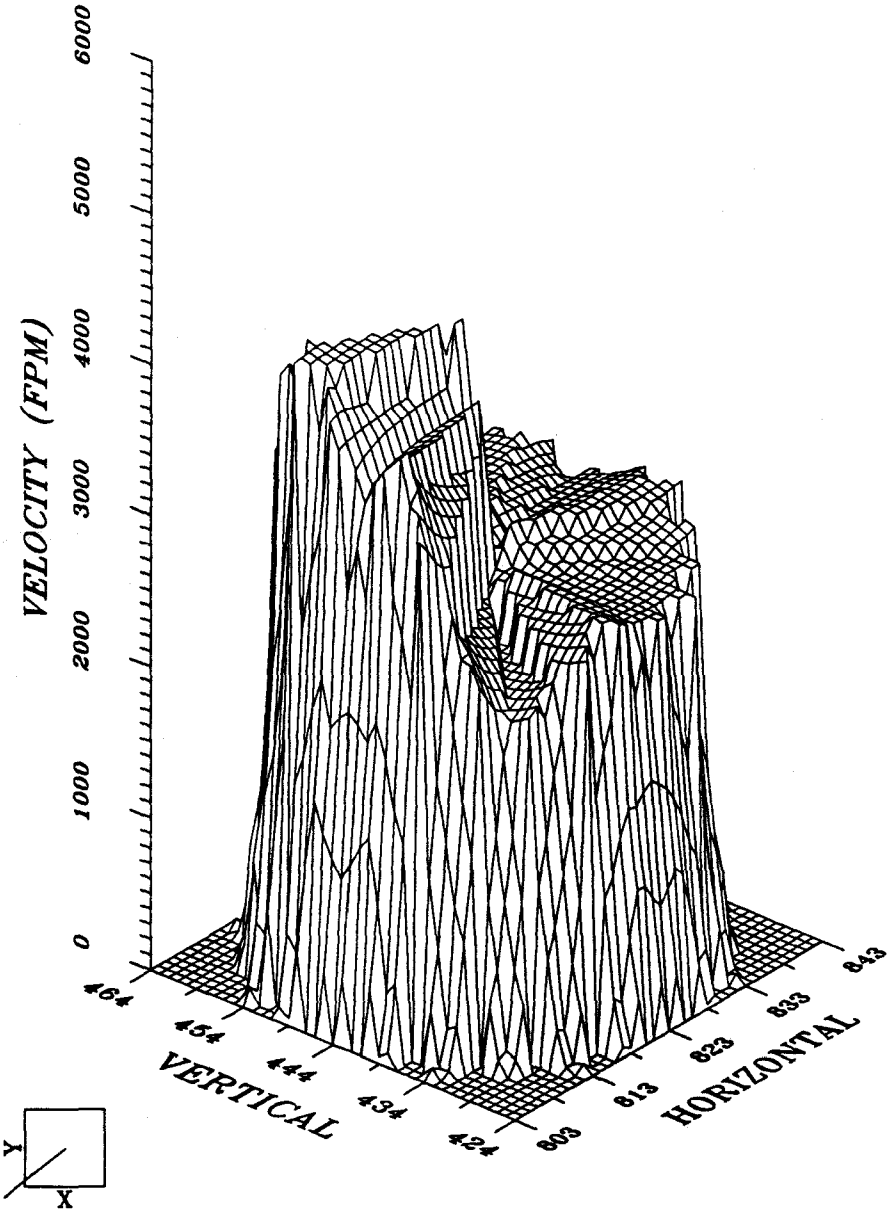

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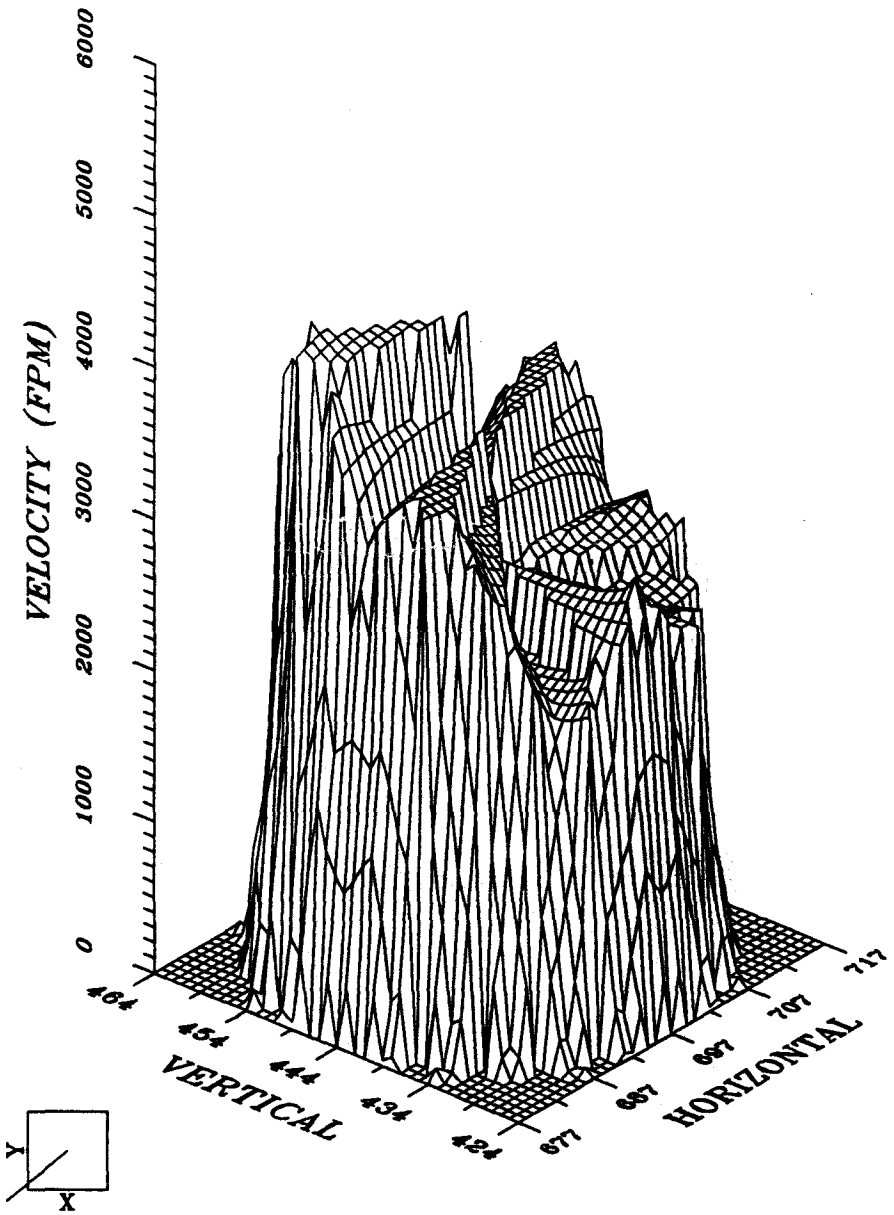

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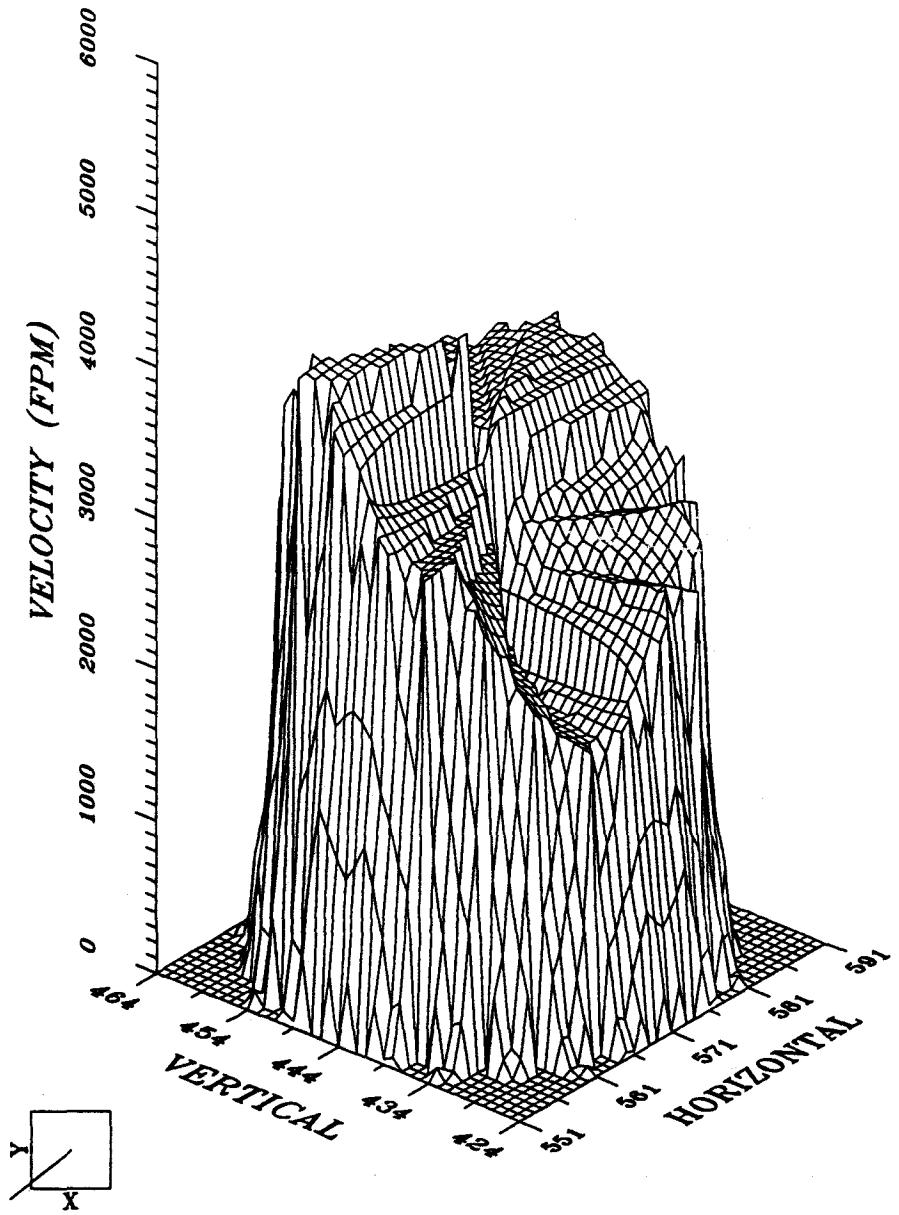

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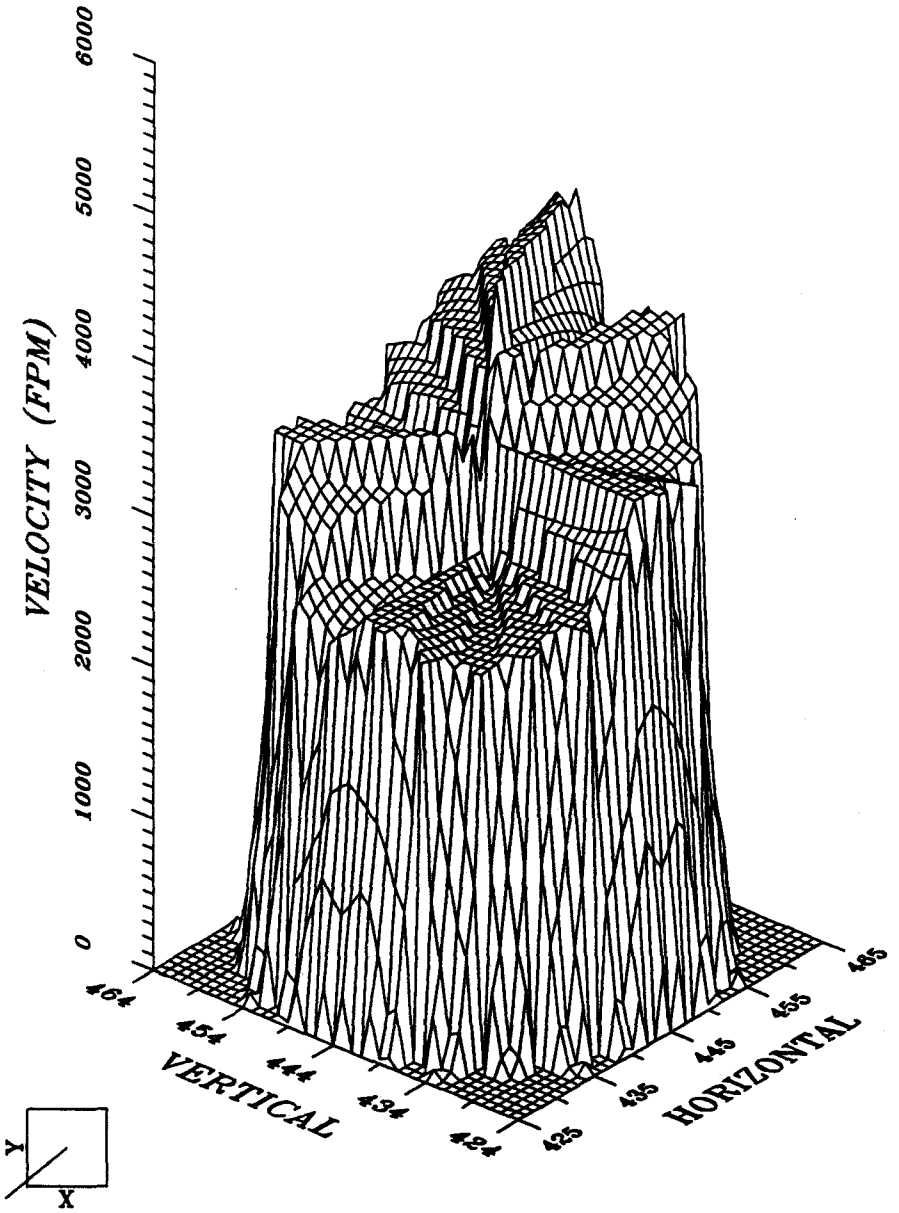

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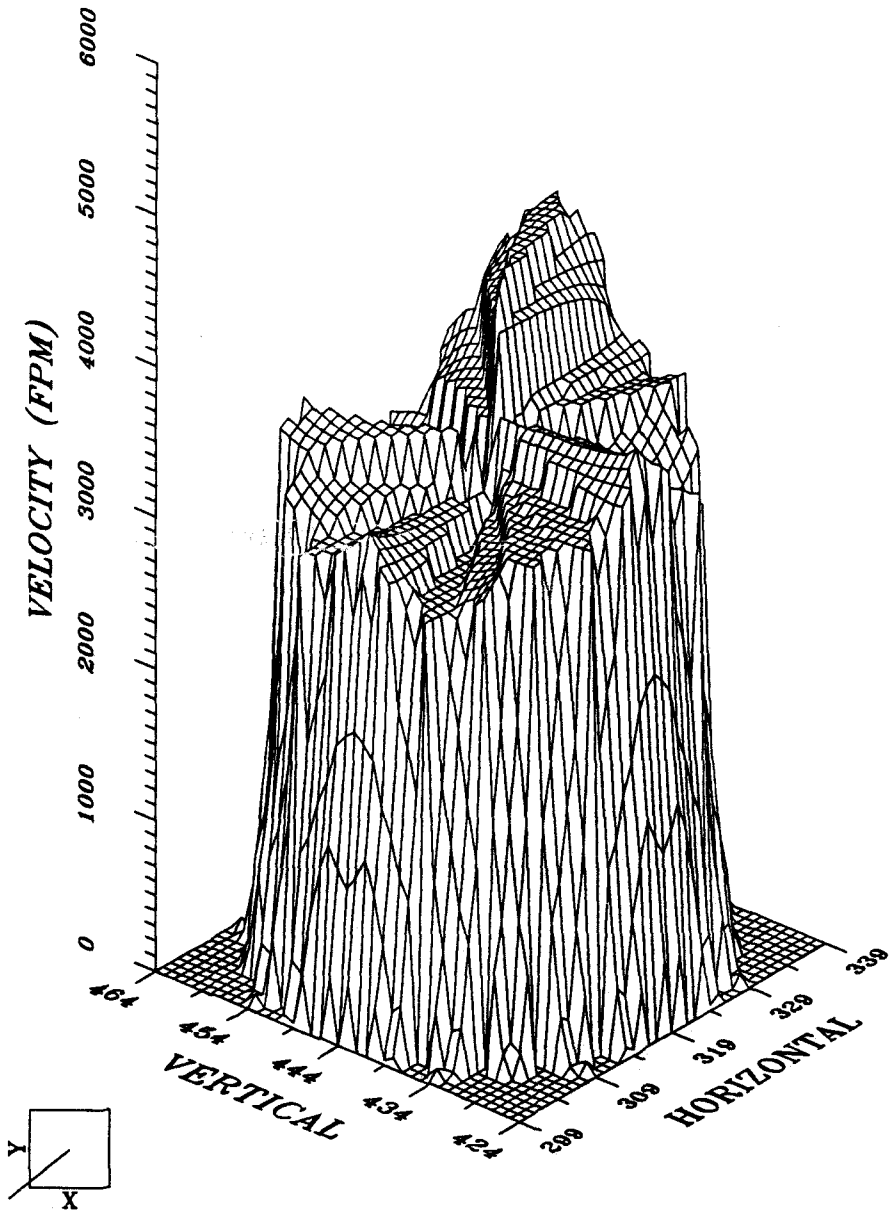

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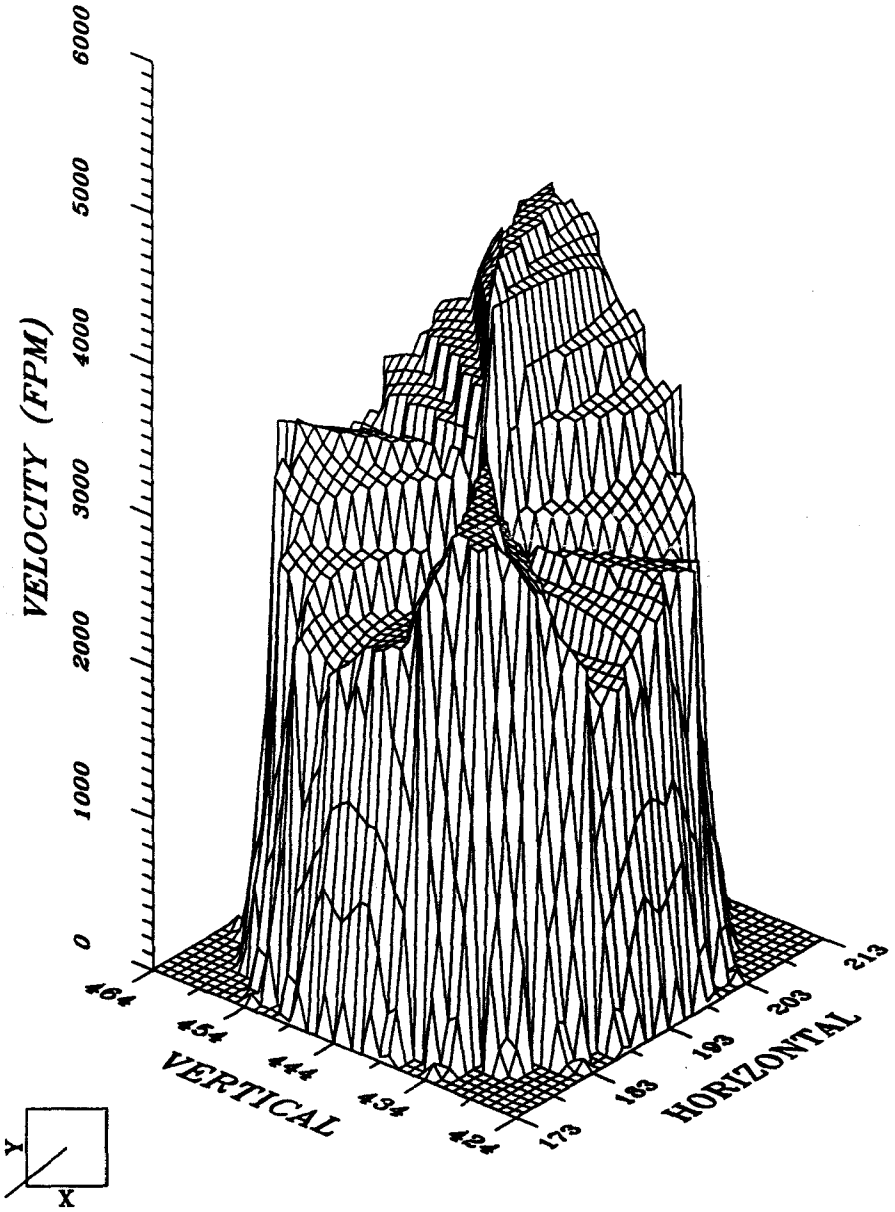

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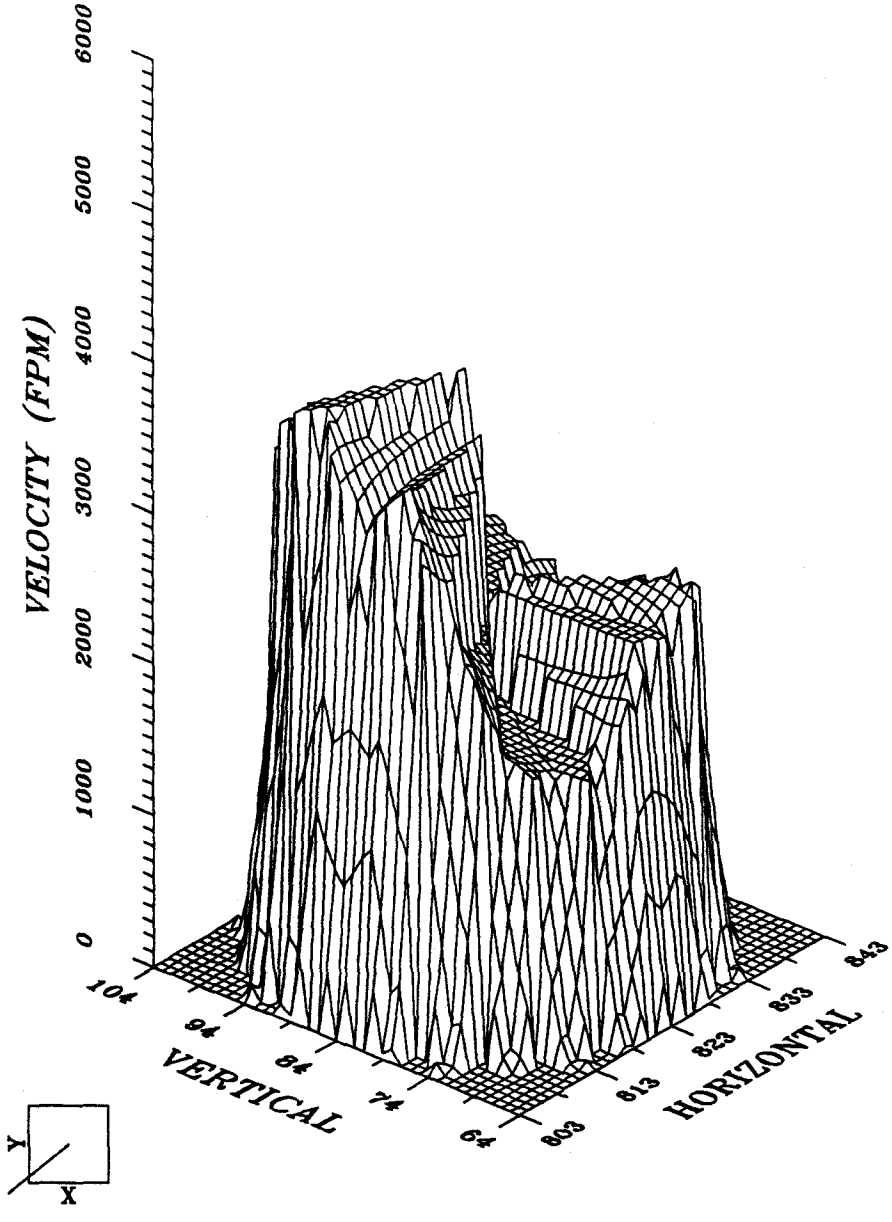

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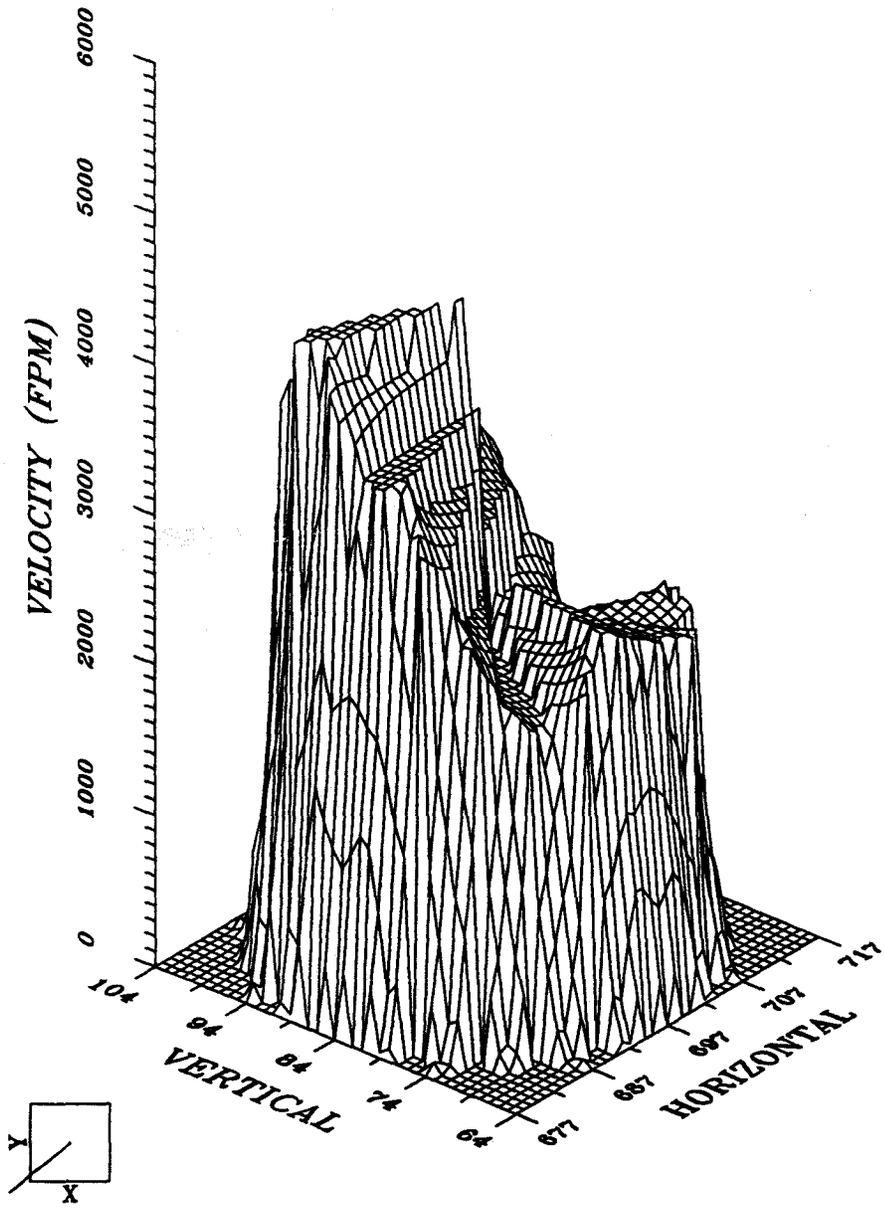

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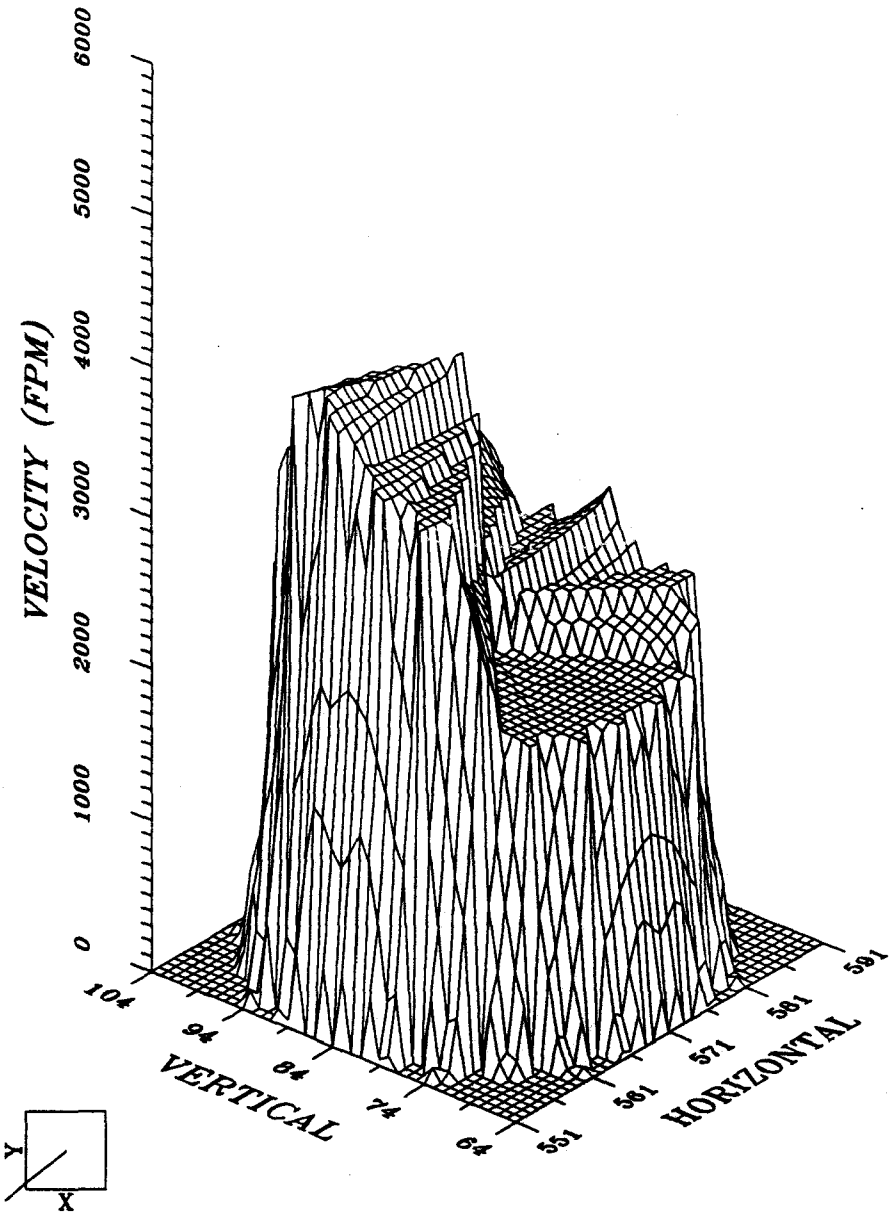

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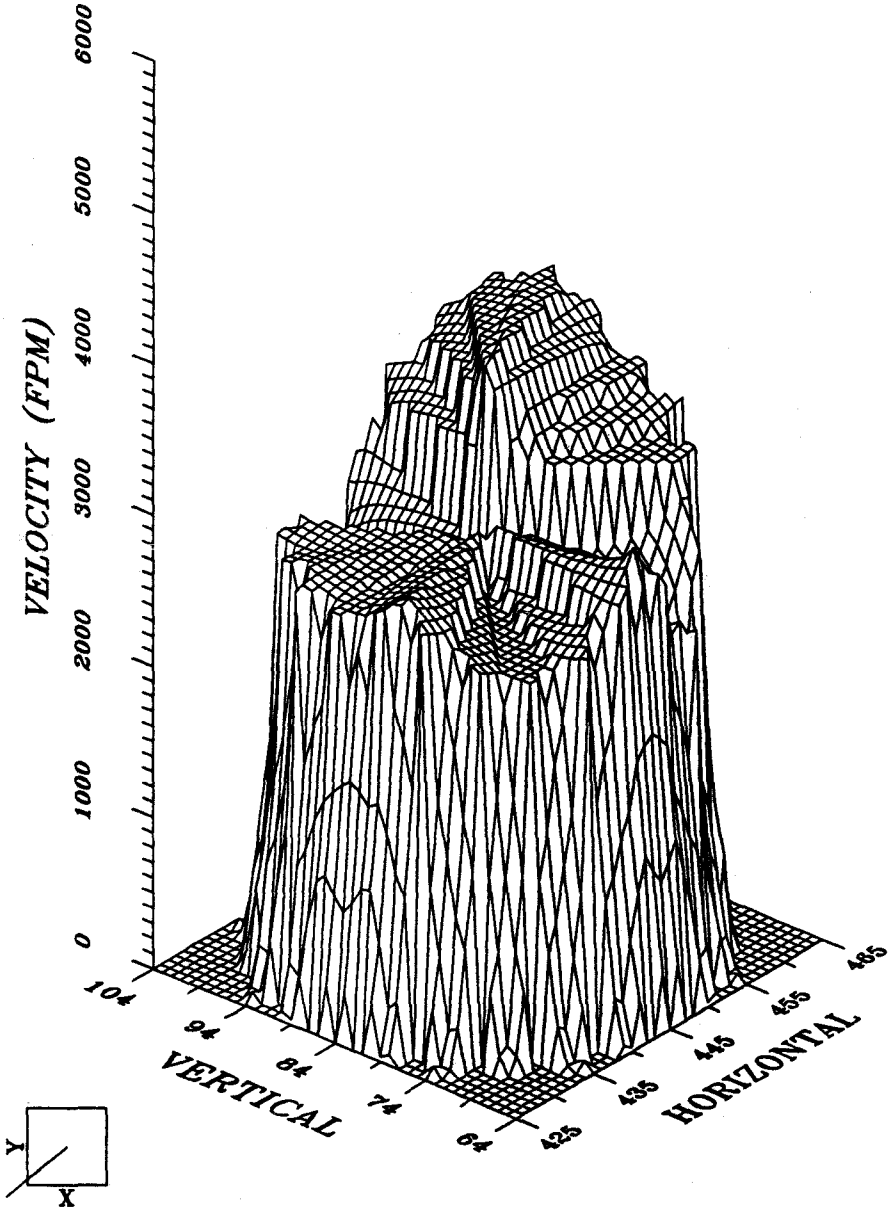

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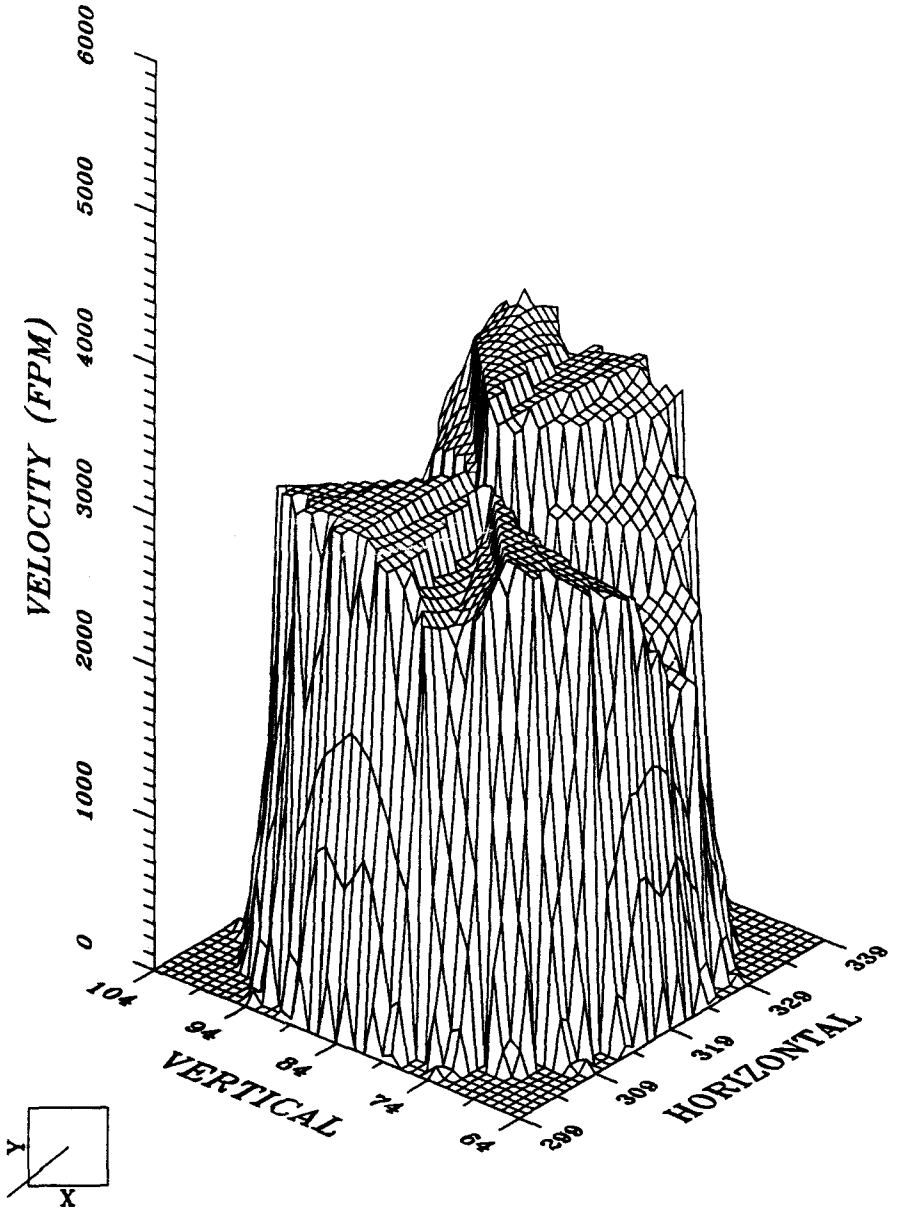

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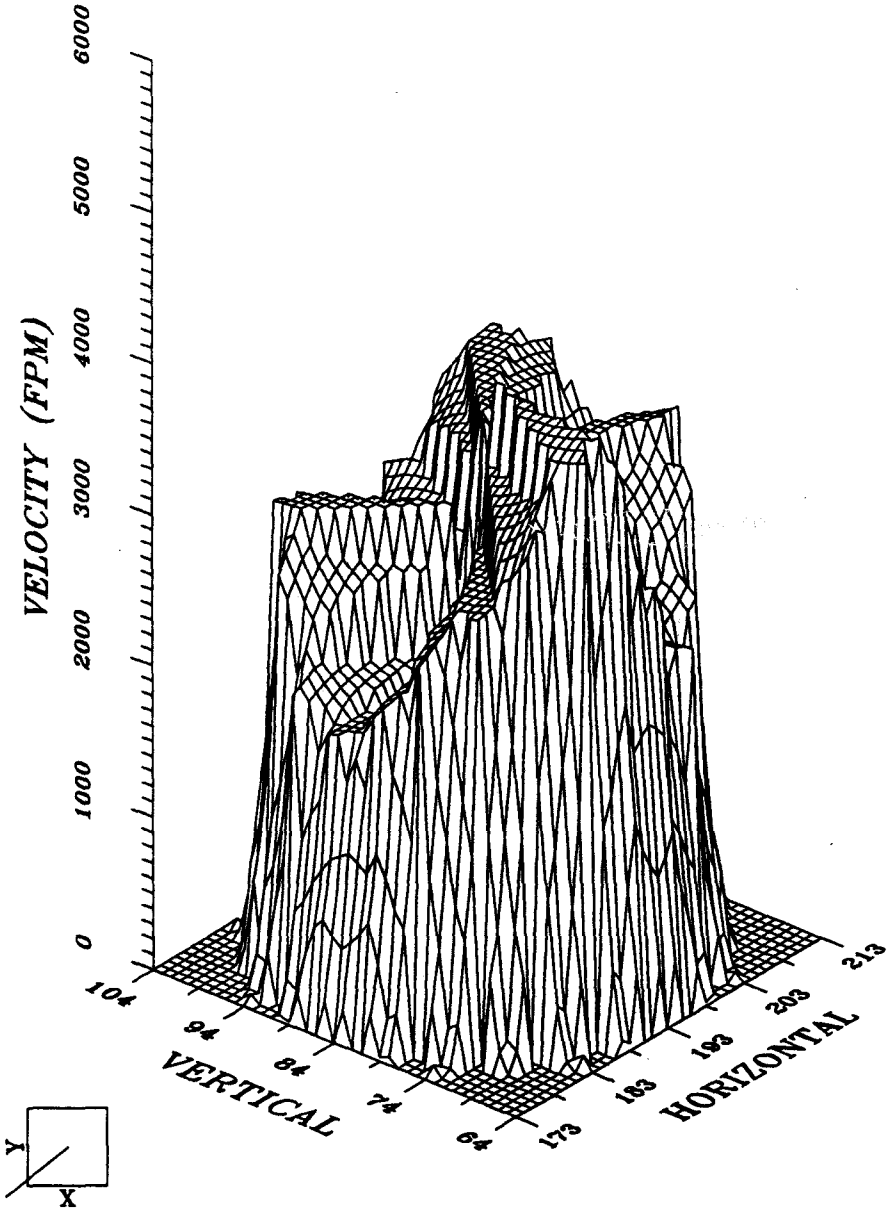

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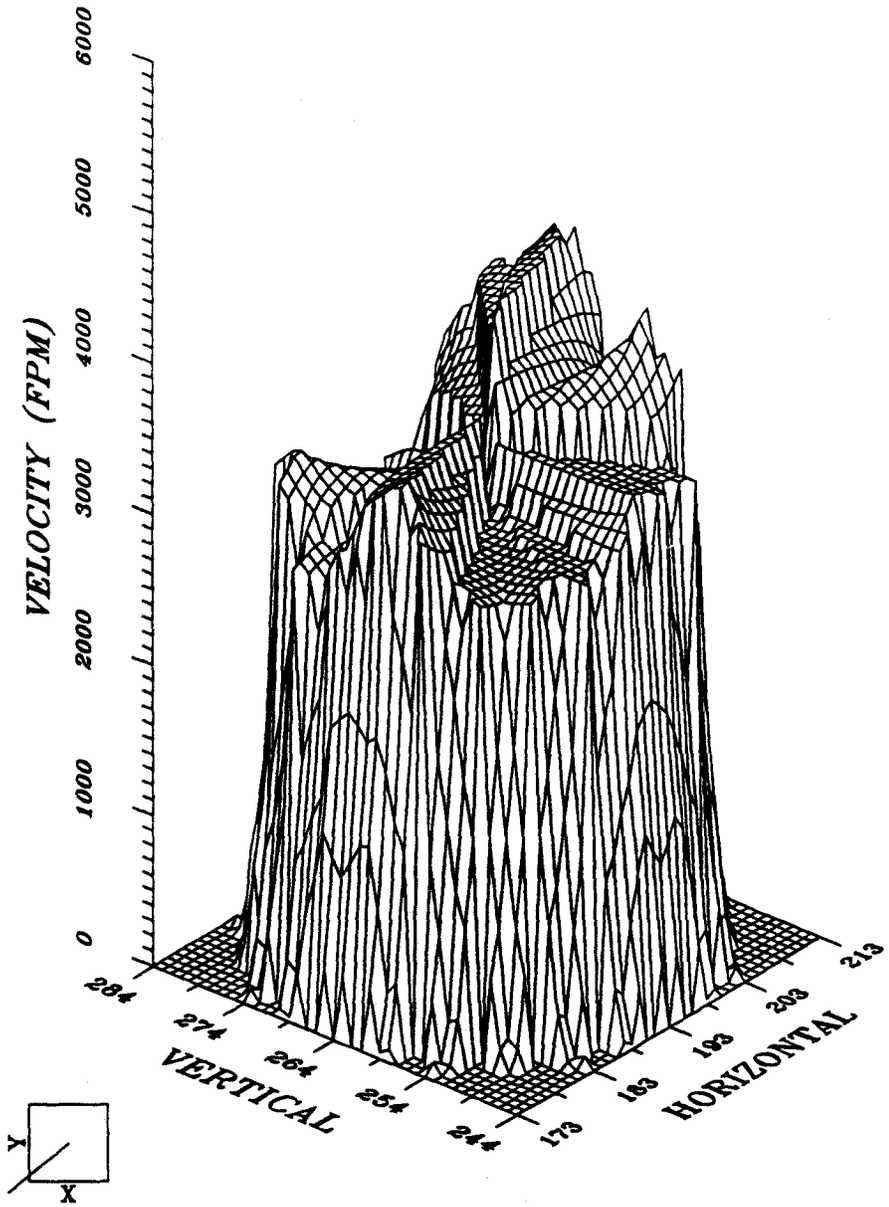

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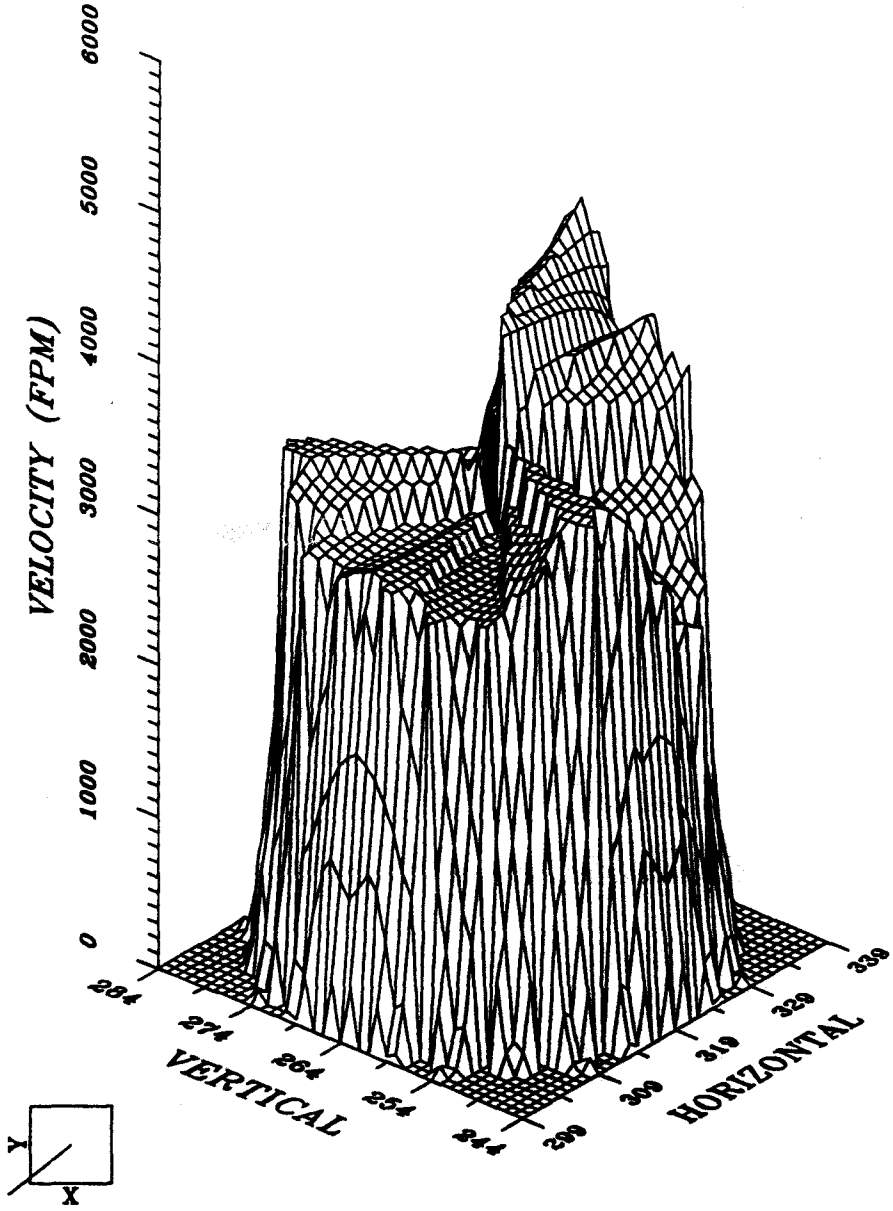

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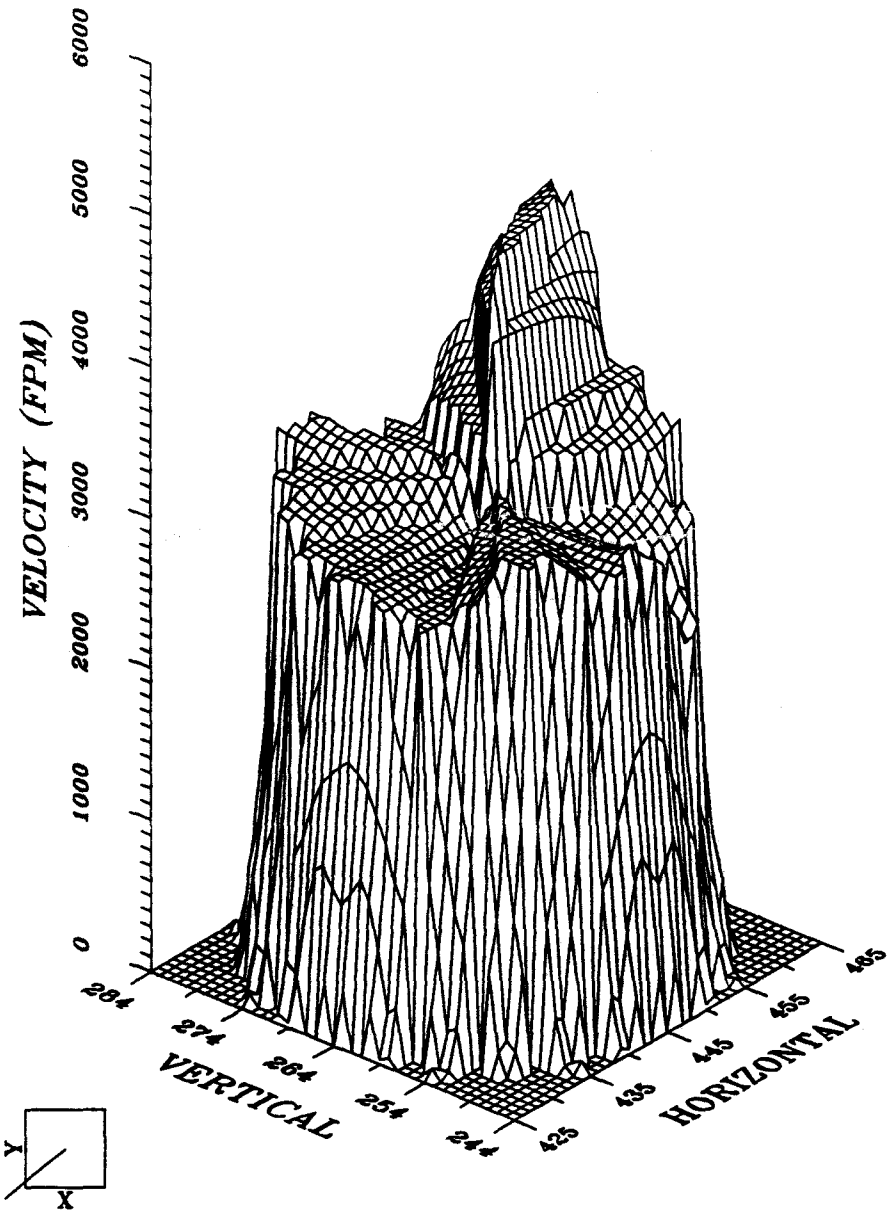

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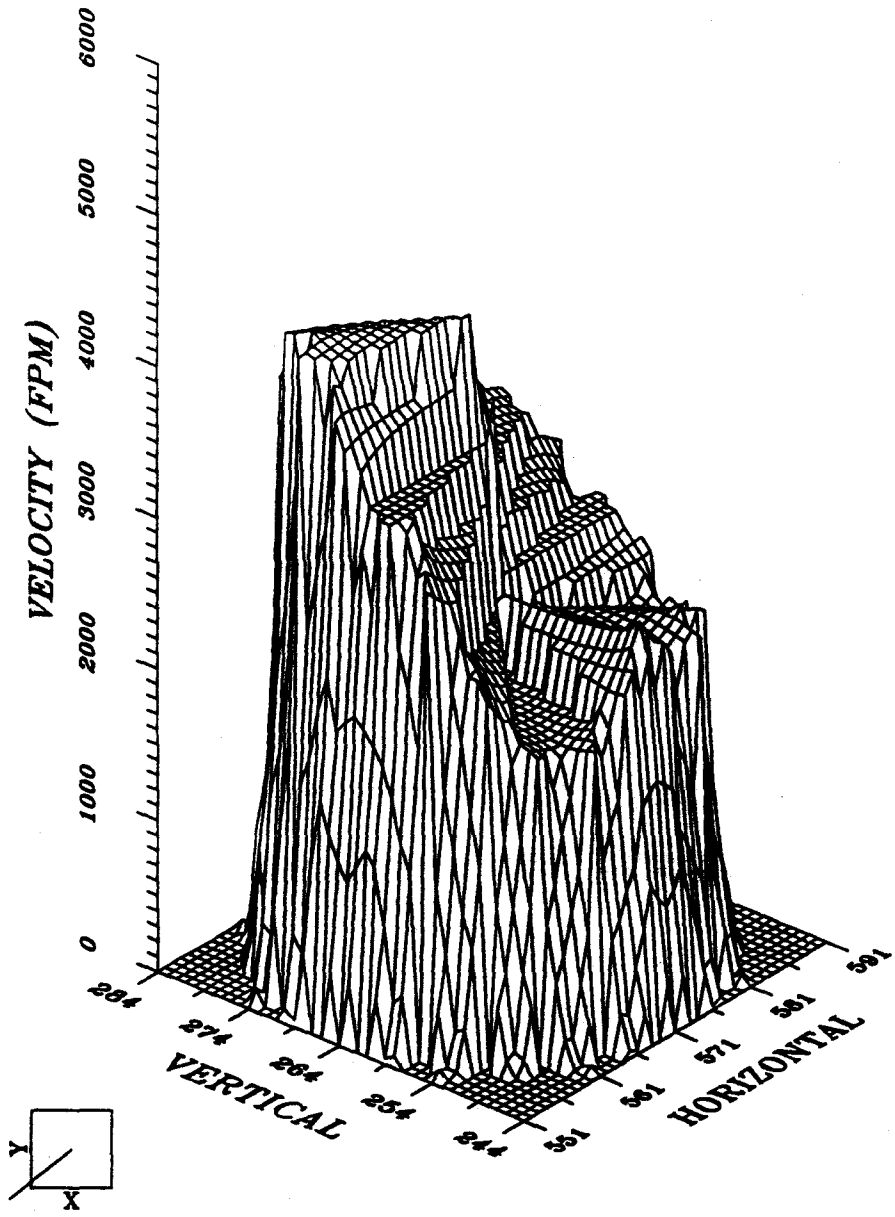

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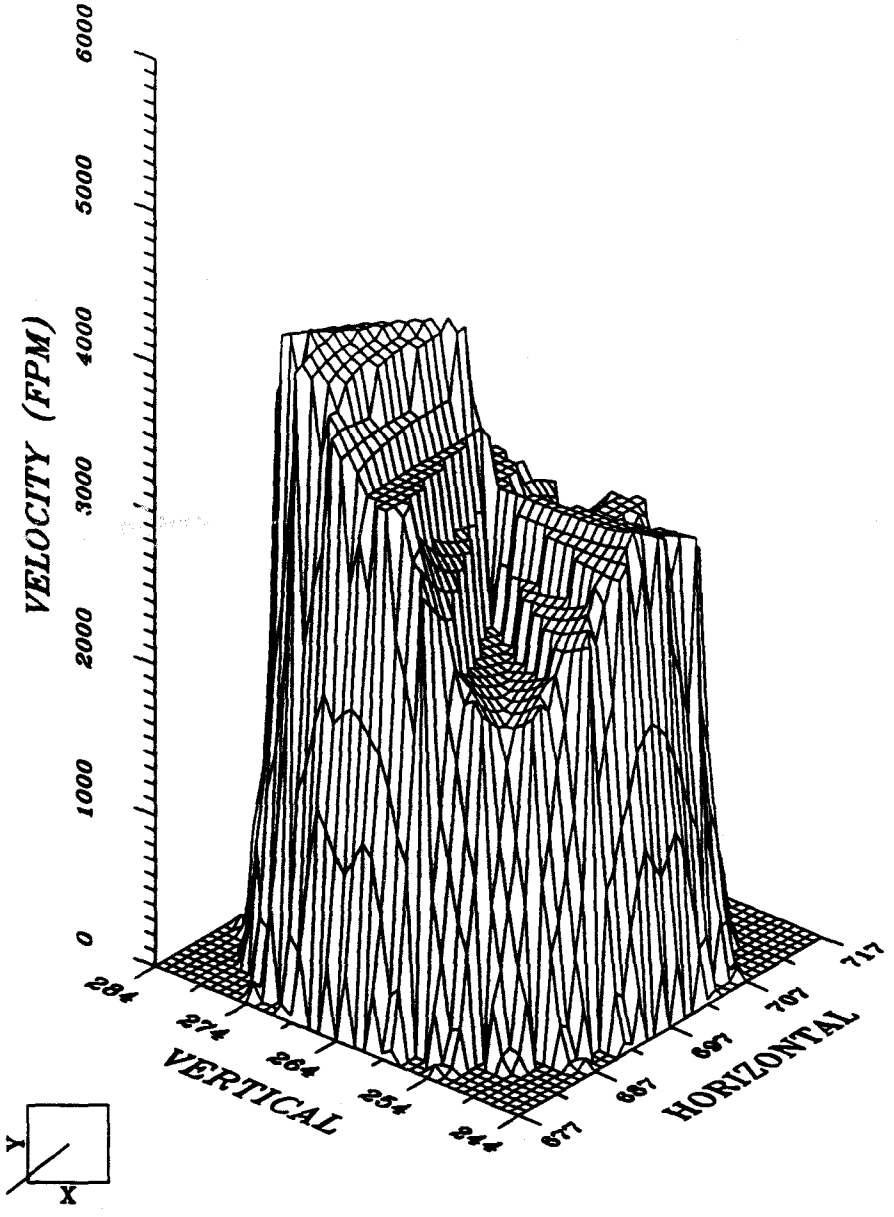

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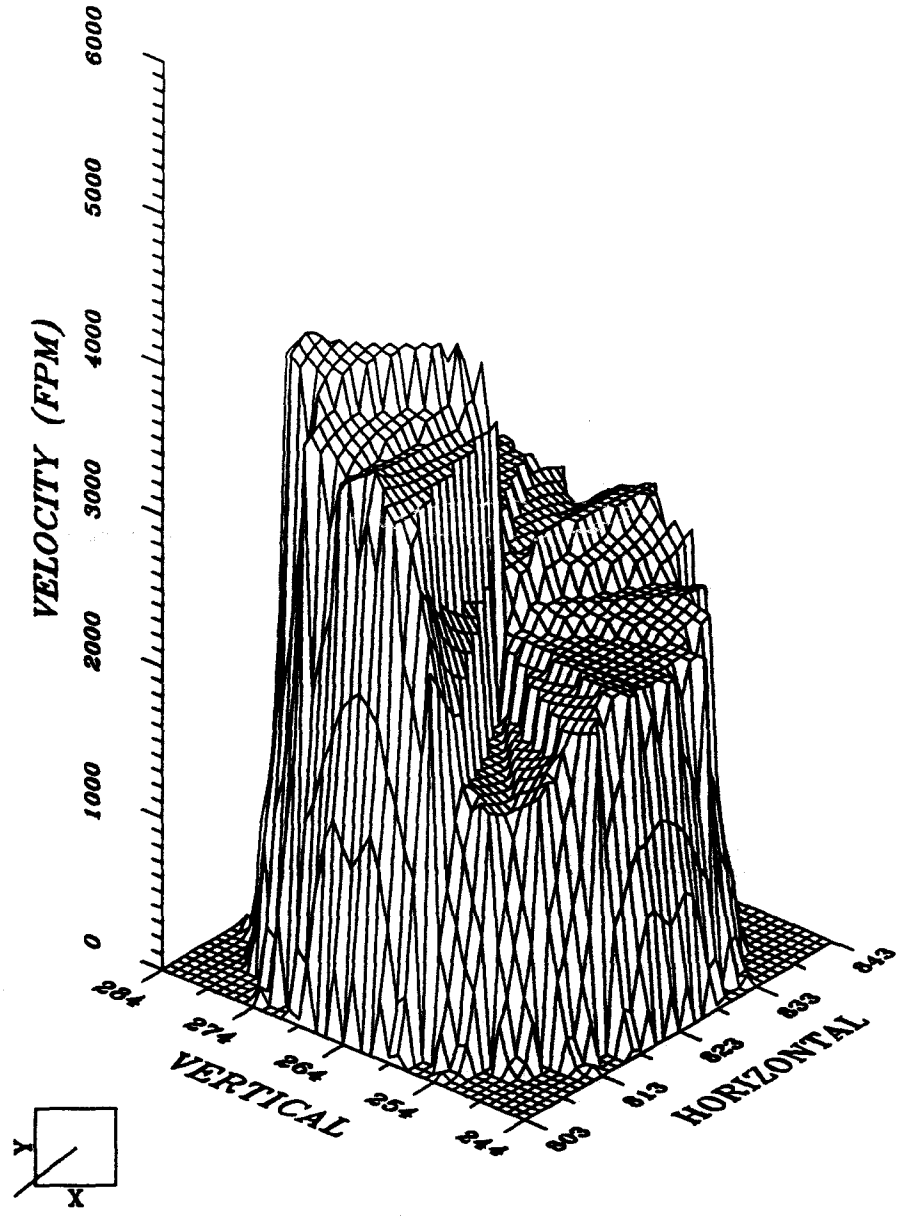

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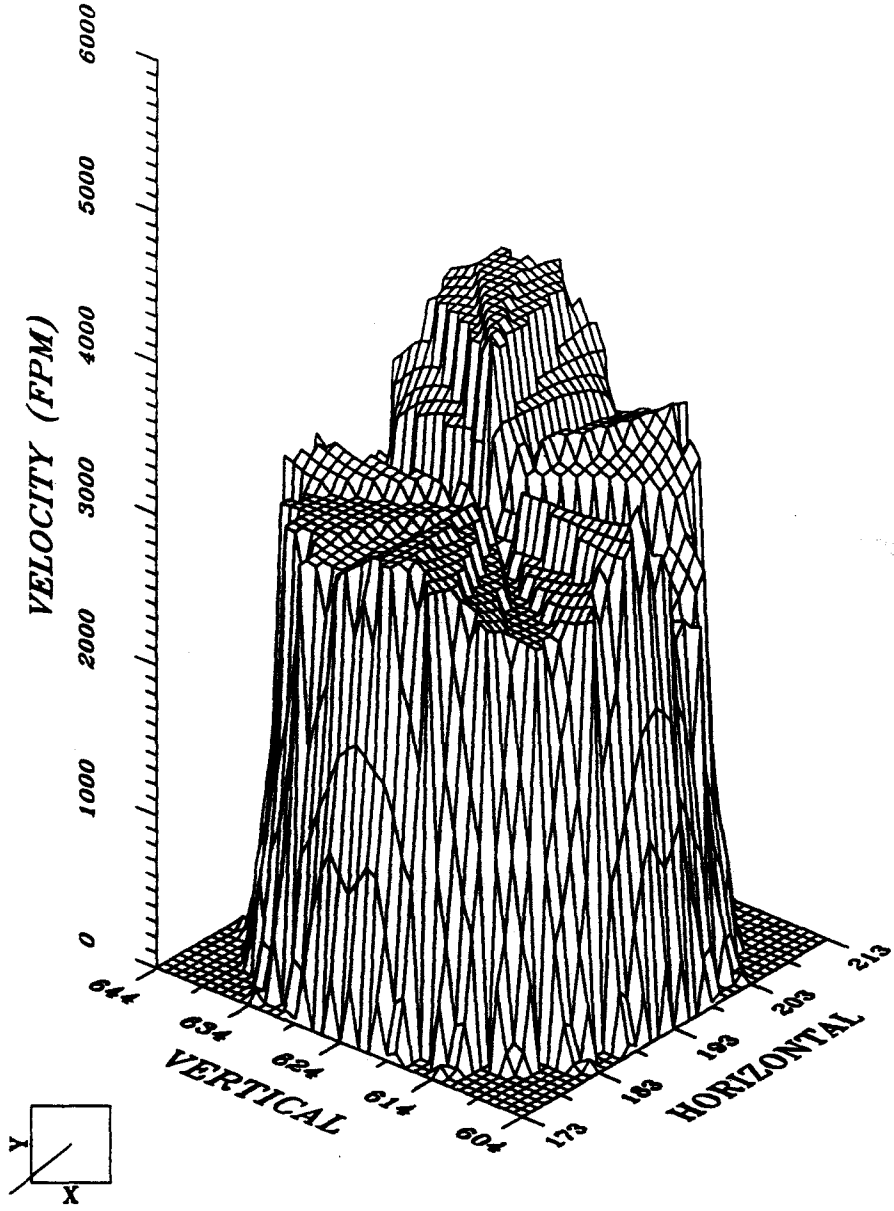

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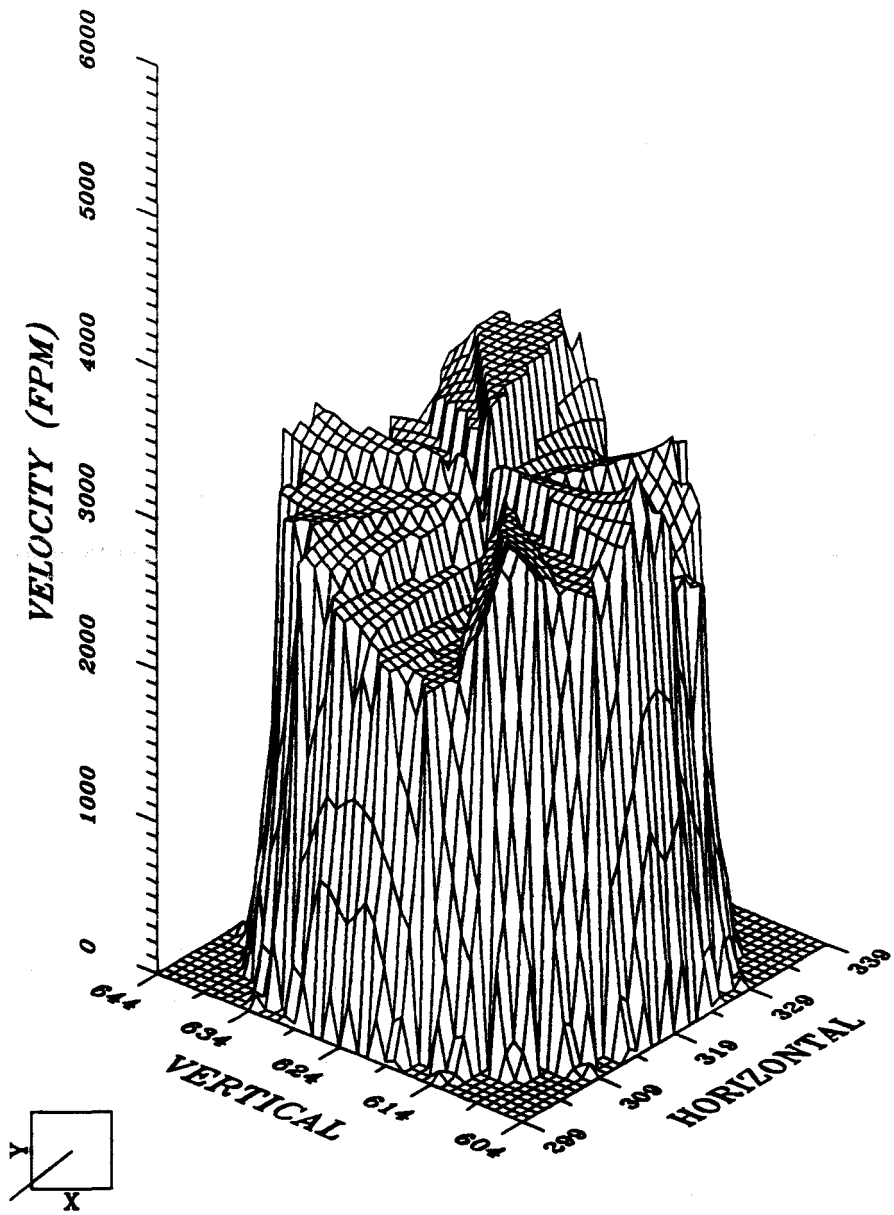

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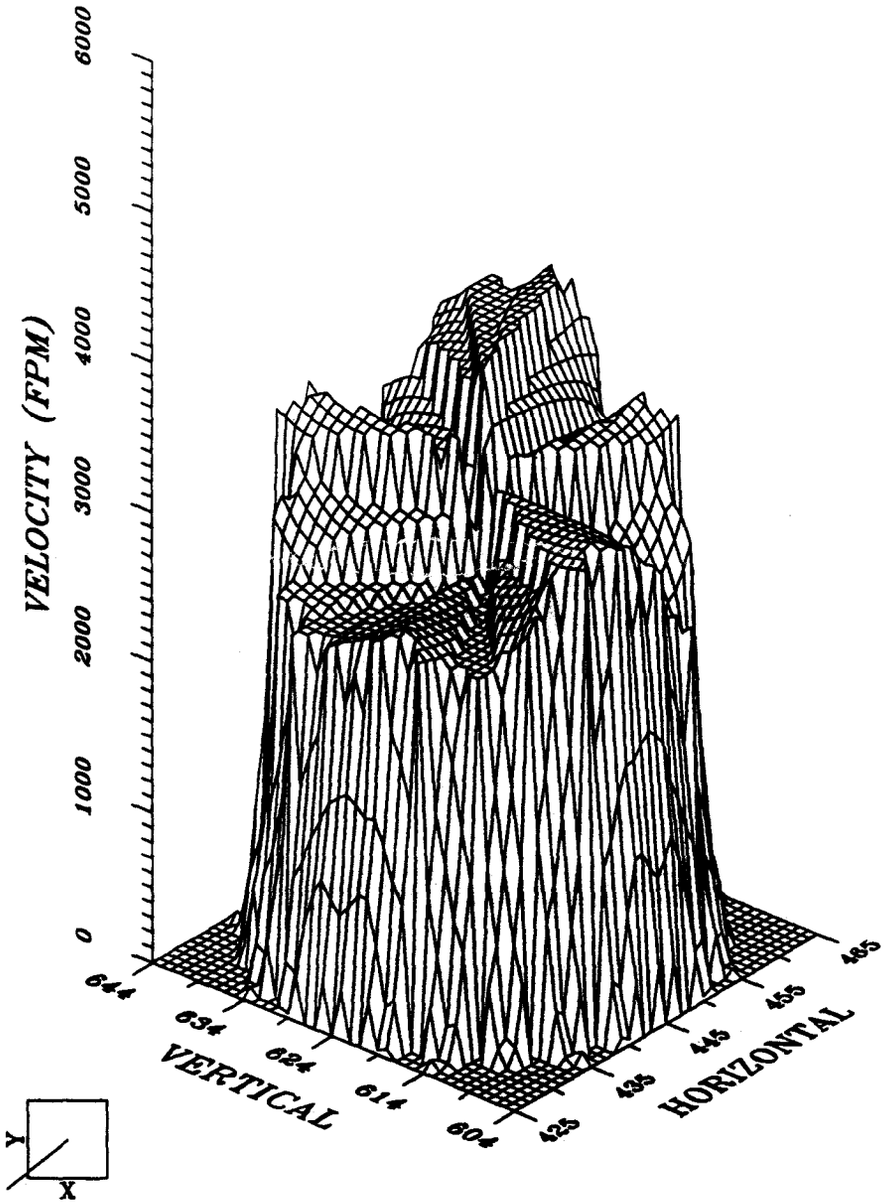

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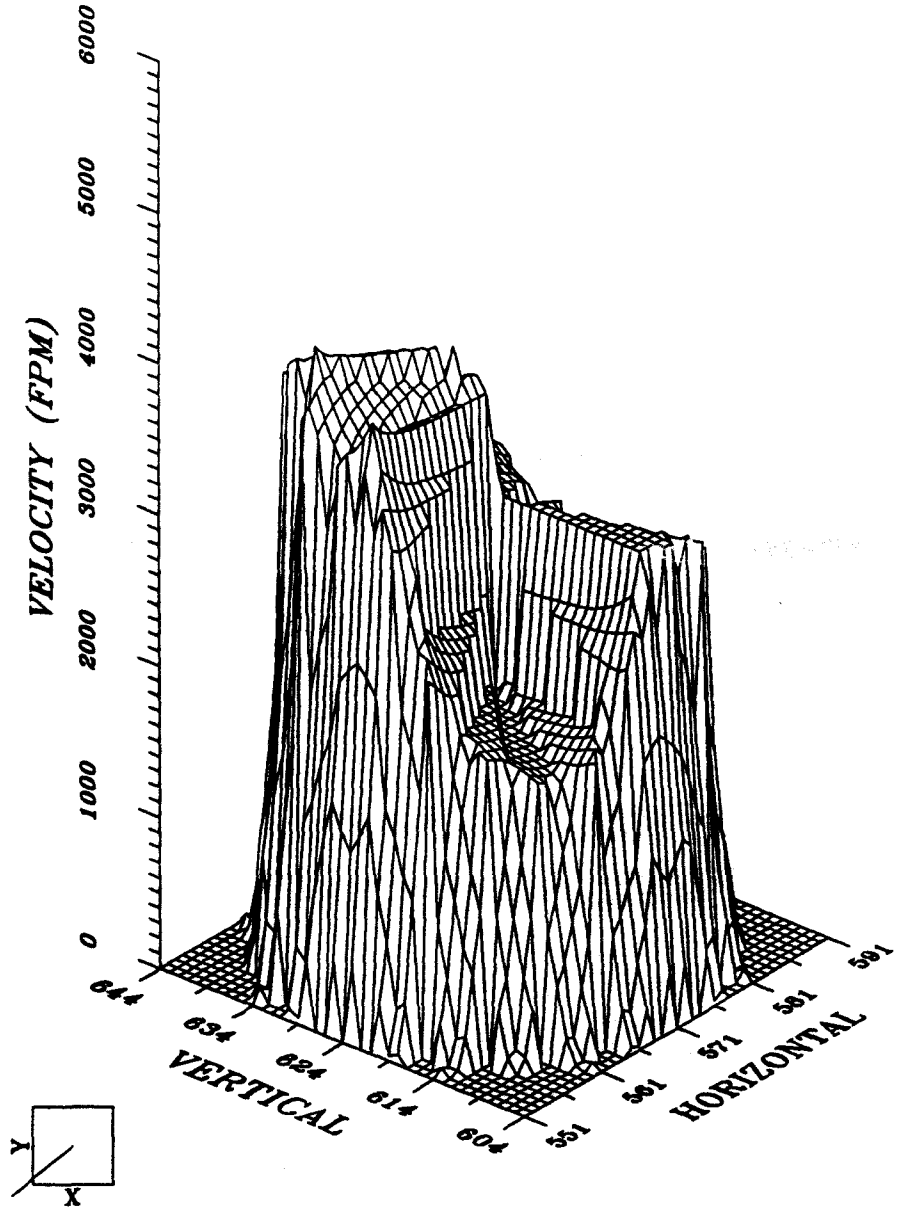

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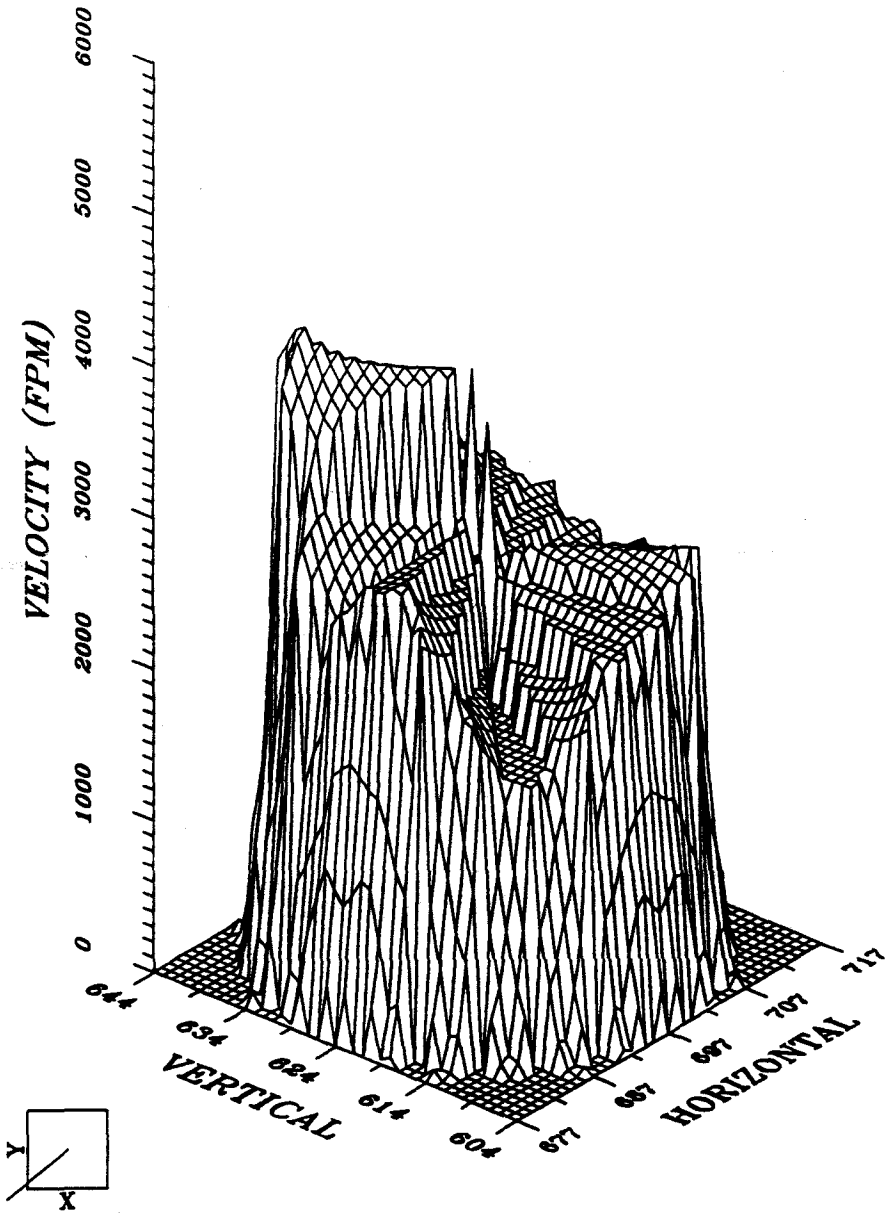

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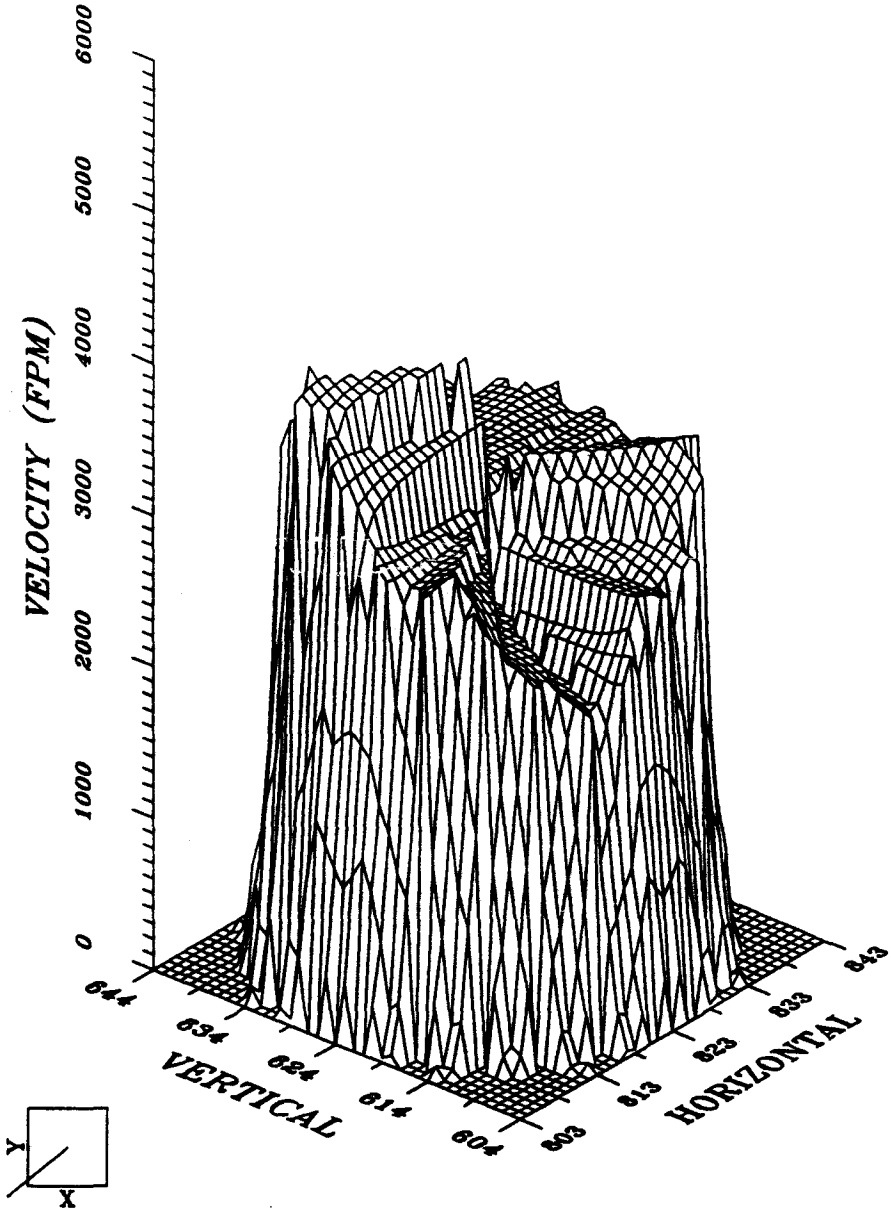

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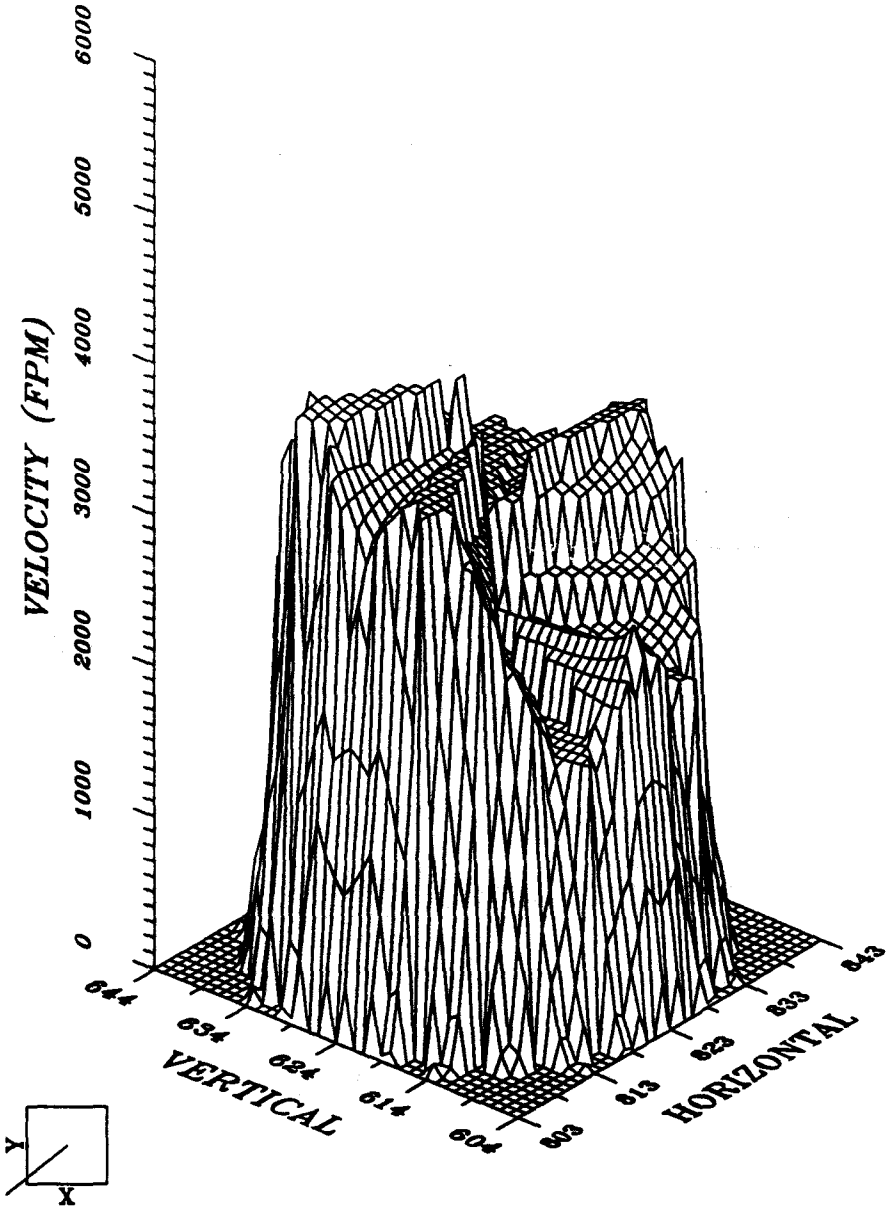

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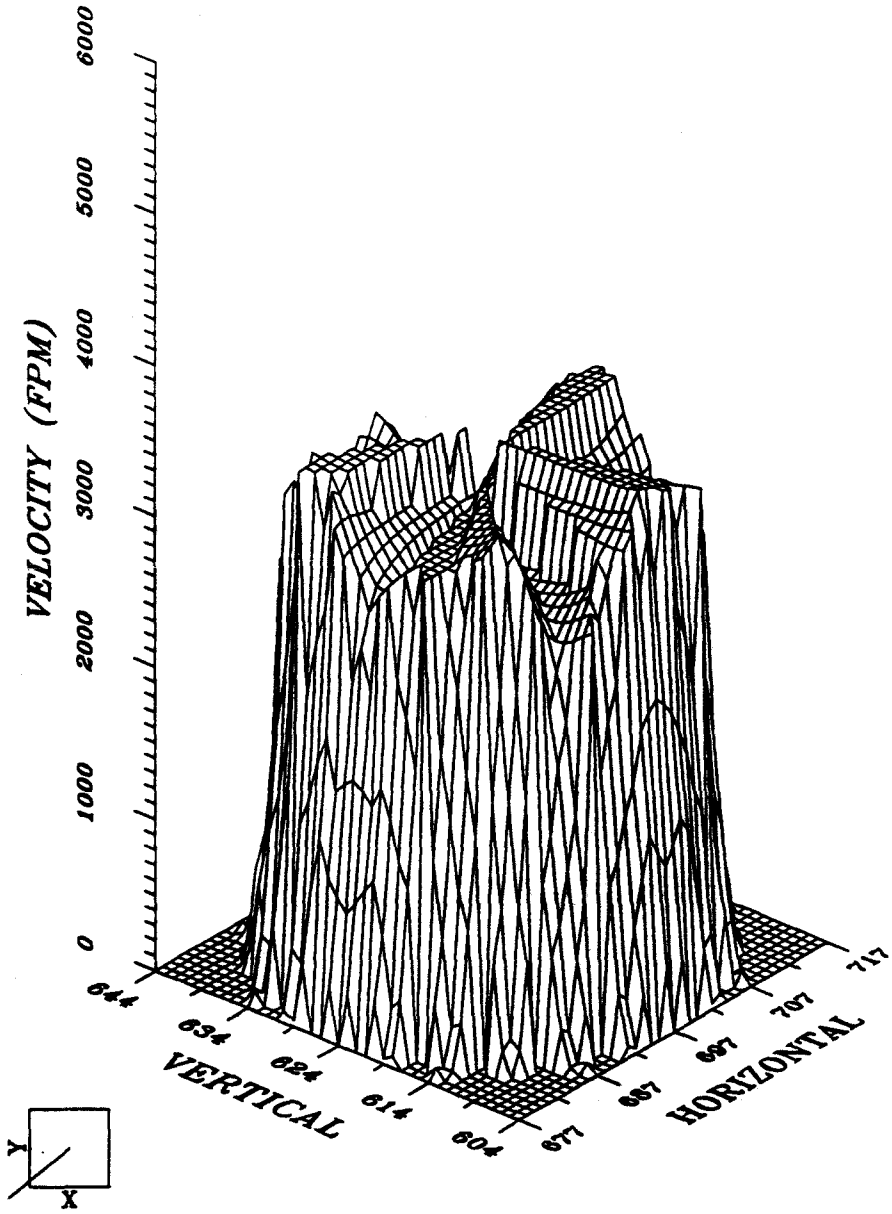

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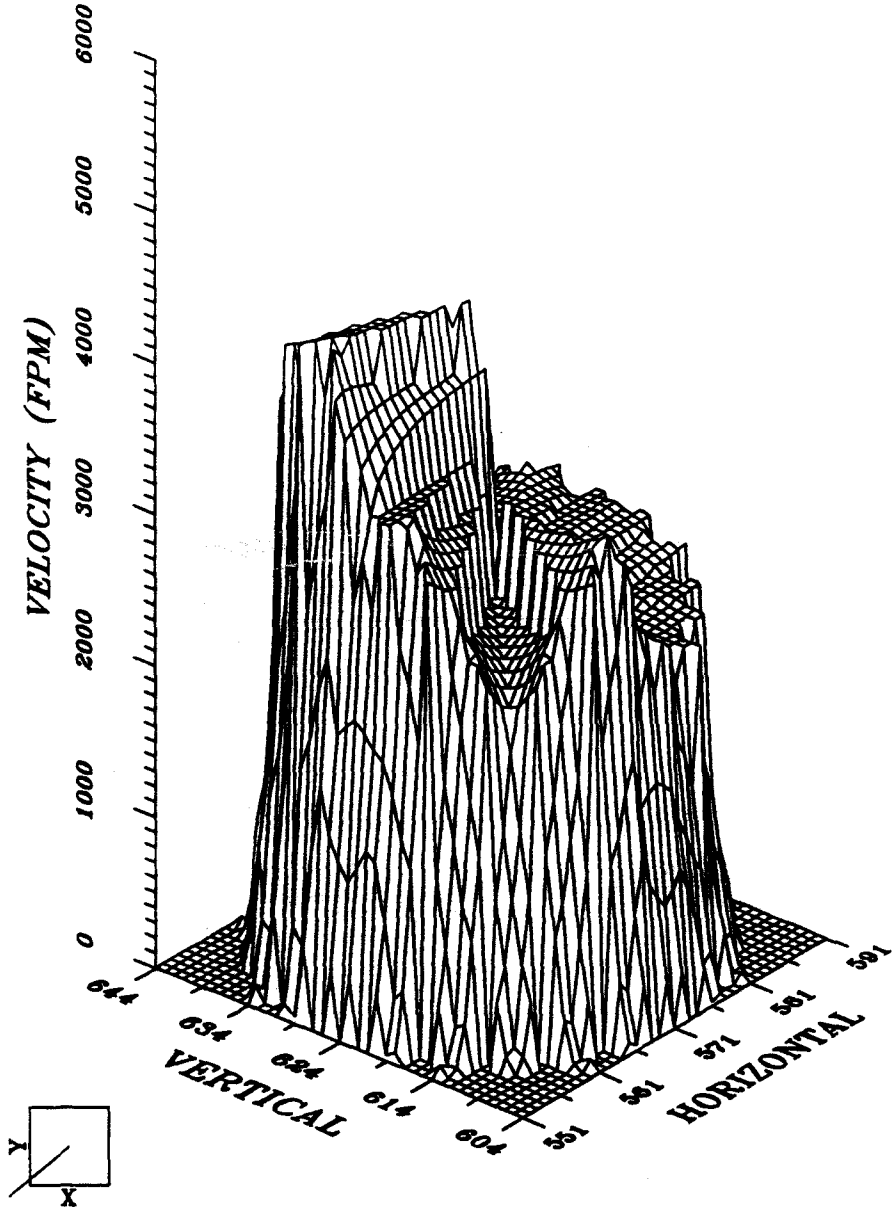

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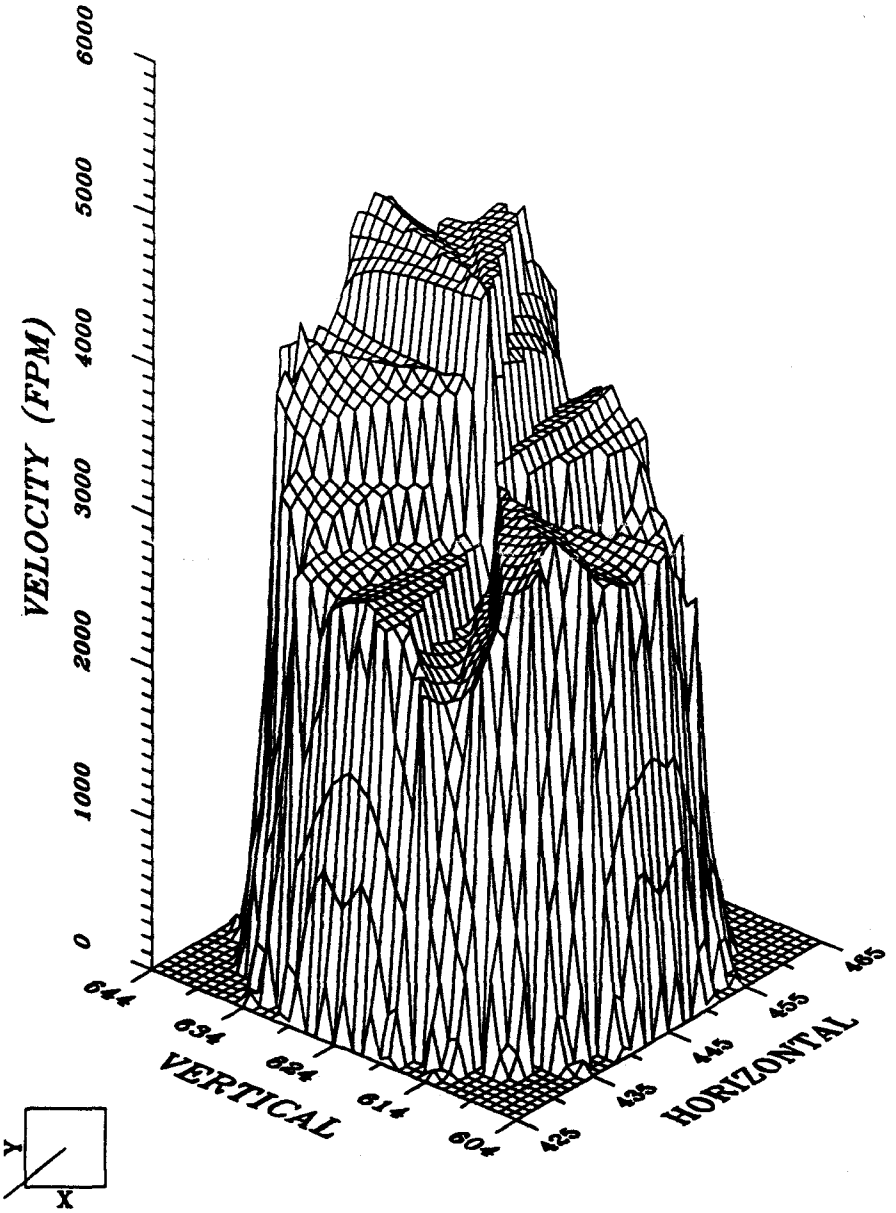

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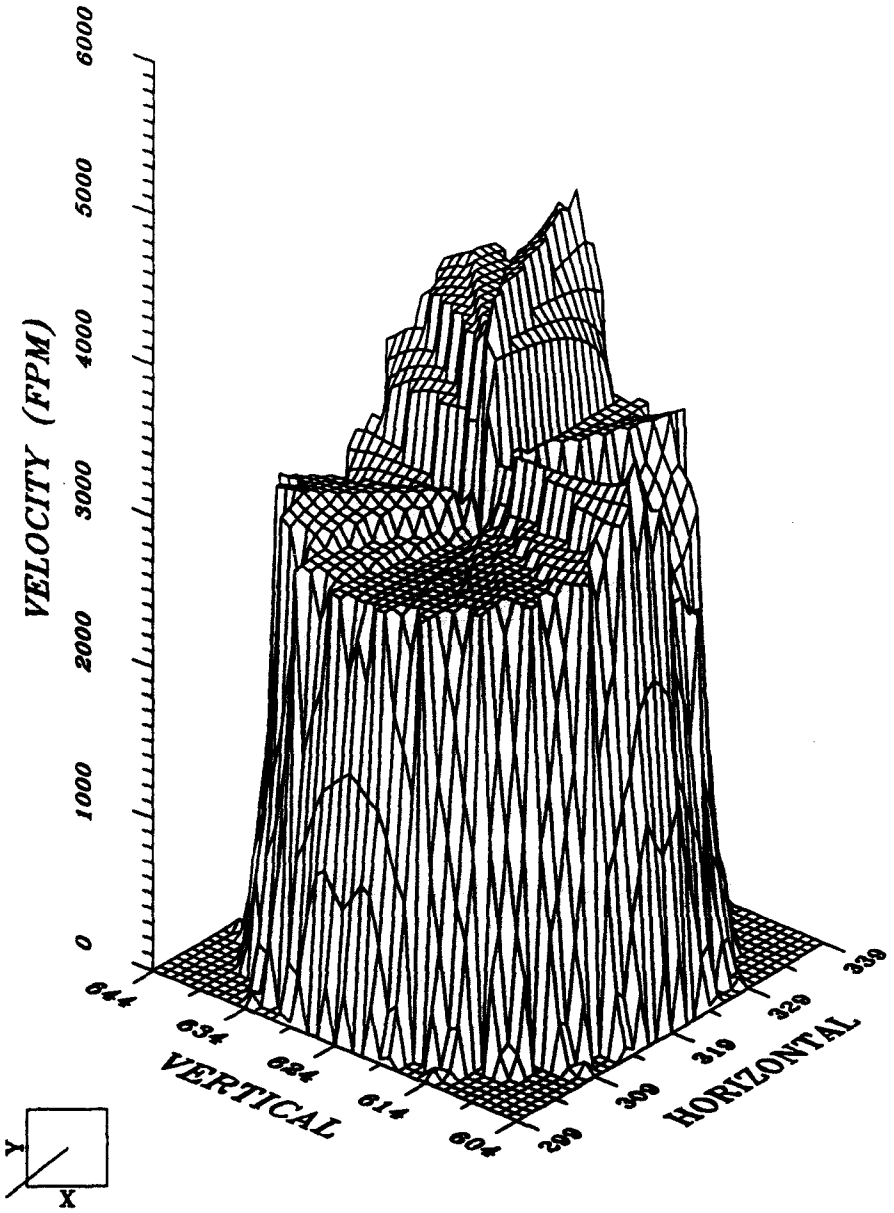

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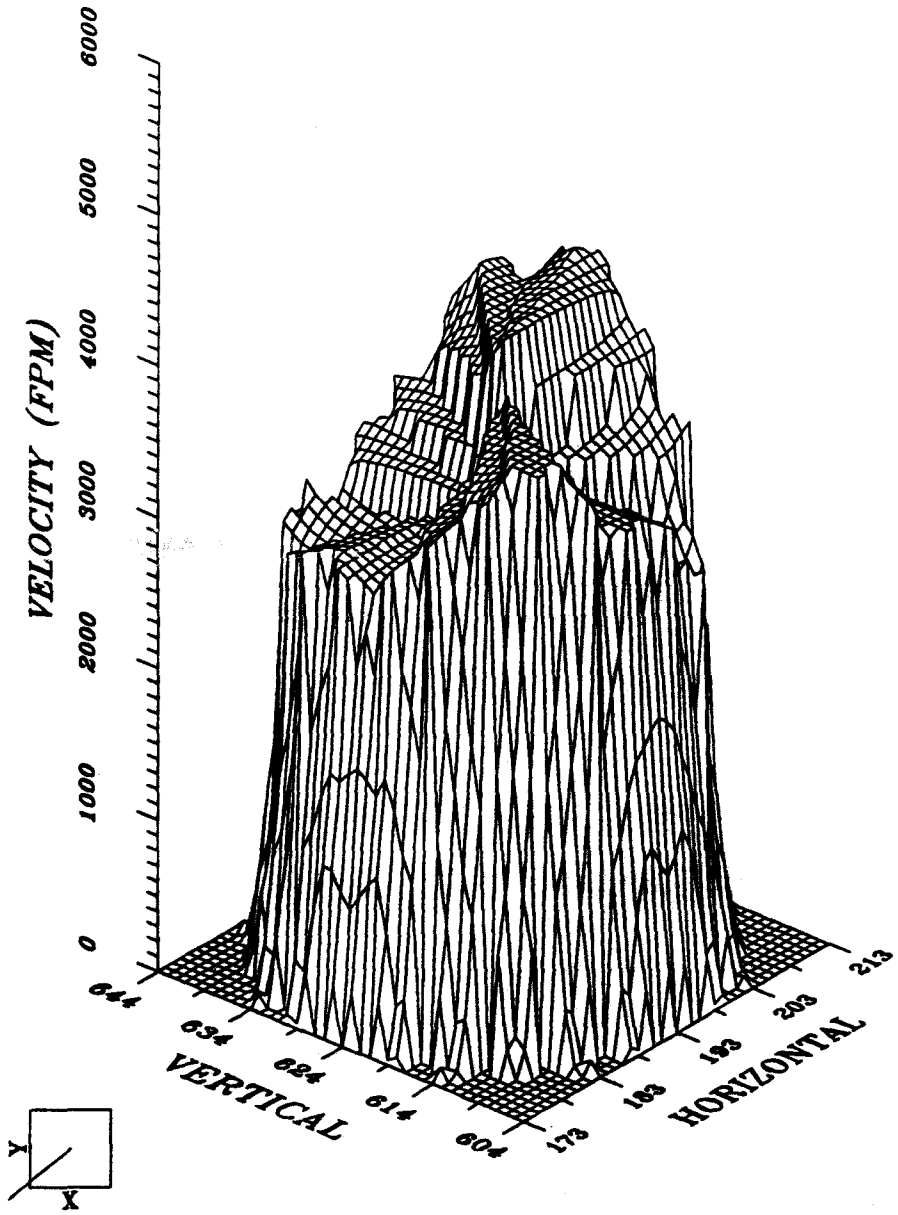

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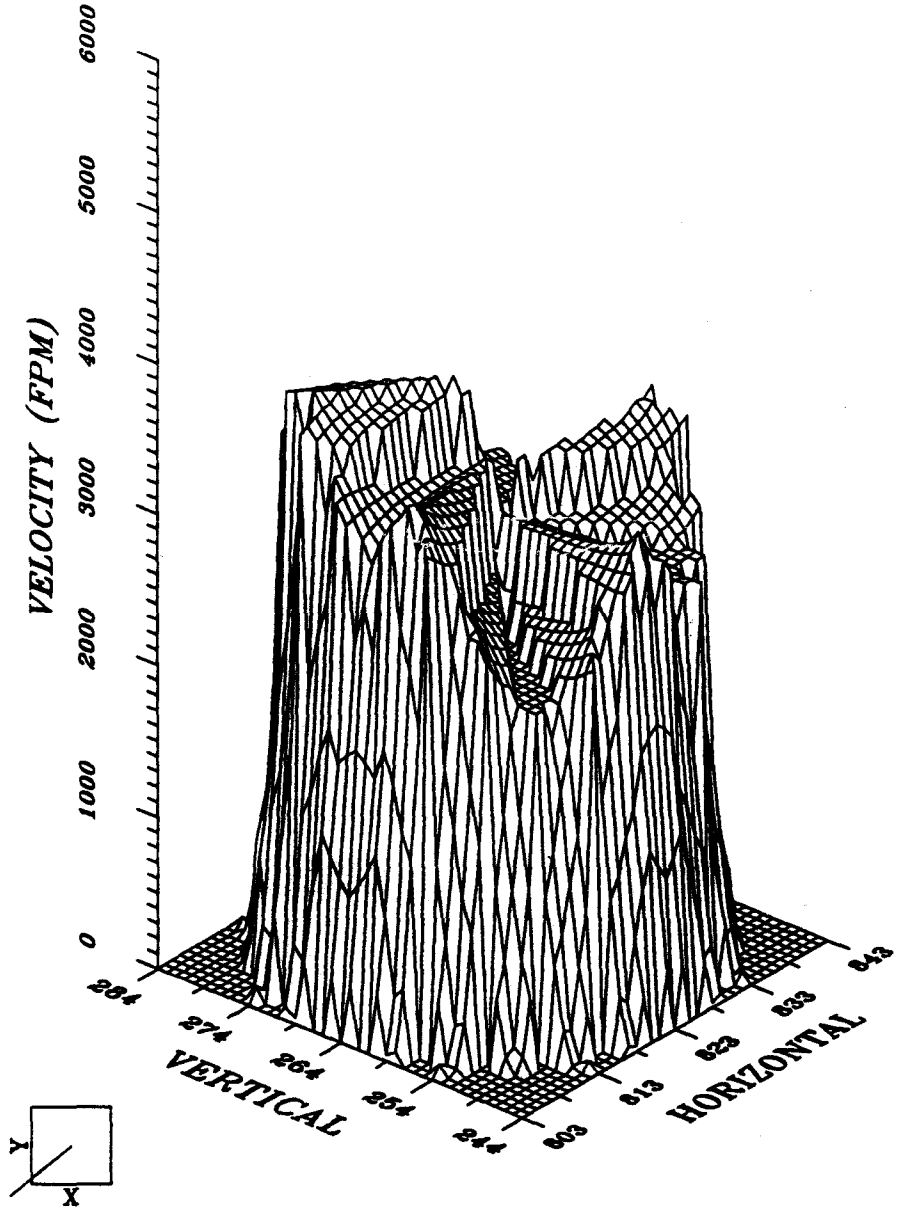

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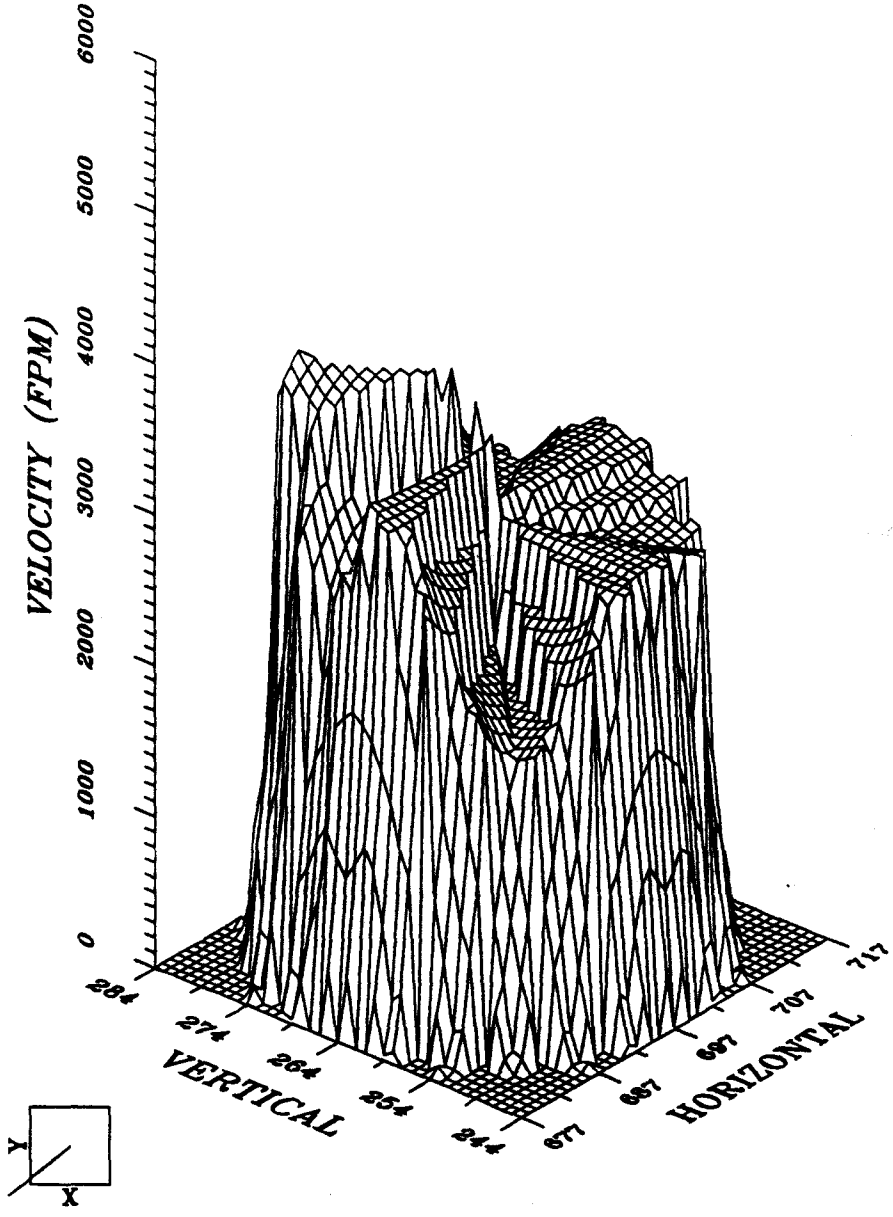

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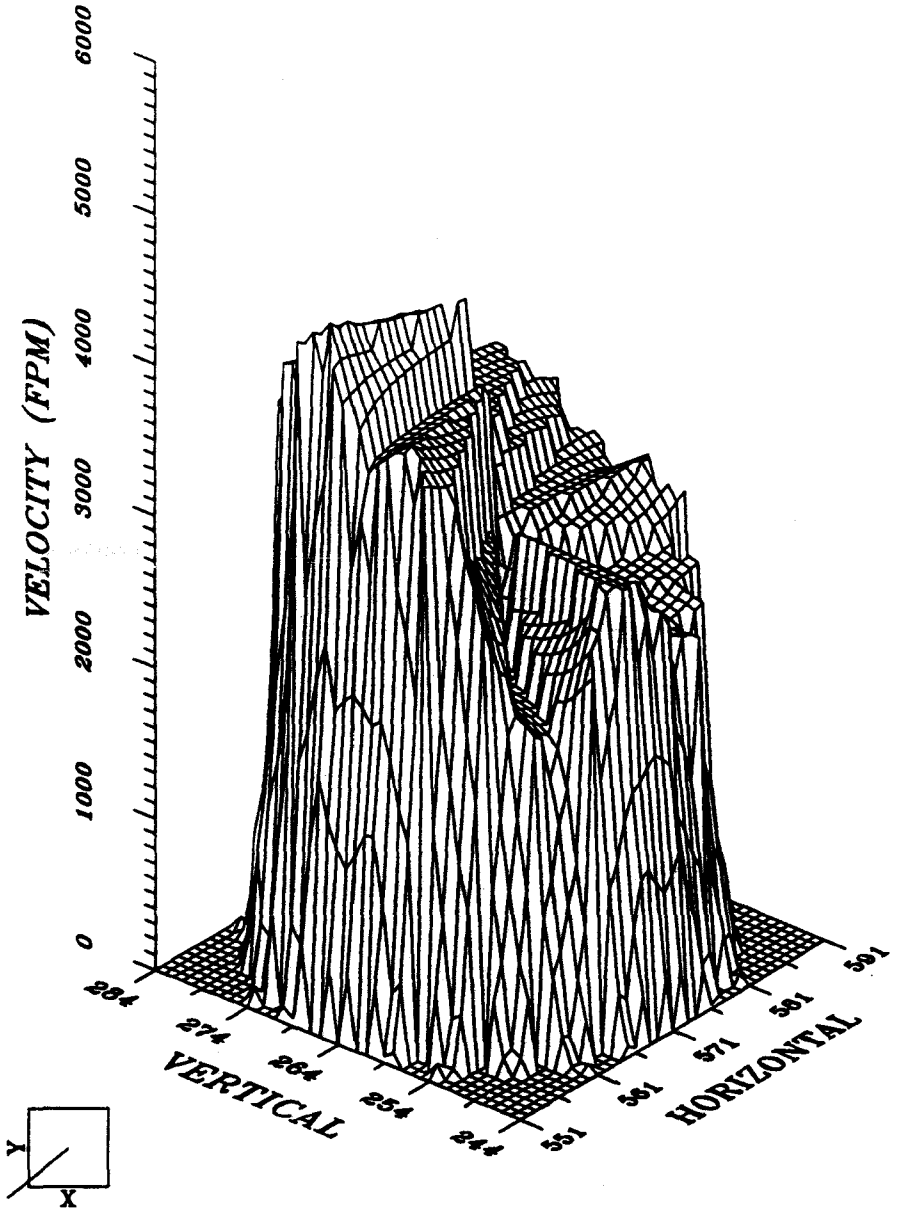

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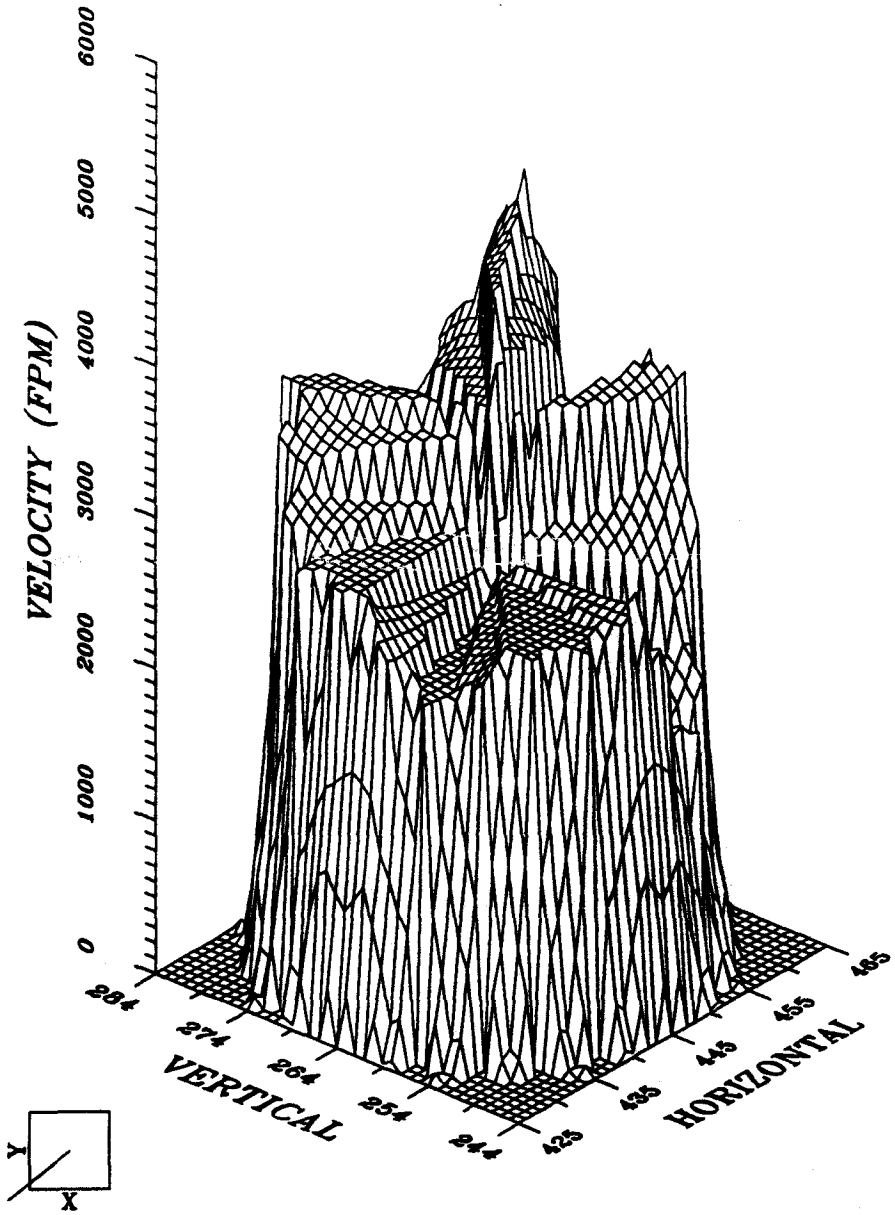

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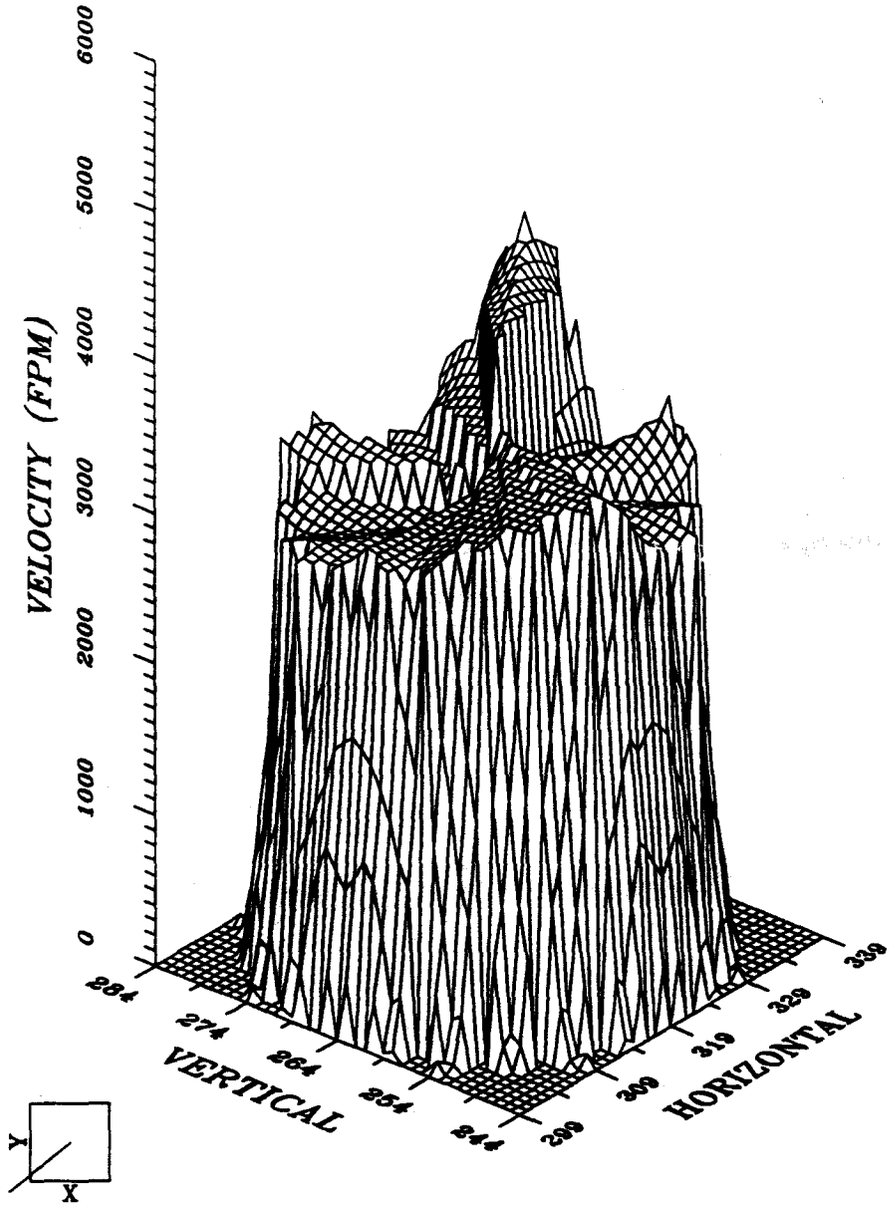

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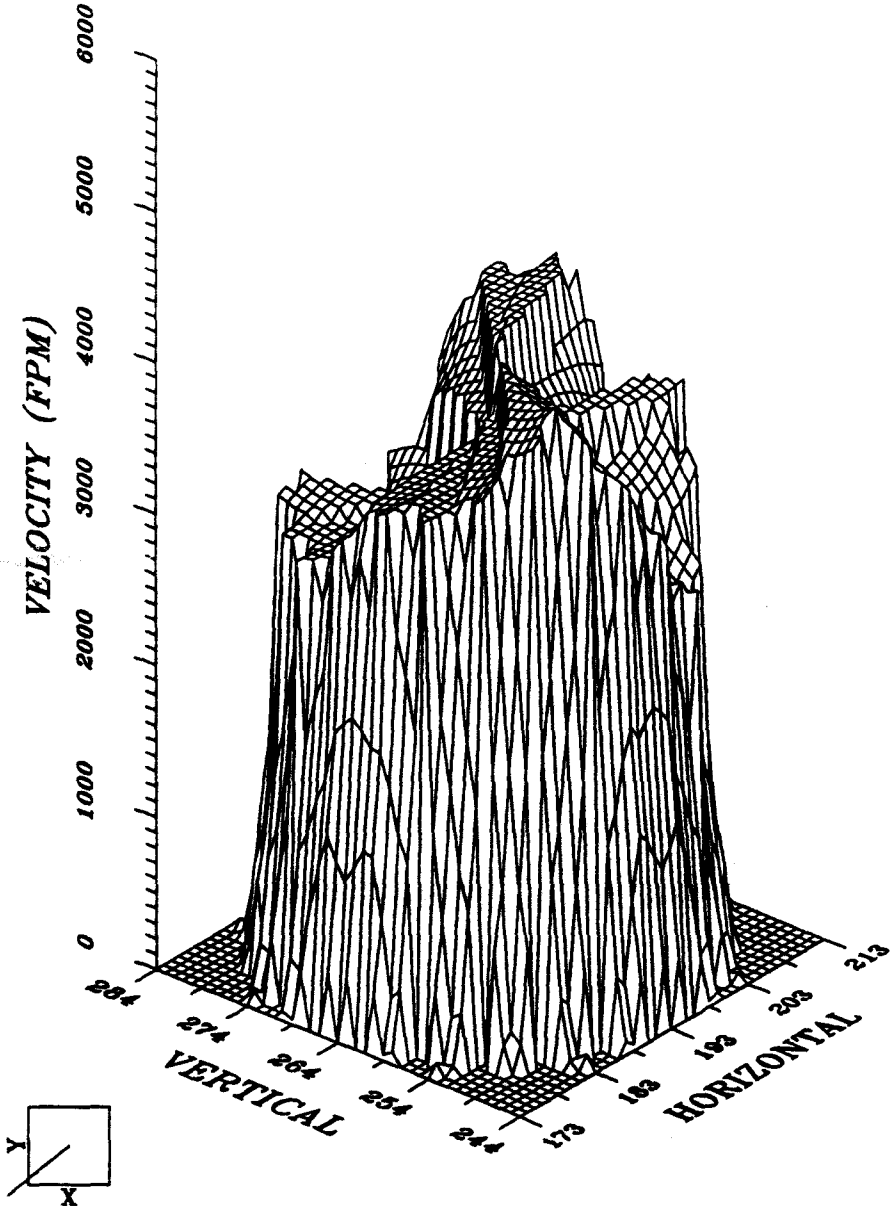

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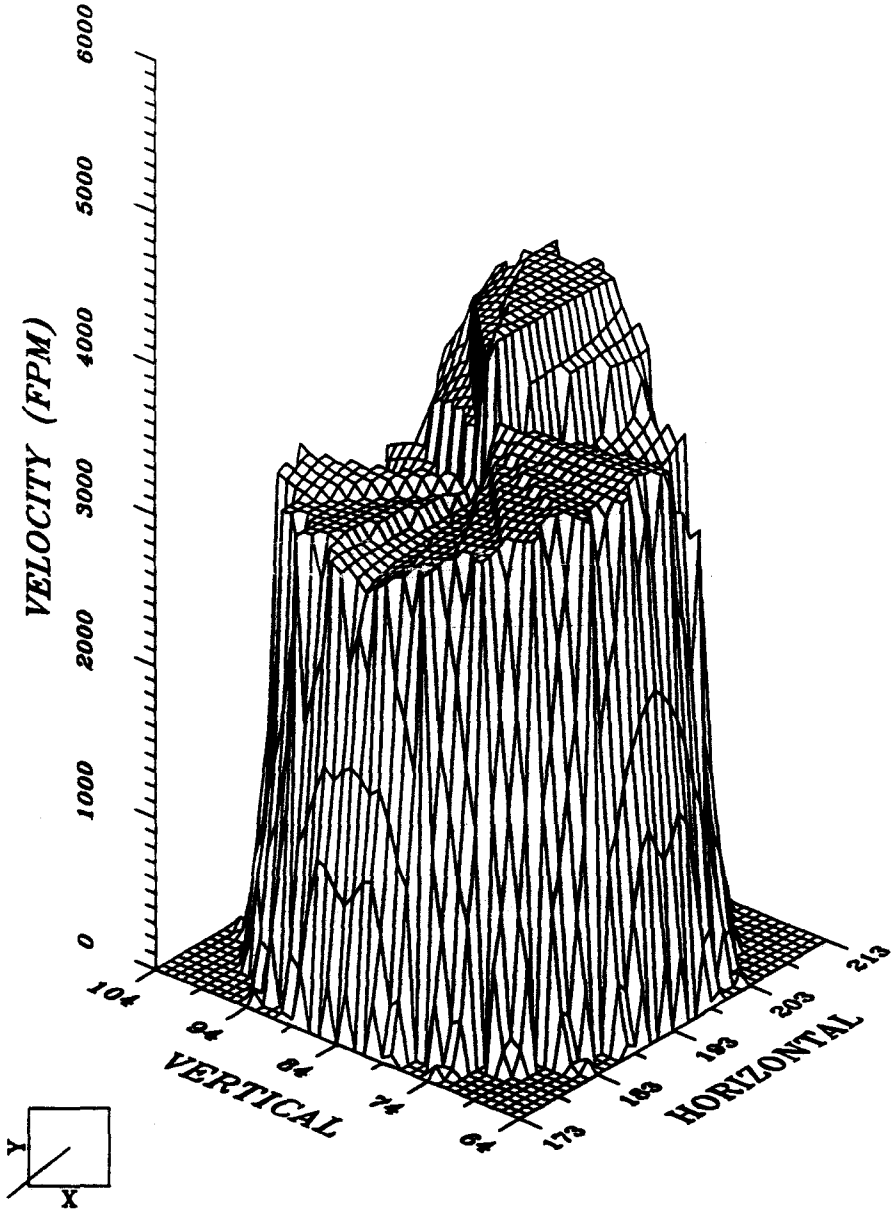
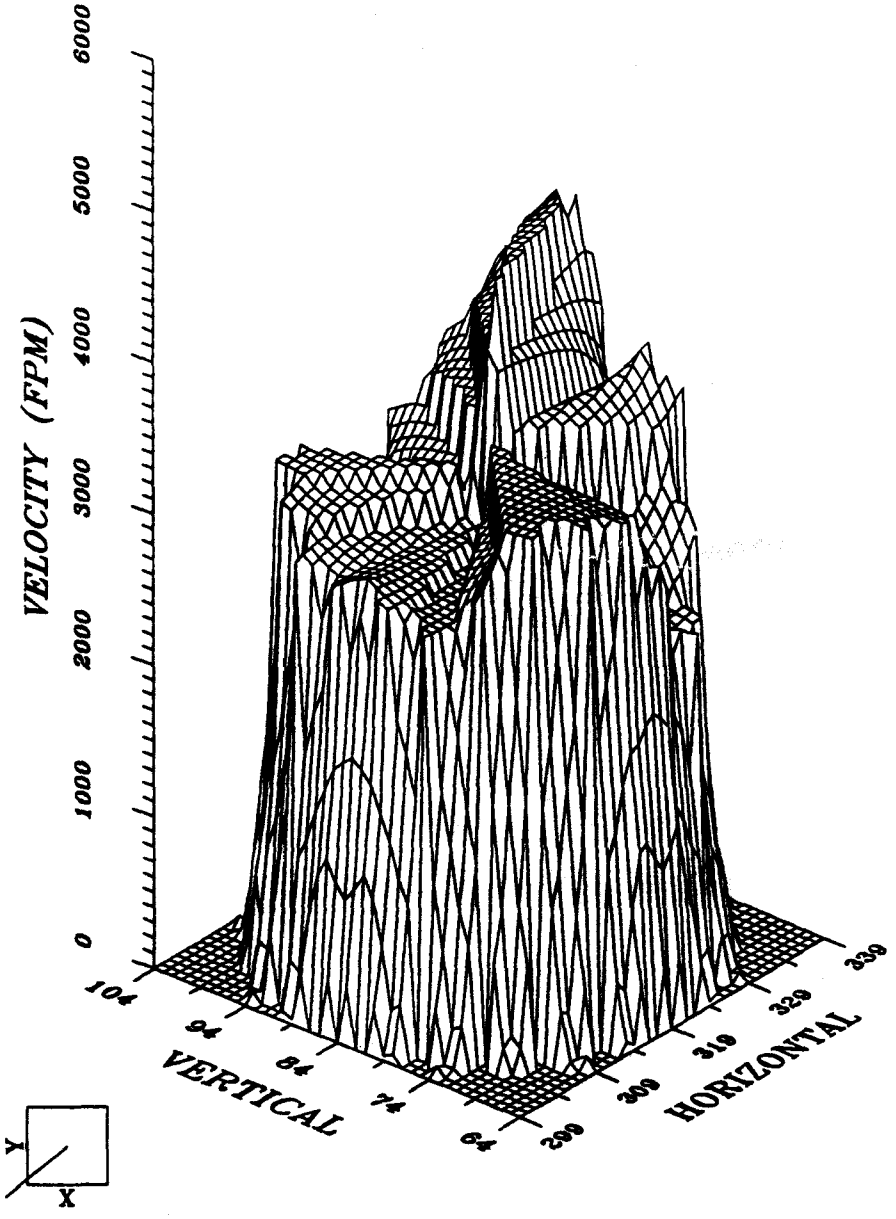


BURNER G1 INNER ZONE VELOCITY PROFILE



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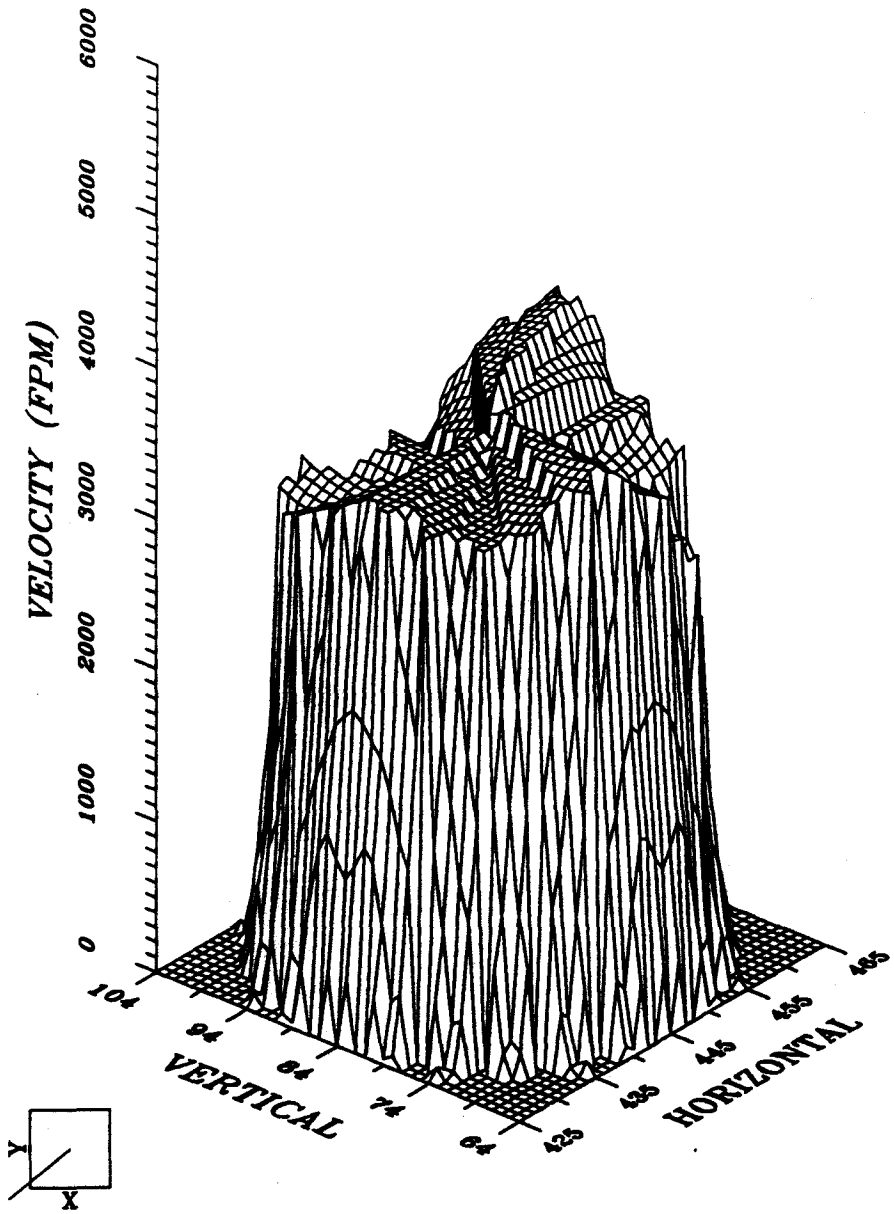

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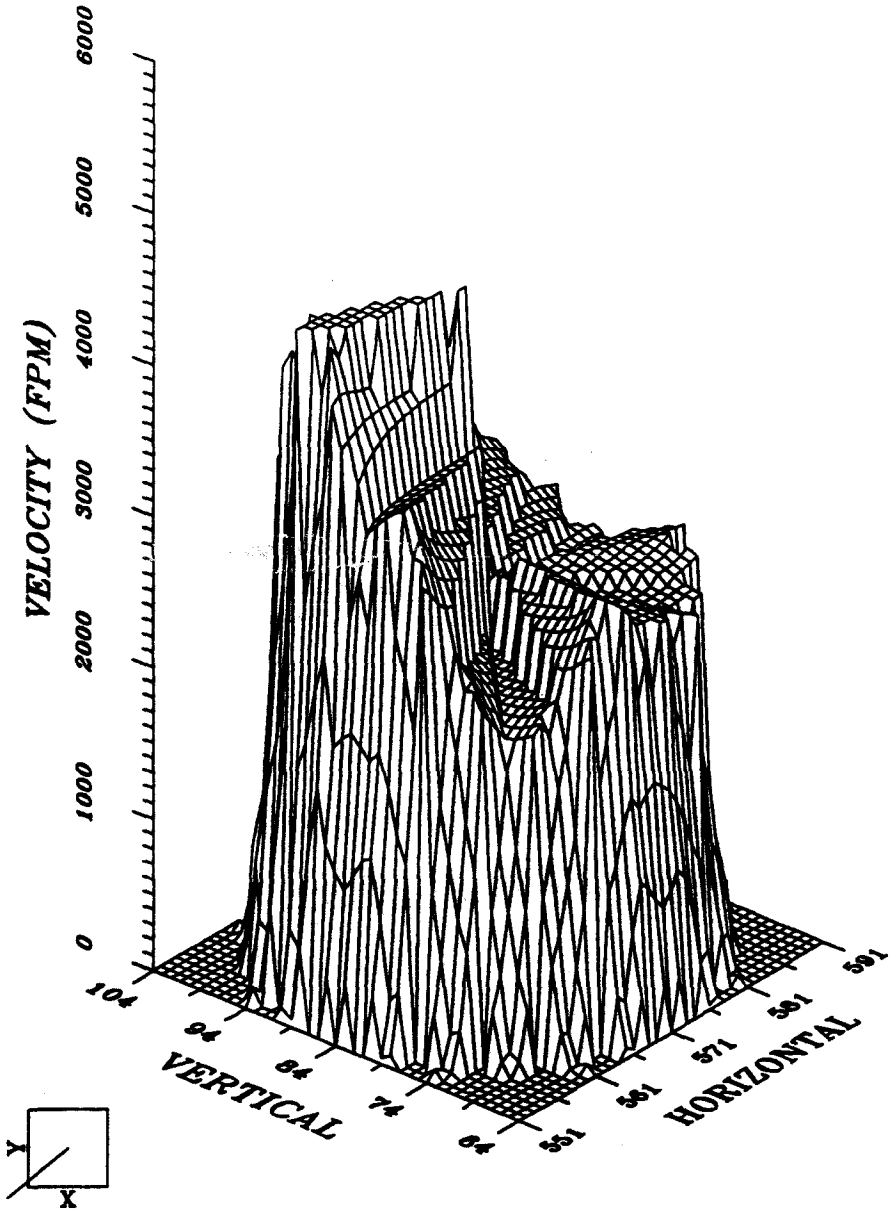

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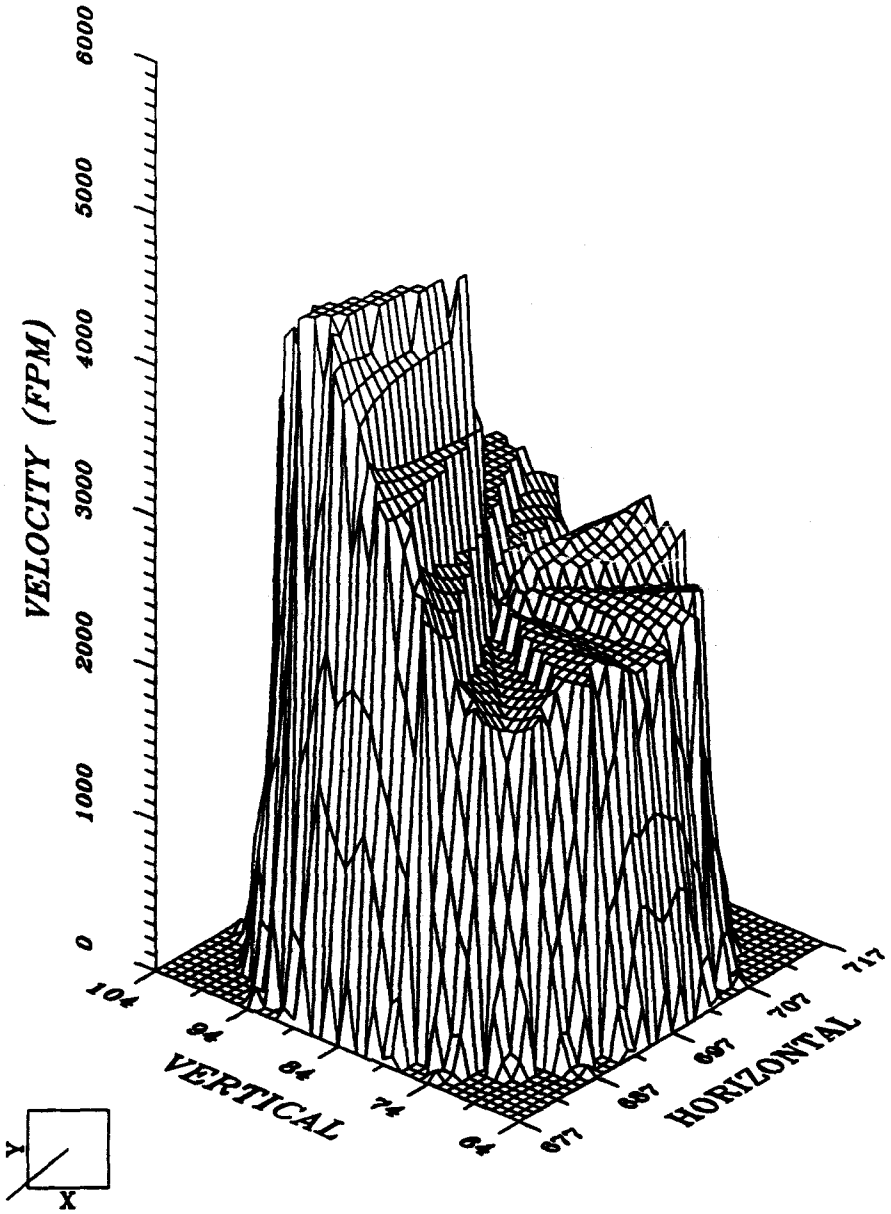

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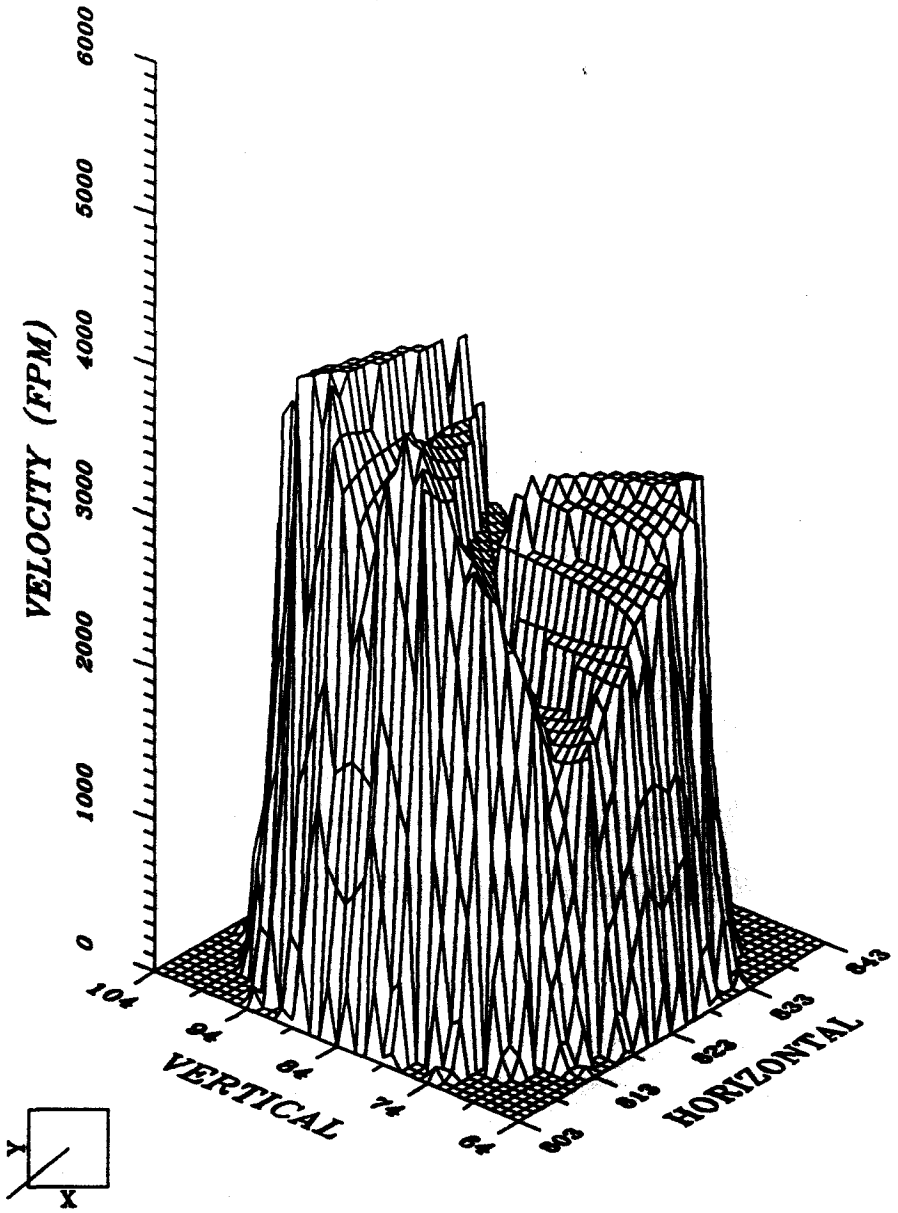

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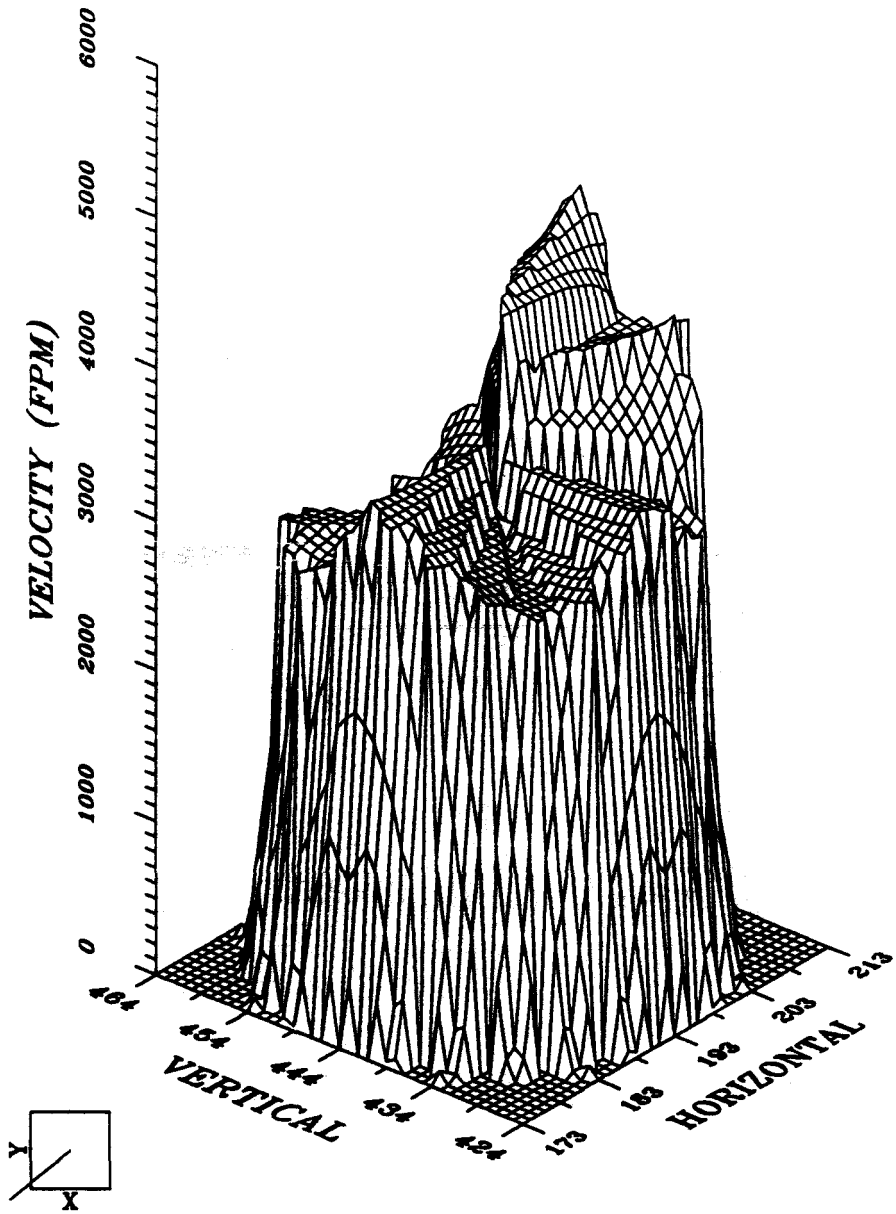

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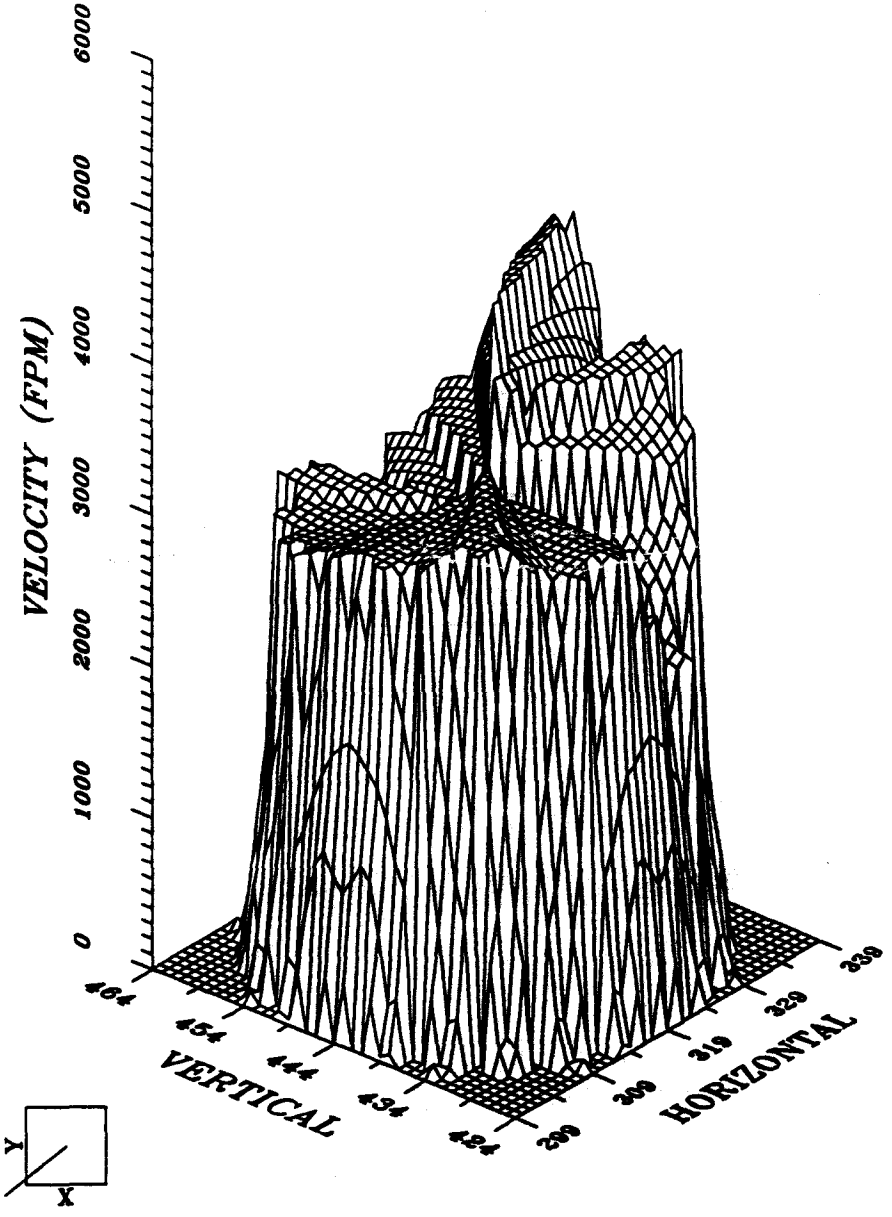

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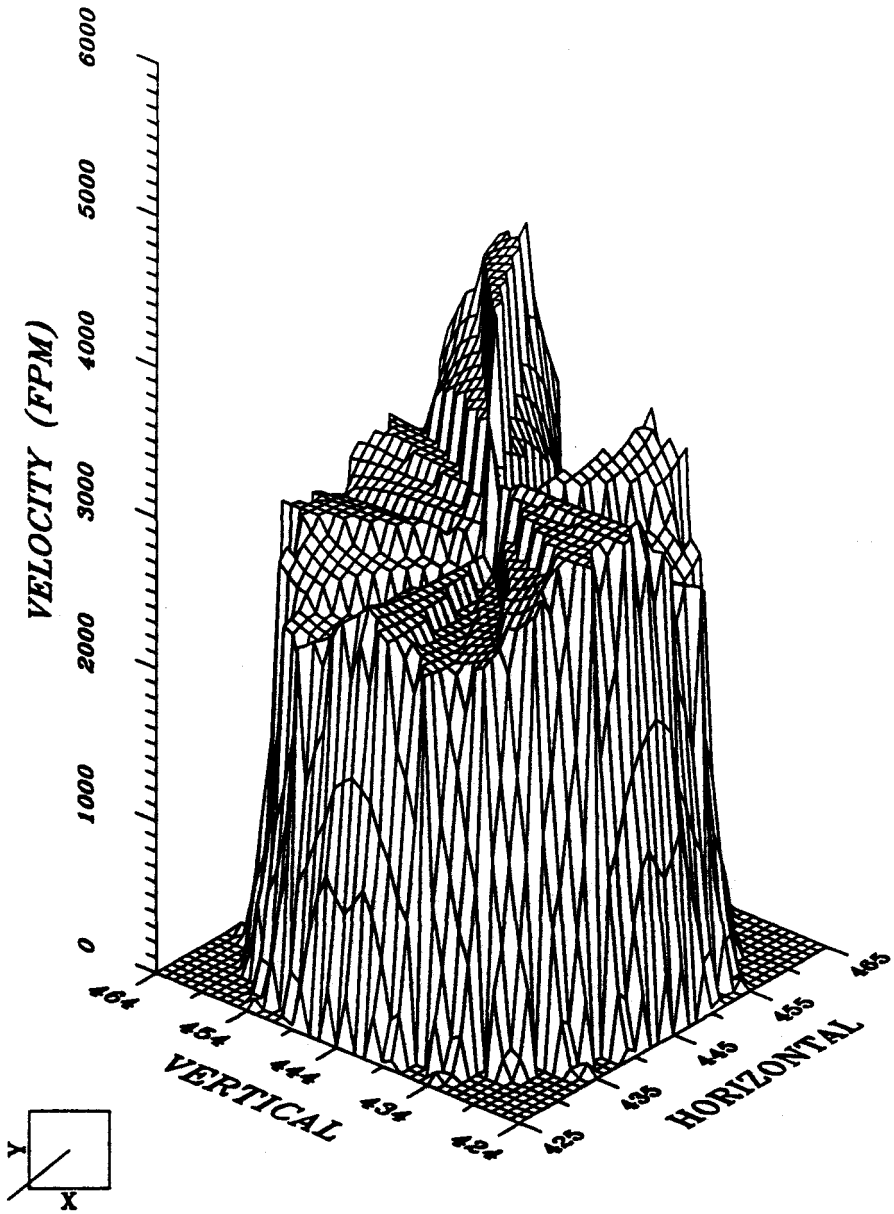

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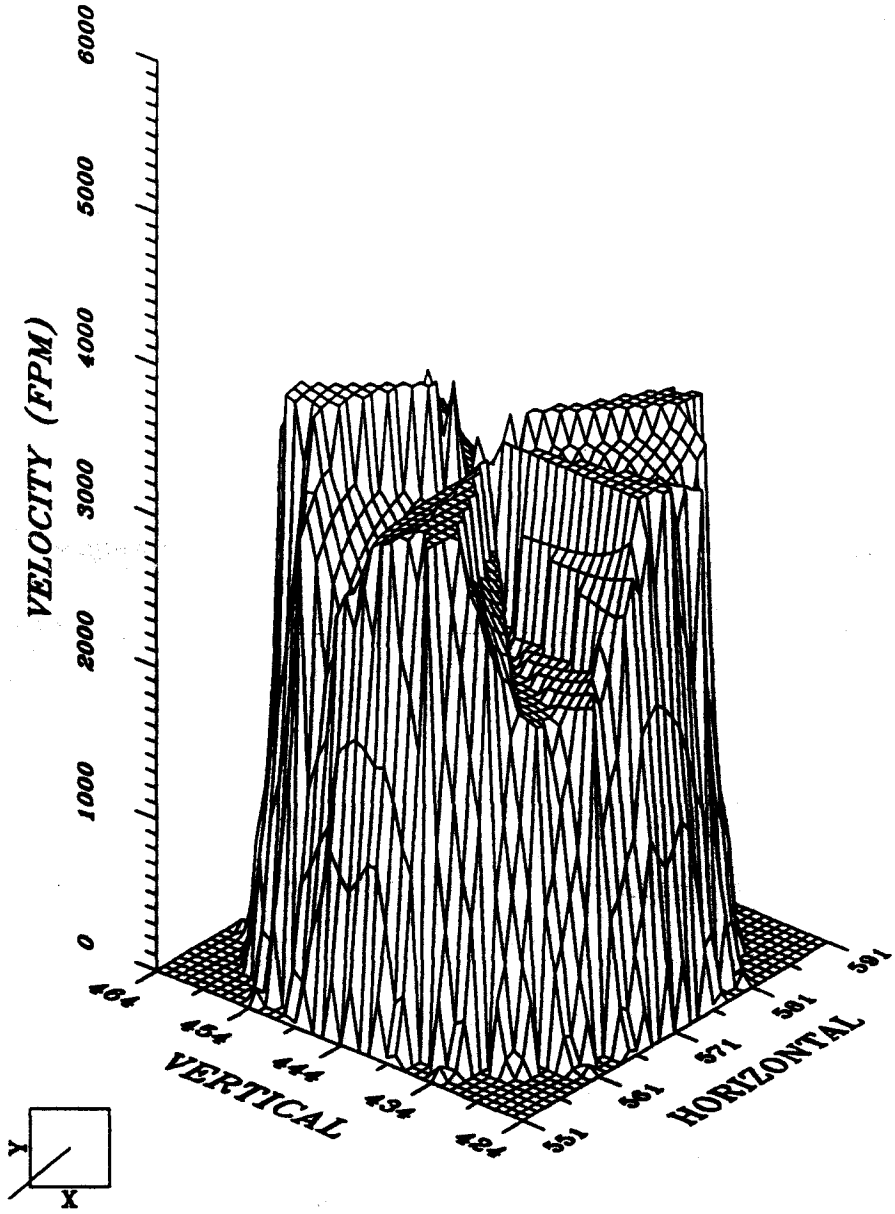

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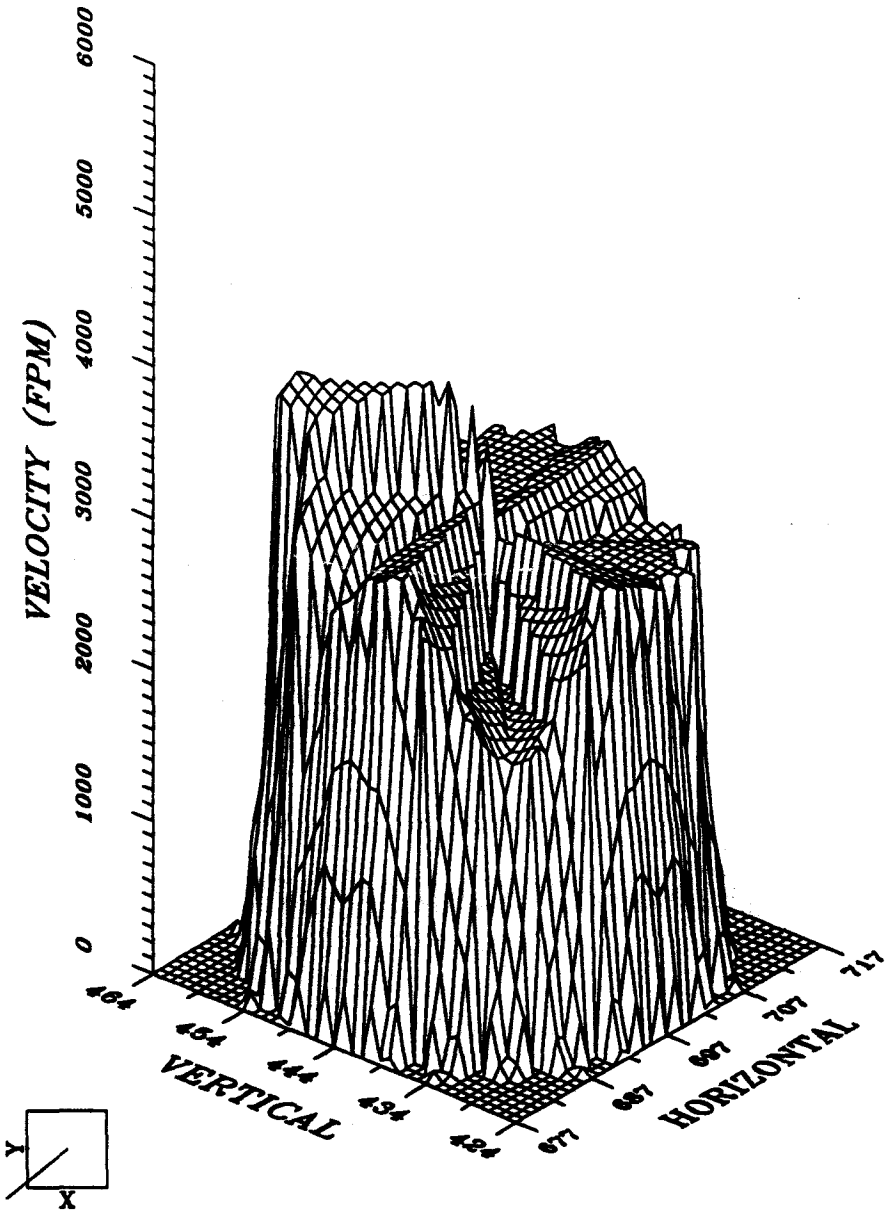
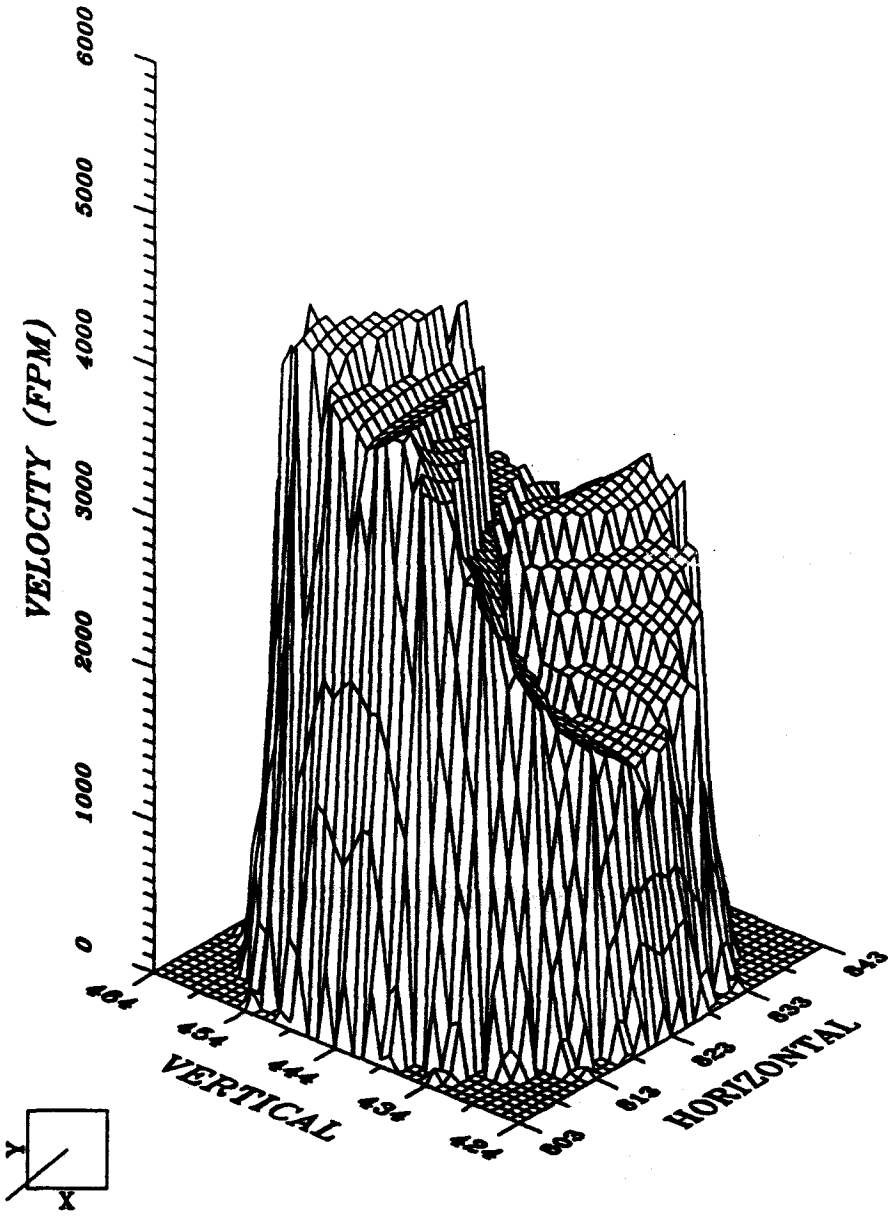


BURNER H5 INNER ZONE VELOCITY PROFILE



BURNER H6 INNER ZONE VELOCITY PROFILE

Table 3

Baseline Outer Zone Air Distribution

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Table 3

Summary

Average Velocity All Burners =	3133.13 fpm
Maximum High Flow Deviation =	22.45 %
Minimum Low Flow Deviation =	-12.97 %
Total Flow Deviation =	35.42 %

Condition	Code	Trigger Level %
Blocked Flow	*****	10
Vortex Action	VVVVV	20
Flow & Vortex Action	*V*V*	

Test Point Velocities (Feet/Minute)

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FE6																											
High -	3798	3875	3707	3389	4228	4465	4228	3829	4482	4362	3589	3969	3922	2890	2939	3333	3707	2865	2890	3389	3238	3783	4212	4113			4482
Low -	2927	2495	2528	2335	2377	2484	2890	2841	2698	2675	2686	3197	2441	2224	2264	2652	2595	2156	2204	2377	2346	2561	3015	2829			
Average -	3434	3013	3060	2903	3830	3491	3570	3210	3907	3691	3292	3691	2759	2405	2754	3100	3216	2482	2553	2939	2664	3207	3779	3381	3155	0.71	
PLD% -	9	-5	-3	-8	21	11	13	2	24	-2	4	17	-13	-24	-13	-2	2	-21	-19	-7	-16	2	20	7			
Code -	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV			
BURNER FE5																											
High -	3814	3891	4195	3753	4065	3814	3663	3431	4001	3663	3459	3502	3105	3118	3361	3488	3678	3906	3678	3319	3891	4097	4345	4081			4345
Low -	3171	2989	3278	2473	2769	2294	2617	2484	2572	2419	2539	2583	2377	2398	2927	2484	2733	3002	2098	2204	2254	2165	2939	2977			
Average -	3518	3518	3759	2997	3339	2898	3243	2844	3532	2955	3225	2940	2627	2880	3175	2983	3212	3432	2564	2679	2854	3354	3703	3662	3162	0.92	
PLD% -	11	11	19	-5	6	-8	3	-10	12	-7	2	-7	-17	-9	0	-6	2	9	-19	-15	-10	6	17	16			
Code -	****	*V*V	VVVV	*V*V	VVVV	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV			
BURNER FE4																											
High -	3118	3560	4329	4228	4261	3953	4396	4162	2902	4081	4130	3389	3028	3875	3875	3417	3197	3306	3197	3574	3375	4228	4033	3707			4396
Low -	2254	2294	2663	3502	2686	2939	3066	2356	1970	2234	2652	2430	2185	2398	3131	3066	2335	2294	2042	2006	2841	2952	1943	2204			
Average -	2651	2954	3778	3985	3282	3535	3785	2840	2534	3500	3229	2880	2495	3498	3400	3190	2642	2995	2521	2985	3090	3734	2968	2734	3134	0.01	
PLD% -	-15	-6	21	27	5	13	21	-9	-19	12	3	-8	-20	12	9	2	-16	-4	-20	-5	-1	19	-5	-13			
Code -	*V*V	*V*V	VVVV		VVVV	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	****	VVVV	VVVV	*V*V			
BURNER FE3																											
High -	3474	3375	3265	3474	3361	3389	3906	3953	3184	2284	2214	3347	3347	3028	3079	3131	3738	3906	3875	4097	3445	3985	3969	3648			4097
Low -	2462	2294	2098	2325	2572	2675	2769	2561	1815	1848	1734	1774	2629	1807	1891	1952	2629	2686	2698	3105	2473	2841	3197	2506			
Average -	2950	2694	2519	2964	2913	2998	3448	3157	2209	2040	1933	2913	3003	2196	2587	2484	3347	3198	3466	3478	2845	3451	3621	2963	2891	-7.74	
PLD% -	2	-7	-13	3	1	4	19	9	-24	-29	-33	1	4	-24	-11	-14	16	11	20	20	-2	19	25	3			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV		*V*V			
BURNER FE2																											
High -	3066	3278	3663	3488	3860	4049	4097	3953	4081	4017	2721	3545	3633	4033	3938	4146	4081	2877	3118	2939	3361	4570	4379	3922			4570
Low -	2024	1790	1782	2572	2829	3265	2710	2977	2024	2264	2346	2495	3224	3459	1988	2042	2398	2315	2061	1997	2098	2769	2335	2484			
Average -	2566	2146	2947	3028	3334	3711	3249	3495	3390	2705	2566	3232	3425	3862	2376	3511	2832	2593	2375	2382	2855	4105	2864	3309	3036	-3.11	
PLD% -	-15	-29	-3	-0	10	22	7	15	12	-11	-15	6	13	27	-22	16	-7	-15	-22	-22	-6	35	-6	9			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	****	*V*V	VVVV	*V*V	****	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			
BURNER FE1																											
High -	3922	3692	4033	4146	4130	4414	4081	3969	3560	3347	3053	4017	3875	3722	3375	4245	4179	4065	4312	4278	4017	3875	4113	3589			4414
Low -	2841	2617	2606	3333	2939	3319	3474	2550	2698	2595	2698	2769	3417	2675	2550	2640	2640	2663	3445	2640	2462	2583	2841	2804			
Average -	3285	3168	3578	3662	3451	3955	3859	2926	3221	2861	2857	3608	3625	3191	2884	3776	3038	3624	3944	3143	3313	3391	3356	3154	3370	7.55	
PLD% -	-3	-6	6	9	2	17	15	-13	-4	-15	-15	7	8	-5	-14	12	-10	8	17	-7	-2	1	-0	-6			
Code -	*V*V	*V*V	VVVV		VVVV	VVVV		*V*V	*V*V	*V*V	****	VVVV	****	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	*V*V			

IP7_001019

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FA6																											
High -	4345	4552	4448	4803	4712	4431	4228	3738	3347	3545	3445	2042	2745	3969	3753	3306	3459	3040	2652	2804	2877	3516	4312	4605			4803
Low -	2484	3891	4097	4228	4113	3663	2877	2853	1734	1815	1618	1574	1874	2606	2617	2663	2829	2367	2042	2377	2346	2506	2517	3938			
Average -	3994	4255	4293	4482	4419	4044	3672	3258	2185	2999	2014	1881	2513	3555	2975	2966	3051	2650	2359	2569	2609	2859	3873	4295	3240	3.42	
PLD% -	23	31	32	38	36	25	13	1	-33	-7	-38	-42	-22	10	-8	-8	-6	-18	-27	-21	-19	-12	20	33			
Code -	VVVV						*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	****	****	*V*V	*V*V				
BURNER FA5																											
High -	3238	3969	4500	4312	4448	4345	4146	4535	3783	3768	3814	3663	3144	3238	3753	3574	3238	3922	3814	3648	4535	4587	3753	3375			4587
Low -	2745	2757	3516	2572	3389	3079	3144	2853	2473	2052	2185	2388	2315	1874	1891	2254	2315	2234	2914	3002	3015	3158	2927	2804			
Average -	2999	3409	3918	3227	4037	3598	3717	3495	3240	2339	3262	2710	2926	2243	3142	2625	2564	3464	3260	3327	4092	3682	3285	3091	3236	3.27	
PLD% -	-7	5	21	-0	25	11	15	8	0	-28	1	-16	-10	-31	-3	-19	-21	7	1	3	26	14	2	-4			
Code -	****	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	VVVV	VVVV	*V*V	****			
BURNER FA4																											
High -	4694	3431	3251	3361	4414	4345	3753	3814	3618	3985	4081	3118	3265	3417	3278	4212	4312	4803	4821	3891	4278	4245	4245	4641			4821
Low -	2890	2572	2484	2550	2528	2757	2517	2606	2451	2952	2335	1848	1758	2484	2419	2757	3560	2517	2902	3251	3292	3131	2224	2294			
Average -	3463	2986	2833	2906	3754	3265	3069	3230	2962	3495	2781	2203	2740	2875	2913	3512	4010	3842	3585	3590	3851	3799	2902	4017	3274	4.50	
PLD% -	6	-9	-13	-11	15	-0	-6	-1	-10	7	-15	-33	-16	-12	-11	7	22	17	9	10	18	16	-11	23			
Code -	VVVV	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	VVVV	VVVV	****	*V*V	*V*V	*V*V	VVVV			
BURNER FA3																											
High -	3531	3319	3417	3389	4535	4245	4130	3985	4465	5007	5007	4785	4694	3783	3053	3238	3306	3985	4162	3028	3938	3753	3798	3722			5007
Low -	2451	2398	2745	2539	2877	2890	3333	2117	2234	2595	2146	2117	3306	2061	1970	2127	2506	2617	2377	2033	2146	2606	2686	2484			
Average -	3086	2882	3040	2960	3873	3360	3762	2659	3302	4511	2963	4180	3831	2596	2432	2676	2873	3594	2943	2531	3156	3212	3127	3336	3204	2.25	
PLD% -	-4	-10	-5	-8	21	5	17	-17	3	41	-7	30	20	-19	-24	-16	-10	12	-8	-21	-1	0	-2	4			
Code -	*V*V	*V*V	****	*V*V	VVVV	*V*V	****	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V			
BURNER FA2																											
High -	3969	3692	3633	3574	3488	3722	4065	3753	3707	3692	3403	3347	2902	3648	3431	3722	4245	3829	4049	4261	3306	3545	3768	3938			4261
Low -	3066	3158	2989	3053	2484	2757	3197	2877	2792	2108	2377	1979	2033	2462	2473	2517	3265	2710	2853	2629	2698	2606	3131	3092			
Average -	3532	3457	3273	3269	2887	3293	3598	3418	3307	2616	2879	2257	2522	3206	2748	3262	3702	3294	3343	3434	2921	3140	3461	3676	3187	1.73	
PLD% -	11	8	3	3	-9	3	13	7	4	-18	-10	-29	-21	1	-14	2	16	3	5	8	-8	-1	9	15			
Code -	VVVV	****	****	****	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	VVVV	VVVV	****	*V*V	****	VVVV			
BURNER FA1																											
High -	4345	4329	4465	4379	4396	3969	3922	2939	2757	3389	3474	3589	3604	3753	3753	3814	3891	3753	3417	3389	3604	3648	3707	4049			4465
Low -	3333	3604	3574	3692	2528	2652	2185	2388	1618	1710	2853	3092	2539	2572	2033	2356	2675	1882	1979	2745	2710	2841	3015	3417			
Average -	4041	4004	3975	4046	2887	3510	2531	2660	1942	2964	3219	3353	2777	3386	2620	2904	3375	2429	2950	3044	3179	3247	3441	3760	3177	1.39	
PLD% -	27	26	25	27	-9	10	-20	-16	-39	-7	1	6	-13	7	-18	-9	6	-24	-7	-4	0	2	8	18			
Code -	VVVV				VVVV	*V*V	*V*V	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	****				
BURNER FF6																											
High -	3389	3445	3502	3891	3663	3545	3015	3144	3445	3251	3722	3692	2409	3053	3678	3753	2927	3224	3066	3906	3707	3545	4017	3678			4017
Low -	2769	2927	2780	2964	3079	2346	2108	2098	2484	2325	2377	2042	1979	2214	2757	2539	2451	2274	1970	2015	2528	2952	3105	2952			
Average -	3079	3185	3221	3432	3405	2919	2546	2651	3041	2600	3364	2467	2214	2759	3445	3119	2639	2831	2251	3279	2912	3319	3514	3307	2979	-4.92	
PLD% -	3	7	8	15	14	-2	-15	-11	2	-13	13	-17	-26	-7	16	5	-11	-5	-24	10	-2	11	18	11			
Code -	****	****	*V*V	VVVV		*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	****	*V*V	VVVV	VVVV	****	*V*V	*V*V	VVVV	VVVV	****	VVVV				
BURNER FF5																											
High -	3197	3265	3445	3560	3053	2939	3118	3648	3417	3514	3922	3829	3158	3278	3692	3985	4065	3560	3692	4212	4162	3678	3278	3028			4212
Low -	2572	2175	2356	2089	2127	2061	2244	2804	2214	2550	2952	2877	2528	2721	2914	3459	2977	2865	2964	2939	3319	2409	2441	2441			
Average -	2864	2681	2994	2556	2566	2482	2735	3286	2700	3361	3509	3206	2826	3065	3439	3682	3373	3253	3367	3705	3683	2958	2883	2740	3080	-1.70	
PLD% -	-7	-13	-3	-17	-17	-19	-11	7	-12	9	14	4	-8	-0	12	20	10	6	9	20	20	-4	-6	-11			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	****	****	*V*V		VVVV	****	****	VVVV	VVVV	*V*V	*V*V	****			

IP7_001020

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FF4																											
High -	3015	3531	3618	3488	3783	4278	4245	3361	3663	3531	3604	3753	3574	3197	3306	3798	3502	3431	3589	3333	4179	4065	3265	3118			4278
Low -	1559	1750	2550	2356	2606	2561	2561	2484	2710	2356	2325	3131	2675	2640	2127	2204	3040	2769	2769	2675	2583	2675	2583	2033			
Average -	2275	2727	3087	2874	2943	3555	3224	2926	3167	2693	3264	3498	2944	2887	2533	3271	3261	3106	3254	3016	3372	3082	2877	2484	3013	-3.82	
PLD% -	-25	-10	2	-5	-2	18	7	-3	5	-11	8	16	-2	-4	-16	9	8	3	8	0	12	2	-5	-18			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	****	****	*V*V	****	VVVV	VVVV	*V*V	*V*V			
BURNER FF3																											
High -	3211	2816	2419	3319	3502	3574	3375	3768	4212	4081	3969	3265	3002	2841	2853	3953	4065	4097	3692	3875	3238	3768	3502	2733			4212
Low -	1908	1679	1531	1510	2663	1891	2224	2733	3516	3648	2146	2346	2346	1710	1710	2617	3053	2572	2865	2721	2254	2462	2165	1926			
Average -	2467	2090	1879	2766	3124	2464	2990	3375	3945	3864	2709	2813	2593	1949	2578	3554	3534	3151	3270	3124	2731	2896	2605	2309	2866	-8.53	
PLD% -	-14	-27	-34	-3	9	-14	4	18	38	35	-5	-2	-10	-32	-10	24	23	10	14	9	-5	1	-9	-19			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V			VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V			
BURNER FF2																											
High -	3015	2914	2640	2816	2451	3403	3306	3144	3502	3319	3278	3197	3875	4113	3798	3361	3171	4312	4113	3531	3389	3985	2617	3144			4312
Low -	1538	1618	2108	2117	1782	1970	2430	2254	2409	2305	2441	2451	2430	3431	2865	2675	2388	2617	2721	2441	1750	2089	1726	1848			
Average -	1894	2354	2337	2520	2133	2913	3042	2699	3143	2683	3006	2693	3367	3766	3156	2985	2738	3699	3218	3023	2150	2722	2042	2688	2790	-10.94	
PLD% -	-32	-16	-16	-10	-24	4	9	-3	13	-4	8	-3	21	35	13	7	-2	33	15	8	-23	-2	-27	-4			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V		*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	VVVV	*V*V	*V*V			
BURNER FF1																											
High -	3375	3445	3985	3922	4179	4785	4605	2902	3319	3445	2853	3474	3361	3224	3319	3184	3040	3678	3692	3633	3474	3389	3403	3361			4785
Low -	2108	2733	3066	3144	3560	3814	2108	2409	2745	2398	2204	2325	2939	2294	2070	2572	2495	2528	2583	2640	2506	2902	2675	2663			
Average -	2945	3109	3628	3554	3929	4451	2696	2645	3114	2669	2394	3176	3150	2492	2594	2848	2804	3258	2906	3192	3007	3108	2984	3044	3071	-1.99	
PLD% -	-4	1	18	16	28	45	-12	-14	1	-13	-22	3	3	-19	-16	-7	-9	6	-5	4	-2	1	-3	-1			
Code -	*V*V	*V*V	*V*V	****	****	VVVV	VVVV	****	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V			
BURNER FB6																											
High -	3319	3028	3814	3906	3969	3589	3618	3531	3692	3560	3531	3375	3389	3265	2964	2675	2617	2398	2539	2346	2710	2606	3753	3814			3969
Low -	2244	2089	2652	3002	2698	2698	2484	2156	2517	3002	2024	2194	2865	2539	1832	1908	1908	1545	1734	1874	2052	1790	1848	3079			
Average -	2585	2627	3266	3648	3248	3077	3267	2702	3324	3262	2465	2976	3187	2826	2095	2453	2180	1941	2215	2111	2400	2062	3187	3496	2775	-11.43	
PLD% -	-7	-5	18	31	17	11	18	-3	20	18	-11	7	15	2	-24	-12	-21	-30	-20	-24	-14	-26	15	26			
Code -	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV				
BURNER FB5																											
High -	3403	3488	3361	4049	3814	3531	2757	3459	3560	3589	3502	3531	3445	2617	3251	3292	2989	3814	3829	3604	4017	3891	3618	3403			4049
Low -	2652	2829	2325	2484	2606	2315	2264	2409	1988	1979	2495	2517	2377	2294	2409	1840	2024	2146	2451	2398	2853	2640	2629	2733			
Average -	2978	3173	2737	3570	3055	2675	2484	3126	2515	3025	2788	3230	2646	2461	2905	2225	2470	3201	2823	3048	3645	3056	3134	3028	2917	-6.91	
PLD% -	2	9	-6	22	5	-8	-15	7	-14	4	-4	11	-9	-16	-0	-24	-15	10	-3	4	25	5	7	4			
Code -	*V*V	****	*V*V	VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	****			
BURNER FB4																											
High -	3197	3459	3361	3319	3361	3118	3361	3251	3066	2964	3319	3445	3053	3403	3211	3197	3633	3560	3224	3589	3663	3079	2939	3066			3663
Low -	2686	2804	2284	2294	2484	2441	2451	2517	2108	2175	2367	2070	2175	2617	2244	2234	2617	2595	2710	2561	2617	2441	2388	2117			
Average -	2937	3193	2789	2735	2937	2821	2909	2935	2636	2482	2867	2485	2668	3100	2597	2758	3370	2999	2914	3181	3096	2693	2667	2426	2841	-9.31	
PLD% -	3	12	-2	-4	3	-1	2	3	-7	-13	1	-13	-6	9	-9	-3	19	6	3	12	9	-5	-6	-15			
Code -	****		VVVV	VVVV	VVVV	*V*V	VVVV	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV	****	VVVV	VVVV	*V*V	****	*V*V			
BURNER FB3																											
High -	3574	3292	3663	3589	3531	3445	3251	3488	3707	3768	2927	3092	3079	2877	3906	3738	3118	3969	3722	2780	3474	3860	3224	3403			3969
Low -	2652	2484	3015	3028	3002	2841	2528	2698	2853	2224	2430	2146	2367	2244	2473	2617	2052	2315	1952	2080	2430	2117	2388	2804			
Average -	3037	2956	3423	3330	3217	3142	2762	3109	3434	2704	2658	2699	2590	2620	3212	3036	2448	3240	2556	2326	2966	2693	2793	3093	2919	-6.85	
PLD% -	4	1	17	14	10	8	-5	7	18	-7	-9	-8	-11	-10	10	4	-16	11	-12	-20	2	-8	-4	6			
Code -	VVVV	*V*V			****	****	*V*V	*V*V	VVVV	VVVV	****	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	VVVV	*V*V	****			

IP7_001021

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FB2																											
High -	3002	2652	2877	2517	2939	2780	2877	2733	2484	2506	2865	3431	3171	2841	2977	3224	3663	3474	3692	3922	3692	3105	3574	3516			3922
Low -	2325	2175	2185	1798	1934	1807	1790	2244	2070	2194	2175	2117	2517	2430	2561	2506	2952	2877	3002	3040	2595	2377	2572	1742			
Average -	2637	2372	2584	2136	2487	2125	2526	2412	2264	2360	2541	3005	2724	2667	2723	2980	3287	3242	3347	3548	3154	2685	3247	2389	2727	-12.97	
PLD% -	-3	-13	-5	-22	-9	-22	-7	-12	-17	-13	-7	10	-0	-2	-0	9	21	19	23	30	16	-2	19	-12			
Code -	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	*V*V	*V*V	*V*V	****	****	*V*V		****		VVVV	VVVV	*V*V	VVVV	*V*V			
BURNER FB1																											
High -	3922	3985	3798	3488	3333	3079	2539	2927	2939	2877	2902	3015	2853	3040	2877	3092	4097	4049	3197	3445	3829	3953	3722	3633			4097
Low -	3053	3028	3278	2757	2710	2214	1798	1943	2156	2484	2388	2583	2127	2315	2244	2346	2902	2769	2652	2841	2927	3306	2841	3105			
Average -	3619	3570	3540	3099	2984	2551	2209	2527	2540	2704	2652	2800	2316	2762	2477	2765	3775	3069	2932	3160	3421	3622	3249	3380	2988	-4.62	
PLD% -	21	19	18	4	-0	-15	-26	-15	-15	-10	-11	-6	-23	-8	-17	-7	26	3	-2	6	14	21	9	13			
Code -	VVVV	VVVV		*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****	****	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	****	****	VVVV		VVVV	****			
BURNER RD1																											
High -	3265	3431	3118	3118	3197	3516	3347	2561	3474	3445	3459	3333	3445	3474	4097	3891	3531	3171	3211	2829	3389	3753	3604	2964			4097
Low -	2640	2617	2335	2409	2462	2733	2006	1997	1997	2780	2769	2617	2710	2451	2675	2829	2710	2377	2335	1952	2136	2617	2451	2356			
Average -	2935	3003	2636	2687	2829	3149	2482	2316	2879	3218	3090	3055	3258	2858	3624	3305	3046	2703	2716	2267	2911	3173	2848	2614	2900	-7.44	
PLD% -	1	4	-9	-7	-2	9	-14	-20	-1	11	7	5	12	-1	25	14	5	-7	-6	-22	0	9	-2	-10			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V			
BURNER RD2																											
High -	3474	3403	3502	3604	3361	3002	3445	3361	3531	3251	3066	3066	2841	2927	2780	2473	3211	3224	3531	3445	3798	4146	3814	3738			4146
Low -	2804	2606	2156	2506	2117	2108	2377	2006	2214	2617	2663	2595	2070	2070	2006	1882	2185	2710	2561	2356	2572	3251	2829	3306			
Average -	3194	2988	2755	3229	2399	2609	3066	2499	2899	2884	2872	2806	2399	2638	2390	2137	2856	2956	3122	2878	3400	3687	3408	3537	2900	-7.43	
PLD% -	10	3	-5	11	-17	-10	6	-14	-0	-1	-1	-3	-17	-9	-18	-26	-2	2	8	-1	17	27	18	22			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	VVVV	VVVV	VVVV				
BURNER RD3																											
High -	2829	3079	2816	3545	3040	3678	3118	2939	3092	3319	3171	3251	3224	3488	3224	3707	3306	3028	3738	3814	4766	4081	3875	3906			4766
Low -	1734	1656	1979	2156	2356	2356	2117	2175	1790	1857	2356	2274	2284	2430	2175	2274	2484	2015	2254	3105	2733	2698	3040	2572			
Average -	2140	2573	2305	2925	2720	3017	2499	2522	2342	2789	2784	2682	2824	3083	2552	3264	2958	2464	3207	3453	3527	3230	3469	2935	2844	-9.22	
PLD% -	-25	-10	-19	3	-4	6	-12	-11	-18	-2	-2	-6	-1	8	-10	15	4	-13	13	21	24	14	22	3			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	VVVV	*V*V	*V*V	*V*V			
BURNER RD4																											
High -	4097	3589	3589	3389	4162	4228	4414	3768	4295	4195	3707	4431	4179	3648	3768	3604	3278	3814	4049	3361	3516	3431	3278	4097			4431
Low -	1988	1882	2430	2561	2473	3224	3066	2927	2640	2792	2780	2939	2495	2617	2710	2194	2264	2175	2550	2098	2398	1943	2224	2853			
Average -	2632	2939	2980	2991	3626	3882	3649	3300	3932	3252	3087	3923	2995	3315	3167	2643	2689	3200	3398	2690	3004	2491	2749	3710	3177	1.39	
PLD% -	-17	-7	-6	-6	14	22	15	4	24	2	-3	23	-6	4	-0	-17	-15	1	7	-15	-5	-22	-13	17			
Code -	VVVV	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV			
BURNER RD5																											
High -	3648	3985	4049	4049	3922	4482	4500	4065	3488	3265	3224	3783	3604	2841	2441	2890	3265	3171	2606	3079	3633	4228	4162	4130			4500
Low -	2305	2335	3224	3278	3211	3319	3333	2698	2675	2042	2204	2952	2698	1926	1961	2117	2528	2117	1934	1900	2156	3118	2745	2792			
Average -	2935	3419	3659	3626	3474	4093	3873	3116	3113	2426	2932	3418	2890	2287	2242	2352	2925	2606	2284	2479	3157	3717	3256	3779	3086	-1.51	
PLD% -	-5	11	19	17	13	33	26	1	1	-21	-5	11	-6	-26	-27	-24	-5	-16	-26	-20	2	20	6	22			
Code -	*V*V	*V*V	*V*V	****	****	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV			
BURNER RD6																											
High -	3663	4017	3906	3678	3633	3403	3015	2528	3002	2780	3417	3131	3171	3197	3445	3431	3798	3531	3197	3278	3002	2939	3053	3648			4017
Low -	2914	3347	3131	3028	3105	2617	2061	1790	2117	2284	2853	2816	2792	2484	2484	2451	2902	2561	2721	2388	2356	2409	2517	2617			
Average -	3363	3597	3523	3345	3327	2889	2398	2092	2646	2532	3184	2958	2995	2859	2779	3075	3258	3003	2962	2760	2747	2692	2777	3323	2962	-5.46	
PLD% -	14	21	19	13	12	-2	-19	-29	-11	-15	8	-0	1	-3	-6	4	10	1	0	-7	-7	-9	-6	12			
Code -	VVVV					*V*V	*V*V	*V*V	*V*V	****	****	****	****	*V*V	*V*V	*V*V	VVVV	*V*V	****	*V*V	*V*V	****	****	VVVV			

IP7_001022

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocit Peak
BURNER RH1																											
High -	4146	3531	3783	4162	4329	4162	3985	4362	4587	4162	4195	4130	3560	3092	3417	3753	3516	2792	2816	2964	3292	3738	4448	4312			4587
Low -	2927	2841	3265	3184	3251	3488	3131	3692	3574	2902	2914	3333	2234	2244	2780	3211	2185	2165	2294	2495	2629	2652	3224	3278			
Average -	3408	3156	3538	3687	3780	3834	3522	3994	4324	3309	3808	3691	2582	2845	3120	3548	2503	2602	2517	2672	3001	3279	3965	3827	3355	7.07	
PLD% -	2	-6	5	10	13	14	5	19	29	-1	14	10	-23	-15	-7	6	-25	-22	-25	-20	-11	-2	18	14			
Code -	VVVV	****	****	VVVV	VVVV		*V*V		VVVV	VVVV	VVVV		*V*V	*V*V	****	****	*V*V	*V*V	****	****	*V*V	*V*V	VVVV	VVVV			
BURNER RH2																											
High -	3738	3604	3251	4081	4396	4362	4017	4001	3604	3171	4113	4113	3738	2698	3474	3278	4329	4228	4295	4228	3678	3403	4162	3829			4396
Low -	2356	2757	2346	2698	3319	3105	3251	2977	2517	2070	2185	2865	2430	1891	2185	2264	2335	2927	2952	3002	2841	2409	2780	2377			
Average -	3061	3134	2790	3515	4018	3495	3537	3449	3120	2399	3594	3344	2745	2197	3078	2601	3854	3370	3831	3476	3317	2935	3594	2854	3221	2.81	
PLD% -	-5	-3	-13	9	25	8	10	7	-3	-26	12	4	-15	-32	-4	-19	20	5	19	8	3	-9	12	-11			
Code -	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV		VVVV	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	VVVV	*V*V			
BURNER RH3																											
High -	3618	4081	3860	4228	4312	4179	4278	4431	4482	4694	4278	4605	4552	4278	4295	4228	4748	4748	4065	3516	3969	3844	4113	3906			4748
Low -	2398	2841	2829	2829	3171	3516	3092	3251	3722	3922	2792	3002	2914	2780	2165	2305	2964	3502	3105	2629	2877	2977	2952	2989			
Average -	3153	3659	3405	3629	3797	3790	3748	4035	4151	4326	3439	4300	3331	4008	2724	3550	4268	3956	3605	2877	3533	3270	3488	3337	3641	16.20	
PLD% -	-13	1	-6	-0	4	4	3	11	14	19	-6	18	-9	10	-25	-3	17	9	-1	-21	-3	-10	-4	-8			
Code -	*V*V	*V*V	*V*V	*V*V	VVVV	****	VVVV	VVVV			VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V			
BURNER RH4																											
High -	3618	4414	4379	3707	4517	4712	4605	4482	4950	4932	4785	4803	4017	3560	3574	3560	3488	4587	4587	4162	3678	5026	5102	4448			5102
Low -	3092	3306	2721	2528	2792	4097	3158	3238	4146	3211	3197	3560	2841	2865	2274	2517	2640	3053	2829	3002	2663	2792	3265	3144			
Average -	3406	4127	3469	3077	3914	4408	3734	4123	4751	3602	4400	4011	3291	3203	2960	3023	3169	4212	3570	3752	3078	4570	3910	3894	3736	19.23	
PLD% -	-9	10	-7	-18	5	18	-0	10	27	-4	18	7	-12	-14	-21	-19	-15	13	-4	0	-18	22	5	4			
Code -	****	*V*V	*V*V	*V*V	*V*V		VVVV	*V*V		VVVV	VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			
BURNER RH5																											
High -	3844	4295	4295	4839	4748	4623	4396	4448	4623	4552	4162	4097	3431	4552	4465	4345	3906	4839	4448	4312	4641	4858	4895	4465			4895
Low -	2769	2952	3053	3417	3953	3604	3618	3459	3829	2890	2745	2652	2780	2952	3768	2745	2686	3560	2816	3040	3589	3292	4261	2462			
Average -	3188	3813	3480	4366	4497	3932	4047	4091	4440	3228	3681	3046	3117	4080	4009	3090	3611	4512	3468	4032	4138	4426	4568	3214	3836	22.45	
PLD% -	-17	-1	-9	14	17	2	5	7	16	-16	-4	-21	-19	6	4	-19	-6	18	-10	5	8	15	19	-16			
Code -	*V*V	*V*V	*V*V	VVVV		VVVV	****	VVVV		VVVV	*V*V	*V*V	****	VVVV		*V*V	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV		VVVV			
BURNER RH6																											
High -	4312	4312	3604	4431	5007	4482	4113	4278	4097	3953	4431	4312	3545	3604	2745	4312	4570	4295	4448	4396	3516	4552	4500	4097			5007
Low -	3707	2484	2710	2927	3875	3560	2136	1997	2419	2804	3171	3131	3238	2127	2156	2294	3488	3389	2989	2721	2792	2964	3361	3066			
Average -	4056	3165	3203	3740	4450	4059	2716	3790	2850	3400	4036	3456	3392	2462	2367	3634	4014	3916	3927	3360	3193	4087	3926	3514	3530	12.66	
PLD% -	15	-10	-9	6	26	15	-23	7	-19	-4	14	-2	-4	-30	-33	3	14	11	11	-5	-10	16	11	-0			
Code -	****	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V			
BURNER RC1																											
High -	3891	3633	3648	3953	3953	3015	3306	4482	4081	3678	3783	3560	3347	3891	3875	3118	3278	3265	3618	3875	4245	4195	3860	4065			4482
Low -	3184	2356	2710	3040	2441	2462	2388	2617	2927	2927	3292	2156	2224	2780	2356	2305	2136	2108	3158	2914	3002	2841	2877	3224			
Average -	3478	2919	3208	3480	2937	2699	2920	3867	3352	3381	3556	2459	2869	3591	2782	2726	2370	2659	3397	3208	3618	3295	3467	3754	3166	1.06	
PLD% -	10	-8	1	10	-7	-15	-8	22	6	7	12	-22	-9	13	-12	-14	-25	-16	7	1	14	4	10	19			
Code -	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV	VVVV	*V*V	VVVV			
BURNER RC2																											
High -	3306	3028	3361	3953	4065	4065	4033	3985	4033	4345	4261	3403	2927	3105	3985	3829	3618	3545	3633	4329	3783	4179	3891	3922			4345
Low -	2294	2335	2388	2495	2274	2061	2721	2841	2792	2902	3066	2356	2346	2539	2617	2234	2346	2902	2572	2617	3028	3028	2539	2539			
Average -	2679	2688	2773	3353	2774	3219	3198	3197	3146	3907	3710	2728	2631	2795	3570	2773	3146	3165	2921	3738	3523	3643	3202	2957	3143	0.32	
PLD% -	-15	-14	-12	7	-12	2	2	2	0	24	18	-13	-16	-11	14	-12	0	1	-7	19	12	16	2	-6			
Code -	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	****	****	VVVV	*V*V	*V*V	****	*V*V	VVVV	****	VVVV	*V*V	VVVV			

IP7_001023

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RC3																											
High -	4130	3092	4065	3768	3860	4379	4228	3516	3768	3922	3648	4448	4179	3545	3197	3589	3560	3251	3417	3707	3488	3798	3604	4245			4448
Low -	2517	2146	2561	2939	2927	3158	2927	2561	2640	3118	2816	2640	2877	2721	2204	2024	2550	2398	2583	2745	2629	3144	2388	2517			
Average -	3151	2565	3473	3329	3403	3996	3433	2838	3324	3483	3271	3605	3280	3192	2580	2928	3032	2684	2928	3060	3135	3491	2936	3634	3198	2.07	
PLD% -	-1	-20	9	4	6	25	7	-11	4	9	2	13	3	-0	-19	-8	-5	-16	-8	-4	-2	9	-8	14			
Code -	VVVV	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV			
BURNER RC4																											
High -	3604	3938	3814	4017	3707	3860	3722	3604	3238	3347	3158	3389	3224	3560	3211	3531	3738	3516	3844	3814	4001	3985	4179	3844			4179
Low -	2877	2686	2617	3118	3211	2865	2698	2561	2080	2146	2698	2398	2675	2441	2550	2561	2663	2462	2517	3255	2710	3118	3211	2419			
Average -	3269	3411	3285	3481	3493	3385	3099	3142	2434	2820	2886	2785	2978	2914	2890	3096	3159	2935	3399	3541	3268	3462	3685	3039	3161	0.88	
PLD% -	3	8	4	10	11	7	-2	-1	-23	-11	-9	-12	-6	-8	-9	-2	-0	-7	8	12	3	10	17	-4			
Code -	*V*V	VVVV	VVVV	VVVV	****	VVVV	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV	VVVV	VVVV	VVVV			
BURNER RC5																											
High -	3604	[illegible]	3459	3722	4130	4345	3860	3906	4049	3922	3375	3768	3092	3707	3545	3953	3604	3574	3969	3531	3306	3403	3663	3403			4345
Low -	2606	[illegible]	[illegible]	2722	3131	3265	3092	3197	3347	2539	1832	1865	2156	2388	1934	1961	2652	2473	2462	2517	2640	2663	2495	2473			
Average -	3116	2897	3082	3360	3665	3684	3514	3611	3750	2928	2233	3127	2508	3291	2404	2914	3086	2794	3285	2952	2931	3048	3068	2968	3093	-1.29	
PLD% -	1	-6	-0	9	19	19	14	17	21	-5	-28	1	-19	6	-22	-6	-0	-10	6	-4	-5	-1	-1	-4			
Code -	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV	****	****		VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V			
BURNER RC6																											
High -	3333	3768	3389	3814	3306	3829	4097	3618	3574	3488	3131	4245	4195	3938	3633	4295	4312	4146	4179	3814	4001	4932	4858	3265			4932
Low -	2841	2572	2675	2698	2506	2572	3211	2506	2194	2061	2244	2792	3633	2952	2710	2902	2550	2629	3015	2517	2617	3224	2606	2686			
Average -	3109	3102	2983	3263	2807	3309	3732	2791	2888	2462	2873	3787	3942	3322	3089	3874	2899	3406	3712	2903	3279	4464	3470	3025	3271	4.38	
PLD% -	-5	-5	-9	-0	-14	1	14	-15	-12	-25	-12	16	21	2	-6	18	-11	4	14	-11	0	36	6	-8			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	****			
BURNER RG1																											
High -	3251	3079	3224	3560	3545	4245	4396	4130	3768	3783	3589	2927	3118	3197	2572	2550	3211	2853	3224	3375	3531	3633	3722	3783			4396
Low -	2606	2335	2356	2902	2335	2462	3431	3053	2388	2473	2430	1545	1618	2315	2165	2254	2024	2108	2194	2517	2816	2606	2640	2473			
Average -	2986	2615	2855	3208	2726	3593	4059	3429	2737	3277	2730	1899	2398	2716	2356	2380	2698	2441	2623	2871	3190	3134	3406	2930	2886	-7.90	
PLD% -	3	-9	-1	11	-6	25	41	19	-5	14	-5	-34	-17	-6	-18	-18	-7	-15	-9	-1	11	9	18	2			
Code -	****	*V*V	*V*V	****	*V*V	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V			
BURNER RG2																											
High -	3663	3906	4195	4097	3722	3516	4162	3985	3814	3906	4001	3238	3079	3079	3171	3171	4065	3278	4130	4500	4379	3738	3875	3722			4500
Low -	3171	3184	3333	3238	2652	2629	2686	3265	2195	2388	2652	2033	2061	2146	2346	1988	1961	2675	2989	3574	2617	2816	2939	2853			
Average -	3479	3539	3860	3625	3258	2941	3713	3604	2633	3364	3006	2622	2770	2469	2906	2314	3065	2996	3696	4136	3068	3301	3358	3276	3208	2.40	
PLD% -	8	10	20	13	2	-8	16	12	-18	5	-6	-18	-14	-23	-9	-28	-4	-7	15	29	-4	3	5	2			
Code -	****	****	VVVV	VVVV	*V*V	*V*V	VVVV	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	****	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V			
BURNER RG3																											
High -	3184	3040	3375	3753	3488	4195	3953	3938	3922	3403	3678	4113	3814	3459	3431	3985	4895	4858	4658	4278	4261	3574	3707	3618			4895
Low -	2710	2409	2419	2914	2495	2473	2890	2675	1934	1857	2367	2572	2757	2686	2663	2686	3488	3829	3431	3738	3028	2506	3002	2710			
Average -	2917	2683	3004	3365	2953	3607	3316	3318	2336	2690	3190	3457	3375	2980	3134	3449	4532	4376	4005	4032	3393	2969	3390	3010	3312	5.70	
PLD% -	-12	-19	-9	2	-11	9	0	0	-29	-19	-4	4	2	-10	-5	4	37	32	21	22	2	-10	2	-9			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	****	*V*V	*V*V	****	*V*V			
BURNER RG4																											
High -	3238	3389	4379	4261	4414	4414	4049	4195	4033	4362	3678	3265	4146	3985	2829	3844	3844	3663	3488	3474	4130	4081	3678	4049			4414
Low -	2927	2865	2877	3722	3663	3131	2539	2640	2617	2606	2583	2663	2745	1815	1891	2451	2305	2388	2089	2284	2629	2952	2927	2877			
Average -	3093	3063	3811	3977	4164	3860	3299	3125	3088	3146	3199	2986	3574	2237	2439	3137	2624	3264	2504	2829	3587	3350	3367	3785	3229	3.07	
PLD% -	-4	-5	18	23	29	20	2	-3	-4	-3	-1	-8	11	-31	-24	-3	-19	1	-22	-12	11	4	4	17			
Code -	****	****	VVVV			VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	****	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	VVVV			

IP7_001024

AIR DISTRIBUTION ANALYSIS
BASELINE OUTER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER BG5																											
High -	2890	2902	3783	3488	4228	4162	4245	3678	4482	4379	4081	3953	3516	3306	3738	4130	4517	4605	4587	4261	3502	3516	3333	3292			4605
Low -	2484	2346	2561	2829	3079	3144	3292	2890	3040	2204	2294	2877	1726	1807	2914	3131	3278	2964	3238	2528	2305	2640	2506	2572			
Average -	2643	2691	3151	3132	3729	3752	3704	3223	4069	2897	3664	3188	2086	2787	3380	3554	4086	3574	4096	3372	2822	3070	2914	3036	3276	4.56	
PLD% -	-19	-18	-4	-4	14	15	13	-2	24	-12	12	-3	-36	-15	3	8	25	9	25	3	-14	-6	-11	-7			
Code -	****	****	*V*V	****	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V			
BURNER BG6																											
High -	4146	4312	4001	4162	3891	4001	3969	3474	4362	4329	2939	3922	3922	3403	2595	3922	3922	3238	4245	4097	3906	3891	3875	3516			4362
Low -	3560	3053	3144	2254	2539	3066	3171	2617	2617	2108	2165	2745	3211	2089	2127	2398	2264	2388	2606	2388	2506	3079	2769	2550			
Average -	3862	3713	3728	2782	3445	3640	3532	3003	4008	2510	2666	3609	3479	2501	2349	3507	2758	2710	3771	2946	3159	3476	3312	3044	3230	3.08	
PLD% -	20	15	15	-14	7	13	9	-7	24	-22	-17	12	8	-23	-27	9	-15	-16	17	-9	-2	8	3	-6			
Code -		VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V			

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Table 4

Baseline Inner Zone Air Distribution

AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Table 4

Summary	
Average Velocity All Burners =	2814.14 fpm
Maximum High Flow Deviation =	22.57 %
Minimum Low Flow Deviation =	-44.34 %
Total Flow Deviation =	66.90 %

Condition	Code	Trigger Level %
Blocked Flow	*****	10
Vortex Action	VVVVV	20
Flow & Vortex Action	*V*V*	

Test Point Velocities (Feet/Minute)

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FE6																											
High -	2664	3025	3109	3511	4243	4207	4137	3932	3799	3419	3067	3067	2166	3039	3574	3449	3669	3152	3717	3653	3081	2780	3109	3167			4243
Low -	2301	2370	2651	2794	3210	3653	2874	3025	3313	2465	2406	1914	1759	1768	2780	3167	2928	2588	2651	2914	2613	2429	2490	1826			
Average -	2473	2738	2834	3240	3965	3904	3315	3629	3476	2807	2646	2212	1947	2681	3305	3322	3421	2953	2906	3142	2811	2595	2846	2200	2974	5.67	
PLD% -	-17	-8	-5	9	33	31	11	22	17	-6	-11	-26	-35	-10	11	12	15	-1	-2	6	-5	-13	-4	-26			
Code -	****	*V*V	****	*V*V	VVVV		VVVV	VVVV	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	****	****	****	*V*V			
BURNER FE5																											
High -	3123	3388	3999	4016	4646	4552	3388	3511	3419	2576	3138	3542	3511	3404	3109	3067	3095	3067	3210	3067	2997	3196	3558	3196			4646
Low -	2514	2638	3053	3701	3799	2382	2370	3152	2255	2122	2278	2874	3081	2874	2741	2312	2441	2833	2901	2728	2754	2914	3011	2563			
Average -	2786	3114	3637	3867	4295	2911	3101	3316	2632	2369	2854	3354	3330	3059	2928	2578	2852	2956	3034	2881	2906	3068	3206	2883	3080	9.44	
PLD% -	-10	1	18	26	39	-5	1	8	-15	-23	-7	9	8	-1	-5	-16	-7	-4	-1	-6	-6	-0	4	-6			
Code -	****	*V*V	*V*V	****		VVVV	*V*V	****	*V*V	****	*V*V	****	****	****	****	*V*V	*V*V	****	****	****	****	****	****	****			
BURNER FE4																											
High -	3799	4172	4405	4589	4460	4190	3637	3653	3239	2221	2199	3167	3167	3480	3138	2887	2255	2833	2741	3225	3328	3653	3848	3717			4589
Low -	3284	3284	3799	4068	3558	2406	2638	2901	1865	1527	1570	1884	2406	2526	2626	1965	1904	2069	2324	2347	2887	3039	3284	2807			
Average -	3551	3825	4057	4335	3891	2782	3329	3164	2380	1864	1916	2691	2772	3084	2858	2220	2080	2619	2498	2882	3110	3435	3550	3206	3004	6.75	
PLD% -	18	27	35	44	30	-7	11	5	-21	-38	-36	-10	-8	3	-5	-26	-31	-13	-17	-4	4	14	18	7			
Code -	****	VVVV			VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	****	*V*V	****	****	****	*V*V			
BURNER FE3																											
High -	2651	3284	3011	2453	2539	2526	2429	2526	2477	2177	2278	2233	2942	3766	2969	2651	3181	3589	3449	4314	4190	4190	3025	2601			4314
Low -	2016	2406	2122	2037	2133	2133	2177	2144	1914	1768	1884	1884	1924	2626	2144	1894	2069	2860	2860	2860	3799	2664	2027	1985			
Average -	2310	2859	2408	2262	2388	2353	2283	2323	2078	1936	2126	2033	2630	3381	2572	2173	2858	3294	3085	3869	4027	3030	2235	2308	2618	-6.99	
PLD% -	-12	9	-8	-14	-9	-10	-13	-11	-21	-26	-19	-22	0	29	-2	-17	9	26	18	48	54	16	-15	-12			
Code -	*V*V	*V*V	*V*V	****	****	****	****	****	*V*V	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	VVVV		VVVV	*V*V	*V*V			
BURNER FE2																											
High -	2702	3225	3138	2807	2526	2477	3210	3067	2502	2289	2689	3167	3621	3434	3095	3081	3239	3419	3225	3999	3832	3621	2638	2588			3999
Low -	2266	2312	2477	2155	2177	2133	2453	2394	1894	1924	2166	2563	3025	2754	2048	2188	2613	2794	2335	2502	3210	2312	1778	1944			
Average -	2474	2846	2693	2330	2392	2327	2963	2600	2116	2121	2469	2979	3370	3004	2439	2727	2858	3095	2655	3439	3439	2679	2119	2368	2688	-4.50	
PLD% -	-8	6	0	-13	-11	-13	10	-3	-21	-21	-8	11	25	12	-9	1	6	15	-1	28	28	-0	-21	-12			
Code -	****	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	****	****	****		****	*V*V	*V*V	****	****	*V*V	VVVV		VVVV	*V*V	*V*V			
BURNER FE1																											
High -	2080	3081	2997	2266	2394	2278	2677	3225	3210	2526	2651	2490	3109	3239	3254	2901	3653	3782	3750	3915	3965	3465	2188	2144			3965
Low -	1649	1613	2069	2006	2080	1975	2006	2502	2312	2122	2166	1924	2080	2677	2016	1924	2465	3239	3210	2997	3123	1865	1740	1685			
Average -	1808	2602	2304	2138	2227	2089	2496	2968	2646	2353	2349	2176	2747	2956	2429	2493	3261	3545	3521	3693	3458	2213	1953	1824	2594	-7.83	
PLD% -	-30	0	-11	-18	-14	-19	-4	14	2	-9	-9	-16	6	14	-6	-4	26	37	36	42	33	-15	-25	-30			
Code -	*V*V	*V*V	*V*V	****	****	****	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	****	*V*V	*V*V	VVVV			VVVV	VVVV	*V*V	*V*V	*V*V			

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AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FA6																											
High -	2465	2997	3284	3685	4172	4155	4085	3750	3558	3328	2833	3025	2997	2794	3269	3181	3298	3067	2563	2406	2833	2901	3388	3343			4172
Low -	2199	2312	2767	3167	3511	3881	3254	3284	3152	2312	2312	2289	2394	2048	2166	2887	2715	2166	2221	1924	1904	2601	2677	2289			
Average -	2337	2758	3131	3508	3971	4035	3520	3478	3334	2656	2568	2772	2696	2272	2891	3043	2930	2385	2326	2068	2587	2737	3175	2490	2903	3.15	
PLD% -	-19	-5	8	21	37	39	21	20	15	-8	-12	-5	-7	-22	-0	5	1	-18	-20	-29	-11	-6	9	-14			
Code -	****	*V*V	****	****			VVVV	****	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	****	*V*V	*V*V	****	*V*V	*V*V			
BURNER FA5																											
High -	2942	3081	3782	4533	4552	4423	3932	3999	3496	2955	3313	3419	3717	3511	3388	3138	3095	2860	3254	3284	3011	3449	3496	2955			4552
Low -	2715	2715	2833	3496	3999	2728	2807	3358	2715	2601	2626	2874	3181	2942	2969	2833	2453	2551	2702	2767	2754	2887	2728	2664			
Average -	2845	2929	3468	4291	4312	3586	3665	3562	3041	2785	3083	3242	3414	3237	3164	3038	2675	2739	3083	2950	2913	3277	2938	2788	3209	14.04	
PLD% -	-11	-9	8	34	34	12	14	11	-5	-13	-4	1	6	1	-1	-5	-17	-15	-4	-8	-9	2	-8	-13			
Code -	****	****	*V*V	VVVV		VVVV	*V*V	****	*V*V	****	*V*V	****	****	****	****	****	*V*V	****	****	****	****	****	*V*V	****			
BURNER FA4																											
High -	3210	3328	3685	4085	4296	4857	4760	4332	4278	3815	3269	3298	3574	3434	2820	2715	2638	2794	2780	2702	3196	3589	3511	3313			4857
Low -	2820	3053	3138	3558	3815	4085	2955	3039	3496	2780	2613	2820	2887	2490	2359	2278	2155	2289	2417	2370	2417	3011	3011	2502			
Average -	3072	3194	3496	3884	4021	4516	3399	4023	3716	3103	2959	3038	3190	2713	2571	2495	2432	2652	2645	2535	2974	3441	3260	2733	3169	12.62	
PLD% -	-3	1	10	23	27	42	7	27	17	-2	-7	-4	1	-14	-19	-21	-23	-16	-17	-20	-6	9	3	-14			
Code -	****	****	****	****	****		VVVV	*V*V	****	*V*V	*V*V	****	****	*V*V	****	****	****	****	****	****	*V*V	****	****	*V*V			
BURNER FA3																											
High -	2465	3313	3254	3254	3313	3404	3039	2874	2833	2382	2551	2551	2080	2016	1884	2406	3181	3138	3225	4225	4225	4120	3269	2626			4225
Low -	2133	2221	2767	2429	2514	2715	2278	2324	2133	1975	2090	1750	1613	1477	1452	1527	1934	2677	2664	2715	3766	2955	1884	1924			
Average -	2301	2844	3065	2739	3012	2929	2789	2697	2372	2186	2320	2048	1856	1749	1592	2064	2784	2854	2893	3700	4001	3355	2190	2386	2614	-7.13	
PLD% -	-12	9	17	5	15	12	7	3	-9	-16	-11	-22	-29	-33	-39	-21	7	9	11	42	53	28	-16	-9			
Code -	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	VVVV		VVVV	*V*V	*V*V			
BURNER FA2																											
High -	1996	2394	2728	2702	2563	2563	2324	1975	2058	2016	2166	2210	2324	2255	2155	1944	3123	3284	3284	3574	3865	3881	2780	2406			3881
Low -	1694	1722	2155	1914	1914	2244	1731	1694	1694	1604	1613	1855	1855	1845	1460	1493	1703	2539	2417	2539	3284	2613	1787	1667			
Average -	1853	2148	2540	2142	2366	2338	1915	1833	1922	1723	1930	2021	2045	2065	1679	1729	2620	3062	2724	3225	3605	2929	2216	1862	2271	-19.32	
PLD% -	-18	-5	12	-6	4	3	-16	-19	-15	-24	-15	-11	-10	-9	-26	-24	15	35	20	42	59	29	-2	-18			
Code -	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV	*V*V	*V*V			
BURNER FA1																											
High -	2112	2382	3123	2942	2767	2728	2689	2914	2754	2613	2588	2715	2833	2563	2453	2301	3109	3881	3915	4016	4016	3848	3181	2563			4016
Low -	1835	1934	2155	2301	2382	2069	2069	2406	2244	2289	2133	2155	2188	2133	1835	1865	2133	2928	2613	2794	3589	2914	2255	1985			
Average -	1979	2156	2882	2528	2568	2207	2496	2710	2470	2462	2352	2446	2470	2361	2021	2053	2825	3581	3056	3617	3808	3162	2591	2160	2623	-6.78	
PLD% -	-25	-18	10	-4	-2	-16	-5	3	-6	-6	-10	-7	-6	-10	-23	-22	8	36	16	38	45	21	-1	-18			
Code -	****	****	*V*V	*V*V	****	*V*V	*V*V	****	****	****	****	*V*V	*V*V	****	*V*V	****	*V*V	VVVV	VVVV	VVVV		VVVV	*V*V	*V*V			
BURNER FF6																											
High -	2166	2394	2702	3685	3766	3717	3284	3343	3328	2887	2477	3095	3196	3766	4120	3898	3373	3313	3343	3025	2928	2874	2860	2312			4120
Low -	1894	2016	2177	2477	3388	2887	2576	2741	2715	2144	2048	2210	2794	2969	3388	3109	3053	3053	2820	2514	2576	2588	1955	1552			
Average -	2042	2195	2489	3214	3600	3224	2809	3134	2906	2382	2261	2786	3012	3481	3716	3345	3212	3192	2996	2711	2779	2730	2269	1755	2843	1.04	
PLD% -	-28	-23	-12	13	27	13	-1	10	2	-16	-20	-2	6	22	31	18	13	12	5	-5	-2	-4	-20	-38			
Code -	****	****	****	*V*V		VVVV	*V*V	****	****	*V*V	****	*V*V	****	VVVV		VVVV	****	****	****	****	****	****	*V*V	*V*V			
BURNER FF5																											
High -	2677	2983	3081	4190	4278	4155	3095	3373	3343	3123	2833	3109	3621	3574	3542	3313	3109	3123	3123	3067	2901	3404	3589	3328			4278
Low -	2347	2188	2638	2887	3932	2477	1436	1552	2664	2324	2335	2601	2780	3284	3053	2942	2754	2741	2794	2677	2526	2626	3067	2048			
Average -	2502	2704	2900	3772	4142	3091	1960	2932	2976	2529	2625	2894	3404	3427	3197	3096	2905	2988	2932	2828	2705	3121	3306	2418	2973	5.64	
PLD% -	-16	-9	-2	27	39	4	-34	-1	0	-15	-12	-3	15	15	8	4	-2	1	-1	-5	-9	5	11	-19			
Code -	****	*V*V	****	VVVV		VVVV	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	****	****	****	****	****	****	****	****	*V*V	****	*V*V			

IP7_001028

AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FF4																											
High -	3181	3123	3138	3782	4332	4350	2983	3343	3373	2166	1865	2901	2969	2689	2794	2820	2626	2914	2997	3053	3081	3434	3328	3419			4350
Low -	2244	2301	2860	2997	3669	1934	1884	2780	2027	1373	1460	1544	2514	2312	2301	2502	1797	1975	2588	2382	2563	2576	3053	3025			
Average -	2545	2849	2973	3603	4158	2567	2615	3199	2406	1608	1609	2482	2648	2477	2584	2635	2071	2594	2813	2588	2788	3103	3213	3224	2723	-3.24	
PLD% -	-7	5	9	32	53	-6	-4	17	-12	-41	-41	-9	-3	-9	-5	-3	-24	-5	3	-5	2	14	18	18			
Code -	*V*V	*V*V	****	*V*V		VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****	****	****	*V*V	*V*V	****	*V*V	****	*V*V	****	****			
BURNER FF3																											
High -	3011	3025	3225	3196	2942	2767	2551	2539	2551	2233	2406	2359	3025	2969	2441	2144	3589	3832	4051	4172	4051	3637	3181	2833			4172
Low -	2417	2394	2820	2741	2576	2233	2177	2188	2080	1944	1985	2006	1996	2335	1855	1658	1884	3123	3225	3527	3284	2874	2188	2335			
Average -	2711	2796	3004	2904	2739	2475	2364	2370	2209	2128	2139	2151	2657	2656	2065	1893	3062	3527	3712	3873	3574	3181	2503	2596	2720	-3.33	
PLD% -	-0	3	10	7	1	-9	-13	-13	-19	-22	-21	-21	-2	-2	-24	-30	13	30	36	42	31	17	-8	-5			
Code -	****	*V*V	****	****	****	****	****	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V		VVVV			*V*V	*V*V	****			
BURNER FF2																											
High -	2526	3181	3152	3095	2312	2613	2794	2677	2514	2453	2741	2702	2754	2728	2406	1845	3025	3313	3298	3653	3750	3717	2997	2613			3750
Low -	2144	2324	2638	2069	2058	2188	2406	2370	2048	2112	2266	2382	2221	2144	1477	1561	1502	2638	2490	2221	3053	2702	2166	2278			
Average -	2313	2807	2965	2343	2185	2466	2647	2482	2226	2291	2517	2526	2575	2403	1748	1672	2575	3047	2818	3180	3496	3068	2471	2413	2551	-9.34	
PLD% -	-9	10	16	-8	-14	-3	4	-3	-13	-10	-1	-1	1	-6	-32	-34	1	19	10	25	37	20	-3	-5			
Code -	****	*V*V	****	*V*V	****	****	****	****	****	****	****	****	****	*V*V	*V*V	****	*V*V	*V*V	*V*V	VVVV		VVVV	*V*V	****			
BURNER FF1																											
High -	2199	2807	2702	2347	2221	1894	2477	3298	3284	2613	2221	2417	3039	2942	2794	2983	3239	3373	3138	3480	4085	4068	2626	2278			4085
Low -	2006	2037	2155	2058	1759	1731	1787	2382	2221	2080	1996	1996	2244	2221	1622	1740	2406	2901	2526	2526	3123	2441	2006	1914			
Average -	2101	2564	2348	2184	1936	1816	2261	3055	2532	2282	2114	2203	2773	2545	1975	2458	2952	3130	2765	3132	3735	2767	2188	2126	2498	-11.25	
PLD% -	-16	3	-6	-13	-22	-27	-9	22	1	-9	-15	-12	11	2	-21	-2	18	25	11	25	50	11	-12	-15			
Code -	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	VVVV	VVVV	*V*V	****			
BURNER FB6																											
High -	2638	2502	2833	3269	3574	3496	3254	3343	3328	2942	2429	2833	3511	4016	3932	3669	2715	2677	2090	2133	2417	3039	2901	2901			4016
Low -	1694	2090	2255	2601	3025	2942	1778	1428	2588	2155	2058	2090	2626	3419	3225	2490	2255	1924	1712	1722	1884	2255	2502	1712			
Average -	2199	2378	2661	3046	3343	3184	2236	2856	2903	2391	2229	2551	3309	3817	3519	2835	2506	2102	1853	1932	2214	2720	2772	2011	2649	-5.88	
PLD% -	-17	-10	0	15	26	20	-16	8	10	-10	-16	-4	25	44	33	7	-5	-21	-30	-27	-16	3	5	-24			
Code -	*V*V	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V			VVVV	****	*V*V	****	****	*V*V	*V*V	****	*V*V			
BURNER FB5																											
High -	2188	2465	2689	3782	4102	3999	3766	3898	3669	3328	2289	2441	3239	3181	3239	3239	2997	3328	3254	3167	3225	3181	3053	2767			4102
Low -	1904	2027	2144	2370	3465	3254	3269	3138	3025	2133	1816	1806	2016	2638	2677	2741	2576	2551	2928	2874	2955	2860	2626	2027			
Average -	2040	2215	2444	3375	3841	3565	3478	3434	3258	2381	1992	2153	2859	2869	3048	2925	2725	3138	3116	3068	3089	2978	2761	2266	2876	2.19	
PLD% -	-29	-23	-15	17	34	24	21	19	13	-17	-31	-25	-1	-0	6	2	-5	9	8	7	7	4	-4	-21			
Code -	****	****	*V*V	VVVV					****	*V*V	*V*V	*V*V	*V*V	****	****	****	****	*V*V	****	****	****	****	****	*V*V			
BURNER FB4																											
High -	2551	2833	3527	3898	3948	4034	3848	3343	3328	3388	2244	2928	3358	3196	2601	2754	2860	2874	2754	2847	2860	3011	3081	3081			4034
Low -	2080	2048	2514	3313	3358	3181	3053	2860	2807	2006	1740	1816	2601	2429	2301	2278	2465	2576	2441	2551	2551	2539	2651	2101			
Average -	2268	2514	3247	3646	3625	3559	3373	3079	3104	2286	1902	2582	3099	2633	2437	2545	2715	2743	2612	2689	2698	2753	2828	2436	2807	-0.25	
PLD% -	-19	-10	16	30	29	27	20	10	11	-19	-32	-8	10	-6	-13	-9	-3	-2	-7	-4	-4	-2	1	-13			
Code -	****	*V*V	*V*V			VVVV	VVVV	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	****	*V*V			
BURNER FB3																											
High -	2429	2080	2155	2429	2244	2027	2359	2335	1914	2069	1884	2027	1934	1914	1694	1914	3053	3848	3782	3717	3637	3313	2199	2429			3848
Low -	1750	1768	1845	1944	1778	1640	1649	1388	1412	1712	1420	1649	1640	1452	1444	1596	1676	2702	2847	2983	3138	2006	1649	1604			
Average -	1963	1970	2030	2282	1981	1817	2137	1572	1728	1870	1614	1823	1803	1606	1594	1743	2588	3520	3195	3449	3398	2319	1800	2178	2166	-23.04	
PLD% -	-9	-9	-6	5	-9	-16	-1	-27	-20	-14	-25	-16	-17	-26	-26	-20	20	63	48	59	57	7	-17	1			
Code -	*V*V	****	****	****	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	****	****	*V*V	****	****	*V*V	VVVV	VVVV			*V*V	*V*V	*V*V			

IP7_001029

AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER FB2																											
High -	2210	2177	2638	2490	2210	1613	1552	1845	2069	2016	2144	2122	2166	2715	2702	2133	3025	3081	3284	3898	3799	3750	2664	2122			3898
Low -	1428	1527	1894	2090	1460	1238	1289	1420	1750	1676	1787	1904	1914	1924	1835	1797	1694	2406	2887	3025	3343	2221	1787	1768			
Average -	1633	1944	2325	2248	1635	1358	1459	1704	1928	1795	1988	2011	2047	2392	2119	1964	2461	2860	3093	3546	3560	2640	2057	1941	2196	-21.96	
PLD% -	-26	-11	6	2	-26	-38	-34	-22	-12	-13	-9	-8	-7	9	-4	-11	12	30	41	61	62	20	-6	-12			
Code -	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	****	****	****	****	****	*V*V	*V*V	****	*V*V	*V*V	****	VVVV		VVVV	*V*V	****			
BURNER FB1																											
High -	2166	2651	2715	2133	1996	1965	2244	2166	1955	2359	2833	2677	2417	2312	1712	1797	2969	3358	3269	3766	3669	3358	2874	2539			3766
Low -	1955	1944	1649	1703	1510	1552	1694	1816	1731	1845	2133	2101	2037	1552	1404	1396	1604	2820	2429	2677	3095	2613	2441	1894			
Average -	2052	2286	1993	1879	1720	1748	1889	1966	1837	2114	2519	2403	2223	1754	1532	1631	2593	3135	2816	3432	3270	2857	2595	2110	2265	-19.52	
PLD% -	-9	1	-12	-17	-24	-23	-17	-13	-19	-7	11	6	-2	-23	-32	-28	14	38	24	52	44	26	15	-7			
Code -	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	****	*V*V	VVVV		*V*V	****	*V*V			
BURNER RD1																											
High -	3373	3011	[illegible]	[illegible]	4405	4314	4016	3733	4155	3782	3434	3095	3766	3750	3284	3025	3181	3527	3419	3328	3328	3328	3239	3915			4515
Low -	2166	2112	2601	2942	3865	3848	2807	2901	3358	2677	2210	2244	2539	2887	2514	2551	2780	2983	3109	2820	2983	2901	2942	2090			
Average -	2472	2585	3022	3947	4184	4100	3208	3470	3672	3089	2537	2641	3421	3275	2754	2838	2997	3324	3286	3066	3174	3086	3111	3162	3184	13.15	
PLD% -	-22	-19	-5	24	31	29	1	9	15	-3	-20	-17	7	3	-14	-11	-6	4	3	-4	-0	-3	-2	-1			
Code -	*V*V	*V*V	*V*V	VVVV			*V*V	*V*V		*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	****	****	****	****	****	*V*V			
BURNER RD2																											
High -	3480	3388	3313	3965	3999	4034	3589	3313	3343	3181	3011	3109	3815	3832	3152	3701	3449	2820	3181	3181	3511	3480	3621	3589			4034
Low -	3025	2914	3081	3081	3558	3225	2477	2576	3053	2312	2037	2122	2626	2901	2780	2887	2244	2335	2651	2887	3011	3210	3298	3067			
Average -	3288	3191	3208	3653	3779	3610	2802	3034	3189	2656	2332	2698	3474	3126	2936	3363	2543	2636	2889	3061	3325	3374	3446	3447	3127	11.13	
PLD% -	5	2	3	17	21	15	-10	-3	2	-15	-25	-14	11	-0	-6	8	-19	-16	-8	-2	6	8	10	10			
Code -	****	****	****	VVVV		VVVV	*V*V	*V*V	****	*V*V	*V*V	*V*V	VVVV	VVVV	****	VVVV	*V*V	****	****	****	****	****	****	****			
BURNER RD3																											
High -	2453	3196	3404	4068	4207	4207	3932	3343	3637	3404	2359	2441	3011	3196	3225	2914	3011	3053	2942	2928	2780	2794	3465	3653			4207
Low -	2155	2166	2741	3109	3832	3574	2027	2255	3123	2133	1996	1996	1874	2502	2588	2453	2576	2626	2576	2394	2289	2382	2324	3152			
Average -	2298	2278	3117	3731	3988	3929	2628	2892	3308	2582	2151	2250	2572	2967	2854	2659	2699	2822	2768	2623	2521	2577	3083	3420	2884	2.48	
PLD% -	-20	-4	8	29	38	36	-9	0	15	-10	-25	-22	-11	3	-1	-8	-6	-2	-4	-9	-13	-11	7	19			
Code -	****	*V*V	****	VVVV			VVVV	*V*V	****	*V*V	****	****	*V*V	*V*V	****	****	****	****	****	****	****	****	*V*V	****			
BURNER RD4																											
High -	3449	3388	3496	3181	3138	2955	2887	3123	3343	3373	3434	3717	3511	3434	2526	1996	2651	3574	4085	4386	4571	4515	4190	4016			4571
Low -	2780	2741	2983	2741	2429	2324	2394	2526	2702	2767	2983	2983	2715	1845	1412	1561	1826	2312	3081	3388	3982	3574	3589	3067			
Average -	3222	3095	3171	2987	2827	2544	2657	2898	2986	3106	3205	3267	3122	2451	1753	1839	2355	3102	3721	3853	4306	3845	3874	3363	3065	8.90	
PLD% -	5	1	3	-3	-8	-17	-13	-5	-3	1	5	7	2	-20	-43	-40	-23	1	21	26	41	25	26	10			
Code -	****	****	****	****	*V*V	*V*V	****	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV		*V*V			
BURNER RD5																											
High -	3621	3848	3434	2914	2860	2754	2626	2429	2613	2942	2928	2465	2406	2312	1894	2199	2969	3434	2874	2794	3865	4608	4515	3832			4608
Low -	3167	3254	2626	2563	2394	2417	2144	2027	2080	2335	2122	1894	1955	1740	1649	1622	1894	2382	2301	1570	2101	3328	3511	3239			
Average -	3372	3448	2875	2774	2573	2576	2290	2166	2397	2650	2415	2182	2186	1914	1785	1948	2504	2944	2550	2181	3214	4213	3882	3479	2688	-4.47	
PLD% -	25	28	7	3	-4	-4	-15	-19	-11	-1	-10	-19	-19	-29	-34	-28	-7	9	-5	-19	20	57	44	29			
Code -	****	****	*V*V	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	VVVV	VVVV	****			
BURNER RD6																											
High -	3419	3465	3298	3225	2997	2874	2820	2754	2780	3025	3480	3465	2715	2664	2453	2887	3225	3605	3637	4034	4190	4051	2689	2833			4190
Low -	2382	2394	2955	2807	2664	2453	2312	2210	2335	2613	2847	2441	2441	2166	1712	1797	2359	3039	2370	2382	3782	2514	2133	2266			
Average -	2736	3030	3109	2992	2812	2688	2514	2508	2591	2813	3233	2736	2574	2360	1934	2459	2976	3280	2671	3497	3961	2940	2325	2564	2804	-0.34	
PLD% -	-2	8	11	7	0	-4	-10	-11	-8	1	15	-2	-8	-16	-31	-12	6	17	-5	25	41	5	-17	-9			
Code -	*V*V	*V*V	****	****	****	****	****	****	****	****	****	*V*V	****	****	*V*V	*V*V	*V*V	****	*V*V	VVVV		VVVV	*V*V	*V*V			

IP7_001030

AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RH1																											
High -	2394	2677	3313	3558	4190	4441	4172	4016	4172	4155	3225	3313	3848	3653	3284	3123	3167	3388	3574	3542	3095	2969	3039	2942			4441
Low -	2133	2199	2429	3025	3298	3815	3480	3527	3511	2874	2702	2715	2754	2997	2677	2502	2702	2833	3039	2874	2539	2588	2741	1884			
Average -	2252	2463	2983	3345	3879	4078	3771	3805	3901	3296	2954	3041	3471	3293	2945	2804	2888	3138	3353	3074	2725	2813	2877	2192	3139	11.55	
PLD% -	-28	-22	-5	7	24	30	20	21	24	5	-6	-3	11	5	-6	-11	-8	-0	7	-2	-13	-10	-8	-30			
Code -	****	****	*V*V	****	VVVV					VVVV	****	****	*V*V	****	****	****	****	****	****	****	****	****	****	*V*V			
BURNER RH2																											
High -	2860	2901	3123	3589	4386	4665	4496	3999	3915	3865	3782	2754	2887	3343	3284	3404	3313	3254	3373	3196	3039	3196	3196	3109			4665
Low -	2188	2526	2563	2820	3269	4102	2429	2651	3123	3109	2514	2278	2278	2728	2780	2887	3081	2983	3011	2847	2588	2754	2833	2689			
Average -	2423	2684	2847	3263	4067	4358	3036	3605	3356	3537	2888	2481	2600	3098	2971	3182	3187	3103	3196	2963	2785	2954	3003	2910	3104	10.30	
PLD% -	-22	-14	-8	5	31	40	-2	16	8	14	-7	-20	-16	-0	-4	3	3	-0	3	-5	-10	-5	-3	-6			
Code -	*V*V	****	****	*V*V	VVVV		VVVV	*V*V	*V*V	****	*V*V	****	*V*V	****	****	****	****	****	****	****	****	****	****	****			
BURNER RH3																											
High -	2754	3067	2960	4386	4405	4296	2576	3750	3782	3081	2780	3284	3637	3669	3511	3358	2638	2780	2887	2754	2677	2551	3181	3095			4405
Low -	2289	2441	2382	2406	4120	2016	1544	1613	2539	2382	2324	2514	2477	3225	2983	2233	2101	2144	2406	2266	2289	2112	2199	2112			
Average -	2527	2791	2714	3788	4250	2762	1956	3365	2918	2649	2597	2900	3225	3432	3247	2608	2377	2578	2636	2535	2441	2361	2861	2447	2832	0.63	
PLD% -	-11	-1	-4	34	50	-2	-31	19	3	-6	-8	2	14	21	15	-8	-16	-9	-7	-10	-14	-17	1	-14			
Code -	****	*V*V	*V*V	VVVV		VVVV	*V*V	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	****	****	****	****	*V*V	*V*V			
BURNER RH4																											
High -	3558	3782	4034	4172	2969	2914	3419	3343	3669	3717	3799	3766	3717	3181	2807	2477	3313	3621	3465	2406	4278	4225	4051	3434			4278
Low -	2767	2969	2651	2429	2266	2058	2090	2677	2860	3298	3254	3269	2807	2177	2027	1934	1985	2887	2874	1161	1189	3685	2741	2677			
Average -	3142	3318	3566	2882	2565	2378	3027	3085	3330	3543	3579	3569	3271	2620	2308	2116	2818	3325	3123	1735	3349	3914	3220	2979	3032	7.73	
PLD% -	4	9	18	-5	-15	-22	-0	2	10	17	18	18	8	-14	-24	-30	-7	10	3	-43	10	29	6	-2			
Code -	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	****	*V*V	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV		VVVV	*V*V			
BURNER RH5																											
High -	2874	2860	2983	3167	3109	2887	2928	2874	2702	2887	2833	2955	3167	2914	2820	2914	2526	3465	3358	3109	4068	4332	4314	3434			4332
Low -	2394	2155	2324	2767	2347	2335	2526	2382	2359	2417	2324	2441	2551	2382	1740	1631	1631	2144	2441	1874	1787	3558	3123	2370			
Average -	2662	2470	2776	2964	2729	2609	2779	2626	2528	2695	2584	2704	2927	2671	2087	1951	2154	2872	2879	2300	3394	3986	3430	2755	2731	-2.97	
PLD% -	-2	-10	2	9	-0	-4	2	-4	-7	-1	-5	-1	7	-2	-24	-29	-21	5	5	-16	24	46	26	1			
Code -	****	*V*V	*V*V	****	*V*V	****	****	****	****	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV	*V*V			
BURNER RH6																											
High -	2370	2901	2887	2514	2651	2638	2901	3343	3343	2638	2406	2048	1640	1904	2027	2188	3328	3932	3881	4261	4368	4332	3067	2394			4368
Low -	2037	2144	2301	2255	2289	2382	2406	2728	2370	1924	1578	1420	1252	1404	1518	1631	1855	2874	3109	3328	3898	2887	1985	1975			
Average -	2224	2628	2538	2365	2499	2511	2730	3132	2666	2210	1951	1584	1407	1732	1843	1914	2792	3597	3444	3956	4199	3322	2272	2200	2571	-8.62	
PLD% -	-14	2	-1	-8	-3	-2	6	22	4	-14	-24	-38	-45	-33	-28	-26	9	40	34	54	63	29	-12	-14			
Code -	****	*V*V	*V*V	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	****	VVVV		VVVV	*V*V	****			
BURNER RC1																											
High -	2928	2780	3434	4515	4441	4515	4172	4314	4296	3848	3388	3527	3542	3358	3152	2955	3196	3982	3865	3358	3167	3685	3733	2860			4515
Low -	2453	2477	2539	3123	3965	3750	3025	3298	3465	2715	2664	2860	3025	2794	2689	2233	2359	2807	3152	2417	2514	3067	2677	2335			
Average -	2618	2658	3055	4184	4214	4020	3410	4062	3829	3056	2961	3301	3302	3078	2885	2572	2882	3703	3336	2642	3006	3494	2933	2573	3241	15.15	
PLD% -	-19	-18	-6	29	30	24	5	25	18	-6	-9	2	2	-5	-11	-21	-11	14	3	-18	-7	8	-9	-21			
Code -	****	****	*V*V	VVVV			VVVV	VVVV		*V*V	*V*V	****	****	****	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	*V*V	****			
BURNER RC2																											
High -	3637	3388	2794	3419	4314	4722	4780	4190	4386	4441	4314	3167	3404	3898	3848	3848	3669	3388	3404	3434	3449	3558	3832	3965			4780
Low -	2807	2526	2502	2526	3109	4137	3225	3343	3766	3815	2754	2664	2741	2983	3496	3328	2741	2728	3138	3011	3081	3269	3419	3313			
Average -	3141	2768	2617	3097	4022	4380	3646	3932	4018	4177	3126	2848	3108	3640	3692	3616	3035	3187	3283	3186	3321	3455	3687	3580	3440	22.24	
PLD% -	-9	-20	-24	-10	17	27	6	14	17	21	-9	-17	-10	6	7	5	-12	-7	-5	-7	-3	0	7	4			
Code -	*V*V	*V*V	****	*V*V	VVVV		VVVV	*V*V			VVVV	****	****	*V*V	****	****	*V*V	****	****	****	****	****	****	****			

IP7_001031

AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RC3																											
High -	3269	3298	3181	4423	4818	5300	5075	4172	3948	3496	2983	2453	3542	3465	3328	3067	3138	3109	3298	3313	3343	3328	3419	3527			5300
Low -	2677	2664	2613	2820	4190	4243	3181	3269	3284	2441	1914	1904	2312	2794	2601	2588	2677	2728	2741	2874	2860	2887	2983	3123			
Average -	2998	3009	2933	3904	4599	4703	3578	3654	3528	2806	2198	2235	3068	3071	3136	2821	2949	2944	2981	3082	3061	3139	3213	3312	3205	13.89	
PLD% -	-6	-6	-8	22	43	47	12	14	10	-12	-31	-30	-4	-4	-2	-12	-8	-8	-7	-4	-4	-2	0	3			
Code -	****	****	****	*V*V			VVVV	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	*V*V	****	****	****	****	****	****	****	****	****			
BURNER RC4																											
High -	3898	4172	4085	3449	3313	2539	2664	2526	2133	2715	2651	2490	3328	3181	2689	1975	2638	4068	4102	5015	4955	4703	4278	4085			5015
Low -	3358	3653	3138	3109	2502	2221	2347	1904	1622	1596	2199	2210	2112	2221	1649	1703	1712	2563	3605	3848	4441	4102	3574	3511			
Average -	3541	3990	3436	3271	2830	2371	2470	2155	1797	2250	2422	2348	2994	2590	1932	1846	2388	3611	3898	4506	4626	4285	3995	3781	3056	8.58	
PLD% -	16	31	12	7	-7	-22	-19	-29	-41	-26	-21	-23	-2	-15	-37	-40	-22	18	28	47	51	40	31	24			
Code -	****	****	*V*V	****	*V*V	****	****	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	VVVV			****	****			
BURNER RC5																											
High -	1436	1510	1502	1388	1334	1260	1127	1134	1357	1622	2441	2324	1759	1855	1740	1502	2144	2715	2576	2820	2969	2613	1975	1874			2969
Low -	1069	1224	1121	976	1006	947	947	913	988	1161	1469	1373	1238	1373	1289	1238	1327	1924	1452	1570	2133	1731	1477	1189			
Average -	1249	1361	1272	1109	1173	1082	1018	992	1183	1437	2007	1671	1482	1623	1484	1345	1854	2439	1833	2329	2501	2001	1707	1441	1566	-44.34	
PLD% -	-20	-13	-19	-29	-25	-31	-35	-37	-24	-8	28	7	-5	4	-5	-14	18	56	17	49	60	28	9	-8			
Code -	*V*V	****	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	*V*V	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V			
BURNER RC6																											
High -	2255	2874	2820	2406	2613	2514	2955	3138	3284	3621	3527	3605	3865	3782	3701	3815	4225	4172	3999	4332	4314	3999	3496	2588			4332
Low -	1914	1985	1955	2048	2301	2301	2210	2677	2983	2833	2767	2901	2942	3152	2514	2728	3527	3653	2860	2983	3480	2942	2221	2037			
Average -	2081	2598	2180	2224	2445	2390	2693	2932	3131	3265	3155	3231	3422	3498	2851	3410	3971	3867	3211	3909	3832	3485	2642	2375	3033	7.79	
PLD% -	-31	-14	-28	-27	-19	-21	-11	-3	3	8	4	7	13	15	-6	12	31	27	6	29	26	15	-13	-22			
Code -	****	*V*V	*V*V	****	****	****	*V*V	****	****	*V*V	*V*V	****	*V*V	****	*V*V	*V*V			VVVV	VVVV		VVVV	*V*V	*V*V			
BURNER RG1																											
High -	2477	2441	2847	3915	4068	4780	4515	3669	3653	3733	3820	3542	3685	3717	3832	3733	3480	3284	3095	3138	3039	2969	3225	3167			4780
Low -	2037	2133	2221	2563	3558	3848	3067	3225	3358	2728	2324	2651	3298	3167	3269	3210	3067	2942	2626	2767	2689	2728	2741	1806			
Average -	2232	2300	2615	3522	3930	4299	3429	3434	3492	2970	2578	3320	3538	3382	3581	3399	3214	3103	2826	3008	2859	2853	3056	2067	3125	11.05	
PLD% -	-29	-26	-16	13	26	38	10	10	12	-5	-18	6	13	8	15	9	3	-1	-10	-4	-9	-9	-2	-34			
Code -	****	****	*V*V	*V*V	****		VVVV	****	****	*V*V	****	*V*V	****	****	****	****	****	****	****	****	****	****	****	*V*V			
BURNER RG2																											
High -	3011	3025	3138	4155	4646	4589	3915	3898	3669	3210	2514	2794	3152	3343	3637	3637	2820	3269	3152	3025	3167	3343	3465	3313			4646
Low -	2514	2477	2613	2794	3948	3298	3039	3225	2942	2177	2133	2199	2502	2901	2914	2741	2477	2588	2715	2754	2847	3011	3167	2465			
Average -	2837	2668	2887	3794	4405	3839	3340	3568	3227	2425	2314	2593	2941	3170	3399	2931	2622	3026	2938	2861	3009	3205	3335	2684	3084	9.59	
PLD% -	-8	-13	-6	23	43	24	8	16	5	-21	-25	-16	-5	3	10	-5	-15	-2	-5	-7	-2	4	8	-13			
Code -	****	****	****	*V*V		VVVV	*V*V	****	****	*V*V	****	*V*V	*V*V	****	****	*V*V	****	*V*V	****	****	****	****	****	*V*V			
BURNER RG3																											
High -	3067	3685	3605	4120	4137	4741	4665	3848	3815	3373	2394	3053	4172	4051	4016	4102	4155	4423	4172	4120	3915	3782	3782	3653			4741
Low -	2441	2847	2997	2955	3766	3865	2997	2955	3025	2133	1797	1914	2677	3388	3496	3527	3419	3733	3637	3404	3373	3181	3152	2465			
Average -	2839	3340	3165	3768	3946	4321	3397	3534	3267	2457	2028	2713	3649	3828	3809	3800	3816	4078	3885	3715	3682	3392	3508	2841	3449	22.57	
PLD% -	-18	-3	-8	9	14	25	-2	2	-5	-29	-41	-21	6	11	10	10	11	18	13	8	7	-2	2	-18			
Code -	*V*V	*V*V	****	*V*V	****		VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	****	****		****	****	****	****	****	*V*V			
BURNER RG4																											
High -	2514	3109	3511	3465	2651	2601	2651	2638	2715	2626	2626	2702	2983	3123	3152	2266	2465	3196	3328	4703	4441	4172	3388	2526			4703
Low -	2133	2166	2221	2278	2221	2177	2058	2324	2453	2188	2210	2221	2312	2406	1924	1613	1694	1835	2613	2874	3965	3123	2155	2101			
Average -	2314	2664	3083	2638	2416	2365	2285	2469	2579	2435	2437	2431	2584	2804	2233	1828	1947	2309	2844	4087	4190	3442	2514	2320	2634	-6.40	
PLD% -	-12	1	17	0	-8	-10	-13	-6	-2	-8	-7	-8	-2	6	-15	-31	-26	-12	8	55	59	31	-5	-12			
Code -	****	*V*V	*V*V	*V*V	****	****	*V*V	****	****	****	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		*V*V	*V*V	****			

IP7_001032

AIR DISTRIBUTION ANALYSIS
BASELINE INNER ZONE AIR DISTRIBUTION ANALYSIS

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER RG5																											
High -	2188	2767	2780	2490	2453	2255	2382	2820	2807	2301	2847	2833	2563	2613	2677	2601	3081	4261	4296	4552	4034	4225	3558	2465			4552
Low -	1845	1924	2335	2266	2069	1835	1826	2233	2122	1996	2112	2266	2155	2406	1826	1768	2188	1914	2677	3766	3733	3269	2221	1934			
Average -	2006	2499	2521	2378	2265	2051	2210	2595	2301	2157	2607	2473	2370	2522	2074	2276	2737	3573	3064	4000	3905	3515	2504	2080	2612	-7.19	
PLD% -	-23	-4	-3	-9	-13	-21	-15	-1	-12	-17	-0	-5	-9	-3	-21	-13	5	37	17	53	50	35	-4	-20			
Code -	****	*V*V	****	****	****	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	****	****	*V*V	*V*V	*V*V	VVVV	VVVV		****	VVVV	*V*V	*V*V			
BURNER RG6																											
High -	2833	2638	2563	2502	2394	2754	2833	2874	3123	3167	3095	2477	2417	2266	1835	1904	2901	3558	3574	4172	4190	4034	2887	2728			4190
Low -	1712	1778	2301	1975	2048	2244	2588	2177	2155	2887	2347	2199	2048	1658	1412	1327	1694	2833	1182	1245	3669	2490	1934	2069			
Average -	1999	2344	2435	2136	2252	2559	2683	2425	2850	3036	2588	2312	2194	1860	1541	1666	2517	3290	1676	3240	3904	2911	2161	2454	2460	-12.60	
PLD% -	-19	-5	-1	-13	-8	4	9	-1	16	23	5	-6	-11	-24	-37	-32	2	34	-32	32	59	18	-12	-0			
Code -	*V*V	*V*V	****	*V*V	****	****	****	*V*V	*V*V	****	*V*V	****	****	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV		VVVV	*V*V	*V*V			

IP7_001033

Table 5

"B" Windbox/Burner Distribution

In Out-Of-Service Mode

AIR DISTRIBUTION ANALYSIS
"B" WINDBOX AIR DISTRIBUTION ANALYSIS - OUT OF SERVICE

TABLE 5

Summary

Average Velocity For All Burners =	1291.6 fpm
Maximum High Flow Deviation =	8.17 %
Minimum Low Flow Deviation =	-21.33 %
Total Flow Deviation =	29.49 %

Condition	Code	Trigger Level (%)
Blocked Flow	*****	10
Vortex Action	VVVVV	20
Blocked Flow & Vortex Action	*V*V*	

Test Point Velocities (Feet/Minute)

Test		0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER B1																												
	High -	758	783	767	817	800	755	820	934	1012	1165	1345	1370	1383	1496	1402	1435	1545	1510	1663	1648	1462	1402	930	749			1663
	Low -	597	456	597	629	589	589	640	720	743	813	985	1035	1187	1260	1012	1134	1149	1226	1243	1272	1209	922	516	562			
	Average -	675	699	677	698	683	651	734	804	875	1031	1198	1181	1315	1380	1174	1277	1341	1354	1484	1433	1360	1083	659	623	1016	-21.33	
	PLD% -	-34	-31	-33	-31	-33	-36	-28	-21	-14	1	18	16	29	36	16	26	32	33	46	41	34	7	-35	-39			
	Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	*V*V	*V*V	VVVV		VVVV	VVVV	****	*V*V	*V*V	*V*V			
BURNER B2																												
	High -	1357	1339	1383	1462	1320	1567	1567	1332	1215	1428	1364	1243	1402	1402	1376	1448	1596	1588	1648	1559	1545	1496	1671	1524			1671
	Low -	938	981	875	910	902	926	976	1021	863	926	875	890	1044	1118	1176	1198	1255	1284	1266	1226	1139	1098	1198	1155			
	Average -	1095	1177	1064	1178	1102	1250	1199	1168	996	1193	1077	1055	1218	1253	1256	1322	1441	1418	1435	1404	1365	1241	1437	1313	1236	-4.34	
	PLD% -	-11	-5	-14	-5	-11	1	-3	-5	-19	-3	-13	-15	-1	1	2	7	17	15	16	14	10	0	16	6			
	Code -	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	****	****	VVVV		VVVV	VVVV	VVVV	*V*V	VVVV	VVVV			
BURNER B3																												
	High -	1581	1559	1633	1531	1702	1603	1415	1408	1641	1766	1510	1475	1364	1782	1815	1618	1611	1663	1815	1552	1874	1718	1641	1926			1926
	Low -	1149	1198	1155	1098	1098	1215	1088	1113	1160	1204	1149	942	1007	1220	942	1093	1260	1278	1123	1144	1314	1123	1284	1272			
	Average -	1363	1381	1384	1351	1463	1378	1245	1228	1485	1496	1323	1114	1222	1600	1211	1367	1447	1480	1473	1390	1566	1376	1477	1525	1389	7.56	
	PLD% -	-2	-1	0	-3	5	-1	-10	-12	7	8	-5	-20	-12	15	-13	-2	4	7	6	0	13	-1	6	10			
	Code -	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	VVVV	*V*V	VVVV	*V*V	*V*V	VVVV			
BURNER B4																												
	High -	1718	1726	1671	1742	1663	1574	1482	1475	1574	1510	1663	1503	1260	1462	1455	1663	1687	1798	1782	1823	1734	1603	1633	1750			1823
	Low -	1415	1376	1351	1187	1165	1129	1193	1064	1049	930	922	946	981	1021	1176	1302	1243	1209	1284	1345	976	1165	1345	1383			
	Average -	1542	1532	1525	1471	1437	1338	1326	1230	1300	1142	1374	1137	1119	1329	1334	1484	1446	1430	1555	1607	1301	1352	1455	1605	1391	7.66	
	PLD% -	11	10	10	6	3	-4	-5	-12	-7	-18	-1	-18	-20	-4	-4	7	4	3	12	16	-6	-3	5	15			
	Code -		VVVV		VVVV	VVVV	*V*V	****	*V*V	*V*V	*V*V	VVVV	*V*V	*V*V	*V*V	****	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV	*V*V	****	VVVV			
BURNER B5																												
	High -	1603	1517	1364	1891	1790	1750	1588	1588	1339	1798	1782	1489	1415	1243	1249	1308	1339	1758	1734	1857	1988	1943	1874	1567			1988
	Low -	1171	1083	1093	1068	1326	1160	1182	1155	1078	1064	1068	1098	1149	1040	1088	1068	994	1068	1435	1389	1611	1611	1260	1220			
	Average -	1393	1328	1218	1606	1574	1292	1309	1382	1194	1523	1227	1355	1230	1168	1163	1183	1119	1459	1559	1645	1826	1815	1555	1411	1397	8.17	
	PLD% -	0	-5	-13	15	13	-8	-6	-1	-15	9	-12	-3	-12	-16	-17	-15	-20	4	12	18	31	30	11	1			
	Code -	*V*V	*V*V	****	VVVV	VVVV	*V*V	*V*V	*V*V	****	VVVV	*V*V	*V*V	****	****	****	****	*V*V	*V*V	****	VVVV			VVVV	*V*V			
BURNER B6																												
	High -	1633	1641	1626	1726	1718	1679	1710	1603	1679	1633	1435	1694	1758	1618	1441	1408	1296	1209	1155	1237	1475	1865	1687	1618			1865
	Low -	1249	1044	1026	1215	951	1139	1187	1129	1093	1266	989	1003	1441	1383	1139	1134	770	770	894	959	1054	1308	1129	1255			
	Average -	1474	1276	1344	1563	1203	1369	1484	1254	1421	1387	1125	1497	1540	1480	1259	1287	899	1031	1004	1088	1265	1628	1443	1386	1321	2.28	
	PLD% -	12	-3	2	18	-9	4	12	-5	8	5	-15	13	17	12	-5	-3	-32	-22	-24	-18	-4	23	9	5			
	Code -	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	*V*V	*V*V	VVVV		****	*V*V	****	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V			

IP7_001035

Table 6

"H" Windbox/Burner Distribution

100% Open Damper Position

Table 6

"H" Windbox/Burner Distribution

100% Open Damper Position

Table 6

"H" Windbox/Burner Distribution

100% Open Damper Position

Table 6

"H" Windbox/Burner Distribution

100% Open Damper Position

Table 6

"H" Windbox/Burner Distribution

100% Open Damper Position

AIR DISTRIBUTION ANALYSIS

"H" WINDBOX AIR DISTRIBUTION ANALYSIS - 100% DAMPER

TABLE 6

Summary

Average Velocity For All Burners =	5753.7 fpm
Maximum High Flow Deviation =	7.03 %
Minimum Low Flow Deviation =	-7.42 %
Total Flow Deviation =	14.45 %

Condition	Code	Trigger Level (%)
Blocked Flow	*****	10
Vortex Action	VVVVV	20
Blocked Flow & Vortex Action	*V*V*	

Test Point Velocities (Feet/Minute)

Test Point (deg)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	Burner Average	% Deviation	Velocity Peak
BURNER H1																											
High -	5761	7142	7045	7290	7216	6573	7720	7414	6550	7465	7315	5803	6124	6301	6301	6504	6368	5044	4858	5782	7118	7191	7142	6481			7720
Low -	5198	5335	5782	5951	5637	4895	5140	5295	5256	5699	5335	3158	3184	5761	4694	4839	4312	4379	3251	3768	5007	6212	6103	4448			
Average -	5482	6371	6369	6677	6290	5359	7069	5880	6051	7078	5877	3658	5423	6097	5204	6006	4963	4726	3995	4968	6383	6841	6515	5075	5765	.20	
PLD% -	-5	11	10	16	9	-7	23	2	5	23	2	-37	-6	6	-10	4	-14	-18	-31	-14	11	19	13	-12			
Code -	****	VVVV			VVVV	*V*V	VVVV	VVVV	****	VVVV	VVVV	*V*V	*V*V	****	*V*V	*V*V	*V*V	****	*V*V	*V*V	VVVV			*V*V			
BURNER H2																											
High -	5994	6103	6124	6190	6877	6829	6550	6735	5474	6081	6081	6146	5930	5236	6436	6527	6596	5555	5236	6146	7021	7093	6901	6853			7093
Low -	4969	5354	5315	4913	5159	5845	5140	4212	3144	3211	4033	4113	4113	3545	3028	3829	4017	4179	4295	4587	5354	4623	4587	4839			
Average -	5412	5753	5788	5379	6322	6245	5869	5408	4060	5323	4496	5622	4712	4201	5551	4529	5629	4622	4861	5653	5994	5497	6153	5273	5348	-7.05	
PLD% -	1	8	8	1	18	17	10	1	-24	0	-16	5	-12	-21	4	-15	5	-14	-9	6	12	3	15	-1			
Code -	****	****	****	*V*V	VVVV		VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	****	*V*V	VVVV	VVVV	VVVV	VVVV			
BURNER H3																											
High -	5121	5866	7465	6925	6550	7414	7440	7216	7720	7824	7465	7118	6806	7069	6972	6642	7772	7903	6481	5535	5535	6877	6596	5761			7903
Low -	4448	4605	5159	4712	4969	5719	5026	5657	5887	4396	4676	6256	4913	4950	5394	5657	6323	5782	3783	4295	4517	4482	4623	4312			
Average -	4823	5218	6828	5405	5874	6767	6063	6418	7166	5458	6841	6623	5414	6136	6215	6246	7188	6354	4584	5197	4997	6027	5287	5005	5922	2.93	
PLD% -	-19	-12	15	-9	-1	14	2	8	21	-8	16	12	-9	4	5	5	21	7	-23	-12	-16	2	-11	-15			
Code -	****	*V*V	VVVV	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	VVVV	VVVV		*V*V	*V*V	*V*V	****		VVVV	*V*V	*V*V	****	*V*V	*V*V	*V*V			
BURNER H4																											
High -	7069	6436	7045	6806	7021	7315	7216	7191	7669	6642	7955	7929	6481	5909	6124	5782	7315	7746	7720	5930	7414	7566	7465	6665			7955
Low -	5494	4803	5575	3953	4465	5824	5678	5514	5657	4839	5236	5414	3969	4195	4448	4414	4535	5434	4431	4345	5555	6735	4712	4712			
Average -	6185	5494	6571	4811	6278	6795	6520	6242	6686	5325	7441	6438	4539	5110	5231	5119	6043	6940	5255	5537	6953	7179	5380	5974	6002	4.31	
PLD% -	3	-8	9	-20	5	13	9	4	11	-11	24	7	-24	-15	-13	-15	1	16	-12	-8	16	20	-10	0			
Code -	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	VVVV	*V*V	VVVV		VVVV	*V*V			
BURNER H5																											
High -	5761	5575	7045	7216	7490	7515	7465	6877	6301	6168	5909	6853	5887	7118	7982	7850	7216	7982	7876	6997	8061	7617	6853	6712			8061
Low -	4988	4988	5236	4839	5276	6212	5824	5761	5063	5159	4414	4500	4379	4396	5845	4517	4839	6759	5178	5374	6573	6279	5930	5335			
Average -	5359	5306	6175	5407	6551	7078	6337	6186	5943	5561	4866	5581	4878	6231	7604	5363	6609	7526	6070	6536	7563	6776	6486	5805	6158	7.03	
PLD% -	-13	-14	0	-12	6	15	3	0	-3	-10	-21	-9	-21	1	23	-13	7	22	-1	6	23	10	5	-6			
Code -	****	****	*V*V	*V*V	VVVV		VVVV	****	****	****	*V*V	*V*V	*V*V	*V*V	VVVV	VVVV	*V*V		VVVV	*V*V			****	*V*V			
BURNER H6																											
High -	5082	5178	7118	7364	7118	6948	5434	5140	6596	6596	5699	6037	6059	4212	6712	6550	6759	6806	5824	6550	6759	6642	6059	5159			7364
Low -	3389	3417	4552	4803	4988	4694	3445	4017	4278	4969	3814	4001	3319	3347	3663	4803	5198	5276	4876	5276	5678	5454	4876	4379			
Average -	3877	4632	6384	5406	6670	5448	4033	4476	6067	5315	4325	5660	4084	3822	6059	5763	6052	5987	5370	5905	6357	5944	5287	4915	5327	-7.42	
PLD% -	-27	-13	20	1	25	2	-24	-16	14	0	-19	6	-23	-28	14	8	14	12	1	11	19	12	-1	-8			
Code -	*V*V	*V*V	VVVV	VVVV	VVVV	VVVV	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	*V*V	VVVV	*V*V	VVVV	VVVV	****	****			****	****			

IP7_001041

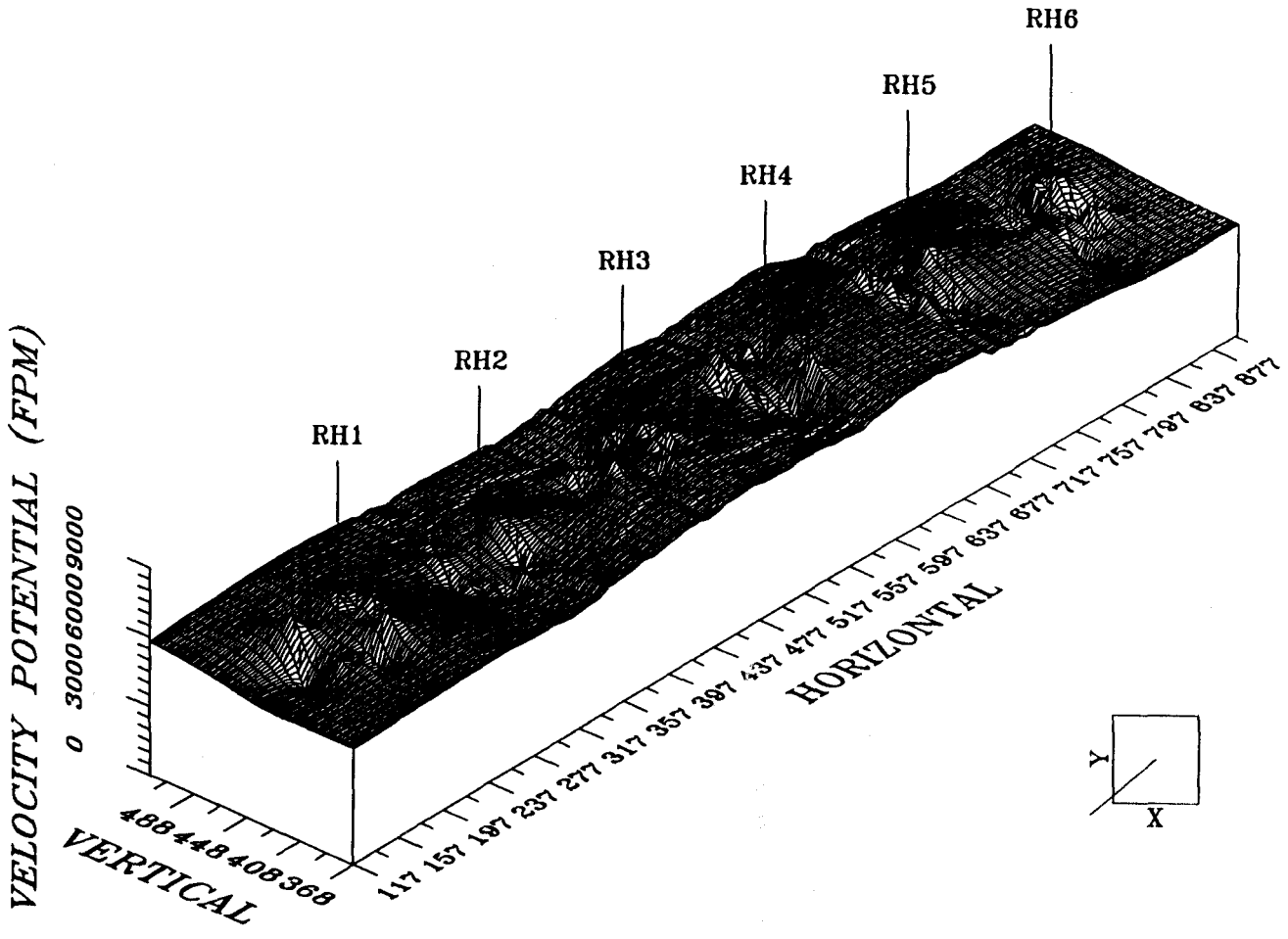
Table 6 Graphics

H Windbox - Dampers 100% Open

Velocity Potential Profile

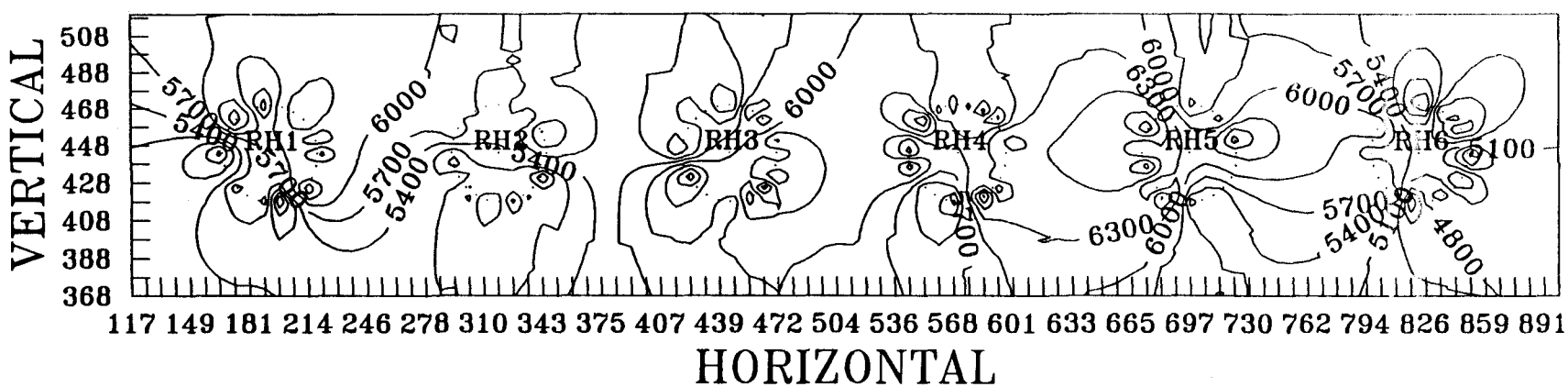
Topographic Diagram

Velocity Profile

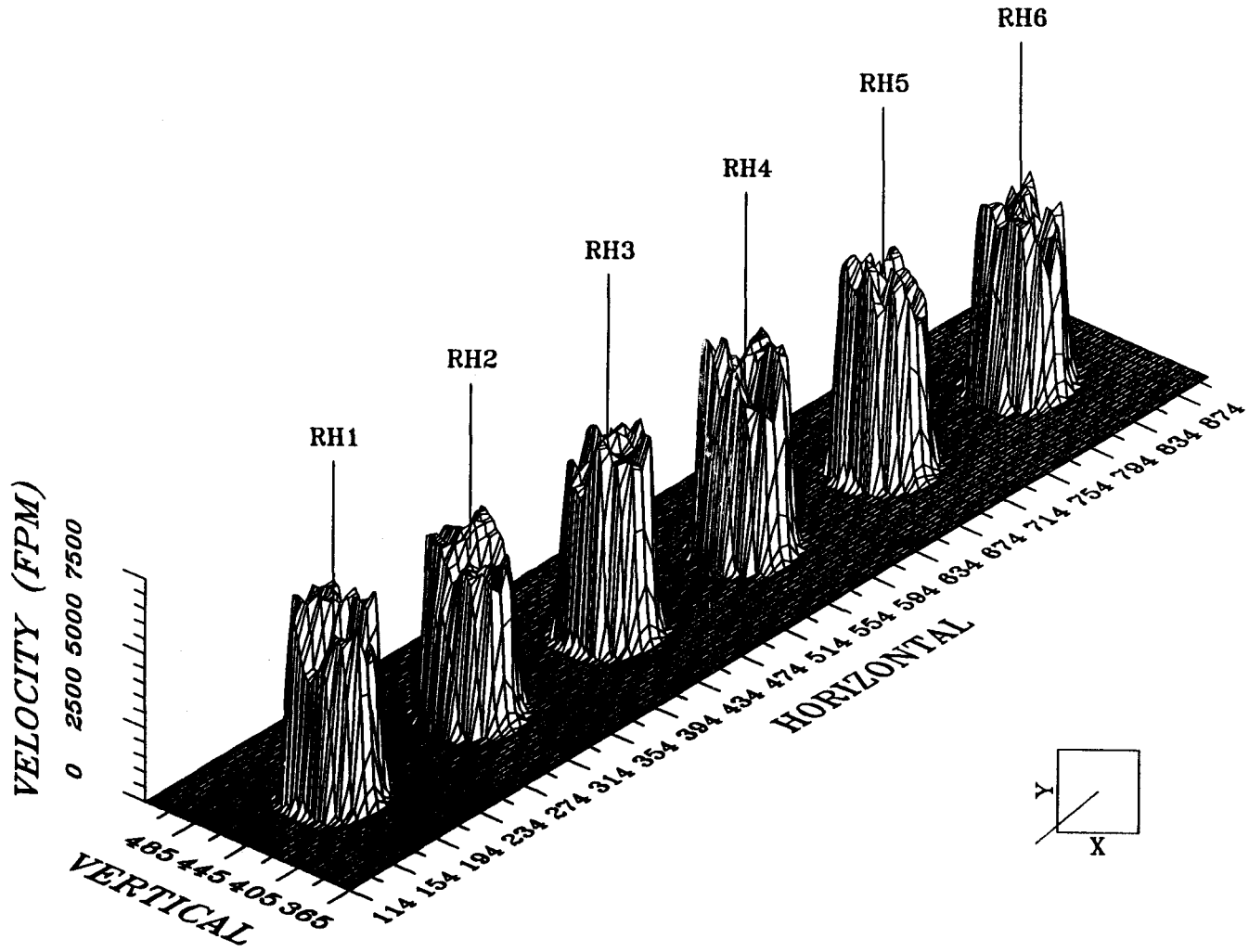


H WINDBOX VELOCITY POTENTIAL PROFILE

H WINDBOX TOPOGRAPHICAL DIAGRAM



IP7_001044



H WINDBOX VELOCITY PROFILE