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To: ~~Steve Wilbur~~

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10/30/96 Thanks Sheila Thornton

K/QT-424

MARTIN MARIETTA

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE NOZZLE MODIFICATION PROGRAM

R.C. Riggs

July 1991

MANAGED BY
MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY

K/QT-424

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE NOZZLE MODIFICATION PROGRAM

R. C. Riggs

Sampling and Environmental Support Department
Technical Division

Date Published: July 1991

Prepared for the
Y-12 Environmental Sampling Department
Y-12 Plant, Oak Ridge, Tennessee

Managed by
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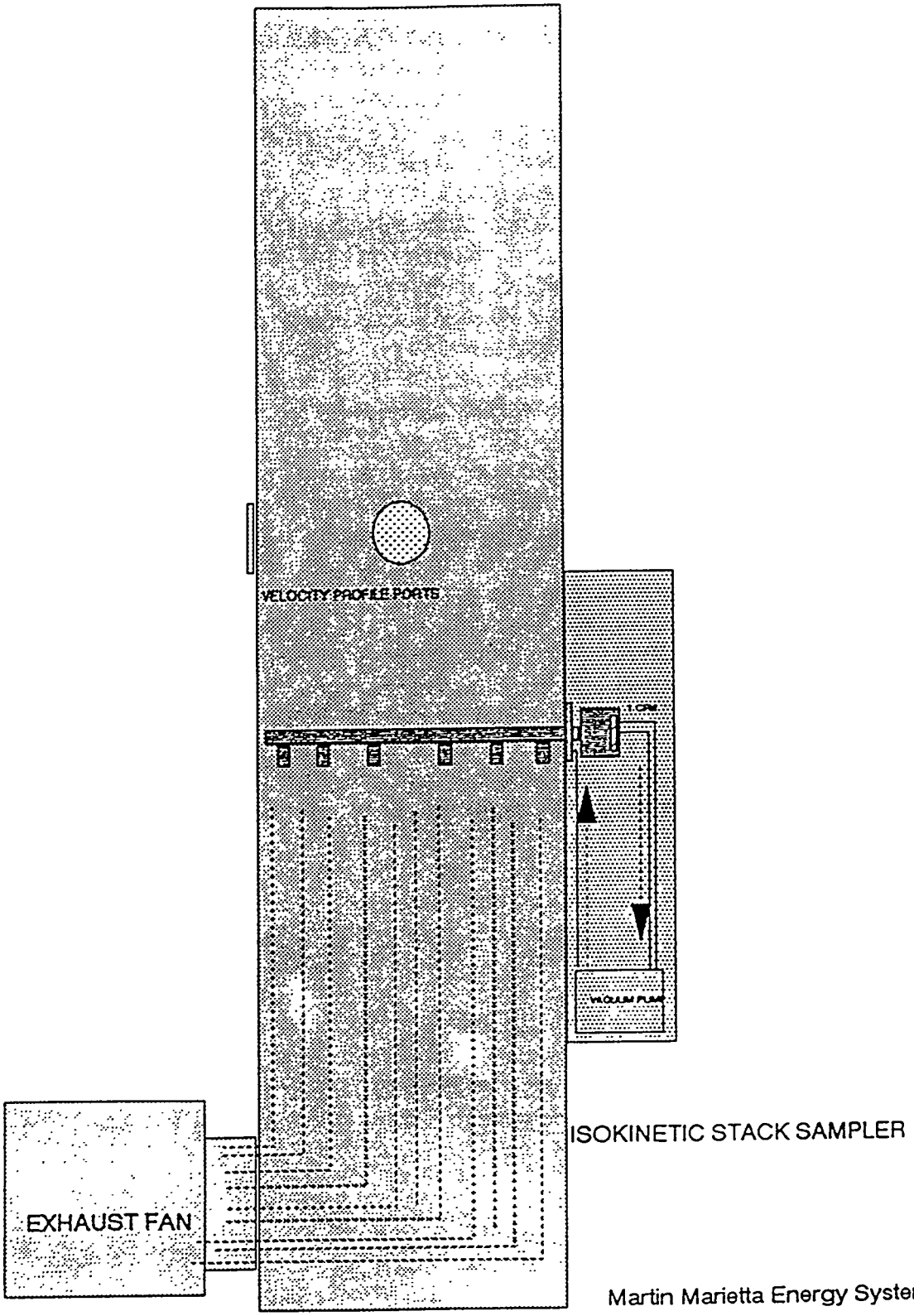
1. INTRODUCTION

The radiological stack samplers at the Y-12 Plant are employed on the stacks to continuously extract a cumulative particulate sample onto a collecting filter. The sample is withdrawn from the stack through precision-sized nozzles attached to a common probe which traverses the stack. The sample flow is generated by a vacuum pump which provides a regulated 1 cfm of stack gas through the filter. Any particulates in the extracted gas are collected by the filter, and the sampled gas is pumped back to the stack. Each nozzle has a particular gas velocity which is determined by its area and volumetric flow rate. Department of Energy Environmental Protection and Y-12 Plant representatives have required that the velocity of the nozzles should be within 10% (plus or minus) of the stack gas velocity. When the velocity of the sampling nozzle equals the stack gas velocity, the sample is "isokinetic." The ratio of the nozzle velocity to the stack gas velocity is termed the "percent isokinetic sampling." A sketch of a typical sample is shown in Sect. 1.1.

Isokinetic sampling refers to taking a sample under conditions where there is no change in momentum so that the sample will be representative of the gas in that portion of the gas stream being sampled. It is essential to withdraw the sample at the same velocity as that of the gas stream. If the nozzle velocity is less than the stack velocity, the collection results on the filter will indicate a particulate concentration that is greater than the actual value. This is due to the momentum of the air stream and the particulate material. The gas stream, having less kinetic energy than the particulate, will change direction at the entrance of the nozzle due to change in localized pressure. The particulate, having greater kinetic energy, will have a greater resistance to a change in direction and will continue in the same direction. The result will be that the particulate will enter the nozzle, and a portion of the associated air stream will not. This results in a higher particulate concentration. The reverse occurs when the nozzle velocity is higher than the stack gas stream. When a sample is withdrawn above isokinetic, the concentration of the sample results in less than the actual value. Thus, a truly representative sample is collected when the nozzle velocity is the same as the stack gas velocity. Section 1.2 illustrates the results of a sample when it is not isokinetic.

Results acquired by the calculations of the nozzle sizes to their relative stack velocities indicate that approximately 70% of the samplers did not comply with the isokinetic guidelines. Nozzles were resized to meet these guidelines. The K-25 Sampling and Environmental Support Department accomplished this task.

Y-12 RADIOLOGICAL ISOKINETIC STACK SAMPLER



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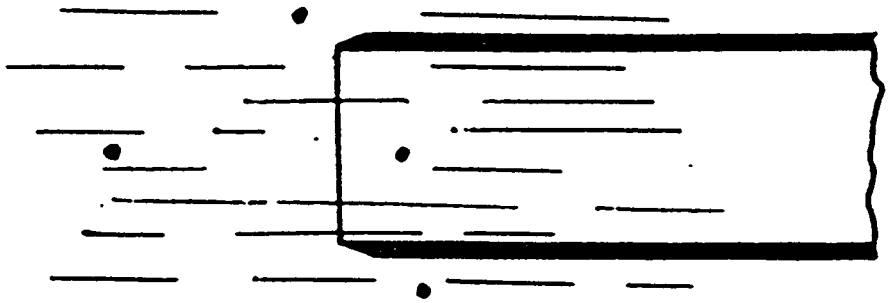
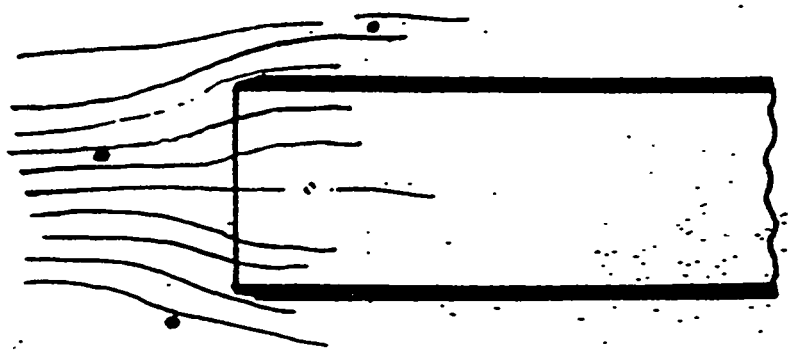
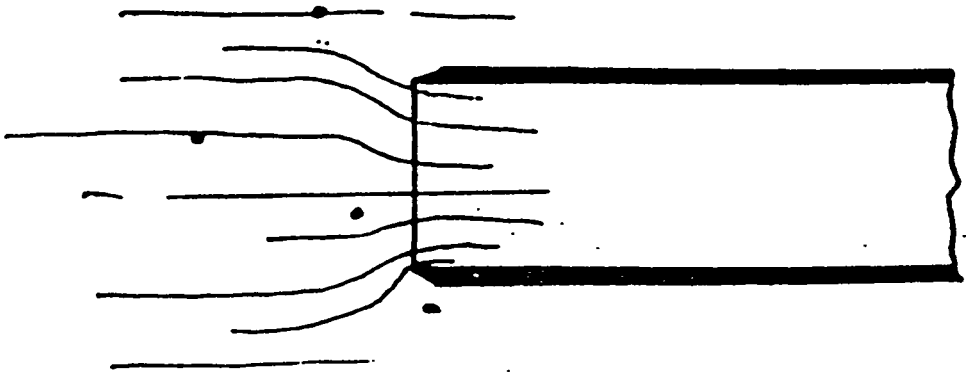


A. Isokinetic



B. Under-Isokinetic



C. Over-Isokinetic

2. SCOPE OF PROGRAM

There was not a large variety of nozzle sizes to match the numerous gas velocities that were involved. Some probes were equipped with tubing that would accommodate a 1/4-inch nozzle fitting, while other probes had tubing to which only a 3/8-inch nozzle fitting could be attached. There was only two sizes of nozzles that were in use on the probes that had 1/4-inch attaching nipples, while there was three nozzle sizes available for the probes that had 3/8-inch tubing attached. Results of the calculations that were made indicated a larger variety of nozzle sizes was needed.

There were 150 nozzles purchased to replace the nozzles that were on the probes that contained 3/8-inch tubing nipples. The nozzles replaced with the purchased ones were redrilled to a larger size in order to use on other probes. This eliminated the purchase of additional nozzles. There were 174 of the nozzles attached to the 1/4-inch probe tubing that were too small in diameter and were redrilled to 0.152 inch diameter. Some of the probes having 1/4-inch tubing attached required smaller nozzles than what was available. Thirty-six nozzles sized at 0.0936 inches diameter were also purchased. The existing nozzles were redrilled at the Y-12 Plant Machine Shop located in Building 9201-1. Of the nozzles that were redrilled, 10% of them were randomly inspected for quality assurance purposes. The K-25 Dimensional Inspection Group performed this work. The inspection results indicated that of all the nozzles inspected, none exceeded a tolerance of more than 1 and 0.0015-inch of its desired diameter. A list of the nozzles that were purchased and those that were redrilled is in Sect. 2.4. Appendix A contains the quality assurance documentation of 10% of the nozzles that were redrilled at Y-12.

In order to eliminate the acquisition of additional nozzle sizes other than those that have already been mentioned, it was decided to use nozzles consisting of different sizes on an individual probe. This also provided a closer ratio for isokinetic sampling. The nozzles are arranged on the probe so that they are evenly distributed across the stack, according to their size. When a nozzle that differs in size from the others is placed on a given location of the stack diameter, the same location measured from the opposite stack wall will contain a nozzle of identical size.

The velocity of any number of nozzles that are attached to a probe will be the same, regardless of their differing sizes. With the total sampling rate remaining constant (1 cfm), any increase or decrease of total nozzle area will affect the velocity of each nozzle proportionally. Thus, increasing or decreasing a nozzle's diameter will affect the velocity of all the nozzles involved, but all the nozzles will contain the same velocity. Section 2.1 contains an example and the equations that are used to calculate the velocity of the nozzles when a probe is equipped with nozzles of different sizes.

EXAMPLE

STACK NO.	6
BLDG. NO.	9215
PROCESS	P-WING ROLLING MILL
SAMPLER NO.	17SFO6
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	48X47

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2	7	14	34	41	46
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	32	34.5	35.4	34.5	33.9	33.9
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.127	0.246	0.127	0.127	0.246	0.127
PERCENT ISOKIN....	101.9	94.5	92.1	94.5	96.2	96.2

AVERAGE % ISOKINETIC	95.9

CALCULATIONS USED FOR MIXED NOZZLES

NOZZLE (A) FLOW RATE = .127 (cfm)

$$\frac{1\ (\text{cfm}) \cdot a\ \text{sq.}}{a\ \text{sq.} + b\ \text{sq.} + c\ \text{sq.} + d\ \text{sq.} + e\ \text{sq.} + f\ \text{sq.}}$$

NOZZLE (A) VELOCITY = 32.6 (fps)

$$\frac{.127\ (\text{cfm})}{.00933\ (\text{sq. ins.})} \quad (2.4)$$

NOZZLE (B) FLOW RATE = .246 (cfm)

$$\frac{1\ (\text{cfm}) \cdot b\ \text{sq.}}{a\ \text{sq.} + b\ \text{sq.} + c\ \text{sq.} + d\ \text{sq.} + e\ \text{sq.} + f\ \text{sq.}}$$

NOZZLE (B) VELOCITY = 32.6 (fps)

$$\frac{.246\ (\text{cfm})}{.0181\ (\text{sq. ins})} \quad (2.4)$$

PROBE NOZZLE LIST AND EQUATIONS

NOZZLE SIZE THSNDS. INCH	NOZZLE AREA (sq. ins.)	TUBING SIZE TO FIT PROBE
0.0936	0.0069	1/4 & 3/8
0.109	0.00933	1/4
0.125	0.0123	3/8
0.152	0.0181	1/4
0.156	0.01911	3/8
0.187	0.0275	3/8 & 1/4
0.203	0.03333	3/8
0.25	0.0491	3/8
0.277	0.0603	3/8

DERIVATION OF 2.4 and 3.0557

$$\frac{12''x12''x12''(\text{cu.ft})\text{time}}{12''(\text{ft})\text{ time}} / 60 = 2.4$$

2.4 / .78539 sq.ins.(area of 1" dia.) = 3.0557

NOZZLE FLOW (cfm)= $\frac{\text{SAMPLE FLOW (1 cfm)}}{\text{NUMBER OF NOZZLE}}$ If all nozzles on the probe are the same size.

THEO dia. NOZZLE= $\frac{\text{NOZZLE FLOW(cfm)}}{\text{VEL STACK(fps)}}$ (3.0577)

NOZZLE VELOCITY (fps)= $\frac{\text{NOZZLE FLOW (cfm)}}{\text{NOZZLE AREA (sq. ins.)}}$ (2.4)

PERCENT ISOKINETIC= $\frac{\text{NOZZLE VEL. (fps)}}{\text{STACK VEL. (fps)}}$ (100)

MARTIN MARIETTA ENERGY SYSTEMS

MEANS of ACQUIRING NOZZLES
FOR Y-12 STACK SAMPLERS

NOZZLE SIZE (ins.)	NOZZLE AREA (sq. ins.)	NOZZLE TUBING SIZE	MEANS OF ACQUISITION	QUANTITY
0.0936	0.0069	0.250	NEWLY PURCHASED	36
0.109	0.00933	0.250	EXISTING NOZZLES	360
0.152	0.0181	0.250	REDRILLED .109s	174
0.187	0.0275	0.250	REDRILLED .109s	12

0.125	0.0123	0.375	NEWLY PURCHASED	36
0.156	0.01911	0.375	EXISTING NOZZLES	90
			REDRILLED TO .277	36
0.187	0.0275	0.375	NEWLY PURCHASED	20
0.203	0.03333	0.375	EXISTING NOZZLES	120
			NEWLY PURCHASED	26
0.250	0.0491	0.375	NEWLY PURCHASED	28
0.277	0.0603	0.375	NEWLY PURCHASED	40

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3. COMPILATION OF STACK AND NOZZLE DATA

A velocity profile was taken on each stack quarterly during the year 1990. These profiles comply with the guidelines stated in Methods 1 and 2 in Appendix A of the Title 40 Code of Federal Regulations (CFR) Part 60. The stack gas velocity data acquired from the third quarter profiles was used to calculate the proper nozzle diameters. These stack velocities have been taken periodically to confirm that the stack flow has remained relatively constant enough not to alter the isokinetic sampling. These profiles also provide data to accurately calculate the stack gas emission rate. The sampling nozzles are positioned in the stack at a location which is relative to the stack velocity traverse points. The measured stack velocity of the traverse point at which a particular nozzle is located is used to calculate the nozzle's desired diameter. Velocity profiles will be taken periodically in the future to confirm isokinetic sampling conditions. If the velocity of a stack changes enough to alter the sampling by more than 10% of isokinetic, the nozzles will be resized.

A velocity data sheet for each stack is provided in Sect. 4 of this report. The stacks are listed numerically with all the necessary data that is needed to acquire the velocities. The velocity of each stack's traverse points is listed and the average velocity of the stack is noted below them. The sampling nozzles are lettered beside their corresponding stack point number where they are located in the stack. The sampling nozzles' velocities are listed to show the comparison of the nozzles' velocities to the average stack gas velocity. However, this is not the average percent isokinetic of the sample. The average of the ratios of the nozzle velocities to the stack point velocity at which the nozzles are located is the average percent of isokinetic sampling. The two average ratios differ because the local velocities of the stack where the nozzles are located are not the same across the plane of the stack.

A sampling nozzle calculation sheet precedes each stack velocity data sheet in Sect. 4. This sheet has a sketch of the stack with the velocity traverse points numbered and the sampling nozzles lettered to indicate their locations within the stack. Each nozzle's size, stack location, traverse number, velocity, volumetric flow rate, and percent isokinetic are listed. The average percent of isokinetic sampling is located at the bottom right of each sheet.

3.1 CALCULATING THE STACK VELOCITY

Using Equation 2-9 from EPA Method 2

$$V_s = K_p \, C_p \, (\sqrt{\Delta P})_{avg} \sqrt{\frac{T_{s\,(avg)}}{P_s \, M_s}}$$

where: V_s = average stack gas velocity, ft/s
K_p = pitot tube constant,

$$85.49 \frac{ft}{s} \left[\frac{(lb/lb\text{-}mole)\ (inch\ H_2)}{(^\circ R)\ (inch\ H_2O)} \right]^{1/2}$$

C_p = pitot tube coefficient, dimensionless
D_p = velocity head of stack gas, in. H_20
T_s = absolute stack temperature, °R
P_s = absolute stack pressure, in. Hg
M_s = molecular weight of stack gas, wet basis, lb/lb-mole

All stacks consist of atmospheric air. Molecular weight of 28.67 is used for all stack calculations. This is the average molecular weight, assuming an average percent moisture of 1.5% from actual method 5 sampling.

Using Equation 3-1 from EPA Method 3

$$M_d = 0.44\ (\%\ CO_2) + 0.32(\%\ O_2) + 0.28\ (\%\ N_2 + \%\ CO)$$

where M_d = molecular weight of stack gas, dry basis, lb/lb-mole

$$M_d = 0.32\ (21) + 0.28\ (79) = 28.84$$

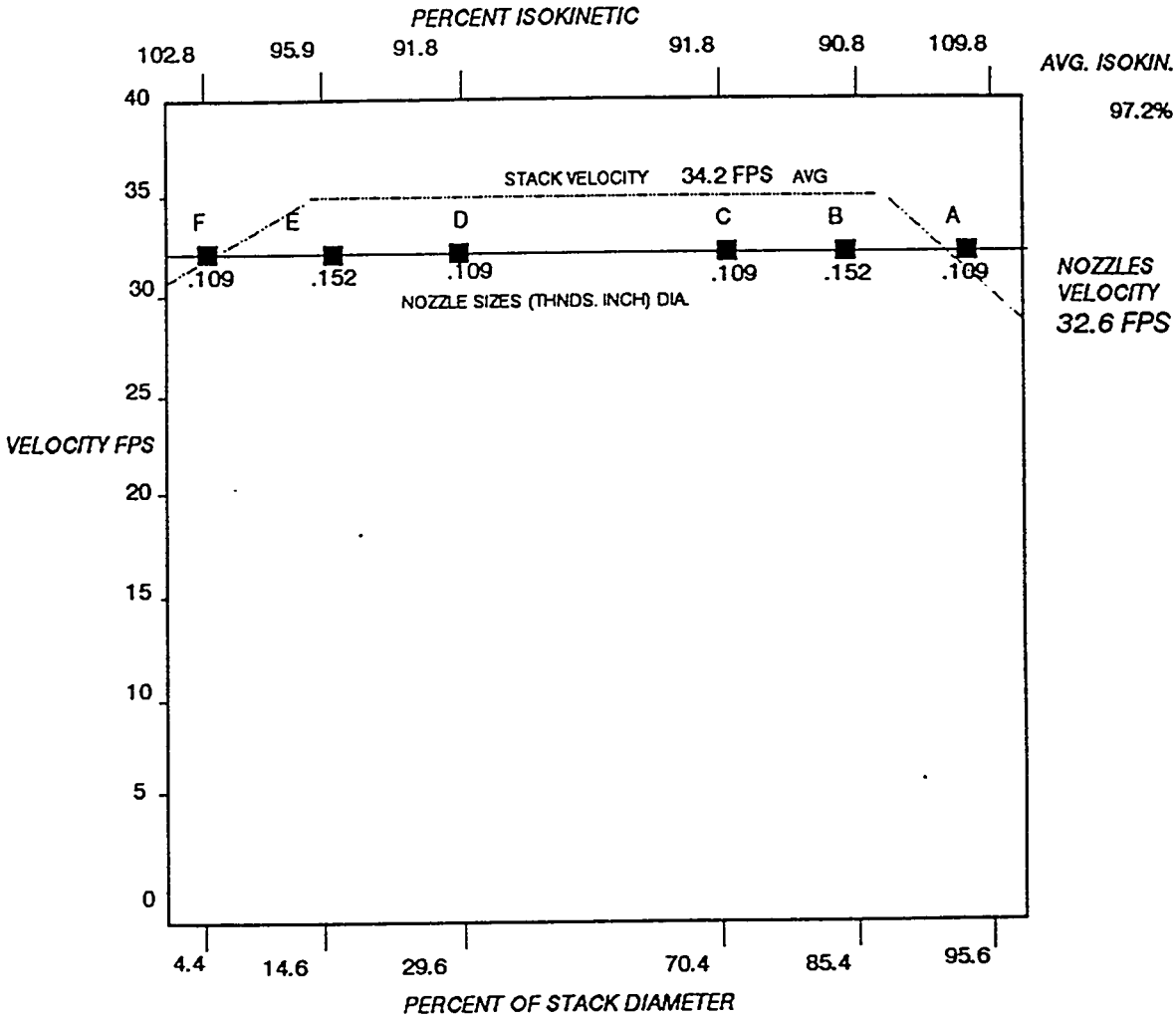
Using Equation 2-5 from EPA Method 2

$$M_s = M_d\ (1 - B_{ws}) + 18.0\ B_{ws}$$

where B_{ws} = water vapor in the gas stream, proportion by volume

$$M_s = 28.84\ (1\text{-}0.015) + 180.0\ (0.015) = 28.67$$

STACK 6
VELOCITY CURVE
SAMPLING NOZZLES LOCATION



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Y-12 RAD. STACKS VELOCITY PROFILES FOR 1990

STACK NUMBER	1989	1990 A	1990 B	1990 C	1990 D	AVGERAGE VELOCITY(fps)	STANDARD DEVIATION
1	43.58	43.26	31.72	42.60	39.24	40.08	4.46
2	29.28	28.48	31.04	31.03	31.57	30.28	1.19
3	58.41	56.17	59.98	58.22	56.92	57.94	1.31
4	44.72	38.34	38.09	38.41	46.39	41.19	3.60
6	33.66	33.67	34.52		34.11	33.99	0.36
7	28.10	29.29	29.62	35.07	33.75	31.17	2.73
8	43.55	41.64	42.04	41.92	40.35	41.90	1.02
9	30.76	30.34	30.83	31.14	31.32	30.88	0.34
10	35.42	35.00	35.29	35.30	33.91	34.98	0.55
11	41.80	31.12	41.35	42.70	35.16	38.43	4.52
12				27.5		27.5	
13	40.34	40.84	41.62	41.88	41.29	41.19	0.55
14	35.95	43.64	37.98	38.21	37.72	38.70	2.60
15	32.72	30.86	33.00	33.27	33.26	32.62	0.90
16	15.00	14.64	14.94	14.99	14.73	14.86	0.15
17				33.18	33.33	33.26	0.07
19		47.63	46.02	46.26	49.23	47.29	1.28
21	40.34	40.40	45.86	46.41	46.73	43.95	2.93
22	23.17	23.93	22.60	22.70	24.56	23.39	0.75
24	49.77	51.05	52.25	52.37	51.89	51.47	0.97
25	33.17	23.99	33.37	33.22	33.94	31.54	3.78
26	29.93	31.50	24.48	25.11	24.74	27.15	2.96
27	58.09	54.16	54.64	56.47	37.64	52.20	7.41
28	66.75	38.63	65.63	51.09	50.48	54.52	10.52
33	48.65	43.87	45.76	46.00	43.46	45.55	1.85
34	33.75	26.43				30.09	3.66
36	15.08	17.93	18.38		17.74	17.28	1.29
38	21.43	21.27	20.65	20.78	20.63	20.95	0.33
40	33.18	39.47	39.10	39.80	39.93	38.30	2.57
42	14.16	19.21	15.53	15.40	15.27	15.91	1.72
43	42.04	43.74	42.26	43.07	42.88	42.80	0.61
44	17.12	22.02	20.83	21.56	24.23	21.15	2.31
45	12.38	11.06	11.24	11.35	11.18	11.44	0.48
46	68.49	69.10	71.06	65.18	65.67	67.90	2.20
47	65.81	65.81	66.99	62.86	65.77	65.45	1.37
48	72.19	70.93	71.16	70.62	70.25	71.03	0.66
50	54.68	54.34	56.36	54.44	54.94	54.95	0.73
53	11.42	8.77	9.06	9.13	10.75	9.83	1.06
54	15.29	17.61	12.53		9.76	13.80	2.94

The sampling nozzle sizes were calculated from the data used from the 3rd quarter stack velocitys.

Y-12 RAD. STACKS VELOCITY PROFILES FOR 1990

STACK NUMBER	1989	1990 A	1990 B	1990 C	1990 D	AVGERAGE VELOCITY(fps)	STANDARD DEVIATION
56		8.30		8.30		8.30	4.45
57	17.30	18.35	17.60	19.44	17.46	18.03	0.79
60		33.99	30.31	31.75	31.12	31.79	1.37
61	40.55	36.71	37.23	37.97	37.61	38.01	1.34
62	38.11	31.10	30.95	31.43	30.79	32.48	2.82
64	25.17	23.19	26.43	27.06	26.84	25.74	1.43
67	20.36	19.45	35.39	35.21	43.79	30.84	9.46
71	41.72	44.47	44.60	44.44	45.25	44.10	1.22
72	14.68	12.61	14.35	14.51	14.09	14.05	0.74
73	19.36	15.68	29.24	29.22	34.16	25.53	6.88
75	22.49	21.15	26.20	27.00	25.58	24.48	2.26
76	46.62	44.41	44.99	45.05	44.78	45.17	0.76
78	38.10	38.03	37.88	38.13		38.04	0.10
83	41.25	44.21	45.01	45.70	41.94	43.62	1.73
85	52.30	51.73	52.26	41.64	51.95	49.98	4.17
86	44.71	37.47		41.75	47.87	42.95	3.83
88	26.87	27.38	30.64	30.49	30.43	29.16	1.67
91	14.63	14.66	14.45	33.32	33.00	22.01	9.10
93	35.57	34.36	33.81	33.73	34.55	34.40	0.66
94				50.90	51.35	51.13	0.22
95	30.54	31.64	31.61			31.26	0.51
97	30.44	29.92	25.93	27.38	41.61	31.06	5.53
100		40.83	41.61	41.68		41.37	0.39
101			19.23	19.32	19.30	19.28	0.04
104	31.75	31.23	36.92	31.69	27.02	31.72	3.14
105	28.48	23.86	24.01	24.76	26.98	25.62	1.81
106	53.51	50.22	51.25	51.22	51.01	51.44	1.10
107	45.34	40.19	43.93	43.91	43.80	43.43	1.72
108	44.08	42.91	47.07	47.04	45.24	45.27	1.63
109	40.28	34.50	29.61	29.47	33.11	33.39	3.96
110	67.72	68.11	64.03	63.64	62.54	65.21	2.27
111	13.45	13.52	13.85	13.45	13.18	13.49	0.21
113	31.24	28.22	27.50			28.99	1.62
114	25.52	22.88	28.46	19.24	19.66	23.15	3.50
116	23.29	19.01	21.26	21.21	21.40	21.23	1.36
127			21.79		27.33	24.56	2.77
128	39.80	24.46	45.76	43.65	42.92	39.32	7.67
130		15.17	16.76	28.68	16.48	19.27	5.46
132		25.31	21.45	21.83	24.57	23.29	1.68

4. SAMPLER DATA

The calculations involved in this report were performed by means of computer programming. The files for each stack's velocity data and the files for each stack's sampling nozzles are listed on separate floppy disks. A copy of these files is included with this report for the convenience of any party which may want to view the accuracy of the calculations.

The program is generated by LOTUS 123, Release 2.2, with the LOTUS 123 Allways, Add-in attached to provide the graphics.

The files are composed in data entry form, which provides rapid recalculation for revisions that will have to be made periodically.

SUMMARY

DATE: 6-26-91

Y-12 RAD. STACK SAMPLERS

NOZZLE IDENTIFICATION

STACK	BLDG #	TYPE	A	B	C	D	E	F	ISOKIN
1	9215	CSS	0.109	0.152	0.109	0.152			99.0%
2	9215	CSS	0.156	0.156	0.156	0.156			97.2%
3	9215	BTM	0.109	0.0936	0.093	0.093	0.093	0.109	93.4%
4	9215	BTM	0.109	0.152	0.109	0.109	0.109	0.109	96.8%
6	9215	CSS	0.109	0.152	0.109	0.109	0.152	0.109	95.9%
7	9215	CSS	0.109	0.152	0.109	0.109	0.109	0.109	103.0%
8	9215	CSS	0.109	0.109	0.109	0.109	0.109	0.109	101.1%
9	9215	CSS	0.109	0.152	0.109	0.152	0.109	0.152	92.7%
10	9215	CSS	0.109	0.152	0.109	0.109	0.152	0.109	96.1%
11	9215	CSS	0.109	0.109	0.109	0.109	0.109	0.109	101.3%
12	9215	CSS	0.203	0.277					93.2%
13	9206	BTM	0.109	0.109	0.109	0.109	0.109	0.109	107.4%
14	9206	CSS	0.109	0.109	0.152	0.109	0.109	0.109	99.5%
15	9206	BTM	0.109	0.152	0.109	0.109	0.152	0.109	98.1%
16	9206	CSS	0.25	0.203	0.25	0.203			96.8%
17	9206	CSS	0.109	0.152	0.109	0.109	0.152	0.109	109.7%
19	9212	BTM	0.109	0.109	0.109	0.109	0.109	0.109	93.3%
21	9212	CSS	0.109	0.152	0.109	0.152			94.3%
22	9212	BTM	0.203	0.25	0.203				99.3%
24	9212	BTM	0.156	0.125	0.156				95.3%
25	9212	BTM	0.152	0.152	0.152	0.152			98.3%
26	9212	CSS	0.203	0.25	0.203				96.0%
27	9212	BTM	0.109	0.109	0.109	0.109	0.109	0.109	101.2%
28	9212	BTM	0.109	0.0936	0.109	0.109	0.093	0.109	93.0%
33	9212	BTM	0.109	0.0936	0.109	0.109	0.093	0.109	99.2%
34	9212	BTM	0.152	0.109	0.152	0.152	0.152	0.152	96.4%
36	9212	CSS	0.277	0.277					106.5%
38	9212	BTM	0.203	0.25	0.203				104.0%
40	9212	BTM	0.125	0.125	0.156	0.156			95.8%
42	9212	BTM	0.187	0.187	0.187	0.187	0.187	0.187	95.6%
43	9212	BTM	0.109	0.109	0.109	0.109	0.109	0.109	98.3%
44	9212	CSS	0.156	0.203	0.156	0.156	0.203	0.156	94.4%
45	9212	CSS	0.203	0.203	0.203	0.203	0.203	0.203	102.6%
46	9212	CSS	0.125	0.125	0.125				101.1%
47	9212	CSS	0.125	0.125	0.125				102.3%
48	9212	BTM	0.093	0.0936	0.093		0.093	0.093	96.9%
50	9212	BTM	0.156	0.156					108.4%
53	9212	CSS	0.277	0.277	0.277	0.277			104.5%
54	9212	CSS	0.277	0.277	0.277	0.277			96.3%
56	9212	CSS	0.277	0.277	0.277	0.277	0.277		95.8%
57	9212	CSS	0.203	0.203	0.156	0.203			97.5%

Y-12 RAD. SAMPLERS ISOKINETIC SUMMARY 6-26-91

NOZZLE IDENTIFICATION

STACK	BLDG	TYPE	A	B	C	D	E	F	ISOKIN
60	9998	BTM	0.156	0.156	0.203				106.0%
61	9998	BTM	0.109	0.109	0.152	0.109	0.109	0.109	97.3%
62	9998	CSS	0.152	0.152	0.152	0.152			103.4%
64	9998	CSS	0.152	0.109	0.152	0.152	0.109	0.152	98.2%
67	9201-5	BTM	0.109	0.152	0.109	0.109	0.152	0.109	93.0%
71	9201-5	BTM	0.109	0.109	0.109	0.109	0.109	0.109	96.3%
72	9201-5	CSS	0.277	0.203	0.277				104.6%
73	9201-5	CSS	0.152	0.152	0.187	0.152			98.4%
75	9201-5	CSS	0.152	0.152	0.109	0.152	0.109	0.152	98.4%
76	9201-5	CSS	0.109	0.109	0.109	0.109	0.109	0.109	97.4%
78	9201-5	CSS	0.109	0.109	0.109	0.109	0.109	0.152	95.1%
83	9201-5	CSS	0.125	0.125	0.125	0.125			95.5%
85	9204-4	CSS	0.109	0.152	0.109	0.152			106.3%
86	9204-4	CSS	0.152	0.152	0.152				99.4%
87	9204-4	CSS	0.093	0.109	0.109	0.109	0.109	0.093	98.6%
88	9204-4	BTM	0.156	0.156	0.156	0.156			100.8%
89	9204-4	CSS	0.109	0.109	0.109	0.109	0.152	0.109	96.1%
90	9204-4	CSS	0.25	0.277	0.25	0.25	0.277	0.25	99.5%
91	9204-4	CSS	0.156	0.203	0.156				101.4%
93	9204-4	CSS	0.156	0.156	0.156	0.156			97.2%
94	9204-4	CSS	0.109	0.109	0.152	0.109			94.7%
95	9204-4	CSS	0.109	0.152	0.109	0.109	0.152	0.109	102.2%
97	9204-4	CSS	0.152	0.109	0.152	0.152	0.109	0.152	101.6%
100	9204-2E	CSS	0.156	0.156	0.156				101.4%
101	9204-2E	CSS	0.203	0.203	0.25				108.8%
104	9202	CSS	0.109	0.152	0.109	0.109	0.152	0.109	105.1%
105	9202	CSS	0.152	0.109	0.152	0.152	0.109	0.152	104.2%
106	9202	CSS	0.125	0.125	0.093	0.125			101.3%
107	9202	CSS	0.109	0.109	0.109	0.109	0.109	0.109	98.5%
108	9203	CSS	0.109	0.109	0.109	0.109	0.109	0.109	90.2%
109	9401-5	BTM	0.156	0.156	0.187	0.156			96.1%
110	9212	BTM	0.093	0.0936	0.093	0.093	0.093	0.093	91.5%
111	9212	BTM	0.25	0.203	0.25	0.25			99.2%
113	9212	CSS	0.203	0.156	0.203				105.8%
114	9212	CSS	0.203	0.277	0.203				103.8%
116	9206	BTM	0.203	0.156	0.203	0.203			95.9%
127	9825-1	CSS	0.203	0.25	0.203				93.5%
128	9212	CSS	0.187	0.187					94.3%
130	9720-5	CSS	0.25	0.25	0.25				96.5%
132	9212	CSS	0.152	0.152	0.152	0.152	0.187	0.152	100.0%

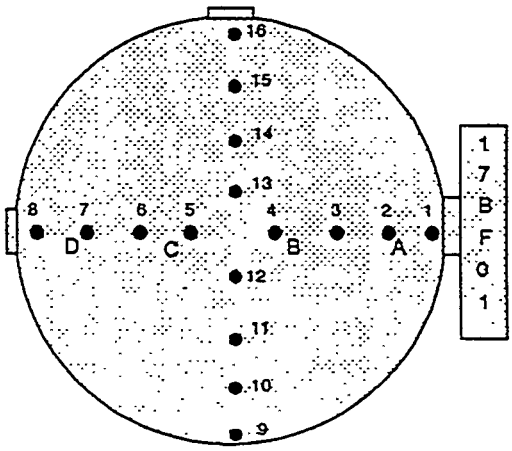
TOTAL = 81

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	1
BLDG. NO.	9215
PROCESS	O-WING HYDROFORM LEAD AND OIL BATH

SAMPLER NO.	17BFO1
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	22"

STACK 1



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.109	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	6.7	25.0	75.0	70.4
INCHES FROM STACK WALL....	1.5	5.5	16.5	20.5
K25 TRAVERSE NO...	2	4	5	7
STACK VELOCITY FT\SEC.....	45.4	45.4	44.3	41.6
NOZZLE VELOCITY FT\SEC.....	43.7	43.7	43.7	43.7
NOZZLE FLOW RATE CFM.....	0.1698	0.3302	0.1698	0.3302
PERCENT ISOKIN....	96.2	96.2	98.6	105.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 99.0

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	1
BUILDING NO.	9215
STACK DIA. OR EQIV.	22
STACK AREA (sq.ft.)	2.64

A DISTANCE (upstream)	48	A
A DISTANCE(no.of dias.)	2.18	B
B DISTANCE (downstream)	168	C
B DISTANCE (no.of dias.)	7.64	
MIN.NO.POINTS (A)	8	D
MIN.NO. POINTS (B)	12	
TOTAL NO. TRAV. POINTS	16	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2	SOUTH	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	85
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.3
ABSOLUTE PRESS.(ins.hg)	29.328
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	3.2	0.75	82	2	0.62	45.4
2	10.5	2.25	82	3	0.62	45.4
3	19.4	4.25	82	3	0.63	45.8
4	32.3	7.125	82	2	0.62	45.4
5	67.7	14.75	82	3	0.59	44.3
6	80.6	17.9	82	3	0.54	42.4
7	89.5	19.7	82	2	0.52	41.6
8	96.8	21.9	82	0	0.41	36.9
9	3.2	0.75	82	0	0.54	42.4
10	10.5	2.25	82	2	0.56	43.1
11	19.4	4.25	82	2	0.57	43.5
12	32.3	7.125	82	3	0.58	43.9
13	67.7	14.75	82	3	0.52	41.6
14	80.6	17.9	82	2	0.51	41.2
15	89.5	19.7	82	2	0.52	41.6
16	96.8	21.9	82	3	0.42	37.4
17						
18						
19						
20						
21						
22						
23						
24						
25						

STACK VELOCITY	(fps)	42.6
VOLUMETRIC FLOW RATE	(cfm)	6748.6
NOZZLE VELOCITY	(fps)	43.7

PITOT WAS LEAKED TESTED AT 3" OF h20 FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 2

BLDG. NO. 9215

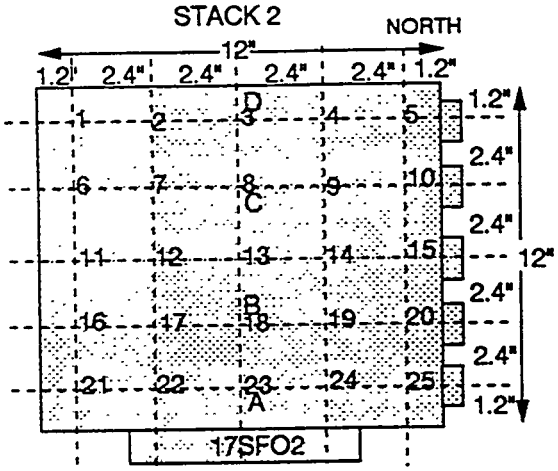
PROCESS O-WING ANNEALING FURNACE

SAMPLER NO. 17SF02

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 12 X 12 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.156	0.156	0.156	0.156
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4
INCHES FROM STACK WALL....	2	7	14	34
K25 TRAVERSE NO...	23	18	8	3
STACK VELOCITY FT\SEC.....	25.8	30.5	39.1	37.4
NOZZLE VELOCITY FT\SEC.....	31.4	31.4	31.4	31.4
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	121.7	102.9	80.3	83.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 97.2

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	2
BUILDING NO.	9215
STACK DIA. OR EQIV.	12*12
STACK AREA (sq.ft.)	1.00

A DISTANCE (upstream)	47	D
A DISTANCE(no.of dias.)	3.91	
B DISTANCE (downstream)	50	
B DISTANCE (no.of dias.)	4.16	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	C
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		B
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	80	
BAROMETER (ins. hg.)	29.35	A
STATIC PRESSURE(ins.h2o)	-0.25	
ABSOLUTE PRESS.(ins.hg)	29.332	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.2	70	2	0.52	41.1
2		3.6	70	2	0.54	41.9
3		6	70	2	0.43	37.4
4		8.4	70	2	0.25	28.5
5		10.8	75	3	0.15	22.2
6		1.2	82	3	0.53	42.0
7		3.6	82	2	0.52	41.6
8		6	82	0	0.46	39.1
9		8.4	82	0	0.24	28.2
10		10.8	82	2	0.2	25.8
11		1.2	82	2	0.35	34.1
12		3.6	82	3	0.42	37.4
13		6	82	3	0.46	39.1
14		8.4	82	2	0.27	30.0
15		10.8	82	2	0.19	25.1
16		1.2	82	2	0.25	28.8
17		3.6	82	3	0.31	32.1
18		6	82	3	0.28	30.5
19		8.4	82	3	0.22	27.0
20		10.8	82	2	0.14	21.6
21		1.2	82	2	0.18	24.5
22		3.6	82	2	0.2	25.8
23		6	82	2	0.2	25.8
24		8.4	82	3	0.17	23.8
25		10.8	82	3	0.14	21.6

STACK VELOCITY	(fps)	31.0
VOLUMETRIC FLOW RATE	(cfm)	1859.5
NOZZLE VELOCITY	(fps)	31.8

PITOT WAS LEAKED TESTED AT 3" H2O FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

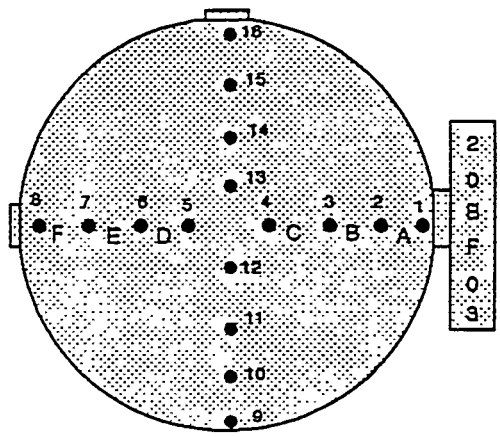
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	3
BLDG. NO.	9215
PROCESS	M-WING MACHINE SHOP
SAMPLER NO.	20BF03
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	48X66" INCHES

Stack 3



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.1090	0.0936	0.0936	0.0936	0.0936	0.1090
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2	7	14	34	41	46
K25 TRAVERSE NO...	1	2	4	5	6	7
STACK VELOCITY FT\SEC.....	60.7	57.9	57.9	54.9	51.8	51.8
NOZZLE VELOCITY FT\SEC.....	52.0	52.0	52.0	52.0	52.0	52.0
NOZZLE FLOW RATE CFM.....	0.202	0.149	0.149	0.149	0.149	0.202
PERCENT ISOKIN....	85.6	89.7	89.7	94.7	100.3	100.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 93.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 2-20-91

STACK NO.	3
BUILDING NO.	9215
STACK DIA. OR EQIV.	42
STACK AREA (sq.ft.)	9.62

	A	
A DISTANCE (upstream)	127	B
A DISTANCE(no.of dias.)	3.02	C
B DISTANCE (downstream)	216	D
B DISTANCE (no.of dias.)	5.14	E
MIN.NO.POINTS (A)	16	F
MIN.NO. POINTS (B)	16	
TOTAL NO. TRAV. POINTS	16	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2	EAST	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	84
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.2
ABSOLUTE PRESS.(ins.hg)	29.335
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	3.2	1.34	86	2	1.1	60.7
2	10.5	4.41	86	2	1.1	60.7
3	19.4	8.15	86	2	1	57.9
4	32.3	13.56	86	2	1	57.9
5	67.7	28.43	86	3	0.9	54.9
6	80.6	33.85	86	3	0.8	51.8
7	89.5	37.5	86	2	0.8	51.8
8	96.8	40.65	86	0	0.75	50.1
9	3.2	1.34	86	0	1.3	66.0
10	10.5	4.41	86	2	1.3	66.0
11	19.4	8.15	86	2	1.2	63.4
12	32.3	13.56	86	3	1.2	63.4
13	67.7	28.43	86	3	1.1	60.7
14	80.6	33.85	86	2	1.1	60.7
15	89.5	37.5	86	2	0.88	54.3
16	96.8	40.65	86	2	0.8	51.8

STACK VELOCITY	(fps)	58.2
VOLUMETRIC FLOW RATE	(cfm)	33614.3
NOZZLE VELOCITY	(fps)	58.1

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 4

BLDG. NO. 9215

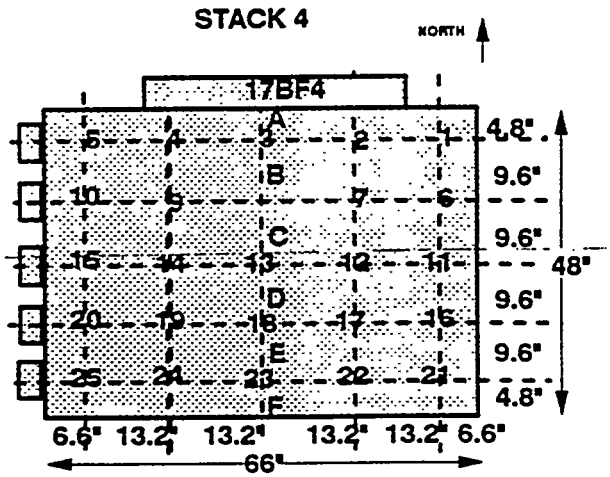
PROCESS O-WING ROLLING MILL

SAMPLER NO. 17BF4

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 48 X 66 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2	7	14	34	41	46
K25 TRAVERSE NO...	3	8	13	13	18	23
STACK VELOCITY FT\SEC.....	45.2	41.7	37.8	36.5	32.5	38.3
NOZZLE VELOCITY FT\SEC.....	37.0	37.0	37.0	37.0	37.0	37.0
NOZZLE FLOW RATE CFM.....	0.144	0.280	0.144	0.144	0.144	0.144
PERCENT ISOKIN....	81.9	88.8	98.0	101.5	114.0	96.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-21-90

STACK NO.	4
BUILDING NO.	9215
STACK DIA. OR EQIV.	48X66
STACK AREA (sq.ft.)	22.00

A DISTANCE (upstream)	45	A
A DISTANCE(no.of dias.)	1.23	
B DISTANCE (downstream)	192	
B DISTANCE (no.of dias.)	3.45	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	WEST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C&D
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		E
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	84	
BAROMETER (ins. hg.)	29.35	F
STATIC PRESSURE(ins.h2o)	-0.21	
ABSOLUTE PRESS.(ins.hg)	29.335	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		6.6	96	2	0.48	40.5
2		19.8	96	2	0.51	41.7
3		33	96	2	0.6	45.2
4		46.2	96	2	0.6	45.2
5		59.4	96	3	0.44	38.7
6		6.6	96	3	0.51	41.7
7		19.8	96	2	0.45	39.2
8		33	96	0	0.42	37.8
9		46.2	96	0	0.5	41.3
10		59.4	96	2	0.54	42.9
11		6.6	96	2	0.48	40.5
12		19.8	96	3	0.36	35.0
13		33	96	3	0.39	36.5
14		46.2	96	2	0.4	36.9
15		59.4	96	2	0.46	39.6
16		6.6	96	2	0.41	37.4
17		19.8	96	3	0.31	32.5
18		33	96	3	0.31	32.5
19		46.2	96	3	0.38	36.0
20		59.4	96	3	0.45	39.2
21		6.6	96	2	0.34	34.0
22		19.8	96	2	0.34	34.0
23		33	96	2	0.43	38.3
24		46.2	96	2	0.45	39.2
25		59.4	96	2	0.32	33.0

STACK VELOCITY	(fps)	38.4
VOLUMETRIC FLOW RATE	(cfm)	50626.7
NOZZLE VELOCITY	(fps)	37.0

PITOT WAS LEAKED TESTED 3" H2O FOR SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

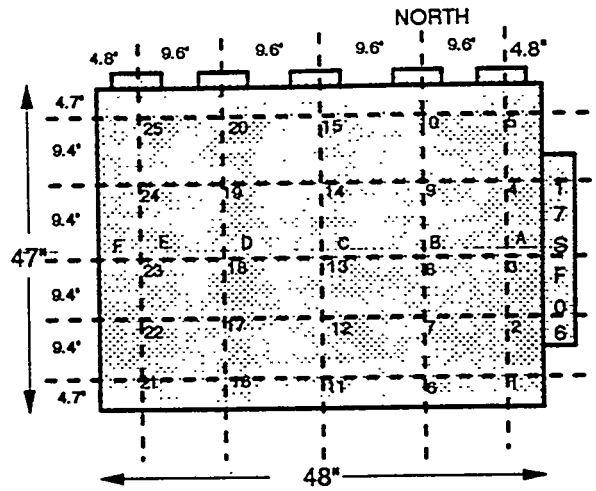
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	6
BLDG. NO.	9215
PROCESS	P-WING ROLLING MILL
SAMPLER NO.	17SFO6
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	48 X 47 INCHES

STACK 6



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2	7	14	34	41	46
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	32	34.5	35.4	34.5	33.9	33.9
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.127	0.246	0.127	0.127	0.246	0.127
PERCENT ISOKIN....	101.9	94.5	92.1	94.5	96.2	96.2

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.9

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-19-90

STACK NO.	6	
BUILDING NO.		
STACK DIA. OR EQIV.	47.5	(47X48)
STACK AREA (sq.ft.)	15.67	
A DISTANCE (upstream)	60	A
A DISTANCE(no.of dias.)	1.26	
B DISTANCE (downstream)	60	
B DISTANCE (no.of dias.)	1.26	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	61	
BAROMETER (ins. hg.)	29.35	E & F
STATIC PRESSURE(ins.h2o)	-0.23	
ABSOLUTE PRESS.(ins.hg)	29.333	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		4.7	78	2	0.29	30.9
2		14.1	78	2	0.32	32.5
3		23.5	78	2	0.31	32.0
4		32.9	78	2	0.32	32.5
5		42.3	78	3	0.3	31.5
6		4.7	78	3	0.36	34.5
7		14.1	77	2	0.39	35.8
8		23.5	77	0	0.37	34.9
9		32.9	77	0	0.34	33.5
10		42.3	77	2	0.33	33.0
11		4.7	78	2	0.37	34.9
12		14.1	78	3	0.4	36.3
13		23.5	78	3	0.38	35.4
14		32.9	78	2	0.37	34.9
15		42.3	77	2	0.44	38.1
16		4.7	78	2	0.44	38.1
17		14.1	78	3	0.4	36.3
18		23.5	78	3	0.36	34.5
19		32.9	78	3	0.37	34.9
20		42.3	78	2	0.35	34.0
21		4.7	77	2	0.4	36.3
22		14.1	77	2	0.41	36.7
23		23.5	77	3	0.35	33.9
24		32.9	77	3	0.28	30.4
25		42.3	77	3	0.27	29.8

STACK VELOCITY	(fps)	34.2
VOLUMETRIC FLOW RATE	(cfm)	32177.7
NOZZLE VELOCITY	(fps)	32.6

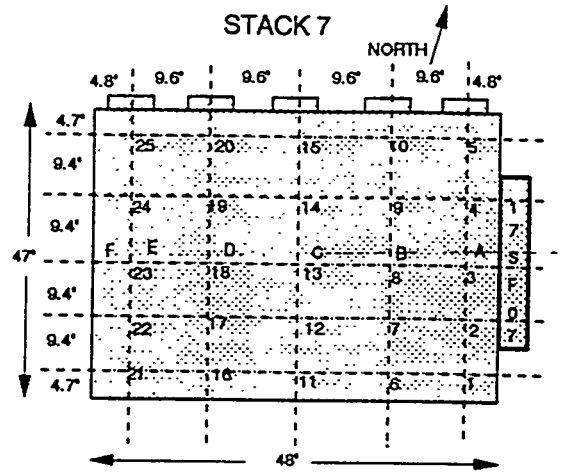
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	7
BLDG. NO.	9215
PROCESS	P-WING HYDROFORM FURNACE
SAMPLER NO.	17SF07
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	48 X 47" INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL.....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2	7	14	34	41	46
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	32.3	35.3	37.2	36.3	37.6	37.6
NOZZLE VELOCITY FT\SEC.....	37.0	37.0	37.0	37.0	37.0	37.0
NOZZLE FLOW RATE CFM.....	0.144	0.280	0.144	0.144	0.144	0.144
PERCENT ISOKIN....	114.7	104.9	99.6	102.0	98.5	98.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 103.0

VELOCITY DATA
Y-12 PLANT

DATE 2-20-91

STACK NO.	7	
BUILDING NO.	9215	
STACK DIA. OR EQIV.	47X48	
STACK AREA (sq.ft.)	15.67	
A DISTANCE (upstream)	60	A
A DISTANCE(no.of dias.)	1.26	
B DISTANCE (downstream)	60	
B DISTANCE (no.of dias.)	1.26	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	82	
BAROMETER (ins. hg.)	29.35	E & F
STATIC PRESSURE(ins.h2o)	-4.5	
ABSOLUTE PRESS.(ins.hg)	29.019	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		4.7	84	2	0.28	30.7
2		14.1	84	2	0.33	33.4
3		23.5	84	2	0.31	32.3
4		32.9	84	2	0.32	32.8
5		42.3	84	3	0.31	32.3
6		4.7	84	3	0.37	35.3
7		14.1	84	2	0.4	36.7
8		23.5	84	0	0.39	36.3
9		32.9	84	0	0.35	34.4
10		42.3	84	2	0.33	33.4
11		4.7	84	2	0.36	34.8
12		14.1	84	3	0.38	35.8
13		23.5	84	3	0.41	37.2
14		32.9	84	2	0.4	36.7
15		42.3	84	2	0.39	36.3
16		4.7	84	2	0.45	39.0
17		14.1	84	3	0.45	39.0
18		23.5	84	3	0.39	36.3
19		32.9	84	3	0.37	35.3
20		42.3	84	2	0.37	35.3
21		4.7	84	2	0.35	34.4
22		14.1	84	2	0.4	36.7
23		23.5	84	3	0.42	37.6
24		32.9	84	3	0.36	34.8
25		42.3	84	3	0.27	30.2

STACK VELOCITY	(fps)	35.1
VOLUMETRIC FLOW RATE	(cfm)	32980.1
NOZZLE VELOCITY	(fps)	32.6

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

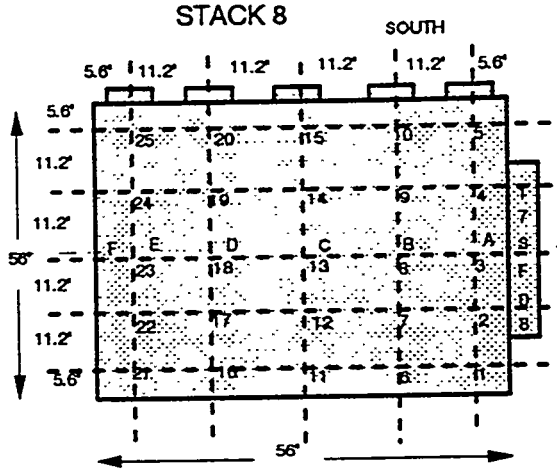
MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	8
BLDG. NO.	9215
PROCESS	P-WING HYDROFORM ROLLING MILL AND CLEANER

SAMPLER NO.	17SF08
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	56 X 56 INCHES

STACK 8



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.5	8	16.5	39.4	47.8	53.5
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	32.5	42.3	41.1	48.1	49.5	45.9
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	131.9	101.3	104.3	89.1	86.6	93.4

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-29-90

STACK NO.	8	
BUILDING NO.	9215	
STACK DIA. OR EQIV.	56	(56X56)
STACK AREA (sq.ft.)	21.80	
A DISTANCE (upstream)	330	A
A DISTANCE(no.of dias.)	5.9	
B DISTANCE (downstream)	240	
B DISTANCE (no.of dias.)	4.29	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	82	
BAROMETER (ins. hg.)	29.35	E & F
STATIC PRESSURE(ins.h2o)	-0.35	
ABSOLUTE PRESS.(ins.hg)	29.324	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		5.6	79	2	0.36	34.5
2		16.6	79	2	0.34	33.5
3		28	79	2	0.32	32.5
4		39	79	2	0.34	33.5
5		50.4	79	3	0.32	32.5
6		5.6	79	3	0.54	42.3
7		16.6	79	2	0.48	39.8
8		28	79	0	0.4	36.4
9		39	79	0	0.38	35.4
10		50.4	79	2	0.45	38.6
11		5.6	79	2	0.65	46.4
12		16.6	79	3	0.61	44.9
13		28	79	3	0.51	41.1
14		39	79	2	0.53	41.9
15		50.4	79	2	0.6	44.5
16		5.6	79	2	0.72	48.8
17		16.6	79	3	0.71	48.4
18		28	79	3	0.7	48.1
19		39	79	3	0.7	48.1
20		50.4	79	2	0.6	44.5
21		5.6	79	2	0.64	46.0
22		16.6	79	2	0.7	48.1
23		28	79	3	0.74	49.5
24		39	79	3	0.7	48.1
25		50.4	79	3	0.5	40.7

STACK VELOCITY	(fps)	41.9
VOLUMETRIC FLOW RATE	(cfm)	54837.1
NOZZLE VELOCITY	(fps)	42.9

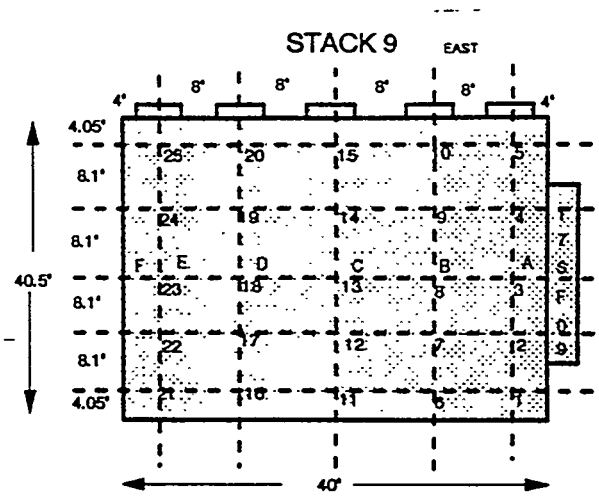
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	9
BLDG. NO.	9215
PROCESS	N-WING ROLLING MILL
SAMPLER NO.	178F09
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	40 X 40.5 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.75	5.8	11.8	28.2	34.2	38.25
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	34.3	33.3	31.8	31.8	29	29
NOZZLE VELOCITY FT\SEC.....	29.1	29.1	29.1	29.1	29.1	29.1
NOZZLE FLOW RATE CFM.....	0.1132	0.2201	0.1132	0.2201	0.1132	0.2201
PERCENT ISOKIN....	84.9	87.4	91.6	91.6	100.4	100.4

DATE DEC 90

INITALS RCR

AVERA 92.7
% ISOKINETIC

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-28-90

STACK NO.	9	
BUILDING NO.	9215	
STACK DIA. OR EQIV.	40.25	40X40.5
STACK AREA (sq.ft.)	11.25	
A DISTANCE (upstream)	48	A
A DISTANCE(no.of dias.)	1.19	
B DISTANCE (downstream)	192	
B DISTANCE (no.of dias.)	4.74	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	84	
BAROMETER (ins. hg.)	29.35	E & F
STATIC PRESSURE(ins.h2o)	-0.17	
ABSOLUTE PRESS.(ins.hg)	29.338	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		4	89	2	0.29	31.2
2		12	89	2	0.34	33.8
3		20	89	2	0.35	34.3
4		28	89	2	0.3	31.8
5		36	89	3	0.24	28.4
6		4	89	3	0.36	34.8
7		12	89	2	0.34	33.8
8		20	89	0	0.33	33.3
9		28	89	0	0.28	30.7
10		36	89	2	0.25	29.0
11		4	89	2	0.39	36.2
12		12	89	3	0.35	34.3
13		20	89	3	0.3	31.8
14		28	89	2	0.24	28.4
15		36	89	2	0.22	27.2
16		4	89	2	0.37	35.3
17		12	89	3	0.33	33.3
18		20	89	3	0.3	31.8
19		28	89	3	0.24	28.4
20		36	89	2	0.2	25.9
21		4	89	2	0.35	34.3
22		12	89	2	0.28	30.7
23		20	89	3	0.25	29.0
24		28	89	3	0.2	25.9
25		36	89	3	0.18	24.6

STACK VELOCITY	(fps)	31.1
VOLUMETRIC FLOW RATE	(cfm)	21021.6
NOZZLE VELOCITY	(fps)	29.2

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

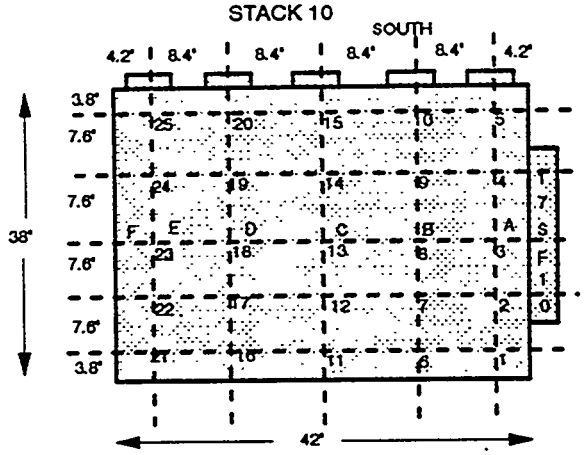
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	10
BLDG. NO.	9215
PROCESS DESCRIPTION	N-WING ROLLING MILL
SAMPLER NO.	17SF10
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	42 X 38 INCHES

STACK 10



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.85	6.0	12.4	29.6	35.9	40.15
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	39.2	31.6	27.1	33.2	37.9	37.9
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.1268	0.2465	0.1268	0.1268	0.2465	0.1268
PERCENT ISOKIN....	83.2	103.2	120.3	98.2	86.0	86.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	10	
BUILDING NO.	9215	
STACK DIA. OR EQIV.	39.9	(42X38)
STACK AREA (sq.ft.)	11.08	
A DISTANCE (upstream)	48	A
A DISTANCE(no.of dias.)	1.2	
B DISTANCE (downstream)	84	
B DISTANCE (no.of dias.)	2.10	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	84	
BAROMETER (ins. hg.)	29.35	E & F
STATIC PRESSURE(ins.h2o)	-0.24	
ABSOLUTE PRESS.(ins.hg)	29.332	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		3.8	84	2	0.44	38.3
2		11.4	84	2	0.44	38.3
3		19	84	2	0.46	39.2
4		26.6	84	2	0.55	42.8
5		34.2	84	3	0.6	44.7
6		3.8	84	3	0.3	31.6
7		11.4	84	2	0.18	24.5
8		19	84	0	0.18	24.5
9		26.6	84	0	0.35	34.2
10		34.2	84	2	0.55	42.8
11		3.8	84	2	0.28	30.6
12		11.4	84	3	0.22	27.1
13		29	84	3	0.22	27.1
14		26.6	84	2	0.38	35.6
15		34.2	84	2	0.54	42.4
16		3.8	84	2	0.31	32.2
17		11.4	84	3	0.3	31.6
18		19	84	3	0.33	33.2
19		26.6	84	3	0.49	40.4
20		34.2	84	2	0.45	38.7
21		3.8	84	2	0.33	33.2
22		11.4	84	2	0.3	31.6
23		19	84	3	0.43	37.9
24		26.6	84	3	0.51	41.2
25		34.2	84	3	0.45	38.7

STACK VELOCITY	(fps)	35.3
VOLUMETRIC FLOW RATE	(cfm)	23470.5
NOZZLE VELOCITY	(fps)	32.64

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 11

BLDG. NO. 9215

PROCESS DESCRIPTION N-WING MILL CONVEYOR ANNEALING FURNACE

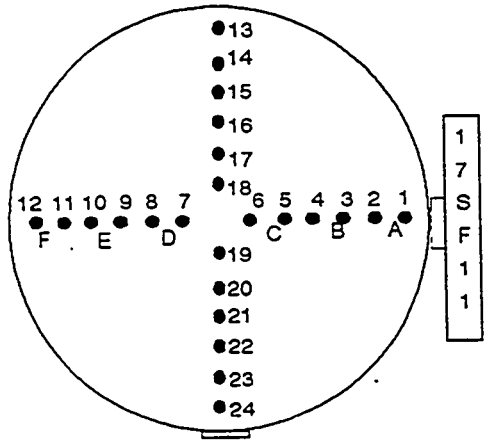
SAMPLER NO. 17SF11

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 71.5 INCHES

STACK 11



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	3.15	10.4	21.2	50.3	61.1	68.3
K25 TRAVERSE NO...	2	4	6	8	10	12
STACK VELOCITY FT\SEC.....	48.4	50.1	41.7	40.9	37.5	38.3
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
PERCENT ISOKIN....	88.6	85.6	102.8	104.8	114.3	111.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-13-90

STACK NO.	11
BUILDING NO.	9215
STACK DIA. OR EQIV.	71.5
STACK AREA (sq.ft.)	27.90

A DISTANCE (upstream)	65	A
A DISTANCE(no.of dias.)	0.91	B
B DISTANCE (downstream)	60	
B DISTANCE (no.of dias.)	2.60	C
MIN.NO.POINTS (A)	24	
MIN.NO. POINTS (B)	24	D
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	SOUTH	E
DIRECTION PORT 2		
		F
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	85
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.22
ABSOLUTE PRESS.(ins.hg)	29.334
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	1.5	85	2	0.68	47.7
2	6.7	4.75	85	2	0.7	48.4
3	11.8	8.5	85	2	0.75	50.1
4	17.7	12.75	85	2	0.75	50.1
5	25	17.87	85	3	0.66	47.0
6	35.6	25.5	85	3	0.52	41.7
7	64.4	46	85	2	0.47	39.6
8	75	53.62	85	0	0.5	40.9
9	82.3	58.87	85	0	0.42	37.5
10	88.2	63	85	2	0.42	37.5
11	93.3	66.75	85	2	0.44	38.3
12	97.9	70	85	3	0.44	38.3
13	2.1	1.5	85	3	0.66	47.0
14	6.7	4.75	85	2	0.69	48.0
15	11.8	8.5	85	2	0.73	49.4
16	17.7	12.75	85	2	0.73	49.4
17	25	17.87	85	3	0.73	49.4
18	35.6	25.5	85	3	0.65	46.6
19	64.4	46	85	3	0.49	40.5
20	75	53.62	85	2	0.46	39.2
21	82.3	58.87	85	2	0.38	35.6
22	88.2	63	85	2	0.39	36.1
23	93.3	66.75	85	3	0.4	36.6
24	97.9	70	85	3	0.4	36.6

STACK VELOCITY	(fps)	43.0
VOLUMETRIC FLOW RATE	(cfm)	71927.9
NOZZLE VELOCITY	(fps)	42.9

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

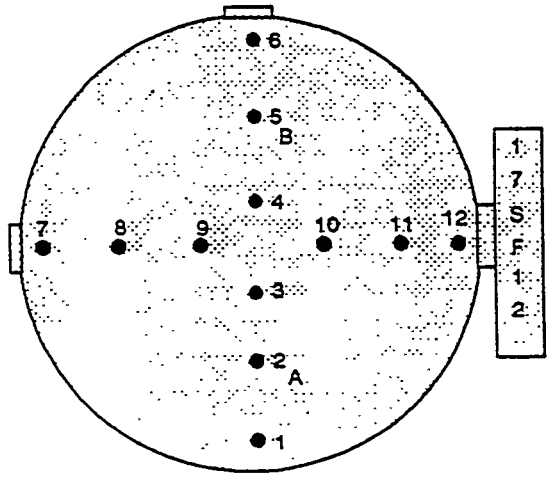
MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	12
BLDG. NO.	9215
PROCESS	N-WING-THIRD MILL-SHEAR

SAMPLER NO.	17SF12
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12 INCHES

Stack 12



NOZZLE I D....	A	B
NOZZLE SIZE.....	0.203	0.277
PERCENT STACK DIA FROM WALL....	14.6	85.4
INCHES FROM STACK WALL....	1.75	10.25
K25 TRAVERSE NO...	2	5
STACK VELOCITY FT\SEC.....	29	26.7
NOZZLE VELOCITY FT\SEC.....	25.9	25.9
NOZZLE FLOW RATE CFM.....	0.349	0.651
PERCENT ISOKIN....	89.3	97.0

DATE DEC 90

INITALS

AVERAGE % ISOKINETIC	93.2

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 2-20-91

STACK NO.	12
BUILDING NO.	9215
STACK DIA. OR EQIV.	12
STACK AREA (sq.ft.)	0.79

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	4
B DISTANCE (downstream)	480
B DISTANCE (no.of dias.)	40.00
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	12
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	NORTH
DIRECTION PORT 2	EAST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	42
BAROMETER (ins. hg.)	29.45
STATIC PRESSURE(ins.h2o)	-0.17
ABSOLUTE PRESS.(ins.hg)	29.438
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	4.4	0.5	70	4	0.25	28.5
A	2	14.6	1.75	70	2	0.26	29.0
	3	29.6	3.5	70	2	0.27	29.6
	4	70.4	8.4	70	2	0.26	29.0
B	5	85.4	10.25	70	3	0.22	26.7
	6	95.6	11.5	70	4	0.12	19.7
	7	4.4	0.5	70	3	0.31	31.7
	8	14.6	1.75	70	3	0.3	31.2
	9	29.6	3.5	70	2	0.28	30.1
	10	70.4	8.4	70	2	0.24	27.9
	11	85.4	11.5	70	2	0.19	24.8
	12	95.6	11.5	70	4	0.15	22.0

STACK VELOCITY	(fps)	27.5
VOLUMETRIC FLOW RATE	(cfm)	1296.5
NOZZLE VELOCITY	(fps)	25.6

PITOT WAS LEAKED TESTED AT 3" OF h2O FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 13

BLDG. NO. 9206

PROCESS SOUTH STACK INCEN. AND S SYSTEM EXHAUST

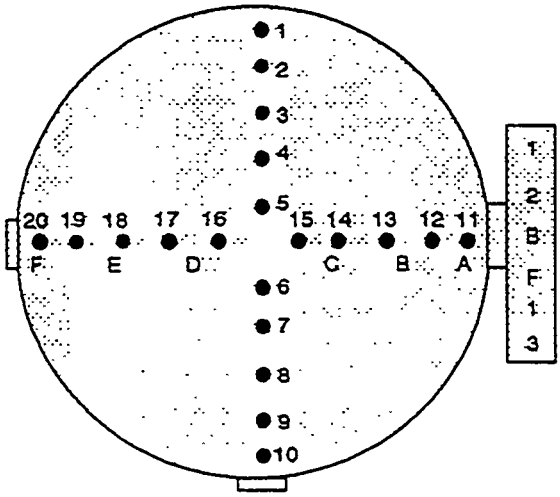
SAMPLER NO. 12BF13

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 72.0 INCHES

STACK 13



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	3.2	10.5	21.3	50.7	61.5	68.9
K25 TRAVERSE NO...	11	13	15	16	18	20
STACK VELOCITY FT\SEC.....	45.1	44.4	40.9	38.3	36.5	36.1
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	95.0	96.5	104.8	111.9	117.4	118.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 107.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-28-90

STACK NO.	13
BUILDING NO.	9206
STACK DIA. OR EQIV.	72
STACK AREA (sq.ft.)	9.00

A DISTANCE (upstream)	192
A DISTANCE(no.of dias.)	2.7
B DISTANCE (downstream)	384
B DISTANCE (no.of dias.)	5.30
MIN.NO.POINTS (A)	20
MIN.NO. POINTS (B)	20
TOTAL NO. TRAV. POINTS	20
DIRECTION PORT 1	WEST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	88
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.32
ABSOLUTE PRESS.(ins.hg)	29.326
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.6	1.87	84.5	2	0.61	45.1
	2	8.2	5.87	84.5	2	0.62	45.5
	3	14.6	10.5	84.5	2	0.61	45.1
	4	22.6	16.25	84.5	2	0.6	44.8
	5	34.2	24.87	84.5	3	0.54	42.5
	6	65.8	47.37	84.5	3	0.47	39.6
	7	77.4	55.75	84.5	2	0.53	42.1
	8	85.4	61.5	84.5	0	0.61	45.1
	9	91.8	66	84.5	0	0.6	44.8
	10	97.4	70.12	84.5	2	0.42	37.5
F	11	2.6	1.87	84.5	2	0.61	45.1
	12	8.2	5.87	84.5	3	0.64	46.2
E	13	14.6	10.5	84.5	3	0.59	44.4
	14	22.6	16.25	84.5	2	0.56	43.2
D	15	34.2	24.87	84.5	2	0.5	40.9
C	16	65.8	47.37	84.5	2	0.44	38.3
	17	77.4	55.75	84.5	3	0.43	37.9
B	18	85.4	61.5	84.5	3	0.4	36.5
	19	91.8	66	84.5	3	0.4	36.5
A	20	97.4	70.12	84.5	2	0.39	36.1

STACK VELOCITY	(fps)	41.9
VOLUMETRIC FLOW RATE	(cfm)	22607.3
NOZZLE VELOCITY	(fps)	42.9

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 14

BLDG. NO. 9206

PROCESS NORTH STACK, PULVERIZERS, BLENDING HOODS

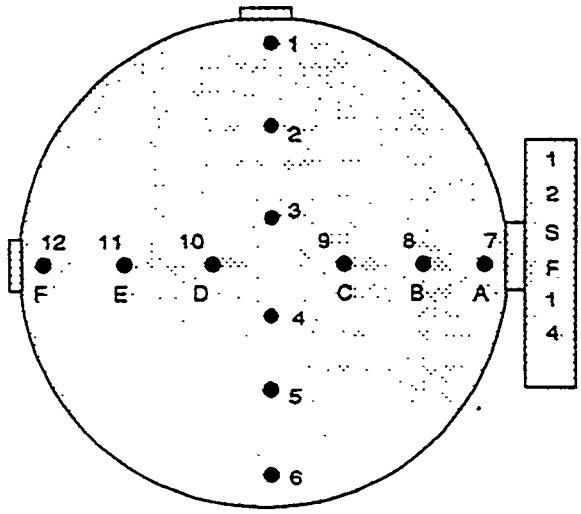
SAMPLER NO. 12SF14

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 59.75 INCHES

STACK 14



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.152	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.6	8.7	17.7	42.1	51	57.1
K25 TRAVERSE NO...	7	8	9	10	11	12
STACK VELOCITY FT\SEC.....	33.8	35.7	36.7	38	40.2	39.7
NOZZLE VELOCITY FT\SEC.....	37.0	37.0	37.0	37.0	37.0	37.0
NOZZLE FLOW RATE CFM.....	0.144	0.144	0.280	0.144	0.144	0.144
PERCENT ISOKIN....	109.6	103.7	100.9	97.5	92.1	93.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 99.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-3-90

STACK NO.	14
BUILDING NO.	9206
STACK DIA. OR EQIV.	59.75
STACK AREA (sq.ft.)	19.47

A DISTANCE (upstream)	132
A DISTANCE(no.of dias.)	2.2
B DISTANCE (downstream)	396
B DISTANCE (no.of dias.)	6.60
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	12
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	S.EAST
DIRECTION PORT 2	S.WEST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	88
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.28
ABSOLUTE PRESS.(ins.hg)	29.329
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	4.4	2.62	88	2	0.42	37.6
	2	14.6	8.75	88	2	0.47	39.7
	3	29.6	17.62	88	2	0.47	39.7
	4	70.4	42	88	2	0.45	38.9
	5	85.4	51	88	3	0.48	40.2
	6	96.6	57.12	88	3	0.44	38.5
A	7	4.4	2.62	88	2	0.34	33.8
B	8	14.6	8.75	88	0	0.38	35.7
C	9	29.6	17.62	88	0	0.4	36.7
D	10	70.4	42	88	2	0.43	38.0
E	11	85.4	51	88	2	0.48	40.2
F	12	96.6	57.12	88	3	0.47	39.7

STACK VELOCITY	(fps)	38.2
VOLUMETRIC FLOW RATE	(cfm)	44652.7
NOZZLE VELOCITY	(fps)	32.7

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 15

BLDG. NO. 9206

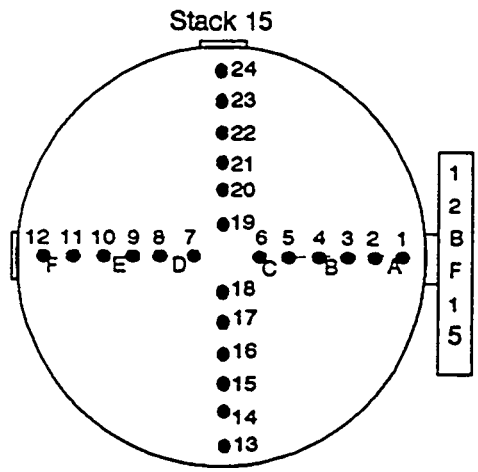
PROCESS WEST STACK UF4 REDUCTION PROCESS

SAMPLER NO. 12BF15

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 90.5 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	4	13.2	26.8	63.7	77.3	86.5
K25 TRAVERSE NO...	2	4	6	8	10	11
STACK VELOCITY FT\SEC.....	34.2	33.2	30.6	31.7	34.7	35.6
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.127	0.246	0.127	0.127	0.246	0.127
PERCENT ISOKIN....	95.3	98.2	106.5	102.8	94.0	91.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-3-90

STACK NO.	15
BUILDING NO.	9206
STACK DIA. OR EQIV.	90.5
STACK AREA (sq.ft.)	44.70

A DISTANCE (upstream)	72	A
A DISTANCE(no.of dias.)	0.8	B
B DISTANCE (downstream)	384	
B DISTANCE (no.of dias.)	4.24	C
MIN.NO.POINTS (A)	24	
MIN.NO. POINTS (B)	24	D
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	SOUTH	E
DIRECTION PORT 2	WEST	F
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	89
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.2
ABSOLUTE PRESS.(ins.hg)	29.335
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	1.9	85	2	0.35	34.2
2	6.7	6	85	2	0.35	34.2
3	11.8	10	85	2	0.34	33.7
4	12.7	16	85	2	0.33	33.2
5	25	22.62	85	3	0.3	31.7
6	35.6	32.25	85	3	0.28	30.6
7	64.4	58.25	85	2	0.3	31.7
8	75	67.75	85	0	0.3	31.7
9	82.3	75	85	0	0.365	34.9
10	88.7	79.75	85	2	0.36	34.7
11	93.3	84.37	85	2	0.38	35.6
12	97.9	88.62	85	3	0.31	32.2
13	2.1	1.87	85	3	0.32	32.7
14	6.7	6	85	2	0.32	32.7
15	11.8	10	85	2	0.31	32.2
16	17.7	16	85	2	0.31	32.2
17	25	22.62	85	3	0.3	31.7
18	35.6	32.25	85	3	0.32	32.7
19	64.4	58.25	85	3	0.35	34.2
20	75	67.75	85	2	0.34	33.7
21	82.3	75	85	2	0.33	33.2
22	88.2	79.75	85	2	0.38	35.6
23	93.3	84.37	85	3	0.36	34.7
24	97.9	88.62	85	3	0.36	34.7

STACK VELOCITY	(fps)	33.3
VOLUMETRIC FLOW RATE	(cfm)	89238.7
NOZZLE VELOCITY	(fps)	32.6

PITOT WAS LEAKED TESTED AT 3" h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

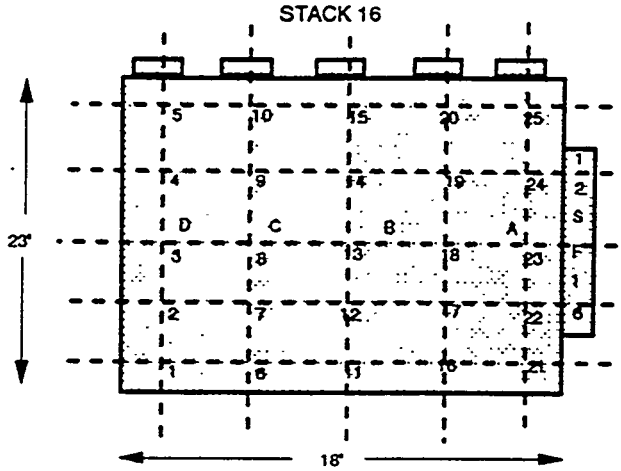
MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	16
BLDG. NO.	9206
PROCESS	LEACHING HOODS ROOM 30

SAMPLER NO.	12SF16
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	18 X 23 INCHES

STACK 16



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.25	0.203	0.25	0.203
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.2	4.5	9	16.8
K25 TRAVERSE NO...	23	18	8	3
STACK VELOCITY FT\SEC.....	14.7	14.7	15.3	16.3
NOZZLE VELOCITY FT\SEC.....	14.7	14.7	14.7	14.7
NOZZLE FLOW RATE CFM.....	0.301	0.199	0.301	0.199
PERCENT ISOKIN....	100.2	100.2	96.3	90.4

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC	96.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-3-90

STACK NO.	16	
BUILDING NO.	9206	
STACK DIA. OR EQIV.	20.2	(23X18)
STACK AREA (sq.ft.)	2.88	
A DISTANCE (upstream)	60	D
A DISTANCE(no.of dias.)	2.97	
B DISTANCE (downstream)	78	
B DISTANCE (no.of dias.)	3.86	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	C
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		B
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	88	
BAROMETER (ins. hg.)	29.35	A
STATIC PRESSURE(ins.h2o)	-0.04	
ABSOLUTE PRESS.(ins.hg)	29.347	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		2.3	84	2	0.1	18.3
2		6.9	84	1	0.09	17.3
3		11.5	84	2	0.08	16.3
4		16.1	84	2	0.07	15.3
5		20.7	84	3	0.06	14.1
6		2.3	84	2	0.08	16.3
7		6.9	84	2	0.075	15.8
8		11.5	84	0	0.07	15.3
9		16.1	84	0	0.055	13.5
10		20.7	84	2	0.055	13.5
11		2.3	84	2	0.07	15.3
12		6.9	84	3	0.07	15.3
13		11.5	84	3	0.065	14.7
14		16.1	84	2	0.06	14.1
15		20.7	84	3	0.06	14.1
16		2.3	84	2	0.07	15.3
17		6.9	84	3	0.065	14.7
18		11.5	84	2	0.065	14.7
19		16.1	84	2	0.06	14.1
20		20.7	84	2	0.06	14.1
21		2.3	84	2	0.06	14.1
22		6.9	84	2	0.06	14.1
23		11.5	84	3	0.065	14.7
24		16.1	84	3	0.065	14.7
25		20.7	84	3	0.065	14.7

STACK VELOCITY	(fps)	15.0
VOLUMETRIC FLOW RATE	(cfm)	2591.0
NOZZLE VELOCITY	(fps)	12.2

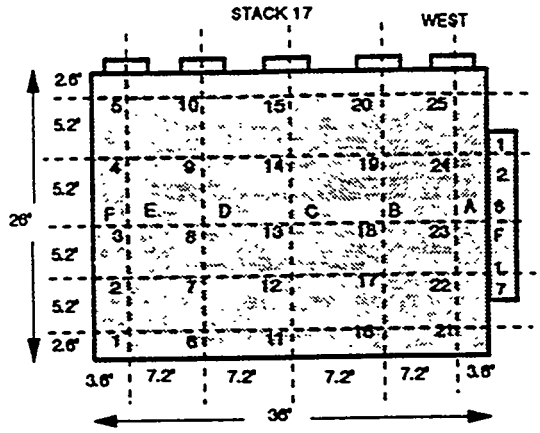
PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: RIGGS, HILD, GODDARD

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SH

STACK NO.	17
BLDG. NO.	9206
PROCESS	STEAM CLEANING HOOD
SAMPLER NO.	12SF17
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	26 X 36 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.6	5.3	10.7	25.3	30.7	34.4
K25 TRAVERSE NO...	23	18	13	8	3	3
STACK VELOCITY FT\SEC.....	43	39.7	28.4	23.2	26.6	26.6
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.127	0.246	0.127	0.127	0.246	0.127
PERCENT ISOKIN....	75.8	82.1	114.8	140.5	122.6	122.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 109.7

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 9-10-90

STACK NO.	17	
BUILDING NO.	9206	
STACK DIA. OR EQIV.	31.5	(36*26)
STACK AREA (sq.ft.)	6.50	
A DISTANCE (upstream)	48.5	E & F
A DISTANCE(no.of dias.)	1.54	
B DISTANCE (downstream)	87	
B DISTANCE (no.of dias.)	2.76	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	D
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	WEST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		B
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	84	
BAROMETER (ins. hg.)	29.32	A
STATIC PRESSURE(ins.h2o)	-0.16	
ABSOLUTE PRESS.(ins.hg)	29.308	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		2.6	87	4	0.38	35.7
2		7.8	87	3	0.25	29.0
3		13	87	2	0.21	26.6
4		18.2	87	1	0.21	26.6
5		23.4	86	1	0.19	25.2
6		2.6	87	3	0.42	37.5
7		7.8	87	2	0.21	26.6
8		13	87	3	0.16	23.2
9		18.2	87	2	0.17	23.9
10		23.4	87	2	0.19	25.3
11		2.6	87	4	0.54	42.6
12		7.8	87	0	0.3	31.7
13		13	87	1	0.24	28.4
14		18.2	87	2	0.27	30.1
15		23.4	87	1	0.24	28.4
16		2.6	85	3	0.63	45.9
17		7.8	85	2	0.51	41.3
18		13	86	2	0.47	39.7
19		18.2	87	1	0.38	35.7
20		23.4	87	1	0.32	32.8
21		2.6	87	2	0.38	35.7
22		7.8	87	3	0.6	44.9
23		13	87	2	0.55	43.0
24		18.2	86	2	0.42	37.5
25		23.4	86	1	0.31	32.2

STACK VELOCITY	(fps)	33.2
VOLUMETRIC FLOW RATE	(cfm)	12937.2
NOZZLE VELOCITY	(fps)	32.6

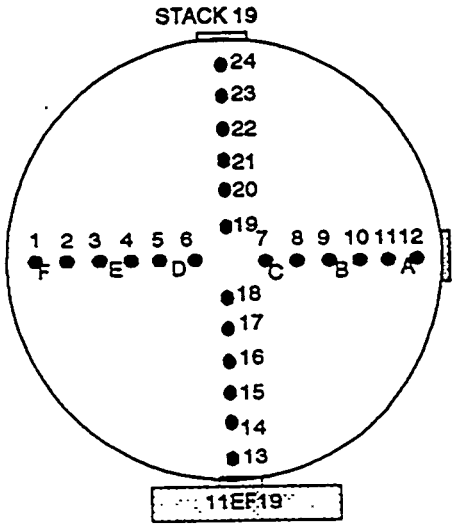
PITOT WAS LEAKED TESTED AT 3" H2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE NOZZLE CALCULATION SHEET

STACK NO.	19
BLDG. NO.	9212
PROCESS	B-1 WING EAST DAY FILTER EXHAUST
SAMPLER NO.	11EF19
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	30 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.3	4.4	8.9	21	25.6	28.7
K25 TRAVERSE NO...	11	9	8	6	4	2
STACK VELOCITY FT\SEC.....	44.6	42.3	46.4	47.1	47.5	48.2
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	96.1	101.3	92.4	91.0	90.2	88.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 93.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	19
BUILDING NO.	9212
STACK DIA. OR EQIV.	30
STACK AREA (sq.ft.)	4.91

A DISTANCE (upstream)	228
A DISTANCE(no.of dias.)	7.60
B DISTANCE (downstream)	144
B DISTANCE (no.of dias.)	4.80
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	91
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	-0.19
ABSOLUTE PRESS.(ins.hg)	29.286
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	0.63	80	4	0.68	47.5
F	2	6.7	2	80	3	0.7	48.2
	3	11.8	3.5	80	2	0.7	48.2
E	4	17.7	5.3	80	1	0.68	47.5
	5	25	7.5	80	1	0.67	47.1
D	6	35.6	10.7	80	3	0.67	47.1
	7	64.4	19.3	80	2	0.66	46.8
C	8	75	22.5	80	3	0.65	46.4
B	9	82.3	24.7	80	2	0.54	42.3
	10	88.2	26.5	80	2	0.54	42.3
A	11	93.3	28	80	4	0.6	44.6
	12	97.9	29.4	80	0	0.6	44.6
	13	2.1	0.63	80	1	0.78	50.9
	14	6.7	2	80	2	0.77	50.5
	15	11.8	3.5	80	1	0.68	47.5
	16	17.7	5.3	80	3	0.58	43.9
	17	25	7.5	80	2	0.57	43.5
	18	35.6	10.7	80	2	0.68	47.5
	19	64.4	19.3	80	1	0.57	43.5
	20	75	22.5	80	1	0.57	43.5
	21	82.3	24.7	80	2	0.64	46.1
	22	88.2	26.5	80	3	0.65	46.4
	23	93.3	28	80	2	0.67	47.1
	24	97.9	29.4	80	2	0.68	47.5

STACK VELOCITY	(fps)	46.3
VOLUMETRIC FLOW RATE	(cfm)	13627.7
NOZZLE VELOCITY	(fps)	42.9

PITOT WAS LEAKED TESTED AT 3" H2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 21

BLDG. NO. 9212

PROCESS CENTRIFUGE CALCINER RECOVERY TANK

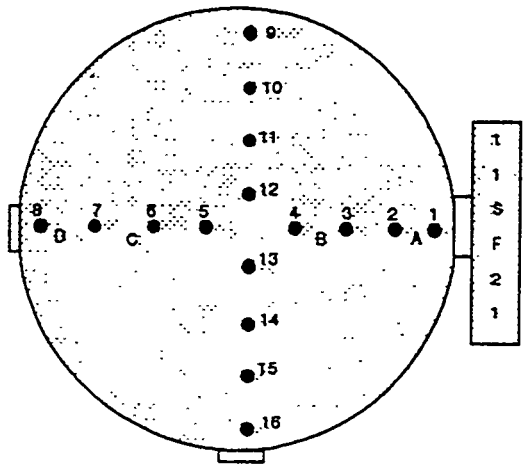
SAMPLER NO. 11SF21

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 26.5 INCHES

STACK 21



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.109	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.7	6.6	19.9	24.7
K25 TRAVERSE NO...	1	3	6	8
STACK VELOCITY FT\SEC.....	49.6	47.8	46.1	42.3
NOZZLE VELOCITY FT\SEC.....	43.7	43.7	43.7	43.7
NOZZLE FLOW RATE CFM.....	0.170	0.330	0.170	0.330
PERCENT ISOKIN....	88.0	91.4	94.7	103.2

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 94.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	21
BUILDING NO.	9212
STACK DIA. OR EQIV.	26.5
STACK AREA (sq.ft.)	3.83

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.81
B DISTANCE (downstream)	192
B DISTANCE (no.of dias.)	7.25
MIN.NO.POINTS (A)	16
MIN.NO. POINTS (B)	16
TOTAL NO. TRAV. POINTS	16
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	WEST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	92
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	-0.36
ABSOLUTE PRESS.(ins.hg)	29.274
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
A	1	3.2	0.85	80	4	0.74	49.6
	2	10.5	2.7	80	3	0.74	49.6
B	3	19.4	5.2	80	2	0.69	47.8
	4	32.3	8.5	80	1	0.68	47.5
	5	67.7	17.9	80	1	0.73	49.2
C	6	80.6	21.3	80	3	0.64	46.1
	7	89.5	23.7	80	2	0.55	42.7
D	8	96.8	25.5	80	3	0.54	42.3
	9	3.2	0.85	80	2	0.76	50.2
	10	10.5	2.7	80	2	0.74	49.6
	11	19.4	5.2	80	4	0.74	49.6
	12	32.3	8.5	80	0	0.69	47.8
	13	67.7	17.9	80	1	0.63	45.7
	14	80.6	21.3	80	2	0.54	42.3
	15	89.5	23.7	80	1	0.53	41.9
	16	96.8	25.5	80	3	0.5	40.7

STACK VELOCITY	(fps)	46.4
VOLUMETRIC FLOW RATE	(cfm)	10667.0
NOZZLE VELOCITY	(fps)	43.75

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

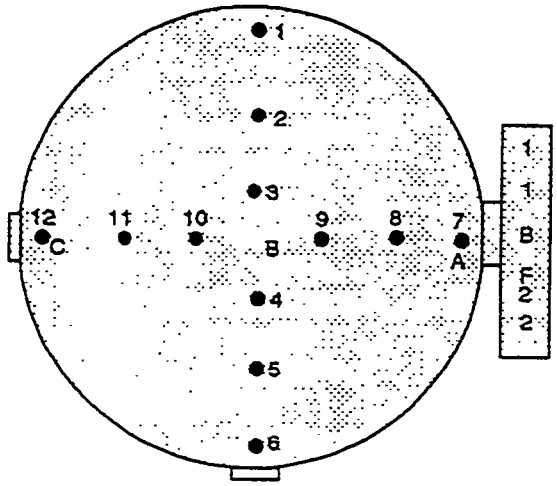
MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	22
BLDG. NO.	9212
PROCESS	B-1 WEST DAY CRUSHER AND HOPPER

SAMPLER NO.	11BF22
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	16 INCHES

STACK 22



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.25	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL.....	2.3	8	13.6
K25 TRAVERSE NO...	7	9	12
STACK VELOCITY FT\SEC.....	19.2	21.7	23.2
NOZZLE VELOCITY FT\SEC.....	21.1	21.1	21.1
NOZZLE FLOW RATE CFM.....	0.284	0.431	0.284
PERCENT ISOKIN....	109.8	97.2	90.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 99.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	22
BUILDING NO.	9212
STACK DIA. OR EQIV.	16
STACK AREA (sq.ft.)	1.40

A DISTANCE (upstream)	72
A DISTANCE(no.of dias.)	4.50
B DISTANCE (downstream)	96
B DISTANCE (no.of dias.)	6.00
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	12
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	92
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	-0.09
ABSOLUTE PRESS.(ins.hg)	29.293
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	4.4	0.7	86	3	0.19	25.2
	2	14.4	2.34	86	1	0.19	25.2
	3	29.6	4.75	86	3	0.18	24.6
	4	70.4	11.25	86	1	0.16	23.2
	5	85.4	13.7	86	1	0.15	22.4
	6	95.6	15.3	86	3	0.12	20.1
A	7	4.4	0.7	86	1	0.11	19.2
	8	14.4	2.34	86	3	0.12	20.1
B	9	29.6	4.75	86	2	0.14	21.7
	10	70.4	11.25	86	1	0.18	24.6
C	11	85.4	13.7	86	2	0.16	23.2
	12	95.6	15.3	86	1	0.16	23.2

STACK VELOCITY	(fps)	22.7
VOLUMETRIC FLOW RATE	(cfm)	1902.4
NOZZLE VELOCITY	(fps)	21.1

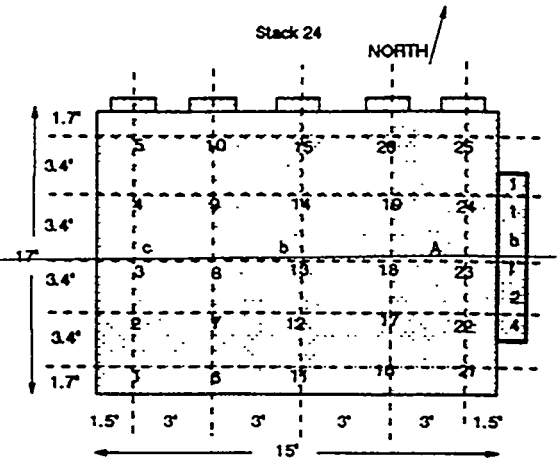
PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	24
BLDG. NO.	9212
PROCESS	CALCINER AND FLUID ENCLOSURES
SAMPLER NO.	11BF24
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	15X17 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.156	0.125	0.156
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.2	7.5	12.8
K25 TRAVERSE NO...	23	13	3
STACK VELOCITY FT\SEC.....	52.2	52.5	45.5
NOZZLE VELOCITY FT\SEC.....	47.5	47.5	47.5
NOZZLE FLOW RATE CFM.....	0.378	0.243	0.378
PERCENT ISOKIN....	91.0	90.5	104.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	24	
BUILDING NO.	9212	
STACK DIA. OR EQIV.	15.93	(17*15)
STACK AREA (sq.ft.)	1.77	

A DISTANCE (upstream)	52	C
A DISTANCE(no.of dias.)	3.26	
B DISTANCE (downstream)	48	
B DISTANCE (no.of dias.)	3.01	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		B
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	93	
BAROMETER (ins. hg.)	29.32	A
STATIC PRESSURE(ins.h2o)	-0.56	
ABSOLUTE PRESS.(ins.hg)	29.279	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.7	74	4	0.58	43.6
2		5.1	74	3	0.62	45.1
3		8.5	74	2	0.63	45.5
4		11.9	74	1	0.8	51.2
5		15.3	74	1	0.79	50.9
6		1.7	74	3	0.76	49.9
7		5.1	74	2	0.76	49.9
8		8.5	74	3	0.84	52.5
9		11.9	74	2	0.92	54.9
10		15.3	74	2	0.84	52.5
11		1.7	74	4	0.85	52.8
12		5.1	74	0	0.84	52.5
13		8.5	74	1	0.84	52.5
14		11.9	74	2	0.96	56.1
15		15.3	74	1	0.9	54.3
16		1.7	74	3	0.9	54.3
17		5.1	74	2	0.9	54.3
18		8.5	74	2	0.96	56.1
19		11.9	74	1	1.1	60.1
20		15.3	74	1	0.99	57.0
21		1.7	74	2	0.93	55.2
22		5.1	74	3	0.86	53.1
23		8.5	74	2	0.83	52.2
24		11.9	74	2	0.8	51.2
25		15.3	74	1	0.8	51.2

STACK VELOCITY	(fps)	52.4
VOLUMETRIC FLOW RATE	(cfm)	5564.0
NOZZLE VELOCITY	(fps)	47.5

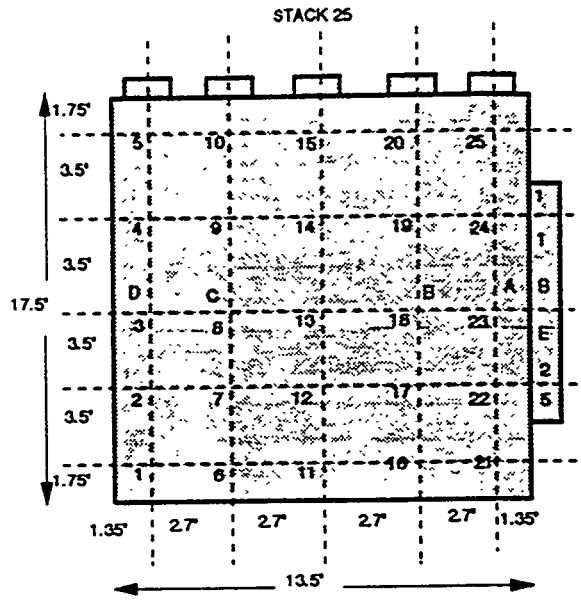
PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	25
BLDG. NO.	9212
PROCESS	DENITRATOR EXHAUST
SAMPLER NO.	11BE25
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	13.5 X 17.5 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.152	0.152	0.152	0.152
PERCENT STACK DIA FROM WALL....	14.6	32.3	67.7	85.4
INCHES FROM STACK WALL....	2	4.4	6.8	11.5
K25 TRAVERSE NO...	23	18	8	3
STACK VELOCITY FT\SEC.....	41.5	35.9	30.4	29.3
NOZZLE VELOCITY FT\SEC.....	33.1	33.1	33.1	33.1
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	79.7	92.1	108.8	112.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	25
BUILDING NO.	15.24
STACK DIA. OR EQIV.	15.24
STACK AREA (sq.ft.)	1.64

13.5*17.5

A DISTANCE (upstream)	48	D
A DISTANCE(no.of dias.)	3.15	
B DISTANCE (downstream)	60	
B DISTANCE (no.of dias.)	3.94	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	C
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		B
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	93	
BAROMETER (ins. hg.)	29.3	A
STATIC PRESSURE(ins.h2o)	-0.21	
ABSOLUTE PRESS.(ins.hg)	29.285	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fmt)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.75	78	2	0.27	29.9
2		5.25	78	2	0.27	29.9
3		8.75	78	2	0.26	29.3
4		12.25	78	2	0.3	31.5
5		15.75	78	3	0.29	31.0
6		1.75	78	3	0.32	32.5
7		5.25	78	2	0.26	29.3
8		8.75	78	0	0.28	30.4
9		12.25	78	0	0.3	31.5
10		15.75	78	2	0.3	31.5
11		1.75	78	2	0.31	32.0
12		5.25	78	3	0.29	31.0
13		8.75	78	3	0.34	33.5
14		12.25	78	2	0.43	37.7
15		15.75	78	2	0.35	34.0
16		1.75	78	2	0.37	35.0
17		5.25	78	1	0.34	33.5
18		8.75	78	1	0.39	35.9
19		12.25	78	2	0.47	39.4
20		15.75	78	2	0.36	34.5
21		1.75	78	3	0.38	35.4
22		5.25	78	3	0.52	41.5
23		8.75	78	1	0.52	41.5
24		12.25	78	1	0.28	30.4
25		15.75	78	2	0.25	28.7

STACK VELOCITY	(fps)	33.2
VOLUMETRIC FLOW RATE	(cfm)	3270.8
NOZZLE VELOCITY	(fps)	33.1

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

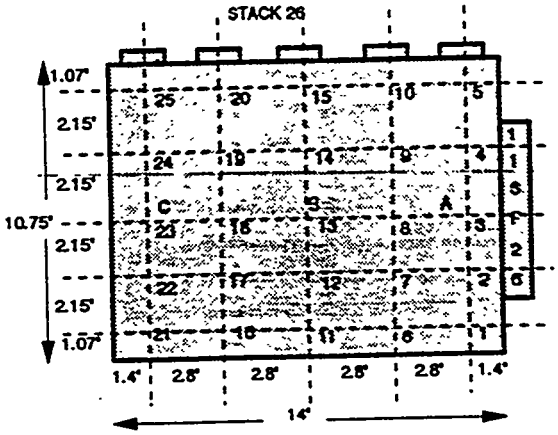
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	26
BLDG. NO.	9212
PROCESS	DRUM UNLOADING HOOD "SPECIAL PROCESS"

SAMPLER NO.	11SF26
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	10.75 X 14 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.25	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2	7	12
K25 TRAVERSE NO...	8	13	23
STACK VELOCITY FT\SEC.....	25	20.7	20.7
NOZZLE VELOCITY FT\SEC.....	21.1	21.1	21.1
NOZZLE FLOW RATE CFM.....	0.284	0.431	0.284
PERCENT ISOKIN....	84.3	101.9	101.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC	96.0

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	26
BUILDING NO.	9212
STACK DIA. OR EQIV.	12.16 10.75*14
STACK AREA (sq.ft.)	1.05

A DISTANCE (upstream)	51
A DISTANCE(no.of dias.)	4.19
B DISTANCE (downstream)	56
B DISTANCE (no.of dias.)	4.61
MIN.NO.POINTS (A)	25
MIN.NO. POINTS (B)	25
TOTAL NO. TRAV. POINTS	25
DIRECTION PORT 1	EAST
DIRECTION PORT 2	
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	86
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.1
ABSOLUTE PRESS.(ins.hg)	29.343
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fmt)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1		1.4	77	2	0.16	22.9
	2		4.2	77	2	0.25	28.7
	3		7	77	2	0.3	31.4
	4		9.8	77	2	0.3	31.4
	5		12.6	77	3	0.27	29.8
	6		1.4	77	3	0.13	20.7
	7		4.2	77	2	0.14	21.5
A	8		7	77	0	0.19	25.0
	9		9.8	77	0	0.26	29.3
	10		12.6	77	2	0.28	30.4
	11		1.4	77	2	0.18	24.3
	12		4.2	77	3	0.12	19.9
B	13		7	77	3	0.13	20.7
	14		9.8	77	2	0.24	28.1
	15		12.6	77	2	0.25	28.7
	16		1.4	77	2	0.13	20.7
	17		4.2	77	1	0.11	19.0
	18		7	77	1	0.16	22.9
	19		9.8	77	2	0.3	31.4
	20		12.6	77	2	0.32	32.5
	21		1.4	77	2	0.09	17.2
	22		4.2	77	3	0.1	18.1
C	23		7	77	3	0.13	20.7
	24		9.8	77	3	0.19	25.0
	25		12.6	77	2	0.22	26.9

STACK VELOCITY	(fps)	25.1
VOLUMETRIC FLOW RATE	(cfm)	1573.4
NOZZLE VELOCITY	(fps)	21.1

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 27

BLDG. NO. 9212

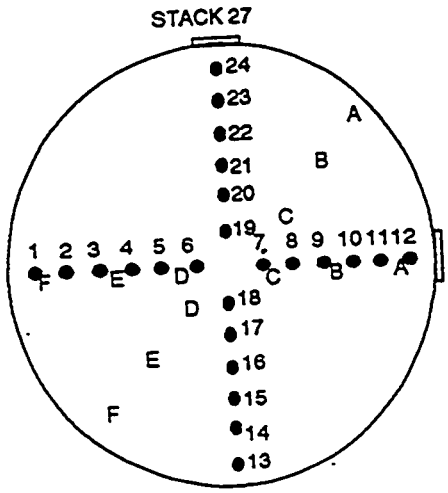
PROCESS DESCRIPTION D-WING ROOM 1010 HOODS

SAMPLER NO. 11BF27

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 54.5 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.4	8	16.1	38.4	46.5	52.1
K25 TRAVERSE NO...	23	21	19	6	3	2
STACK VELOCITY FT\SEC.....	25.7	32	37.7	64.3	68	68
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	166.8	134.0	113.7	66.7	63.0	63.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.2

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-23-90

STACK NO.	27
BUILDING NO.	9212
STACK DIA. OR EQIV.	54.5
STACK AREA (sq.ft.)	16.20

	F	
A DISTANCE (upstream)	192	E
A DISTANCE(no.of dias.)	3.52	
B DISTANCE (downstream)	42	
B DISTANCE (no.of dias.)	0.77	D
MIN.NO.POINTS (A)	24	
MIN.NO. POINTS (B)	24	
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2	WEST	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5	C
MOLECULAR WT. (wet)	28.67	B
AMBIENT TEMP(deg. F)	72	
BAROMETER (ins. hg.)	29.29	A
STATIC PRESSURE(ins.h2o)	-0.65	
ABSOLUTE PRESS.(ins.hg)	29.242	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fmt)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	1.1	77	2	1.25	64.3
2	6.7	3.6	77	2	1.4	68.0
3	11.8	6.3	77	2	1.4	68.0
4	17.7	9.5	77	2	1.35	66.8
5	25	13.5	77	3	1.4	68.0
6	35.6	19.3	77	3	1.25	64.3
7	64.4	35.1	77	2	1.25	64.3
8	75	40.7	77	0	1.35	66.8
9	82.3	44.7	77	0	1.35	66.8
10	88.2	48.1	77	2	1.35	66.8
11	93.3	50.75	77	2	1.1	60.3
12	97.9	53.3	77	3	0.42	37.2
13	2.1	1.1	77	3	1.15	61.6
14	6.7	3.5	77	2	1.15	61.6
15	11.8	6.3	77	2	1.35	66.8
16	17.7	9.5	77	2	1.3	65.5
17	25	13.5	77	3	1.1	60.3
18	35.6	19.3	77	3	0.79	51.1
19	64.4	35.1	77	3	0.43	37.7
20	75	40.7	77	2	0.34	33.5
21	82.3	44.7	77	2	0.31	32.0
22	88.2	48.1	77	2	0.24	28.2
23	93.3	50.75	77	2	0.2	25.7
24	97.9	53.3	77	2	0.21	26.3

STACK VELOCITY	(fps)	54.7
VOLUMETRIC FLOW RATE	(cfm)	53125.0
NOZZLE VELOCITY	(fps)	42.88

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 28

BLDG. NO. 9212

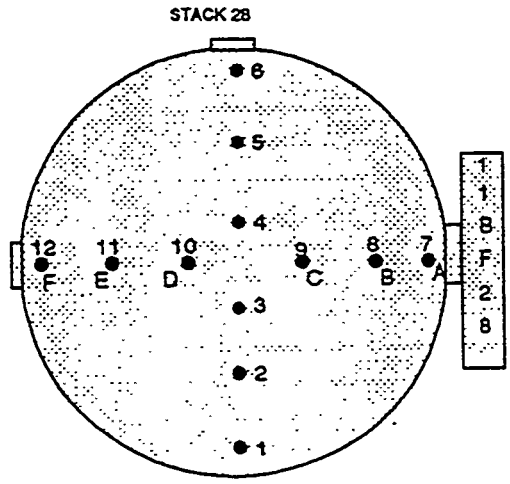
PROCESS DESCRIPTION REDUCTION SHEAR AND ROOM 110

SAMPLER NO. 11BF28

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 48 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.0936	0.109	0.109	0.0936	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.1	7	14.2	33.8	41	45.9
K25 TRAVERSE NO...	7	8	9	10	11	12
STACK VELOCITY FT\SEC.....	50.2	53.7	53.4	50.2	49.9	46.5
NOZZLE VELOCITY FT\SEC.....	47.0	47.0	47.0	47.0	47.0	47.0
NOZZLE FLOW RATE CFM.....	0.183	0.135	0.183	0.183	0.135	0.183
PERCENT ISOKIN....	93.6	87.5	88.0	93.6	94.1	101.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 93.0

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	28
BUILDING NO.	
STACK DIA. OR EQIV.	48
STACK AREA (sq.ft.)	12.57

A DISTANCE (upstream)	120
A DISTANCE(no.of dias.)	2.50
B DISTANCE (downstream)	360
B DISTANCE (no.of dias.)	7.50

MIN.NO.POINTS (A)	12	A
MIN.NO. POINTS (B)	12	B
TOTAL NO. TRAV. POINTS	12	C
DIRECTION PORT 1	S.EAST	D
DIRECTION PORT 2	S.WEST	E
		F

STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	80
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.57
ABSOLUTE PRESS.(ins.hg)	29.308
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	4.4	2.1	81	2	0.81	51.9
2	14.6	7	81	2	0.86	53.4
3	29.6	14.25	81	2	0.85	53.1
4	70.4	33.75	81	2	0.87	53.7
5	85.4	41	81	3	0.75	49.9
6	95.6	45.7	81	3	0.67	47.2
7	4.4	2.1	81	2	0.76	50.2
8	14.6	7	81	0	0.87	53.7
9	29.6	14.25	81	0	0.86	53.4
10	70.4	33.75	81	2	0.76	50.2
11	85.4	41	81	2	0.75	49.9
12	95.5	45.7	81	3	0.65	46.5

STACK VELOCITY	(fps)	51.1
VOLUMETRIC FLOW RATE	(cfm)	38530.1
NOZZLE VELOCITY	(fps)	49.3

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 33

BLDG. NO. 9212

PROCESS DESCRIPTION HEADHOUSE EQUIPMENT AND FURNACES

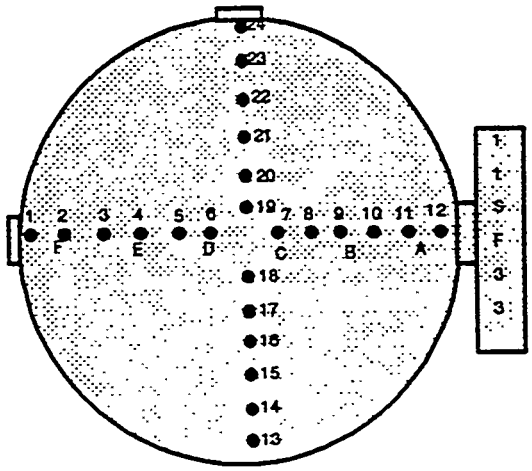
SAMPLER NO. 11SF33

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 42 INCHES

STACK 33



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.0936	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.8	6.1	12.4	29.5	35.8	40.2
K25 TRAVERSE NO...	11	9	7	6	4	2
STACK VELOCITY FT\SEC.....	43.8	47.9	50.3	50	47.5	45.3
NOZZLE VELOCITY FT\SEC.....	44.8	44.8	44.8	44.8	44.8	44.8
NOZZLE FLOW RATE CFM.....	0.174	0.174	0.129	0.174	0.174	0.174
PERCENT ISOKIN....	102.3	93.6	89.1	89.7	94.4	99.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 94.7

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	33
BUILDING NO.	9212
STACK DIA. OR EQIV.	42
STACK AREA (sq.ft.)	9.62

A DISTANCE (upstream)	168	F
A DISTANCE(no.of dias.)	4.00	E
B DISTANCE (downstream)	216	
B DISTANCE (no.of dias.)	5.14	D
MIN.NO.POINTS (A)	24	C
MIN.NO. POINTS (B)	24	
TOTAL NO. TRAV. POINTS	24	B
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2	EAST	A
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	90
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	0.06
ABSOLUTE PRESS.(ins.hg)	29.304
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	1	98	2	0.49	41.0
2	6.7	2.75	98	2	0.6	45.3
3	11.8	5	98	2	0.68	48.3
4	17.7	7.3	98	2	0.66	47.5
5	25.0	10.5	98	3	0.75	50.7
6	35.6	15	98	3	0.73	50.0
7	64.4	27	98	2	0.74	50.3
8	75.0	31.5	98	0	0.73	50.0
9	82.3	34.5	98	0	0.67	47.9
10	88.2	37	98	2	0.62	46.1
11	93.3	39	98	2	0.56	43.8
12	97.9	41	98	3	0.49	41.0
13	2.1	1	98	3	0.52	42.2
14	6.7	2.75	98	2	0.5	41.4
15	11.8	5	98	2	0.52	42.2
16	17.7	7.3	98	2	0.51	41.8
17	25.0	10.5	98	3	0.56	43.8
18	35.6	15	98	2	0.57	44.2
19	64.4	27	98	3	0.59	45.0
20	75.0	31.5	98	3	0.71	49.3
21	82.3	34.5	98	2	0.71	49.3
22	88.2	37.5	98	2	0.74	50.3
23	93.3	39	98	2	0.66	47.5
24	97.9	41	98	2	0.6	45.3

STACK VELOCITY	(fps)	46.0
VOLUMETRIC FLOW RATE	(cfm)	26559.5
NOZZLE VELOCITY	(fps)	47.0

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 34

BLDG. NO. 9212

PROCESS DESCRIPTION C-WING TILE EXHAUST RESIDUE PROCESSING

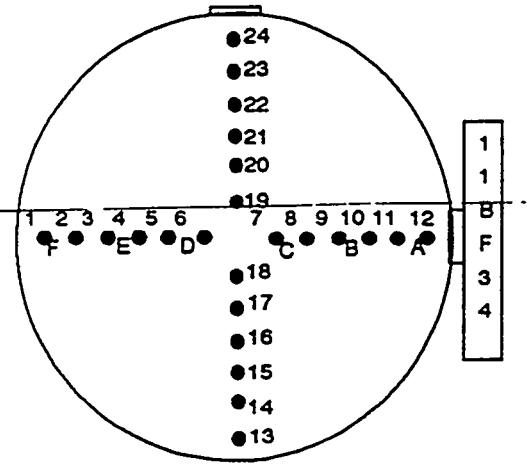
SAMPLER NO. 11BF34

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 54 INCHES

STACK 34



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.152	0.109	0.152	0.152	0.152	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.4	7.9	16	38	46.1	51.6
K25 TRAVERSE NO...	12	11	8	4	3	1
STACK VELOCITY FT\SEC.....	19	22.2	26.2	29.7	29.2	26.8
NOZZLE VELOCITY FT\SEC.....	24.0	24.0	24.0	24.0	24.0	24.0
NOZZLE FLOW RATE CFM.....	0.181	0.093	0.181	0.181	0.181	0.181
PERCENT ISOKIN....	126.2	108.0	91.5	80.8	82.1	89.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-16-90

STACK NO.	34
BUILDING NO.	9212
STACK DIA. OR EQIV.	54
STACK AREA (sq.ft.)	15.90

A DISTANCE (upstream)	84
A DISTANCE(no.of dias.)	1.56
B DISTANCE (downstream)	216
B DISTANCE (no.of dias.)	4.00
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	69
BAROMETER (ins. hg.)	29.29
STATIC PRESSURE(ins.h2o)	-0.3
ABSOLUTE PRESS.(ins.hg)	29.268
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
F	1	2.1	1.3	73	0	0.22	26.8
	2	6.7	3.6	73	0	0.25	28.6
E	3	11.8	3.4	73	0	0.26	29.2
D	4	17.7	9.6	73	0	0.27	29.7
	5	25	13.5	73	0	0.275	30.0
	6	35.8	19.2	73	0	0.26	29.2
	7	64.4	34.7	73	0	0.23	27.4
C	8	75	40.5	73	0	0.21	26.2
	9	82.3	44.4	73	0	0.19	24.9
	10	88.2	47.3	73	0	0.17	23.6
B	11	93.3	50.4	73	0	0.15	22.2
A	12	97.9	52.8	73	0	0.11	19.0
	13	2.1	1.3	73	0	0.22	26.8
	14	6.7	3.6	73	0	0.27	29.7
	15	11.8	6.5	73	0	0.33	32.9
	16	17.7	9.5	73	0	0.35	33.9
	17	25	13.5	73	0	0.35	33.9
	18	35.8	19.2	73	0	0.34	33.4
	19	64.4	37.7	73	0	0.2	25.6
	20	75	40.5	73	0	0.18	24.3
	21	82.3	44.4	73	0	0.15	22.2
	22	88.2	47.6	73	0	0.14	21.4
	23	93.3	50.4	73	0	0.12	19.8
	24	97.9	52.8	73	0	0.09	17.2

STACK VELOCITY	(fps)	26.6
VOLUMETRIC FLOW RATE	(cfm)	25365.2
NOZZLE VELOCITY	(fps)	24.0

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

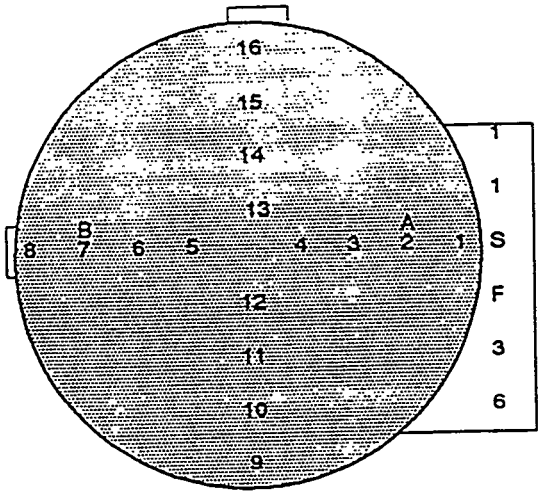
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MERITTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	36
BLDG. NO.	9212
PROCESS	ESAT CAUSTIC SCRUBBER: C-1 EXHAUST

SAMPLER NO.	11SF36
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1



STACK DIAMETER	11.75	INCHES

NOZZLE I D....	A	B
NOZZLE SIZE.....	0.277	0.277
PERCENT STACK DIA FROM WALL....	14.6	85.4
INCHES FROM STACK WALL....	1.7	10
K25 TRAVERSE NO...	2	7
STACK VELOCITY FT\SEC.....	20.6	17.1
NOZZLE VELOCITY FT\SEC.....	19.9	19.9
NOZZLE FLOW RATE CFM.....	0.500	0.500
PERCENT ISOKIN....	96.6	116.4

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC	106.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-16-90

STACK NO.	36
BUILDING NO.	9212
STACK DIA. OR EQIV.	11.75
STACK AREA (sq.ft.)	0.75

A DISTANCE (upstream)	240	A
A DISTANCE(no.of dias.)	20.43	
B DISTANCE (downstream)	66	
B DISTANCE (no.of dias.)	5.62	
MIN.NO.POINTS (A)	12	B
MIN.NO. POINTS (B)	16	
TOTAL NO. TRAV. POINTS	16	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2	EAST	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	64
BAROMETER (ins. hg.)	29.29
STATIC PRESSURE(ins.h2o)	-0.04
ABSOLUTE PRESS.(ins.hg)	29.287
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	3.2	0.5	70	1	0.13	20.6
2	10.5	1.25	70	1	0.13	20.6
3	19.4	2.25	70	1	0.12	19.8
4	32.3	3.75	70	0	0.115	19.3
5	67.7	8	75	0	0.09	17.2
6	80.6	9.5	70	2	0.09	17.1
7	89.5	10.5	70	2	0.09	17.1
8	96.8	11.3	70	0	0.085	16.6
9	3.2	0.5	70	0	0.12	19.8
10	10.5	1.25	70	2	0.12	19.8
11	19.4	2.25	70	2	0.11	18.9
12	32.3	3.75	70	2	0.1	18.0
13	67.7	8	70	2	0.1	18.0
14	80.6	9.5	70	2	0.09	17.1
15	89.5	10.5	70	1	0.09	17.1
16	96.8	11.3	70	0	0.09	17.1

STACK VELOCITY	(fps)	18.4
VOLUMETRIC FLOW RATE	(cfm)	830.7
NOZZLE VELOCITY	(fps)	19.9

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

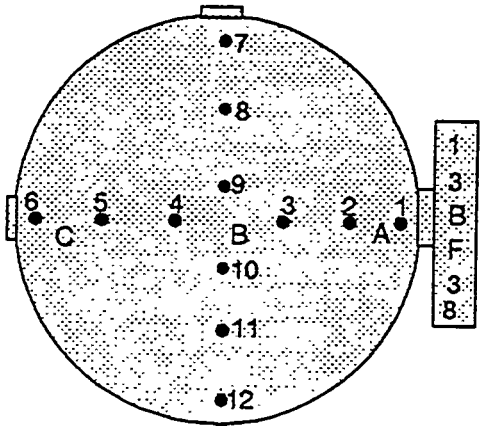
MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	38
BLDG. NO.	9212
PROCESS	ROOM 1008 BRIQUETTING HOOD, CHIP HANDLING EXHAUST

SAMPLER NO.	11BF 38
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	18 INCHES

STACK 38



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.25	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.6	9	15.4
K25 TRAVERSE NO...	1	9	6
STACK VELOCITY FT\SEC.....	20.7	21.5	20.7
NOZZLE VELOCITY FT\SEC.....	21.1	21.1	21.1
NOZZLE FLOW RATE CFM.....	0.284	0.431	0.284
PERCENT ISOKIN....	101.9	98.1	101.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 100.6

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	38
BUILDING NO.	9212
STACK DIA. OR EQIV.	18
STACK AREA (sq.ft.)	1.77

A

A DISTANCE (upstream)	49.5
A DISTANCE(no.of dias.)	2.75
B DISTANCE (downstream)	288
B DISTANCE (no.of dias.)	16.00
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	12
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

B

C

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	85
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	-0.07
ABSOLUTE PRESS.(ins.hg)	29.295
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	4.4	0.75	79	0	0.14	21.5
2	14.6	2.3	79	0	0.14	21.5
3	29.6	5.3	79	0	0.13	20.7
4	70.4	12.5	79	0	0.14	21.5
5	85.4	15.3	79	0	0.14	21.5
6	95.6	17.25	79	0	0.1	18.2
7	4.4	0.75	79	0	0.13	20.7
8	14.6	2.3	79	0	0.13	20.7
9	29.6	5.3	79	0	0.14	21.5
10	70.4	12.5	79	0	0.14	21.5
11	85.4	15	79	0	0.13	20.7
12	95.6	17.25	79	0	0.11	19.1

STACK VELOCITY	(fps)	20.8
VOLUMETRIC FLOW RATE	(cfm)	2203.5
NOZZLE VELOCITY	(fps)	21.1

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 40

BLDG. NO. 9212

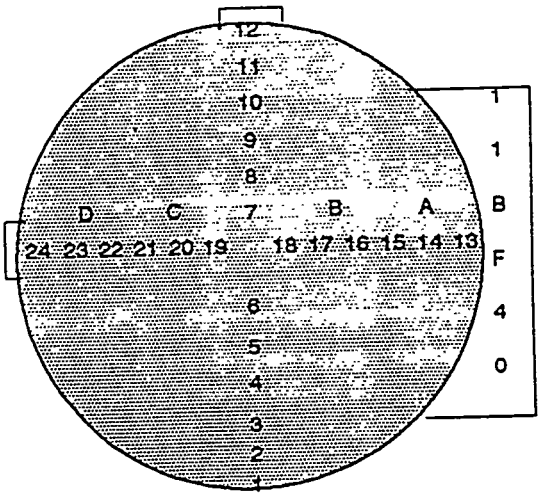
PROCESS B-1 SERVICE LAB. HOOD EXHAUST

SAMPLER NO. 11BF40

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 19.25 INCHES



SKETCH

NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.125	0.125	0.156	0.156
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.3	4.8	14.4	18
K25 TRAVERSE NO...	13	16	19	23
STACK VELOCITY FT\SEC.....	44.6	43.8	41.1	32.6
NOZZLE VELOCITY FT\SEC.....	38.2	38.2	38.2	38.2
NOZZLE FLOW RATE CFM.....	0.196	0.196	0.304	0.304
PERCENT ISOKIN....	85.7	87.3	93.0	117.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	40
BUILDING NO.	9212
STACK DIA. OR EQIV.	19.25
STACK AREA (sq.ft.)	2.02

A DISTANCE (upstream)	108
A DISTANCE(no.of dias.)	5.61
B DISTANCE (downstream)	120
B DISTANCE (no.of dias.)	6.23
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	EAST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5	C
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	84	
BAROMETER (ins. hg.)	29.35	D
STATIC PRESSURE(ins.h2o)	-0.26	
ABSOLUTE PRESS.(ins.hg)	29.331	
PITOT COEFFICIENT	0.84	

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	0.5	80	2	0.52	41.5
	2	6.7	1.25	80	2	0.52	41.5
	3	11.8	2.25	80	2	0.54	42.3
	4	17.7	3.3	80	2	0.52	41.5
	5	25	4.75	80	3	0.52	41.5
	6	35.6	6.5	80	3	0.48	39.9
	7	64.4	12.3	80	2	0.47	39.5
	8	75	14.3	80	0	0.48	39.9
	9	82.3	15.7	80	0	0.46	39.0
	10	88.2	16.7	80	2	0.44	38.2
	11	93.3	18	80	2	0.42	37.3
	12	97.9	18.75	80	3	0.43	37.7
A	13	2.1	0.5	80	3	0.6	44.6
	14	6.7	1.25	80	2	0.6	44.6
	15	11.8	2.25	80	2	0.6	44.6
B	16	17.7	3.3	80	2	0.58	43.8
	17	25	4.75	80		0.58	43.8
	18	35.6	6.5	80		0.56	43.1
	19	64.4	12.3	80		0.51	41.1
	20	75	14.3	80		0.45	38.6
	21	82.3	15.7	80		0.37	35.0
	22	88.2	16.7	80		0.34	33.6
	23	93.3	18	80		0.32	32.6
	24	97.9	18.7	80		0.28	30.4

STACK VELOCITY	(fps)	39.8
VOLUMETRIC FLOW RATE	(cfm)	4827.3
NOZZLE VELOCITY	(fps)	38.2

PITOT WAS LEAKED TESTED AT 3" h2O FOR 15 SECONDS BEFORE AND AFTER TEST
NOZZLES ARE NUMBERED BESIDE THEIR CORRESPONDING STACK NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 42

BLDG. NO. 9212

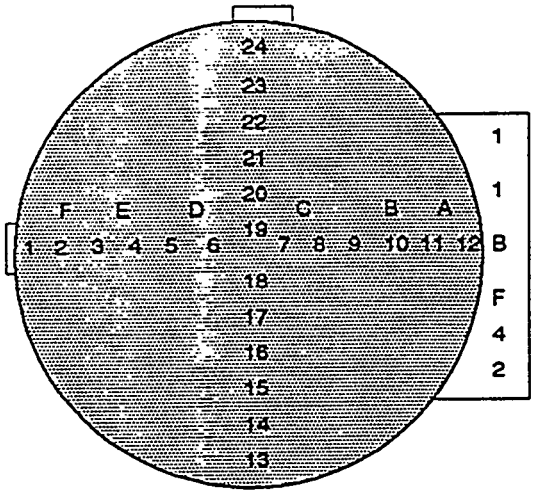
PROCESS C-1 WING PROCESSING EXHAUST

SAMPLER NO. 11BF42

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 58.5 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.187	0.187	0.187	0.187	0.187	0.187
PERCENT STACK DIA FROM WALL.....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.6	8.5	17.3	41.2	50	55.9
K25 TRAVERSE NO...	12	10	8	6	4	2
STACK VELOCITY FT\SEC.....	15.2	15.7	16.2	15.2	14.1	15.2
NOZZLE VELOCITY FT\SEC.....	14.6	14.6	14.6	14.6	14.6	14.6
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	95.8	92.8	89.9	95.8	103.3	95.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.6

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-20-90

STACK NO.	42
BUILDING NO.	9212
STACK DIA. OR EQIV.	58.5
STACK AREA (sq.ft.)	18.67
A DISTANCE (upstream)	132
A DISTANCE(no.of dias.)	2.26
B DISTANCE (downstream)	222
B DISTANCE (no.of dias.)	3.79
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	NORTH
DIRECTION PORT 2	EAST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84
STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	77
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.06
ABSOLUTE PRESS.(ins.hg)	29.346
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1.25	77	2	0.05	12.8
F	2	6.7	3.38	77	2	0.07	15.2
	3	11.8	6.78	77	2	0.06	14.1
E	4	17.7	10.38	77	2	0.06	14.1
	5	25	14.58	77	3	0.065	14.6
D	6	35.6	20.75	77	3	0.07	15.2
	7	64.4	37.58	77	2	0.07	15.2
C	8	75	43.38	77	0	0.08	16.2
	9	82.3	48.18	77	0	0.08	16.2
B	10	88.2	51.58	77	2	0.075	15.7
	11	93.3	54.58	77	2	0.08	16.2
A	12	97.9	57.25	77	3	0.07	15.2
	13			77	3	0.065	14.6
	14			77	2	0.07	15.2
	15			77	2	0.07	15.2
	16			77	2	0.075	15.7
	17			77	2	0.08	16.2
	18			77	3	0.08	16.2
	19			77	4	0.08	16.2
	20			77	2	0.085	16.7
	21			77	3	0.08	16.2
	22			77	2	0.08	16.2
	23			77	3	0.07	15.2
	24			77	2	0.07	15.2

STACK VELOCITY	(fps)	15.4
VOLUMETRIC FLOW RATE	(cfm)	17246.0
NOZZLE VELOCITY	(fps)	14.5

PITOT WAS LEAKED TESTED AT 3 h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 43

BLDG. NO. 9212

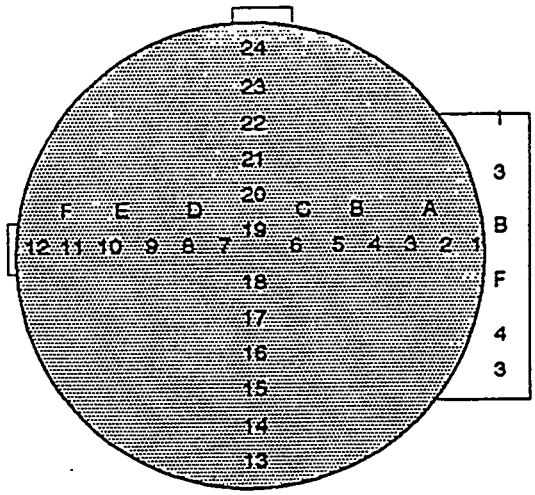
PROCESS EAST WING MACHINE SHOP

SAMPLER NO. 11BF43

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 31.75 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.4	4.6	9.4	22.4	27.1	30.4
K25 TRAVERSE NO...	2	4	6	8	10	12
STACK VELOCITY FT\SEC.....	39.3	40.6	43.6	46.6	45.1	47.6
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	109.1	105.6	98.3	92.0	95.0	90.1

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-21-90

STACK NO.	43
BUILDING NO.	9212
STACK DIA. OR EQIV.	31.75
STACK AREA (sq.ft.)	5.50

A DISTANCE (upstream)	48	A
A DISTANCE(no.of dias.)	1.51	B
B DISTANCE (downstream)	204	
B DISTANCE (no.of dias.)	6.43	C
MIN.NO.POINTS (A)	24	
MIN.NO. POINTS (B)	24	D
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	NORTH	E
DIRECTION PORT 2	EAST	
		F
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	83
BAROMETER (ins. hg.)	29
STATIC PRESSURE(ins.h2o)	-0.42
ABSOLUTE PRESS.(ins.hg)	28.969
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	1	70	2	0.44	38.1
2	6.7	2.18	70	2	0.47	39.3
3	11.8	3.75	70	2	0.48	39.7
4	17.7	5.58	70	2	0.5	40.6
5	25	8	75	3	0.5	40.8
6	35.8	11.38	77	3	0.57	43.6
7	64.4	20.5	77	2	0.64	46.2
8	75	23.75	77	0	0.65	46.6
9	82.3	26.18	77	0	0.65	46.6
10	88.2	28	77	2	0.61	45.1
11	93.5	29.58	77	2	0.54	42.4
12	97.9	31.18	77	3	0.68	47.6
13	2.1	1	77	3	0.75	50.0
14	6.7	2.18	77	2	0.75	50.0
15	11.8	3.75	77	2	0.74	49.7
16	17.7	5.58	77	2	0.72	49.0
17	25	8	77	2	0.7	48.3
18	35.8	11.38	77	3	0.68	47.6
19	64.4	20.5	77	4	0.57	43.6
20	75	23.75	77	2	0.53	42.0
21	82.3	26.18	77	3	0.5	40.8
22	88.2	28	77	2	0.42	37.4
23	93.5	29.58	77	3	0.31	32.1
24	97.9	31.18	77	2	0.29	31.1

STACK VELOCITY	(fps)	43.3
VOLUMETRIC FLOW RATE	(cfm)	14270.5
NOZZLE VELOCITY	(fps)	42.9

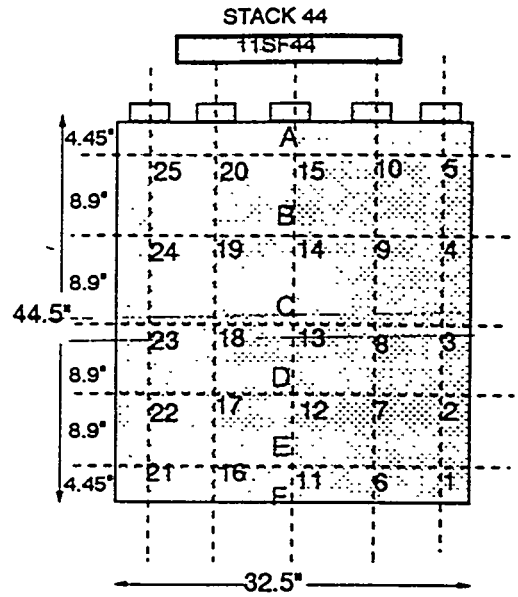
PITOT WAS LEAKED TESTED AT 3 h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	44
BLDG. NO.	9212
PROCESS	ROOM 1002, BEAKER LEACHING HOODS
SAMPLER NO.	11SF44
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	44.5X32.5 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.156	0.203	0.156	0.156	0.203	0.156
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.0	6.5	13	31.25	38	42.5
K25 TRAVERSE NO...	15	14	13	12	11	11
STACK VELOCITY FT\SEC.....	15.3	16.3	17.3	19.1	20.8	20.8
NOZZLE VELOCITY FT\SEC.....	17.0	17.0	17.0	17.0	17.0	17.0
NOZZLE FLOW RATE CFM.....	0.135	0.229	0.135	0.135	0.229	0.135
PERCENT ISOKIN....	111.1	104.3	98.3	89.0	81.7	81.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC	94.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-19-90

STACK NO.	44
BUILDING NO.	9212
STACK DIA. OR EQIV.	37.5
STACK AREA (sq.ft.)	10.04

32.5X44.5

A DISTANCE (upstream)	160
A DISTANCE(no.of dias.)	4.27
B DISTANCE (downstream)	90
B DISTANCE (no.of dias.)	2.40
MIN.NO.POINTS (A)	25
MIN.NO. POINTS (B)	25
TOTAL NO. TRAV. POINTS	25
DIRECTION PORT 1	NORTH
DIRECTION PORT 2	
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	86
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	-0.07
ABSOLUTE PRESS.(ins.hg)	29.295
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1		4.45	82	2	0.19	25.1
	2		13.25	82	2	0.18	24.5
	3		22.5	82	2	0.15	22.3
	4		31.2	82	2	0.16	23.1
	5		40	82	3	0.16	23.1
	6			82	3	0.14	21.6
	7			82	2	0.14	21.6
	8			82	0	0.13	20.8
	9			82	0	0.13	20.8
	10			82	2	0.1	18.2
E&F	11			82	2	0.13	20.8
D	12			82	3	0.11	19.1
C	13			82	3	0.09	17.3
B	14			82	2	0.08	16.3
A	15			82	2	0.07	15.3
	16			82	3	0.21	26.4
	17			82	2	0.2	25.8
	18			82	0	0.12	20.0
	19			82	0	0.11	19.1
	20			82	0	0.09	17.3
	21			82	0	0.28	30.5
	22			82	2	0.25	28.8
	23			82	2	0.19	25.1
	24			82	3	0.13	20.8
	25			82	3	0.08	16.3

STACK VELOCITY	(fps)	21.6
VOLUMETRIC FLOW RATE	(cfm)	13017.1
NOZZLE VELOCITY	(fps)	16.7

PITOT WAS LEAKED TESTED AT 3" h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

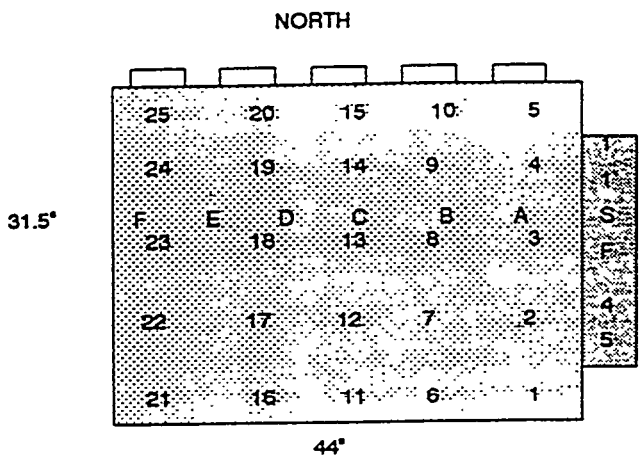
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	45
BLDG. NO.	9212
PROCESS	ROOM 1021, SOUTH DRYING HOOD (EF5061)

SAMPLER NO.	11SF45
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	31.5 X 44 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.203	0.203	0.203	0.203	0.203	0.203
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.4	4.6	9.3	22.2	26.9	30.1
K25 TRAVERSE NO...	3	8	13	18	23	23
STACK VELOCITY FT\SEC.....	12.9	12.2	12.9	11.5	11.5	11.5
NOZZLE VELOCITY FT\SEC.....	12.4	12.4	12.4	12.4	12.4	12.4
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	95.8	101.3	95.8	107.5	107.5	107.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 102.6

VELOCITY DATA
Y-12 PLANT

DATE 7-12-90

STACK NO.	45	
BUILDING NO.	9212	
STACK DIA. OR EQIV.	36.7	(31.5X44)
STACK AREA (sq.ft.)	9.60	
A DISTANCE (upstream)	51	A
A DISTANCE(no.of dias.)	1.39	
B DISTANCE (downstream)	74	
B DISTANCE (no.of dias.)	2.02	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	92	
BAROMETER (ins. hg.)	29.3	E&F
STATIC PRESSURE(ins.h2o)	-0.02	
ABSOLUTE PRESS.(ins.hg)	29.299	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		2.12	82	2	0.04	11.5
2		8.45	82	2	0.05	12.9
3		14.75	82	2	0.05	12.9
4		21	82	2	0.03	10.0
5		27.35	82	3	0.03	10.0
6			82	3	0.05	12.9
7			82	2	0.05	12.9
8			82	0	0.045	12.2
9			82	0	0.04	11.5
10			82	2	0.03	10.0
11			82	2	0.03	10.0
12			82	3	0.05	12.9
13			82	3	0.05	12.9
14			82	2	0.05	12.9
15			82	2	0.04	11.5
16			82	3	0.03	10.0
17			82	2	0.04	11.5
18			82	0	0.04	11.5
19			82	0	0.03	10.0
20			82	0	0.03	10.0
21			82	0	0.025	9.1
22			82	2	0.045	12.2
23			82	2	0.04	11.5
24			82	3	0.04	11.5
25			82	3	0.025	9.1

STACK VELOCITY	(fps)	11.3
VOLUMETRIC FLOW RATE	(cfm)	6536.3
NOZZLE VELOCITY	(fps)	12

PITOT WAS LEAKED TESTED AT 3" h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

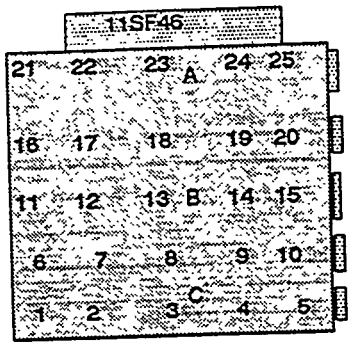
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	46
BLDG. NO.	9212
PROCESS DESCRIPTION	ROOM 1021 WEST DISSOLVER HOOD
SAMPLER NO.	11SF46
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	22 INCHES

NORTH



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.125	0.125	0.125
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.3	8	13.7
K25 TRAVERSE NO...	23	13	3
STACK VELOCITY FT\SEC.....	75.1	63.1	57.6
NOZZLE VELOCITY FT\SEC.....	65.2	65.2	65.2
NOZZLE FLOW RATE CFM.....	0.333	0.333	0.333
PERCENT ISOKIN....	86.8	103.3	113.2

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-19-90

STACK NO.	46	
BUILDING NO.	9212	
STACK DIA. OR EQIV.	16	(16X16)
STACK AREA (sq.ft.)	1.80	
A DISTANCE (upstream)	55	C
A DISTANCE(no.of dias.)	3.44	
B DISTANCE (downstream)	52	
B DISTANCE (no.of dias.)	3.25	
MIN.NO.POINTS (A)	15	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		B
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	69	
BAROMETER (ins. hg.)	29.3	A
STATIC PRESSURE(ins.h2o)	-0.68	
ABSOLUTE PRESS.(ins.hg)	29.250	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.6	80	2	1.2	63.1
2		4.8	80	2	1.2	63.1
3		8	80	2	1	57.6
4		11.2	80	2	0.99	57.3
5		14.6	80	3	0.92	55.3
6			80	3	1.4	68.2
7			80	2	1.2	63.1
8			80	0	1.05	59.0
9			80	0	1	57.6
10			80	2	1	57.6
11			80	2	1.2	63.1
12			80	3	1.5	70.6
13			80	3	1.2	63.1
14			80	2	1.2	63.1
15			80	2	1.1	60.4
16			80	2	1.6	72.9
17			80	0	1.6	72.9
18			80	0	1.5	70.6
19			80	0	1.3	65.7
20			80	2	1.3	65.7
21			80	2	1.65	74.0
22			80	3	1.7	75.1
23			80	4	1.7	75.1
24			80	4	1.5	70.6
25			80	3	1.3	65.7

STACK VELOCITY	(fps)	65.2
VOLUMETRIC FLOW RATE	(cfm)	7045.0
NOZZLE VELOCITY	(fps)	65

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

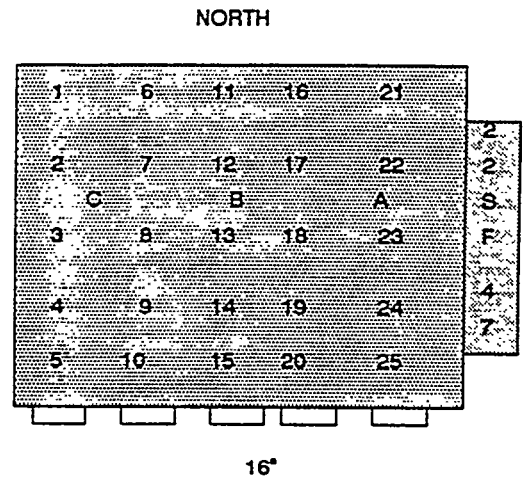
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	47
BLDG. NO.	9212
PROCESS	ROOM 1021 WEST DISSOLVER HOOD

SAMPLER NO.	11SF47
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	22 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.125	0.125	0.125
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.3	8	13.7
K25 TRAVERSE NO...	23	13	3
STACK VELOCITY FT\SEC.....	64.4	63.1	63.1
NOZZLE VELOCITY FT\SEC.....	65.0	65.0	65.0
NOZZLE FLOW RATE CFM.....	0.333	0.333	0.333
PERCENT ISOKIN....	100.9	103.0	103.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 102.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	47	
BUILDING NO.	9212	
STACK DIA. OR EQIV.	16	(16*16)
STACK AREA (sq.ft.)	1.80	
A DISTANCE (upstream)	55.5	C
A DISTANCE(no.of dias.)	3.47	
B DISTANCE (downstream)	52	
B DISTANCE (no.of dias.)	3.25	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		B
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	85	
BAROMETER (ins. hg.)	29.3	A
STATIC PRESSURE(ins.h2o)	-0.45	
ABSOLUTE PRESS.(ins.hg)	29.267	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.6	80	2	1.4	68.2
2		4.8	80	2	1.4	68.2
3		8	80	2	1.25	64.4
4		11.2	80	2	1.1	60.4
5		14.4	80	3	0.78	50.9
6			80	3	1.4	68.2
7			80	2	1.5	70.6
8			80	0	1.2	63.1
9			80	0	1	57.6
10			80	2	0.85	53.1
11			80	2	1.5	70.6
12			80	3	1.2	63.1
13			80	3	1	57.6
14			80	2	0.94	55.9
15			80	2	0.78	50.9
16			80	2	1.4	68.2
17			80	2	1.6	72.9
18			80	0	1.5	70.6
19			80	0	1.3	65.7
20			80	2	0.95	56.1
21			80	2	1.3	65.7
22			80	3	1.2	63.1
23			80	3	1.2	63.1
24			80	3	1.1	60.4
25			80	4	0.85	53.1

STACK VELOCITY	(fps)	62.5
VOLUMETRIC FLOW RATE	(cfm)	6745.3
NOZZLE VELOCITY	(fps)	65.0

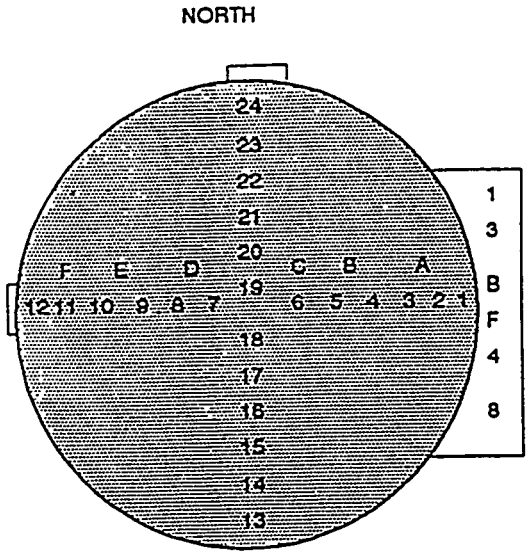
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	48
BLDG. NO.	9212
PROCESS DESCRIPTION	1008 CHIP DRYING OVENS
SAMPLER NO.	11BF48
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	29.25 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.0936	0.0936	0.0936	deleted	0.0936	0.0936
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6		85.4	95.6
INCHES FROM STACK WALL....	1.3	4.3	8.7		25	28
K25 TRAVERSE NO...	2	4	6	7	9	11
STACK VELOCITY FT\SEC.....	78.3	65.7	70.5		75.1	71.7
NOZZLE VELOCITY FT\SEC.....	69.8	69.8	69.8		69.8	69.8
NOZZLE FLOW RATE CFM.....	0.200	0.200	0.200		0.200	0.200
PERCENT ISOKIN....	89.1	106.2	98.9		92.9	97.3

NOTE: Nozzle (d) has been removed, smaller nozzles were needed for isokinetic sampling.

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.9

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-13-90

STACK NO.	48
BUILDING NO.	9212
STACK DIA. OR EQIV.	29.25
STACK AREA (sq.ft.)	4.7

A DISTANCE (upstream)	72	A
A DISTANCE(no.of dias.)	2.5	B
B DISTANCE (downstream)	42	
B DISTANCE (no.of dias.)	1.4	C
MIN.NO.POINTS (A)	12	D
MIN.NO. POINTS (B)	24	
TOTAL NO. TRAV. POINTS	24	E
DIRECTION PORT 1	WEST	
DIRECTION PORT 2	NORTH	F
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	81
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.8
ABSOLUTE PRESS.(ins.hg)	29.291
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	1	80	2	1.85	78.3
2	6.7	2	80	3	1.85	78.3
3	11.8	3.5	80	3	1.4	68.1
4	17.7	5.12	80	4	1.3	65.7
5	25	7.25	80	5	1.7	75.1
6	35.8	10.37	80	3	1.5	70.5
7	64.4	18.75	80	2	1.3	65.7
8	75	22	80	0	1.4	68.1
9	82.3	24.12	80	0	1.7	75.1
10	88.2	25.75	80	2	1.7	75.1
11	93.2	27.12	80	2	1.55	71.7
12	97.9	28.25	80	3	1.15	61.8
13	2.1	1	80	3	2.2	85.4
14	6.7	2	80	2	2.2	85.4
15	11.8	3.5	80	2	1.9	79.4
16	17.7	5.12	80	3	1.7	75.1
17	25	7.25	80	2	1.5	70.5
18	35.8	10.37	80	2	1.35	66.9
19	64.4	18.75	80	0	1.35	66.9
20	75	22	80	0	1.3	65.7
21	82.3	24.12	80	0	1.2	63.1
22	88.2	25.75	80	2	1.2	63.1
23	93.2	27.12	80	2	1.15	61.8
24	97.9	28.25	80	3	1.1	60.4

STACK VELOCITY	(fps)	70.7
VOLUMETRIC FLOW RATE	(cfm)	19939.8
NOZZLE VELOCITY	(fps)	69.8

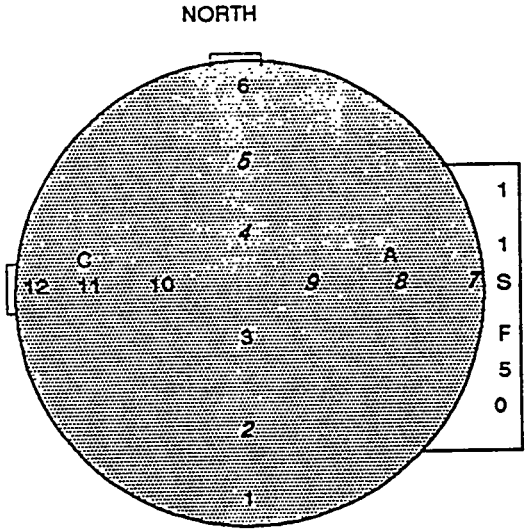
PITOT WAS LEAKED CHECKED AT 3" h20 FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED BESIDE THEIR RESPECTED POINT NUMBERS

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	50
BLDG. NO.	9212
PROCESS	C-1 CHIP BURNER
SAMPLER NO.	11BF50
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12 INCHES



NOZZLE I D....	A	B
NOZZLE SIZE.....	0.156	0.156
PERCENT STACK DIA FROM WALL....	14.6	85.4
INCHES FROM STACK WALL....	1.8	10.2
K25 TRAVERSE NO...	8	11
STACK VELOCITY FT\SEC.....	62.8	53.7
NOZZLE VELOCITY FT\SEC.....	62.8	62.8
NOZZLE FLOW RATE CFM.....	0.500	0.500
PERCENT ISOKIN....	100.0	116.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 108.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	50
BUILDING NO.	9212
STACK DIA. OR EQIV.	12
STACK AREA (sq.ft.)	0.79

A DISTANCE (upstream)	240
A DISTANCE(no.of dias.)	20.00
B DISTANCE (downstream)	118
B DISTANCE (no.of dias.)	9.83
MIN.NO.POINTS (A)	8
MIN.NO. POINTS (B)	8
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	WEST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	65
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.45
ABSOLUTE PRESS.(ins.hg)	29.317
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	4.4	0.5	75	2	0.72	48.6
	2	14.6	1.75	75	2	0.86	53.1
	3	29.6	3.5	75	0	0.94	55.5
	4	70.4	8.5	75	0	0.98	56.7
	5	85.4	10.25	75	0	0.93	55.2
	6	95.6	11.5	75	3	0.7	47.9
	7	4.4	0.5	75	2	0.94	55.5
A	8	14.6	1.75	75	0	1.2	62.8
	9	29.6	3.5	75	0	1.05	58.7
	10	70.4	8.5	75	0	0.93	55.2
B	11	85.4	10.25	75	2	0.88	53.7
	12	95.6	11.5	75	3	0.77	50.3

STACK VELOCITY	(fps)	54.5
VOLUMETRIC FLOW RATE	(cfm)	2566.2
NOZZLE VELOCITY	(fps)	62.8

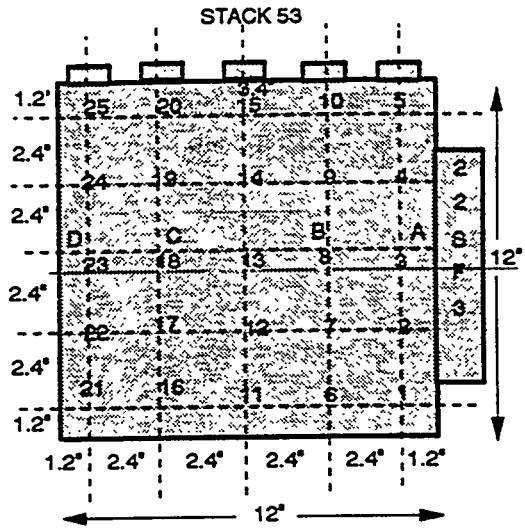
PITOT WAS LEAKED TESTED AT 3" h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	53
BLDG. NO.	9212
PROCESS DESCRIPTION	A-2 WING EXCELLO LATHES
SAMPLER NO.	22SF3
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12 X 12 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.277	0.277	0.277	0.277
PERCENT STACK DIA FROM WALL.....	14.6	25	75	85.4
INCHES FROM STACK WALL....	1.8	3	9	10.2
K25 TRAVERSE NO...	3	8	18	23
STACK VELOCITY FT\SEC.....	8.9	9.3	10	10
NOZZLE VELOCITY FT\SEC.....	10.0	10.0	10.0	10.0
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	111.9	107.1	99.6	99.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 104.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	53	
BUILDING NO.	9212	
STACK DIA. OR EQIV.	12	(12X12)
STACK AREA (sq.ft.)	1.00	

A DISTANCE (upstream)	90	A
A DISTANCE(no.of dias.)	7.50	
B DISTANCE (downstream)	65	
B DISTANCE (no.of dias.)	5.42	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		C
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	94	
BAROMETER (ins. hg.)	29.35	D
STATIC PRESSURE(ins.h2o)	-0.018	
ABSOLUTE PRESS.(ins.hg)	29.349	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.2	80	2	0.02	8.1
2		3.6	80	2	0.028	9.6
3		6	80	2	0.03	10.0
4		8.4	80	2	0.032	10.3
5		11	80	3	0.028	9.6
6			80	3	0.026	9.3
7			80	2	0.028	9.6
8			80	0	0.03	10.0
9			80	0	0.028	9.6
10			80	2	0.026	9.3
11			80	2	0.026	9.3
12			80	3	0.026	9.3
13			80	3	0.026	9.3
14			80	2	0.024	8.9
15			80	2	0.022	8.5
16			80	2	0.024	8.9
17			80	0	0.026	9.3
18			80	3	0.026	9.3
19			80	2	0.024	8.9
20			80	3	0.024	8.9
21			80	2	0.022	8.5
22			80	3	0.024	8.9
23			80	2	0.024	8.9
24			80	3	0.022	8.5
25			80	2	0.02	8.1

STACK VELOCITY	(fps)	9.2
VOLUMETRIC FLOW RATE	(cfm)	549.6
NOZZLE VELOCITY	(fps)	10.0

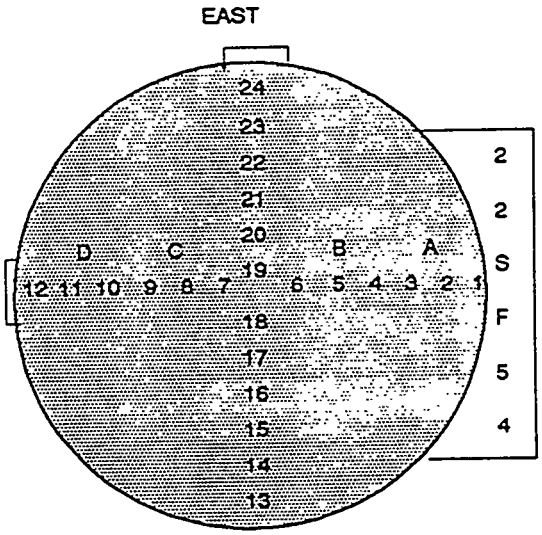
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON AND KELSHEIMER*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	54
BLDG. NO.	9212
PROCESS	A-2 WING LATHES AND MILL
SAMPLER NO.	22SF54
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	22.5 INCHES



SKETCH

NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.277	0.277	0.277	0.277
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.5	5.6	16.9	21
K25 TRAVERSE NO...	2	5	8	11
STACK VELOCITY FT\SEC.....	11.5	10	10	10
NOZZLE VELOCITY FT\SEC.....	10.0	10.0	10.0	10.0
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	86.6	99.6	99.6	99.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-26-90

STACK NO.	54
BUILDING NO.	9212
STACK DIA. OR EQIV.	22.5
STACK AREA (sq.ft.)	2.76

A DISTANCE (upstream)	50	A
A DISTANCE(no.of dias.)	2.22	
B DISTANCE (downstream)	100	B
B DISTANCE (no.of dias.)	4.44	
MIN.NO.POINTS (A)	12	
MIN.NO. POINTS (B)	24	C
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2	EAST	D
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	82.4
BAROMETER (ins. hg.)	29.38
STATIC PRESSURE(ins.h2o)	-0.03
ABSOLUTE PRESS.(ins.hg)	29.378
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	0.5	81	2	0.05	12.9
2	6.7	1.5	81	2	0.04	11.5
3	11.8	2.7	81	2	0.03	10.0
4	17.7	4	81	2	0.03	10.0
5	25	5.6	81	3	0.03	10.0
6	35.6	8	81	3	0.03	10.0
7	64.4	14.5	81	2	0.02	8.1
8	75	16.9	81	0	0.03	10.0
9	82.3	18.5	81	0	0.03	10.0
10	88.2	19.9	81	2	0.04	11.5
11	93.3	21	81	2	0.03	10.0
12	97.9	22	81	3	0.05	12.9
13			81	3	0.02	8.1
14			80	2	0.03	10.0
15			81	2	0.03	10.0
16			80	2	0.025	9.1
17			80	2	0.03	10.0
18			81	2	0.03	10.0
19			81	2	0.03	10.0
20			81	2	0.03	10.0
21			81	3	0.03	10.0
22			81	3	0.025	9.1
23			81	2	0.02	8.1
24			80	2	0.03	10.0

STACK VELOCITY	(fps)	9.6
VOLUMETRIC FLOW RATE	(cfm)	1596.2
NOZZLE VELOCITY	(fps)	10.0

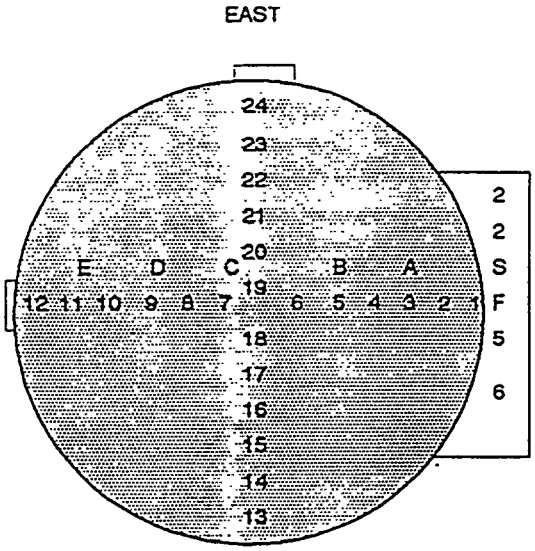
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON,KELSHEIMER,SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	56
BLDG. NO.	9212
PROCESS DESCRIPTION	A-2 WING MILL AND GRINDER
SAMPLER NO.	22SF56
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	18 INCHES



NOZZLE I D....	A	B	C	D	E
NOZZLE SIZE.....	0.277	0.277	0.277	0.277	0.277
PERCENT STACK DIA FROM WALL....	14.6	25	50	67.7	85.4
INCHES FROM STACK WALL....	2.6	5.8	9	12.2	15.4
K25 TRAVERSE NO...	3	5	7	9	11
STACK VELOCITY FT\SEC.....	8.4	8.4	8.4	8.4	8
NOZZLE VELOCITY FT\SEC.....	8.0	8.0	8.0	8.0	8.0
NOZZLE FLOW RATE CFM.....	0.200	0.200	0.200	0.200	0.200
PERCENT ISOKIN....	94.8	94.8	94.8	94.8	99.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-15-90

STACK NO.	56
BUILDING NO.	9212
STACK DIA. OR EQIV.	18
STACK AREA (sq.ft.)	1.77

A DISTANCE (upstream)	50	A
A DISTANCE(no.of dias.)	2.78	
B DISTANCE (downstream)	117	B
B DISTANCE (no.of dias.)	6.50	
MIN.NO.POINTS (A)	12	C
MIN.NO. POINTS (B)	24	
TOTAL NO. TRAV. POINTS	24	D
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2	EAST	E
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	39
BAROMETER (ins. hg.)	29.26
STATIC PRESSURE(ins.h2o)	-0.01
ABSOLUTE PRESS.(ins.hg)	29.259
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	0.5	58	2	0.02	8.0
2	6.7	1.25	58	2	0.022	8.4
3	11.8	2.2	58	2	0.022	8.4
4	17.7	3.2	58	2	0.022	8.4
5	25	4.5	58	3	0.022	8.4
6	35.6	6.3	58	3	0.022	8.4
7	64.4	11.6	58	2	0.022	8.4
8	75	13.5	58	0	0.022	8.4
9	82.3	14.6	58	0	0.022	8.4
10	88.2	15.8	58	2	0.022	8.4
11	93.3	16.7	58	2	0.02	8.0
12	97.9	17.5	58	3	0.02	8.0
13			58	3	0.024	8.7
14			58	2	0.022	8.4
15			58	2	0.022	8.4
16			58	2	0.02	8.0
17			58	2	0.022	8.4
18			58	2	0.022	8.4
19			58	2	0.022	8.4
20			58	2	0.024	8.7
21			58	3	0.02	8.0
22			58	3	0.02	8.0
23			58	2	0.02	8.0
24			58	2	0.02	8.0

STACK VELOCITY	(fps)	7.9
VOLUMETRIC FLOW RATE	(cfm)	841.9
NOZZLE VELOCITY	(fps)	8

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON,KELSHEIMER,SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 57

BLDG. NO. 9212

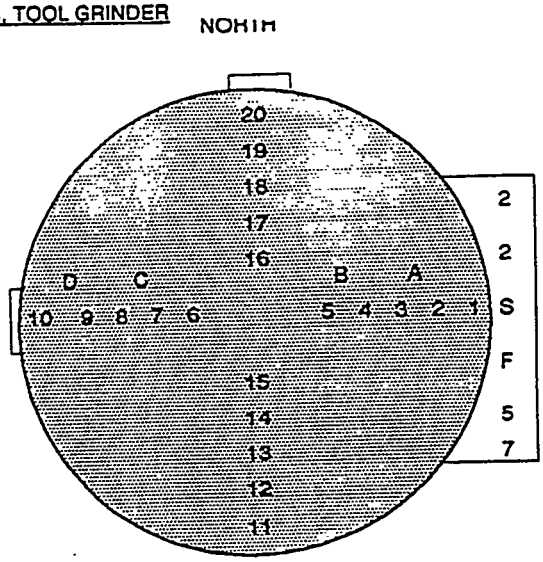
PROCESS DESCRIPTION A-1 WING DEBURRING HOODS, TOOL GRINDER

SAMPLER NO. 22SF57

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 20 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.203	0.203	0.156	0.203
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL.....	1.3	5	15	18.7
K25 TRAVERSE NO...	2	5	8	10
STACK VELOCITY FT\SEC.....	23.3	22.2	20.7	19
NOZZLE VELOCITY FT\SEC.....	20.7	20.7	20.7	20.7
NOZZLE FLOW RATE CFM.....	0.279	0.279	0.164	0.279
PERCENT ISOKIN....	88.6	93.0	99.8	108.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 97.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	57
BUILDING NO.	9212
STACK DIA. OR EQIV.	20
STACK AREA (sq.ft.)	2.18

A DISTANCE (upstream)	90.5	A
A DISTANCE(no.of dias.)	4.53	B
B DISTANCE (downstream)	114	C
B DISTANCE (no.of dias.)	5.70	
MIN.NO.POINTS (A)	12	D
MIN.NO. POINTS (B)	20	
TOTAL NO. TRAV. POINTS	20	
DIRECTION PORT 1	WEST	
DIRECTION PORT 2	NORTH	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	93
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.09
ABSOLUTE PRESS.(ins.hg)	29.343
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.6	0.5	76	2	0.17	23.6
2	8.2	1.6	76	2	0.165	23.3
3	14.6	2.8	76	2	0.16	22.9
4	22.6	4.5	76	2	0.15	22.2
5	34.2	4.7	76	3	0.13	20.7
6	65.8	13.2	76	3	0.115	19.4
7	77.4	15.5	76	2	0.11	19.0
8	85.4	17	76	0	0.1	18.1
9	91.8	18.2	76	0	0.09	17.2
10	97.4	19.5	70	2	0.09	17.1
11			76	2	0.08	16.2
12			76	3	0.09	17.2
13			76	3	0.1	18.1
14			76	2	0.11	19.0
15			76	2	0.12	19.9
16			76	2	0.13	20.7
17			76		0.12	19.9
18			76		0.11	19.0
19			76		0.1	18.1
20			76		0.09	17.2

STACK VELOCITY	(fps)	19.4
VOLUMETRIC FLOW RATE	(cfm)	2544.9
NOZZLE VELOCITY	(fps)	20.7

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

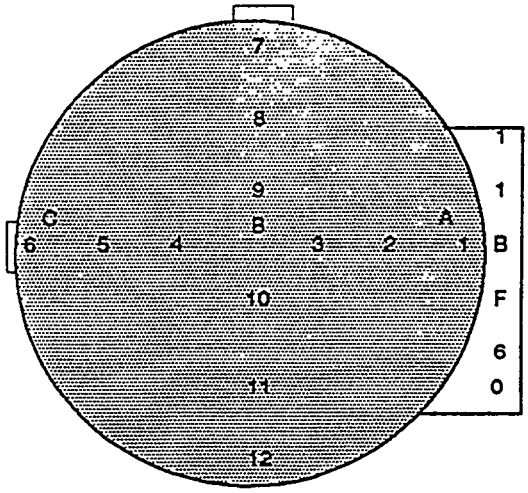
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	60
BLDG. NO.	9998
PROCESS DESCRIPTION	H-1 SWAGGING MACHINES
SAMPLER NO.	11BF60
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12.5 INCHES

NORTH



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.156	0.156	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	1.75	6.1	10.5
K25 TRAVERSE NO...	2	3	5
STACK VELOCITY FT\SEC.....	34.3	34.3	28.4
NOZZLE VELOCITY FT\SEC.....	34.0	34.0	34.0
NOZZLE FLOW RATE CFM.....	0.271	0.271	0.458
PERCENT ISOKIN....	99.1	99.1	119.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 106.0

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	60
BUILDING NO.	9998
STACK DIA. OR EQIV.	12.25
STACK AREA (sq.ft.)	0.82

A DISTANCE (upstream)	53
A DISTANCE(no.of dias.)	4.33
B DISTANCE (downstream)	93
B DISTANCE (no.of dias.)	7.59
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	12
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	WEST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	84
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.16
ABSOLUTE PRESS.(ins.hg)	29.338
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	4.4	0.5	88	2	0.34	33.8
A	2	14.6	1.75	88	2	0.33	33.3
B	3	29.6	3.6	88	2	0.35	34.3
	4	70.4	8.6	88	2	0.35	34.3
C	5	85.4	10.5	88	3	0.24	28.4
	6	95.6	11.75	88	3	0.24	28.4
	7			88	2	0.34	33.8
	8			88	0	0.36	34.8
	9			88	0	0.33	33.3
	10			88	2	0.29	31.2
	11			88	2	0.24	28.4
	12			88	3	0.22	27.2

STACK VELOCITY	(fps)	31.8
VOLUMETRIC FLOW RATE	(cfm)	1559.7
NOZZLE VELOCITY	(fps)	34.0

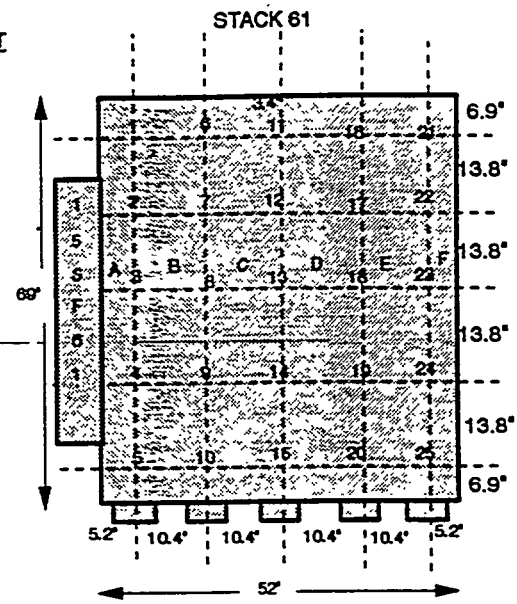
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	61
BLDG. NO.	9998
PROCESS DESCRIPTION	H-1 MAIN FOUNDRY PROCESS EXHAUST
SAMPLER NO.	15SF61
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	52 X 69 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.152	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.3	7.6	15.4	36.6	44.4	47.5
K25 TRAVERSE NO...	3	3	8	13	18	23
STACK VELOCITY FT\SEC.....	39.2	39.2	41.6	36.1	36.5	36.5
NOZZLE VELOCITY FT\SEC.....	37.0	37.0	37.0	37.0	37.0	37.0
NOZZLE FLOW RATE CFM.....	0.144	0.144	0.280	0.144	0.144	0.144
PERCENT ISOKIN....	94.5	94.5	89.0	102.6	101.5	101.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 97.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-30-90

STACK NO.	61	
BUILDING NO.	9998	
STACK DIA. OR EQIV.	59.3	(69X52)
STACK AREA (sq.ft.)	24.90	
A DISTANCE (upstream)	66	A-B
A DISTANCE(no.of dias.)	1.11	
B DISTANCE (downstream)	68	
B DISTANCE (no.of dias.)	1.15	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	C
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		D
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		E
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	82	
BAROMETER (ins. hg.)	29.35	F
STATIC PRESSURE(ins.h2o)	-0.24	
ABSOLUTE PRESS.(ins.hg)	29.332	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		6.9	84	2	0.91	55.1
2		20.7	84	2	0.8	51.7
3		34.5	84	2	0.46	39.2
4		48.3	84	2	0.25	28.9
5		62.1	84	3	0.18	24.5
6			84	3	0.73	49.3
7			84	2	0.73	49.3
8			84	0	0.52	41.6
9			84	0	0.37	35.1
10			84	2	0.23	27.7
11			84	2	0.42	37.4
12			84	3	0.4	36.5
13			84	3	0.39	36.1
14			84	2	0.38	35.6
15			84	2	0.31	32.2
16			84	2	0.51	41.2
17			84		0.42	37.4
18			84		0.4	36.5
19			84		0.4	36.5
20			84		0.3	31.6
21			84		0.58	44.0
22			84		0.57	43.6
23			84		0.4	36.5
24			84		0.29	31.1
25			84		0.28	30.6

STACK VELOCITY	(fps)	38.0
VOLUMETRIC FLOW RATE	(cfm)	56737.2
NOZZLE VELOCITY	(fps)	37

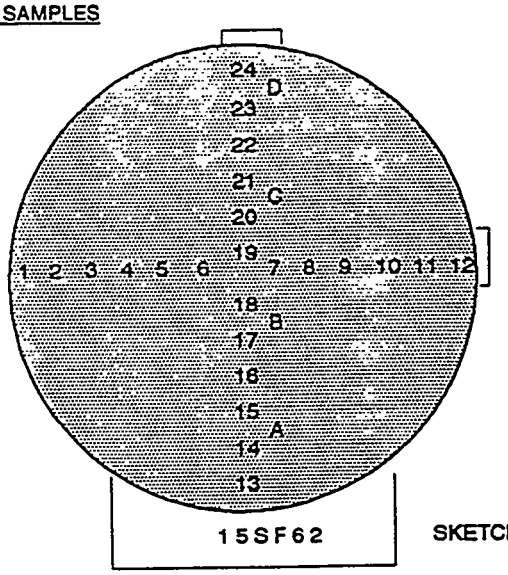
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	62
BLDG. NO.	9998
PROCESS	H-1 CLEANING HOOD AND HP SAMPLES
SAMPLER NO.	15SF62
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	24 INCHES



SKETCH

NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.152	0.152	0.152	0.152
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.6	6	18	22.4
K25 TRAVERSE NO...	14	17	20	23
STACK VELOCITY FT\SEC.....	32.7	32.7	32.7	30
NOZZLE VELOCITY FT\SEC.....	33.1	33.1	33.1	33.1
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	101.1	101.1	101.1	110.2

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 103.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	62
BUILDING NO.	9998
STACK DIA. OR EQIV.	24
STACK AREA (sq.ft.)	3.14

A DISTANCE (upstream)	72
A DISTANCE(no.of dias.)	3.00
B DISTANCE (downstream)	60
B DISTANCE (no.of dias.)	2.50
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	84
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.21
ABSOLUTE PRESS.(ins.hg)	29.335
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	0.5	84	2	0.34	33.7
	2	6.7	1.6	84	2	0.34	33.7
	3	11.8	2.7	84	2	0.32	32.7
	4	17.7	4.25	84	2	0.32	32.7
	5	25	6	84	3	0.34	33.7
	6	35.6	8.5	84	3	0.32	32.7
	7	64.4	15.5	84	2	0.31	32.2
	8	75	18	84	0	0.28	30.6
	9	82.3	19.75	84	0	0.26	29.4
	10	88.2	21.3	84	2	0.26	29.4
	11	93.3	22.3	84	2	0.21	26.5
	12	97.9	23.5	84	3	0.2	25.8
	13			84	3	0.31	32.2
A	14			84	2	0.32	32.7
	15			84	2	0.32	32.7
	16			84	2	0.31	32.2
B	17			84	2	0.31	32.2
	18			84	0	0.32	32.7
	19			84	0	0.32	32.7
C	20			84	0	0.32	32.7
	21			84	0	0.29	31.1
	22			84	3	0.29	31.1
D	23			84	3	0.27	30.0
	24			84	2	0.26	29.4

STACK VELOCITY	(fps)	30.2
VOLUMETRIC FLOW RATE	(cfm)	5685.4
NOZZLE VELOCITY	(fps)	33.1

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

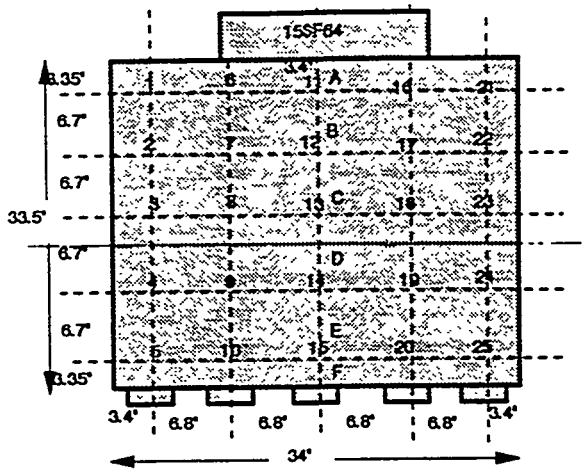
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERSYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	64
BLDG. NO.	9998
PROCESS DESCRIPTION	H-1 NITRIC ACID PICKELING BATH
SAMPLER NO.	15SF64
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	33.5 X 34 INCHES

STACK 64



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.152	0.109	0.152	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.5	4.9	9.9	23.6	28.6	32
K25 TRAVERSE NO...	11	12	13	14	15	15
STACK VELOCITY FT\SEC.....	25.9	26.6	26.6	27.2	27.2	27.2
NOZZLE VELOCITY FT\SEC.....	26.3	26.3	26.3	26.3	26.3	26.3
NOZZLE FLOW RATE CFM.....	0.199	0.102	0.199	0.199	0.102	0.199
PERCENT ISOKIN....	101.6	98.9	98.9	96.7	96.7	96.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.2

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	64
BUILDING NO.	9998
STACK DIA. OR EQIV.	33.74 (33.5X34)
STACK AREA (sq.ft.)	7.90

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.42
B DISTANCE (downstream)	192
B DISTANCE (no.of dias.)	5.69
MIN.NO.POINTS (A)	25
MIN.NO. POINTS (B)	25
TOTAL NO. TRAV. POINTS	25
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	82
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.12
ABSOLUTE PRESS.(ins.hg)	29.341
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1		3.25	89	2	0.23	27.8
	2		9.95	89	2	0.23	27.8
	3		16.65	89	2	0.25	29.0
	4		23.35	89	2	0.26	29.6
	5		30.1	89	3	0.21	26.6
	6			89	3	0.22	27.2
	7			89	2	0.22	27.2
	8			89	0	0.24	28.4
	9			89	0	0.25	29.0
	10			89	2	0.22	27.2
A	11			89	2	0.2	25.9
B	12			89	3	0.21	26.6
C	13			89	3	0.21	26.6
D	14			89	2	0.21	26.6
E-F	15			89	2	0.22	27.2
	16			89	2	0.22	27.2
	17			89	2	0.22	27.2
	18			89	0	0.22	27.2
	19			89	0	0.21	26.6
	20			89	0	0.22	27.2
	21			89	0	0.2	25.9
	22			89	3	0.19	25.3
	23			89	3	0.2	25.9
	24			89	2	0.2	25.9
	25			89	2	0.19	25.3

STACK VELOCITY	(fps)	27.1
VOLUMETRIC FLOW RATE	(cfm)	12828.5
NOZZLE VELOCITY	(fps)	26.4

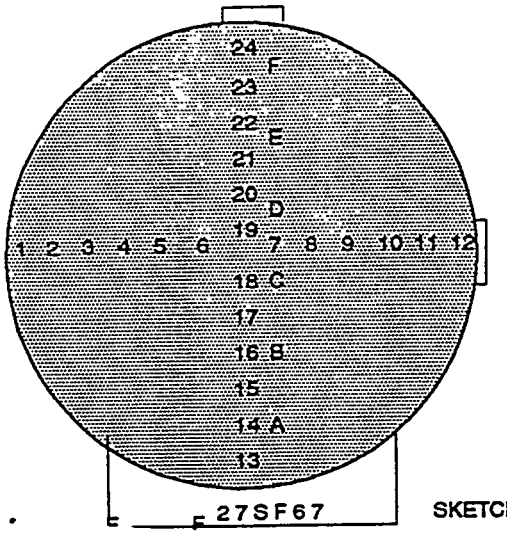
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	67
BLDG. NO.	9201-5N
PROCESS DESCRIPTION	MACHINE SHOP ALPHA 5 NORTH
SAMPLER NO.	27SF67
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	31.5 INCHES



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.4	4.6	9.3	22.2	26.9	30.1
K25 TRAVERSE NO...	14	16	18	19	21	23
STACK VELOCITY FT\SEC.....	32.8	33.8	34.8	36.2	38.4	34.8
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.1268	*****	*****	*****	0.2465	0.1268
PERCENT ISOKIN....	99.4	96.5	93.7	90.1	84.9	93.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 93.0

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-3-90

STACK NO.	67
BUILDING NO.	9201-5N
STACK DIA. OR EQIV.	31.5
STACK AREA (sq.ft.)	5.41

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.52
B DISTANCE (downstream)	192
B DISTANCE (no.of dias.)	6.10
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	89
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.2
ABSOLUTE PRESS.(ins.hg)	29.335
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	0.66	88	2	0.44	38.4
	2	6.7	2.1	87	2	0.47	39.7
	3	11.8	3.7	88	2	0.48	40.2
	4	17.7	5.5	87	2	0.48	40.1
	5	25	7.8	87	3	0.46	39.3
	6	35.6	11.2	87	3	0.43	38.0
	7	64.4	20.3	87	2	0.34	33.8
	8	75	23.6	88	0	0.33	33.3
	9	82.3	25.9	88	0	0.32	32.8
	10	88	27.8	87	2	0.31	32.2
	11	93.3	29.4	88	2	0.29	31.2
	12	97.2	30.8	87	3	0.25	29.0
	13			87	3	0.31	32.2
A	14			88	2	0.32	32.8
	15			87	2	0.34	33.8
B	16			87	2	0.34	33.8
	17			88	0	0.35	34.3
C	18			88	2	0.36	34.8
D	19			88	2	0.39	36.2
	20			88	0	0.43	38.0
E	21			88	0	0.44	38.4
	22			88	2	0.41	37.1
F	23			88	2	0.36	34.8
	24			88	3	0.28	30.7

STACK VELOCITY	(fps)	33.8
VOLUMETRIC FLOW RATE	(cfm)	10973.1
NOZZLE VELOCITY	(fps)	32.6

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 71

BLDG. NO. 9201-5

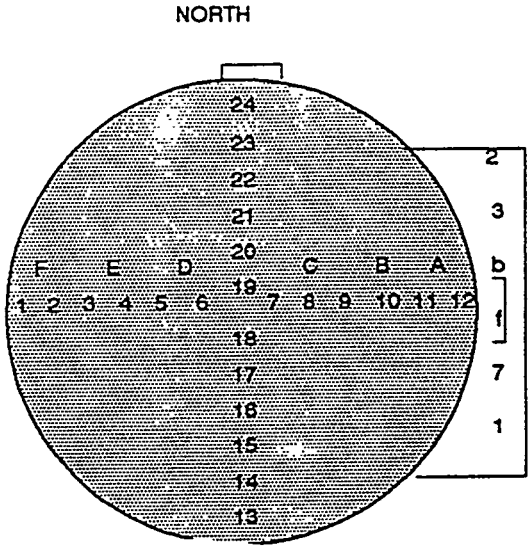
PROCESS DESCRIPTION EAST MACHINE SHOP

SAMPLER NO. 23BF71

SAMPLER TYPE BREAKTHRU

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 46 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2	6.7	13.6	32.4	39.3	44
K25 TRAVERSE NO...	12	10	8	6	4	2
STACK VELOCITY FT\SEC.....	39.8	44.6	46.1	45.3	45.7	46.4
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.1667	*****	*****	*****	0.1667	0.1667
PERCENT ISOKIN....	107.7	96.1	93.0	94.6	93.8	92.4

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-4-90

STACK NO.	71
BUILDING NO.	9201-5
STACK DIA. OR EQIV.	46
STACK AREA (sq.ft.)	11.54

A DISTANCE (upstream)	50
A DISTANCE(no.of dias.)	1.09
B DISTANCE (downstream)	144
B DISTANCE (no.of dias.)	3.13
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	80
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.4
ABSOLUTE PRESS.(ins.hg)	29.221
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1	87	2	0.64	46.4
F	2	6.7	3	87	2	0.64	46.4
	3	11.8	5.4	87	2	0.63	46.1
E	4	17.7	8.15	87	2	0.62	45.7
	5	25	11.5	87	3	0.61	45.3
D	6	35.6	16.4	87	3	0.61	45.3
	7	64.4	29.6	87	2	0.63	46.1
C	8	75	34.5	87	0	0.63	46.1
	9	82.3	37.8	87	0	0.6	44.9
B	10	88	40.5	87	2	0.59	44.6
	11	93.3	42.9	87	2	0.56	43.4
A	12	97.2	44.7	87	3	0.47	39.8
	13			87	3	0.62	45.7
	14			87	2	0.66	47.1
	15			87	2	0.67	47.5
	16			87	2	0.63	46.1
	17			87	0	0.61	45.3
	18			87	2	0.61	45.3
	19			87	2	0.56	43.4
	20			87	0	0.59	44.6
	21			87	0	0.6	44.9
	22			87	2	0.55	43.0
	23			87	2	0.46	39.4
	24			87	3	0.35	34.3

STACK VELOCITY	(fps)	42.7
VOLUMETRIC FLOW RATE	(cfm)	29546.8
NOZZLE VELOCITY	(fps)	42.9

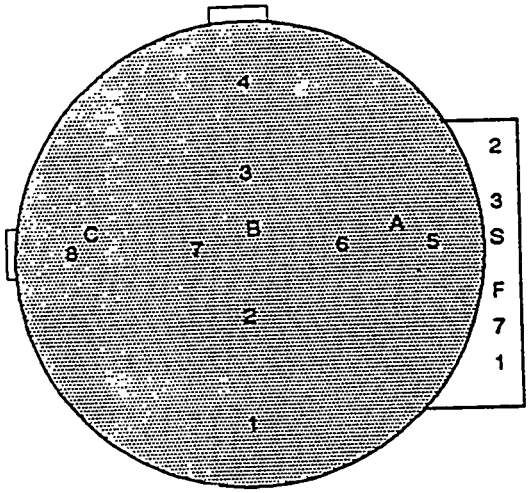
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	72
BLDG. NO.	9201-5
PROCESS DESCRIPTION	CHIP VACUUM SYSTEM
SAMPLER NO.	23SF71
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	17.5 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.277	0.203	0.277
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.6	7.3	14.9
K25 TRAVERSE NO...	5	6	8
STACK VELOCITY FT\SEC.....	15.5	15.5	14.1
NOZZLE VELOCITY FT\SEC.....	15.7	15.7	15.7
NOZZLE FLOW RATE CFM.....	0.394	0.212	0.394
PERCENT ISOKIN....	101.3	101.3	111.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 104.6

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-1-90

STACK NO.	72
BUILDING NO.	9201-5
STACK DIA. OR EQIV.	17.5
STACK AREA (sq.ft.)	2.82
A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	2.74
B DISTANCE (downstream)	144
B DISTANCE (no.of dias.)	8.23
MIN.NO.POINTS (A)	8
MIN.NO. POINTS (B)	8
TOTAL NO. TRAV. POINTS	8
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84
STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	78
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.05
ABSOLUTE PRESS.(ins.hg)	29.246
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	6.7	1.17	201	2	0.05	14.3
	2	25	4.37	200	2	0.05	14.2
	3	75	13.1	200	2	0.06	15.6
	4	93.3	16.3	196	0	0.04	12.7
A	5		19.8	192	3	0.06	15.5
B	6			190	0	0.06	15.5
	7			190	2	0.05	14.1
C	8			185	3	0.05	14.1

STACK VELOCITY	(fps)	14.5
VOLUMETRIC FLOW RATE	(cfm)	2454.0
NOZZLE VELOCITY	(fps)	15.7

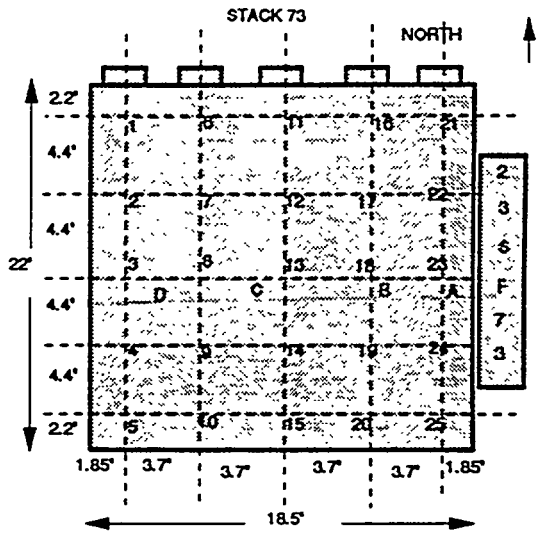
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	73
BLDG. NO.	9201-5
PROCESS DESCRIPTION	POLARITE SHOP
SAMPLER NO.	22SF73
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	18.5 X 22 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.152	0.152	0.187	0.152
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.25	4.6	13.9	17.25
K25 TRAVERSE NO...	23	18	8	3
STACK VELOCITY FT\SEC.....	27.8	35.3	31.8	25.9
NOZZLE VELOCITY FT\SEC.....	29.3	29.3	29.3	29.3
NOZZLE FLOW RATE CFM.....	0.222	0.222	0.335	0.222
PERCENT ISOKIN....	105.4	83.0	92.1	113.1

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-3-90

STACK NO.	73
BUILDING NO.	9201-5
STACK DIA. OR EQIV.	20.1 (18.5X22)
STACK AREA (sq.ft.)	2.82

A DISTANCE (upstream)	41	D
A DISTANCE(no.of dias.)	2.04	
B DISTANCE (downstream)	115	
B DISTANCE (no.of dias.)	5.72	
MIN.NO.POINTS (A)	16	
MIN.NO. POINTS (B)	8	C
TOTAL NO. TRAV. POINTS	16	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		B
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	80	
BAROMETER (ins. hg.)	29.25	A
STATIC PRESSURE(ins.h2o)	-0.14	
ABSOLUTE PRESS.(ins.hg)	29.240	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		2.2	87	2	0.31	32.3
2		6.6	87	2	0.27	30.1
3		11	87	2	0.2	25.9
4		15.4	87	2	0.13	20.9
5		19.8	87	3	0.09	17.4
6			87	3	0.42	37.6
7			87	2	0.39	36.2
8			87	0	0.3	31.8
9			87	0	0.24	28.4
10			87	2	0.16	23.2
11			87	2	0.44	38.5
12			87	3	0.41	37.1
13			87	3	0.36	34.8
14			87	2	0.25	29.0
15			87	2	0.21	26.6
16			87	2	0.21	26.6
17			87	0	0.38	35.8
18			87	0	0.37	35.3
19			87	0	0.25	29.0
20			87	2	0.17	23.9
21			87	2	0.24	28.4
22			87	2	0.28	30.7
23			87	3	0.23	27.8
24			87	2	0.16	23.2
25			87	2	0.12	20.1

STACK VELOCITY	(fps)	29.2
VOLUMETRIC FLOW RATE	(cfm)	4945.3
NOZZLE VELOCITY	(fps)	29.3

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 75

BLDG. NO. 9201-5

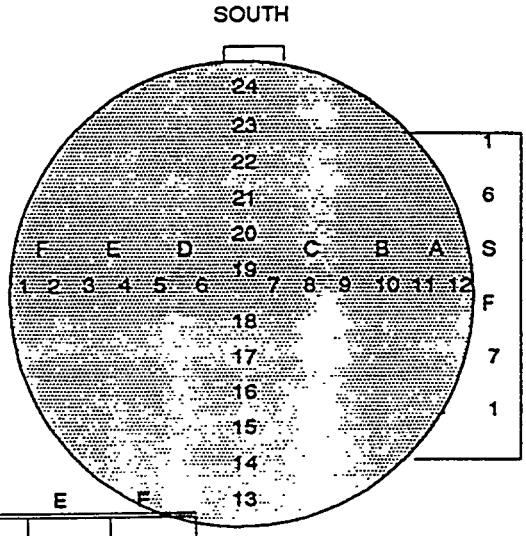
PROCESS ARC MELT WASHING AND FURNACE AREA

SAMPLER NO. 16SF75

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 61.5 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.152	0.152	0.109	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.7	9	18.2	43.3	52.5	58.8
K25 TRAVERSE NO...	11	9	7	6	4	2
STACK VELOCITY FT\SEC.....	24.6	25.3	24.6	26	30.7	30.7
NOZZLE VELOCITY FT\SEC.....	26.3	26.3	26.3	26.3	26.3	26.3
NOZZLE FLOW RATE CFM.....	0.199	0.199	0.102	0.199	0.102	0.199
PERCENT ISOKIN....	106.9	104.0	106.9	101.2	85.7	85.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-3-90

STACK NO.	75
BUILDING NO.	9201-5
STACK DIA. OR EQIV.	61.5
STACK AREA (sq.ft.)	20.60

A DISTANCE (upstream)	72
A DISTANCE(no.of dias.)	1.17
B DISTANCE (downstream)	360
B DISTANCE (no.of dias.)	5.85
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	WEST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	79
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.15
ABSOLUTE PRESS.(ins.hg)	29.239
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1.3	88	2	0.26	29.6
F	2	8.7	4.1	88	2	0.28	30.7
	3	11.8	7.25	88	2	0.28	30.7
E	4	17.7	10.9	88	2	0.28	30.7
	5	25	15.4	88	3	0.26	29.6
D	6	35	21.8	88	3	0.2	26.0
C	7	64	39.7	88	2	0.18	24.6
	8	75	46.1	88	0	0.16	23.2
B	9	82	50.6	88	0	0.19	25.3
	10	88	54.2	88	2	0.18	24.6
A	11	93.3	57.4	88	2	0.18	24.6
	12	97.9	60.2	88	3	0.24	28.4
	13			88	3	0.26	29.6
	14			88	2	0.26	29.6
	15			88	2	0.24	28.4
	16			88	2	0.22	27.2
	17			88	2	0.18	24.6
	18			88	2	0.18	24.6
	19			88	0	0.18	24.6
	20			88	0	0.21	26.6
	21			88	2	0.2	26.0
	22			88	3	0.21	26.6
	23			88	2	0.21	26.6
	24			88	2	0.19	25.3

STACK VELOCITY	(fps)	25.9
VOLUMETRIC FLOW RATE	(cfm)	32041.9
NOZZLE VELOCITY	(fps)	26.3

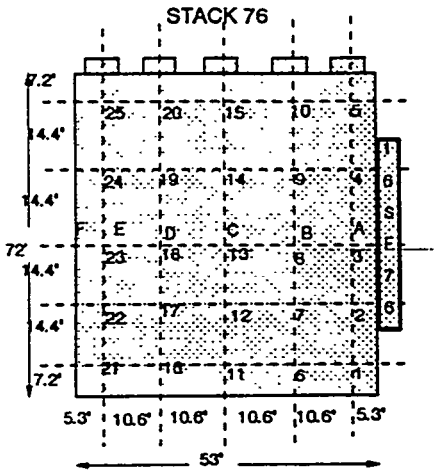
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON AND HILD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	76
BLDG. NO.	9201-5
PROCESS DESCRIPTION	DELTA PHASE II KNOCKOUT, ALLIGATOR SHEAR,PRESS AND WORK TABLE
SAMPLER NO.	16SF76
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	53 X 72 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.3	7.7	15.7	37.3	45.3	50.7
K25 TRAVERSE NO...	3	3	8	13	18	23
STACK VELOCITY FT\SEC.....	44.2	44.2	44.5	42.6	42.2	46.7
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	97.0	97.0	96.3	100.6	101.6	91.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 97.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-2-90

STACK NO.	76	
BUILDING NO.	9201-5	
STACK DIA. OR EQIV.	61	(53X72)
STACK AREA (sq.ft.)	26.50	
		A
A DISTANCE (upstream)	49	
A DISTANCE(no.of dias.)	0.80	B
B DISTANCE (downstream)	178	
B DISTANCE (no.of dias.)	2.92	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	C
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		D
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		E
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	80	
BAROMETER (ins. hg.)	29.25	F
STATIC PRESSURE(ins.h2o)	-0.45	
ABSOLUTE PRESS.(ins.hg)	29.217	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		7.2	86	2	0.56	43.4
2		21.6	86	2	0.58	44.2
3		36	86	2	0.58	44.2
4		50.4	86	2	0.64	46.4
5		64.8	86	3	0.73	49.5
6			86	3	0.62	45.7
7			86	2	0.58	44.2
8			86	0	0.59	44.5
9			86	0	0.65	46.7
10			86	2	0.72	49.2
11			86	2	0.55	43.0
12			86	3	0.55	43.0
13			86	3	0.54	42.6
14			86	2	0.58	44.2
15			86	2	0.7	48.5
16			86	2	0.54	42.6
17			86	2	0.55	43.0
18			86	2	0.53	42.2
19			86	0	0.59	44.5
20			86	0	0.67	47.5
21			86	2	0.6	44.9
22			86	3	0.6	44.9
23			86	2	0.65	46.7
24			86	2	0.65	46.7
25			86	2	0.58	44.2

STACK VELOCITY	(fps)	45.1
VOLUMETRIC FLOW RATE	(cfm)	71638.2
NOZZLE VELOCITY	(fps)	42.9

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON AND HILD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 78

BLDG. NO. 9201-5

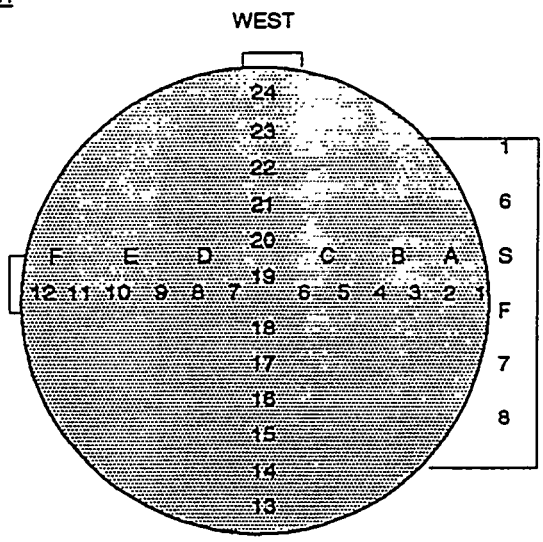
PROCESS NITRIC ACID PICKELING BOOTH

SAMPLER NO. 16SF78

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 31.75 INCHES



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.4	4.6	9.4	22.4	27.1	30.4
K25 TRAVERSE NO...	1	4	6	8	10	12
STACK VELOCITY FT\SEC.....	40.8	41.2	41.2	38.7	37	35.6
NOZZLE VELOCITY FT\SEC.....	37.0	37.0	37.0	37.0	37.0	37.0
NOZZLE FLOW RATE CFM.....	0.144	0.144	0.144	0.144	0.144	0.280
PERCENT ISOKIN....	90.8	89.9	89.9	95.7	100.1	104.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-1-90

STACK NO.	78
BUILDING NO.	9201-5
STACK DIA. OR EQIV.	31.75
STACK AREA (sq.ft.)	5.50

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.51
B DISTANCE (downstream)	156
B DISTANCE (no.of dias.)	4.91
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	WEST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	80
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.18
ABSOLUTE PRESS.(ins.hg)	29.237
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
A	1	2.1	1	82	2	0.5	40.8
	2	6.7	2.12	82	0	0.49	40.4
	3	11.8	3.75	82	0	0.5	40.8
B	4	17.7	5.6	82	3	0.51	41.2
	5	25	7.8	82	3	0.51	41.2
C	6	35.6	11.25	82	2	0.51	41.2
	7	64.4	20.5	82	2	0.45	38.7
D	8	75	23.75	82	2	0.45	38.7
	9	82.3	26.12	82	0	0.41	37.0
E	10	88.2	28	82	0	0.41	37.0
	11	93.3	29.3	82	0	0.38	35.6
F	12	97.9	31	82	0	0.33	33.2
	13			82	3	0.43	37.9
	14			82	4	0.43	37.9
	15			82	2	0.44	38.3
	16			82	0	0.45	38.7
	17			82	0	0.46	39.2
	18			82	0	0.46	39.2
	19			82	2	0.42	37.4
	20			82	2	0.41	37.0
	21			82	3	0.41	37.0
	22			82	3	0.4	36.5
	23			82	2	0.38	35.6
	24			82	2	0.36	34.6

STACK VELOCITY	(fps)	36.6
VOLUMETRIC FLOW RATE	(cfm)	12076.7
NOZZLE VELOCITY	(fps)	37

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 83

BLDG. NO. 9201-5

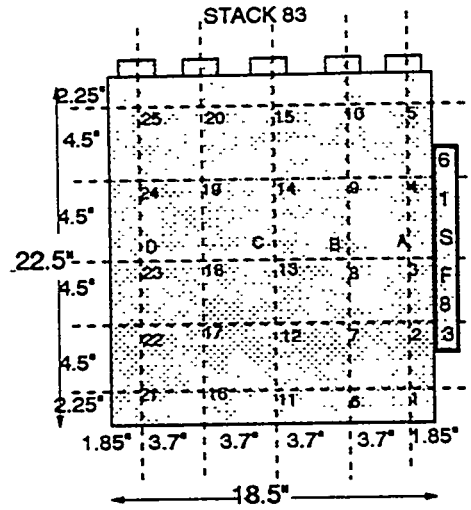
PROCESS WELD BOOTH GRINDERS AND SANDERS

SAMPLER NO. 61SF83

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 18.5 X 22.5" INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.125	0.125	0.125	0.125
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.2	4.6	13.9	17.3
K25 TRAVERSE NO...	3	8	18	23
STACK VELOCITY FT\SEC.....	46.3	52.7	54.9	51.8
NOZZLE VELOCITY FT\SEC.....	48.9	48.9	48.9	48.9
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	105.6	92.8	89.1	94.4

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-1-90

STACK NO.	83
BUILDING NO.	9201-5
STACK DIA. OR EQIV.	19.49
STACK AREA (sq.ft.)	2.89
A DISTANCE (upstream)	40
A DISTANCE(no.of dias.)	2.05
B DISTANCE (downstream)	72
B DISTANCE (no.of dias.)	3.69
MIN.NO.POINTS (A)	25
MIN.NO. POINTS (B)	25
TOTAL NO. TRAV. POINTS	25
DIRECTION PORT 1	EAST
DIRECTION PORT 2	
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84
STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	82
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.35
ABSOLUTE PRESS.(ins.hg)	29.224
PITOT COEFFICIENT	0.84

22.5X18.5

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ftlsec
	1		2.2	84	6	0.1	18.3
	2		6.6	84	5	0.27	30.1
A	3		11	84	6	0.64	46.3
	4		15.4	84	3	0.9	54.9
	5		19.8	84	3	1.2	63.4
	6			84	5	0.19	25.2
	7			84	5	0.4	36.6
B	8			84	5	0.83	52.7
	9			84	0	1.1	60.7
	10			84	4	1	57.9
	11			84	2	0.14	21.7
	12			84	3	0.34	33.7
	13			84	3	0.72	49.1
	14			84	4	1.1	60.7
	15			84	2	1.2	63.4
	16			84	0	0.19	25.2
	17			84	0	0.37	35.2
C	18			84	0	0.9	54.9
	19			84	2	1	57.9
	20			84	2	1.1	60.7
	21			84	5	0.18	24.5
	22			84	6	0.4	36.6
D	23			84	5	0.8	51.8
	24			84	2	1.1	60.7
	25			84	4	1.1	60.7

STACK VELOCITY	(fps)	45.7
VOLUMETRIC FLOW RATE	(cfm)	7925.8
NOZZLE VELOCITY	(fps)	48.9

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: RIGGS, HILD, GODDARD

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 85

BLDG. NO. 9204-4

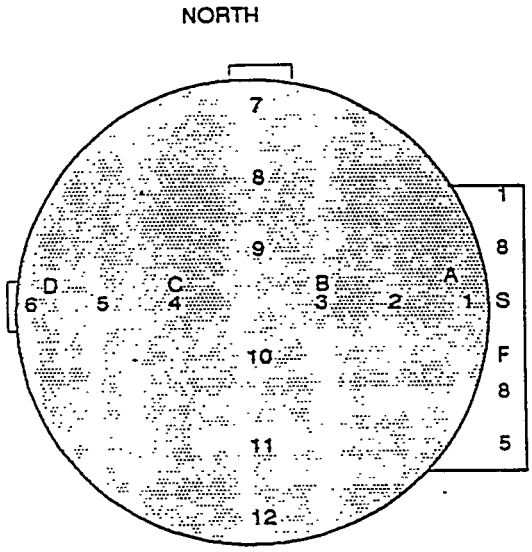
PROCESS DESCRIPTION 7500 TON PRESS

SAMPLER NO. 18SF85

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 23.5 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.109	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.6	5.9	17.6	22
K25 TRAVERSE NO...	1	3	4	6
STACK VELOCITY FT\SEC.....	42.5	44.8	41.3	36.6
NOZZLE VELOCITY FT\SEC.....	43.7	43.7	43.7	43.7
NOZZLE FLOW RATE CFM.....	0.170	0.330	0.170	0.330
PERCENT ISOKIN....	102.8	97.5	105.7	119.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 106.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-6-90

STACK NO.	85
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	23.5
STACK AREA (sq.ft.)	3.01

A DISTANCE (upstream)	192	B
A DISTANCE(no.of dias.)	8.17	C
B DISTANCE (downstream)	216	
B DISTANCE (no.of dias.)	8.2	D
MIN.NO.POINTS (A)	12	
MIN.NO. POINTS (B)	12	
TOTAL NO. TRAV. POINTS	12	
DIRECTION PORT 1	WEST	
DIRECTION PORT 2	NORTH	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	85
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.24
ABSOLUTE PRESS.(ins.hg)	29.332
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW	DELTA P ins. (h2o)	VELOCITY ft\sec
A	1	4.4	1	85	0	0.54	42.5
	2	14.6	3.5	85	2	0.59	44.4
B	3	29.8	7	85	2	0.6	44.8
C	4	70.4	16.5	85	3	0.51	41.3
	5	85.4	20	85	4	0.45	38.8
D	6	96.8	22.5	85	4	0.4	36.6
	7	4.4	1	85	2	0.44	38.3
	8	14.6	3.5	85	0	0.53	42.1
	9	29.8	7	85	0	0.57	43.6
	10	70.4	16.5	85	2	0.56	43.3
	11	85.4	20	85	2	0.53	42.1
	12	96.8	22.5	85	3	0.53	42.1

STACK VELOCITY	(fps)	41.6
VOLUMETRIC FLOW RATE	(cfm)	7527.1
NOZZLE VELOCITY	(fps)	43.6

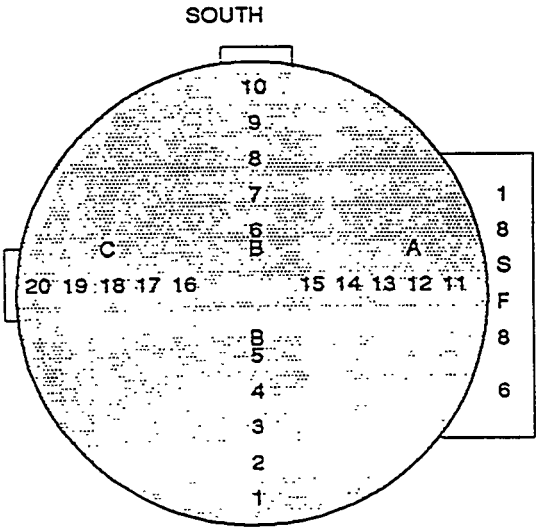
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *HILD, WILSON, SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	86
BLDG. NO.	9204-4
PROCESS	1500 TON PRESS
SAMPLER NO.	18SF86
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	19.5 INCHES



SKETCH

NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.152	0.152	0.152
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.8	9.8	16.7
K25 TRAVERSE NO...	12	15	18
STACK VELOCITY FT\SEC.....	44.8	48	40.9
NOZZLE VELOCITY FT\SEC.....	44.1	44.1	44.1
NOZZLE FLOW RATE CFM.....	0.333	0.333	0.333
PERCENT ISOKIN....	98.4	91.8	107.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 99.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-6-90

STACK NO.	86
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	19.5
STACK AREA (sq.ft.)	2.07

A DISTANCE (upstream)	90
A DISTANCE(no.of dias.)	4.62
B DISTANCE (downstream).	105
B DISTANCE (no.of dias.)	5.4
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	20
TOTAL NO. TRAV. POINTS	20
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	EAST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	85
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-4.5
ABSOLUTE PRESS.(ins.hg)	29.019
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.6	0.5	79	0	0.45	38.8
	2	8.4	1.6	79	0	0.48	40.0
	3	14.6	2.8	79	0	0.57	43.6
	4	22.6	4.8	79	0	0.59	44.4
	5	34.2	6.6	79	0	0.64	46.2
	6	65.8	12.8	79	0	0.67	47.3
	7	77.4	15.2	79	2	0.72	49.0
	8	85.4	16.6	79	0	0.72	49.0
	9	91.8	17.8	79	0	0.69	48.0
	10	97.4	19	79	2	0.64	46.2
	11	2.6	0.5	79	2	0.5	40.9
A	12	8.4	1.6	79	3	0.6	44.8
	13	14.6	2.8	79	3	0.68	47.7
	14	22.6	4.8	79	0	0.7	48.4
B	15	34.2	6.6	79	0	0.69	48.0
	16	65.8	12.8	79	2	0.66	47.0
	17	77.4	15.2	79	0	0.52	41.7
C	18	85.4	16.6	79	2	0.5	40.9
	19	91.8	17.8	79	2	0.54	42.5
	20	97.4	19	79	2	0.45	38.8

STACK VELOCITY	(fps)	44.7
VOLUMETRIC FLOW RATE	(cfm)	5557.1
NOZZLE VELOCITY	(fps)	44.0

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

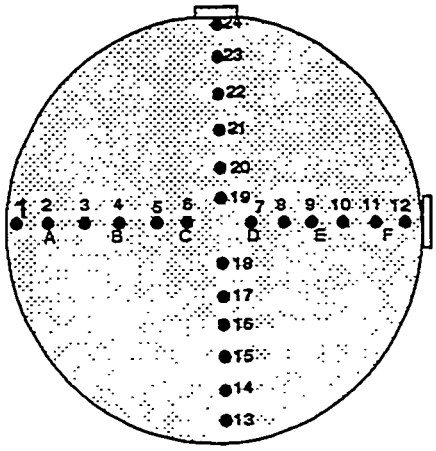
TECHNICIANS: *WILSON AND SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	87
BLDG. NO.	9204-4
PROCESS	450 TON PRESS
SAMPLER NO.	NO ID.
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	30 INCHES

STACK 87



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.3	4.4	8.9	21.1	25.6	28.7
K25 TRAVERSE NO...	2	4	6	8	10	11
STACK VELOCITY FT\SEC.....	54.6	51.5	45.3	40.7	47.8	45.3
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	78.5	83.2	94.6	105.3	89.7	94.6

AVERAGE % ISOKINETIC 91.0

DATE DEC 90

INITALS RCR

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 5/30/91

STACK NO.	87
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	30
STACK AREA (sq.ft.)	4.90

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.6
B DISTANCE (downstream)	126
B DISTANCE (no.of dias.)	4.20
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	86
BAROMETER (ins. hg.)	29.62
STATIC PRESSURE(ins.h2o)	-0.38
ABSOLUTE PRESS.(ins.hg)	29.592
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1	85	2	0.9	54.6
A	2	6.7	2	85	2	0.9	54.6
	3	11.8	3.5	85	0	0.8	51.5
B	4	17.7	5.3	85	0	0.8	51.5
	5	25	7.5	85	2	0.62	45.3
C	6	35.6	10.7	85	2	0.62	45.3
	7	64.4	19.3	85	0	0.52	41.5
D	8	75	22.5	85	0	0.5	40.7
	9	82.3	24.7	85	0	0.7	48.2
E	10	88.2	26.5	85	0	0.69	47.8
	11	93.3	28	85	0	0.62	45.3
F	12	97.9	29.4	85	0	0.64	46.0
	13	2.1	1	85	2	0.77	50.5
	14	6.7	2	85	3	0.77	50.5
	15	11.8	3.5	85	3	0.71	48.5
	16	17.7	5.3	85	2	0.66	46.8
	17	25	7.5	85	2	0.66	46.8
	18	35.6	10.7	85	2	0.7	48.2
	19	64.4	19.3	85	3	0.71	48.5
	20	75	22.5	85	2	0.68	47.5
	21	82.3	24.7	85	2	0.66	46.8
	22	88.2	26.5	85	3	0.68	47.5
	23	93.3	28	85	3	0.67	47.1
	24	97.9	29.4	85	2	0.61	45.0

STACK VELOCITY	(fps)	47.7
VOLUMETRIC FLOW RATE	(cfm)	14035.3
NOZZLE VELOCITY	(fps)	47.0

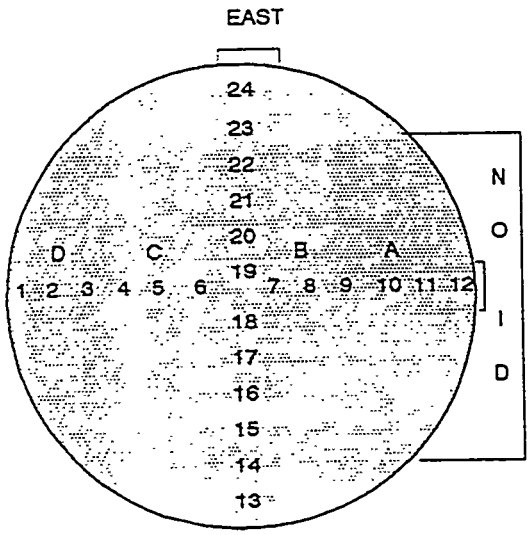
PITOT WAS LEAKED TESTED 3" H2O FOR SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	88
BLDG. NO.	9204-4
PROCESS DESCRIPTION	GRIT BLASTERS
SAMPLER NO.	NO ID
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	23.75 INCHES



SKETCH

NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.156	0.156	0.156	0.156
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.6	5.9	17.8	22.2
K25 TRAVERSE NO...	10	8	5	2
STACK VELOCITY FT\SEC.....	30.7	29.6	31.7	32.8
NOZZLE VELOCITY FT\SEC.....	31.4	31.4	31.4	31.4
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	102.3	106.1	99.0	95.7

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 100.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 8-6-90

STACK NO.	88
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	23.75
STACK AREA (sq.ft.)	3.08

A DISTANCE (upstream)	54
A DISTANCE(no.of dias.)	2.27
B DISTANCE (downstream)	32
B DISTANCE (no.of dias.)	168.0
MIN.NO.POINTS (A)	8
MIN.NO. POINTS (B)	8
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	79
BAROMETER (ins. hg.)	29.5
STATIC PRESSURE(ins.h2o)	-0.14
ABSOLUTE PRESS.(ins.hg)	29.490
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	0.5	90	2	0.3	31.7
D	2	6.7	1.6	90	2	0.32	32.8
	3	11.8	2.8	90	3	0.34	33.8
	4	17.7	4.2	90	3	0.31	32.2
C	5	25	5.9	90	4	0.3	31.7
	6	35.6	8.4	91	4	0.3	31.8
	7	64.4	15.3	91	2	0.27	30.1
B	8	75	17.8	91	0	0.26	29.6
	9	82.3	19.5	91	0	0.27	30.1
A	10	86.2	20.9	91	2	0.28	30.7
	11	93.3	22.1	90	2	0.26	29.5
	12	97.9	23.25	90	3	0.22	27.2
	13	2.1	0.5	90	3	0.26	29.5
	14	6.7	1.6	90	2	0.26	29.5
	15	11.8	2.8	90	2	0.25	29.0
	16	17.7	4.2	90	2	0.24	28.4
	17	25	5.9	90	0	0.25	29.0
	18	35.6	8.4	91	2	0.26	29.6
	19	64.4	15.3	91	2	0.28	30.7
	20	75	17.8	91	2	0.3	31.8
	21	82.3	19.5	91	2	0.31	32.3
	22	86.2	20.9	91	3	0.31	32.3
	23	93.3	22.1	91	3	0.28	30.7
	24	97.9	23.25	91	2	0.24	28.4
	25						

STACK VELOCITY	(fps)	29.3
VOLUMETRIC FLOW RATE	(cfm)	5405.8
NOZZLE VELOCITY	(fps)	31.4

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

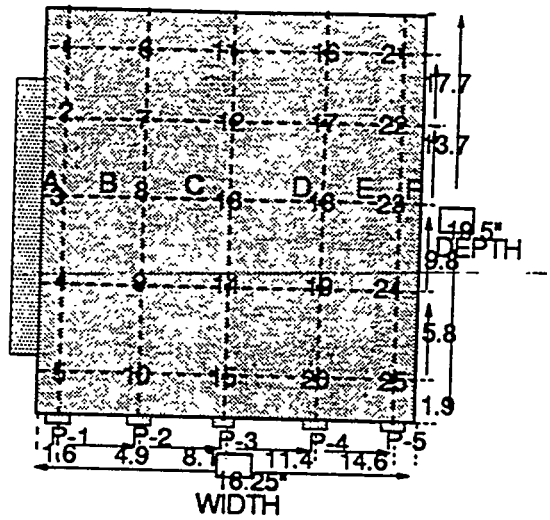
TECHNICIANS: *HILD, WILSON, SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	90
BLDG. NO.	9204-4
PROCESS	BILLET QUINCHER
SAMPLER NO.	23 SF-71
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	19.5 * 16.25"

STACK 90



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.25	0.277	0.25	0.25	0.277	0.25
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.4	4.1	6.9	9.6	12.4	15.1
K25 TRAVERSE NO...	3	8	13	13	18	23
STACK VELOCITY FT\SEC.....	7.1	8.2	7.1	7.1	8.2	8.2
NOZZLE VELOCITY FT\SEC.....	7.6	7.6	7.6	7.6	7.6	7.6
NOZZLE FLOW RATE CFM.....	0.155	0.190	0.155	0.155	0.190	0.155
PERCENT ISOKIN....	106.7	92.4	106.7	106.7	92.4	92.4

DATE MAY 91

INITALS RCR

AVERAGE % ISOKINETIC	99.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 6/3/91

STACK NO.	90	
BUILDING NO.	9204-4	
STACK DIA. OR EQIV.	19.5 "	16.25"
STACK AREA (sq.ft.)	2.20	
EQUIV. DIA.	17.7	
A DISTANCE (upstream)	48	A
A DISTANCE(no.of dias.)	2.7	
B DISTANCE (downstream)	192	
B DISTANCE (no.of dias.)	10.80	
MIN.NO.POINTS (A)	25	
MIN.NO..POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		C
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		D
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	88	
BAROMETER (ins. hg.)	29.65	E&F
STATIC PRESSURE(ins.h2o)	-0.01	
ABSOLUTE PRESS.(ins.hg)	29.649	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.95	96	2	0.015	7.1
2		5	96	2	0.02	8.2
3		8.9	96	2	0.02	8.2
4		12.8	96	2	0.02	8.2
5		16.7	96	3	0.015	7.1
6		1.95	96	3	0.02	8.2
7		5	96	2	0.02	8.2
8		8.9	96	0	0.02	8.2
9		12.8	96	0	0.02	8.2
10		16.7	96	2	0.02	8.2
11		1.95	96	2	0.01	5.8
12		5	96	3	0.015	7.1
13		8.9	96	3	0.015	7.1
14		12.8	96	2	0.015	7.1
15		16.7	96	2	0.015	7.1
16		1.95	96	2	0.015	7.1
17		5	96	3	0.015	7.1
18		8.9	96	3	0.02	8.2
19		12.8	96	3	0.02	8.2
20		16.7	96	3	0.015	7.1
21		1.95	96	2	0.02	8.2
22		5	96	2	0.02	8.2
23		8.9	96	2	0.02	8.2
24		12.8	96	2	0.015	7.1
25		16.7	96	2	0.015	7.1

STACK VELOCITY	(fps)	7.6
VOLUMETRIC FLOW RATE	(cfm)	1007.5
NOZZLE VELOCITY	(fps)	7.6

PITOT WAS LEAKED TESTED 3" H2O FOR SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

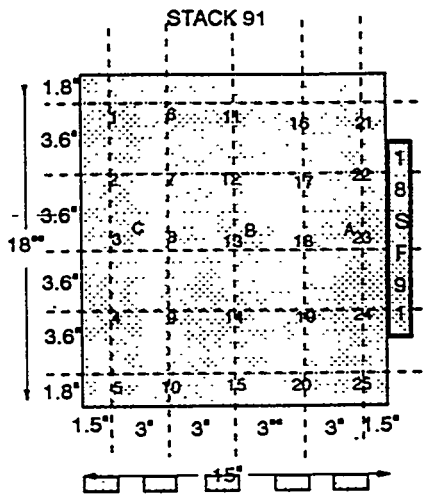
TECHNICIANS: *RIGGS AND GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	91
BLDG. NO.	9204-4
PROCESS	QUENCH TANKS AND CLEANING TANK

SAMPLER NO.	18SF91
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	15 X 18 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.156	0.203	0.156
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.6	9	15.4
K25 TRAVERSE NO...	23	13	3
STACK VELOCITY FT\SEC.....	28.8	35	38.2
NOZZLE VELOCITY FT\SEC.....	34.0	34.0	34.0
NOZZLE FLOW RATE CFM.....	0.271	0.458	0.271
PERCENT ISOKIN....	118.0	97.1	89.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.4

MARTIN MARIEETA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 9-30-90

STACK NO.	91	
BUILDING NO.	9204-4	
STACK DIA. OR EQIV.	16.36	(15X18)
STACK AREA (sq.ft.)	1.88	

A DISTANCE (upstream)	36	C
A DISTANCE(no.of dias.)	2.20	
B DISTANCE (downstream)	72	
B DISTANCE (no.of dias.)	4.40	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		B
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	85	
BAROMETER (ins. hg.)	29.35	A
STATIC PRESSURE(ins.h2o)	-0.11	
ABSOLUTE PRESS.(ins.hg)	29.342	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.8	81	2	0.22	27.0
2		5.4	81	2	0.44	38.2
3		9	81	2	0.44	38.2
4		12.6	81	2	0.42	37.3
5		16.2	81	3	0.34	33.6
6			81	3	0.27	29.9
7			81	2	0.43	37.8
8			81	0	0.36	34.6
9			81	0	0.34	33.6
10			81	2	0.33	33.1
11			81	2	0.32	32.6
12			81	3	0.43	37.8
13			81	3	0.37	35.0
14			81	2	0.32	32.6
15			81	2	0.3	31.5
16			81	2	0.28	30.5
17			81	3	0.42	37.3
18			81	2	0.38	35.5
19			81	2	0.3	31.5
20			81	2	0.27	29.9
21			81	2	0.36	34.6
22			81	0	0.34	33.6
23			81	0	0.25	28.8
24			81	4	0.25	28.8
25			81	3	0.23	27.6

STACK VELOCITY	(fps)	33.2
VOLUMETRIC FLOW RATE	(cfm)	3748.5
NOZZLE VELOCITY	(fps)	34.0

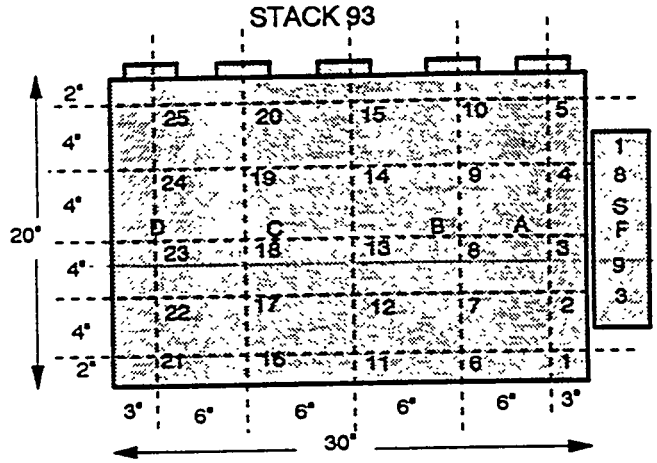
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *SMITH, WILSON*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	93
BLDG. NO.	9204-4
PROCESS DESCRIPTION	VACUUM QUENCH FURNACE (B1026)
SAMPLER NO.	18SF93
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	30 X 20 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.156	0.156	0.156	0.156
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	2.19	7.5	22.5	28
K25 TRAVERSE NO...	3	8	18	23
STACK VELOCITY FT\SEC.....	25.1	30.7	38.4	39.3
NOZZLE VELOCITY FT\SEC.....	31.4	31.4	31.4	31.4
NOZZLE FLOW RATE CFM.....	0.250	0.250	0.250	0.250
PERCENT ISOKIN....	125.1	102.3	81.7	79.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 97.2

VELOCITY DATA
Y-12 PLANT

DATE 7-31-90

STACK NO.	93	
BUILDING NO.	9204-4	
STACK DIA. OR EQIV.	24	(20X30)
STACK AREA (sq.ft.)	3.14	
A DISTANCE (upstream)	48	A
A DISTANCE(no.of dias.)	2.00	
B DISTANCE (downstream)	72	
B DISTANCE (no.of dias.)	3.00	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		C
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	61	
BAROMETER (ins. hg.)	29.35	D
STATIC PRESSURE(ins.h2o)	-0.05	
ABSOLUTE PRESS.(ins.hg)	29.346	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		3	53	2	0.22	26.3
2		9	53	2	0.21	25.7
3		15	53	2	0.2	25.1
4		21	53	2	0.21	25.7
5		27	53	3	0.22	26.3
6			53	3	0.27	29.1
7			53	2	0.3	30.7
8			53	0	0.3	30.7
9			53	0	0.32	31.7
10			53	2	0.36	33.6
11			53	2	0.36	33.6
12			53	3	0.4	35.5
13			53	3	0.45	37.6
14			53	2	0.45	37.6
15			53	2	0.43	36.8
16			53	2	0.37	34.1
17			53		0.42	36.3
18			53		0.47	38.4
19			53		0.51	40.0
20			53		0.51	40.0
21			53		0.46	38.0
22			53		0.41	35.9
23			53		0.49	39.3
24			53		0.45	37.6
25			53		0.45	37.6

STACK VELOCITY	(fps)	33.7
VOLUMETRIC FLOW RATE	(cfm)	6359.8
NOZZLE VELOCITY	(fps)	31.4

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: SMITH, WILSON

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 94

BLDG. NO. 9204-4

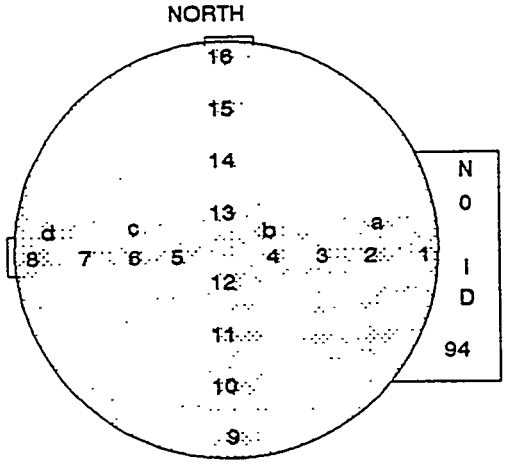
PROCESS DESCRIPTION PLASMA TORCH BURNER

SAMPLER NO. NO ID

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 28 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.9	7	21	26.1
K25 TRAVERSE NO...	2	4	6	8
STACK VELOCITY FT\SEC.....	60.3	58.9	54.5	47.8
NOZZLE VELOCITY FT\SEC.....	52.0	52.0	52.0	52.0
NOZZLE FLOW RATE CFM.....	0.202	0.202	0.393	0.202
PERCENT ISOKIN....	86.3	88.3	95.4	108.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 94.7

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-12-90

STACK NO.	94
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	28
STACK AREA (sq.ft.)	4.28

A DISTANCE (upstream)	77	A
A DISTANCE(no.of dias.)	2.75	B
B DISTANCE (downstream)	173	
B DISTANCE (no.of dias.)	6.18	C
MIN.NO.POINTS (A)	12	
MIN.NO. POINTS (B)	16	D
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2	EAST	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	64
BAROMETER (ins. hg.)	29.37
STATIC PRESSURE(ins.h2o)	-0.63
ABSOLUTE PRESS.(ins.hg)	29.324
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	0.75	79	0	1	57.5
2	6.7	2.25	79	0	1.1	60.3
3	11.8	4.25	79	0	1.1	60.3
4	17.7	7.125	79	2	1.05	58.9
5	25	14.75	79	3	1	57.5
6	35.6	17.9	79	3	0.9	54.5
7	64.4	19.7	79	2	0.69	47.8
8	75	21.9	79	0	0.69	47.8
9	82.3	0.75	79	2	0.7	48.1
10	86.2	2.25	79	3	0.67	47.1
11	93.3	4.25	79	3	0.65	46.4
12	97.9	7.125	79	3	0.51	41.1
13			79	3	0.9	54.5
14			79	2	1	57.5
15			79	2	1.05	58.9
16			79	2	1.05	58.9
17			79	0	1	57.5
18			79	0	0.97	56.6
19			79	0	0.69	47.8
20			79	3	0.67	47.1
21			79	4	0.63	45.6
22			79	4	0.51	41.1
23			78	3	0.42	37.2
24			78	4	0.31	32.0

STACK VELOCITY	(fps)	48.9
VOLUMETRIC FLOW RATE	(cfm)	12540.2
NOZZLE VELOCITY	(fps)	52.0

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: RIGGS, HILD, GODDARD

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 95

BLDG. NO. 9204-4

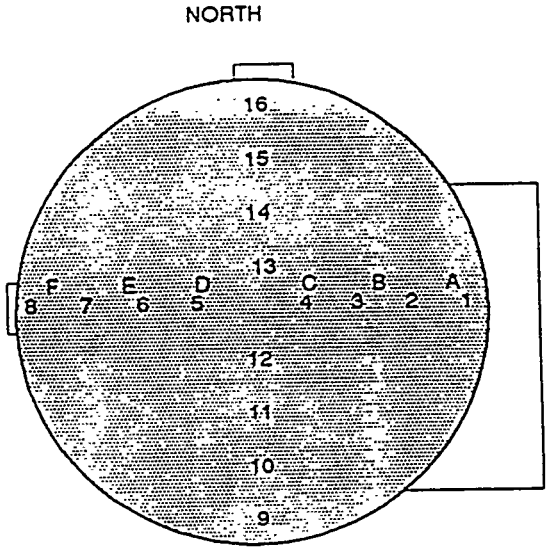
PROCESS SALT BATHS AND AREA EXHAUST

SAMPLER NO. NO ID

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 42 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.8	6.1	12.4	29.5	35.9	40.1
K25 TRAVERSE NO...	1	3	4	5	6	8
STACK VELOCITY FT\SEC.....	31.5	31.5	31	35	35.4	28.2
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.127	0.246	0.127	0.127	0.246	0.127
PERCENT ISOKIN....	103.5	103.5	105.2	93.1	92.1	115.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 102.2

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-13-90

STACK NO.	95
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	42
STACK AREA (sq.ft.)	9.62

A DISTANCE (upstream)	48	B
A DISTANCE(no.of dias.)	1.14	C
B DISTANCE (downstream)	360	D
B DISTANCE (no.of dias.)	8.57	E
MIN.NO.POINTS (A)	16	
MIN.NO. POINTS (B)	12	F
TOTAL NO. TRAV. POINTS	16	
DIRECTION PORT 1	WEST	
DIRECTION PORT 2	NORTH	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	71
BAROMETER (ins. hg.)	29.08
STATIC PRESSURE(ins.h2o)	-0.15
ABSOLUTE PRESS.(ins.hg)	29.069
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
A	1	3.2	1.25	74	2	0.3	31.5
	2	10.5	4.5	74	2	0.3	31.5
B	3	19.4	8.12	74	2	0.295	31.2
C	4	32.3	13.5	74	2	0.29	31.0
D	5	67.7	23.37	74	3	0.37	35.0
E	6	80.6	33.87	74	3	0.38	35.4
	7	89.5	37.5	74	2	0.34	33.5
F	8	96.8	40.6	74	0	0.24	28.2
	9	3.2	1.25	74	0	0.38	35.4
	10	10.5	4.5	74	2	0.39	35.9
	11	19.4	8.12	74	2	0.395	36.1
	12	32.3	13.5	74	3	0.365	34.7
	13	67.7	23.37	74	3	0.29	31.0
	14	80.6	33.87	74	2	0.23	27.6
	15	89.5	37.5	74	2	0.22	27.0
	16	96.8	40.6	74	2	0.16	23.0

STACK VELOCITY	(fps)	31.7
VOLUMETRIC FLOW RATE	(cfm)	18323.9
NOZZLE VELOCITY	(fps)	32.6

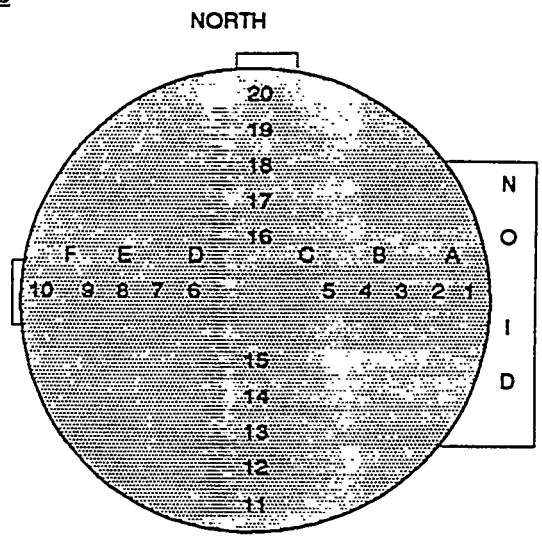
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	97
BLDG. NO.	9204-4
PROCESS	RECLAMATION AREA LATHES
SAMPLER NO.	NO ID
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	30.25 INCHES



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.152	0.109	0.152	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.3	4.4	9	21.3	25.8	28.9
K25 TRAVERSE NO...	1	3	5	7	8	10
STACK VELOCITY FT\SEC.....	26.2	25 6	25.6	25.6	26.2	26.2
NOZZLE VELOCITY FT\SEC.....	26.3	26.3	26.3	26.3	26.3	26.3
NOZZLE FLOW RATE CFM.....	0.199	0.102	0.199	0.199	0.102	0.199
PERCENT ISOKIN....	100.4	102.7	102.7	102.7	100.4	100.4

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.6

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-17-90

STACK NO.	97
BUILDING NO.	9204-4
STACK DIA. OR EQIV.	30.25
STACK AREA (sq.ft.)	4.98
A DISTANCE (upstream)	45
A DISTANCE(no.of dias.)	1.60
B DISTANCE (downstream)	168
B DISTANCE (no.of dias.)	5.60
MIN.NO.POINTS (A)	20
MIN.NO. POINTS (B)	20
TOTAL NO. TRAV. POINTS	20
DIRECTION PORT 1	WEST
DIRECTION PORT 2	NORTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84
STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	58
BAROMETER (ins. hg.)	29.5
STATIC PRESSURE(ins.h2o)	-0.15
ABSOLUTE PRESS.(ins.hg)	29.489
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLO FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
A	1	2.6	1	76	2	0.21	26.2
	2	8.2	2.5	76	2	0.21	26.2
B	3	14.6	4.37	76	2	0.2	25.6
	4	22.6	6.85	76	2	0.2	25.6
C	5	34.2	10.37	76	3	0.2	25.6
	6	65.8	19.8	76	3	0.2	25.6
D	7	77.4	23.7	76	2	0.2	25.6
E	8	85.4	25.7	76	0	0.21	26.2
	9	91.8	27.7	76	0	0.21	26.2
F	10	97.4	29.25	76	2	0.21	26.2
	11			76	2	0.24	28.0
	12			76	3	0.25	28.6
	13			76	3	0.24	28.0
	14			76	2	0.23	27.4
	15			76	2	0.22	26.8
	16			76	2	0.23	27.4
	17			76	3	0.25	28.6
	18			76	2	0.27	29.7
	19			76	3	0.31	31.8
	20			76	2	0.31	31.8

STACK VELOCITY	(fps)	27.4
VOLUMETRIC FLOW RATE	(cfm)	8173.7
NOZZLE VELOCITY	(fps)	26.4

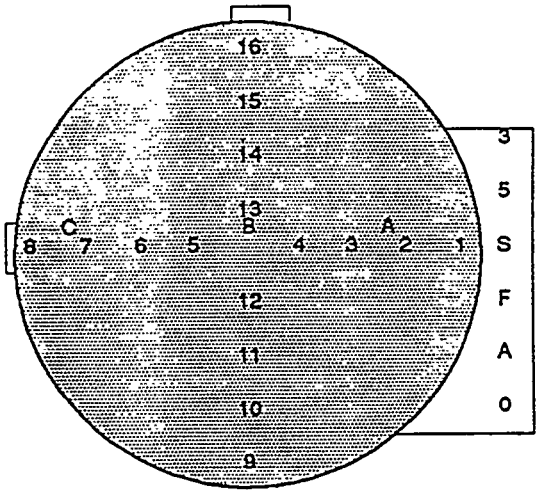
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: RIGGS, HILD, GODDARD

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	100
BLDG. NO.	9204-2E
PROCESS	SPECIMEN SHOP CUTOFF SAW AND GRINDERS
SAMPLER NO.	35SFAO
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	14 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.156	0.156	0.156
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.0	7.0	12.0
K25 TRAVERSE NO...	2	5	7
STACK VELOCITY FT\SEC.....	41.7	41.3	40.9
NOZZLE VELOCITY FT\SEC.....	41.9	41.9	41.9
NOZZLE FLOW RATE CFM.....	0.333	0.333	0.333
PERCENT ISOKIN....	100.4	101.3	102.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 101.4

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-17-90

STACK NO.	100
BUILDING NO.	9204-2E
STACK DIA. OR EQIV.	14
STACK AREA (sq.ft.)	1.07

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	3.43
B DISTANCE (downstream)	72
B DISTANCE (no.of dias.)	5.14
MIN.NO.POINTS (A)	8
MIN.NO. POINTS (B)	16
TOTAL NO. TRAV. POINTS	16
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	WEST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	65
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.16
ABSOLUTE PRESS.(ins.hg)	29.338
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCL. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	3.2	0.5	75	2	0.58	43.6
A	2	10.5	1.5	75	2	0.53	41.7
	3	19.4	2.75	75	2	0.49	40.1
	4	32.3	4.5	75	2	0.49	40.1
B	5	67.7	9.5	75	3	0.52	41.3
	6	80.6	11.25	75	3	0.525	41.5
C	7	89.5	12.5	75	2	0.51	40.9
	8	96.8	13.5	75	0	0.43	37.6
	9	3.2	0.5	75	0	0.58	43.6
	10	10.5	1.5	75	2	0.62	45.1
	11	19.4	2.75	75	2	0.62	45.1
	12	32.3	4.5	75	3	0.62	45.1
	13	67.7	9.5	75	3	0.6	44.4
	14	80.6	11.25	75	2	0.54	42.1
	15	89.5	12.5	75	2	0.48	39.7
	16	96.8	13.5	75	2	0.37	34.8

STACK VELOCITY	(fps)	41.7
VOLUMETRIC FLOW RATE	(cfm)	2672.3
NOZZLE VELOCITY	(fps)	41.9

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

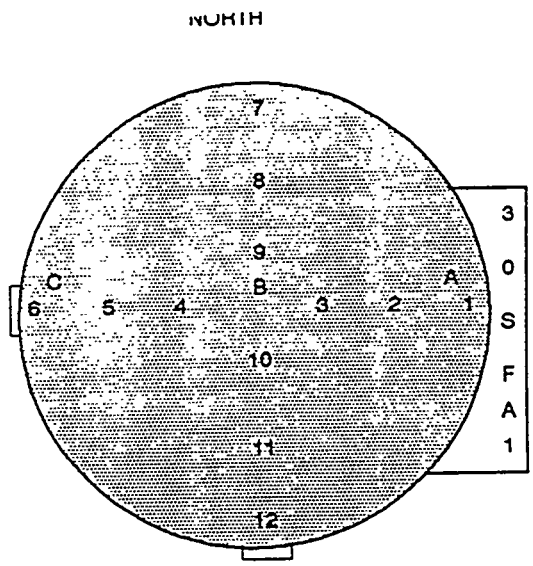
TECHNICIANS: RIGGS, HILD, GODDARD

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	101
BLDG. NO.	9204-2E
PROCESS	ASSEMBLY AREA LATHES

SAMPLER NO.	30SFA1
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.203	0.25
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	1.8	6.0	10.2
K25 TRAVERSE NO...	2	4	5
STACK VELOCITY FT\SEC.....	20.5	19.7	18.1
NOZZLE VELOCITY FT\SEC.....	21.1	21.1	21.1
NOZZLE FLOW RATE CFM.....	0.284	0.284	0.431
PERCENT ISOKIN....	102.9	107.0	116.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 108.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-23-90

STACK NO.	101
BUILDING NO.	9204-2E
STACK DIA. OR EQIV.	12
STACK AREA (sq.ft.)	0.79

A DISTANCE (upstream)	192
A DISTANCE(no.of dias.)	16.00
B DISTANCE (downstream)	122
B DISTANCE (no.of dias.)	10.17
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	12
TOTAL NO. TRAV. POINTS	12
DIRECTION PORT 1	WEST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	89
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.03
ABSOLUTE PRESS.(ins.hg)	29.348
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	4.4	0.5	70	2	0.12	19.7
A	2	14.6	1.75	70	2	0.13	20.5
	3	29.6	3.5	70	2	0.13	20.5
B	4	70.4	8.5	70	2	0.12	19.7
C	5	85.4	10.25	75	3	0.1	18.1
	6	95.6	11.5	70	3	0.08	16.1
	7	4.4	0.5	70	2	0.12	19.7
	8	14.6	1.75	70	0	0.13	20.5
	9	29.6	3.5	70	0	0.13	20.5
	10	70.4	8.5	70	2	0.12	19.7
	11	85.4	10.25	70	2	0.105	18.5
	12	95.6	11.5	70	3	0.08	16.1

STACK VELOCITY	(fps)	19.2
VOLUMETRIC FLOW RATE	(cfm)	903.1
NOZZLE VELOCITY	(fps)	21.0

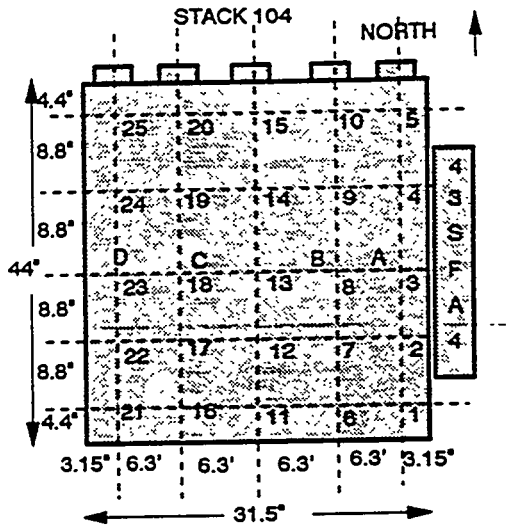
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *HILD WILSON GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	104
BLDG. NO.	9202
PROCESS	EXTRUSION PRESS, C-SAW
SAMPLER NO.	43SFA4
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	31.5 X 44 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.152	0.109	0.109	0.152	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.4	4.6	9.3	22.2	26.9	30.1
K25 TRAVERSE NO...	3	3	8	13	18	23
STACK VELOCITY FT\SEC.....	32.7	32.7	32.2	31.1	31.1	27.1
NOZZLE VELOCITY FT\SEC.....	32.6	32.6	32.6	32.6	32.6	32.6
NOZZLE FLOW RATE CFM.....	0.127	0.246	0.127	0.127	0.246	0.127
PERCENT ISOKIN....	99.7	99.7	101.2	104.8	104.8	120.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 105.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-21-91

STACK NO.	104	
BUILDING NO.	9202	
STACK DIA. OR EQIV.	36.7	(31.5*44)
STACK AREA (sq.ft.)	9.63	

A DISTANCE (upstream)	48	A & B
A DISTANCE(no.of dias.)	1.30	
B DISTANCE (downstream)	280	
B DISTANCE (no.of dias.)	7.70	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	C
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		D
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		E
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	85	
BAROMETER (ins. hg.)	29.25	F
STATIC PRESSURE(ins.h2o)	-0.21	
ABSOLUTE PRESS.(ins.hg)	29.235	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		3.6	82	2	0.25	28.9
2		7.3	82	2	0.25	28.9
3		18.2	82	2	0.32	32.7
4		25.5	82	2	0.35	34.2
5		32.8	82	3	0.3	31.6
6		41.1	82	3	0.25	28.9
7			82	2	0.28	30.6
8			82	0	0.31	32.2
9			82	0	0.34	33.7
10			82	2	0.35	34.2
11			82	2	0.35	34.2
12			82	3	0.25	28.9
13			82	3	0.29	31.1
14			82	2	0.32	32.7
15			82	2	0.34	33.7
16			82	2	0.31	32.2
17			82	2	0.27	30.0
18			82	2	0.29	31.1
19			82	5	0.32	32.7
20			82	5	0.32	32.7
21			82	3	0.34	33.7
22			82	2	0.34	33.7
23			82	3	0.22	27.1
24			82	2	0.27	30.0
25			82	2	0.29	31.1

STACK VELOCITY	(fps)	31.6
VOLUMETRIC FLOW RATE	(cfm)	18253.8
NOZZLE VELOCITY	(fps)	32.6

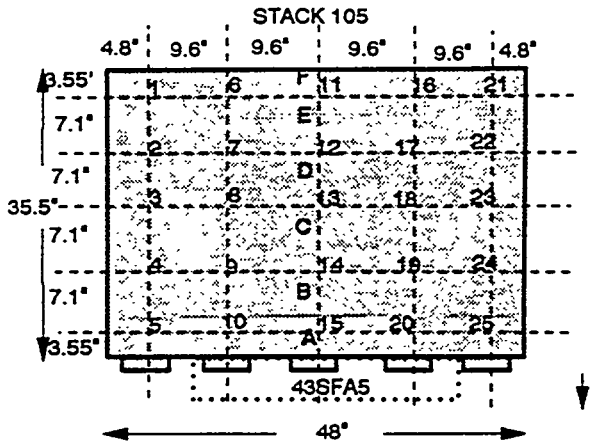
PITOT WAS LEAKED TESTED 3" H2O FOR SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	105
BLDG. NO.	9202
PROCESS	FOUNDRY SAW
SAMPLER NO.	43SFA5
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	35.5 X 48 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.152	0.109	0.152	0.152	0.109	0.152
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.6	5.2	10.5	25	30.3	33.9
K25 TRAVERSE NO...	15	15	14	13	12	11
STACK VELOCITY FT\SEC.....	25.8	25.8	25.2	24.5	24.5	25.8
NOZZLE VELOCITY FT\SEC.....	26.3	26.3	26.3	26.3	26.3	26.3
NOZZLE FLOW RATE CFM.....	0.199	0.102	0.199	0.199	0.102	0.199
PERCENT ISOKIN....	101.9	101.9	104.4	107.4	107.4	101.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 104.2

VELOCITY DATA
Y-12 PLANT

DATE 7-28-90

STACK NO.	105	
BUILDING NO.	9202	
STACK DIA. OR EQIV.	35.5X48	40.8"
STACK AREA (sq.ft.)	11.83	

A DISTANCE (upstream)	72	
A DISTANCE(no.of dias.)	1.10	
B DISTANCE (downstream)	276	
B DISTANCE (no.of dias.)	6.80	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		F
		E
STACK GAS ANALYSIS:		D
PERCENT OXYGEN	20.9%	C
PERCENT CARBON DIOXIDE	0.0%	A-B
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	85
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.18
ABSOLUTE PRESS.(ins.hg)	29.237
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		3.5	82	2	0.14	21.6
2		10.6	82	2	0.14	21.6
3		17.7	82	2	0.18	24.5
4		24.8	82	2	0.21	26.5
5		31.9	82	3	0.19	25.2
6			82	3	0.16	23.1
7			82	2	0.17	23.8
8			82	0	0.19	25.2
9			82	0	0.2	25.8
10			82	2	0.21	26.5
11			82	2	0.2	25.8
12			82	3	0.18	24.5
13			82	3	0.18	24.5
14			82	2	0.19	25.2
15			82	2	0.2	25.8
16			82	2	0.19	25.2
17			82	2	0.18	24.5
18			82	2	0.18	24.5
19			82	5	0.2	25.8
20			82	5	0.2	25.8
21			82	3	0.17	23.8
22			82	2	0.16	23.1
23			82	3	0.18	24.5
24			82	2	0.2	25.8
25			82	2	0.21	26.5

STACK VELOCITY	(fps)	24.8
VOLUMETRIC FLOW RATE	(cfm)	17575.3
NOZZLE VELOCITY	(fps)	26.3

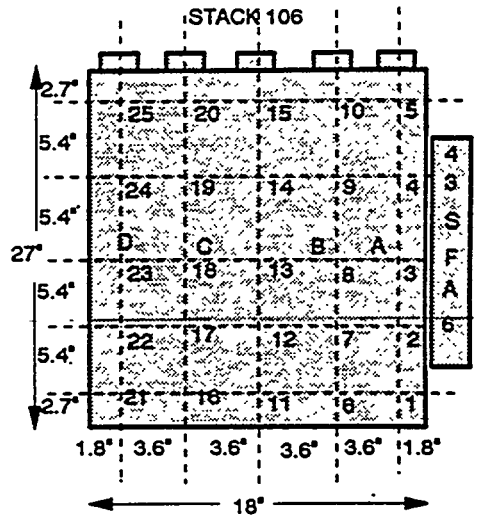
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON SMITH*

MARTIN MARIETTA ENERGY SYSTEM

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	106
BLDG. NO.	9202
PROCESS	FIRST FLOOR FOUNDRY
SAMPLER NO.	43SFA6
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	18 X 27 INCHES



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.125	0.125	0.0936	0.125
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.2	4.5	13.5	16.8
K25 TRAVERSE NO...	3	8	18	23
STACK VELOCITY FT\SEC.....	55.4	50.5	57.2	54.2
NOZZLE VELOCITY FT\SEC.....	54.9	54.9	54.9	54.9
NOZZLE FLOW RATE CFM.....	0.281	0.281	0.157	0.281
PERCENT ISOKIN....	99.1	108.8	96.0	101.3

AVERAGE % ISOKINETIC 101.3

DATE DEC 90

INITALS

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-21-90

STACK NO.	106
BUILDING NO.	9202
STACK DIA. OR EQIV.	27.5X18
STACK AREA (sq.ft.)	3.44

A DISTANCE (upstream)	24	A
A DISTANCE(no.of dias.)	1.10	
B DISTANCE (downstream)	0.32	
B DISTANCE (no.of dias.)	6.00	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	B
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	EAST	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	
		C
STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	66	
BAROMETER (ins. hg.)	29.25	D
STATIC PRESSURE(ins.h2o)	-0.56	
ABSOLUTE PRESS.(ins.hg)	29.209	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		2.75	70	2	0.95	55.7
2		8.25	70	2	0.98	56.6
3		13.75	70	2	0.94	55.4
4		19.25	70	2	0.67	46.8
5		24.75	71	3	0.51	40.8
6			70	3	1.06	58.8
7			70	2	0.95	55.7
8			70	0	0.78	50.5
9			70	0	0.65	46.1
10			70	2	0.49	40.0
11			70	2	1.08	59.4
12			70	3	0.96	56.0
13			70	3	0.88	53.6
14			70	2	0.68	47.1
15			70	2	0.5	40.4
16			70	2	1.1	59.9
17			71	0	1.1	60.0
18			71	0	1	57.2
19			71	0	0.84	52.4
20			71	3	0.54	42.0
21			71	2	0.74	49.2
22			71	2	0.96	56.0
23			71	3	0.9	54.2
24			70	3	0.72	48.5
25			71	2	0.46	38.8

STACK VELOCITY	(fps)	51.2
VOLUMETRIC FLOW RATE	(cfm)	10575.0
NOZZLE VELOCITY	(fps)	54.9

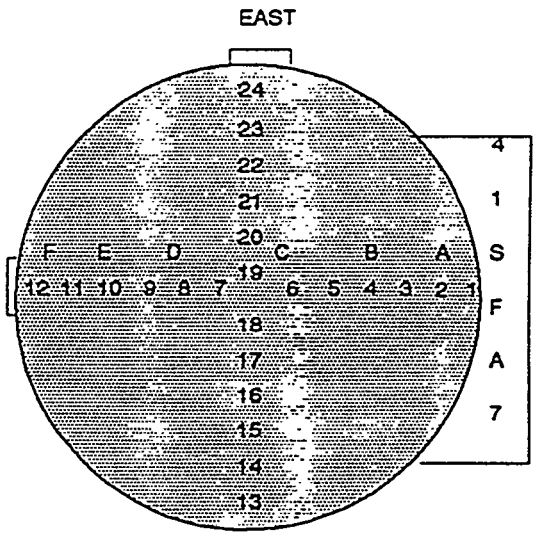
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	107
BLDG. NO.	9202
PROCESS	HOOD AND ROOM EXHAUST
SAMPLER NO.	41SFA7
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	38 INCHES



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.7	5.5	11.2	26.8	32.5	36.3
K25 TRAVERSE NO...	2	4	6	8	10	12
STACK VELOCITY FT\SEC.....	35.7	38.4	49.9	52.2	50.9	40.1
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	120.1	111.6	85.9	82.1	84.2	106.9

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 98.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-22-90

STACK NO.	107
BUILDING NO.	9203
STACK DIA. OR EQIV.	38
STACK AREA (sq.ft.)	7.88

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.26
B DISTANCE (downstream)	132
B DISTANCE (no.of dias.)	3.47
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	79
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.52
ABSOLUTE PRESS.(ins.hg)	29.212
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1.0	72	0	0.38	35.3
A	2	6.7	2.5	72	0	0.39	35.7
	3	11.8	4.5	72	2	0.43	37.5
B	4	17.7	6.75	72	2	0.45	38.4
	5	25	9.5	72	0	0.48	39.7
C	6	35.8	13.5	72	0	0.76	49.9
	7	64.4	24.5	72	0	0.8	51.2
D	8	75	28.5	73	0	0.83	52.2
	9	82.3	31.25	73	0	0.8	51.2
E	10	88.2	33.5	73	2	0.79	50.9
	11	93.3	35.6	72	2	0.6	44.3
F	12	97.9	37	72	3	0.49	40.1
	13	2.1	1.0	72	3	0.53	41.7
	14	6.7	2.5	72	2	0.6	44.3
	15	11.8	4.5	72	2	0.6	44.3
	16	17.7	6.75	72	2	0.61	44.7
	17	25	9.5	72	0	0.63	45.4
	18	35.8	13.5	72	0	0.65	46.1
	19	64.4	24.5	72	2	0.63	45.4
	20	75	28.5	72	0	0.6	44.3
	21	82.3	31.25	72	2	0.57	43.2
	22	88.2	33.5	73	2	0.49	40.1
	23	93.3	35.12	73	3	0.51	40.9
	24	97.9	37	73	2	0.53	41.7

STACK VELOCITY	(fps)	41.9
VOLUMETRIC FLOW RATE	(cfm)	19822.8
NOZZLE VELOCITY	(fps)	42.9

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON HILD SMITH*

MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO. 108

BLDG. NO. 9203

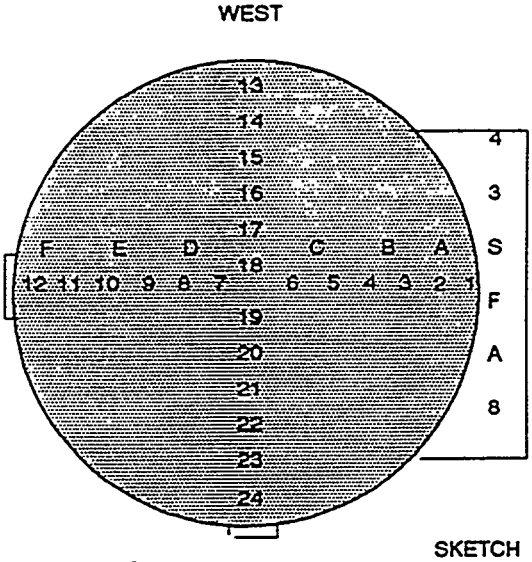
PROCESS ROOM 42 LAB. HOODS

SAMPLER NO. 43SFA8

SAMPLER TYPE CONTINUOUS

SAMPLE FLOW RATE CFM 1

STACK DIAMETER 30 INCHES



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.109	0.109	0.109	0.109	0.109	0.109
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	1.3	4.3	8.9	21	25.6	28.7
K25 TRAVERSE NO...	2	4	6	8	10	12
STACK VELOCITY FT\SEC.....	55.4	58.2	45.1	45:4	46.5	39.4
NOZZLE VELOCITY FT\SEC.....	42.9	42.9	42.9	42.9	42.9	42.9
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	77.4	73.7	95.0	94.4	92.2	108.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 90.2

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-19-90

STACK NO.	108
BUILDING NO.	9203
STACK DIA. OR EQIV.	30
STACK AREA (sq.ft.)	4.91

A DISTANCE (upstream)	48
A DISTANCE(no.of dias.)	1.60
B DISTANCE (downstream)	132
B DISTANCE (no.of dias.)	4.40
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	79
BAROMETER (ins. hg.)	29.25
STATIC PRESSURE(ins.h2o)	-0.52
ABSOLUTE PRESS.(ins.hg)	29.212
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1.0	64	0	0.87	53.0
A	2	6.7	2.0	64	0	0.95	55.4
	3	11.8	3.54	64	2	1.05	58.2
B	4	17.7	5.3	64	2	1.05	58.2
	5	25	7.5	64	0	0.82	51.4
C	6	35.8	10.7	64	0	0.63	45.1
	7	64.4	19.3	64	0	0.64	45.4
D	8	75	22.5	64	0	0.64	45.4
	9	82.3	24.7	64	0	0.64	45.4
E	10	88.2	26.5	64	2	0.67	46.5
	11	93.3	27.9	64	2	0.52	41.0
F	12	97.9	29	64	3	0.48	39.4
	13	2.1	1.0	64	3	0.84	52.1
	14	6.7	2.0	64	2	0.85	52.4
	15	11.8	3.54	64	2	0.79	50.5
	16	17.7	5.3	64	2	0.75	49.2
	17	25	7.5	64	0	0.67	46.5
	18	35.8	10.7	64	0	0.66	46.1
	19	64.4	19.3	64	2	0.52	41.0
	20	75	22.5	64	0	0.5	40.2
	21	82.3	24.7	64	2	0.57	42.9
	22	88.2	26.5	64	2	0.55	42.1
	23	93.3	27.9	64	3	0.51	40.6
	24	97.9	29	64	2	0.53	41.4

STACK VELOCITY	(fps)	45.2
VOLUMETRIC FLOW RATE	(cfm)	13303.0
NOZZLE VELOCITY	(fps)	42.9

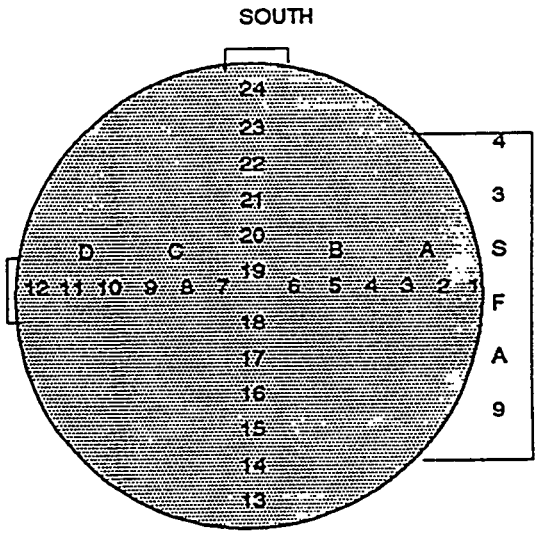
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON HILD SMITH*

MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	109
BLDG. NO.	9401-5
PROCESS	CHIP OXIDATION FACILITY
SAMPLER NO.	43SFA9
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	23.5 INCHES



SKETCH

NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.156	0.156	0.187	0.156
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.6	5.9	17.6	21.9
K25 TRAVERSE NO...	2	5	8	11
STACK VELOCITY FT\SEC.....	31.3	30.7	29	27.2
NOZZLE VELOCITY FT\SEC.....	28.3	28.3	28.3	28.3
NOZZLE FLOW RATE CFM.....	0.225	0.225	0.324	0.225
PERCENT ISOKIN....	90.4	92.2	97.6	104.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.1

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-18-90

STACK NO.	109
BUILDING NO.	9401-5
STACK DIA. OR EQIV.	23.5
STACK AREA (sq.ft.)	3.01

A DISTANCE (upstream)	168
A DISTANCE(no.of dias.)	7.15
B DISTANCE (downstream)	186
B DISTANCE (no.of dias.)	7.91
MIN.NO.POINTS (A)	12
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	EAST
DIRECTION PORT 2	SOUTH
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	79
BAROMETER (ins. hg.)	29.5
STATIC PRESSURE(ins.h2o)	-0.68
ABSOLUTE PRESS.(ins.hg)	29.450
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	0.5	92	0	0.28	30.7
A	2	6.7	1.59	92	0	0.29	31.3
	3	11.8	2.8	92	2	0.3	31.8
	4	17.7	4.2	92	2	0.3	31.8
B	5	25	5.8	92	0	0.28	30.7
	6	35.8	8.3	92	0	0.28	30.7
	7	64.4	15.2	92	0	0.27	30.2
C	8	75	17.6	92	0	0.25	29.0
	9	82.3	17.3	91	0	0.27	30.1
	10	88.2	20.7	91	2	0.26	29.6
D	11	93.3	21.9	91	2	0.22	27.2
	12	97.9	23	91	3	0.19	25.3
	13	2.1	0.5	91	3	0.3	31.8
	14	6.7	1.59	92	2	0.32	32.8
	15	11.8	2.8	92	2	0.33	33.4
	16	17.7	4.2	92	2	0.32	32.8
	17	25	5.8	92	0	0.32	32.8
	18	35.8	8.3	91	0	0.3	31.8
	19	64.4	15.2	91	2	0.24	28.4
	20	75	17.6	91	0	0.22	27.2
	21	82.3	17.3	91	2	0.2	25.9
	22	88.2	20.7	91	2	0.2	25.9
	23	93.3	21.9	91	3	0.16	23.2
	24	97.9	23	91	2	0.16	23.2

STACK VELOCITY	(fps)	28.3
VOLUMETRIC FLOW RATE	(cfm)	5116.8
NOZZLE VELOCITY	(fps)	28.3

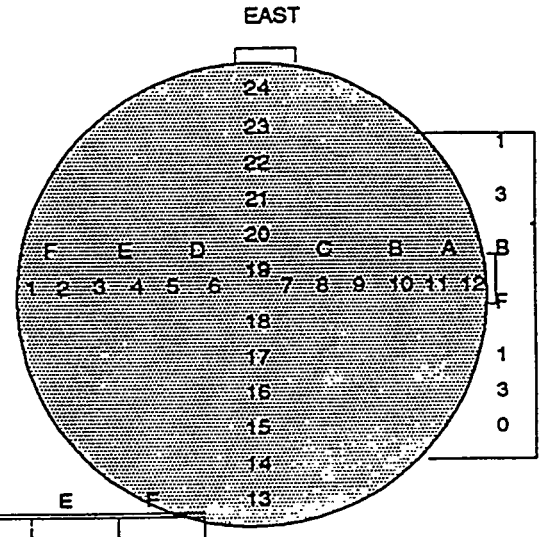
PITOT WAS LEAKED TESTED AT 3" h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON HILD SMITH*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	110
BLDG. NO.	9212
PROCESS	E-WING CASTING
SAMPLER NO.	13BF130
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	56 INCHES



SKETCH

NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.0936	0.093	0.093	0.093	0.0936	0.0936
PERCENT STACK DIA FROM WALL....	4.4	14.6	29.6	70.4	85.4	95.6
INCHES FROM STACK WALL....	2.5	8.2	16.6	39.4	47.8	53.5
K25 TRAVERSE NO...	11	9	7	6	4	2
STACK VELOCITY FT\SEC.....	70.8	68.4	63.3	57.8	60.6	62
NOZZLE VELOCITY FT\SEC.....	58.1	58.1	58.1	58.1	58.1	58.1
NOZZLE FLOW RATE CFM.....	0.167	0.167	0.167	0.167	0.167	0.167
PERCENT ISOKIN....	82.1	85.0	91.8	100.6	95.9	93.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 91.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-20-90

STACK NO.	110
BUILDING NO.	9212
STACK DIA. OR EQIV.	56
STACK AREA (sq.ft.)	17.10

A DISTANCE (upstream)	336
A DISTANCE(no.of dias.)	6.00
B DISTANCE (downstream)	276
B DISTANCE (no.of dias.)	4.93
MIN.NO.POINTS (A)	24
MIN.NO. POINTS (B)	24
TOTAL NO. TRAV. POINTS	24
DIRECTION PORT 1	SE
DIRECTION PORT 2	SW
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	84
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.68
ABSOLUTE PRESS.(ins.hg)	29.300
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.1	1.25	84	2	1.15	62.0
F	2	6.7	3.75	84	2	1.15	62.0
	3	11.8	6.58	84	2	1.2	63.3
E	4	17.7	9.38	84	2	1.1	60.6
	5	25	14	84	3	1.1	60.6
D	6	35.8	20	84	3	1	57.8
C	7	64.4	36.12	84	2	1.2	63.3
	8	75	42	84	0	1.3	65.9
B	9	82.3	46.12	84	0	1.4	68.4
	10	88.2	49.37	84	2	1.6	73.1
A	11	93.3	52.25	84	2	1.5	70.8
	12	97.9	54.75	84	3	1.2	63.3
	13	2.1	1.25	84	3	1.5	70.8
	14	6.7	3.75	84	2	1.4	68.4
	15	11.8	6.58	84	2	1.35	67.1
	16	17.7	9.38	84	2	1.3	65.9
	17	25	14	84	0	1.1	60.6
	18	35.8	20	84	0	1.1	60.6
	19	64.4	36.12	84	2	1.2	63.3
	20	75	42	84	0	1.2	63.3
	21	82.3	46.12	84	2	1.1	60.6
	22	88.2	49.37	84	2	1.15	62.0
	23	93.3	52.25	84	3	1	57.8
	24	97.9	54.75	84	2	0.95	56.3

STACK VELOCITY	(fps)	61.1
VOLUMETRIC FLOW RATE	(cfm)	62711.9
NOZZLE VELOCITY	(fps)	58.1

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

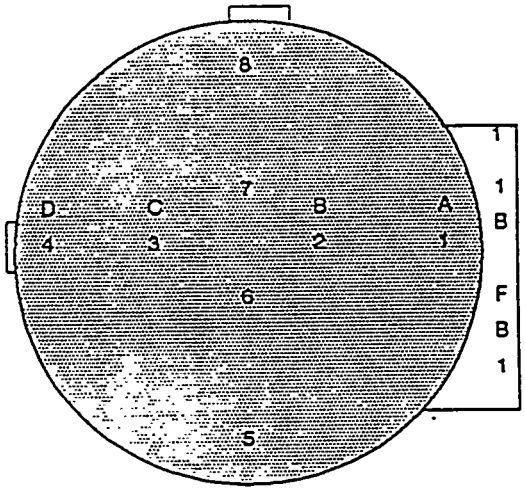
TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	111
BLDG. NO.	9212
PROCESS	ASSEMBLY AREA LATHES
SAMPLER NO.	11BFB1
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	13.5 INCHES

NORTH



NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.25	0.203	0.25	0.25
PERCENT STACK DIA FROM WALL....	14.6	25	75	85.4
INCHES FROM STACK WALL....	2.0	3.4	10.1	11.5
K25 TRAVERSE NO...	1	2	3	4
STACK VELOCITY FT\SEC.....	12.9	12.9	14.1	14.1
NOZZLE VELOCITY FT\SEC.....	13.4	13.4	13.4	13.4
NOZZLE FLOW RATE CFM.....	0.273	0.180	0.273	0.273
PERCENT ISOKIN....	103.6	103.6	94.8	94.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 99.2

VELOCITY DATA
Y-12 PLANT

DATE 7-21-90

STACK NO.	111
BUILDING NO.	9212
STACK DIA. OR EQIV.	13.5
STACK AREA (sq.ft.)	0.99
A DISTANCE (upstream)	16
A DISTANCE(no.of dias.)	1.19
B DISTANCE (downstream)	384
B DISTANCE (no.of dias.)	28.44
MIN.NO.POINTS (A)	8
MIN.NO. POINTS (B)	8
TOTAL NO. TRAV. POINTS	8
DIRECTION PORT 1	SOUTH
DIRECTION PORT 2	WEST
STACK GAS ANALYSIS:	
PERCENT OXYGEN	20.9%
PERCENT CARBON DIOXIDE	0.0%
PERCENT NITROGEN	79.1%
MOLECULAR WT. (dry)	28.84
STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	91
BAROMETER (ins. hg.)	29.29
STATIC PRESSURE(ins.h2o)	-0.02
ABSOLUTE PRESS.(ins.hg)	29.289
PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
A	1	6.7	0.9	79	2	0.05	12.9
B	2	25	3.4	79	2	0.05	12.9
C	3	75	10.2	79	2	0.06	14.1
D	4	93.3	12.1	79	2	0.06	14.1
	5	6.7	0.9	79	3	0.05	12.9
	6	25	3.4	79	0	0.06	14.1
	7	75	10.2	79	0	0.06	14.1
	8	93.3	12.1	79	0	0.05	12.9

STACK VELOCITY	(fps)	13.5
VOLUMETRIC FLOW RATE	(cfm)	803.9
NOZZLE VELOCITY	(fps)	13.4

PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

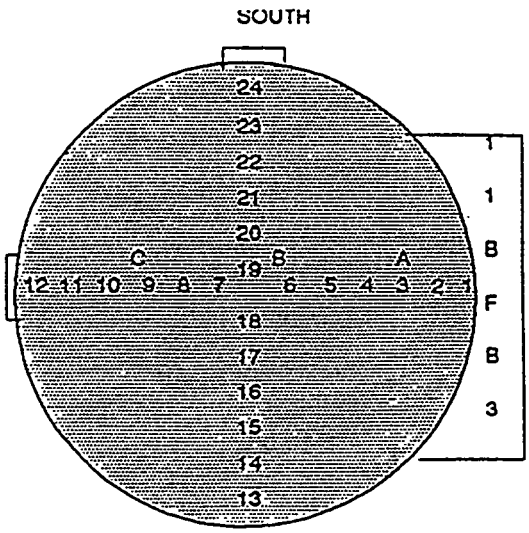
TECHNICIANS: *WILSON SMITH KELSHEIMER*

MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	113
BLDG. NO.	9212
PROCESS DESCRIPTION	ROOM 1021, TRAY DISSOLVER, SCRUBBER, SPECIAL PROCESS

SAMPLER NO.	11BFB3
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12 INCHES



SKETCH

NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.156	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	1.75	6.0	10.2
K25 TRAVERSE NO...	3	6	9
STACK VELOCITY FT\SEC.....	29.6	25.3	26.6
NOZZLE VELOCITY FT\SEC.....	28.6	28.6	28.6
NOZZLE FLOW RATE CFM.....	0.386	0.228	0.386
PERCENT ISOKIN....	96.7	113.1	107.6

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 105.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-20-90

STACK NO.	113
BUILDING NO.	9212
STACK DIA. OR EQIV.	12
STACK AREA (sq.ft.)	0.79

A DISTANCE (upstream)	32	A
A DISTANCE(no.of dias.)	2.67	
B DISTANCE (downstream)	32	
B DISTANCE (no.of dias.)	2.67	B
MIN.NO.POINTS (A)	12	
MIN.NO. POINTS (B)	24	
TOTAL NO. TRAV. POINTS	24	C
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2	EAST	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	61
BAROMETER (ins. hg.)	29.29
STATIC PRESSURE(ins.h2o)	-0.16
ABSOLUTE PRESS.(ins.hg)	29.278
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	0.5	90	2	0.27	30.2
2	6.7	0.75	90	2	0.27	30.2
3	11.8	1.37	90	2	0.26	29.6
4	17.7	1.12	90	2	0.23	27.9
5	25	2.12	90	3	0.21	26.6
6	35.6	3	90	0	0.19	25.3
7	64.4	4.25	90	0	0.2	26.0
8	75	7.75	90	0	0.21	26.6
9	82.3	9	90	0	0.21	26.6
10	88.2	9.37	90	2	0.22	27.3
11	93.3	10.5	90	2	0.2	26.0
12	97.9	11.12	90	3	0.21	26.6
13	2.1		90	3	0.18	24.7
14	6.7		90	2	0.18	24.7
15	11.8		90	2	0.15	22.5
16	17.7		90	2	0.15	22.5
17	25		90	0	0.17	24.0
18	35.6		90	0	0.26	29.6
19	64.4		90	3	0.28	30.8
20	75		90	3	0.285	31.0
21	82.3		66		0.26	29.0
22	88.2		66		0.27	29.5
23	93.3		66		0.28	30.1
24	97.9		66		0.28	30.1

STACK VELOCITY	(fps)	26.3
VOLUMETRIC FLOW RATE	(cfm)	1239.3
NOZZLE VELOCITY	(fps)	28.6

PITOT WAS LEAKED TESTED 3" H2O FOR SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *WILSON SMITH KELSHEIMER*

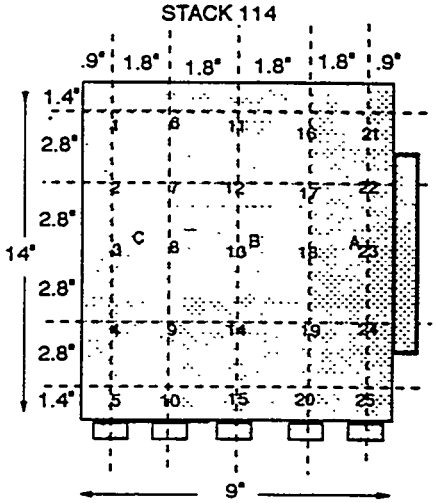
MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	114
BLDG. NO.	9212
PROCESS	ROOM 1021 SAW AND SHEAR EXHAUST

SAMPLER NO.	NO ID
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	9 X 14 INCHES

STACK 114



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.277	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	1.3	4.5	7.7
K25 TRAVERSE NO...	23	13	3
STACK VELOCITY FT\SEC.....	17.3	17.3	21.5
NOZZLE VELOCITY FT\SEC.....	19.2	19.2	19.2
NOZZLE FLOW RATE CFM.....	0.259	0.482	0.259
PERCENT ISOKIN....	111.0	111.0	89.3

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 103.8

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-20-90

STACK NO.	114
BUILDING NO.	9212
STACK DIA. OR EQIV.	9X14 (10.96")
STACK AREA (sq.ft.)	0.88

A DISTANCE (upstream)	61.5	C
A DISTANCE(no.of dias.)	5.60	
B DISTANCE (downstream)	70	
B DISTANCE (no.of dias.)	6.40	
MIN.NO.POINTS (A)	25	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		B
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	90	
BAROMETER (ins. hg.)	29.3	A
STATIC PRESSURE(ins.h2o)	-0.05	
ABSOLUTE PRESS.(ins.hg)	29.296	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1		1.4	80	2	0.21	26.4
2		2.8	80	2	0.17	23.7
3		7	80	2	0.14	21.5
4		9.8	80	2	0.12	19.9
5		12.6	80	3	0.09	17.3
6			80	3	0.16	23.0
7			80	2	0.13	20.8
8			80	0	0.12	19.9
9			80	0	0.1	18.2
10			80	2	0.09	17.3
11			80	2	0.13	20.8
12			80	3	0.13	20.8
13			80	3	0.09	17.3
14			80	2	0.09	17.3
15			80	2	0.09	17.3
16			80	2	0.16	23.0
17			80	3	0.12	19.9
18			80	2	0.09	17.3
19			80	3	0.08	16.3
20			80	2	0.07	15.2
21			80	3	0.11	19.1
22			80	2	0.12	19.9
23			80	2	0.09	17.3
24			80	2	0.08	16.3
25			80	2	0.07	15.2

STACK VELOCITY	(fps)	19.2
VOLUMETRIC FLOW RATE	(cfm)	1016.0
NOZZLE VELOCITY	(fps)	19.2

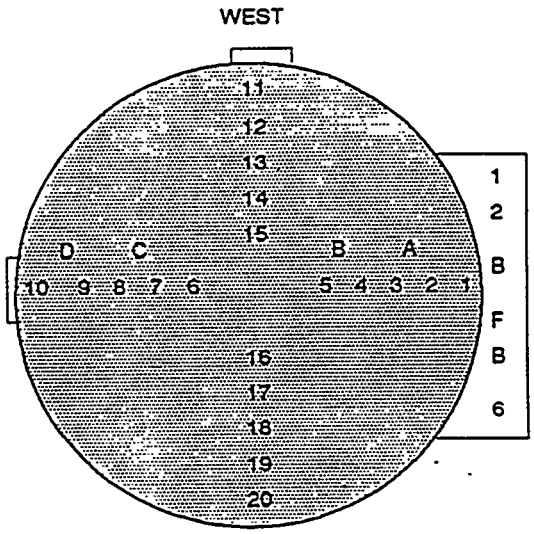
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	116
BLDG. NO.	9206
PROCESS	ROOM 19 PROCESS EXHAUST
SAMPLER NO.	12BFB6
SAMPLER TYPE	BREAKTHRU
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	25.75 INCHES



SKETCH

NOZZLE I D....	A	B	C	D
NOZZLE SIZE.....	0.203	0.156	0.203	0.203
PERCENT STACK DIA FROM WALL....	6.7	25	75	93.3
INCHES FROM STACK WALL....	1.7	6.4	19.3	24
K25 TRAVERSE NO...	2	4	7	9
STACK VELOCITY FT\SEC.....	21.4	22.2	22.9	19.9
NOZZLE VELOCITY FT\SEC.....	20.7	20.7	20.7	20.7
NOZZLE FLOW RATE CFM.....	0.279	0.164	0.279	0.279
PERCENT ISOKIN....	96.5	93.0	90.2	103.8

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 95.9

MARTIN MARIETTA ENERRGY SYSTEM

VELOCITY DATA
Y-12 PLANT

DATE 7-20-90

STACK NO.	116
BUILDING NO.	9206.00
STACK DIA. OR EQIV.	25.75
STACK AREA (sq.ft.)	3.62

	A DISTANCE (upstream)	48.00
	A DISTANCE(no.of dias.)	1.86
	B DISTANCE (downstream)	132.00
	B DISTANCE (no.of dias.)	5.13
	MIN.NO.POINTS (A)	20.00
	MIN.NO. POINTS (B)	12.00
	TOTAL NO. TRAV. POINTS	20.00
	DIRECTION PORT 1	SOUTH
	DIRECTION PORT 2	EAST
	STACK GAS ANALYSIS:	
	PERCENT OXYGEN	20.9%
	PERCENT CARBON DIOXIDE	0.0%
	PERCENT NITROGEN	79.1%
	MOLECULAR WT. (dry)	28.84
	STACK GAS PERCENT MOIST.	1.50
	MOLECULAR WT. (wet)	28.67
	AMBIENT TEMP(deg. F)	90.00
	BAROMETER (ins. hg.)	29.35
	STATIC PRESSURE(ins.h2o)	-0.07
	ABSOLUTE PRESS.(ins.hg)	29.345
	PITOT COEFFICIENT	0.84

	STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
	1	2.60	0.65	76.00	0.00	0.13	20.7
A	2	8.20	2.13	76.00	2.00	0.14	21.4
	3	14.60	3.75	76.00	2.00	0.15	22.2
B	4	22.60	5.80	76.00	0.00	0.15	22.2
	5	34.20	8.75	76.00		0.15	22.2
	6	65.80	16.80	76.00	3.00	0.16	22.9
C	7	77.40	19.80	76.00	2.00	0.16	22.9
	8	85.40	22.00	76.00	0.00	0.14	21.4
D	9	91.80	23.60	76.00	0.00	0.12	19.9
	10	97.40	25.00	76.00	2.00	0.11	19.0
	11	2.60	0.65	76.00	2.00	0.11	19.0
	12	8.20	2.13	76.00	3.00	0.12	19.9
	13	14.60	3.75	76.00	3.00	0.13	20.7
	14	22.60	5.80	76.00	2.00	0.13	20.7
	15	34.20	8.75	76.00	2.00	0.14	21.4
	16	65.80	16.80	76.00	2.00	0.15	22.2
	17	77.40	19.80	76.00	0.00	0.16	22.9
	18	85.40	22.00	76.00	2.00	0.15	22.2
	19	91.80	23.60	76.00	2.00	0.14	21.4
	20	97.40	25.00	76.00	2.00	0.11	19.0

STACK VELOCITY	(fps)	21.4
VOLUMETRIC FLOW RATE	(cfm)	4643.5
NOZZLE VELOCITY	(fps)	20.70

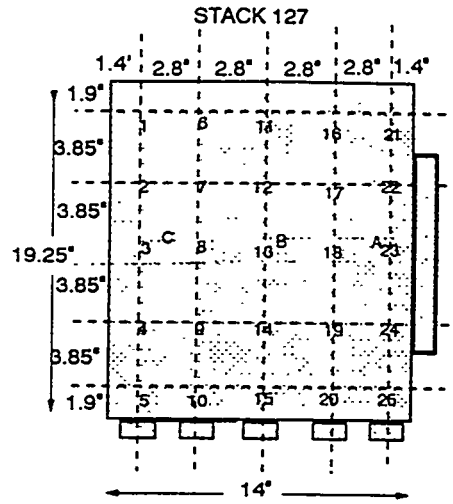
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	127
BLDG. NO.	9825-1
PROCESS DESCRIPTION	U OXIDE STORAGE VAULT
SAMPLER NO.	NO ID
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	14 X 19.25 INCHES



NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.203	0.25	0.203
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	2.0	7.0	12.0
K25 TRAVERSE NO...	23	13	3
STACK VELOCITY FT\SEC.....	23.1	25.5	19.8
NOZZLE VELOCITY FT\SEC.....	21.1	21.1	21.1
NOZZLE FLOW RATE CFM.....	0.284	0.431	0.284
PERCENT ISOKIN....	91.3	82.7	106.5

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 93.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 2-20-91

STACK NO.	127
BUILDING NO.	9825-A
STACK DIA. OR EQIV.	19.25X14
STACK AREA (sq.ft.)	16.20

A DISTANCE (upstream)	59	C
A DISTANCE(no.of dias.)	3.6	
B DISTANCE (downstream)	63	
B DISTANCE (no.of dias.)	3.90	
MIN.NO.POINTS (A)	15	
MIN.NO. POINTS (B)	25	
TOTAL NO. TRAV. POINTS	25	
DIRECTION PORT 1	NORTH	
DIRECTION PORT 2		
STACK GAS ANALYSIS:		B
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5	
MOLECULAR WT. (wet)	28.67	
AMBIENT TEMP(deg. F)	62	
BAROMETER (ins. hg.)	29.35	A
STATIC PRESSURE(ins.h2o)	-0.12	
ABSOLUTE PRESS.(ins.hg)	29.341	
PITOT COEFFICIENT	0.84	

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ftlsec
1		1.4	50	2	0.045	11.9
2		4.2	50	2	0.07	14.8
3		7	50	2	0.126	19.8
4		9.8	49	2	0.17	23.0
5		12.6	50	3	0.23	26.8
6			50	3	0.043	11.6
7			50	2	0.075	15.3
8			50	0	0.13	20.2
9			50	0	0.21	25.6
10			50	2	0.25	28.0
11			50	2	0.07	14.8
12			50	3	0.11	18.5
13			70	3	0.2	25.5
14			50	2	0.27	29.1
15			50	2	0.26	28.5
16			50	1	0.06	13.7
17			51	5	0.12	19.4
18			51	5	0.18	23.7
19			51	0	0.27	29.1
20			51	0	0.3	30.7
21			49	0	0.06	13.7
22			49	2	0.11	18.5
23			50	2	0.17	23.1
24			50	2	0.28	29.6
25			51	2	0.3	30.7

STACK VELOCITY	(fps)	21.8
VOLUMETRIC FLOW RATE	(cfm)	21207.4
NOZZLE VELOCITY	(fps)	21.1

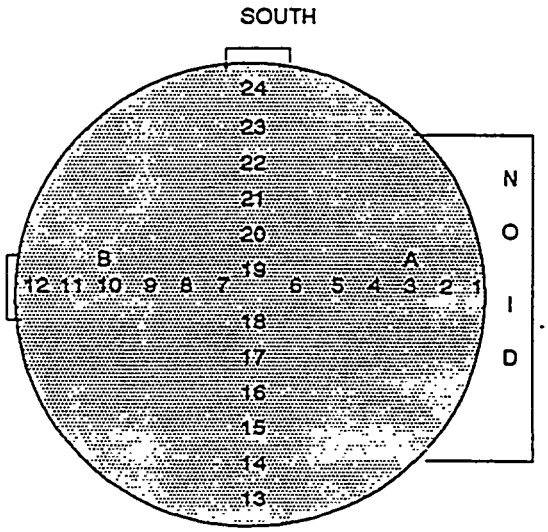
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	128
BLDG. NO.	9212
PROCESS	ROOM 1022 PRECIPITATOR
SAMPLER NO.	NO ID
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12 INCHES



SKETCH

NOZZLE I D....	A	B
NOZZLE SIZE.....	0.187	0.187
PERCENT STACK DIA FROM WALL....	14.6	85.4
INCHES FROM STACK WALL....	1.8	10.2
K25 TRAVERSE NO...	3	10
STACK VELOCITY FT\SEC.....	48	44.8
NOZZLE VELOCITY FT\SEC.....	43.7	43.7
NOZZLE FLOW RATE CFM.....	0.500	0.500
PERCENT ISOKIN....	91.0	97.5

DATE	DEC 90
INITALS	RCR

AVERAGE % ISOKINETIC 94.3

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-23-90

STACK NO.	128
BUILDING NO.	9212
STACK DIA. OR EQIV.	12
STACK AREA (sq.ft.)	0.79

A DISTANCE (upstream)	126	A
A DISTANCE(no.of dias.)	10.5	
B DISTANCE (downstream)	42	
B DISTANCE (no.of dias.)	3.50	
MIN.NO.POINTS (A)	8	
MIN.NO. POINTS (B)	24	
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	EAST	B
DIRECTION PORT 2	SOUTH	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	86
BAROMETER (ins. hg.)	29.3
STATIC PRESSURE(ins.h2o)	-0.3
ABSOLUTE PRESS.(ins.hg)	29.278
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCLON. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	0.5	75	2	0.68	47.3
2	6.7	0.75	75	2	0.7	48.0
3	11.8	1.25	75	0	0.7	48.0
4	17.7	2.125	75	2	0.67	46.9
5	25	3	75	3	0.64	45.9
6	35.6	4.25	75	3	0.61	44.8
7	64.4	7.75	75	2	0.69	47.6
8	75	9	75	0	0.69	47.6
9	82.3	9.75	75	0	0.64	45.9
10	88.2	10.5	75	2	0.61	44.8
11	93.3	11.25	75	2	0.57	43.3
12	97.9	11.5	75	3	0.56	42.9
13	2.1	0.5	75	3	0.53	41.7
14	6.7	0.75	75	2	0.51	40.9
15	11.8	1.75	75	2	0.49	40.1
16	17.7	2.125	75	4	0.46	38.9
17	25	3	75	4	0.44	38.0
18	35.6	4.25	75	4	0.45	38.5
19	64.4	7.75	75	0	0.55	42.5
20	75	9	75	0	0.6	44.4
21	82.3	9.75	75	2	0.61	44.8
22	88.2	10.5	75	2	0.57	43.3
23	93.3	11.25	75	3	0.51	40.9
24	97.9	11.5	75	3	0.51	40.9
25						

STACK VELOCITY	(fps)	41.9
VOLUMETRIC FLOW RATE	(cfm)	1975.2
NOZZLE VELOCITY	(fps)	43.6

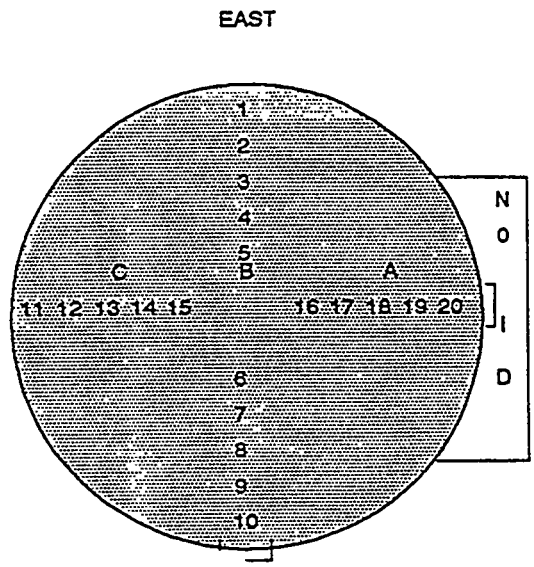
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTIN MARIETTA ENERGY SYSTEMS

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	130
BLDG. NO.	9720-5
PROCESS	PU SMEAR HOOD EXHAUST
SAMPLER NO.	NO ID
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	12.5 INCHES



SKETCH

NOZZLE I D....	A	B	C
NOZZLE SIZE.....	0.25	0.25	0.25
PERCENT STACK DIA FROM WALL....	14.6	50	85.4
INCHES FROM STACK WALL....	1.8	6.3	10.7
K25 TRAVERSE NO...	3	5	8
STACK VELOCITY FT\SEC.....	18.2	16.3	16.3
NOZZLE VELOCITY FT\SEC.....	16.3	16.3	16.3
NOZZLE FLOW RATE CFM.....	0.333	0.333	0.333
PERCENT ISOKIN....	89.5	100.0	100.0

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 96.5

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-21-90

STACK NO.	130
BUILDING NO.	9720-5
STACK DIA. OR EQIV.	12.5
STACK AREA (sq.ft.)	0.85

A DISTANCE (upstream)	52	A
A DISTANCE(no.of dias.)	4.16	
B DISTANCE (downstream)	66	B
B DISTANCE (no.of dias.)	5.28	
MIN.NO.POINTS (A)	8	
MIN.NO. POINTS (B)	20	C
TOTAL NO. TRAV. POINTS	20	
DIRECTION PORT 1	SOUTH	
DIRECTION PORT 2	EAST	
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	79
BAROMETER (ins. hg.)	29.5
STATIC PRESSURE(ins.h2o)	-0.04
ABSOLUTE PRESS.(ins.hg)	29.497
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCL. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.6	0.5	85	2	0.11	19.1
2	8.2	1.2	85	2	0.11	19.1
3	14.6	1.8	85	2	0.1	18.2
4	22.6	2.8	85	2	0.08	16.3
5	34.2	4.27	85	3	0.08	16.3
6	65.8	8.25	85	3	0.08	16.3
7	77.7	9.75	85	2	0.08	16.3
8	85.4	10.5	85	0	0.08	16.3
9	91.8	11.5	85	0	0.07	15.3
10	97.4	12	86	2	0.07	15.3
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

STACK VELOCITY	(fps)	16.9
VOLUMETRIC FLOW RATE	(cfm)	861.7
NOZZLE VELOCITY	(fps)	16.3

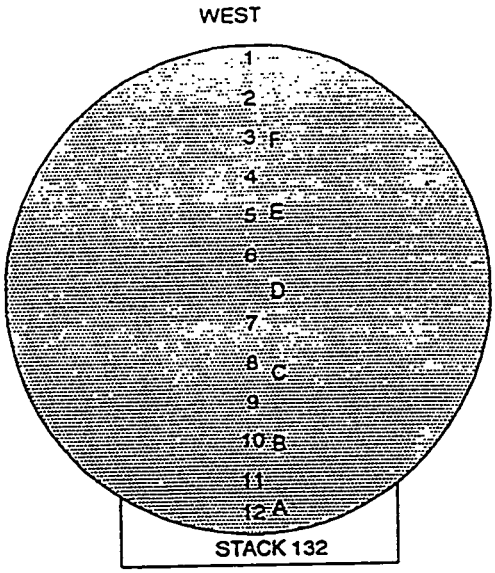
PITOT WAS LEAKED TESTED AT 3" OF h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST.
NOZZLES ARE LETTERED TO INDICATE THEIR LOCATION IN THE STACK.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTN MARIETTA ENERGY S

Y-12 PLANT RADIOLOGICAL STACK SAMPLER PROBE
NOZZLE CALCULATION SHEET

STACK NO.	132
BLDG. NO.	9212
PROCESS	DECONTAMINATION FACILITY
SAMPLER NO.	NO ID
SAMPLER TYPE	CONTINUOUS
SAMPLE FLOW RATE CFM	1
STACK DIAMETER	37.75 INCHES



NOZZLE I D....	A	B	C	D	E	F
NOZZLE SIZE.....	0.152	0.152	0.152	0.152	0.187	0.152
PERCENT STACK DIA FROM WALL....	4.6	19.9	35.0	50.0	66.0	84.0
INCHES FROM STACK WALL....	1.7	7.5	13.2	18.9	24.9	31.7
K25 TRAVERSE NO...	12	10	8	7	5	3
STACK VELOCITY FT\SEC.....	15.1	17.1	18	20.5	27.9	32.7
NOZZLE VELOCITY FT\SEC.....	20.3	20.3	20.3	20.3	20.3	20.3
NOZZLE FLOW RATE CFM.....	0.154	0.154	0.154	0.154	0.232	0.154
PERCENT ISOKIN....	134.5	118.7	112.8	99.1	72.8	62.1

DATE DEC 90

INITALS RCR

AVERAGE % ISOKINETIC 100.0

MARTIN MARIETTA ENERGY SYSTEMS

VELOCITY DATA
Y-12 PLANT

DATE 7-20-90

STACK NO.	132
BUILDING NO.	9212
STACK DIA. OR EQIV.	37.75
STACK AREA (sq.ft.)	7.77

A DISTANCE (upstream)	96	F
A DISTANCE(no.of dias.)	2.54	
B DISTANCE (downstream)	75	E
B DISTANCE (no.of dias.)	1.99	
MIN.NO.POINTS (A)	12	D
MIN.NO. POINTS (B)	24	C
TOTAL NO. TRAV. POINTS	24	
DIRECTION PORT 1	EAST	B
DIRECTION PORT 2		
		A
STACK GAS ANALYSIS:		
PERCENT OXYGEN	20.9%	
PERCENT CARBON DIOXIDE	0.0%	
PERCENT NITROGEN	79.1%	
MOLECULAR WT. (dry)	28.84	

STACK GAS PERCENT MOIST.	1.5
MOLECULAR WT. (wet)	28.67
AMBIENT TEMP(deg. F)	66
BAROMETER (ins. hg.)	29.35
STATIC PRESSURE(ins.h2o)	-0.12
ABSOLUTE PRESS.(ins.hg)	29.341
PITOT COEFFICIENT	0.84

STACK POINT NO.	% STACK DIA.	INCHES FROM WALL	STACK TEMP (fht)	CYCL. FLOW (degs)	DELTA P ins. (h2o)	VELOCITY ft\sec
1	2.1	0.79	69	0	0.35	33.7
2	6.7	2.51	69	0	0.36	34.2
3	11.8	4.45	69	0	0.33	32.7
4	17.7	6.68	69	0	0.29	30.7
5	25	9.42	69	0	0.24	27.9
6	35.6	13.43	69	0	0.22	26.7
7	64.4	24.31	69	0	0.13	20.5
8	75	28.31	69	0	0.1	18.0
9	82.3	31.66	69	0	0.1	18.0
10	88.2	33.29	69	2	0.09	17.1
11	93.3	35.22	69	2	0.08	16.1
12	97.9	36.95	69	3	0.07	15.1
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

STACK VELOCITY	(fps)	24.2
VOLUMETRIC FLOW RATE	(cfm)	11295.3
NOZZLE VELOCITY	(fps)	22

PITOT WAS LEAKED TESTED AT 3" h2o FOR 15 SECONDS BEFORE AND AFTER THE TEST
NOZZLES ARE LETTERED TO CORRESPOND TO THE STACK NUMBERS IN WHICH THEY ARE LOCATED.

TECHNICIANS: *RIGGS, HILD, GODDARD*

MARTN MARIETTA ENERGY S

APPENDIX A

QUALITY ASSURANCE FOR REDRILLED NOZZLES

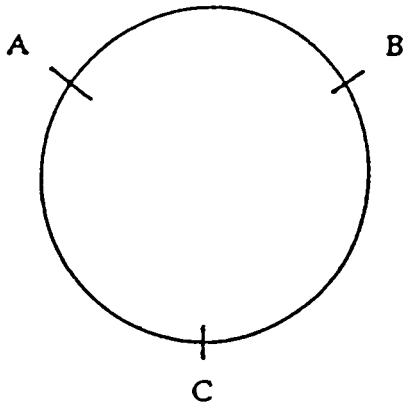
There was a total of 222 of the existing nozzles that were redrilled at the Y-12, 9201-1 Machine Shop. Forty of these nozzles were randomly selected for measurements which was performed by the K-25 Dimensional Inspection Group. The results of these measurements are indicated in this section.

NOZZLE MEASUREMENT

NOZZLE NO. # 1 NOZZLE SIZE .125

CALIBRATED BY: J.O.E. DATE 2-12-91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1271

B. .1273

C. .1274

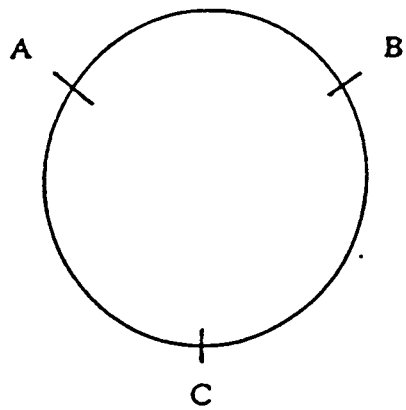
AVERAGE NOZZLE DIAMETER

| .1273 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 2 NOZZLE SIZE .125

CALIBRATED BY: J.a.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1274

B. .1279

C. .1278

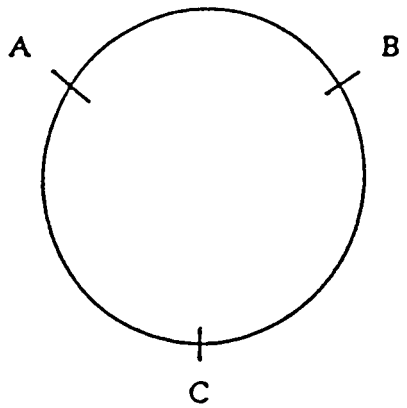
AVERAGE NOZZLE DIAMETER

| .1277 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 3 NOZZLE SIZE .125

CALIBRATED BY: J.a.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1279

B. .1275

C. .1277

AVERAGE NOZZLE DIAMETER

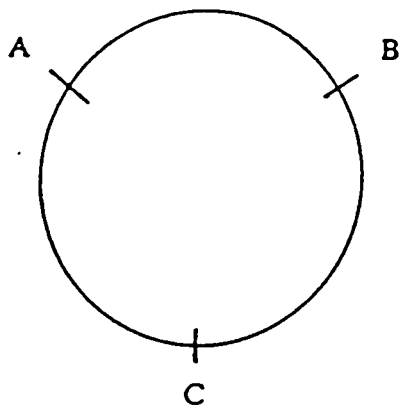
| .1277 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 4 NOZZLE SIZE .125

CALIBRATED BY: J.a.E. DATE 2/12/91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1271

B. .1270

C. .1272

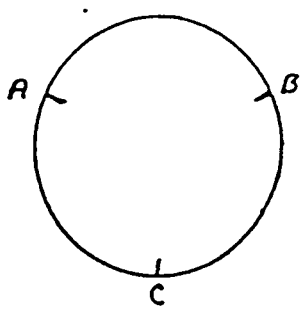
AVERAGE NOZZLE DIAMETER

.1271 *inches*

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 "A" NOZZLE SIZE 1/4

CALIBRATED BY E [illegible] (31) DATE 11-20-90



DIAMETER IN INCHES

A. .1525

B. .1526

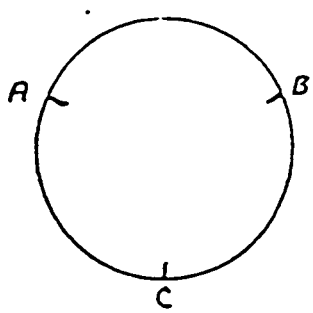
C. .1526

AVERAGE NOZZLE DIAMETER .1526

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 "B" NOZZLE SIZE 1/4

CALIBRATED BY E. Stewart DATE 11-20-90



DIAMETER IN INCHES

A. .1524

B. .1526

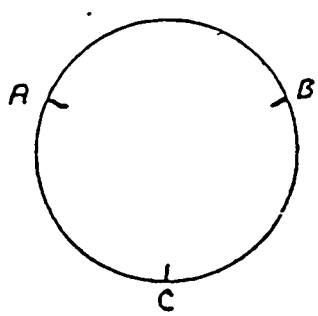
C. .1525

AVERAGE NOZZLE DIAMETER .1525

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 ("A") NOZZLE SIZE 1/4"

CALIBRATED BY 31-29 E [illegible] DATE 12-19-90



DIAMETER IN INCHES

A. .1526

B. .1525

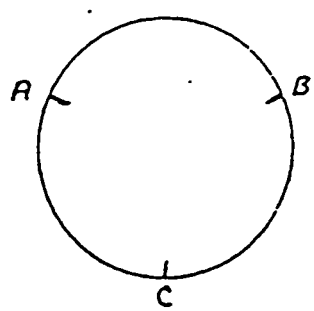
C. .1527

AVERAGE NOZZLE DIAMETER .1526

NOZZLE MEASUREMENT

NOZZLE NUMBER 10257-1 ("B") NOZZLE SIZE 1/4"

CALIBRATED BY 31-29 E. [illegible] DATE 12-19-90



DIAMETER IN INCHES

A. .1520

B. .1522

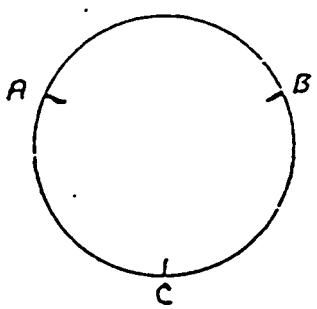
C. .1521

AVERAGE NOZZLE DIAMETER .1521

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 "C" NOZZLE SIZE 1/4

CALIBRATED BY 31-267 [illegible] DATE 12-Aug-[illegible]



DIAMETER IN INCHES

A. .1524

B. .1527

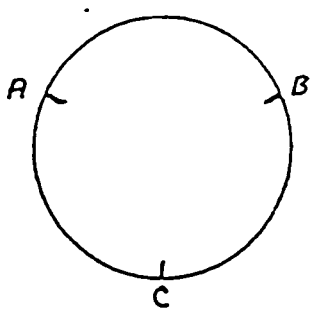
C. .1527

AVERAGE NOZZLE DIAMETER .1526

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 "D" NOZZLE SIZE 1/4"

CALIBRATED BY 31-49 [illegible] DATE 12-19-90



DIAMETER IN INCHES

A. .1516

B. .1517

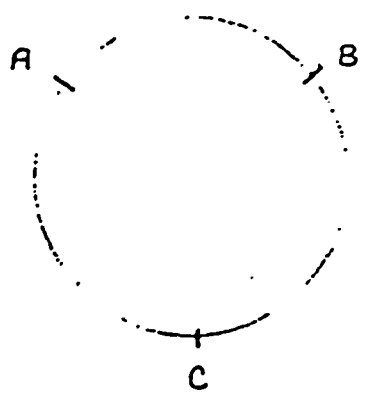
C. .1518

AVERAGE NOZZLE DIAMETER .1519

NOZZLE MEASUREMENT

NOZZLE NUMBER 10257/-1 "F" NOZZLE SIZE 1/4

CALIBRATED BY [illegible] DATE 12/20/90



DIAMETER IN INCHES

A. .1522

B. .1523

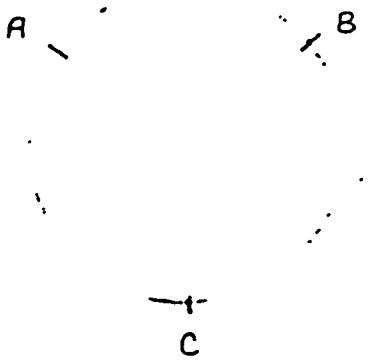
C. .1524

AVERAGE NOZZLE DIAMETER .1523

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 "G" NOZZLE SIZE 1/4

CALIBRATED BY [illegible] DATE 12/20/90



DIAMETER IN INCHES

A. .1514

B. .1513

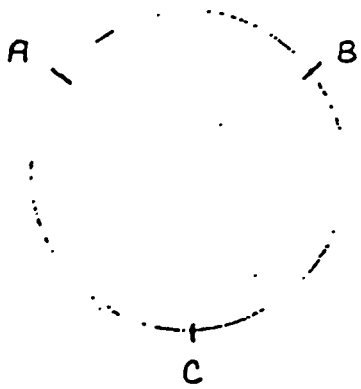
C. .1515

AVERAGE NOZZLE DIAMETER .1514

NOZZLE MEASUREMENT

NOZZLE NUMBER 10257/-1 "H" NOZZLE SIZE Kp

CALIBRATED BY 29/9 Pendunian DATE 12/20/90



DIAMETER IN INCHES

A. .1519

B. .1521

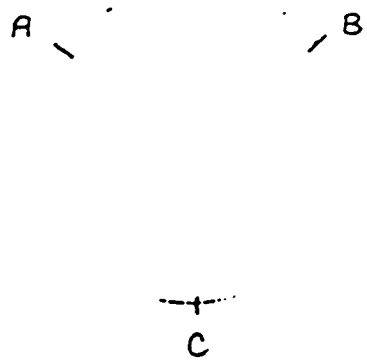
C. .1520

AVERAGE NOZZLE DIAMETER .1520

NOZZLE MEASUREMENT

NOZZLE NUMBER 102571-1 "I" NOZZLE SIZE 1/4

CALIBRATED BY 29/7 DATE 12/20/90



DIAMETER IN INCHES

A. .1516

B. .1518

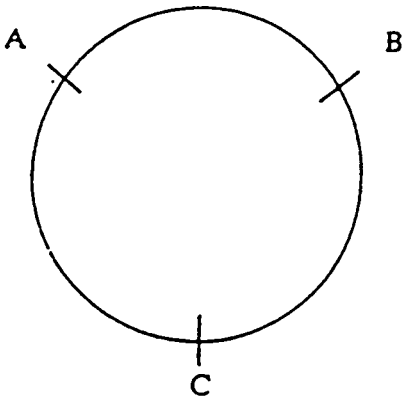
C. .1517

AVERAGE NOZZLE DIAMETER .1518

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "A" NOZZLE SIZE 1/4

CALIBRATED BY: E [illegible] DATE 1-11-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1543

B. .1530

C. .1537

AVERAGE NOZZLE DIAMETER

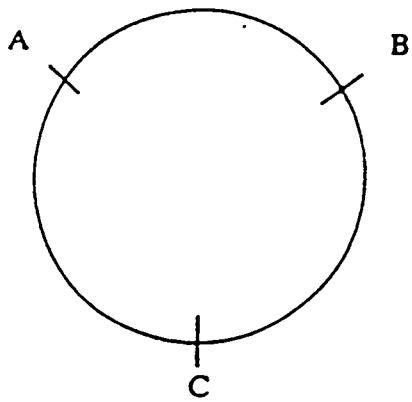
| .1536 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "D" NOZZLE SIZE 1/4"

CALIBRATED BY: E. [illegible] DATE 1-11-91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1535

B. .1528

C. .1535

AVERAGE NOZZLE DIAMETER

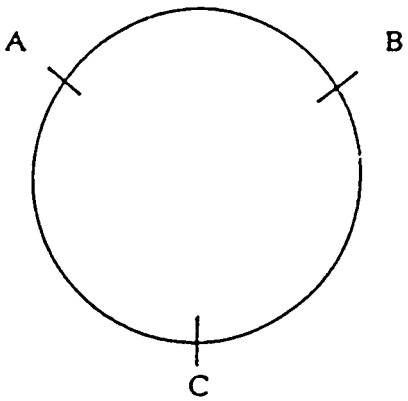
| .1532 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 102574-1 "F" NOZZLE SIZE 1/4"

CALIBRATED BY: [illegible] DATE 1/11/91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1526

B. .1528

C. .1520

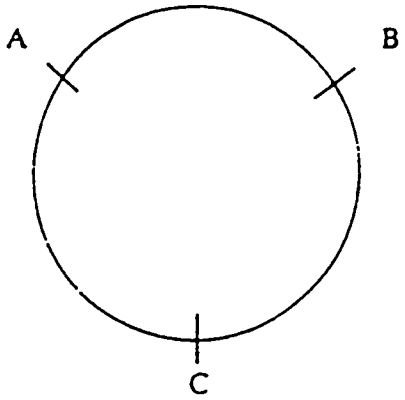
AVERAGE NOZZLE DIAMETER

| .1525 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "G" NOZZLE SIZE 1/4"

CALIBRATED BY: C. [illegible] DATE 1-11-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1517

B. .1524

C. .1523

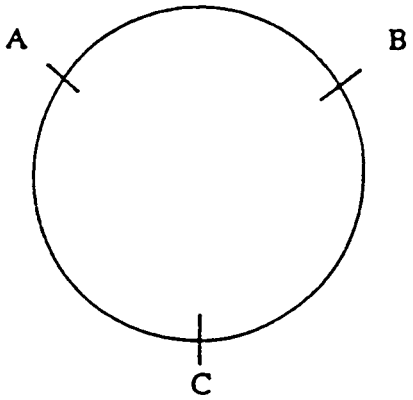
AVERAGE NOZZLE DIAMETER

| .1521 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "H" NOZZLE SIZE 1/4"

CALIBRATED BY: E. [illegible] DATE 1-11-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1528

B. .1519

C. .1511

AVERAGE NOZZLE DIAMETER

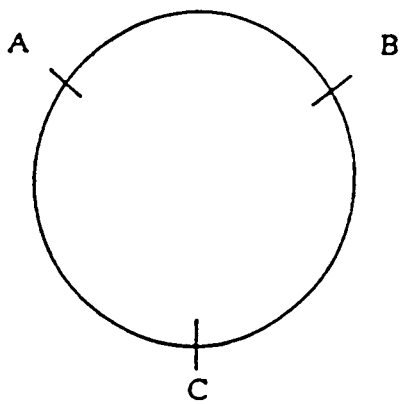
| .1519 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "I" NOZZLE SIZE 1/4"

CALIBRATED BY: [illegible] DATE 1/11/91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1523

B. .1514

C. .1525

AVERAGE NOZZLE DIAMETER

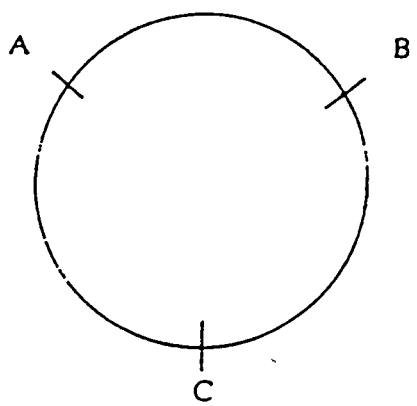
| .1520 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "XX" NOZZLE SIZE 1/4"

CALIBRATED BY: [illegible] DATE 1/6/91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1529

B. .1534

C. .1533

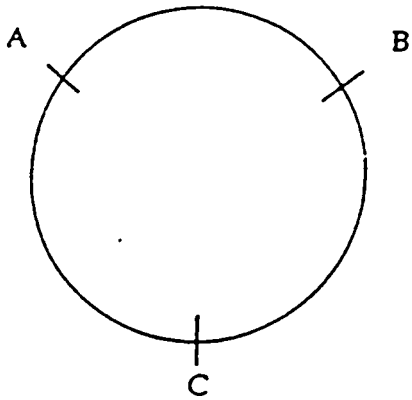
AVERAGE NOZZLE DIAMETER

| .1532 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 "22" NOZZLE SIZE 1/4"

CALIBRATED BY: E. [illegible] DATE 1-11-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1497

B. .150

C. .1526

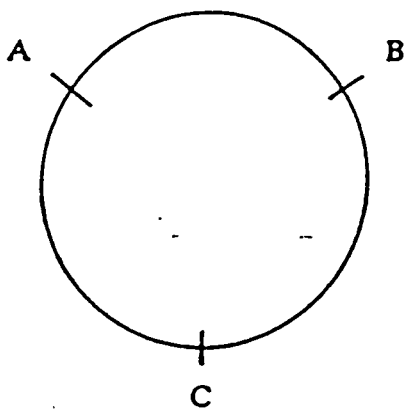
AVERAGE NOZZLE DIAMETER

| .1507 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 pT.1 NOZZLE SIZE 1/4"

CALIBRATED BY: E. R. D. DATE 3-4-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1858

B. .1859

C. .1863

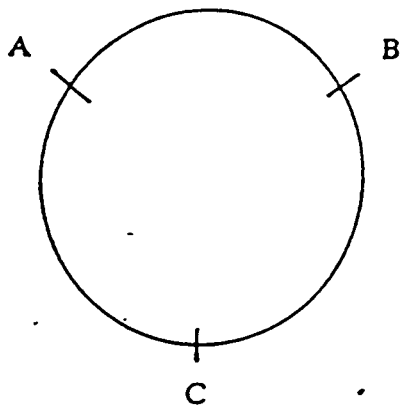
AVERAGE NOZZLE DIAMETER

| .1860 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 102571-1 PT. 2 NOZZLE SIZE 1/4

CALIBRATED BY: E. L. S. DATE 3-4-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1865

B. .1863

C. .1854

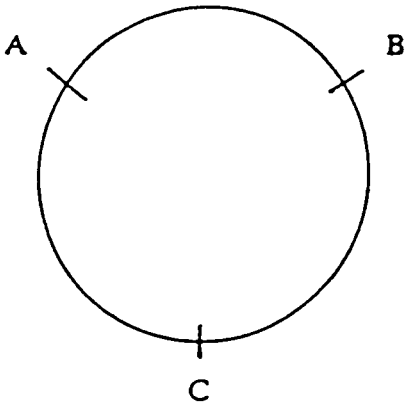
AVERAGE NOZZLE DIAMETER

| .1860 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 1 NOZZLE SIZE .187

CALIBRATED BY: J.A.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1884

B. .1881

C. .1882

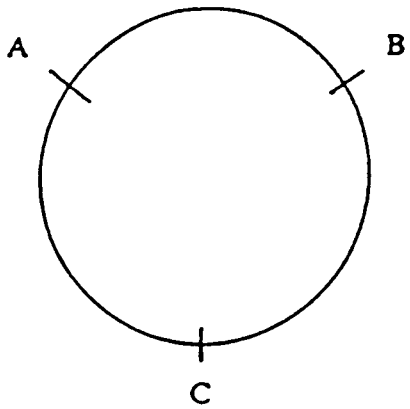
AVERAGE NOZZLE DIAMETER

| .1882 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 2 NOZZLE SIZE .187

CALIBRATED BY: J.A.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .1864

B. .1868

C. .1866

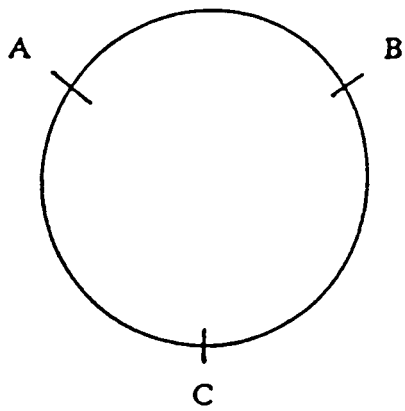
AVERAGE NOZZLE DIAMETER

| .1866 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 1 NOZZLE SIZE .203

CALIBRATED BY: J.A.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2025

B. .2037

C. .2039

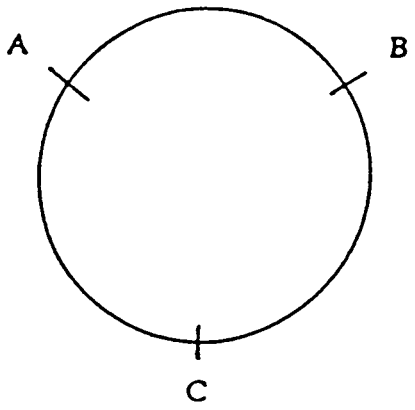
AVERAGE NOZZLE DIAMETER

| .2034 inches |

NOZZLE MEASUREMENT

NOZZLE NO. 2 NOZZLE SIZE .203

CALIBRATED BY: JAE DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A .2027

B. .2029

C .2029

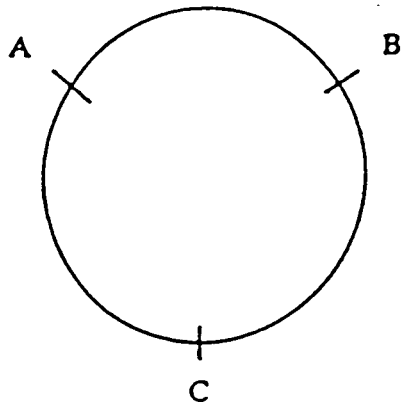
AVERAGE NOZZLE DIAMETER

| .2028 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 3 NOZZLE SIZE .203

CALIBRATED BY: J.A.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2029

B. .2035

C. .2032

AVERAGE NOZZLE DIAMETER

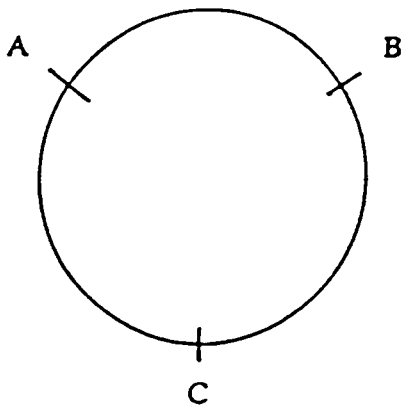
| .2032 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 1 NOZZLE SIZE .250

CALIBRATED BY: J.E. DATE 2/12/91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A .2497

B. .2501

C .2503

AVERAGE NOZZLE DIAMETER

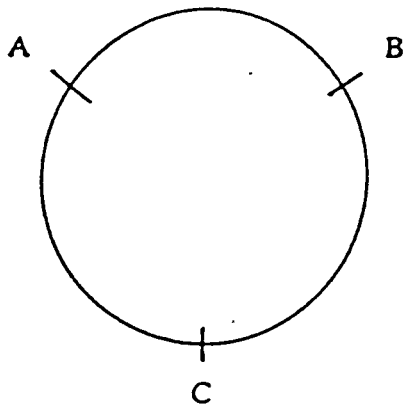
| .2500 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 2 NOZZLE SIZE .250

CALIBRATED BY: [illegible] DATE 2/12/91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A .2498

B. .2503

C .2502

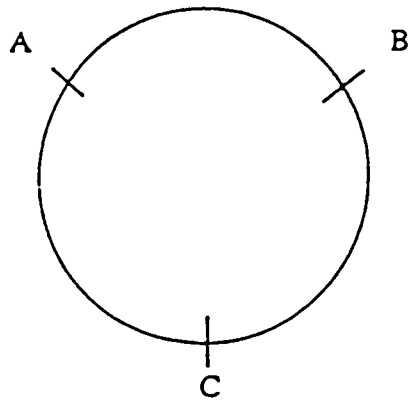
AVERAGE NOZZLE DIAMETER

.2501 *inches*

NOZZLE MEASUREMENT

NOZZLE NO. 102572-2 "A" NOZZLE SIZE 3/8"

CALIBRATED BY: E. R. R DATE 1-22-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2784

B. .2778

C. .2772

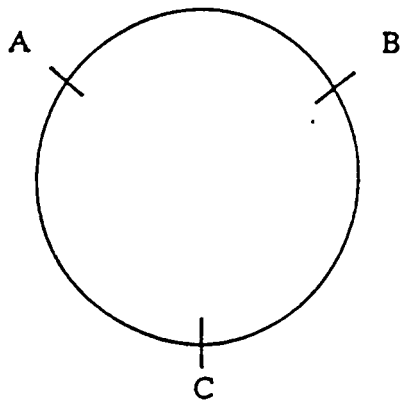
AVERAGE NOZZLE DIAMETER

| .2778 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 102572-2 "B" NOZZLE SIZE 3/8"

CALIBRATED BY: E. R. R. DATE 1-22-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2775

B. .2775

C. .2777

AVERAGE NOZZLE DIAMETER

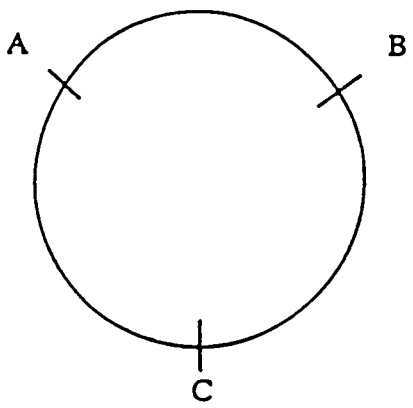
| .2775 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 102572-2"C" NOZZLE SIZE 3/8"

CALIBRATED BY: E.P.L DATE 1-22-91

SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2767

B. .2775

C. .2762

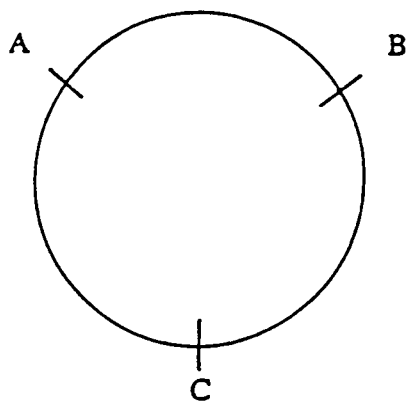
AVERAGE NOZZLE DIAMETER

| .2768 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 102572-2 "D" NOZZLE SIZE 3/8"

CALIBRATED BY: E L L DATE 1-22-91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2764

B. .2766

C. .2762

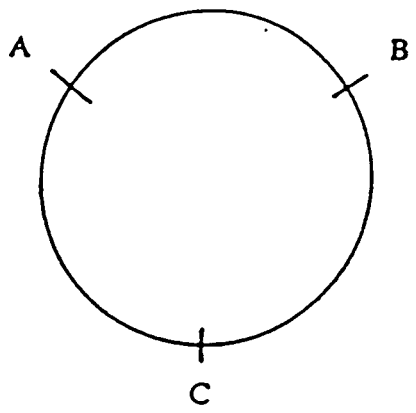
AVERAGE NOZZLE DIAMETER

| .2764 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 1 NOZZLE SIZE .277

CALIBRATED BY: J.A.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A .2776

B. .2771

C. .2774

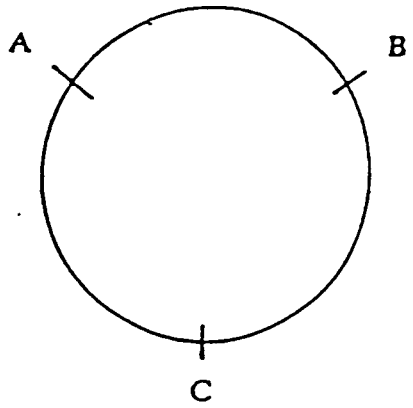
AVERAGE NOZZLE DIAMETER

| .2774 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 2 NOZZLE SIZE .277

CALIBRATED BY: J.A.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A .2773

B. .2778

C. .2774

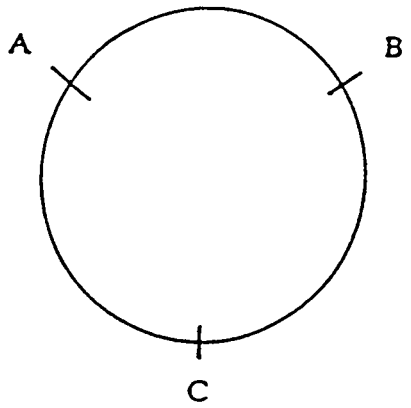
AVERAGE NOZZLE DIAMETER

.2775 *inches*

NOZZLE MEASUREMENT

NOZZLE NO. 3 NOZZLE SIZE .277

CALIBRATED BY: J.a.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2769

B. .2772

C. .2770

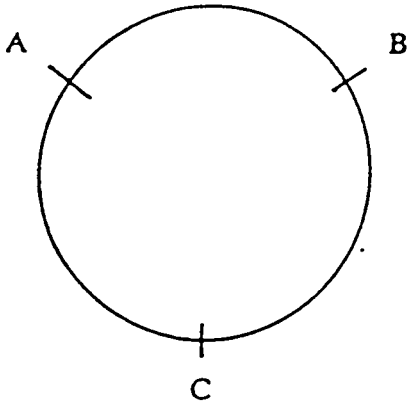
AVERAGE NOZZLE DIAMETER

| .2770 *inches* |

NOZZLE MEASUREMENT

NOZZLE NO. 4 NOZZLE SIZE .277

CALIBRATED BY: J.a.E. DATE 2/12/91
SIGNATURE or INITIALS



INSIDE DIAMETER IN INCHES

A. .2775

B. .2769

C. .2776

AVERAGE NOZZLE DIAMETER

.2773 *inches*

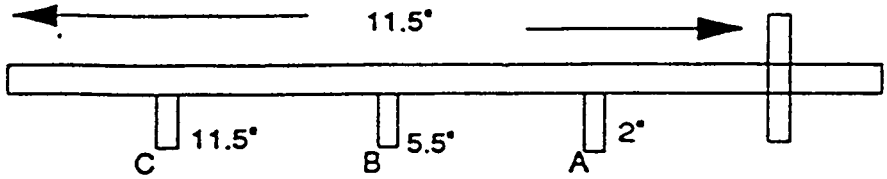
APPENDIX B

PROBE MODIFICATIONS AND FABRICATION

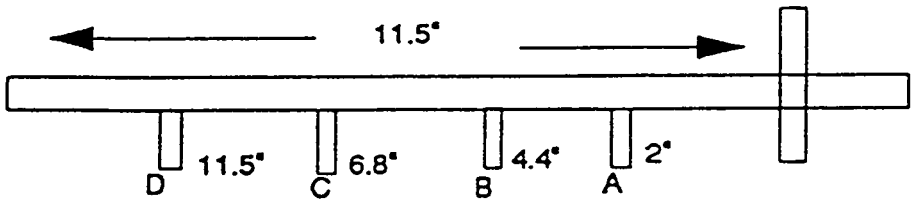
Modifications were required for some the probes. Some probes needed additional nozzles, while others needed to have some nozzles removed. Five probes were removed from stack that had discontinued operation and were modified for other stacks. Two probes were modified for each of stacks 25, 48, 53, 56, 72, and 111. A spare probe was fabricated for stacks 11 and 13. A total of 17 probes were modified and two probes were newly fabricated. The modifications and fabrication work were performed by Y-12 maintenance personnel at the 9212 Maintenance Shop. All welds were dye checked by welding inspectors at Y-12. Probe modifications sketches are located in this section.

MODIFIED PROBES

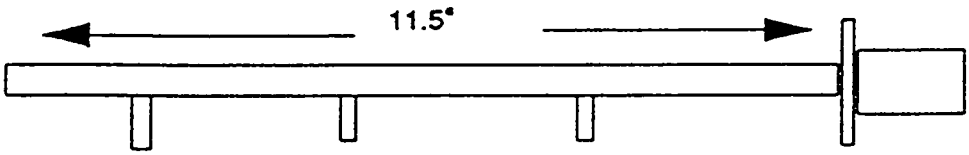
PROBE 25 OLD STATUS



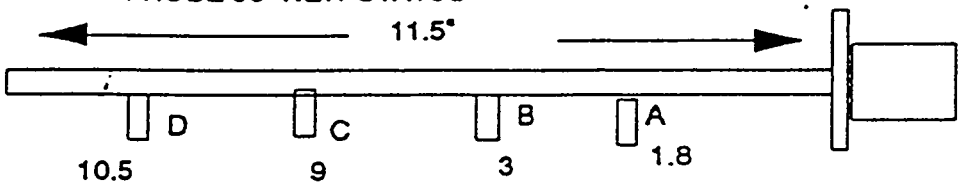
PROBE 25 NEW STATUS



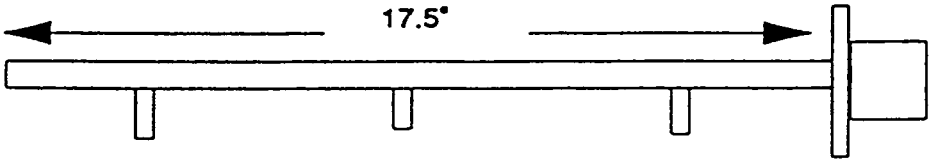
PROBE 53 "OLD STATUS"



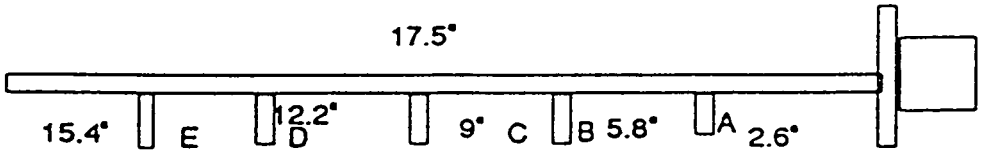
PROBE 53 "NEW STATUS"



PROBE 56 "OLD STATUS"



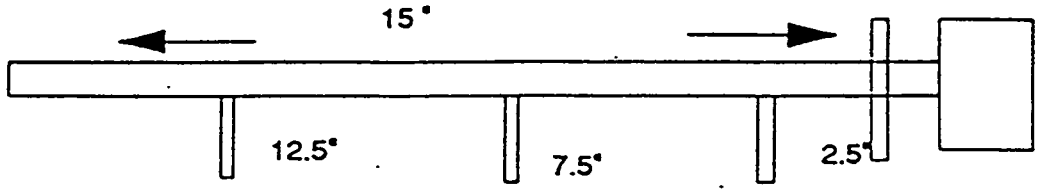
PROBE 56 "NEW STATUS"



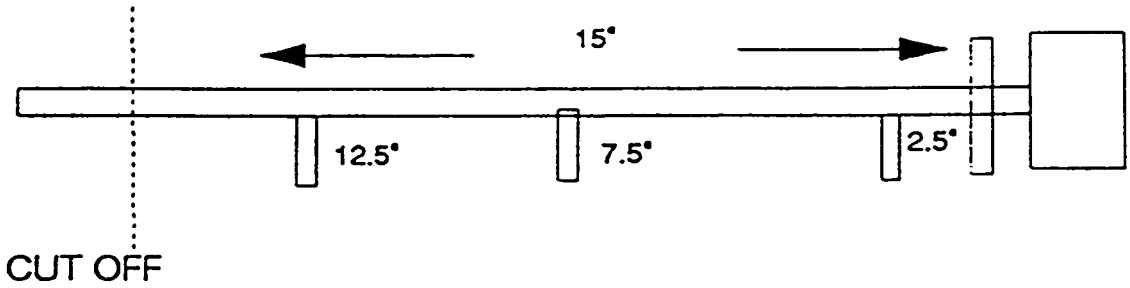
PROBE 82 GOES IN STACK 130

PROBE IN 130 IS SPARE FOR STACK 26

PROBE 130

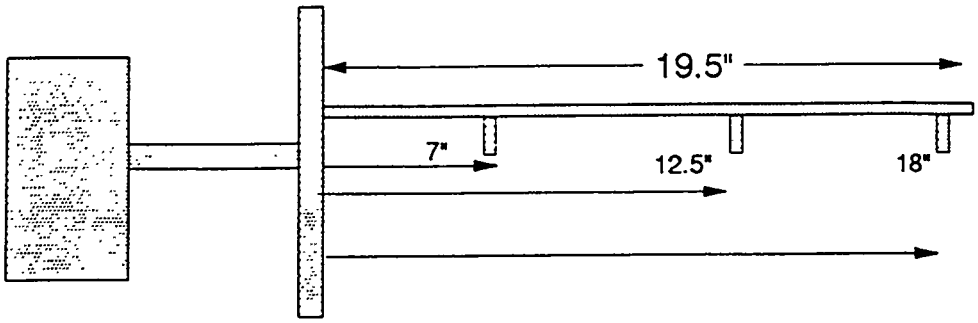


PROBE 82 (2 PROBES)



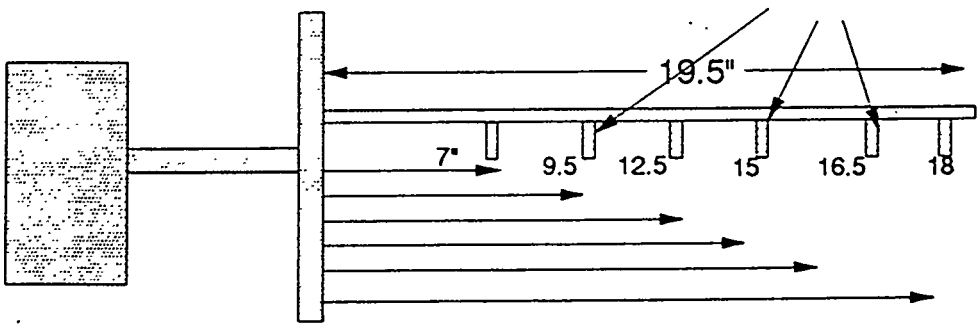
PROBE 90

PRESENT STATUS



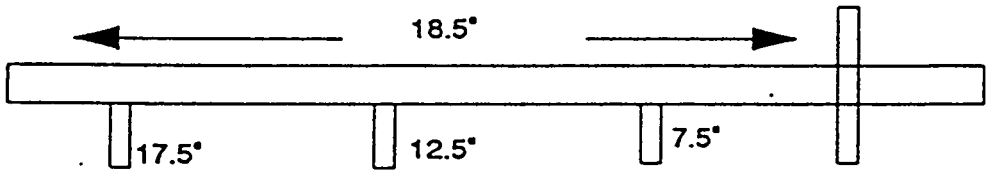
PROBE 90

ADD NIPPLES



RC RIGGS

PROBE 24



SPARE PROBE FOR STACK 92 USED AT STACK 24

DISTRIBUTION

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