SOLID STATE SCIENTIFIC

SOLID STATE SCIENTIFIC, INC.

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May 21, 1985

United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Gentlemen:

Subject: Inspection No. 30-14499/85-01
Reference: License No. 37-18113-01

In response to the discrepancy noted on the above mentioned inspection report, we would like to submit the following corrective action information:

> "Adequate surveys or evaluations were not made of the concentrations of radioactive materials on the effluent air discharged from the Tracer-flo unit for the period between June 1, 1984 and December 6, 1984."

As was explained to Mrs. T. H. Darden during her visit on January 14, 1985; Solid State Scientific was bought by the Penn Central Corp. on May of 1984. Subsequently, all personnel involved with the department utilizing the radioactive Tracer-flo equipment were no longer associated with the company including the director of operations, department manager, process engineer, and the RSO who was in charge of taking the gas samples and calculating the data. As such, no gas samples were taken until I was trained to be RSO in December 1984. Our operating specification has been revised to document the fact that a monthly gas sample be taken so this type of situation will not recur in the future.

Upon receiving my training, I immediately resumed responsibility for taking samples and keeping appropriate records as well as reviewing existing files. Enclosed you will find my corrected continuous discharge data for 1983 and 1984. I checked the mathmatics and all corrections are noted. Because several data points were missing and others questionable due to sampling procedures, I produced a graph of Ci loss per month for the last 2 years of data to smooth out the effects of the extraneous data and extrapolate where data was missing. (see Figure 1)

From the graph it can be seen that the calculated value of 13.01 curies seems reasonable for 1-17-84 but the value 9.38 for 1-13-85 seems high. In figuring the concentration of effluents released from 1-17-84 to 1-13-85 I used the interpolated value of 7.75 as worse case which gives a total loss of 5.26 curies. This value produces a worse case concentration of 1.07×10^{-7} µCi/ml air for 1984, well below the 3.0×10^{-7} limit.

As for the volume of air flow in the exhaust stack, air velocity readings were taken using a calibrated Kurz Air Velocity Meter, Model 441. Four readings were taken across the 24 inch diameter pipe approximately 12 inches from the top of the flue. The velocities ranged from 1100 to 1400 ft/min with an average of 1300 ft/min. This corresponds to an air flow of 4000 ft^3/min, a value well above the 3350 ft^3/min used for our calculations. We will continue to use 3350 ft^3/min as a guard band in our calculations.

All corrective actions outlined in this letter were completed as of 5-10-85.

Sincerely yours,
SPRAGUE SOLID STATE

Dale Luders

Dale Luders
RSO

DL/meg

UNIVERSAL PLANNING FORM

Date	days	μCi Std.	C/M std	CPM sample	Store Press (atm)	S	Ci added	Ci loss	Ci bal	air flow CFM	CD month (10^{-7})	CD 12 mo	Max MPC
													3×10^{-7}
1-26-83	35	3.97	36K	17K	10.4	229.7	—	0.80	11.94	2250	2.49		
3-1-83	34	3.96	37K	17K	10.4	222.9	—	0.35	11.59	2250	1.12		
3-23-83	22	3.94	36.5K	22.2K	6.46	294.1	—	2.09	9.50	2250	10.36		
4-12-83	17	3.92	34.9K	26.1K	10.48	359.4	9.33	—	18.83	2250	—		
5-16-83	34	3.90	37.8K	24.4K	10.20	335.8	—	1.70	17.13	2250	5.45		
6-15-83	31	3.87	35.1K	24.4K	10.48	346.0	—	+1.00	18.13	2250			
7-15-83	30	3.85	36.2K	25.8K	10.27	336.0	—	1.12	17.25	2250	4.07		
8-15-83	31	3.83	35.0K	24.5K	10.20	328.6	—	0.55	16.70	3350	1.30		
9-19-83	35	3.81	36.5K	25K	10.13	309.8	—	1.00	15.70	3350	2.09		
10-15-83	26	3.79	35.5K	23K	10.20	300.5	—	0.40	15.30		V.13		
11-16-83	31	3.77	35K	21K	10.14	277.2	—	1.25	14.05		2.95		
12-16-83	30	3.75	34.5K	19K	10.20	253.2	—	1.14	12.91		2.78		
1-17-84	32	3.73	33.9K	19.3K	10.0	260.3	—	+0.10	13.01			2.03	
2-15-84	29	3.71	30.5K	17K	10.0	253.4	—	0.34	12.67		0.86		
3-15-84	28	3.69	30.3K	16.3K	9.8	243.3	—	0.75	11.92		1.96		
4-24-84	40	3.67	29.1K	14.8K	9.5	229.7	—	1.01	10.91		1.85		
5-31-84	37	3.65	26.3K	14.4K	9.25	245.5	—	+0.44	11.35				
12-7-84	188	3.52	28.5K	16.5K	9.80	249.9	—	+0.89	12.24				
1-13-85	37	3.50	29.0K	13.5K	9.39	199.9	—	2.86	9.38		5.66	0.74	

$$CD = \frac{\mu Ci}{ml.\ Air} = \frac{\mu Ci\ loss\ (Ci\ loss \times 10^6)}{(Air\ Flow\ Ft^3/min)(2.83\times10^4\ ml/Ft^3)(1440\ min/day)(Days)}$$

Operating Unit: Corrected Data

Prepared By: Dale Seiders

Date: 1-12-85

7/17/80

diff. # than log book

	DATE	DAYS	µCi Std.	CPM Std.	CPM Sample	Store Press. (ATM)	S	Ci Added	Ci Bal.	Ci Loss (month)	CD Month ($x10^{-7}$)	Ci Loss YTD	Days YTD	CD YTD ($x10^{-7}$)
1	1-13-85	37	3.50	29.0K	13.5K	9.39	199.9	—	9.38	2.86	5.66	3.63	361	0.74
2	2-22-85	40	3.48	28.0K	10.5K	9.25	160.1	—	7.41	1.97	3.61	1.97	40	3.61
3	3-4-85	10	3.48	28.0K	9.3K	10.20	141.8	—	7.23	0.18	1.32	2.15	50	3.15
4	4-11-85	38	3.45	28.0K	8.6K	9.25	129.8	—	6.00	1.23	2.37	3.38	88	2.81
5	5-7-85	26	3.42	28.5K	9.0K	8.98	132.7	—	5.96	0.04	0.11	3.42	114	2.20
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$$CD = \frac{\mu Ci}{ml.\ Air} = \frac{Ci\ Loss \times 10^6}{(3350\ Ft^3/min)(2.83 \times 10^4\ ml/Ft^3)(1440\ min/day)(\#\ Days)} = \frac{Ci\ Loss}{\#\ Days}(7.325 \times 10^{-6})$$

OPERATING UNIT:

PREPARED BY: Dale Suders

DATE: 2-22-85

UNIVERSAL PLANNING FORM

TRACER - C10 CONTROL DATA

DATE		μCi STD.	C/M STD.	C/M SAMPLE	STORE PRESS	S	Ci ADDED	Ci LOSS	Ci BAL.	AIR FLOW CFM	CD MONTH	CD 12 MO.	MAX. MPC
1-26-83		3.97	36K	17K	10.4	229.7	—	.8	11.94	2250	2.49x10⁻⁷	2.49x10	3x10⁻
[illegible]		3.96	37K	17K	10.4	222.9	—	.35	11.59	2250	1.12x10⁻⁷	1.8x10⁻⁷	"
3-23-83		3.94	36.5K	22.2K	6.46	294.1	—	2.09	9.50	2250	1.65x10	2.96x10⁻⁷	
4-12-83		3.92	34.9K	26.1K	10.48	359.4	9.33	—	18.83	2250	-		
5-16-83		3.90	37.8K	29.4K	10.20	335.8	—	1.70	17.13	2250	5.62x10	3.47	
6-15-83		3.87	[illegible]	[illegible]	10.48	346.0	—	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
7-15-83		3.85	36.2K	25.8K	[illegible]	336.0	—	[illegible]	17.25	[illegible]	[illegible]	[illegible]	
8-15-83		3.83	35K	24.5K	10.20	328.6	—	0.55	16.70	3350	1.3x10⁻⁷	3.23	
9-19-83		3.81	36.5K	25K	10.13	309.8	—	1.0	15.70	3350	2.09x10⁻⁷	3.33	
10-15-83		3.79	35.5K	23K	10.20	300.5	—	0.40	15.30	3350	2.82x10⁻⁷	2.90	
11-16-83		3.77	35K	21K	10.14	272.2	—	1.25	14.05	3350	3.15x10⁻⁷	2.60	
12-16-83		3.75	34.5K	19K	10.20	253.3	—	1.14	13.91	3350	2.78x10⁻⁷	2.80	
1-17-84		3.73	33.9K	19.3K	10.0	260.3	—	N/A	13.01	3350	N/A	2.60	
2-15-84		3.71	30.5K	17K	10.0	253.4	—	0.34	12.67	3350	4.1x10⁻⁸	3.05	
3-15-84		3.69	30.3K	16.3K	9.8	243.3	—	0.75	11.92	3350	1.9x10⁻⁷	2.40	
4-24-84		3.67	29.1K	14.8K	9.5	229.7	—	1.01	10.91	3350	1.85x10⁻⁷	2.56	

$$CD = \frac{\mu Ci\ loss\ (Ci\ loss \times 10^6)}{(CFM)\ (2.83 \times 10^4)\ (1440)\ (DAYS)}$$

CD: μCi/ml air; 2.83×10^4: CFM/cc/sec.; 1440: MIN/DAY; DAYS: OF DISCHARGE

NOTES:

Operating Unit: Assembly Engineering - R.S.O.

Prepared By: [signature]

Date: 1-26-83

7/17/80

FIGURE 1 - TRACER-FLO CURIE LOSS