

CONFIDENTIAL

LEAK CALCULATION

D-500 REACTOR

12:45 p.m. - April 1, 1980

An orifice calculational procedure based on the methods of Spink⁽¹⁾ was used to determine the amount of the leak. The length and width of the crack were measured and from this a hydraulic radius of 0.0315 inches was calculated. Leak rates were then calculated for ten minute intervals using the average pressure and temperature of the reactor for each interval. These results are shown below:

Time Period	Reactor		Discharge Rate (lb./hr.)	Weight Fraction VCM	VCM Leaked in Period lbs.
	Pressure Psig	Temperature °F			
12:45 - 12:55	118.5	133	139	0.996	23
12:55 - 13:05	98.5	120	120	0.998	20
13:05 - 13:15	73.5	106	94	0.999	16
13:15 - 13:25	63.0	99	84	0.999	14
13:25 - 13:35	60.5	95	81	1.000	14
13:35 - 13:45	59.0	93	80	1.000	13
13:45 - 13:55	57.0	93	78	1.000	13
13:55 - 14:05	53.5	90	74	1.000	12
14:05 - 14:15	49.5	86	70	1.000	12
14:15 - 14:25	46.5	82	67	1.000	11
14:25 - 14:35	44.5	81	65	1.000	11
14:35 - 14:45	44.0	81	64	1.000	11
14:45 - 14:55	42.0	79	62	1.000	10
14:55 - 15:05	39.5	75	60	1.000	10
15:05 - 15:15	38.0	73	58	1.000	10
15:15 - 15:25	38.0	73	58	1.000	10
15:25 - 15:35	39.5	75	60	1.000	10
15:35 - 15:45	38.5	73	58	1.000	10
15:45 - 15:55	36.0	72	56	1.000	9
15:55 - 16:05	34.0	70	54	1.000	9
16:05 - 16:15	32.5	66	52	1.000	9
16:15 - 16:25	28.0	63	48	1.000	8
16:25 - 16:35	27.0	61	47	1.000	8
16:35 - 16:45	22.0	127	38	0.983	6
16:45 - 16:55	9.0	164	21	0.925	3
16:55 - 17:05	3.0	187	9	0.780	1
17:05 - 17:15	1.0	200	5	0.556	-
				TOTAL	283

DTH 000114447

¹Spink, L. K., "Principles and Practices of Flow Meter Engineering, 9th ed., The Foxboro Company, 1967.