HW-22344

HW--22344

DE91 002731

DATE

10-4-51

FILE DESIGNATION

SUBJECT OR TITLE

Compilation of Data on 51 Ruptured Slugs

TO

File

FROM

DP O'Keefe

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COMPILATION OF DATA ON 51 RUPTURED SLUGS

The following tabulation includes information on all uranium slug failures which have occurred through September 26, 1951.

The four suspect slugs which are listed were discharged from tubes which gave strong indication of containing ruptures. Although no obvious rupture could be found among the slugs from these tubes, the listed pieces exhibited defects which may be incipient ruptures.

D. P. O'Keefe
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October 4, 1951

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Rupture No.	Tube No. and Area	Date Charged	Date Discharged	Time in Reactor (days)	Megawatt Days / AT	Production Down Time (hours)	Power Generation in Tube (KW)	Power Generation in 4" Slug (KW)	Water Temperature at Slug	Location of Slug from Front Face	Canning Data	Observations	Reports Issued
1	1165-F	5/19/48	6/4/48	17	8	351.4	156	3.5	28	33	ARG 4/30/48 Truck 2	Cap failure Patched weld, poor braze No autoclave mark Slight steam mark visible	HW 10757 HW 10284 HW 10226
2	0569-B	10/11/48	11/25/48	50	40	0	226	3.1	49	52	ARH 2/1/48 Truck 2	Cap failure Weld apparently good Corrosion growth on end of slug	HW 12589 HW 11814
3	1572-D	4/26/50	6/23/50	38	92	98.5	196	4.3	38	36	ZRH 3/2/50 Truck 9	Cap failure Patched weld, poor braze Cap bulged	HW 19212 HW 19059
4	1476-DR	11/4/50	11/29/50	29	40	79.6	360	7.9	37	29-31	Not Examined	Process tube has large hole 2 or more slugs in affected tube section	HW 12737
5	3288-H	6/7/50	12/6/50	183	314	76.8	301	6.7	38	34	MRH 4/6/50 Truck 6	Side failure Uranium, can and cap separated by one continuous split.	HW 20173 HW 19750
6	3188-DR	9/29/50	1/11/51	108	182	86.6	381	8.4	44	37	MRG 3/10/50 Truck 5	Cap failure Poor weld. Possible hole near weld patch.	HW 20133 HW 20778
7	3270-H	6/7/50	1/31/51	239	429	18.0	353	5.2	53	53	MRH 4/6/50	Cap failure Possible cocked cap Slightly bulged cap	HW 20200 HW 20269
8	2562-H	10/2/50	2/2/51	123	219	91.6	288	6.0	18	21	PT 313-110 N-7	Side failure Elliptically shaped hole at center of	HW 20270

9	2780-F	9/13/50	4/10/51	210	318	30.2	271	5.9	36	38	MRH 7/14/50	Cap failure Thin cap bulged to 1" Dia. hemisphere Wedge of metal 1 1/2" long broken away from side near cap.	HW 20894
10	1477-H	6/28/50	4/10/51	288	537	18.0	345	6.7	17	13	MRH 4/26/50 Truck 2	Cap failure Cap completely detached from slug Can wall rippled	HW 20878
11	1377-DR	11/4/50	4/15/51	163	433	48.0	375	8.3	37	30	MRH 5/5/49 Truck 3	Side failure 1" Dia. hole near base of can.	
12	0986-F	8/2/50	4/20/51	261	307	31.4	266	6.1	36	32	MRG 6/2/50 Truck 5	Side failure 3/4" and 1/4" holes near base of can. Can wall rippled	HW 21239
13	3373-H	2/12/51	4/24/51	71	176	32.7	355	6.8	25	23	MRG 1/15/51 Truck 1	Side failure Two parallel splits 120° apart joined near base of can.	HW 20976
14	2475-F	6/13/50	5/1/51	322	510	30.5	289	6.5	44	37	MRH 5/16/50 Truck 3	Side failure 1" hole near cap	HW 21460
15	3489-F	10/11/51	5/3/51	204	240	2.0	•	•	•	•	MRG 9/5/50 Truck 1	Cap failure Cap broken free at base of cap.	HW 21459
16	1973-D	1/16/51	5/14/51	118	234	26.8	290	6.1	33	26	MRH 12/7/50 Truck 11	Cap failure Fine crack 120° around base of cap.	HW 21287
17	1368-DR	9/24/50	5/15/51	243	551	54.0	356	5.5	68	51	1/5/50 Truck 5	Side failure Severe fragmentation	HW 21515
18	1174-D	9/2/50	5/22/51	262	440	15.0	258	4.2	55	49	ZRG 7/10/50 Truck 2	Cap failure Severe 120° separation at cap plus 1 1/2" split down slug.	HW 21413

HW 21285

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Rupture No. Tube No. and Area Date Charged Date Discharged Time in Reactor (days) Megawatt Days/AT Production Down Time (hours) Power Generation in Tube (KW) Power Generation in 4" Slug (KW) Water Temperature at Slug Location of Slug from Front Face Canning Data Observations Reports Issued

19	3179-H	6/2/50	6/2/51	347	635	22.3	337	3.9	65	50	MRG 4/12/50 Truck 4	Side failure 1" hole near base of can	HW 21265
20	2278-H	7/10/50	6/13/51	338	631	13.3	353	6.6	57	39	MRH 5/17/50 Truck 8	Side failure 1" hole near cap end	HW 21404
21	1476-D	9/4/50	6/29/51	298	523	26.6	311	6.9	48	35	MRG 8/1/50 Truck 2	Cap failure 290° fine crack, patched weld	HW 21523
22	3486-H	1/24/51	7/1/51	157	346	19.6	358	7.1	54	40	MRG 12/29/50 Truck 3	Side failure Two parallel splits 1" apart which joined near cap end.	HW 21560
23	4380-F	5/23/50	7/10/51	413	393	26.9	176	4.0	40	34	MRG 2/27/50	Cap failure Portion of slug near cap missing	
24	2169-B	2/7/51	7/18/51	161	371	25.7	341	6.3	68	48	MRG 12/27/50 Truck 3	Cap failure Wedge-shaped piece broken from cap end.	HW 21728
25	1768-D	2/14/51	7/14/51	150	304	26.9	270	5.7	48	38	MRG 12/15/50 Truck 8	Cap failure 270° fine crack	HW 21788
26	1487-DR	5/9/51	7/19/51	71	144	31.4	355	7.8	51	35	Not examined	In process tube section	HW 21771
27	1961-D	10/25/50	7/22/51	270	488	27.0	272	3.2	64	55	MRH 8/31/50	Side failure 1 3/8" hole in center of piece	HW 21787

28	4086-B	2/7/51	7/28/51	171	246	25.2	234	4.3	50	35	MRG	Truck 2	Cap failure 1 1/2" wedge broken from slug end. Severely blistered.	HW 21789
29	1963-D	2/14/51	7/28/51	154	315	26.5	280	6.0	51	38	MRH	1/19/51 Truck 11	Side failure Split lengthwise into 2 wedge-shaped pieces.	HW 21925
30	1874-F	10/24/50	7/28/51	277	461	2.1	289	4.8	66	50	MRH	10/7/50	Cap failure Cap detached. Slug not examined.	HW 21791
31	1572-D	3/28/51	8/3/51	128	248	26.5	318	6.3	64	45	MRG	3/9/51 Truck 9	Cap failure 270° split at base of cap. Cap slightly bulged.	HW 21843
32	1963-B	4/3/51	8/8/51	127	269	26.5	318	6.6	47	25	MRG	3/14/51 Truck 2	Side failure Wedge-shaped piece with cap attached broken from slug.	HW 21994
33	1485-B	1/24/51	8/12/51	200	391	35.0	224	4.6	45	41	MRH	1/4/51 Truck 2	Side failure 2" wedge broken from slug side. 2 longitudinal cracks through uranium.	HW 21995
34	4086-H	5/2/51	8/14/51	104	193	14.5	302	4.3	55	40	MRG	11/13/50	Side failure 2 longitudinal cracks joined near base of slug with a third crack appearing on the opposite side.	HW 21962
35	3658-D	7/11/50	8/17/51	402	522	48.0	254	5.5	53	37	MRH	6/7/50 Truck 8	Cap failure Cap detached. 1 1/2" wedge broken from cap end.	HW 22050
36	1475-DR	10-30-50 11-30-50	6/28/51	212	568	18.5	335	4.3	39	11	MRH	7/27/49 Truck 5	Cap failure 1 1/2" wedge with cap attached broken from slug.	
37	2073-D	2/14/51	8/23/51	190	379	27.0	318	6.6	59	40	MRG	1/18/51 Truck 2	Cap failure Cap completely detached	HW 22051

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Run/Tube No.	Tube No. and Area	Date Charged	Date Discharged	Time in Reactor (days)	Megawatt Days/AT	Production Down Time (hours)	Power Generation in Tube (KW)	Power Generation in 4" Slug (KW)	Water Temperature at Slug	Location of Slug from Front Face	Canning Data	Observations	Reports Issued
38	2584-B	1/23/51	8/28/51	217	456	27.5	331	7.3	70	40	MRG 1/5/51 Truck 7	Cap failure Cap completely detached	HW 22030
39	2068-H	8/8/51	8/30/51	22	40	22.6	356	6.8	38 or 53	25 or 40	MRH 7/7/51 Truck 3	Cap failure 300° split at base of cap	HW 22064
40	1861-B	2/7/51	8/30/51	202	395	5	300	6.6	55	36	MRG 12/26/50 Truck 10	Side failure 2 longitudinal splits joined near data end	HW 22030
41	1756-D	2/14/51	9/1/51	199	304	27.6	280	5.1	53	38	MRG 12/15/50 Truck 6	Cap failure Cap completely detached. Can wall rippled.	
42	2293-F	6/13/50	9/2/51	446	516	26.3	239	5.3	46	33	MRH 5/17/50 Truck 1	Cap failure 300° split at base of cap	
43	1562-D	3/28/51	9/3/51	159	288	34.5	211	3.4	53	49	Not examined	In process tube section	
44	2061-F	12/5/50	9/5/51	243	456	23	232	2.9	58	54	MRH 10/2/50 Truck 7	Cap failure Cap completely detached	
45	1765-D	2/14/51	9/6/51	204	389	23.7	298	6.6	47	33	MRH 12/15/50 Truck 3	Cap failure Cap completely detached. Can wall rippled.	

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46	1860-D	2/14/51	9/10/51	208	382	2.0	256	5.1	33	22	MRG 12/15/50 Truck 10	Cap failure Cap completely detached. Can wall rippled.	HW 22176
47	0970-B	2/20/51	9/17/51	210	400	0.4	218	4.8	39	32	XRH 1/22/51 Truck 2	Cap failure Cap completely detached	
48	1479-D	1/16/51	9/19/51	246	467	27.3	329	7.2	50	33	MRG 12/8/50 Truck 1	Cap failure 1 1/2" wedge with cap attached broken from slug.	
49	3273-DR	3/7/51	9/20/51	188	523	0.6	375	6.3	68	48	MRH 2/13/51 Truck 2	Cap failure	HW 22265
50	1264-DR	4/10/51	9/20/51	164	376	9.5	370	7.0	34	20	MRG 3/2/51 Truck 10	Side failure Two splits from cap end join 1 1/2" from data end. Triangular metal piece missing from side.	
51	1288-B	12/13/50	9/26/51	288	465	0.4	282	6.2	60.1	28	MRG 11/7/50 Truck 12	Cap failure 300° split around base of cap	
SUSPECT PIECES													
2077-DR	11/4/50	4/17/51	165	430	0	304	•	•	•	•	MRH 5/6/49 Truck 4	300 mr/hr on pigtail Suspect crack 1" long parallel to weld at base of weld	
0573-H	9/5/50	4/24/51	231	392	0	303	•	•	•	•	MRG 7/13/50 Truck 4	600 mr/hr on pigtail Suspect crack 3/8" long parallel to weld at base of weld	
3481-DR	6/6/51	6/20/51	14	32	•	•	•	•	•	•	5/5/51	800 mr/hr on pigtail 2 slugs with can edge visible at base of weld retained	
0679-H	4/4/51	7/28/51	115	229	1.0	332	2.4	21	4	or 67	MRG 3/22/51	2 r/hr, 40 rep/hr on swab from tube Possible can wall penetration near can base and at weld.	HW 21784

• No information available.

END

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