



**INFORMATION SYSTEM ON OCCUPATIONAL EXPOSURE**

**General Distribution**

**July 2003**

**ISOE INFORMATION SHEET**

**North American Technical Center  
Information System on Occupational Exposure**

**United States Pressurized Water Reactor (PWR)  
2002 Occupational Dose Benchmarking Chart**

**NATC ISOE Information Sheet No. 03-4**

NATC ISOE Information Sheet No. 03-4 presents the U.S. Pressurized Water Reactor (PWR) occupational exposure results for FY 2002. Exposure categories per unit include refueling outage duration and dose, normal operations dose, and total dose.

For comparison, the 2002 worldwide collective dose per reactor unit is provided in the below table:

<b>Country/Region</b>	<b>Collective dose per Reactor (person-Sv)</b>
USA	0.87
IAEA(VVER)	0.54
Europe	0.88

The FY 2002 U.S. PWR charts prepared by NATC include the following:

**Figure 1a: 2002 PWR Outage Duration**

**Figure 1b: 2002 PWR Outage Dose**

**Figure 1c: 2002 PWR Normal Dose**

**Figure 1d: 2002 PWR Total Dose**

**Figure 2a-d: 2002 PWR Outage Duration Quartiles**

**Figure 3a-d: 2002 PWR Outage Dose Quartiles**

**Figure 4a-d: 2002 PWR Normal Dose Quartiles**

**Figure 5a-d: 2002 PWR Total Dose Quartiles**

**Table 6: 2002 PWR Occupational Dose Data**

Figure 1a: 2002 PWR Outage Duration

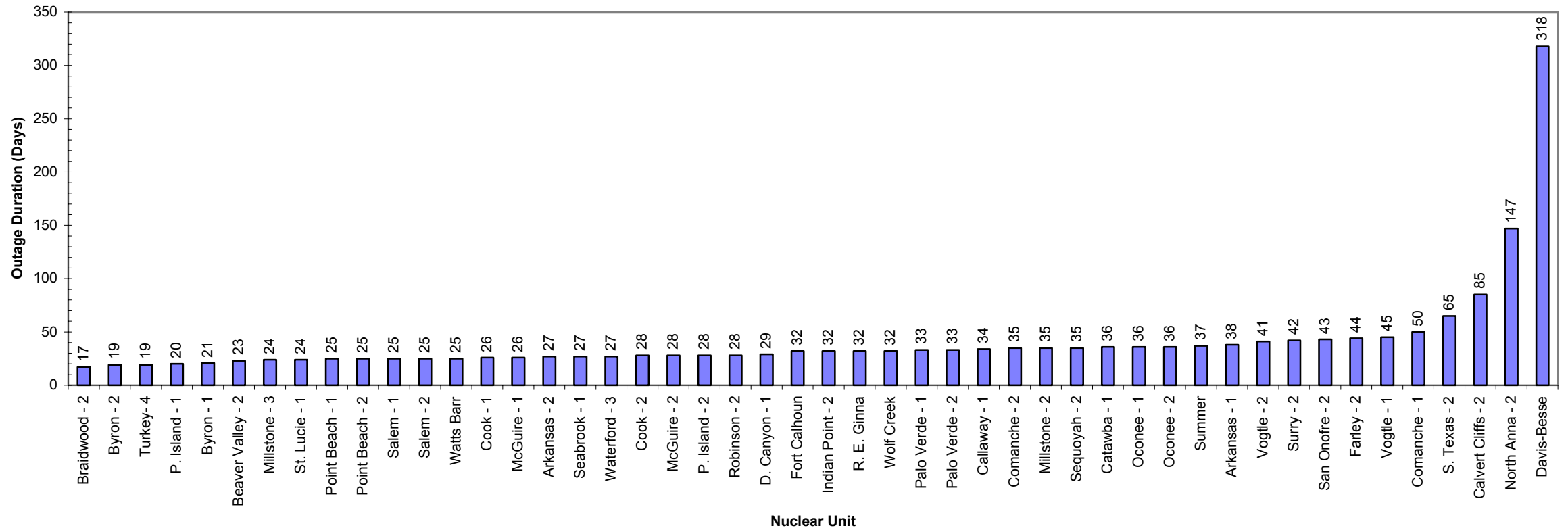


Figure 1b: 2002 PWR Outage Dose

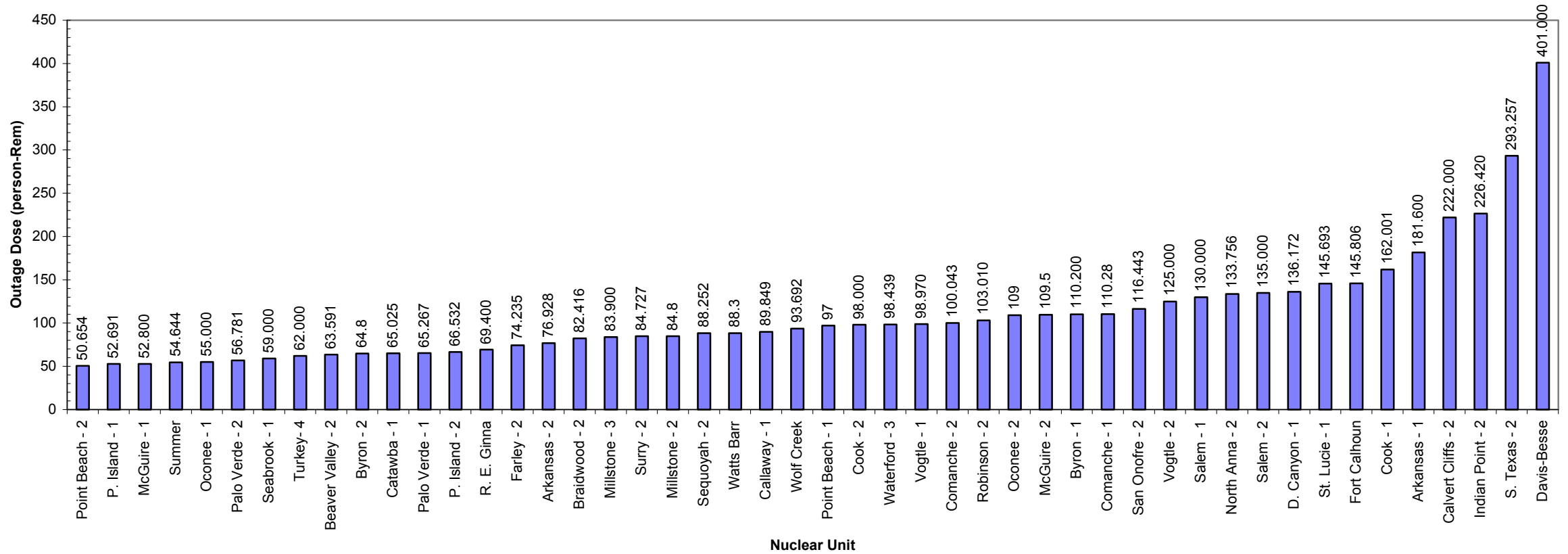


Figure 1c: 2002 PWR Normal Operational Dose

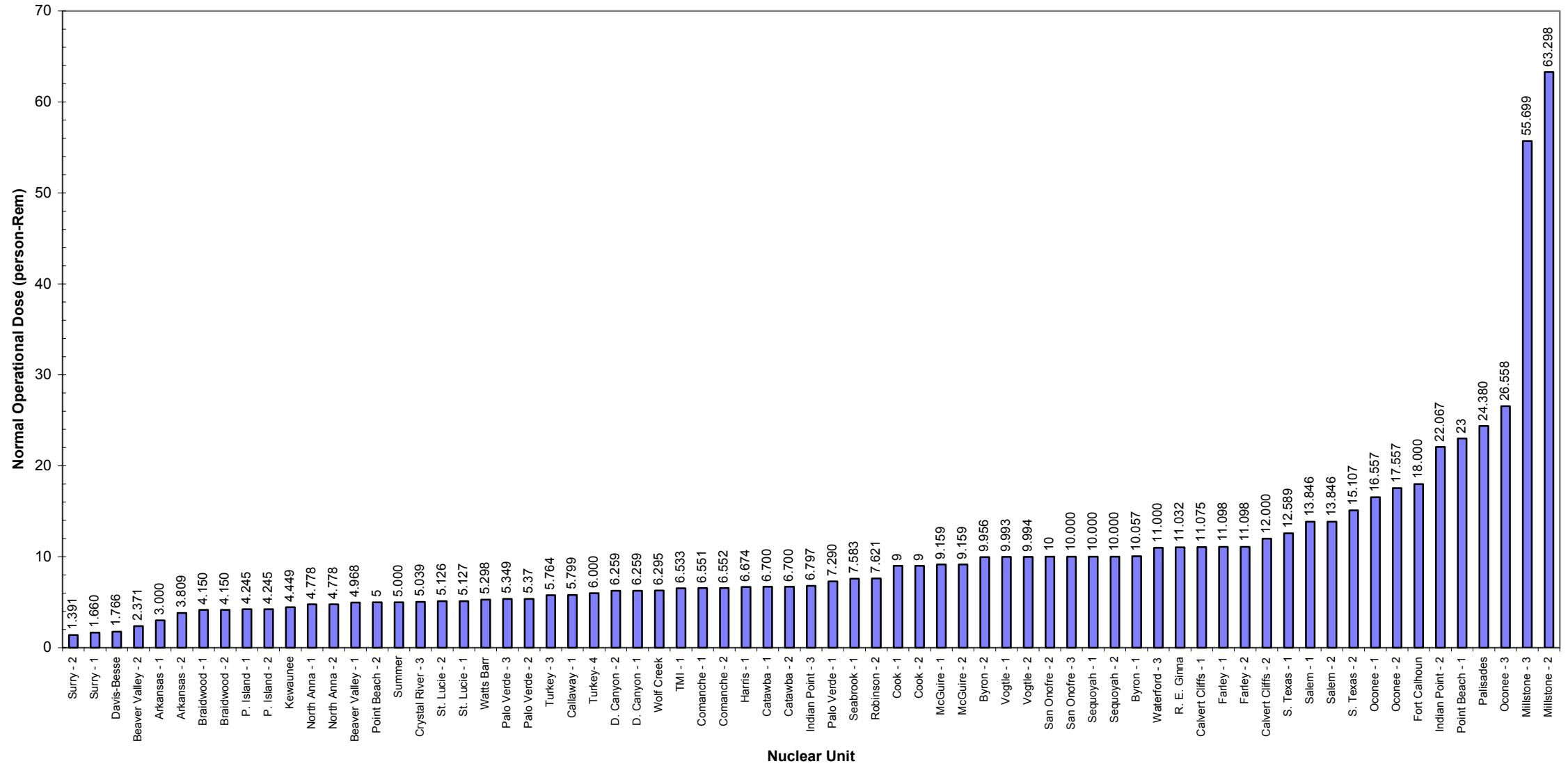
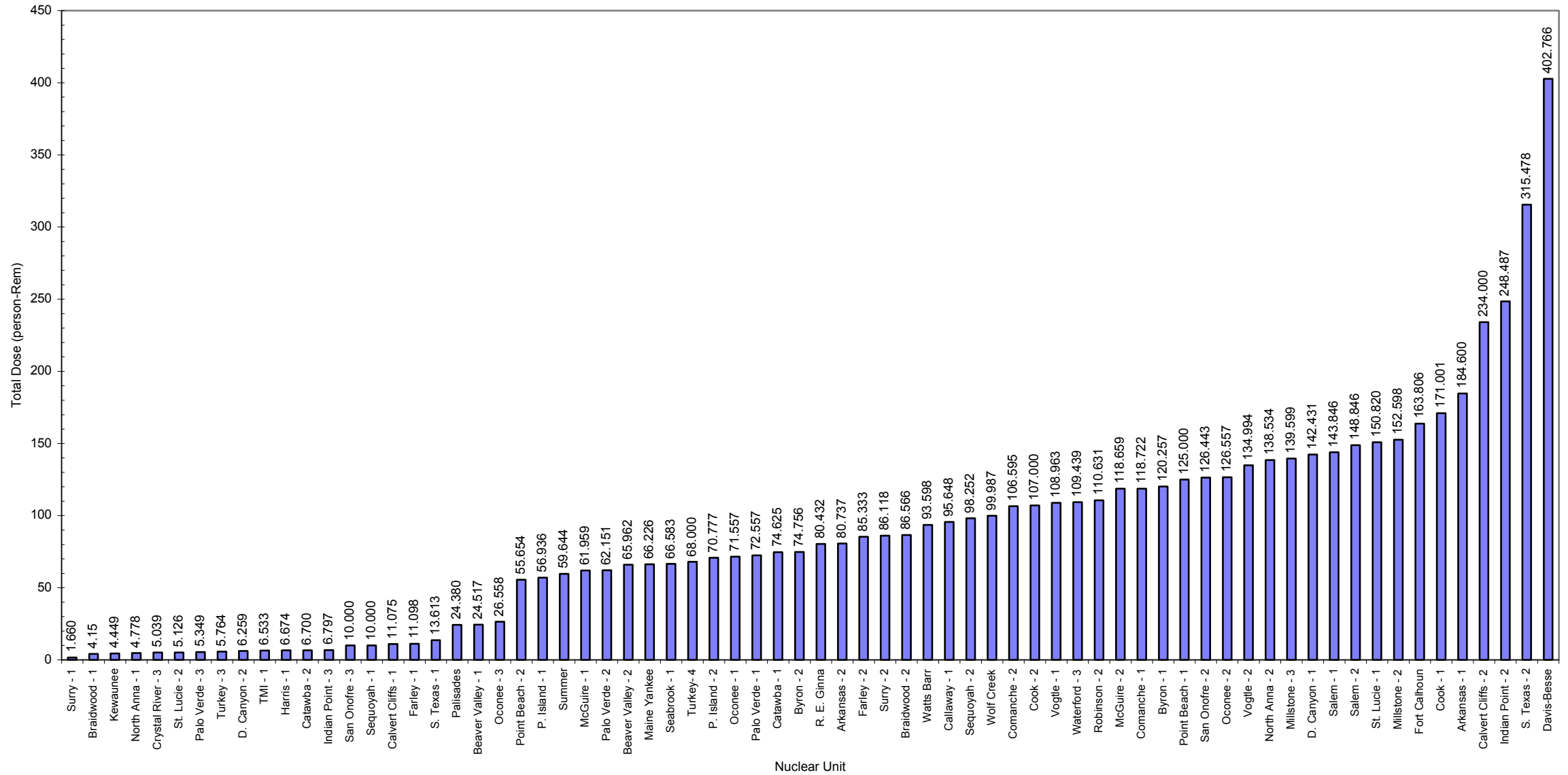
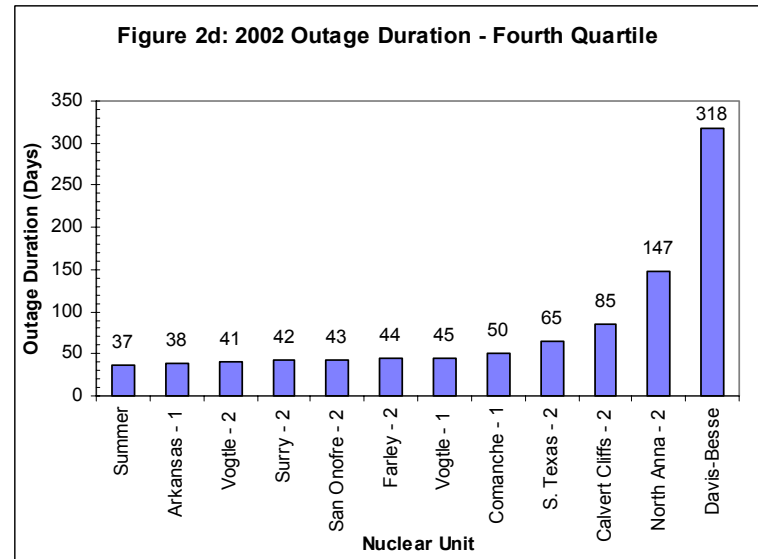
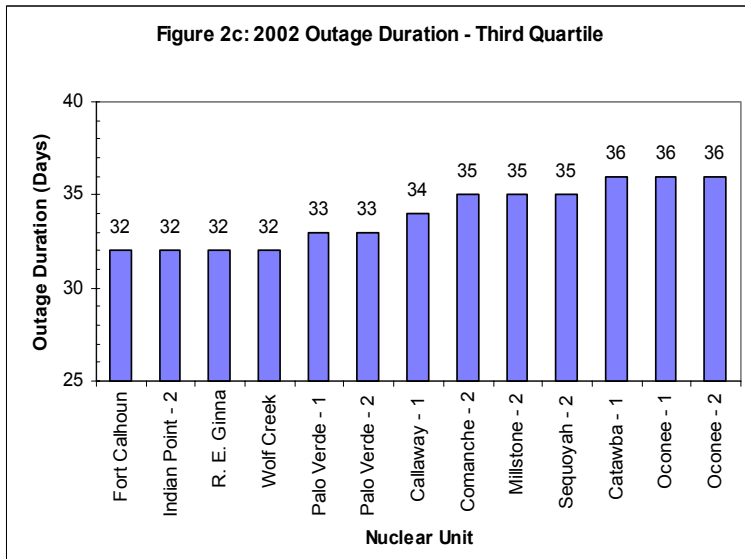
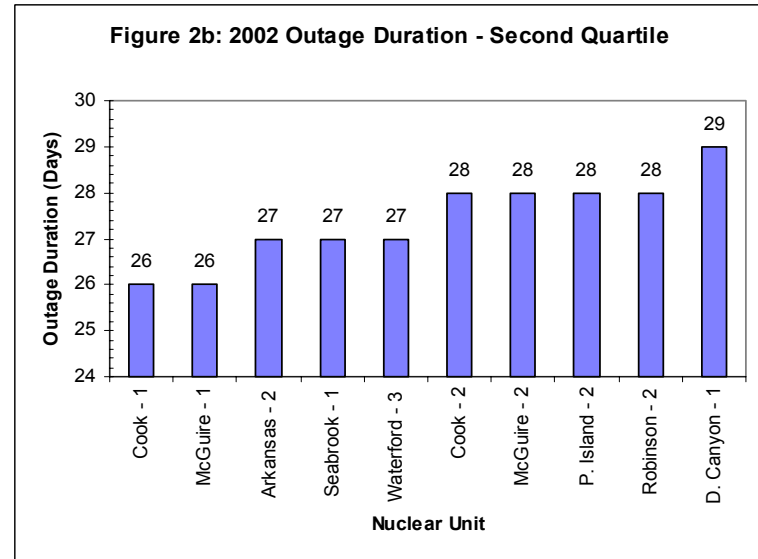
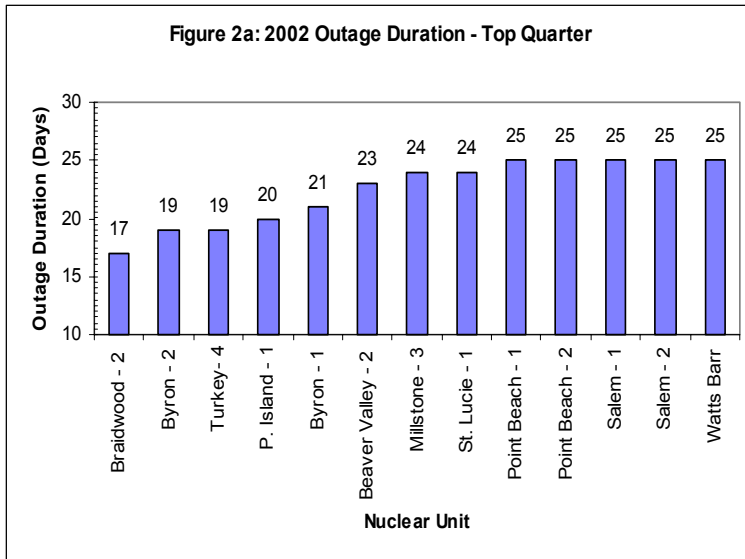
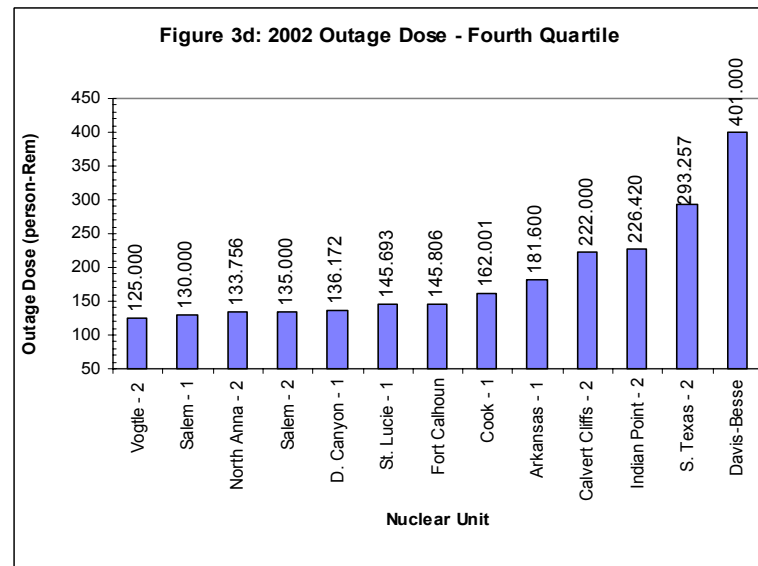
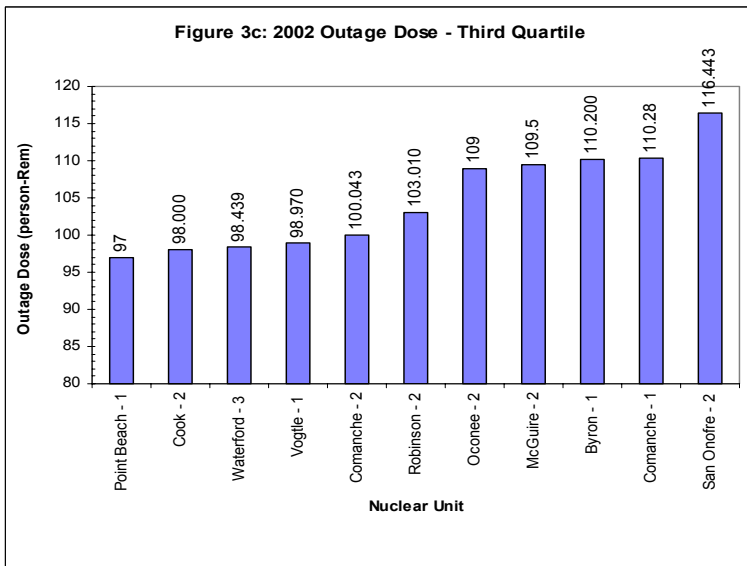
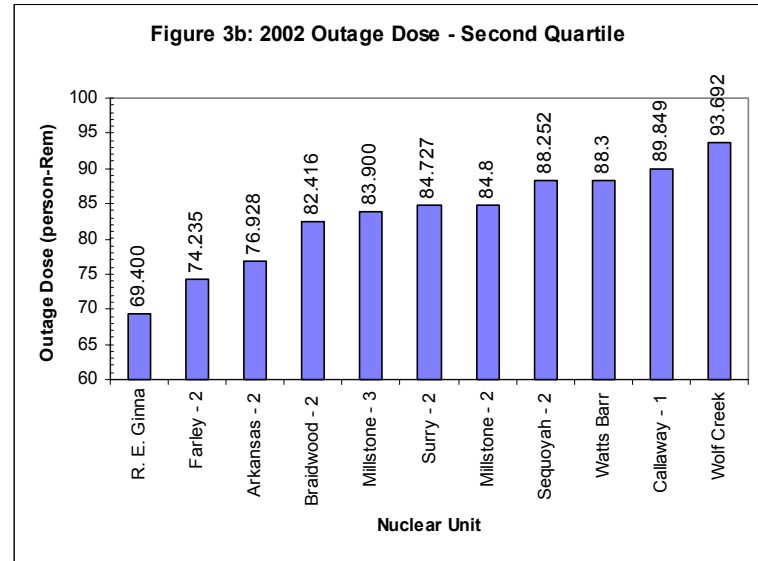
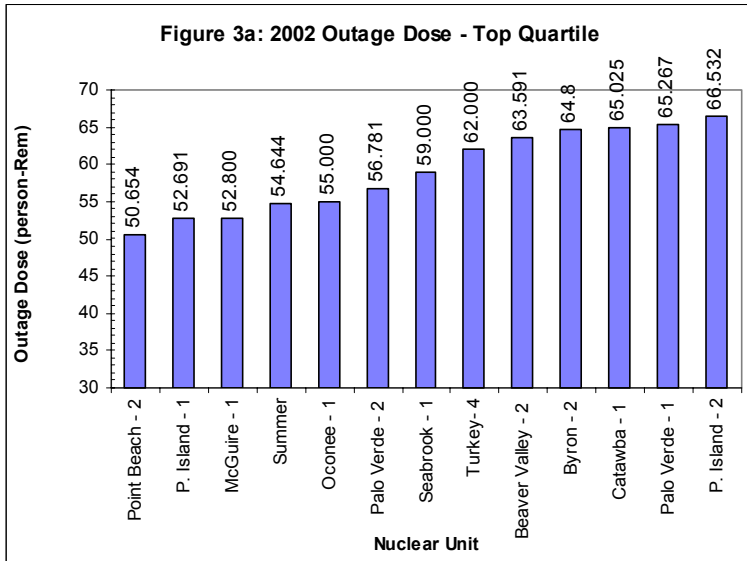
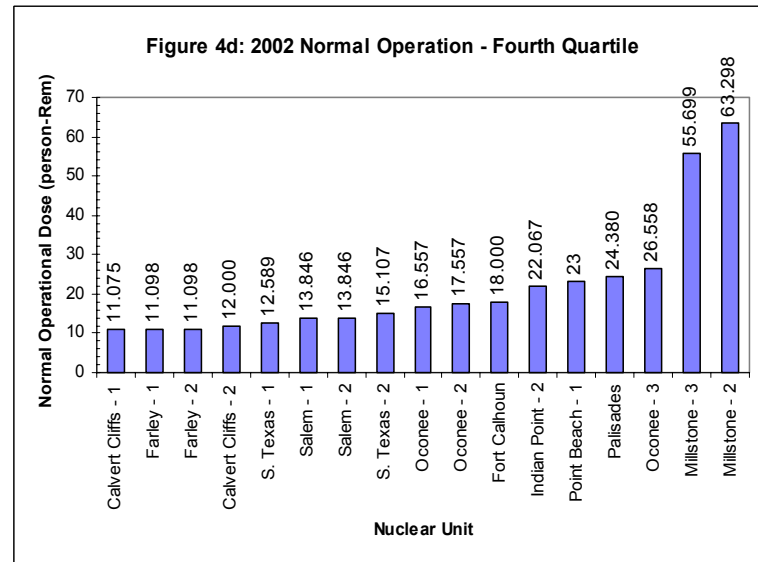
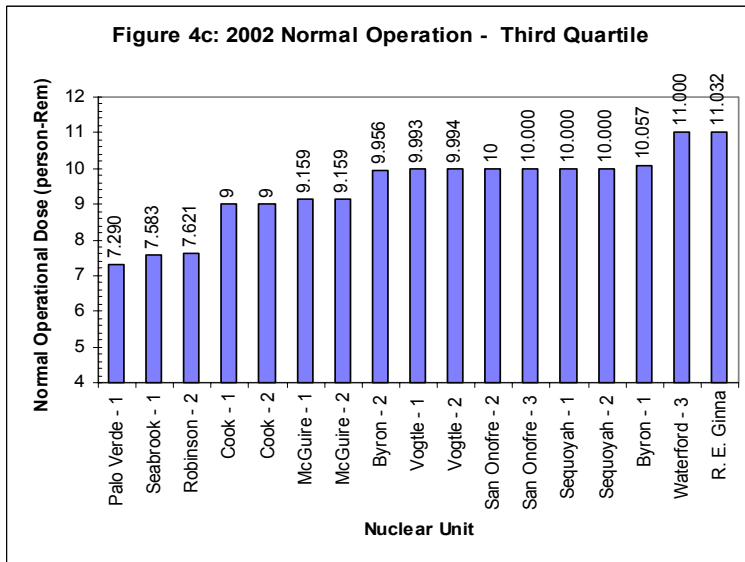
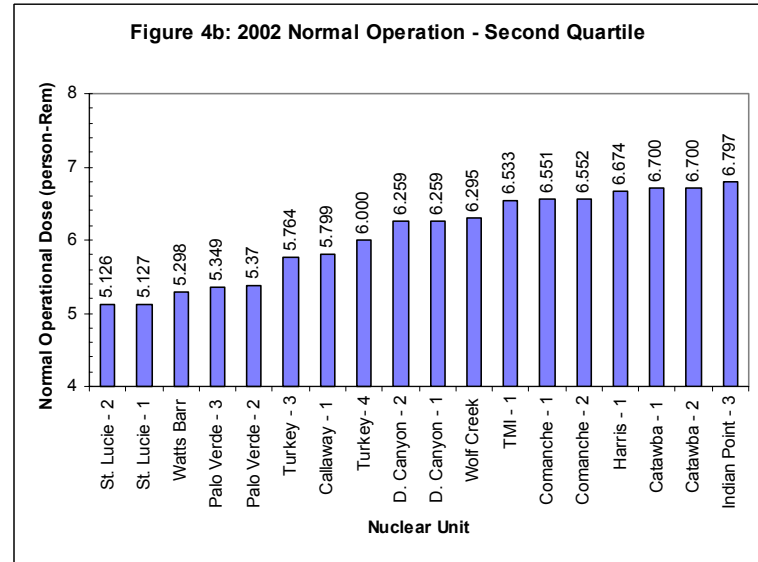
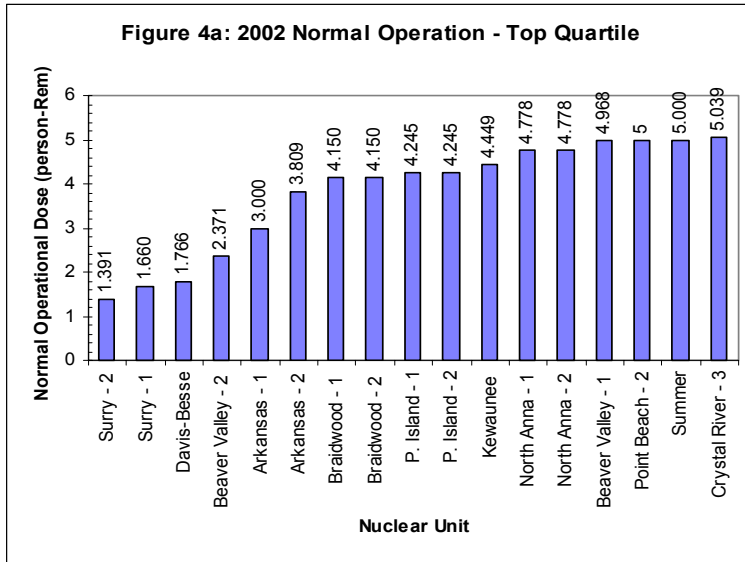


Figure 1d: 2002 PWR Total Annual Dose

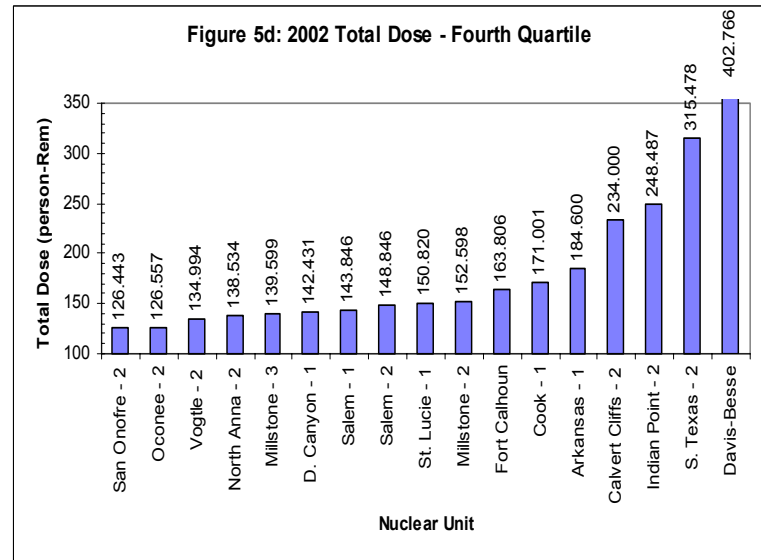
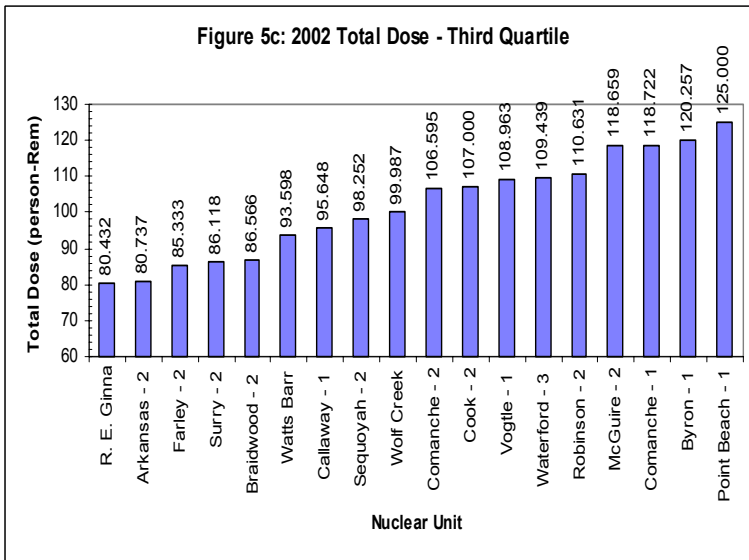
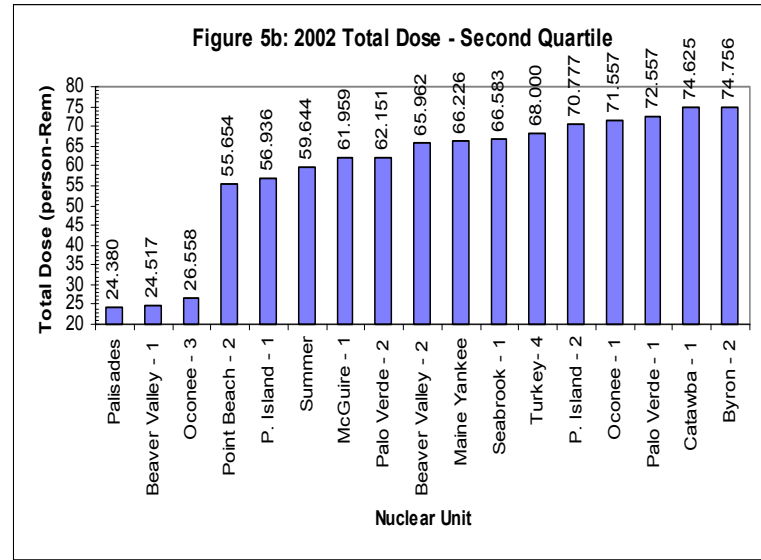
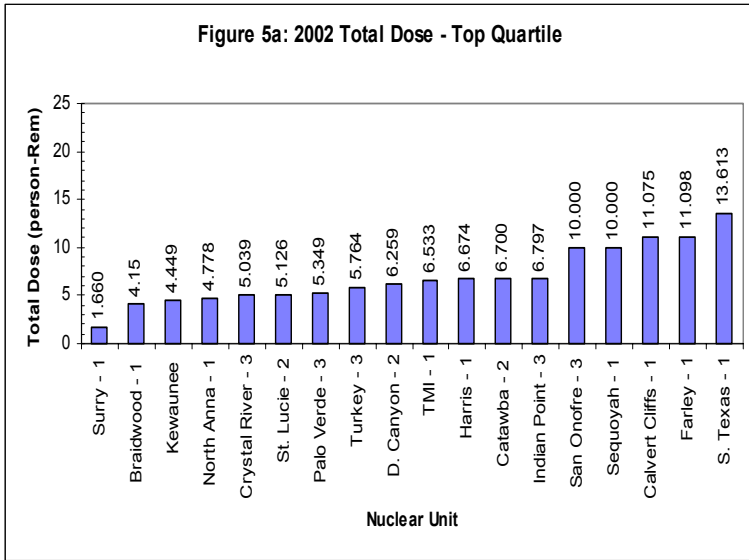












**Table 6: 2002 PWR Occupational Dose Data**

Nuclear Unit	Outage Start Date	Outage End Date	Outage Duration	Outage Dose	Normal Operation	Other Shutdowns	Total Dose	Goals	Comments	TLD Values
Arkansas - 1	10/5/2002	11/12/2002	38	181.600	3.000		184.600			265.337
Arkansas - 2	4/12/2002	5/9/2002	27	76.928	3.809		80.737			
Beaver Valley - 1	N/A	N/A	0		4.968	19.549	24.517	136goal	10 d FO	90.479
Beaver Valley - 2	2/4/2002	2/27/2002	23	63.591	2.371		65.962			
Braidwood - 1	N/A	N/A	0		4.150		4.150			90.716
Braidwood - 2	4/13/2002	4/30/2002	17	82.416	4.150		86.566			
Byron - 1	3/9/2002	3/30/2002	21	110.2	10.057		120.257			195.013
Byron - 2	3/11/2002	3/30/2002	19	64.8	9.956		74.756			
Callaway - 1	10/22/2002	11/26/2002	34	89.849	5.799		95.648	86goal		95.648
Calvert Cliffs - 1	N/A	N/A	0		11.075		11.075	18 rx head inspect unit 2		245.075
Calvert Cliffs - 2	2/8/2002	5/4/2002	85	222.000	12.000		234.000	86.982 SG head, 80 days	2/13 SG head, 220 person rem RV head Insp 15 rem	
Catawba - 1	5/3/2002	6/8/2002	36	65.025	6.7	2.9	74.625			81.325
Catawba - 2	N/A	N/A	0		6.7		6.700			
Comanche - 1	9/28/2002	11/17/2002	50	110.280	6.551	1.891	118.722			225.317
Comanche - 2	3/30/2002	5/4/2002	35	100.043	6.552		106.595			
Cook - 1	5/4/2002	5/30/2002	26	162.001	9.000		171.001	Outage dose goal being claculated		278.001
Cook - 2	1/19/2002	2/16/2002	28	98.000	9.000		107.000	16 Rx head insp		
Crystal River - 3	N/A	N/A	0		5.039		5.039	7 rem normal ops, 2 rem projects		5.039
D. Canyon - 1	4/28/2002	5/27/2002	29	136.172	6.259		142.431			148.69
D. Canyon - 2	N/A	N/A	0		6.259		6.259			
Davis-Besse	2/16/2002	12/31/2002	318	401.000	1.766		402.766			402.766
Farley - 1	N/A	N/A	0		11.098		11.098			96.431
Farley - 2	9/14/2002	10/28/2002	44	74.235	11.098		85.333			

Nuclear Unit	Outage Start Date	Outage End Date	Outage Duration	Outage Dose	Normal Operation	Other Shutdowns	Total Dose	Goals	Comments	TLD Values
Fort Calhoun	5/4/2002	6/5/2002	32	145.806	18.000		163.806	norm 18.0		163.806
Haddam Neck	N/A	N/A	0				0.000			
Harris - 1	N/A	N/A	0		6.674		6.674	13 (9ops,4spent fuel cask)		6.674
Indian Point - 2	10/25/2002	11/26/2002	32	226.420	22.067		248.487			248.487
Indian Point - 3	N/A	N/A	0		6.797		6.797			6.797
Kewaunee	N/A	N/A	0		4.449		4.449			4.449
Maine Yankee	N/A	N/A	0			66.226	66.226			66.226
McGuire - 1	9/14/2002	10/10/2002	26	52.8	9.159		61.959			180.618
McGuire - 2	2/24/2002	3/24/2002	28	109.5	9.159		118.659			
Millstone - 2	2/15/2002	3/22/2002	35	84.8	63.298	4.500	152.598			296.508
Millstone - 3	9/7/2002	10/1/2002	24	83.900	55.699		139.599			
North Anna - 1	N/A	N/A	0		4.778		4.778			143.312
North Anna - 2	9/8/2002	2/2/2003	147	133.756	4.778		138.534			
Oconee - 1	3/21/2002	4/26/2002	36	55	16.557		71.557			224.672
Oconee - 2	10/10/2002	11/15/2002	36	109	17.557		126.557			
Oconee - 3	N/A	N/A	0		26.558		26.558			
P. Island - 1	10/30/2002	11/19/2002	20	52.691	4.245		56.936			127.713
P. Island - 2	2/2/2002	3/2/2002	28	66.532	4.245		70.777			
Palisades	N/A	N/A	0		24.380		24.380			n
Palo Verde - 1	9/28/2002	10/31/2002	33	65.267	7.290		72.557			140.057
Palo Verde - 2	3/16/2002	4/18/2002	33	56.781	5.370		62.151	S/G Repl 9/27/2003 to 12/6/2003 70 days		
Palo Verde - 3	N/A	N/A	0		5.349		5.349	2003 3/9/03 to 5/1/03 33 days		
Point Beach - 1	4/13/2002	5/8/2002	25	97	23	5.000	125.000			180.654

Nuclear Unit	Outage Start Date	Outage End Date	Outage Duration	Outage Dose	Normal Operation	Other Shutdowns	Total Dose	Goals	Comments	TLD Values
Point Beach - 2	9/14/2002	10/9/2002	25	50.654	5		55.654			
R. E. Ginna	3/8/2002	4/9/2002	32	69.400	11.032		80.432	71 OG	29 ODG	79.4?
Robinson - 2	10/12/2002	11/9/2002	28	103.010	7.621		110.631			110.631
S. Texas - 1	N/A	N/A	0		12.589	1.024	13.613	9 D FO		329.091
S. Texas - 2	10/5/2002	12/9/2002	65	293.257	15.107	7.114	315.478			
Salem - 1	10/5/2002	10/30/2002	25	130.000	13.846		143.846			286.125
Salem - 2	4/15/2002	5/10/2002	25	135.000	13.846		148.846			
San Onofre - 2	5/20/2002	7/2/2002	43	116.443	10.000		126.443	150 OG	U1 61.214	136.443
San Onofre - 3	N/A	N/A	0		10.000		10.000			
Seabrook - 1	5/11/2002	6/7/2002	27	59.000	7.583		66.583	87.000	72 OD 15 rout	66.583
Sequoyah - 1	N/A	N/A	0		10.000		10.000			108.252
Sequoyah - 2	4/14/2002	5/19/2002	35	88.252	10.000		98.252			
St. Lucie - 1	4/3/2002	4/27/2002	24	145.693	5.127		150.820			166.815
St. Lucie - 2	N/A	N/A	0		5.126		5.126			
Summer	5/15/2002	6/21/2002	37	54.644	5.000		59.644	80 OG	30 ODG	59.644
Surry - 1	N/A	N/A	0		1.660		1.660			87.778
Surry - 2	4/7/2002	5/19/2002	42	84.727	1.391		86.118	99 OG		
TMI - 1	N/A	N/A	0		6.533		6.533			6.533
Turkey - 3	N/A	N/A	0		5.764		5.764			73.764
Turkey- 4	3/25/2002	4/13/2002	19	62.000	6.000		68.000	90 OG	23 ODG	
Vogtle - 1	3/6/2002	4/20/2002	45	98.970	9.993		108.963	100 OG	35 ODG	
Vogtle - 2	10/5/2002	11/15/2002	41	125.000	9.994		134.994			
Waterford - 3	3/22/2002	4/18/2002	27	98.439	11.000		109.439			
Watts Barr	2/17/2002	3/14/2002	25	88.3	5.298		93.598			93.598
Wolf Creek	3/28/2002	4/29/2002	32	93.692	6.295		99.987			99.987