

INFORMATION SYSTEM ON OCCUPATIONAL EXPOSURE

General Distribution

September 2017

ISOE Information Sheet

North American Technical Center Information System on Occupational Exposure

North American Pressurized Water Reactor (PWR) 2015 Occupational Dose Benchmarking Charts

NATC ISOE Information Sheet No. 15-4

NATC ISOE Information Sheet No. 15-4 presents the North American Pressurized Water Reactor (PWR) occupational exposure results for FY 2015. Exposure categories per unit include refueling outage duration and dose, normal operations dose, and total dose.

The 2015 PWR charts are arranged in the following format:

Table 1: Outage Duration

Table 2: Outage Dose

Table 3: Normal Operation Dose

Table 4: Total Dose

Table 5a-d: Outage Duration Quartiles

Table 6a-d: Outage Dose Quartiles

Table 7a-d: Normal Operation Dose Quartiles

Table 8a-d: Total Dose Quartiles

Table 9: Occupation Dose Data

For reference, global comparison for 2015 PWR collective dose per reactor unit is provided in the table below:

Country	CollectiveDose per Reactor (person-Rem/Unit)
France	71.0
Germany	16.9
S. Korea	31.05
USA	44.05

Table 1: 2015 PWR Outage Duration

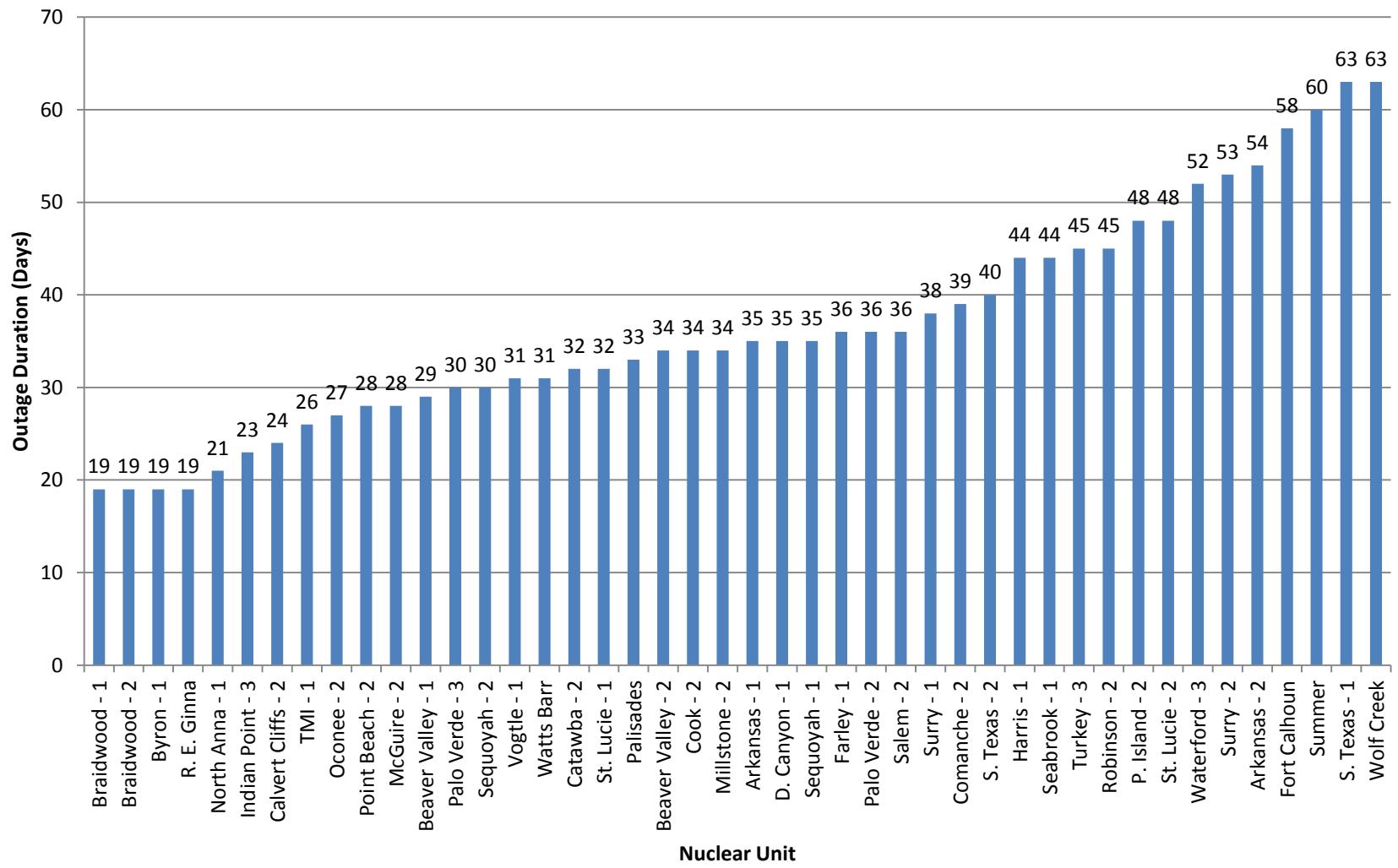


Table 2: 2015 PWR Outage Dose

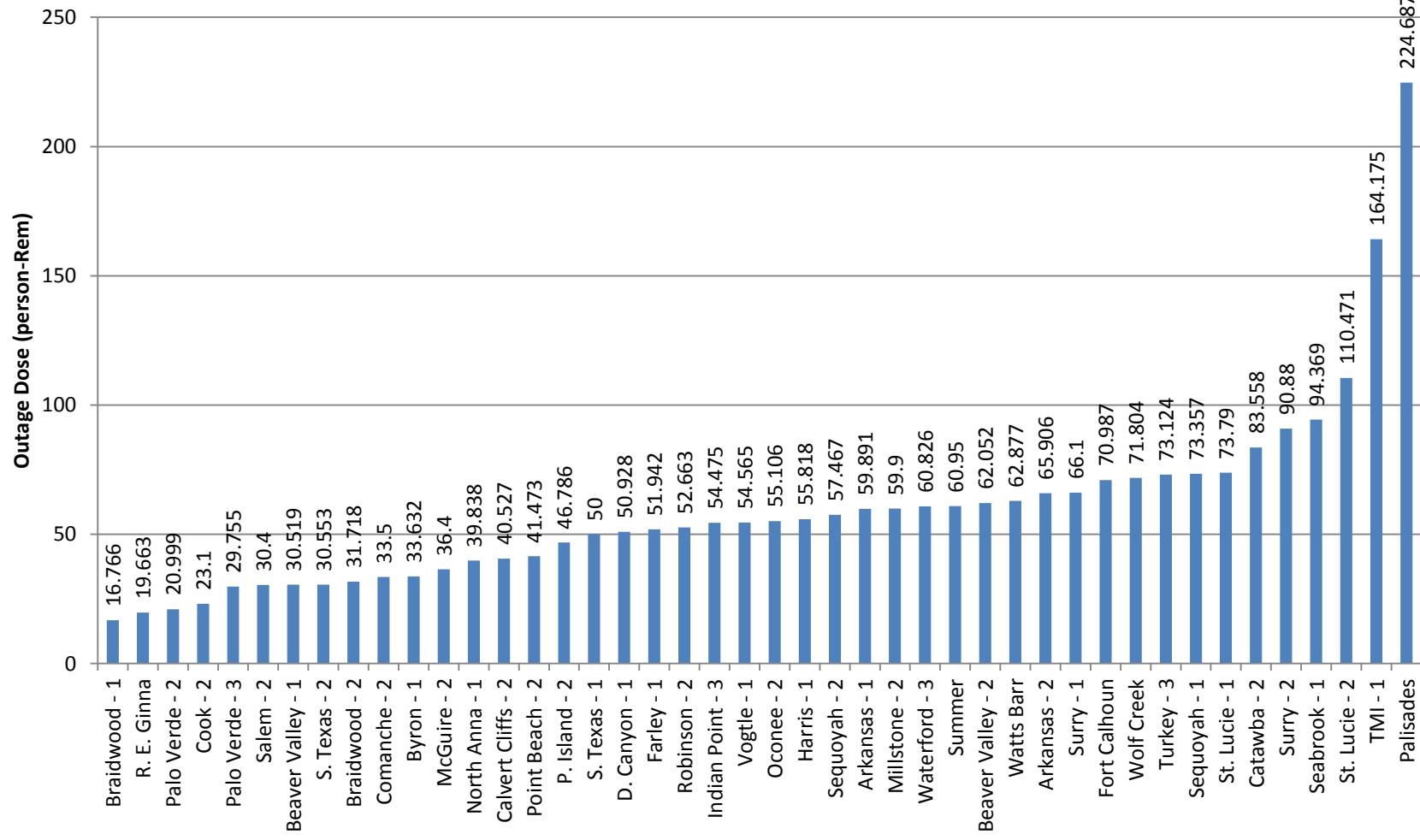
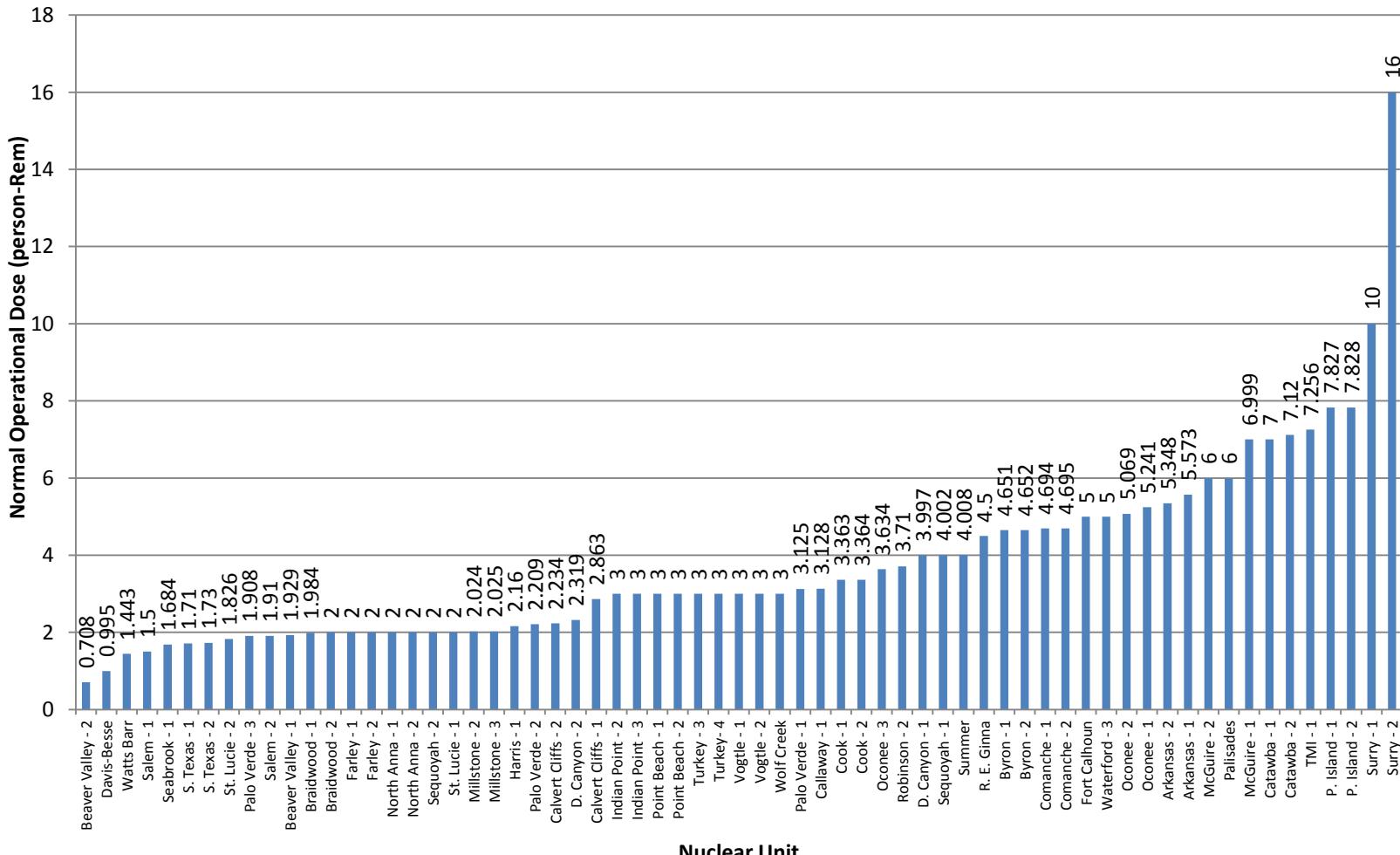
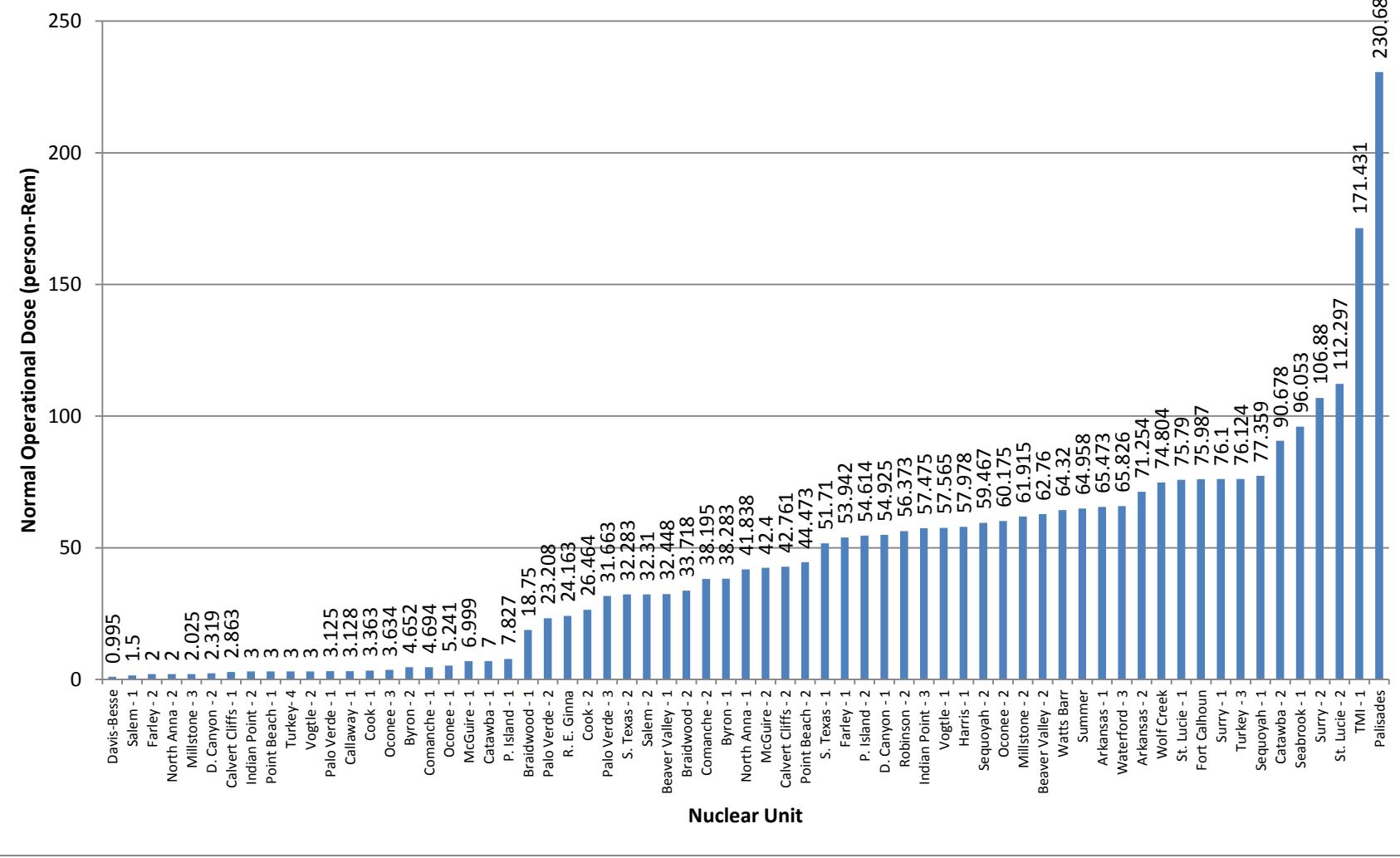


Table 3: 2015 PWR Normal Operation



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Table 4: 2015 PWR Total Dose



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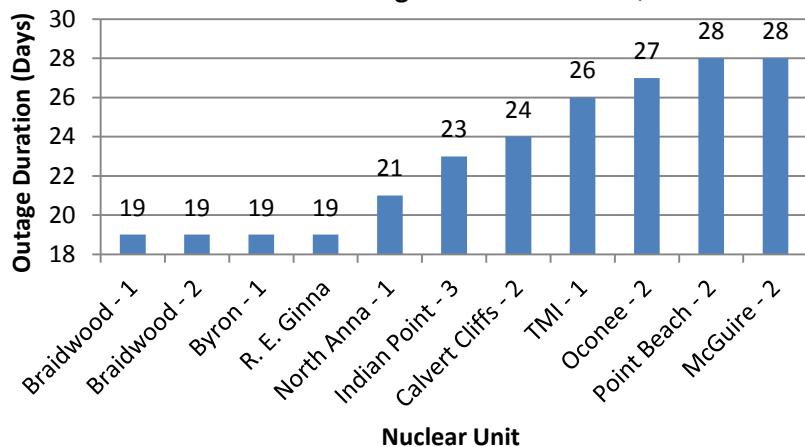
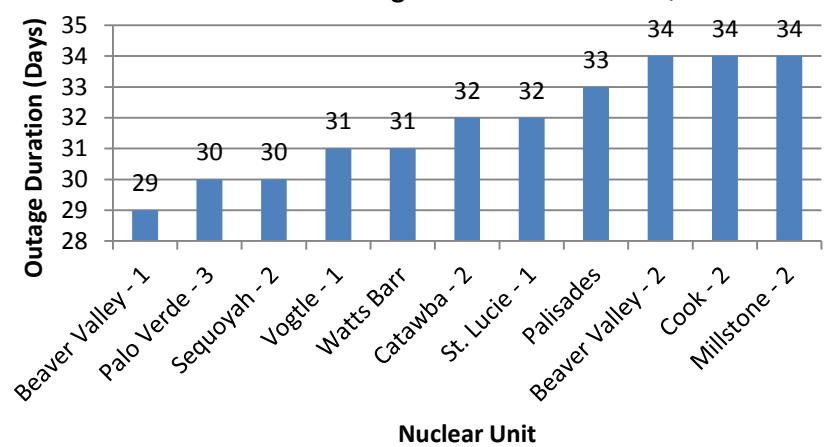
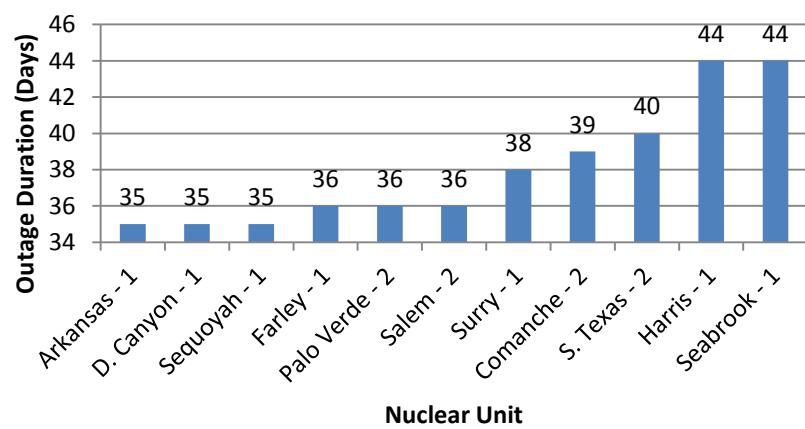
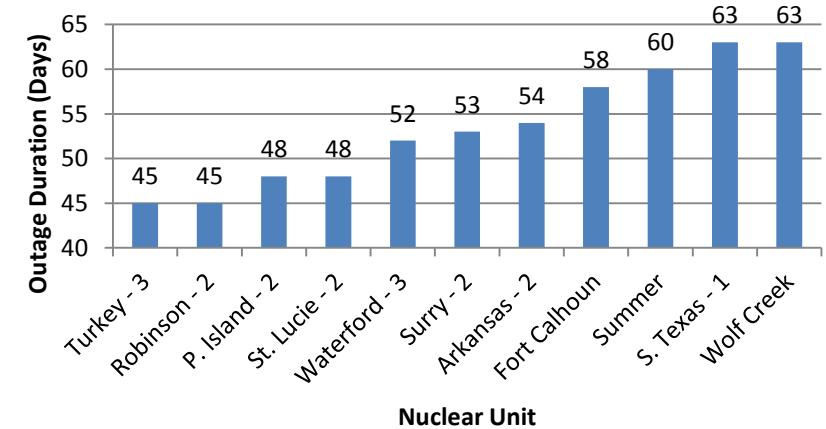
Table 5a: 2015 PWR Outage Duration - First Quartile**Table 5b: 2015 PWR Outage Duration - Second Quartile****Table 5c: 2015 PWR Outage Duration - Third Quartile****Table 5d: 2015 PWR Outage Duration - Fourth Quartile**

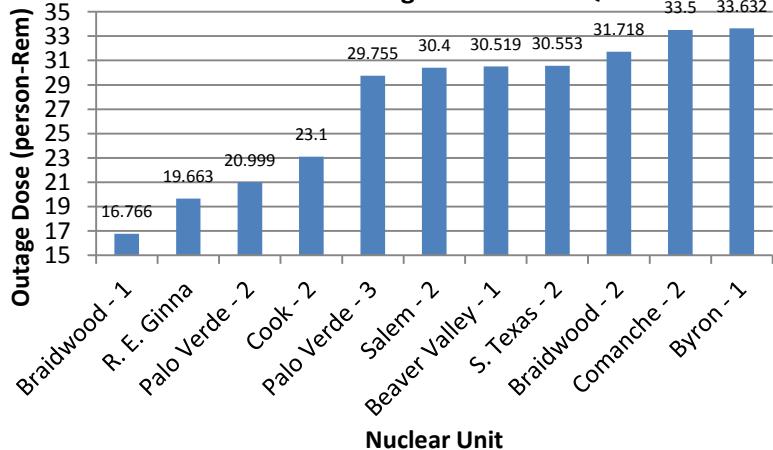
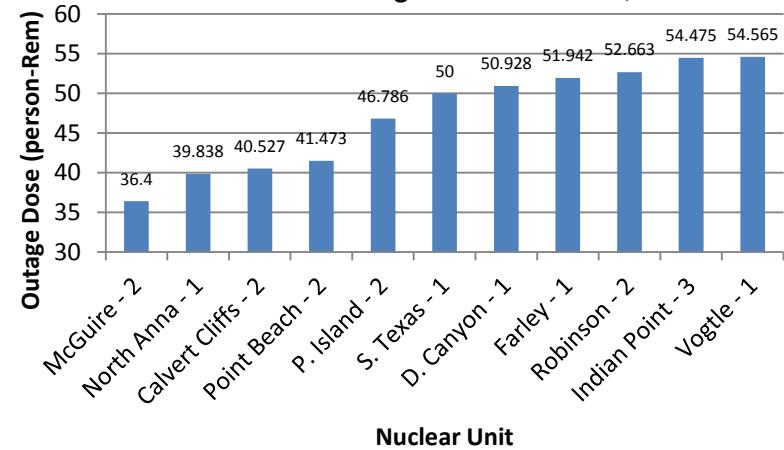
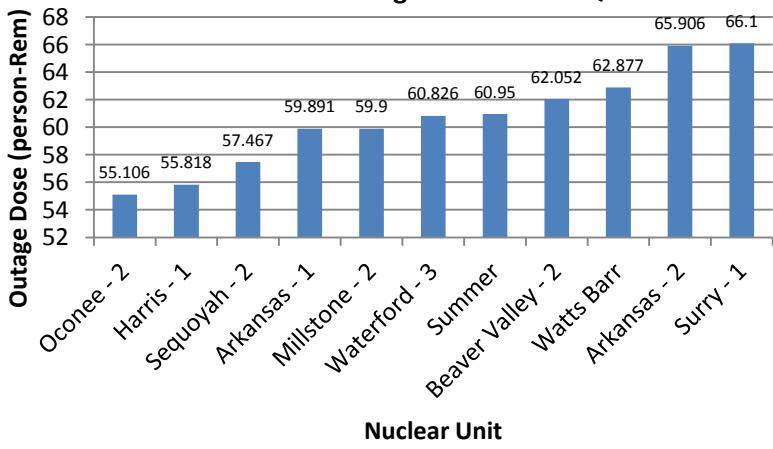
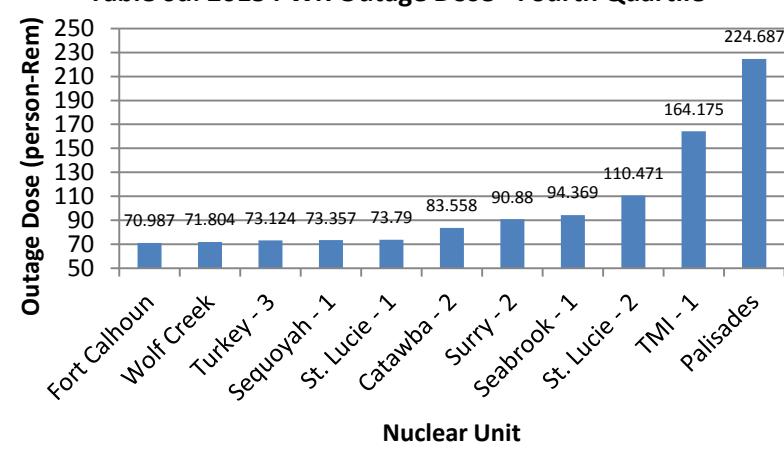
Table 6a: 2015 PWR Outage Dose - First Quartile**Table 6b: 2015 PWR Outage Dose - Second Quartile****Table 6c: 2015 PWR Outage Dose - Third Quartile****Table 6d: 2015 PWR Outage Dose - Fourth Quartile**

Table 7a: 2015 PWR Normal Operations Dose - First Quartile

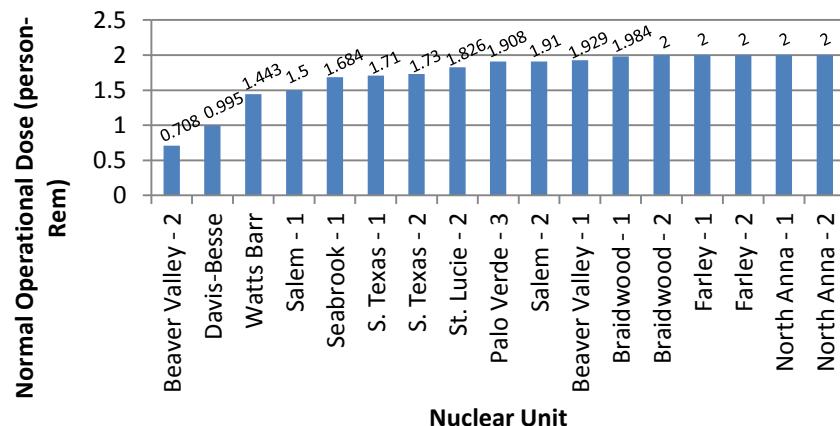


Table 7b: 2015 PWR Normal Operations Dose - Second Quartile

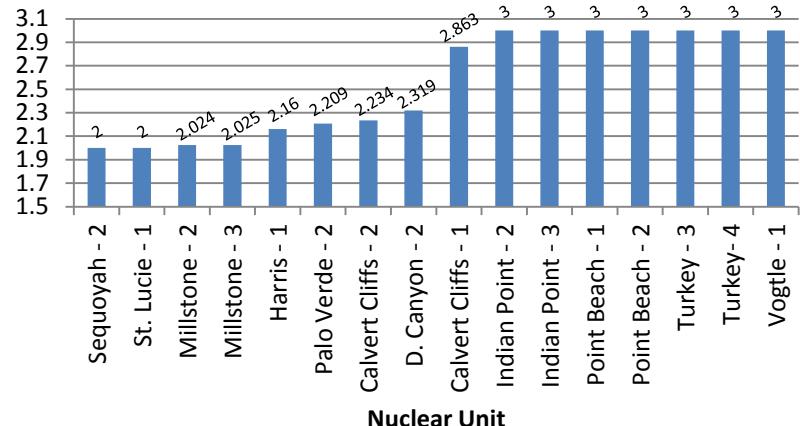


Table 7c: 2015 PWR Normal Operations Dose - Third Quartile

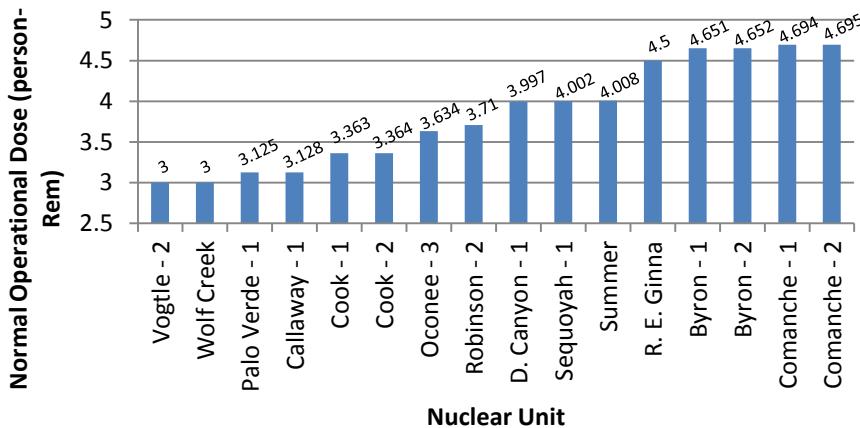


Table 7d: 2015 PWR Normal Operations Dose - Fourth Quartile

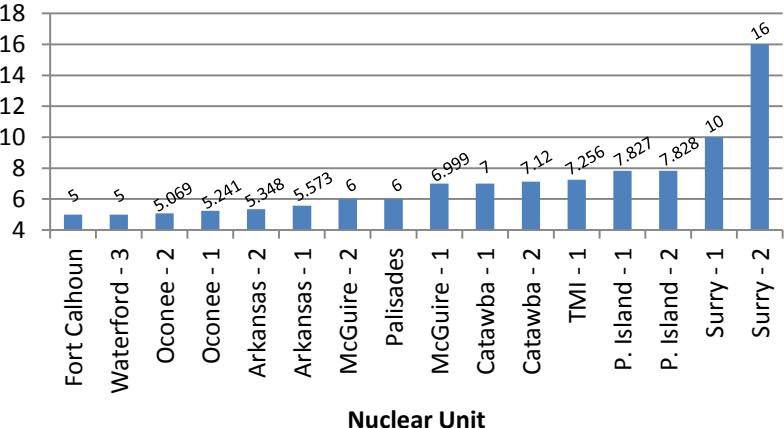


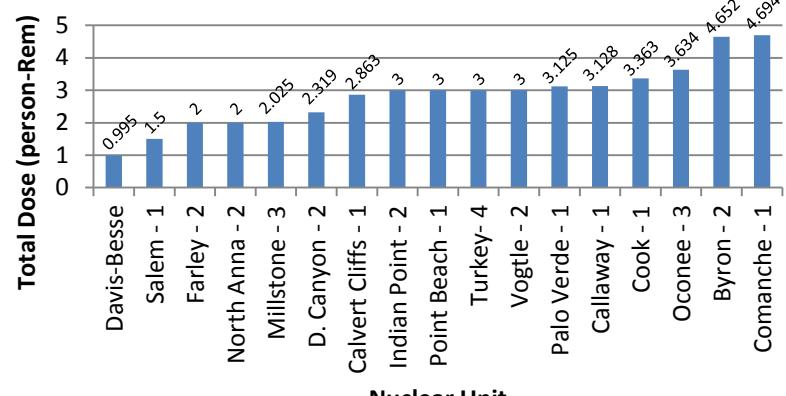
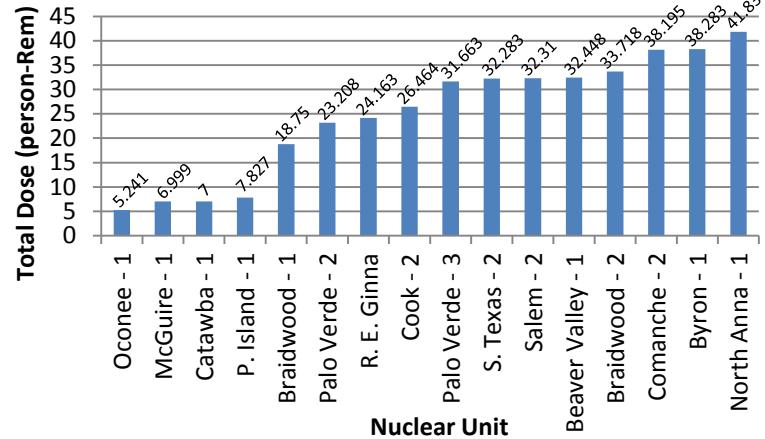
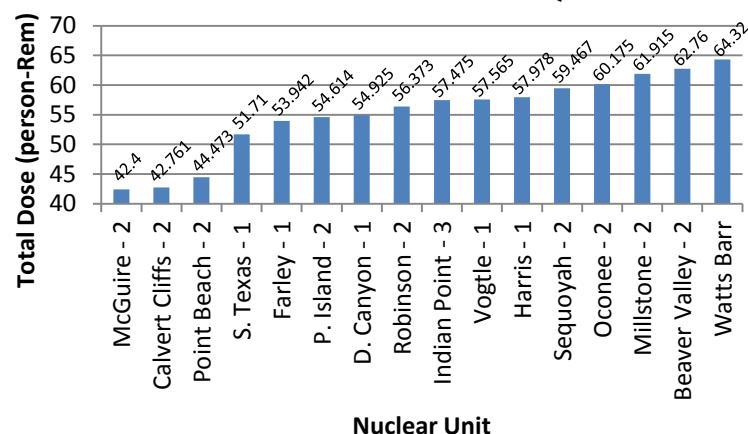
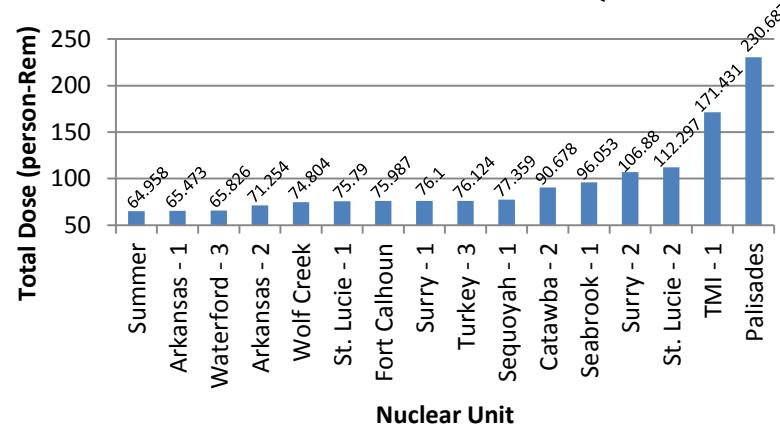
Table 8a: 2015 PWR Total Dose - First Quartile**Table 8b: 2015 PWR Total Dose - Second Quartile****Table 8c: 2015 PWR Total Dose - Third Quartile****Table 8d: 2015 PWR Total Dose - Fourth Quartile**

Table 9: 2015 PWR Occupation Dose Data

Nuclear Unit	Outage Start Date	Outage End Date	Outage Duration (Days)	Outage Dose*	Normal Operation*	Other Shutdowns	Total Dose*	ISOE SITE DOSE*	NRC Values*
Arkansas - 1	1/26/2015	3/1/2015	35	59.900	5.573		65.473		
Arkansas - 2	9/21/2015	11/13/2015	54	65.906	5.348		71.254	136.727	136.727
Beaver Valley - 1	4/25/2015	5/23/2015	29	30.519	1.929		32.448		
Beaver Valley - 2	9/26/2015	10/29/2015	34	62.052	0.708		62.760	95.208	95.208
Braidwood - 1	3/30/2015	4/17/2015	19	16.766	1.984		18.750		
Braidwood - 2	10/5/2015	10/23/2015	19	31.718	2.000		33.718	52.468	52.468
Byron - 1	9/14/2015	10/2/2015	19	33.632	4.651		38.283		
Byron - 2					4.652		4.652	42.935	42.935
Callaway - 1					3.128		3.128	3.128	3.128
Calvert Cliffs - 1					2.863		2.863		
Calvert Cliffs - 2	2/16/2015	3/11/2015	24	40.527	2.234		42.761	45.624	45.624
Catawba - 1					7.000		7.000		
Catawba - 2	2/28/2015	3/31/2015	32	83.558	7.120		90.678	97.678	97.678
Comanche - 1					4.694		4.694		
Comanche - 2	10/4/2015	11/11/2015	39	33.500	4.695		38.195	42.889	42.889
Cook - 1					3.363		3.363		
Cook - 2	3/25/2015	4/27/2015	34	23.100	3.364		26.464	29.827	29.827
D. Canyon - 1	10/4/2015	11/7/2015	35	50.928	3.997		54.925		
D. Canyon - 2					2.319		2.319	57.244	57.244
Davis-Besse					0.995		0.995	0.995	0.995
Farley - 1	3/30/2015	5/4/2015	36	51.942	2.000		53.942		
Farley - 2					2.000		2.000	55.942	55.942
Fort Calhoun	4/12/2015	6/8/2015	58	70.987	5.000		75.987	75.987	75.987
Harris - 1	4/2/2015	5/15/2015	44	55.818	2.160		57.978	57.978	57.978
Indian Point - 2					3.000		3.000		

*Units in person-Rem (1 Rem = 10mSv).

Nuclear Unit	Outage Start Date	Outage End Date	Outage Duration (Days)	Outage Dose*	Normal Operation*	Other Shutdowns	Total Dose*	ISOE SITE DOSE*	NRC Values*
Indian Point - 3	3/2/2015	3/24/2015	23	54.475	3.000		57.475	60.475	60.475
McGuire - 1					6.999		6.999		
McGuire - 2	9/12/2015	10/9/2015	28	36.400	6.000		42.400	49.399	49.399
Millstone - 2	10/4/2015	11/6/2015	34	59.891	2.024		61.915		
Millstone - 3					2.025		2.025	63.940	63.94
North Anna - 1	3/8/2015	3/28/2015	21	39.838	2.000		41.838		
North Anna - 2					2.000		2.000	43.838	43.838
Oconee - 1					5.241		5.241		
Oconee - 2	10/17/2015	11/12/2015	27	55.106	5.069		60.175		
Oconee - 3					3.634		3.634	69.050	69.05
P. Island - 1					7.827		7.827		
P. Island - 2	10/17/2015	12/3/2015	48	46.786	7.828		54.614	62.441	62.441
Palisades	9/16/2015	10/18/2015	33	224.687	6.000		230.687	230.687	230.687
Palo Verde - 1					3.125		3.125		
Palo Verde - 2	10/10/2015	11/14/2015	36	20.999	2.209		23.208		
Palo Verde - 3	4/4/2015	5/3/2015	30	29.755	1.908		31.663	57.996	57.996
Point Beach - 1					3.000		3.000		
Point Beach - 2	10/3/2015	10/30/2015	28	41.473	3.000		44.473	47.473	47.473
R. E. Ginna	10/19/2015	11/6/2015	19	19.663	4.500		24.163	24.163	24.163
Robinson - 2	5/12/2015	6/25/2015	45	52.663	3.710		56.373	56.373	56.373
S. Texas - 1	10/18/2015	12/19/2015	63	50.000	1.710		51.710		
S. Texas - 2	3/29/2015	5/7/2015	40	30.553	1.730		32.283	83.993	83.993
Salem - 1					1.500		1.500		
Salem - 2	10/23/2015	11/27/2015	36	30.400	1.910		32.310	33.810	33.81
Seabrook - 1	10/1/2015	11/13/2015	44	94.369	1.684		96.053	96.053	96.053
Sequoyah - 1	4/11/2015	5/15/2015	35	73.357	4.002		77.359		
Sequoyah - 2	11/14/2015	12/13/2015	30	57.467	2.000		59.467	136.826	136.826
St. Lucie - 1	3/22/2015	4/22/2015	32	73.790	2.000		75.790		

*Units in person-Rem (1 Rem = 10mSv).

Nuclear Unit	Outage Start Date	Outage End Date	Outage Duration (Days)	Outage Dose*	Normal Operation*	Other Shutdowns	Total Dose*	ISOE SITE DOSE*	NRC Values*
St. Lucie - 2	9/8/2015	10/25/2015	48	110.471	1.826		112.297	188.087	188.087
Summer	10/3/2015	12/1/2015	60	60.950	4.008		64.958	64.958	64.958
Surry - 1	4/19/2015	5/26/2015	38	66.100	10.000		76.100		
Surry - 2	10/19/2015	12/10/2015	53	90.880	16.000		106.880	182.980	182.98
TMI - 1	10/30/2015	11/24/2015	26	164.175	7.256		171.431	171.431	171.431
Turkey - 3	10/19/2015	12/2/2015	45	73.124	3.000		76.124		
Turkey- 4					3.000		3.000	79.124	79.124
Vogtle - 1	9/21/2015	10/21/2015	31	54.565	3.000		57.565		
Vogtle - 2					3.000		3.000	60.565	60.565
Waterford - 3	10/25/2015	12/15/2015	52	60.826	5.000		65.826	65.826	65.826
Watts Barr	9/21/2015	10/21/2015	31	62.877	1.443		64.320	64.320	64.32
Wolf Creek	2/28/2015	5/1/2015	63	71.804	3.000		74.804	74.804	74.804

*Units in person-Rem (1 Rem = 10mSv).