PWR RP/ALARA ASSOCIATION

2014 Summer Meeting
Providence, RI
June 23-25, 2014

2014 Board of Directors

Chairman:

2013-2015 Term

Steve Edelman (717-948-8516) steven.edelman@exeloncorp.com - Three Mile Island

Vice-Chairman

2013-2015 Term

2015-2017 Term as Chairman

Dana Page (803-701-3596) dana.page@duke-energy.com - Catawba Nuclear Station

Secretary

2014-2016 Term

1 Position Open

Treasurer

2013-2015 Term

Steve Lisi (704-875-5124) stephen.lisi@duke-energy.com - McGuire Nuclear Station

Steering Committee "At Large" Members

2014-2016 Term

4 Positions Open

**** Terms begin/end after the Summer Meeting of the year indicated ****

PWR RP/ALARA ASSOCIATION

Providence, RI
June 23-25, 2014

MEETING BOOK INDEX

PWR RP/ALARA Association Meeting Agenda
Providence, Rhode Island - June 2014

Sunday, June 22

16:00 – 18:00 Steering Board Meeting & Appetizers

Monday, June 23

14:00 – 15:00 Meeting Registration – Symphony A&B Foyer

15:00 – 16:00 Opening Ceremonies & Introduction:

- Welcome – Opening Remarks (Steve Edelman)
- Safety Review – Building escape routes (Dana Page)
- Introductions of Board Members (Steve Edelman)
- Introductions of “First Time” Representatives (Dana Page)
- Introduction of Association Members
- **Board of Directors election overview**
  - **Nominations –2 year positions on Steering Board**
  - **Vote –2 year positions on Steering Board PWR**
- **By-Laws Revision “C” Approval**

16:15 – 16:30 Steering Committee Meeting

17:00 – 18:30 Opening Reception & Vendor Displays

Tuesday, June 24

07:00 – 08:00 Breakfast in Vendor Exhibit Hall

08:00 – 08:30 Meeting Overview (Steve Edelman)

- Establish Meeting Expectations
- Bench Mark question solicitation
- High Interest Topic Sheets/Program
- Steering Board Directors Report (Mark Roberts)
- Treasury Report (Stephen Lisi)
- ALARA Association Group Picture

08:30 – 09:20 Vendor Presentations

09:20 – 09:30 **10 Minute Break**

09:30 – 10:20	Breakout Session by Plant Type (Document Successes & Challenges and a Golden Nugget) • 2 Loop Westinghouse • 3 Loop Westinghouse • 4 Loop Westinghouse • 4 Loop ICE • B & W, CE and Decommissioning Units
10:20 - 10:50	**Break / Vendor Interface**
10:50 – 12:00	Breakout Sessions by Plant Type (Document Successes & Challenges and a Golden Nugget con't): • 2 Loop Westinghouse • 3 Loop Westinghouse • 4 Loop Westinghouse • 4 Loop ICE • B & W, CE and Decommissioning Units
12:00 – 13:00	Lunch
13:00 – 13:40	Breakout Session Review (Successes, Challenges and Golden Nuggets) • B & W, CE and Decommissioning Units
13:40 – 14:10	**Break / Vendor Interface**
14:10 – 14:50	DFS2 Seabrook Station Summer 2013 (**Kinsey Boehl**)
14:50 – 15:30	Vendor Presentations
15:30 – 15:35	End of Day Comments / Adjourn Day 2
15:45 – 16:15	Steering Committee Meeting
17:00 – 18:30	Vendor Reception

Wednesday, June 25

07:00 – 08:00 Breakfast in Vendor Exhibit Hall

08:00 – 09:10 Breakout Session Review (Successes, Challenges and Golden Nuggets)

- 2 Loop Westinghouse
- 3 Loop Westinghouse

09:10 – 09:30 **Break / Vendor Interface**

09:30 – 10:40 Breakout Session Review (Successes, Challenges and Golden Nuggets)

- 4 Loop Westinghouse
- 4 Loop ICE

10:40 – 10:50 **10 Minute Break**

10:50 – 11:50 US & European Source Term Measurement Results from the H3D Technology **(David Miller)**

11:50 – 13:15 **Lunch / Passport Drawing**

13:15 – 13:30 **Steering Board Election results**

- **Recognize new Steering Board Members**

13:30 – 14:45 Round Table Discussions

14:45 – 15:00 Closing Remarks and Update on the 2015 Meetings (Key West, Florida; January 20-22, 2015 and Seattle, Washington; June 22-24, 2015)

15:15 – 16:30 Steering Committee Meeting

- Opening Remarks
- Welcome New Members
- Review Meeting Critique Sheets
- New Business

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI
June 23-25, 2014
MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI
June 23-25, 2014
MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI
June 23-25, 2014
MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA
ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA ASSOCIATION

Providence, RI

June 23-25, 2014

MEETING NOTES

PWR RP/ALARA Committee Meeting
June 23-25, 2014
Providence, RI
Attendee List by Plant

ANO
Dan Stoltz
Entergy
1448 State Route 333
Russellville, AR 72802
479-858-7679
dstoltz@entergy.com

Braidwood
Harry Miller
Exelon
35100 South Route 53, Suite 84
Braceville,IL 60416
815-417-2713
harryl.miller@exeloncorp.com

Catawba
Dana Page
Duke Energy
4800 Concord Road
York, SC 29745
803-701-3596
dana.page@duke-energy.com

Calvert Cliffs
Crystal Couey
Exelon
1650 Calvert Cliffs Pkwy
Lusby, MD 20657
410-495-2681
crystal.couey@cengllc.com

Comanche Peak
Shari Mosty
Luminant
PO Box 1002
Glen Rose,TX 76043
254-897-5204
shari.mosty@Luminant.com

DC Cook Nuclear Plant
David Miller
AEP
One Cook Place
Bridgman, MI 49106
217-855-3238
dwmiller2@aep.com

Diablo Canyon
Rick Rogers
PG&E
P.O. Box 56
Avila Beach, CA 93424
805-545-3246
rwr2@pge.com

HB Robinson
Wade Miller
Duke Energy
3481 W. Entrance Road
Hartsville, SC 29055
843-339-3933
wade.miller@pgnmail.com

McGuire
Stephen Lisi
Duke Energy
7800 Hagers Ferry Road
Huntersville,NC 28078
980-878-5124
stephen.lisi@duke-energy.com

Oconee
Bill Meldrum
Duke Energy
7800 Rochester Highway
Seneca, SC 29672
864-873-3204
william.meldrum@duke-energy.com

Prairie Island

Krystyn Kono
Xcel energy
1717 Wakonade Drive East
Welch, MN 55089
651-267-6556
krystyn.kono@xenuclear.com

Seabrook

Kinsey Boehl
NextEra Energy
626 Lafayette Road
Seabrook, NH 03874
603-773-7638
kinsey.boehl@fpl.com

Sequoyah

Debra Champagne
TVA
2600 Igou Ferry Road
Soddy Daisy, TN 37379
423-843-7468
dlchampa@tva.gov

Jeffrey Nolen
TVA
2600 Igou Ferry Road
Soddy Daisy, TN 37379
423-843-6778
jlnolen@tva.gov

Three Mile Island

Steve Edelman
Exelon
PO Box 480 Middletown, PA 17112
717-948-8516
steven.Edelman@exeloncorp.com

VC Summer

Thomas Corbett
SCE&G
P.O. Box 88, Jenkinsville, SC 29065
803-931-5020
thomas.corbett@scana.com

Vogtle

Abby Fields
Southern Nuclear
7821 River Road
Waynesboro, GA 30830
706-826-3432
acfields@southernco.com

PWR RP/ALARA Committee Meeting
June 23-25, 2014
Providence, RI
Vendor List by Company

ACT / Silflex Shielding
Richard Culbertson
Adrian Stewart
1317 Simpson Way
Escondio, CA 92029
619-913-6205
adrian@silflexshielding.com

BHI Energy | Bartlett Nuclear
Bill Peoples
Dave Wood
60 Industrial Park Road
Plymouth, MA 02360
508-591-1149
lauren.buckman@
bhienergy.com

Canberra
Jeff Raimondi
800 Research Parkway
Meriden, CT 06450
800-243-4422
tpattison@canberra.com

Day & Zimmerman
Luther Jones
5800 E. Skelly Drive
Tulsa, OK 74135
918-949-6000
john.edwards@dayzim.com

Eastern Technologies/OREX
Doug Kay
215 2nd Avenue
Ashford, AL 36312
334-798-1687
bmcwaters@orex.com

Eichrom Technologies/NPO
Mike Davis
Andrew Dockweiller
1955 University Lane
Lisle, IL 60532
630-963-0320
adockweiler@eichrom.com

Frham Safety Products
Brian Anderson
John Arrowsmith
Trip McGarity
171 Grayson Road
Rock Hill, SC 29732
803-366-5131
trip@frhamsafety.com

Innovative Industrial Solutions
Shane Robinson
Chris Whitford
2830 Skyline Drive
Russellville, AR 72802
479-968-4266
shane.robinson@i-i-s.net

iRobot Corporation
Rainer Gasche
Tom Phelps
8 Crosby Drive
Bedford, MA 01730
781-430-3570
jlesser@irobot.com

ISEC Industrial Security AB
Anthony Spadaro
Sporthallsvagen 2B
Hoganas Sweden
ansp@isec.se

Lancs Industries
Ron Therrien
12704 NE 124th Street
Kirkland, WA 98034
401-884-9926
rtherrien@lancsindustries.com

Master-Lee Decon Services
Rick McCormick
Steve Senitta
430 Miller Road
Medford, NJ 08055
609-953-3200
mccormick-ml@comcast.net

Mirion Technologies
Jim Gustafson
Jason Stevenson
5000 Highlands Pkwy, Ste 150
Smyrna, GA 30082
770-432-2744
snewby@mirion.com

RPS (Radiation Protection Systems)
David Cruise
Haley Stout
P.O. Box 890
Groton, CT 06340
860-445-0334
hstout@radprosys.com

Rolls Royce
David Cruise
6546 Pound Road
Williamson, NY 14519
315-589-4000
tonia.smith@rolls-roycenuclear.com

Scientech/Curtiss-Wright
Ralph Aceves
Tom Bernacki
Cliff Evans
44 Shelter Rock Road
Danbury, CT 06810
860-409-0513
tbernacki@curtisswright.com

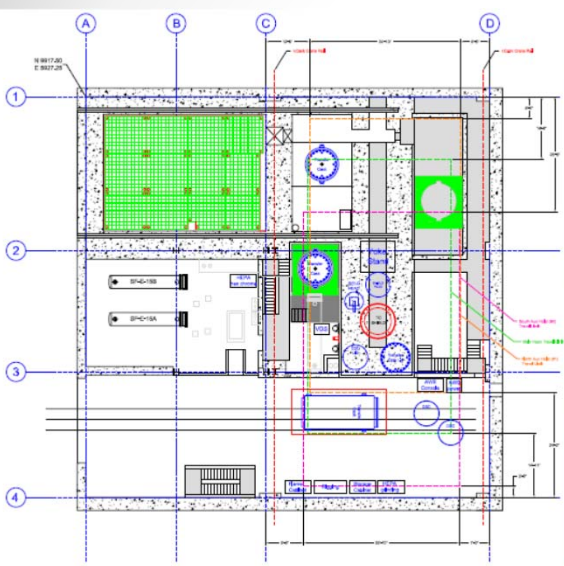
Topy Industries Ltd
Mike Takahashi
Shin Tsukui
Tom Turner
660 Fargo Avenue
Elk Grove Village, IL 60007
847-471-1032
tturner@itaoffice.com

Uticom Systems
Bob Thompson
Jackie Waller
109 Independence Way
Coatesville, PA 19320
610-857-2655
jackie@uticom.net

Vocera
Dave Bingham
Heidi Isaias
525 Race Street
San Jose, CA 95126
408-348-5469
jcrisci@vocera.com

DFS2 Seabrook Station Summer 2013

FSB Setup



PLAN EL. 21'-6" & 25'-0"

Scope

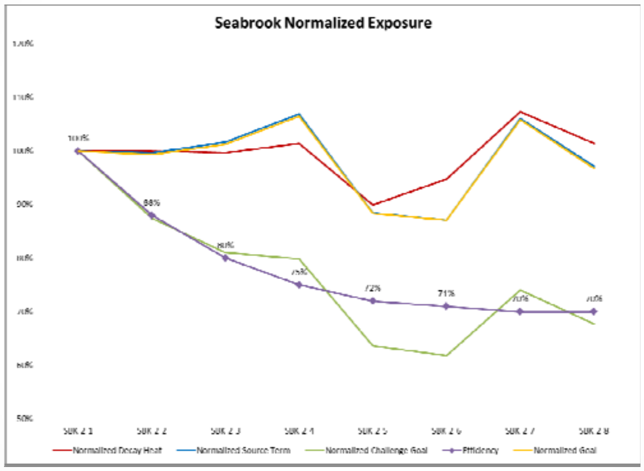
- Cask Loading Activities, encompassing the loading of two hundred fifty six (256) spent fuel assemblies (specified by Juno Beach Fuels Group) into eight (8) NUHOMS® HD-32PTH dry cask storage systems at Seabrook (SBK).
- Loading shall be performed in accordance with CoC No. 1030, Amendment 1 and the NUHOMS® HD System Updated Final Safety Analysis Report (UFSAR), Revision 3 and SBK site-specific requirements. Fuel assemblies to be loaded will include 3 assemblies requiring damaged fuel caps. The above cask loading operations are scheduled to be completed no later than September 30, 2013.
- Complete 2 dry runs before fuel movement.

Normalizing Cask Dose Rates to Demonstrate Relative Performance

Design Basis Data for 32PTH Type-1 Cask			
Decay Heat Average Outer Ring Value (kw)	MTU Average Outer Ring Value (kg Ur)	Burnup (x1000) Average Outer Ring Value	Enrichment wt-% Average Outer Ring Value
1.3	476	60	4
	Contact Dose Rate Side (mrem/hr)	Contact Dose Rate Top (mrem/hr)	Contact Dose Rate Bottom (mrem/hr)
	384	8.1	475
	1-Meter Dose Rate Side (mrem/hr)	1-Meter Dose Rate Top (mrem/hr)	1-Meter Dose Rate Bottom (mrem/hr)
	165	3.5	53.1

ID	Total Decay Heat	Decay Heat Average Outer Ring Value (kw)	*MTU Average Outer Ring Value (kg U)*	Burnup (x1000) Average Outer Ring Value	Enrichment wt-% Average Outer Ring Value
SBK-1-1	27.2	0.844	476.000	43.749	3.775
SBK-1-2	24.6	0.830	476.000	40.630	3.888
SBK-1-3	25.2	0.828	476.000	42.888	3.813
SBK-1-4	26.4	0.867	476.000	42.888	4.000
SBK-1-5	26.7	0.817	476.000	40.683	3.963
SBK-1-6	26.1	0.821	476.000	40.657	3.738
SBK-2-1	28.7	1.027	467.301	44.290	4.090
SBK-2-2	28.7	1.026	467.301	45.490	4.210
SBK-2-3	28.6	1.004	465.538	44.520	3.940
SBK-2-4	29.1	1.015	476.118	46.800	4.070
SBK-2-5	25.8	0.981	458.484	47.190	4.620
SBK-2-6	27.2	0.978	462.893	47.080	4.710
SBK-2-7	30.8	1.076	480.527	49.990	4.690
SBK-2-8	29.1	1.016	476.118	48.960	4.690

$$\left(\left(\frac{\text{Outer Ring of Fuel Average Burnup}}{\text{Outer Ring of Fuel Average Enrichment}} \right) \div \left(\frac{\text{Design Basis Burnup}}{\text{Design Basis Enrichment}} \right) \right) \times \left(\frac{\text{Outer Ring of Fuel Average MTU}}{\text{Design Basis MTU}} \right) \times \left(\frac{\text{Outer Ring of Fuel Average Decay Heat}}{\text{Design Basis Decay Heat}} \right) \times \left(\text{Design Basis Doserate} \right) \simeq \left(\text{Normalized Doserate} \right)$$



Cask #	Normalized Dose Rate
1	1.00
2	1.00
3	1.02
4	1.07
5	0.88
6	0.87
7	1.06
8	0.97
Total	7.87

Figure 1: Normalized exposure goals and challenge goal. The challenge goal was determined by applying improved crew efficiency factors typical of historical performances.

Improvements DFS1 to DFS2

Improved dose performance from DFS1 to DFS2 is specifically attributed to the following:

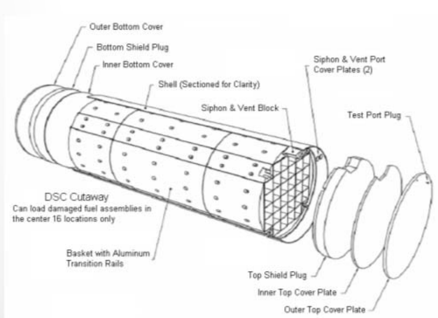
- Training and work proficiency of Transnuclear crew is the most significant contributor to dose performance. The crew has moved over 40 casks to ISFSIs as a crew. Job descriptions, assignments and work flows are well established. Crew members understand their work actives and are able to perform them correctly the first time. Job assignments do not change weekly. This enables crew to practice skills. Crews used Job Site Reviews prior to each significant evolution. This was helpful in communicating job assignments for contract and Seabrook personnel.
- **The Transnuclear crew came to Seabrook with the expressed goal of lowest dose for the industry. Daily post job reviews and weekly critiques identify efficiency improvement areas. Each task is reviewed and team members are given the opportunity to discuss personnel, tooling, jobsite provisions required for each job step. Dose ownership among the crew is evident at these meetings. An example of crew engagement was demonstrated following the 6th loaded canister. A crew member approached ALARA to improve the electronic dosimetry tracking estimates by providing a Sentinel change station near the ISFSI. AR1903939.**
- **Seabrook completed two dry runs to familiarize Station and contract staff on the equipment and process. The tasks were not completed sequentially due to failure of the cask crane sheaves. Although the dry runs were not completed as desired, the station benefited from their performance. Performing dry run activities during future campaigns is desirable.**
- House RP and RW technicians and supervisor have supported the project. Routine activities have been backfilled with contract personnel. Technician rotations were scheduled to provide continuity in the project by not introducing entirely new support crews weekly. Many backshift personnel covered the entirety of the project.

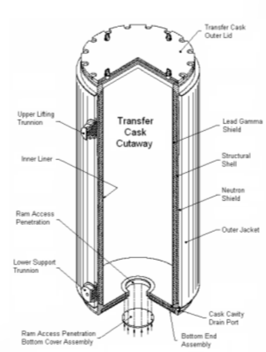
Improvements DFS1 to DFS2

- Work area conditions were improved from DFS1 OE. The VDS system was moved to the LDWA on the upper mezzanine where it can be accessed without exposure from the loaded cask. Instrumentation on the VDS are monitored remotely from the cool tent using PTZ camera systems. Headsets enable reduction of workers in radiation fields by facilitating communication and timing tasks so unnecessary personnel are not in the area. Hoses and ventilation runs were made to avoid low spots to prevent concentrating and trapping contamination.
- Site procedures listed as FS and FX series incorporate RP hold points that require signoff during evolutions that can change dose rates in the field.
- Gamma to neutron ratios were evaluated by HPSTIDs 08-008 during DFS1. RWP tasks were tailored to incorporate documented neutron to gamma ratios for individual tasks. Occupancy rates and source term were considered for each major evolution to establish neutron to gamma ratios for electronic dosimetry estimates.
- Pre-job ALARA planning included contingencies. Contingency shielding packages were available to shield the VDS condensate trap. Additional contingencies included actions for RP, Chemistry and Operations in the event of a Kr-85 release during vacuum drying. The contingency for Kr-85 release included actions to reduce exposure and control licensed material.
- **Station control of SFP purification is correlated to project dose accrued during decontamination of the transfer cask and to dose rates on the bridge during fuel moves. History from DFS1 and benchmarking from the plants listed in Figure 1 is not readily accessible. Concentrations of gamma emitters in the SFP may demonstrate improved relative performance to industry peers.**

Pre-Job Considerations: Shielding

- An engineered Transfer Cask Shield Bell will be installed on the TC. A Temporary Shielding Request will not be written for the Bell. It will be installed IAW FX3000.12 Figure 6. It consists of borated polycarbonate.
- Additional shielding will be required on the Vacuum Drying Skid pictured in the foreground to shield the condensate trap. The skid location for DFS2 will be on the upper 25′ mezzanine.
  - o This shield was not actually installed. The VDS condensate trap has a low point drain and can be flushed to the FSB sump if it becomes a source term.
  - o Seabrook could not get Project approval to apply shielding directly to the VDS condensate tank. We installed scaffold around the entire VDS. The project was not happy with this due to space constraints. We eventually removed the scaffold.
- Another TSR will be written to install lead snakes between the annular space between the Dry Shield Canister and the top cover.





Remote Operation and Monitoring

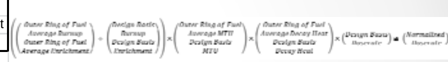
- The project supplied an Automated Welding System to close the Inner Top Cover and for Outer Top Cover root and fill welds.
- Remote monitoring of vacuum drying indication and remote personnel monitoring set up in air conditioned tent.
- Cool tent provided location for supervisory observations
- Personnel were restricted from general areas when not directly supporting work actives.

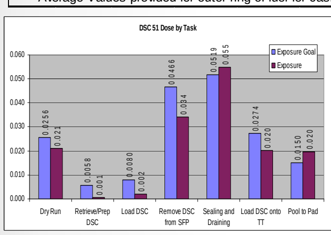
Exposure by Cask (rem)

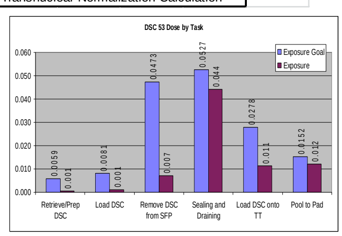
Task	Cask 51	53	55	57	52	54	56	58	Total
1	0.0007	0.0005	0.0008	0.0009	0.0005	0.0009	0.0008	0.0009	0.0060
2	0.0021	0.0010	0.0009	0.0009	0.0007	0.0008	0.0006	0.0007	0.0077
3	0.0341	0.0070	0.0035	0.0053	0.0064	0.0060	0.0031	0.0025	0.0679
4	0.0549	0.0442	0.0391	0.0403	0.0388	0.0337	0.0343	0.0354	0.3207
5	0.0203	0.0114	0.0047	0.0231	0.0156	0.0104	0.0110	0.0038	0.1003
6	0.0196	0.0121	0.0123	0.0144	0.0134	0.0122	0.0074	0.0072	0.0986
Total	0.1317	0.0762	0.0613	0.0849	0.0754	0.0640	0.0572	0.0505	0.6012
						Dry Run	0.0222	Total	0.6234
Total Decay Heat	28.7	28.6	25.8	30.8	28.7	29.1	27.2	29.1	kW
Burnup*	44.29	44.52	47.19	49.99	45.49	46.8	47.08	48.96	x1000
Enrichment*	4.09	3.94	4.62	4.69	4.21	4.07	4.71	4.69	% Weight
TN Normalization	1	1.02	0.88	1.06	1	1.07	0.87	0.97	

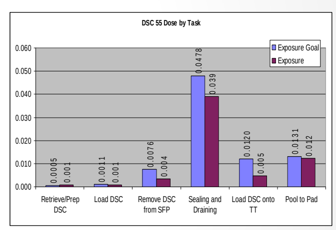
*Average Values provided for outer ring of fuel for casks per Transnuclear Normalization Calculation

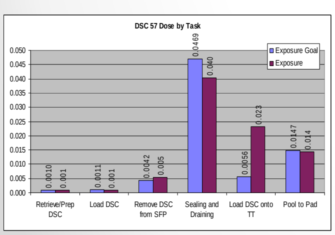
Task	
1	Retrieve/Prep DSC
2	Load DSC
3	Remove DSC from SFP
4	Sealing and Draining
5	Load DSC onto TT
6	Pool to Pad

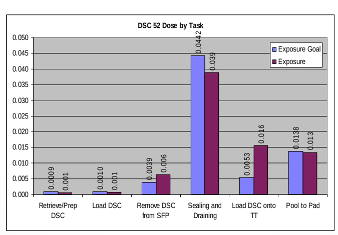


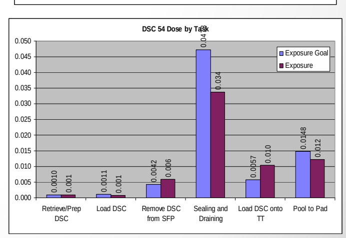


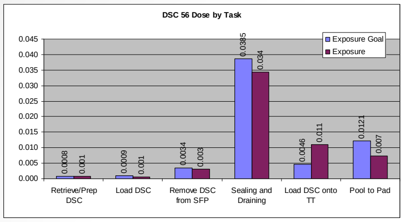


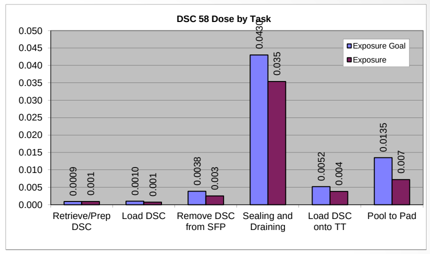












Revised Goal by Cask 8/26

Task	Cask 51	53	55	57	52	54	56	58	Total
1	0.0058	0.0059	0.0005	0.0010	0.0009	0.0010	0.0008	0.0009	0.0168
2	0.0080	0.0081	0.0011	0.0011	0.0010	0.0011	0.0009	0.0010	0.0223
3	0.0466	0.0473	0.0076	0.0042	0.0039	0.0042	0.0034	0.0038	0.1212
4	0.0519	0.0527	0.0478	0.0469	0.0442	0.0473	0.0385	0.0430	0.3723
5	0.0274	0.0278	0.0120	0.0056	0.0053	0.0057	0.0046	0.0052	0.0935
6	0.0150	0.0152	0.0131	0.0147	0.0138	0.0148	0.0121	0.0135	0.1123
Total	0.1546	0.1570	0.0821	0.0735	0.0692	0.0741	0.0604	0.0674	0.7383
						Dry Run	0.0256	Total	0.763868

ARB Approved Goal

Task	Cask 1	2	3	4	5	6	7	8	Total
1	0.0058	0.0058	0.0059	0.0062	0.0051	0.0050	0.0062	0.0056	0.0456
2	0.0080	0.0080	0.0081	0.0086	0.0071	0.0070	0.0085	0.0078	0.0630
3	0.0466	0.0465	0.0473	0.0498	0.0412	0.0406	0.0494	0.0453	0.3665
4	0.0519	0.0517	0.0527	0.0554	0.0458	0.0451	0.0550	0.0504	0.4080
5	0.0274	0.0273	0.0278	0.0292	0.0242	0.0238	0.0290	0.0266	0.2152
6	0.0150	0.0150	0.0152	0.0160	0.0133	0.0131	0.0159	0.0146	0.1180
Total	0.1546	0.1542	0.1570	0.1652	0.1366	0.1346	0.1639	0.1502	1.2164
							Dry Run	0.0256	

Gamma Exposure by Cask

Task	Cask 51	53	55	57	52	54	56	58	Total
1	0.0007	0.0005	0.0008	0.0009	0.0005	0.0009	0.0008	0.0009	0.0060
2	0.0015	0.0010	0.0009	0.0009	0.0007	0.0008	0.0006	0.0007	0.0071
3	0.0172	0.0036	0.0023	0.0034	0.0032	0.0034	0.0018	0.0015	0.0364
4	0.0275	0.0225	0.0209	0.0203	0.0195	0.0181	0.0172	0.0180	0.1640
5	0.0103	0.0057	0.0024	0.0116	0.0078	0.0052	0.0055	0.0019	0.0504
6	0.0171	0.0104	0.0107	0.0126	0.0118	0.0106	0.0070	0.0069	0.0871
Total	0.0743	0.0437	0.0380	0.0497	0.0435	0.0390	0.0329	0.0299	0.3510
							Dry Run	0.0222	0.3732

Neutron Exposure by Cask

Task	Cask 51	53	55	57	52	54	56	58	Total
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006
3	0.0169	0.0034	0.0012	0.0019	0.0032	0.0026	0.0013	0.0010	0.0315
4	0.0274	0.0217	0.0182	0.0200	0.0193	0.0156	0.0171	0.0174	0.1567
5	0.0100	0.0057	0.0023	0.0115	0.0078	0.0052	0.0055	0.0019	0.0499
6	0.0025	0.0017	0.0016	0.0018	0.0016	0.0016	0.0004	0.0003	0.0115
Total	0.0574	0.0325	0.0233	0.0352	0.0319	0.0250	0.0243	0.0206	0.2502
									0.2502

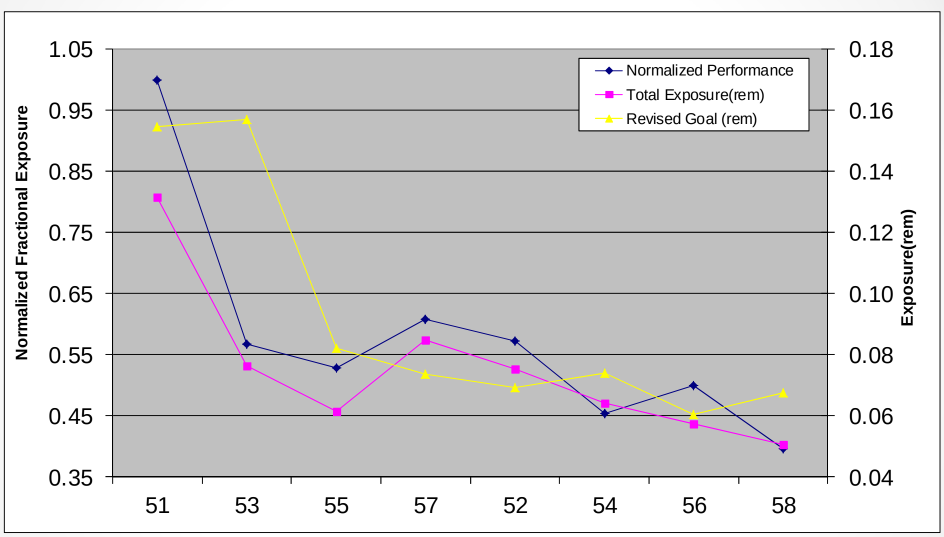
	Task	η:γ Ratio by RWP
1	Retrieve/Prep DSC	0:1
2	Load DSC	0:1
3	Remove DSC from SFP	1:1
4	Sealing and Draining	1:1
5	Load DSC onto TT	1:1
6	Pool to Pad	0:1
7	Dry Run	0:1
8	Partial HSM Entry	1:1

Average 75 mrem per cask loaded

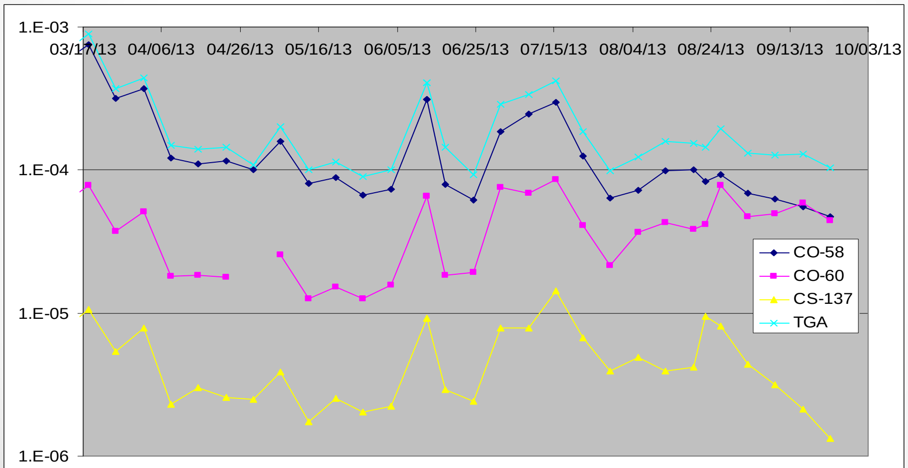
One PCE occurred during DFS2. The individual was contaminated with a 1000 ccpm particle while rigging the weld head from the DSC.

Benchmark

Plant	System	Average Exposure (person-mrem)	Lowest Exposure (person-REM)	Burnup (GWD/MTU)	Cooling Time (years)	Heat Load (kW)	Notes	Contributor
Peach Bottom	TN-68	267	182		>10		Avg. of 60 loadings (2000-2012)	Charles.Albert@exeloncorp.com; paul.gregory@exeloncorp.com
Pt. Beach	NUHOMS-32PT	180	94	18-45	10-35		Avg. of 9 loadings (2012)	Gears, Charles [Charles.Gears@fpl.com]
St. Lucie	NUHOMS-32PTH	145	93	12-55	5.7 - 35	26.3	Avg. of 6 loadings (2013)	Gary.Hollinger@fpl.com; Gears, Charles [Charles.Gears@fpl.com]
Nine Mile Point	NUHOMS-61BT	229		35		7.4 kW	Gamma, only; based on first loading campaign of 6 loadings (2012)	Phy, Kenneth A [Kenneth.Phy@cengllc.com]
Dominion	NUHOMS-32PTH (Surry, N. Anna); NUHOMS-32PT (Millstone 2, Kewaunee)	100-150	<100			30 kW (S, NA) 15 kW (M, K)	typical loading	Brian Wakeman [brian.wakeman@dom.com]
North Anna	NUHOMS-32PTH	195	76	47	11		Avg. of 15 loadings; exposures do not include transfer and placement into storage (74.7 mrem, avg. for 15); total exposure for last 5 DSCs is 187 mrem	Joe Goerge [joe.goerge@dom.com]
La Salle	Hi-Storm 100S, MPC-68	660	620	30-34	outer region- 17-18 yr;	12-14 kW	typical loading	Gabriel.Chavez@exeloncorp.com
Diablo Canyon	Hi-Storm 100SA, MPC-32	198	75	45.5 max		18 kW	Avg. of 23 loadings	Hagler, Rich [RDH7@pge.com]
Cooper	NUHOMS-61BTH, HSM-H	621	513	37.6 max		11 kW	Avg. of 8 loadings	Voss, Brian K. [bkvoss@nppd.com]
SONGS	NUHOMS-24PT4	155	77			9-15 kW, typi	Avg. of 5 loadings (#43, #45-#49)	Randall.Granaas@sce.com
Robinson	NUHOMS-24PTH	266	163			27.4	Avg. of 14 loadings (1-8; 17-22)	Matthew.Basta@pgnmail.com
Oconee	NUHOMS-24PHB	557-1000	557	45	10-11	20	typical loading	
McGuire	UMS-24	227	63			14.1	Avg. of 28 loadings	
Catawba	UMS-24	140	61			15.5	Avg. of 24 loadings	william.murphy@duke-energy.com
Palo Verde	UMS-24	105-115	32			13-14	typical loading	seth.kanter@aps.com
Duane Arnold	NUHOMS-61BT	556	486	35	15	12.1	Average of 10 loadings in 2011 Lowest Exposure is in person-mrem	clark.harberts@fpl.com



- Reduce Transfer Cask Decon Efforts
  - Maintain SFP Purification in Service Prior to Campaign
  - Seabrook Performs Ultra Sonic Cleaning
  - Casks were pre rinsed with DI during placement and removal from SFP



Gamma emitter concentrations in SFP uCi/cc

OE from St. Lucie: Kr-85 release during vacuum drying

- Fuel assemblies to be loaded included 3 damaged assemblies from early cycles.
- Wrote white paper for mitigating actions and station communication.

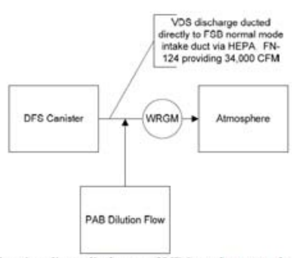


Figure 1: Model showing direct discharge of VDS to plant vent through HEPA filter in FSB Normal Mode.

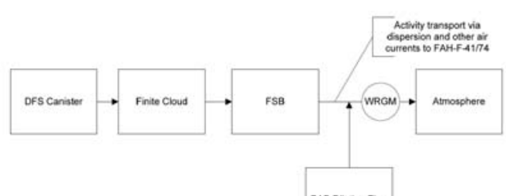


Figure 2: Model showing discharge of VDS to general FSB volume through HEPA filter in FSB Fuel Handling Mode. The activity of each compartment is modeled using Equations 2-5.

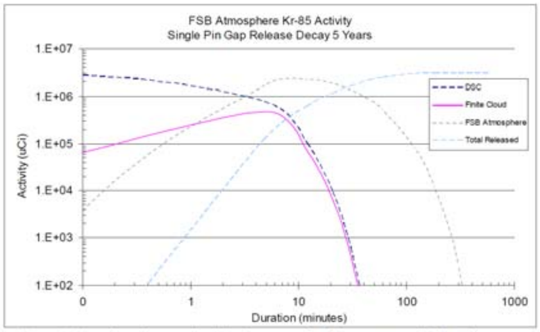


Figure 4: Time dependent total activity inventory of each compartment indicated in Figure 2 discharge to FSB.

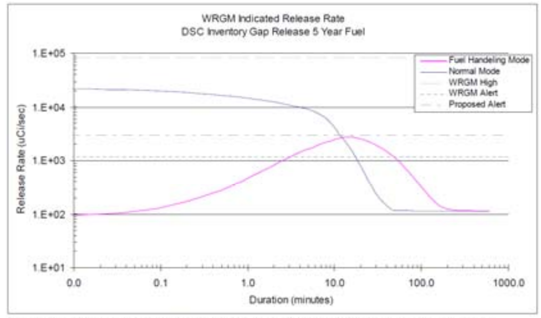


Figure 5: Time dependent indicated WRGM release rate by ventilation mode for 5 year fuel single pin gap release. Proposed alert set point change to 3.00E+03 uCi/sec is not expected to be exceeded during a single pin design basis gap release.

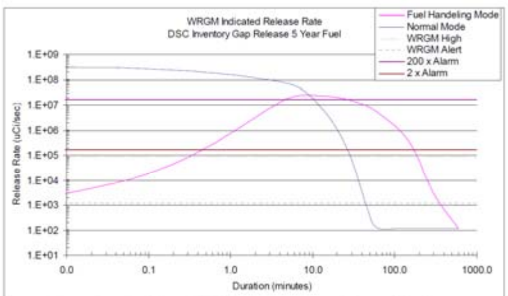


Figure 7: Time dependent indicated WRGM release rate by ventilation mode for 5 year fuel total inventory gap release.

		Normal Mode	Fuel Handling Mode
Single Pin Release 5 Year Fuel	Max Indicated Release Rate(uCi/sec)	3.44E+04	2.97E+03
	Alert	1.20E+03	1.20E+03
	Alarm	8.47E+04	8.47E+04
	Alert In	Yes	Yes
	Alert Time after Failure	Instantaneous	2.5 min
	Alert Duration	12 min	42 min
	Percent High Alarm	40.6%	3.5%
Bounding Conditions 5 Year Fuel	Pin Failures for High Alarm	3	29
	Pin Failures for 2 x High Alarm	5	59
	Pin Failures for 200 x High Alarm	500	~Cask Inventory
	Pin Failures for AU1 2x Alarm for 60 min	>Cask Inventory	300
	Pin Failures for AA1 200x Alarm for 15 min	>Cask Inventory	>Cask Inventory
	Pin Failures for AA1 200x Alarm for 15 min	~35000	~8000

Abbreviated Results of VDS Release Study

- Review of OE has shown that gap releases have occurred during vacuum drying operations may resulting in radiation monitor alarms in the plant vent. An assessment of radiological conditions from a failed fuel pin over the pool during fuel handling operation was assessed in HPSTID 10-006. A similar assessment was performed to evaluate radiation monitor response and emergency plan impact for failed fuel event during vacuum drying. RP recommends directly discharging HEPA filtered VDS waste to the general volume of the fuel building while in fuel handling ventilation mode to reduce the likelihood of a high alarm on the WRGM. FSB roll up door should remain closed during VDS operation to prevent an unmonitored release. See HPSTID 13-005.

Questions or additional info:

Kinsey Boehl

603-773-7638

Kinsey.Boehl@fpl.com

HIGH INTEREST TOPIC AND QUESTIONNAIRE

PWR ALARA Association Providence, RI June 23-25, 2014

Topic:

Contact (Name)	Plant	NSSS	Comments
	Ginna	2LW	
	Kewaunee	2LW	
	Point Beach 1,2	2LW	
	Prairie Island 1,2	2LW	
	Ringhals 2,3,4	2LW 3LW	
	Beaver Valley 1,2	3LW	
	Farley 1,2	3LW	
	Harris	3LW	
	North Anna 1,2	3LW	
	Robinson	3LW	
	Surry 1,2	3LW	
	Turkey Point 1,2	3LW	
	VC Summer	3LW	
	Braidwood 1,2	4LW	
	Byron 1,2	4LW	
	Callaway	4LW	
	Catawba 1,2	4LW	
	Comanche Peak 1,2	4LW	
	Cook 1,2	4LW	
	Diablo Canyon 1,2	4LW	
	Indian Point 2,3	4LW	
	McGuire 1,2	4LW	
	Salem 1,2	4LW	

Return completed form to the Committee Secretary prior to the end of the meeting so that it may be included in the meeting report.

HIGH INTEREST TOPIC AND QUESTIONNAIRE

PWR ALARA Association Providence, RI June 23-25, 2014

Topic:

Contact (Name)	Plant	NSSS	Comments
	Seabrook	4LW	
	Sequoyah 1,2	4LW	
	Sizewell B	4LW	
	South Texas 1,2	4LW	
	Vogtle 1,2	4LW	
	Watts Bar	4LW	
	Wolf Creek	4LW	
	Millstone 3,2	4LW, CE	
	Calvert Cliffs	CE	
	Ft. Calhoun	CE	
	Palisades	CE	
	Palo Verde 1,2,3	CE	
	San Onofre 2,3	CE	
	St.Lucie 1,2	CE	
	Waterford	CE	
	ANO 2,1	CE, B&W	
	Crystal River	B&W	
	Davis Besse	B&W	
	Oconee 1,2,3	B&W	
	TMI	B&W	
	Areva		
	EDF		
	Westing-house		

Return completed form to the Committee Secretary prior to the end of the meeting so that it may be included in the meeting report.

PWR RP/ALARA ASSOCIATION

Optional
Name:________________________________
Utility: ______________________________

Summer 2014 Providence, RI June 23-25, 2014

MEETING CRITIQUE

The goal is to meet your expectations regarding this meeting. Please help us by providing your comments and suggestions regarding the following:

Plant Status Report:____

____

Technical Content:____

____

____

Vendor Participation:____

____

Meeting Format (Breakout Session vs. Presentation, etc.):______________________________

____

____

Facilities (Meeting Room, Hotel Facilities, Location, etc.):______________________________

____

____

Please list any topics you would like to see the Board address in the future. Also include specific recommendations relative to the suggested presentation format, where possible (e.g. breakout session, technology presentation, survey, etc.):__________________________

____

____

____

Please provide suggestions for Board activities or actions which would help justify your company's continued participation in the PWR/ALARA Association:____________________

____

____

____

Other Comments:____

____

____

Do you anticipate your plant being represented by you or another representative at the Winter 2015 Meeting in Key West, FL? _________ If not, why?

____

____