

(1 Document)

Group DR

(Records Withheld  
In Part)

1/2D

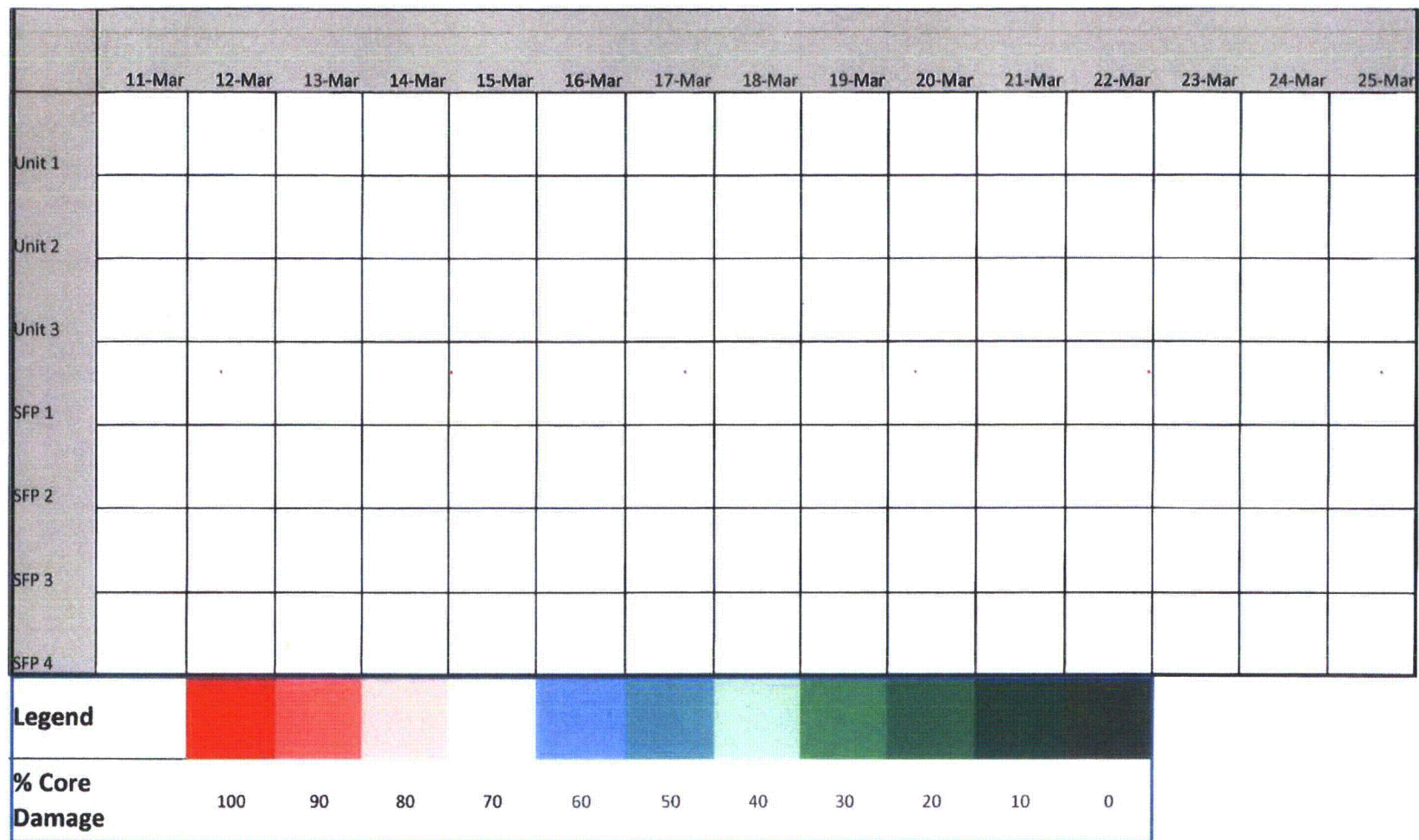
# SUMMARY OF SOURCE TERM INFORMATION SENT TO NARAC

	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
Unit 1	Coolant Only	25%/15 min 0.5%/day	25%/15 min	0.5%/day					Major source term calculation	RASCAL BWR Core Inventory + Power				10%/day	
Unit 2				0.5%/day	25%/15min	25%/15 min		25%/15 min						5 in^2 hole	
Unit 3				0.5%/day		super core								100%/day	
SFP4					4%/day										
SFP 1															
SFP 2															
SFP 3						100% releasable inventory		100% releasable inventory							
SFP5					4%/day										

Plausible Realistic

Legend						
% Fuel Damage	100	70	40	33	10	0

m:/25 March files/matrix\_RASCAL\_runs.xlsx



m:\25 March files\matrix\_RASCAL\_runs.xlsx

**SUMMARY OF SOURCE TERM INFORMATION SENT TO NARAC  
(16 RASCAL and MELCOR RUN)**

	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
Unit 1	Coolant Only								*	**					
Unit 2									*						
Unit 3									*						
SFP 1									*						
SFP 2									*						
SFP 3									*						
SFP4									*						
SFP5															

<b>Legend</b>							
<b>% Fuel Damage</b>	100	70	40	33	10	0	

\* MELCOR

\* \* BWR Core Inventory Only

m:/25 March files/matrix\_RASCAL\_runs.xlsx



	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
Unit 1	coolant only	10% + 100%	100%	40%					101%	**				70%	
Unit 2				40%	100%	33% 100%		33%	100%					33%	
Unit 3				40%		33%			100%					33%	
SFP 1									100%						
SFP 2									100%						
SFP 3						<del>100%</del>		100%	100%						
SFP 4					100%	100%		100%	100%						

# Legend

% Core FVA  
Damage

100 90 80 70 60 50 40 30 20 10 0

m:\25 March files\matrix\_RASCAL\_runs.xlsx

SPE 5

100

\* MELCOR runs  
\*\* BWR core inventory only  
\*\*\* 16 PASCAL + 1 MELCOR RUNS

Dose calculations that supported the March 16 press release and calculations sent to NARAC Data as of 03/25/2011										
Date sent	Name of case	Fule Melt (FM) and containment release (%/Day) assumed			Fuel Pool inventory released				NARAC Summary	Note
		U1 Core	U2 Core	U3 Core	U1 SFP	U2 SFP	U3 SFP	U4 SFP		
3/15/2011	Attachment 1 to March 16 Protective Action Press Release		100% FM 100%/day						N/A	RASCAL run, not sent to NARAC.
3/16/2011	Attachment 2 to March 16 Protective Action Press Release		33% FM 100%/day	33% FM, 100%/day				100% released	N/A	RASCAL run, not sent to NARAC. Adjusted U2 power to approximate source term from assumed damage.
3/17 - 3/18/2011	"Super Core" Trans- Pacific		33% FM 100%/day				50% release in 14 days	3 fresh batches + 4 old batches 100%/14 days	N/A	NARAC to use this source term to determine impacts to U.S. west coast
3/19/2011	MELCOR Assessment - Long Term Station Blackout (LTSBO)	1/2 hour release duration based on a containment failure shortly after Reactor Pressure Vessel (RPV) breach			500 day off loaded fuel 16-hour release duration			mix of 100 & 500 day fuel 8-hour release	N/A	"Worst-Case" scenario using best estimate accident progression assumptions
?	Plausible Realistic Scenario	33% FM 0.5%/Day	33% FM 0.5%/Day	33% FM 0.5%/Day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 7.8 km 14:33 UTC March 24, 2011	Source Term from conference call with OSTP (Japan), DOE, NARAC and NRC
3/24/2011	Plausible Realistic Case PRC-V3	70% FM 10%/day	33% FM 5 in <sup>2</sup> hole 60 psi internal pressure	33% FM 100%/day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 12.6 km 16:00 UTC March 25, 2011	Source term info from Japan 3/21/2011 Analysis Team
3/26/2011	Intermediate Phase Supercore		33% FM 100%/day				50% release in 14 days	3 fresh batches + 4 old batches 100%/14 days	N/A	DOE was directed by the White House to generate report



**Dose calculations that supported the March 16 press release and calculations sent to NARAC**

Data as of 03/25/2011

Date sent	Name of case	Fule Melt (FM) and containment release (%/Day) assumed			Fuel Pool inventory released				NARAC Summary	Note
		U1 Core	U2 Core	U3 Core	U1 SFP	U2 SFP	U3 SFP	U4 SFP		
3/15/2011	Attachment 1 to March 16 Protective Action Press Release		100% FM 100%/day						N/A	RASCAL run, not sent to NARAC.
3/16/2011	Attachment 2 to March 16 Protective Action Press Release		33% FM 100%/day	33% FM, 100%/day				100% released	N/A	RASCAL run, not sent to NARAC. Adjusted U2 power to approximate source term from assumed damage.
3/17 - 3/18/2011	"Super Core" Trans- Pacific		33% FM 100%/day				50% release in 14 days	3 fresh batches + 4 old batches 100%/14 days	N/A	NARAC to use this source term to determine impacts to U.S. west coast
3/19/2011	MELCOR Assessment - Long Term Station Blackout (LTSBO)	1/2 hour release duration based on a containment failure shortly after Reactor Pressure Vessel (RPV) breach			500 day off loaded fuel 16-hour release duration			mix of 100 & 500 day fuel 8-hour release	N/A	"Worst-Case" scenario using best estimate accident progression assumptions
?	Plausible Realistic Scenario	33% FM 0.5%/Day	33% FM 0.5%/Day	33% FM 0.5%/Day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 7.8 km 14:33 UTC March 24, 2011	Source Term from conference call with OSTP (Japan), DOE, NARAC and NRC
3/24/2011	Plausible Realistic Case PRC-V3	70% FM 10%/day	33% FM 5 in <sup>2</sup> hole 60 psi internal pressure	33% FM 100%/day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 12.6 km 16:00 UTC March 25, 2011	Source term info from Japan 3/21/2011 Analysis Team
3/26/2011	<del>REUSED SUPER CORE</del> Intermediate Phase Supercore NOTE: This source term is not to be used going forward due to error in offload timing for SPF #4		33% FM 100%/day				50% release in 14 days	3 fresh batches + 4 old batches 100%/14 days	N/A	DOE was directed by the White House to generate report

# 5 Worst Cases

Dose calculations that supported the March 16 press release and calculations sent to NARAC  
Data as of 04/03/2011

Case 1 ✓

2 ✓

3 ✓

4

5

Dose calculations that supported the March 16 press release and calculations sent to NARAC Data as of 04/03/2011										
Date sent	Name of case	Fuel Melt (FM) and containment release (%/Day) assumed			Fuel Pool inventory released				NARAC Summary	Note
		U1 Core	U2 Core	U3 Core	U1 SFP	U2 SFP	U3 SFP	U4 SFP		
3/15/2011	Attachment 1 to March 16 Protective Action Press Release		100% FM 100%/day						N/A	RASCAL run, not sent to NARAC.
3/16/2011	Attachment 2 to March 16 Protective Action Press Release		33% FM 100%/day	33% FM, 100%/day				100% released	N/A	RASCAL run, not sent to NARAC. Adjusted U2 power to approximate source term from assumed damage.
3/17 - 3/18/2011	"Super Core" Trans- Pacific NOTE: This source term is not to be used going forward due to error in offload timing for SPF #4. E-mail sent 3/28/2011 @12:54 to NARAC		33% FM 100%/day				50% release in 14 days	3 fresh batches + 4 old batches 100%/14 days	N/A	NARAC to use this source term to determine impacts to U.S. west coast
3/19/2011 (See NARAC Folder) Run	MELCOR Assessment - Long Term Station Blackout (LTSBO)	1/2 hour release duration based on a containment failure shortly after Reactor Pressure Vessel (RPV) breach			500 day off loaded fuel 16-hour release duration			mix of 100 & 500 day fuel 8-hour release	N/A	"Worst-Case" scenario using best estimate accident progression assumptions
?	Plausible Realistic Scenario	33% FM 0.5%/Day	33% FM 0.5%/Day	33% FM 0.5%/Day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 7.8 km 14:33 UTC March 24, 2011	Source Term from conference call with OSTP (Japan), DOE, NARAC and NRC
3/24/2011	Plausible Realistic Case PRC-V3	70% FM 10%/day	33% FM 5 in <sup>2</sup> hole 60 psi internal pressure	33% FM 100%/day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 12.6 km 16:00 UTC March 25, 2011	Source term info from Japan 3/21/2011 Analysis Team
3/26/2011	Intermediate Phase Supercore NOTE: This source term is not to be used going forward due to error in offload timing for SPF #4. E-mail sent 3/28/2011 @12:54 to NARAC		33% FM 100%/day				50% release in 14 days	3 fresh batches + 4 old batches 100%/14 days	N/A	DOE was directed by the White House to generate report

3/23/2011

RASCAL Re construction of U2 based on flyover

M:\PMT\Major dose assessment matrix\_04032011.xlsx



**Dose calculations that supported the March 16 press release and calculations sent to NARAC**

Data as of 04/03/2011

Dose calculations that supported the March 16 press release and calculations sent to NARAC										
Data as of 04/03/2011										
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3/30/2011	Pessimistic Source Term for US Embassy in Tokyo	70% FM, some ex-vessel, drywell venting						3 fresh batches offloaded on 12/01/10, 7 old batches	4/3/2011 NSC Directed that NARAC will not run ST for plume modelling because previous runs have bounded worst case calcs	Request from Japan Team
3/31/2011	MELCOR version of "Plausible Realistic Case" (Ref OMT09 email to C. Tinkler & J. Shaperow)	70% FM 10%/day	33% FM 5 in <sup>2</sup> hole 60 psi internal pressure	33% FM 100%/day	No Fuel Pool release assessed in this scenario				N/A	To re-evaluate 50-mile evacuation and validate 3/24/11 PRC V3 run of RASCAL



Dose calculations that supported the March 16 press release and calculations sent to NARAC Data as of 03/25/2011										
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3/19/2011	MELCOR Assessment - Long Term Station Blackout (LTSBO)	1/2 hour release duration based on a containment failure shortly after Reactor Pressure Vessel (RPV) breach			500 day off loaded fuel 16-hour release duration			mix of 100 & 500 day fuel 8-hour release	N/A	"Worst-Case" scenario using best estimate accident progression assumptions
3/23/11	"Tokyo" Plausible Realistic Scenario	33% FM 0.5%/Day	33% FM 0.5%/Day	33% FM 0.5%/Day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 7.8 km 14:33 UTC March 24, 2011	Source Term from conference call with OSTP (Japan), DOE, NARAC and NRC
3/24/2011	Plausible Realistic Case PRC-V3	70% FM 10%/day	33% FM 5 in <sup>2</sup> hole 60 psi internal pressure	33% FM 100%/day	No Fuel Pool release assessed in this scenario				>1 rem TEDE 12.6 km 16:00 UTC March 25, 2011	Source term info from Japan 3/21/2011 Analysis Team