



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

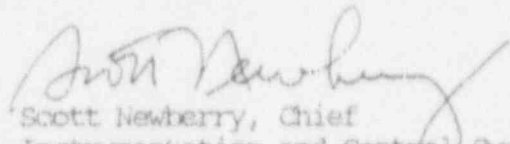
April 2, 1992

MEMORANDUM TO: Robert C. Pierson, Director  
Advanced Reactors Project Directorate  
Division of Advanced Reactors

FROM: Scott Newberry, Chief  
Instrumentation and Control Systems Branch  
Division of Systems Technology

SUBJECT: SICB COMMENTS ON THE GE ABWR DRAFT ITAACs

Enclosed is a set of comments on the draft ITAACs that are being developed on I&C topics. We request that these comments be forwarded to GE for their consideration in the ongoing development of the ITAACs. We have had several telephone conversations and meetings with GE on these topics and expect several more before complete resolution of these issues. Because the resolution of these issues will be documented in the final ITAACs we do not request a formal response from GE to this set of comments. As GE provides additional ITAACs for NRC review, we expect that we will have additional comments. The impact on review schedules as a result of GE's submittal schedule has been discussed with GE and is documented in the GE/NRC monthly meeting minutes. If you have any questions, please call Jim Stewart (304-2824). These comments do not contain any GE proprietary information.

  
Scott Newberry, Chief  
Instrumentation and Control Systems Branch  
Division of Systems Technology

Enclosure: SICB ITAAC Comments

cc: w/enclosure:  
A. Thadani  
C. Poslusney  
T. Boyce  
C. Goodman

64  
9-204090043 29 MP

## SICB ITAAC COMMENTS

1/16/92

These comments are provided to document past conversations and facilitate future discussions on the development of the ITAACs that are related to the ABWR I&C design.

In general, we agree with GE that those items which are usually referred to as Appendix B type items (traditional quality inspection of the art of the craft such as soldering, welding, painting, wire lug crimps, etc) do not need to be described in the ITAACs. These items will still be inspected under Part 50. Any items which we believe need to be clarified now to minimize disagreements later (software, emi, multiplexing, etc.) will be recommended for ITAACs.

We have not identified any I&C specific topics that should be included as interface requirements. There will be some interface systems which will have the expected I&C portion included. We believe that these are system specific and will have no significant differences from the I&C systems available for review now.

There is still a need to describe the process which applies to the modification of the tier 2 commitments.

### PROTOTYPING

These comments relate only to the I&C aspects of the design. The I&C input to the control room man-machine interface design/tests/prototypes should be included as part of that issue.

The term "prototype" has been used in several different ways. Using the October 24, 1992 version of the "Scroll" as a reference point we identified several points that have at times been referred to by various parties, including the NRC, as prototypes. There are probably other points than the ones listed below that could be referred to as prototype points but we think this will address the issue. The first, which on the original I&C Scroll occurred prior to design certification, is a demonstration of the basic technology or an example of a possible implementation. An example of this is the GE NUMAC line as a demonstration that microprocessors can be used to perform a function like neutron monitoring. We have taken this into consideration and will mention it in the final SER. We do not believe that there is any need to put any acceptance criteria into the ITAACs for this part. The design process description, which includes the Scroll, should be adequate. The October 24, 1992 Scroll has removed the NUMAC references. We believe that there should be a block prior to the design certification line that includes a demonstration of the basic technologies to be employed.

The second place that is identified would be during the selection of the equipment vendors. There may be some prototyping to demonstrate capabilities or compatibility with the rest of the design. We do not believe that this would need to be included as an item in the ITAACs.

The third place (probably many places) would include the development prototyping. For example, this may include breadboarding, testing specific components and testing different software languages to implement the neutron monitoring algorithms. We do not believe that this type of prototyping needs to be described in the ITAACs.

The fourth point could be either the prototype development and testing blocks identified on the scroll or the point identified on the scroll as "perform hardware/software integration testing" (block 54 on the scroll). The staff expects that this is an appropriate point to audit and will be used as part of our safety determination and, therefore, needs to be included in the ITAACs. The staff is flexible on whether this goes into system or generic ITAAC. The items that should be included include: the development of the test and evaluation procedures as the design commitment, inspections to verify that the procedures are being used correctly as the inspection activity, and the completion of the testing, documentation of the results, and the feedback of the results to the design process as the acceptance criteria. We believe that this confirmation point would serve two primary purposes. The first would be a verification that the design process is being implemented as certified and that the previous requirements have been met. The second would be to establish the more detailed acceptance criteria for the step described below. We believe that this step should have, as a minimum, one full channel of the SSLC using hardware and software similar to the intended final product.

The fifth point (not usually referred to as prototype) would be a final factory acceptance test (block 64 on the scroll). We believe that this should be in the ITAAC and should be similar to the step above except that the test will be with the final software and hardware which is to be installed in the plant and would include all channels. The acceptance criteria could be similar to the general criteria.

The last point (also not prototype) is the final inspection (block 73 on the scroll) prior to fuel load as installed in the plant. This will be in the ITAAC. We consider that this is part of the original construction ITAAC intent and is not a new suggestion. The acceptance criteria would be a successful demonstration that all the original criteria in the design certification have been met.

#### Comments on the GENERIC SOFTWARE ITAAC:

In general, we are not distinguishing between the design acceptance criteria and the original confirmatory inspection criteria.

In referring to item 1 of the generic software ITAAC(1/17/92), the plans themselves should be included as part of an early hold/conformance point described in the scroll. The description of the SMP and V&V plans should be expanded similar to the CMP that we have previously discussed.

Under item 1 add Software Safety Analysis Plan, Timing analysis, and Hardware/Software Integration Plan. Add "safety" to the list of attributes for the acceptance criteria.

For item 2, add Software design safety/hazard analysis.

Delete item number three referring down to tier two.

The plans should specifically describe a method for maintaining testing statistics (metrics) for later use.

In general, the approximate "level of detail" for all of the topics should be equivalent to the configuration management plan.

In addition to the items mentioned above we believe that it will be necessary to describe the selection process for the software design methodology. The criteria for selection of a formal method, object oriented design or particular languages should be described in the ITAAC. This section may be a place for including the requirement that the design method and the tools to be used are proven technology. If formal methods are to be used, the symbol definitions, syntax, semantics, objects, etc must be documented and specifically included (perhaps by reference) in all of the design and configuration control documents.

#### ADDITIONAL COMMENTS

We have received additional comments on the configuration management plan from our contractors and other NRC staff members. We believe that the following items should be added to the CMP part of the software ITAAC. The comments are referenced to the version that was submitted by GE on January 17, 1992.

Item 2 of the CMP should use the definition of IEEE 1042-1987, section 2.1.3 for executable/non-executable software.

Describe how subcontractors are to be included in the CMP.

Add an additional item 11 which puts the definition and control process documents for walkthroughs/inspections/audits/reviews, SQA, V&V plans, design procedures, code format standards, etc., under configuration management control.

We suggest adding an item which requires the definition and control of the various baselines ( functional baseline, allocated baseline, developmental configuration baseline, product baseline).

For item 5, add a specific requirement for physical and functional configuration audits/reviews. (Ref IEEE 1042-1987, App. A, 3.4)

Related to the ITAAC process we are providing comments on the GE NUMAC Software Configuration Management Plan.

The staff did a short review of the NUMAC SCMP (Rev 1, March 12, 1991) using the draft ITAAC CMP, IEEE 838-1983, and IEEE 1042-1987. The intent of this effort was to simulate an NRC audit of the SCMP as it may occur during the performance of the ITAACs when the final vendors are selected. This is meant as an example only and due to its brevity is not intended as a final

conclusion as would be found in a safety evaluation report. Several items discussed in IEEE 828 may also be discussed in GE software management plans and QA documents which we did not review for this task. In addition, the IEEE standard includes some items which may not be of regulatory concern.

In general, the SCMP appears to provide reasonable guidance to the GENE staff for managing software configuration with a few exceptions. The SCMP follows the recommended format of IEEE 828 except in the area of managing interface requirements (IEEE 828 section 3.0). The SCMP should either include this section, provide justification for the omission or refer to specific product interface requirements in another document.

The introduction and scope are general, as expected for a product line document. The responsible organizations would have to be specifically identified for a specific SCMP.

"FDI" should be included in the list of definitions and acronyms. Section 2.3 of the SCMP does not mention configuration management of related software development, test, and support tools.

Though not required, several items from IEEE 828 should be addressed in section 2.4 of the NUMAC plan. These include the document release process, the structure of the configuration control board, the release and acceptance of software products, SCM audits, problem reporting, testing prior to CM, and QA prior to CM.

The control procedures for associated special software products, such as nonreleased software, off-the-shelf software, user-furnished software, and in-house support software was not discussed. The control of tools to manage the software configuration appears to be ambiguous.

The control of subcontractors needs to be expanded. The method to determine the SCM capability of the subcontractor and the method to monitor their performance is not discussed in the SCMP.

Physical safeguards were not discussed. Off-site backup was not discussed. Retention periods were not discussed.

In conclusion, it appears that a few revisions or references to other documents would be needed to demonstrate that the GENE SCMP is in complete conformance with IEEE 828.

#### SSLC ITAAC

Though we have not seen the SSLC ITAAC yet, there are a few items that should be included which we wish to identify at this time. Some of these may apply to other ITAACs in addition to SSLC or may be in the generic ITAACs.

1. The testing of the SSLC at the prototype confirmation points should include loss of power. This includes both short (a second or less), intermediate (a few minutes), and long (8 hours) interruptions in power. The acceptance criteria would be that the failure and recovery states of the SSLC



output is achieved. An analysis and confirmatory test should be included for the recovery situation where, after reinitialization, the input data has changed enough to require the final actuated device to change position. The rate of change to the new position (or block and alarm) and information to the operator should be considered.

#### EMI/SWC ITAAC

Though we have not seen this ITAAC draft yet we have a few comments to offer for discussion. We believe that this ITAAC has four primary functions.

1. The equipment should be designed with EMI/SWC considerations in mind. The purchase specifications should specify the minimum levels that the equipment should be designed to withstand and the maximum levels that are acceptable for emissions. Because the methods used are dependent on the equipment and there are different methods to achieve a successful design, we believe that this is appropriate for ITAACs.
2. The equipment should be tested in a controlled environment by a lab or at the factory to establish the tested envelope. The key features of your 461/462 commitments could be used for this part of the ITAAC.
3. The equipment should be installed using shielding and grounding techniques appropriate for the equipment. The GE commitment to IEEE 1050 can be used to extract the key attributes. Because this is a lengthy standard, we will attempt to work with GE to keep the ITAAC to a reasonable length.
4. The EMI fields should be tested with the equipment installed in the plant. The site testing will include radiated and conducted emissions and will be measured over a period of time. The analysis section for this step should verify that the tested environment is enveloped by the factory testing.

#### SETPPOINT METHODOLOGY

The setpoint methodology ITAAC should be modeled on ISA -S67.04, both part 1 and part 2. J.L. Leong is listed as the GE representative for the standard committee.

In addition to the ISA standard we suggest the additional 4 items:

- 1) Guidance should be provided regarding the use of the SRSS in cascading situations such as multiple instrument channels or multiple modules in an instrument loop. For example, if the SRSS has been performed on each of three channels inputting to a multiple module, can the output of that module have an SRSS performed on the error components that have already undergone an SRSS. The 95/95 rule should take precedence in this matter.
- 2) In section 8.1, additional caution should be expressed in the use of the single sided setpoint error calculation. This should be used as a last resort to avoid going into the process area and, above all, the 95/95 rule must be maintained.

3) In section 6.2.6.2, further discussion should be provided regarding the use of a calibration tolerance. The upper calibration tolerance band should leave enough margin between it and the allowable value to allow for the normal uncertainty between the setpoint and the allowable value.

4) As before, section 6.1 should contain further discussion on the merits of 95% probability and 95% confidence level. This discussion would help in alleviating setpoint problems that will be encountered in the future.



page 1

GE Nuclear Energy

ICEY ABWR

Date \_\_\_\_\_

To GLEN KELLY NRC

Fax No. \_\_\_\_\_

This page plus 21 page(s)

From JACK DUNCAN

Mail Code 754  
175 Curtner Avenue  
San Jose, CA 95125

Phone (408) 925-6947

FAX (408) 925-1193  
or (408) 925-1687

please note

Subject ABWR PRA PUNCH LIST

Message An updated punch list follows.  
Please provide copies to all the  
"NRC contacts" and others as appropriate  
including Victor McCree

This revision reflects the  
results of our March 23, 24, 25  
discussions, recent submissions  
by Carol Buchholz and



page ix

recent discussions with you, Vishu and  
Ratlevy

The "non-DSEI items" in the DSEI  
item column are now numbered for  
easier reference (eg m/a in page 1)

Other additions, changes of note

- I-1 is applicant activity: Resolved
- RWCU as other success added  
under Success Criteria
- C-4 updated to show 2%  
unavailability assumption
- "PRA Insights" added after O-22  
PRA as a design tool
- Human Factors subtasks updated  
to reflect 3/28 discussions
- C-6, same O-18A material  
submitted 4/2/92
- Site acceptability (under  
consequence analysis) accepted  
by Bob Pella

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If you or other "NRC contacts" need to discuss these items, they should call the "GE contact"

Please note that in many cases the next actor is NRC. We would like to have estimates of the unknown dates within the next week.

12 page punch list follows

### ABWR Tasks to wrap up PRA

DSEI	SSAR	Title	NRC Contact	P	A	R	Next	Date	Action	Comments
Item	Section	- Subtask	GE Contact	l	a	n	Actor			
				n	a	e				
				i	v					
				c						
				w						
<b>Fault Tree Update</b>										
O-1		RPS Reliability	Kelly Raftery	v	s		GE	4/15	Provide RPS Fault tree to NRC thru Fox	
n/a		Update other fault trees	Kelly Raftery	v	s		GE	4/30	Provide balance of fault trees to NRC	Some additional functions to be automated
<b>Initiating Events</b>										
S-2		Defend IORV frequency	Kelly Raftery	v	n		GE	-	1. Use 0.1 in requantification	Staff requires use 6.1 event/year. GE accepts - <u>Item Resolved</u>
							GE	TBD	2. Reflect 0.1 in SSAR table and text	
C-1		IORV success criteria	Kelly Raftery				GE	TBD		NRC clarification sent 4/1.
S-1	n	Defend one trip per year	Kelly Duncan	v	n	v	n		none	NRC now agrees 1 trip/year as reasonable - <u>Item Resolved</u>

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4/5/92

Page 1

### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P A R			Next Date	Action	Comments	
				l	o	e				
				s	a	v				
				n	i	i				
				c						
				w						
O-2		Evaluate support system failure on plant trips	Kelly Raftery	s	s	s	NRC	4/3E 4/18/92	Review draft material	GE has provided (Jan. 27) draft material (HVAC failure) and list of other support system to be addressed. GE agreed to still request to add bus of single AC or single DC bus
O-3		Analyze interfacing LOCA	Kelly Visweswaran	n			GE		Document piping upgrade. Track Separately	
O-4		Outside containment LOCA	Kelly Frederick	s			NRC	2 4/18	Review SSAR	GE request NRC review SSAR 19F.2.3.3. Issue is addressed
I-1		Confirm site loss of AC, other site specific parameters	Kelly Raftery	s	v		n		Applicant action <u>Item Resolved</u>	

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4/3/92

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ABWR Tasks to wrap up PRA

DSEI Item	SSAE Section	Title - Subtask	NRC Contact	GE Contact	P I n n	A a I I	K e i e w	Next Date	Action	Comments
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Success Criteria

C-2		ATWS Success Criteria to prevent core damage	Kelly Buchholz		c	c	v	NRC ?	Review submittal	Agreed SSAR treatment is adequate at San Jose 1/92 meeting. Documentation submitted 4/2/92
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n3a		ATWS RHR Success Criteria	Kelly Buchholz		c	c	v	NRC ?	Review submittal	Agreed SSAR treatment is adequate at San Jose 1/92 meeting. Documentation submitted 4/2/92
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n4a		RWCU as DIC? Success (ACRS)	Kelly Paradiso					GE 4/6	Clarify with NRC	
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X(6953) Call Frank Paradiso

Failure Data

C-3		Justify common cause failure data	Kelly Frederick						See item 05	
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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				I	n	c				
0-5		Justify train-level common cause approach is adequate	Kelly Raftery				GE	3/24	Discuss which components to include with NRC	For item C-3 and 0-5, NRC suggested requantify PKA without addressing CCF, then requantify CCF as sensitivity study as part of input to RAP (Item I- E)
C-4		Justify test/maintenance data analysis	Kelly Raftery				GE		Include new values in requantification: test and maintenance unavailability	Action plan discussed with NRC 5/24: T/M unavailabilities will be increased for utility flexibility. ECCS, RGIC RHR unavailability will be taken as 2%. <u>Item Resolved</u>
0-6		Justify RHR, HPCF pump failure probability	Kelly Raftery				GE	4/15	Provide justification	

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4/3/92



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DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P A R			Date	Action	Comments
				I	n	e			
O-21A		List systems not part of certified design, significant assumptions, assumed reliability	Palla Duncan						
Level 1 PRA and Subsequent Related Studies									
S-11		Fire water credit correction	Kelly Visweswaren		n	n		GE approach conservative. Fire water will be in RAP. No other action needed <u>- Item Resolved</u>	
O-18A		Requantify level 1 PRA results (base case)	Kelly Raftery		GE		4/15	Tabular results to NRC: CDF by initiator and accident class. Will not include item b-2 (supports system trips)	
					GE		6/90	SSAR text draft to NRC	
O-18A		Level 1 uncertainty analysis	Kelly Raftery	v			GE 5/15	Submit uncertainty analysis	Results stop at CDF, will not be propagated through analysis
O-11		Initiating Event uncertainty	Kelly						Address as part of item O-18A

*Handwritten:* Kelly  
Visweswaren  
O-18A

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DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments	
				I	n	c					
				n	I	i					
				c							
				w							
I-15		PRA input to Reliability Assurance	Kelly Raftery	v			GE		Define input	General agreement reached on how to proceed	
n7a		PRA input to ITAAC	n Duncan								
0-22		PRA as a design tool	Kelly Duncan	v	s		GE	4/15	Provide 90% complete draft		
n7b		PRA Insights	Kelly Duncan				NRC	?	Outline of management closure. June 25 staff deadline	New item, added in 3/23 meeting. Narrative relating how PRA was used, including how several DSER items were addressed	

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4/3/92

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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				i	n	e				
0-20		Shutdown risk. Four subtasks:	Kelly? Visweswaren	c	s		GE	3/24	Further discussion	
		1. ABWR design features					GE	4/30		
		2. Review of past shutdown events					GE	4/30		
		3. Decay heat removal reliability					GE	6/30		
		4. Other tasks					GE	6/30		
<b>Other Analyses</b>										
0-12		Fire PRA	Kelly Raftery	c	c	s	NRC	4/15	Provide results of review to GE	No major items expected
1-9		Internal Flood	Kelly Visweswaren	s	s					Approach outlined 3/24 San Jose
		Four subtasks:								
		1) Turbine Bldg	Ehlert							
		2) Control Bldg	Miller							
		3) Reactor Bldg	Maxwell Ehlert							
		4) Event Trees	Gokrek							

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4/3/92

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### ABWR Tasks to wrap up PRA

DSER item	SSA2 Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				l	n	e				
				n	i	i				
						e				
						w				
<hr/>										
<b>Human Factors in PRA</b>										
G-5		These items are addressed by the following job subtasks:								Plan (Subtasks A,B, C, D) based on NRC/GE phone call 3 Mzrch 92 and discussions 25 March.
O-7										
O-8										
O-9										
O-10										
I-2										
I-3										
I-4										
I-5		A) Provide a list of references/general methods used to determine all failure probabilities. Reference to GESSAR PRA is acceptable.	Beckner Frederick	v			GE			
I-6		B) Conduct sensitivity study	Kelly Rafferty	v			GE	6/1	Sensitivity study results	Increase sensitivity range if hard to document source of number
I-7										

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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact EE Contact	P	A	R	Next Date	Action Actor	Comments
				l	n	e			
		C) Develop descriptions for most significant actions for input to control room design ie, provide time available for operator action & signals that the operator relies on. Provides input to control room design & EPCS.	Kelly Duncan	v				CE	Preliminary judgement of significant items documented in 18F.2.
		D) Provide more specific references for operator actions identified as significant based on sensitivity study. References should include table and page numbers in references. Alternatively, use a wider range in performing the sensitivity study.							

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4/3/92

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### ABWR Tasks to wrap up PRA

DSER item	SSaR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				i	n	e				
				a	a	v				
				n	i	i				
				e						
				w						
<hr/>										
Containment Event Trees										
S-4		Staff estimates extra credit for vent in Class II internal event and seismic sequences	Kelly Buchholz				CE		GE will take credit for vent in Level 1 requantification	
O-13		Treatment of drywell-wetwell bypass in CETs. This item is addressed by two sub tasks:								
		A) Design basis sensitivity studies	Kudrick Saxena						Tracked separately by Kudrick/Saxena	
		B) Determine if CETs need to change	Palla/ Kudrick Buchholz						See O-18, Backend Uncertainty Analysis	
O-17B		Modify CET for severe accident phen.	Palla Buchholz						See item O-17A under Backend Analysis	

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4/5/92

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ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				i	n	e				
<b>Backend Analyses</b>										
C-6		Flashing during venting	Palla Buchholz	c	c		NRC	?	Review submittal	Analysis documented in 4/2/92 submittal.
O-14		Justify aspects of OPPD (Rupture Disk Setpoint)	Palla Buchholz	c	v		GE		Provide documentation indicating results of sensitivity and uncertainty analyses in regard to the OPPD and giving the basis for the setpoint.	GE agreed to raise rupture disk setpoint
O-15		Net risk of passive flowler system	Palla Buchholz	c			GE	4/30	Provide documentation indicating results of sensitivity and uncertainty analyses in regard to the passive flowler.	
O-16		CCI coolability	---	---	---	---	---	---	---	---

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4/5/92

04-03-92 07:44 PM  
 26-00-40  
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ABWR Tasks to wrap up PRA

DSEI item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P i a n	A a l	R e i c w	Next Actor	Date	Action	Comments
		- Containment integrity	Palla Buchholz	c	s		GE	4/10	Take credit for assumed factor of safety in calculation. Submit to NRC.	GE has shown staff early results of bounding analysis - work not complete but results appear to support no containment failure
		- Source terms	Palla Buchholz	c						See uncertainty analysis
O-17A		Modify CETs for DCH, FCI, etc.	Palla Buchholz	v						DCH and FCI nodes are included as early containment failure modes in the current event trees. GCI and Pool bypass will be added if the uncertainty analysis warrants it.
O-18		Uncertainty analysis								

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### ABWR Tasks to wrap up PEA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				I	n	c				
		- Survey literature	Palla Buchholz	c	c	v	NRC	?	Review submittal	Discussed at 1/22 meeting in Bethesda. Documented in 4/2/92 submittal.
		- Screen events for applicability to ABWR	Palla Buchholz	c	c	v	NRC	?	Review submittal	Discussed at 1/22 meeting in Bethesda. Documented in 4/2/92 submittal.
		- Perform sensitivity studies	Palla Buchholz	v	s		GE	4/10	Complete sensitivity studies and document. (some will be missing)	List of sensitivity studies discussed at 1/22 meeting in Bethesda. About 50% of studies complete.
		- Detailed DCH Uncertainty analysis	Palla Buchholz	c	v	v	GE	4/10	Incorporate NRC comments. Document study and results.	Essentially done. Discussed at 1/22 meeting in Bethesda and in 2/26 telecon. NRC had only minor comments.

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4/5/92

ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Action	Date	Action	Comments
				I	n	c				
		- Detailed CCI/Coolability Uncertainty analysis	Falla Buchholz	v	s	s	GE	4/30	Complete study - incorporating NRC comments	Discussed at 1/22 meeting in Bethesda and in 2/26 telecon
S-9		Rupture disk operation before 24 hours not cont failure	Falla Buchholz				n			NRC agrees rupture disk operation is not containment failure. Item <u>Resolved</u>

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4/3/92

ANSWR Tasks to wrap up PRA

DSEI item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Date	Action Actor	Comments
				i	n	c			
S-12		ATWS treatment by NRC	Palla Buchholz					n	NRC agrees GE approach conservative, no other impacts. <u>Item Resolved</u>
n17a	Chapter 22	Severe Accident Closure	Kudrick Buchholz	c	c		NRC ?	Write section.  Inform GE if more info needed beyond that identified in 2/29 submittal.	
n18a		Accident management	Palla Buchholz	s	c	v	NRC	Provide response to GE submittal.	
Seismic Analysis Beyond Design Base									
S-5		Fuel assembly capacity	Kelly Liu	v			GE	Update SSAR	NRC, GE have agreed to 1.2g <u>Item resolved</u>
S-6		Flat-bottom tank capacity	Kelly Liu	v			GE	Margins Analysis	GE will probably reduce value.
S-7		Diesel generator capacity	Kelly Liu	v			GE f	Margins Analysis	GE will probably reduce value
S-8		Electrical equipment capacity	Kelly Liu	v			GE	Margins Analysis	GE will probably reduce value

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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Date	Action Actor	Comments
				l	n	e			
				a	a	v			
				n	l	i			
				e					
				w					
I-14		Confirm electrical equipment capacities in site specific PRA	Kelly Duncan	v			GE	Margins analysis	Site specific PRA not required. Capacities used in margins analysis will be input to ITAAC.
O-21B		Seismic capacities for systems not in certified design	Palla Duncan	v			GE	part of margins assessment	
S-10	n	Staff will use LLNL hazard curve	Kelly Duncan	---	---	---	n	n	Seismic PRA not required. <u>Item Resolved</u>
n20a	n	How to treat seismic hazard uncertainties	Kelly Duncan	---	---	---	n	n	Not required. <u>Item resolved</u>
I-10		Confirm assumed seismic capacities and incorporate in design specs	Kelly Duncan	v			GE		Probably cover by PRA input to ITAAC
I-11		Modify seismic PRA to account for soil failures	Kelly Duncan	---	---	---	n	n	Seismic PRA not required. NRC may address by site licensing requirement. <u>Item Resolved</u>

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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Date	Action Actor	Comments
				l	s	c			
I-14		Confirm electrical equipment capacities in site specific PRA	Kelly Duncan	v			GE	Margins analysis	Site specific PRA not required. Capacities used in margins analysis will be input to ITAAC.
O-21B		Seismic capacities for systems not in certified design	Palla Duncan	v			GE	part of margins assessment	
S-10	n	Staff will use LLNL hazard curve	Kelly Duncan	—	—	—	n	n	Seismic PRA not required. <u>Item resolved</u>
n20a	n	How to treat seismic hazard uncertainty	Kelly Duncan	—	—	—	n	n	Not required. <u>Item resolved</u>
I-10		Confirm assumed seismic capacities and incorporate in design specs	Kelly Duncan	v			GE		Probably cover by PRA input to ITAAC
I-11		Modify seismic FRA to account for soil failures	Kelly Duncan	—	—	—	n	n	Seismic PRA not required. NRC may address by site licensing requirement. <u>Item Resolved</u>

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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				i	n	r				
1-12		Plant walkdown by applicant	Kelly Duncan	--	--	--	n	n	n	Ge agree to plant walkdown. Per EPR1 NP-6041 <u>Item resolved</u>
1-15		Site specific seismic PRA by applicant	Kelly Duncan	--	--	--	n	n	n	Seismic PRA not required. NRC may address by site licensing requirement. <u>Item Resolved</u>
O-19		Address potential for penetration, isolation valve failure during seismic event	Palla Knecht	v			NRC	?	Evaluate proposal. More discussion needed nearing resolution.	Proposed approach provided to NRC Dec. 91, Jan. 92
S-3		Correct the treatment of firewater in Seismic Class II CET	Kelly Vishu	v			GE		Include correction in margins analysis	GE will correct
n20a		Margins Analysis	Kelly Duncan				NRC	4/5	Clarify rules, describe HCLF calculation	

#### Other External Records

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### ABWR Tasks to wrap up PRA

DSER item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P	A	R	Next Actor	Date	Action	Comments
				i	n	e				
I-8		Site specific design verification: external floods, transportation hazards	Kelly Duncan				NRC 1	6/92		"Grandchild" of SECY 016 due about June. Classic design analysis alone may be sufficient.
Interfaces (General)										
n206		Be sure PRA "requirements" and insights get into "Interface write up"								Duncan/Fox need discussion.

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ABWR Tasks to wrap up PRA

DSEB item	SSAR Section	Title - Subtask	NRC Contact GE Contact	P i a n i e	A s e v e r y	R e q u i r e d	Next Action	Date	Action	Comments
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Consequence Analysis

n21a		No NRC feedback on site acceptability from weather standpoint	Palla Careway				NRC ✓		Reflect agreement in SER	Palla/Careway discussed 4/2. NRC agrees. <u>Item Resolved</u>
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