

GPU Nuclear Corporation

One Upper Pond Road Parsippany, New Jersey 07054 201-316-7000 TELEX 136-482 Writer's Direct Dial Number

July 20, 1992 C321-92-2175 C311-92-2079 5000-92-3036

U. S. Nuclear Regulatory Commission Attn: Document Control Desk Washington, D.C. 20555

Dear Sir:

Subject:

Oyster Creek Nuclear Generating Station (OCNGS) Operating License No. DPR-16

Docket No. 50-219

Three Mile Island Nuclear Station, Unit 1 (TMI-1)

Operating License No. DPR-50

Dccket No. 50-289

Survey of Deterioration and Repair of Concrete

In Nuclear Power Facilities

In response to the NRC's letter to GPUN, dated March 11, 1992 (C311-92-3046), regarding survey of deterioration and repair of concrete in nuclear power facilities, enclosed are completed survey forms for TMI-1 and OCNGS. This information is provided to assist in NRC development of a concrete repair manual for concrete structures in nuclear power plants, as part of its Nuclear Plant Aging Program.

The completed survey forms are based on reviews of plant records and discussions with appropriate personnel. This information has not been compiled in accordance with any quality assurance program activity and as such should be utilized for statistical survey purposes only.

If any additional information is needed, please contact Mr. David Distel at (201) 316-7955.

Very truly yours,

J. C. DeVine, Jr.

Vice President and Director,

Technical Functions

JCD/DJD/amk Enclosures

cc: A. Dromerick - USNRC

R. Hernan - USNRC

P. D. Krauss - Wiss, Janney, Elstner Associates, Inc. Administrator, Region I

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9207280104 920720 PDR ADDCK 05000219 PDR

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A601:

DETERIORATION AND REPAIR OF CONCRETE IN NUCLEAR POWER FACILITIES A SURVEY OF PLANTS

Plant Manager	J. B.	ARTON			
Plant Name	OYSTER	CREEK	NGS		
Address	ROUTE	9			
	FORKED	RIVER	, NEW	JERSEY	08731
Type of Containment					
Concrete Cylinder	Yes	E 3	No	n	
Mark I	Yes	18	No	D	
Mark II	Yes		No	0	
Mark III	Yes	0	No	0	
Other	Minimature, vil		MATRICE SEAS TO SEASON ASSESSMENT OF THE SEASO	**********	
Date of Commission		4-9	-69		
Person Completing Surve	у	ten w	HITMOR	€	
Telephone No.		201-31	6 - 7540	6	
Fax No.	_				
Person(s) in Charge of C Inspection and Repairs	oncrete				-
Telephone No.					NAME AND ADDRESS OF THE OWNER, WHEN THE OWNER,
Fax No.					NT SANGE WHEN AND ADDRESS OF THE PARTY OF TH

External Assistance

Do you use outside consultants for inspection of concrete structures?	Yes	23	No 🗆		
Y yes: Consultant Name	WATER FRONT INC	CE	C	MUE	NOW ASS.
Contact Name	STEVE HILDEBRAND	JOE !	ATUSSO	RICH	ARD MUENOW
	215-426-2345				-377-4041
none No.	-		-	-	-542-1471
Fax No.				100	
Do you use outside consultants for repair of concrete structures?	Yes	0	No E	ā	
If yes: Company Name					DOMESTIC ACTUAL ACTUAL CONTROLS
Contact Name					
Telephone No.					
Fax No.					
General					
Do you conduct regular inspections of the concrete in the plant?		Yes	E S	No	О
If yes: How often do you conduct th	ese surveys? IN Ge	HERAL SCHOOL	THERE IS N	O REGU N DANE	LIAR SCHEDULE FOR CONCRET
If yes:			During	CUTA	æ.
What techniques are used to	inspect the concr	Yes	namon r	No	0
visual half-cell potential tests fo	r corresion	Yes		No	M
removal of cores	· Controllin	Yes		No	0
NDT (pulse velocity, puls	e echo,	Yes		No	0
chemical analyses		Yes		No	FOR BLOCK WALL MOTER DINTENSE CONCRETE
X-ray		Yes		No	STRUCTURE CONCERTS
other (describe)					

Observed Deterioration Have you experienced damaged concrete in this plant? Yes No O Have the following types of deterioration been located at the plant? volds/honeycomb Yes No cracking Yes 図 No scaling Yes No spailing Yes 100 No staining Yes 153 No corrosion of reinforcing steel Yes E No degradation of prestressing steel Yes No 剧 popouts Yes No 颜 efflorescence Yes No 國 dusting Yes No 23 delamination Yes No ott...r (please describe) **Deterioration Mechanisms** Have you experienced concrete damage due to: freeze/thaw Yes 認 No D aggressive chemical attack Yes No 翻 sulfate attack Yes No seawater exposure Yes 58 No acid attack Yes No 53 abrasion Yes No EG impact Yes E No ü corrosion of steel embedded in concrete Yes No carbonation Yes [3 NO 1 corrosion of other metals embedded in concrete Yas No 58 if yes, describe

	chemical reactions of aggregates	Yes		No	E23
	dimensional changes				
	thermal changes	Yes	图	No	
	plastic shrinkage	Yes		No	13
	drying shrinkage	Yes	0	No	[3]
	structural overload	Yes		Mo	25
	temperature/fire	Yes	Ø	No	
	radiation	Yes		No	図
	other				
Ra	pair				
Ha	ve you repaired damaged areas at the plant?	Yes	B	No	0
lf y	res:				
	What type of repair techniques have been used?				
	GROUTING				
	EPOXY INJECTION				
Cri	ack repairs				
	Epoxy Injection	Yes	8	No	
	If yes, what material? SIKADUR 35 HI MOD L	V			
	Routing and sealing	Yes	図	No	
	If yes, what material? SIKATOP 123				
	Stitching and additional reinforcement	Yes		No	[3]
	if yes, what material?	-			
	Drilling and plugging	Yes	[21	No	D
	If yes, what material? MASTERFLOW 928				
	Flexible sealing	Yes	139	No	
	If yes, what material? SIKAFLEX IQ				
	Grout injection	Yes		No	20
	If yes, what material?				
	Dry packing	Yes		No	100
	If ves. whut material?				

Polymer impregnation if yes, what material?		Yes		No	Ø	
Other						
Spalling or Delamination Repa	drs.					
Concrete replacement If yes, what material?	MASTERFLOW 928	Yes	E.	No	0	
Dry pack if yes, what material?		Yes	0	No	12	
Pre-placed aggregate con	crete	Yes	G	No	123	
Shotcrete		Yes		No	Ø	
If yes, what material?		Yes	59.	Me	_	
If yes, what material?	SIKAPRONTO 19	105	\$254	No	0	
Other	SIKATOP 123, SIK	MATERIAL STATE OF THE PARTY OF				
Do you utilize cathodic protect	tion of reinforced concre	te?	Yes		No p	8
cathodic protection of pres	tressed concrete membe	rs?	Yes	D	No. E	g.
Damaged and/or Repaired Lo	cations					
is your plant a boiling water r	eactor?	Yes	123	No		
is your plant a pressurized wa (Go to section on pressurized		Y63		No	图	
Boiling Water Reactor						
What areas of the plant have Have these areas been repair						
Concrete containment		Dan	naged		Repai	red
basemat foundation		Yes C	ON E		Yes 🗆	No 🗆
dryvell pedestal		Yes [OM E		Yes 🗆	No 🗆
vertical walls (Mark I)		Yes [ON E	23	Yes 🗆	No D
steel liner		Yes 1	No No		Yes 🗆	No Ø
suppression chamber (Mar	rk I)	Yes I	ON C	Ø	Yes 🗆	No 🗆
chamber steel liner (Mark I)	Yes I	ON C	R	Yes 🗆	No 🗆

		De	ma	ged	LORDE	Re	Pal	red	
vertical walls (Mark II)		Yes		No	13	Yes	0	No	
vertical walls (truncated cone - Mark II)		Yes	0	No	123	Yes		No	
concrete dome (Mark III)		Yes		No	53	Yes		No	0
polar crane support (Mark III)		Yes	0	No	pa	Yes		No	0
Containment Internal structures									
bottom slab (steel Mark I and pre-Mark conta	inments)	Yos		No		Yes		No	0
reactor pedestal/support structure		Yes		No	100	Yes		No	
biological (Reactor) shield wall		Yes		No		Yes	D	No	0
floor slabs		Yes		No	团	Yes	120	No	0
walls		Yes		No	[2]	Yes	図	No	0
columns		Yes		No		Yes		No	0
diaphragm floor (Mark II)	N/A	Yes		No		Yes		No	0
NSSS equipment pedestals/supports		Yes		No	ES	Yes	12	No	
upper and fuel pool slabs (Mark III)	A/A	Yes		No		Yes	U	No	
drywell wall (Mark ill)	N/A	Yes		No		Yes		No	
weir/vent wail (Mark III)	N/A	Yes		No		Yes		No	
crane support structure (Mark III)	N/A	Yes		No		Yes	0	No	
Secondary Containments/Reactor Buildings									
basemat foundation (isolated from containm	ent basen	nat)							
valls		Yas	10	No	0	Yes	121	No	0
siabs		Yes	Ø	No		Yes	Ø	No	0
columns		Yes		No	四	Yrs		No	
equipment supports/pedestals		Yes	13	No		Yes		No	DSOME
sacrificial shield wall (Metal Containments)		Yes		No	图	Yes		No	0
spant/New fuel pool walls/slabs		Yes	M	No	0	Yes		No	2
drywell foundation		Yes		No	B	Yes		No	
Auxiliary Structures									
foundations		Yes		No	Ø	Ye	8 🗆	No	0
walls		Yes	s (E)	No		Ye	s 🖾	No	

		Dama	ged	Repa	red
siabs		Yes 🗆	No 🖾	Yes 🗆	No []
cable ducts		Yes 🗆	No 🖾	Yes 🗆	Mo 🗆
pipe tunnels		Yes 🖾	No D	Yes 🖾	No 🗆
stacks		Yes 🗆	No 🖾	Yes 🗆	No 🗆
concrets intake piping		Yes 🗆	No 🖾	Yes []	No 🗆
hyperbolic cooling towers	N/A	Yes 🗆	No 🗆	Yes 🗆	No 🗆
dams	N/A	Yes 🗆	No []	res 🗆	No D
Intake crib structure		Yes 🖾	No 🗆	Yes 🖾	No 🗆
embankments		Yes 🖾	No 🗆	Yes 🛛	No 🗆
tanks		Yes 🗆	No 🖾	Yes 🗆	No 🗆
water wells		Yes 🗆	No KI	Yes 🗆	No 🗆
other					
PRESSURIZED WATER REACTOR					
What areas of the plant have exhibited di have these areas been repaired?	amage and				
concrete containment		Yes 🗆	No 🗆	Yes 🗆	No 🗆
basemat foundation		Yes D	No D	Yes 🗆	No D
tendon access galleries		Yes 🗆	No D	Yes 🗆	No []
vertical walls (and buttresses)		Yas 🗆	No 🗆	Yes 🗆	No 🗆
ring girder		Yes []	No 🗆	Yes 🗆	No 🗆
dome		Yes 🗆	No 🗆	Yes 🗆	No D
linor		Yes 🗆	No 🗆	Yes 🗆	No 🗆
Containment Internal structures					
bottom floor		Yes 🗆	No 🗆	Yes 🗆	No 🗆
floor slabs		Yes 🗆	No 🗆	Yes 🗆	No 🗆
walls		Yes 🗆	No 🗆	Yes D	No D
columns		Yes D		Yes 🗆	No 🗆
NSSS equipment pedectals/supports		Yes 🗆	No 🗆	Yes 🗆	No []
primary shield wall (reactor cavity)		Yes 🗆		Yes 🗆	No D
reactor coolant vault walls			No 🗆	Yes 🗆	

	Dams	ged		Re	pair	ed	
beams	Yes 🖸	No 🗆		Yes		No	
crane support structures	Yes 🖂	No []		Yes		No	
ice condenser divider wall and slab	Yes 🖂	No 🗆		Yes		No	
refueling pool and canal walls	Yes 🗆	No 🗆		Yes		No	
Auxiliary Structures							
foundations	Yes 🗆	No 🗆		Yes		No	
walls	Yes 🗆	No 🗆		Yes		No	
siabs	Yes 🗆	No 🗆		Yes		No	
cable ducts	Yes 🖸	No 🗆		Yes		No	
pipe tunnels	Yes 🖸	No 🗆		Yes		No	0
stacks	Yes 🗆	No 🗆		Yes		No	
concrete intake piping	Yes 🖂	No 🗆		Yes		No	П
hyperbolic cooling towers	Yes 🗆	No 🗆		Yes		No	
damo	Yes 🖸	No 🗆		Yes		No	
intake crib structure	Yes 🗆	No 🗆		Yes		No	
embankments	Yes 🗆	No 🗆		Yes		No	0
tanks	Yes D	No 🗆		Yes		No	
water wells	Yes 🗆	No 🗆		Yes		No	
other							
General Commonts							
Do you have experience with durability of par	ticular repairs		Yes	63	No		
Do you have experience with performance his	story of particular	repairs	Yes	0	No	Ø	
Do you regularly evaluate repair performance			Yes		No	図	
If yes, how							

If yes has been answered to any of the above general comments, we would appreciate brief comments or copies of reports concerning these factors.

DETERIORATION AND REPAIR OF CONCRETE IN NUCLEAR POWER FACILITIES A SURVEY OF PLANTS

Plant Manager	T. G. E	Rout	HTON		
Plant Name	TMI	-1	NGS		
Address	ROUTE	441	SONTH		
	MIDDLE	TOWN	,PA.	170 57	
Type of Containment					
Concrete Cylinder	Yes	M	No	0	
Mark I	Yes	0	No	8	
Mark II	Yes	0	No	8	
Mark III	Yes	0	No	Ø	
Other	P	WR b	y Bay	N	
Date of Commission		4	4-19-7	4	
Person Completing Survey	k	ENWH	ITMORE		
Telephone No.	2	01-31	6-754	16	
Fax No.	-				
Person(s) in Charge of Con Inspection and Repairs	crete				
Telephone No.				A CONTRACTOR OF THE STATE OF TH	
Fax No.					

External Assistance

Do you inspecti	use outside consultants for on of concrete structures?	Yes	図	No	0		
H yes:	Consultant Name	MATCOR INC	c (FOR	(SO).	swdT pui	SR V	ISUAL INSPECTION
	Contact Name	WILLIAM R.	SCHUT	Т			
	Telephone No.	800-528-0	692				
	Fax No.	215 - 848 - 8	2699				
	use outside consultants for f concrete structures?	Yes	0	No	B		
If yes:	Company Name						
	Contact Name						NA ATTACABATA CALLACATA CA
	Telephone No.			-			-
	Fax No.						
Genera							
	conduct regular inspections oncrete in the plant?		Yes		No	100	FOR TENDONI WOHOPAGE AREA
If yes:	How often do you conduct thes	se surveys?	SEE	NOTE	AT BOT	TOM	OF THIS PAGE
If yes:	What techniques are used to in	spect the concr	ete con	dition	?		
	visual		708	23	No	2	OFTEN
	half-cell potential tests for s	corrosion	Yes	52	No		SOMETIMES
	removal of cores		Yes	E	No		SOMETIMES
	HDT (pulse velocity, pulse e acoustic emission)	echo,	Yes	E	No	0	RARE
	chemical analyses		Yes	123	No		VERLY PARE
	X-ray		Yes		Но		RAPE
	other (describe)						NAMES OFFICE ADMINISTRATIONS

NOTE: THE ONLY FORMAL REGULAR INSPECTIONS OF CONCRETE PREFORMED AT TIME IS THE INSPECTION AROUND THE TENDONS CONDUCTED EVERY 5 YEARS, INFORMAL VISUAL INSPECTIONS ARE PERFORMED DURING EACH OUTAGE. IF DEGRADATION IS CRISCIPLED, MORE EXTENSIVE PROPERTY INSPECTIONS INVESTIGATIONS ARE PERFORMED AND TEMPORARY REGULAR INSPECTIONS ARE SCHEDULED TO DOCUMENT ANY FOULTWAR DEGRADATION.

we you experienced damaged concrete in this plant?	Yes	図	No	
ve the following types of deterioration been located at	the pla	ent?		
voids/honeycomb	Yes	120	No	
cracking	Yes	623	No	
scrng	Yes	123	No	D
spelling	Yes		No	0
staining	Yes		No	图
corrosion of reinforcing steel	Yes	0	No	150
degradation of prestressing steel	Yes		No	腿
popouts	Yes		No	[23
efflorescence	Yes		No	E
dusting	Yes		No	E
delamination	Yes		No	E3
other (please describe) Stawing of Co	MCVB	e au	e 10 1	ense
terioration Mechanisms	иств	e au	e 10 1	ensc
terioration Mechanisms ive you experienced concrete damage due to:				
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw	Yes	163	No	0
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack	Yes Yes	10	No No	
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack	Yes Yes Yes	8 0	No No	E E
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure	Yes Yes Yes	8000	No No No	
terioration Mechanisms Ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure acid attack	Yes Yes Yes Yes	00000	No No No No	
terioration Mechanisms Ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure acid attack abrasion	Yes Yes Yes Yes Yes	800000	No No No No No	
terioration Mechanisms Ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure acid attack abrasion impact	Yes Yes Yes Yes Yes Yes	8000000	No No No No No No	
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure acid attack abrasion impact corrosion of steel embedded in concrete	Yes Yes Yes Yes Yes Yes Yes Yes Yes	00000000	No No No No No No	
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure acid attack abrasion impact corrosion of steel embedded in concrete carbonation	Yes	800000000	No No No No No No No	
terioration Mechanisms ive you experienced concrete damage due to: freeze/thaw aggressive chemical attack sulfate attack seawater exposure acid attack abrasion impact corrosion of steel embedded in concrete	Yes Yes Yes Yes Yes Yes Yes Yes Yes	800000000	No No No No No No	

chemical reactions of aggregates	Yes	0	No	E
dimensional changes				
thermal changes	Yes		No	E 5
plastic shrinkage	Yes	0	No	120
drying shrinkage	Yes		No	Ø
structural overload	Yes	0	No	525
temperature/fire	Yes		No	图
radiation	Yes		No	123
other	e souse at automorphism and a present the contract of the cont		***	
Repair	AND THE RESIDENCE OF THE PARTY AND ANY THE PARTY AND AND ANY THE PARTY AND ANY THE P			MATERIAL SOLU
Have you repaired damaged areas at the pla	int? Yes	(2)	No	
If yes:				
What type of repair techniques have be	en used?			
GROUT (PATCHING FOR SOME AREA ,)	NYECTION FOR BLO	CK WAI	15)	
Crack repairs				
CE-CA-				
Epoxy Injection	Yes	£3	No	[20]
If yes, what material?			**-	-
Routing and sealing	Yes 123	25.	No	
ii you, wreat material .				
Stitching and additional reinforcement	Yes		No	(83)
If yes, what material?		-	No	1700
Drilling and plugging	Yes		No	图
If yes, what material?		_		
Flexible sealing	EX IQ	8	No	
if yes, what material? SIKAFL	to play 1 to the second			
Grout Injection	Yes		No	
if yes, what material?				
Dry packing	Y65		No	[2]
if use what material?				

Polymer impregnation If yes, what meterial?	Yes	0	No	23		
Other						
Spailing or Delamination Repairs						
Concrete replacement If yes, what moterial?	Yes	0	No	A		
Dry pack If yes, what material?	Yes	0	No	20		
Pre-placed aggregate concrete	Yes		No	100		
Shotcrete If yes, what material?	Yes	D	No	図		
Sealers If yes, what material?	Yes	0	No	図		
Other						
Do you utilize cathodic protection of reinforced co	ncrete?	Yes	0	No	图	
cathodic protection of prestressed concrete me	mbers?	Yes	U	No	M	
Damaged and/or Repaired Locations						
is your plant a boiling water reactor?	Yes	0	No	DS1		
is your plant a pressurized water reactor? (Go to section on pressurized water reactor)	Yes	酚	No	0		
Boiling Water Reactor (NA)						
What areas of the plant have exhibited damage? Have these areas been repaired?						
Concrete containment	Dar	naged		Rep	ain	ed
basemat foundation	Yes C	ON C		Yes I		No 🗆
drywell pedestal	Yes [ON C		Yes	0	No 🗆
vertical walls (Mark I)	Yes I	J No		Yes		No 🗆
steel liner	Yes	ON C		Yes		No []
suppression chamber (Mark I)	Yes	ON C		Yes	0	No D
chamber steel liner (Mark I)	Yes	□ No	0	Yes		No D

	Duma	ged	Repaired		
vertical walls (Mark II)	Yes []	No 🗆	Yas D	No 🗆	
vertical walls (truncated cone - Mark II)	Yes 🗆	No 🗆	Yes 🗆	No D	
concrete dome (Mark III)	Yes 🗆	No []	Yes 🗆	No 🗆	
polar crane support (Mark III)	Yes 🗆	No 🗆	Yes 🗆	No []	
Containment Internal structures					
bottom slab (steel Mark I and pre-Mark containments)	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
reactor pedestal/support structure	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
biological (Reactor) shield wall	Yes 🗆	No D	Yes []	No 🗆	
floor slabs	Yes []	No 🗆	Yes 🗆	No 🗆	
wells	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
columns	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
diaphragm floor (Mark II)	Yes 🗆	No D	Yes 🗆	No []	
NSSS equipment pedestals/supports	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
upper and fuel pool slabs (Mark III)	Yes 🗆	No 🗆	Yes 🗆	No D	
drywell wall (Mark III)	Yes 🗆	No 🗆	Yes D	No 🗆	
weir/vent wall (Mark III)	Yes D	No 🗆	Yes 🗆	No 🗆	
crane support structure (Mark III)	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
Secondary Containments/Reactor Buildings					
basemat foundation (isolated from containment base	mat)				
wails	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
slabs	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
columns	Yos D	No 🗆	Yrs D	No Ci	
equipment supports/pedestals	Yes [No D	Yes []	No 🗆	
sacrificial shield wall (Metal Containments)	Yes D	Mo Ci	Yes 🗆	No 🗆	
spent/New fuel pool walls/slabs	Yes D	No 🗆	Yes 🗆	No 🗆	
drywell foundation	Yes E	No D	Yes 🗆	No 🗆	
Auxiliary Structures					
foundations	Yes D	No D	Yes 🗆	No 🗆	
walls	Yes D	No D	Yes D	No D	

Damaged		Repai	red		
slabs	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
cable ducts	Yes D	No D	Yes []	No 🗆	
pipe tunnels	Yes 🗆	No []	Yes 🗆	No 🗆	
stacks	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
concrete intake piping	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
hyperbolic cooling towers	Yes 🗆	No D	Yes 🗆	No []	
dams	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
Intake crib structure	Yes L	No D	Yes 🗆	No 🗆	
embankments	Yes 🗆	No 🗆	Yes 🖂	No D	
tanks	Yes 🗆	No []	Yes 🗆	No D	
water wells	Yes 🗆	No 🗆	Yes 🗆	No 🗆	
other				-	
PRESSURIZED WATER REACTOR					
What areas of the plant have exhibited damage and have these areas been repaired?					
concrete containment	Yes 🗆	No B	Yes 🗆	No 🗆	
basemat foundation	Yes 🗆	No 🖾	Yes []	No 🗆	
tendon access galleries	Yes 🗆	No 🖾	Yes D	No 🗆	
tertical walls (and buttresses)	Y09 🖂	No 🖾	Yes 🗆	No 🗆	
ring girder	Yes 🖾	No 🗆	Yes III	No 🗆	
dome	Yes 🗀	No EJ	Yes 🗆	No 🗆	
liner	Yes 🗆	No pa	Yes 🗆	No 🗆	
Containment internal structures					
bottorn floor	Yes 🗆	No Ø	es 🗆	No 🗆	
floor slabs	Yes D	No ES	Yes 🗆	No 🗆	
walls	Yes 🖂	No E	Yes 🗆	No 🗆	
columns	Yes 🗆	No E	Yes 🗆	No 🗆	
NSSS equipment pedestals/supports	Yes 🗆	No El	Yes 🗆	No 🗆	
primary shield wall (reactor cavity)	Yes []	No El	Yes 🗆	No 🗆	
reactor coolant vauit walls	Yes 🗆	No O	Yes 🗆	No D	N/F

8 D 8 D 8 D 8 D 8 D 8 D 8 D	No No	123		Yes Yes Yes	0	No No	0000
08 D 08 D 08 D 08 D 08 D	No No No No No	日日日	,	Yes Yes	0	No No	0 0
08 C	No No No No	四四四四		Yes Yes	0	No No	0
08 C 08 C 08 C	No No No	D C		Yes Yes	0	No	0
98 E	No No	0		Yes			
98 E	No No	0		Yes			
98 D	No No					No	[26]
98 D	No.	回					Section
es þ				Yes		No	
	L P TOLL	FI		Yes		No	
	(No	DE .		Yes	发	No	
00 L	l Ko	Ø		Yes		No	
es D	No			Yes		No	
es 12	No			Yes	13	No	
es 🗆	1 No			Yes	0	No	
es C) No	図		Yes		No	
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es C) No			Yes	0	No	
гв			Yes	8	No	0 13	
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			Yes	2	N	0 0	
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If yes has been answered to any of the above general comments, we would appreciate brief comments or copies of reports concerning these factors.