In the Matter of: Commonwealth Edison Company) Docket Nos.
Dresden Station, Units 2 and 3) 50-237
(Spent Fuel Pool Modifications)) 50-249

DOCKETED
USNRC
JUN 17 198
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APPLICANT'S
CORRECTIONS OF TRANSCRIPT OF NRC HEARINGS
CONDUCTED ON NOVEMBER 19-21, 1980

The transcript of the hearings of November 19-21 conducted in Morris, Illinois contains numerous errors. Terry Pickens' name is misspelled throughout the transcript. Moreover, Dr. Remick and Dr. Little are erroneously and consistently referred to as Mr. Remick and Ms. Little. In addition, the following corrections must also be made:

Page	Line	Transcript Corrections
76	3	"bearing" should be "hearing"
	14	"if" should be "is"
	23	"if" should be "is"
77	3	"this" should be "is"
80	10	"witness" should be "witnesses"
	15	"if" should be "is"
81	10	"contin-" should be "continu-"
85	1	"considerably" should be "considerable"
	13	"afer" should be "after"
	14	"omission" should be "admission"
86	5	"SECo" should be "CECo"
91	22	"make" should be "may"
99	6	"our" should be "out"
105	15	"out" should be "outages"

Appendix A. Part 1.

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Page	Line	Transcript Corrections
108	17	"in store" should be "store"
111	4	"Regulator" should be "Regulatory"
	17	"de-evaluation in" should be "evaluation and"
116	8	"fabricated?" should be "fabricated."
	11	"in" should be "and"
117	25	"in" should be "and"
119	9	"fuels" should be "fuel pools"
120	22	"new rag" should be "NUREG"
121	20	"to cut" should be "fuel"
127	20	"storage?" should be "storage."
132	15	"II" should be "III"
142	12	"no" should be "not"
148	3	"paramaters" should be "parameters"
149	14	"blowing" should be "bowing"
	16	"blowing" should be "bowing"
	21	"blowing" should be "bowing"
	22	"blowing" should be "bowing"
	23	"blowing" should be "bowing"
169	25	"it" should be "there"
170	6	"MUREG" should be "NUREG"
174	21	"availalbe" should be "available"
175	23	"exten" should be "extent"
176	23	"carriet" should be "carried"
181	14	"reviewing" should be "refueling"
	15	"would us some coastal down" should be "would coast down"

Page	Line	Transcript Corrections
182	2	"Field" should be "Fuel"
	7	"Qual" should be "Quad"
183	1	"Quald" should be "Quad"
184	13	"contentions" should be "contention"
186	14	"C 45" should be "N45"
188	7	"of" should be "on"
189	6	"normally" should be "formally"
190	8	"operated" should be "upgraded"
	15	"let" should be "sent"
	16	"let" should be "designated"
192	25	"indicate" should be "date"
194	15	"problesm" should be "problems"
198	2	"brie" should be "brief"
	18	"continuation" should be "attenuation"
199	7	"doucment" should be "document"
200	4	"netron" should be "neutron"
202	14	"dlearance" should be "clearance"
204	22	"Boiler" should be "OBoyle"
207	19	"would would" should be "what would"
220	15	"specks" should be "specs"
221	25	"ones" should be "one"
232	14	"cart check" should be "Car Tech"
234	9	"improve" should be "approve"
	20	between "Company" and "the" add "responsible for" and delete "counts as to"
235	13	"documents" should be "documented"

Page	Line	Transcript Corrections
240	18	"vender" should be "vendor"
	19	substitute "10 CFR" for "tensey afar"
	20	"vender" should be "vendor"
241	9	"edition" should be "addition"
	19	"insured" should be "assured"
248	18	"if had" should be "if he had"
252	13	"supervision" should be "supervisors"
254	10	"what" should be "way"
257	8	"transparent" should be "apparent"
261	1	"are" should be "those"
264	23	"?" should be "."
265	13	"broght" should be "brought"
	16	"exist" should be "exit"
266	11	"organizzation" should be "organization"
268	6	"Schewski" should be "Shewski"
	23	"Schewski" should be "Shewski"
275	18	"O'Boil" should be "OBoyle"
	20	"O'Boil" should be "OBoyle"
280	11	"markins" should be "markings"
290	24	"audity" should be "audit"
291	14	"consultant" should be "consulting"
296	19	"ging" should be "being"
	25	"were" should be "was"
298	4	"are" should be "were"

Page	Line	Transcript Corrections
311	10	"this" should be "the"
	13	"audit" should be "auditor"
	15	"tenatively" should be "tentatively"
	16 & 17	"corrective was" should be "corrective action was"
320	15	"presentatives" should be "representatives"
321	25	"labled" should be "labeled"
324	22	"or" should be "are"
325	7	"still" should be "built"
329	19	"if" should be "of"
334	4	delete "of NRC"
338	2	"leak" should be "break"
339	16	"inche" should be "inch"
340	1	"assembly" should be "assembly"."
346	12	delete "at"
	20 & 21	should read "water. Sodium chloride is such a common substance that a small quantity may be on things that are put"
358	23	"dented" should be "vented"
369	16	substitute "rather" for "other"
	22	"days to extrapolate" should be "data which incorporates"
373	10	"incur" should be "occur"
377	3	"nerely" should be "nearly"
382	16	"will for" should be "will look for"

Page	Line	Transcript Corrections
383	1	"According" should be "Accordingly"
386	19	"go" should be "to"
389	17	"Anny" should be "Any"
390	22	"wee" should be "see"
392	12	"Described" should be "Describe"
393	17	substitute "refueling floor" for "reviewing board"
	18	"then store them to" should be "then install them into"; substitute "per" for "for"
394	4	"send" should be "sent"
	14	"no" should be "not"
395	6	"ship" should be "plant"
397	2	"was directed" should be "delivered directly"
	19	"Luckenby" should be "Leckenby"
401	10	"tender" should be "tendered"
411	5	"or" should be "of"
413	2	"corss" should be "cross"
415	1	"sue" should be "use"
417	22	"became" should be "k"
420	8	"numeral" should be numerical"
	14	"hat sould" should be "that should"
430	8	"againt" should be "against"
437	21	"duiring" should be "during"
444	22	"or" should be "and"
447	14	"this marked" should be "this be marked"

Page	Line	Transcript Corrections
448	12	"James James" should be "James"
451	24	"Techincal" should be "Technical"
461	10	"short" should be "shorten"
463	9	"Quadrex used diffusion theory" should be "diffusion theory Quadrex used"
466	15	"can be refitted" should be "will be vented"
467	4	"whole" should be "hole"
	24	"effect" should be "effective"
468	6	"9.2 grams" should be ".02 grams"
	12	line should read "Actually the BWR fuel had"
	13	"pits" should be "pins"
	14	"pit" should be "assembly"
	17	"235 compact" should be "u235 content"
	19	"pool" should be "pools"
469	6	line should read "presently in use. I believe at Browns Ferry, racks are"
470	5	"in any" should be "into"
471	21 & 22	should read "long. We assumed that the fuel is a finite thing which is 144 inches long and placed in an infinitely reflective medium."
472	4	"they" should be "that"
	5	"that" should be "an"
	6	"infinitely" should be "infinite"; substitute "so" for "to"
	7	"compare" should be "compares"

Page	Line	Transcript Corrections
474	12	"05" should be ".05"
477	13	"entries" should be "increases"
	16	"defect" should be "effect"
	22	"gate and AI fuel" should be "and 8x8 fuel"
479	24	"analysys" should be "analysis"
482	1	"presen" should be "present"
	10 & 11	"less than 9.5 less than or equal to 9.5?" should be "less than or equal to .95?"
	21	"in" should be "that"
483	5	"ro" should be "or"
486	4	"the" should be "and"
	16	"9.5" should be ".95"
487	5	"9.5" should be ".95"
	24	"3-3-2" should be "3.3-2"
489	4	"effect" should be "effective"
490	6	"finer of" should be "finite"
492	8	"prorat" should be "prorate"
	15	"dimineralizes" should be "dimineralizer"
	18	"weight" should be "witness"
493	14	"moving" should be "removed"
	22	"move" should be "remove"
497	11	"vending" should be venting"
499	3	"submittion" should be "submission"
500	3	"195" should be ".95"
	19	"wich" should be "which"
501	5	"date" should be "day"

Page	Line	Transcript Corrections
508	23	"Steedy" should be "Stiede"
	24	"Steedy" should be "Stiede"
509	7	"Knaughton" should be "Naughton"
	8	"Knaughton" should be "Naughton"
513	21	"Ready" should be "Reddy"
	23	"Ready" should be "Reddy"
514	2	"Ready's" should be "Reddy's"
	3	"Ready" should be "Reddy"
	6	"Ready's" should be "Reddy's"
	19	"Ready's" should be "Reddy's"
516	17	"Contention" should be "contentions"
520	3	"engineering" should be "engineer"
524	19	"unequivocably" should be "unequivocally"
534-A	7	Add the word "know" between "you" and "that"
535	4	Replace "Chairman Wolf" with "Mr. Steptoe"
540	25	"mineralizer" should be "demineralizer"
541	9	"for" should be "from"
550	10	"taken" should be "take"
551	17	"examplanation" should be "explanation"
	18	"currently" should be "current"
	23	"hydrolyzing" should be "hydrolazing"
552	16	"hydrolyze" should be "hydrolaze"

Page	Line	Transcript Corrections
554	3	Add the word "in" between "Edison" and "tends"
558	3	Take out the word "designed" after "designed"
560	9	"extent" should be "sense"
565	7	"thow" should be "throw"
580	16	"has" should be "have"
	20	"for" should be "of"
584	22	"was" should be "were"
585	19	"rack" should be "rod"
	20	"centered" should be "scintered"
	21	"among them thirty-five" should be "Uranium 235"
	24	"Mr." should be "Dr."
586	14	"box" should be "rods"
	17	"question" should be "questions"
	24	"Raga" should be "Ragan"
	24	"Criticality" should be "A criticality"
587	3	"in" should be "and"
	17	"cool" should be "pool"
588	20	Take out the "." after the word "pool" and change "The" to "the"
	24	"condense" should be "condensate"
589	22	"fuel" should be "floor"

Page	Line	Transcript Corrections
590	1	"airborn" should be "airborne"
	3	Add the words "pool" between "fuel" and "pumps" and the word "and" between "pumps" and "heat" and the word "exchange" should be "exchangers".
592	8	"into" should be "in"
	24	"perceived?" should be "possible?"
	25	"would" should be "could"
593	21	Add "-" between "structure" and "and"
	25	"environment" should be "environments"
595	8	"minimizer" should be "demineralizer"
	9	"cool" should be "pool". Add the word "cooling" between "pool" and "system"
	11	Add the words "pool cooling" between "fuel" and "system"
596	13	Add the word "missing" between "further" and "plates"
	14	"criticalities" should be "criticality"
594	5	Add "&" between "Sergeant" and "Lundy"
	9	Delete the word "a" between "on" and "loss"
	10	"time" should be "type". "accidents" should be "accident"
	24	Add "&" between "Sergeant" and "Lundy"
597	25	"that" should be "in" and "commenced" should be "committed"

Page	Line	Transcript Corrections
598	25	"iron" should be "ion"
600	5	"install" should be "involve"
	25	"on" should be "in"
601	2	"system" should be "systems"
	10	"air boron" should be "airborne"
602	8	"particular" should be "particulate"
	12	"particular" should be "particulate"
604	15	"Instituate" should be "Institute"
605	3	"suspect" should be "forget"
609	8	"remmeber" should be "remember"
	12	Delete the word "the" between "the" and "Health"
611	9	"LaSall" should be "LaSalle"
	10	"Edison's" should be "Edison"
	12	Rad-Chem's" should be "Rad-Chem"
612	17	"head" should be "heads"
613	16	"has" should be "have"
	18	"myslef" should be "myself"
	25	"implementations" should be "implementation"
614	7	"activities'" should be "activities;"
616	4	Add the word "the" between "to" and "specific"
617	15	"radiochemicshtry" should be "radiochemistry"
	22	"their" should be "the" and "for" should be "the"
618	15	"improvals" should be "approvals"
619	20	"Has" should be "Have" and "the" should be "or"

Page	Line	Transcript Corrections
621	1	"Maintenace" should be "Maintenance"
	17	"season" should be "cesium"
622	1	"is" should be "are"
	11	Add "&" between "Sergeant" and "Lundy"
	18	Add "&" between "Sergeant" and "Lundy's"
623	7	"exhibited" should be "committed"
624	3	"Physic's" should be "Physics"
632	8	"drab" should be "grab"
	10	"alloquad" should be "aliquot"
	21	"multiple" should be "multichannel"
634	6	Delete the word "of" between "out" and "the"
	10	"rate account?" should be "beta-gamma?"
	12	"account" should be "count"
	12	Delete the word "if" between "determined" and "by"
	14	"drag" should be "grab"
635	24	"postpone" should be "propose"
638	2	"milligram" should be "milligrem"
	4	"milligrams" should be "milligrem"
	10	"a rivet blank" should be "if read"
639	3	"it" should be "there"
640	20	"does" should be "dose"
	23	add "in" between "me" and "what"

Page	Line	Transcript Corrections
641	16	add "he has" between "testimony" and "not"
643	24	"zenons" should be "xenons"
644	4	"cool" should be "pool"
	24	"a normal" should be "an abnormal"
646	14	"explain" should be "explaining"
	21	"completed," should be "complete,"
648	13	"milligram" should be "millirem"
649	9	"proper" should be "prompter"
	12	"Tht's" should be "That's"
650	5	"a hankrid of Patel-Northerstern Court" should be "an article of Batelle-Northwestern Labs"
	10	"milligram" should be "millrem"
652	7	"emination" should be "emanation"
	11	"insignificant" should be "significant"
	17	"for" should be "Floor"
653	1	add "area" after "pool"
	6	"merger" should be "immersion"
	6	"ventilating" should be "ventilation"
	8	"later" should be "beta"
	9	"of the skin than the gama does" should be "to the skin than the gamma dose"
655	20	"that takes" should be "taking"
656	18	"check on" should be "collect"
	23	"check" should be "collect"
	23	"factors" should be "fraction"

Page	Line	Transcript Corrections
660	18, 19, 20 & 23	"seizmic" should be "seismic"
661	1	"seizmic" should be "seismic"
	5	"Kazzi Hussain" should be "Quazi Hossain"
	20, 22 & 24	"seizmic" should be "seismic"
662	2	"seizmic" should be "seismic"
	17	delete "residue"
663	14	"analyed" should be "analyzed"
	15	"before" should be "for"
	16	"question" should be "questions"
664	21	"Commissions'" should be "Commission's"
665	19	"inner locks" should be "interlocks"
	25	"concluded" should be "precluded"
666	12	"resolve" should be "result"
	12	"barrier" should be "term"
	16	"than the eight-day" should be "for the eight-by-eight"
	17	"case less similar to 77" should be "case, less or similar to 7 by 7"
667	5	"HAB" should be "gap"
	6	"analygence and" should be "and halogens in"
	8	"girders" should be "occurs"
	12	"61A" should be "6.1.a"
	24	"by" should be "for"

Page	Line	Transcript Corrections
668	7	"metalurgical" should be "containment meteorological"
	12	"or 1077" should be "for 7 by 7"
669	9	"docking" should be "docketing"
670	24	"from" should be "for"
	25	add "accident" between "refueling" and "described"
671	18	add "report" after "generic"
	18	"planes" should be "plants"
	20	"am I" should be "you are"
	21	"testimony?" should be "testimony."
	23	"form" should be "from"
672	2	"FSAR" should be "FSAR's"
676	19	"trane" should be "train"
	23	"a vent" should be "event"
	25	"redundancy." should be "redundancy,"
677	1	"For" should be "for" and "Dresden, some" should be "Dresden. Some"
	3	"overhandling" should be "load handling"
677	10, 16 & 23	"offside" should be "offsite"
679	8	delete "or" before "such"
680	3	"applicants," should be "Applicant,"
	24	add "which" after "document"
681	24	"offside" should be "offsite"

Page	Line	Transcript Corrections
682	1	"leaving" should be "leading"
	24	"affluence" should be "effluents"
684	19	"4446" should be "444"
	20	"NRC" should be "6 NRC"
	21	"1977. "The" should be "1977, that"
	21	"problem" should be "problems - "
	22	"NUREG 10" should be "NUREG 510" and "NUREG 660," should be "NUREG 0660,"
	23	"1.97." should be "1.97 - "
	25	"SER." " should be "SER."
685	3	"and" should be "in"
	10	"the supplement" should be "a supplemental"
686	11	"make such discoveries" should be "take such discovery"
	14	"access" should be "accidents"
	18	"wrap the" should be "draft a"
687	2	"issue" should be "issued"
	3	"case" should be "case."
	4	"to" should be "To"
	6	"case. They" should be "case, they"
692	7 & 8	delete "Ms."
	16	delete "Mr."
696	22	"think" should be "thick"
700	17	"parties" should be "party"

Page	Line	Transcript Corrections
701	9	add "prepared between "the" and "testimony"
	12	"tolerance" should be "tolerances"
704	14	"0.95" should be "0.15"
	18	"with" should be "without"
710	18	delete "on"
712	17	"less" should be "unless"
714	10	"Schewski" should be "Shewski"
717	16	add "commitment" after "Edison"
720	3	add "MR. REMICK:" after "them."

JUN 17 1981
Office of the Secretary
Docketing & Service
Branch

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-237-SP
COMMONWEALTH EDISON COMPANY	)	50-249-SP
	)	(Spent Fuel Pool
(Dresden Station, Units 2 & 3))		Modification)

APPLICANT'S CORRECTIONS TO TRANSCRIPT OF
NRC HEARINGS CONDUCTED ON APRIL 20-21, 1981

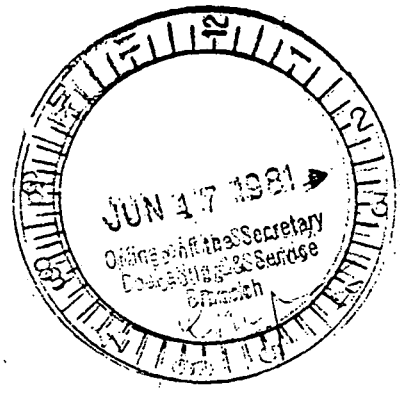
Ignoring some scattered, obvious typographical errors, the only possibly significant corrections which need to be made are shown below.

Page	Line	Transcript Correction
742	2	delete "hold"
745	22	"assist" should be "assistance"
766	2	"16" should be "17"
	8	"16" should be "17"
795	10	"they" should be "there"
806	17	"120" should be "100"
820	3	"to" should be "plus"
825	3	"rods" should be "racks"
828	12	"notice" should be "amendment"
835	17	"abnormal" should be "normal"
852	2	delete "at"
	3	"seized" should be "sees"
869	2	"both" should be "bowed"

Appendix A part 2

Page	Line	Transcript Correction
879	3	"and" should be "an"
881	18	"in" should be "on"
885	25	"fuel channel assembly" should be "fuel assembly"
914	10	"pond" should be "pools"
915	8	delete "in"
916	1	"1,000-ton" should be "1,000-pound"
	15	After the end of the question, "Would it not, in fact, take four tests of each location by mandrel rather than two?" the witness' answer begins: "A: If you wanted it -- I suppose if. . ."
958	4	add "greater" after "times"
960	23	"cams" should be "cans"
	25	"cams" should be "cans"
987	7	add "will" before "come in,"
988	14	"enumerate" should be "eliminate"

Mr. Shaw's testimony has not been bound in the record and it should be.



PROPOSED TRANSCRIPT CHANGES

DRESDEN STATION, UNITS 2 AND 3

Prehearing Conference

August 19, 1980

Page	Line	Change
32	24	Change second sentence to read "They have alleged"
33	12	Add the word "but" after "modification"
35	5	Change "a reprocessing" to read "no reprocessing"
	10	Add the word "they" between "think" and "would"
	11	As a comma after "as" and delete the word "a" before reprocessing"
	12	Change the line to read "for their utilization -- other means. The staff did not"
36	15	Change the word "or" to "of"
37	11	Change the word "evaluation" to "evacuation"
52	9	Change the word "contention" to "suggestion"

Depositions

November 19, 1980

89	6	Change the word "of" to "a"
93 and throughout transcript		Change the name "Pekins" or "Pickins" to "Pickens"
99	6	Change the word "our" to "out"
	12	Add the word "assemblies" after "spent fuel"
107	23-25	Unintelligible
108	17	Change the first "in" to "can"
109	22	Change "on" to "under"

Appendix A. part 3.

Page	Line	Change
110	2	Change the word "in" to "and"
	8	Change the word "before" to "for"

Deposition of Paul W. O'Connor

111	17	Change the words "de-evaluation in" to "evaluation and"
112	6	Change the word "for" to "per"
114	8	Change the phrase "The number spent fuel assembly" to "The number of spent fuel assemblies"
116	8	Change the question mark to a period
	24	Change the word "in" to "and"
117	8	Change the word "aided" to "offered"
	16	Add the word "is" between "testimony" and "to"
		Add the word "are" between "documents" and "to"
120	7	Change the word "environment" to "environmental"
	9	The words "procompact storate" are unintelligible, and change the word "leased" to "least"
121	15	Change the word "City" to "Cities"
124	12	Change the word "of" to "for"
	21	Change the words "of the" to "fuel"
125	13	Add the word "and" between "storage" and "reprocessing"
	17	Add "s" to the end of "Safeguard"
126	4	Change the words "in an" to "than"
	22	Change the word "of" to "and"
	23	The words "appended to the early hours"are unintelligible
127	8	Change the word "your" to "the"
	13	Change the second "the" to "that"

Page	Line	Change
128	1	Change the word "in" to "for"
	2	Delete the word "the"
	11-13	The phrase is unintelligible
130	6	Change the word "carrier with" to "carried out by"
	12, 15, 17,	The name "Lance" should be spelled "Lantz"
132		The name "Bevin" should be changed "Bevan" on this page and wherever else it appears in the transcript
133	17	Change the first "with" to "of"
135	8	The words "in construction" are unintelligible
145	8	Change the word "contentions" to "sections"
146	5	Add the word "Board" before "Question"
	9	Change the word "submitted" to "admitted"
147	25	Change the word "variabilities" to "variables"
149	17	Change the word "blocks" to "box"
150	17	A word has been omitted from the end of the line
163	4	Change the words "visa-versa" to "vice versa"
164	2	Change the second "and" to "into"
	12	Change the words "visa-versa" to "vice versa"
165	17	Add the word "to" between "speak" and "genercially"
170	16	Change the word "interest" to "at this time"
	25	Delete the word "the" between "from" and "reactor"
171	1	Change the word "active" to "reactor"
	25	Change the words "present day" to "proposed"
172	6	Change the word "to" to "and"
	24	Change the word "And" to "Do"
	25	Change the word "fuels" to "fuel"

Page	Line	Change
173	18	Change the word "reactor" to "reactors"
176	8	Change the words "subject to" to "as"
	10	Add the word "Part" before "fifty-one"
178	6	Change the word "belts" to "rods"
	8	Acc the word "startup" between "after" and "the"
179	10	Delete the comma and change the word "and" to "than"

Deposition of Terry Arthur Pickens

182	6	Change the word "to" to "at"
183	7	Change the word "reloading" to "reload and"
186	14	Change "10 C" to "ANSI"
	22	Add the word "committed" between "have" and "to"
187	21	Change the word "Zion" to "design"
	24	Add the word "and" at the end of the line
188	7	Change the word "of" to "on"
189	2	Change the word "security" to "quality assurance"
	9	Change the word "there" to "error"
196	10	Change "31" to "21"
198	18	Change the word "with" to "but"
202	21	Change the word "is" to "if"
207	19	Change the words "would would" to "what would be"
208	5-6	The words "proper regulations" are unintelligible
209	17	The word "exit" is unintelligible
214	24	Remove the "s" from the word "assurances"

Page	Line	Change
220	15	Change the words "meant specks" to "met specs"
222	16	Change the word "buy" to "by" and remove semi-colon
224	17	Change the word "thousands" to "thousandths"
227	3	Change the word "critical" to "criticality"
	7	Change "60,000" to "60 thousandths"
	9	Change the word "retain" to "remain"
	14	The words "our average .9" are unintelligible
228	1	Change the word "or" to "of"
	11	Change the words "weight of" to "way"
229	4	Delete the word "for" between "checking" and "each"
	8	Change the words "effect the critical" to "affect the criticality"
	11	Change the second "that" to "then"
231	1	Change the word "pipspring" to "clipspring"
232	6	Change the word "or" to "of"
234	14	Change the words "manufacturer that worked" to "manufacture of that work"
	15	Change the word "labels" to "manuals"
235	19	Change the word "request" to "requests"

Deposition of Walter J. Shewski

238	1	Change the word "refiled" to "prefiled"
250	2	Change the word "welders" to "welds"

Page	Line	Change
257	7	Change "NSR" to "NSC"
265	6	Change the word "interest" to "entrance"

Deposition of Walter Shewsky - 11/20/80

283	19	Change the word "to" to "from"
290	10	Change the word "documented" to "document"
	19	Change the word "sent" to "set"
291	12 & 16-17	Change the words "Engineering Olympic" to "Olympic Engineering"
292	15-16	Change the words "Engineering Olympic" to "Olympic Engineering"
293	9	Change the words "Engineering Olympic" to "Olympic Engineering"
296	5, 7	Change the words "Engineering Olympic" to "Olympic Engineering"
305	11	Change the word "lone" to "phone"
306	24	Add the word "at" between "personnel" and "Leckenby"
307	16	Change the word "if" to "is"
321	9	The word "inseparably" is unintelligible
328	19	Change the word "form" to "from them"
337	5	Change the word "effectiveness" to "effect of this"

Deposition of Joe E. Draley

340	6	Change the word "devised" to "revised"
344	3	Add the words "it is" between "whether" and "a" and change the word "corrective" to "correct"
346	3	The word "likened" is unintelligible
	9	The word "zircolized" is unintelligible

Page	Line	Change
347	13	Add the words "per million" between "parts" and "in"
349	5, 6	Change the word "stream" to "screen"
352	2	The words "thermanic" and "illegible" are unintelligible
	23	Change the word "sights" to "sites"
	24	Delete the words "for it" between "it" and "to"
354	13	Change the word "their" to "there"
356	13	Add the word "that" at the end of the line
	14	Change "is corroded. The" to "is corroded, the"
365	17	Change the word "purities" to "purity"
366	3	Change the word "policy" to "velocity"
368	23	Change the word "Mr." to "Dr."
369	23	The words "interesting to" are unintelligible
370	11	Add the word "as" between the words "small" and "to"
371	19	Change the word "more" to "not"
373	22	Change the name "Drayler" to "Draley"

Afternoon Session

389	16	Change the word "testimony" to "testify"

Deposition of Terry A. Pickens (resumed)

392	14	Change the words "on in-site" to "in inside"
393	18	Change the words "store them" to "install them in" and change the word "for" to "by"
	21-25	These lines are unintelligible

Page	Line	Change
395	2	Change the words "in site" to "inside"
398	24	The word "design" is unintelligible
400	17	Change the word "position" to "disposition"
Deposition of Walter Shewski (resumed)		
402	1	Change the word "and" to "N."
Deposition of Ron Ragan		
415	1	The words "in sue" are unintelligible
Deposition of William L. Belke		
424	4	The words "I believe since Revision 3" are unintelligible
427	20	Add the word "me" between "Correct" and "if"
430	17	Change the word "factors" to "reactors"
431	6	Add the word "don't" between "I" and "object"
	9-10	Change the phrase "his scope of expertise" to "the scope of his expertise"
	14	Change the word "which" to "what"
	21	The word "borrowed" is unintelligible
Deposition of John R. Weeks		
435	16	Add the words "Nuclear Reactor" to the end of the line
Deposition of James D. Gilcrest and Kin W. Wong		
467	24	Change the words "effect of the low" to "effective below"
477	17	The words "looking for" are unintelligible
478	11	Change the words "absorb the" to "have absorber"

Page	Line	Change
479	6	Change the word "changes" to "change is"
	10	Change the word "it" to "we"
480	22	The words "reactor activity has" is unintelligible
	24	Change the words "reactor activity" to "reactivity"
481	3, 7, 13	Change the words "reactor activity" to "reactivity"
	23	Add the word "of" between "plates" and "required"
485	25	Change the words "conserving itself" to "conservative"
486	4	Change the period after the word "used" to a comma, and change the upper case "W" to lower case
	25	Delete the word "is" between "reactivity" and "due, and delete the semi-colon at the end of the line
487	1	Add the word "in" between the words "increase" and "reactivity"
489	10	Change the words "a non-consistency" to "an inconsistency"
	15, 16	Change the words "and count as" to "encounters"
		Page 491 is missing
493	14	Change the word "mineralizers" to "demineralizers"
	22	Change the word "mineralizers" to "demineralizers"
497	15	The word "hope" is unintelligible
499	15	Change the word "about" to "than"
500	21	Delete the word "two" at the beginning of the line

Deposition of Valentine Malafeew

521	6	Add the word "accept" at the end of the line

Deposition of Ron Ragan and Don A. Adam

Page	Line	Change
554	3	Change the word "tends" to "intends"

November 21, 1980

Deposition of Ron Ragan and Don Adam (resumed)

585	17, 19	Change the word "gadolinia" to "gadolinium"
586	2, 4, 12, 14	" " " " " "
589	2	Change the word "looking" to "hooking"
590	7	Change the word "occasions" to "locations"
594	9	Delete the word "a" between "on" and "loss"
	10	Change the word "time" to "type"
597	21	Add the word "pool" between "fuel" and "and"
	24	Change the word"rate" to "Reg."
602	19	Add the word "Nuclear" between "the" and "Regulatory"
608	13	Change the word "language" to "ALARA"

Deposition of George Arthur Myrick

611	10	The words "lead office" are unintelligible
628	2	Add the word "Nuclear" between "the" and "Regulatory"
629	2	Change the word "rate" to "Reg"
632	10	Change the words "plant check" to "planchet"

Deposition of Seymour Block

649	7	Add the word "to" between "have" and "provide"

Deposition of Terry Perkins

Page	Line	Change
658	13	Change the word "cast" to "cask"
660	7	The word "equipment" is unintelligible
671	15	The word "reload" is unintelligible

Deposition of Millard L. Wohl

675	4-6	From the words "to maintain" through "state that--" are unintelligible
677	10, 16, 23	Change the word "offside" to "offsite"
680	15	Add the word "an" between "mounting" and "attack" and change the word "acts" to "accidents
	16	Add the word "and" between "SER" and "by"
	17	Change the "?" to a comma and change the upper case"S" to lower case
683	19	Change the words "the safety" to "the unresolved safety issues"
684	11	Add the word "of" between "findings" and "facts"
688	12	Change the word "out" to "ought"
691	5	Change the word "are" to "or"
693	13	Change the word "kenetic" to "kinetic"
695	9	Change the word "accidents" to "action of"

Deposition of Paul O'Connor

718	11, 13 16	Change the name of "Lance" to "Lantz"

DOCKETED
USNRC
JUN 17 1981
Office of the Secretary
Docketing & Service
Branch

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-237
COMMONWEALTH EDISON COMPANY	)	50-249
	)	(Spent Fuel Pool Modification)
(Dresden Station, Units 2 and 3)	)	

SUPPLEMENTAL TESTIMONY OF MILLARD L. WOHL ON CONTENTION 6

I, Millard L. Wohl, do state as follows:

I am employed by the United States Nuclear Regulatory Commission, as a nuclear engineer in the Division of Systems Integration, Accident Evaluation Branch. A statement of my professional qualifications is attached to this testimony.

This testimony addresses Contention 6 in the Memorandum and Order of the Atomic Safety and Licensing Board of September 9, 1980, concerning the matter of accident consequences.

> 6. The application inadequately addresses the increased consequences of accidents considered in the FSAR, SER, and FES associated with the operating license review of Dresden Units 2 and 3 due to the increased number of spent fuel assemblies and additional amounts of defective fuel to be stored in the spent fuel pool as a result of the modification.

The accidents considered in the documents referred to in Contention 6 are (1) Control Rod Drop, (2) The Refueling Accident, (3) Main Steam Line Break Outside Drywell, and (4) Loss of Coolant Inside the Drywell. The increased number of spent fuel assemblies stored in the spent fuel pools has no impact on the consequences of any of the above accidents. (Accidents (1), (3), and (4) are not relevant to the proposed action, and are not further discussed.)

Appendix B.

Dupe of 8011070214

A Fuel Handling Accident, postulated to occur in the spent fuel pool area would have consequences similar to those of the Refueling Accident, which occurs in the core area and is defined as the impact of one assembly on another assembly with damage to all the fuel rods in one assembly.

In the Staff Safety Evaluation Report of October 17, 1969, it was assumed for the Refueling Accident that (1) perforation of 49 fuel rods (7 x 7 assembly) with consequent release of 20% of the noble gases and 10% of the halogens from the damaged rods into the reactor building occurs, (2) 90% of the halogens released from the perforated fuel rods remain in the refueling water; (3) the remaining airborne fission products (20% of the noble gases and 1% of the halogens contained in the fuel) within the building are assumed to be discharged to the atmosphere through the Standby Gas Treatment System, having a 90% iodine filter removal efficiency, and then through the stack over a two-hour period. It is assumed that the accident occurs 24 hours after shutdown, resulting in a 25 rem 0-2 hr. thyroid dose and a whole body dose of <1 rem at the site boundary.

For the fuel rack movements necessary in the present proposed spent fuel storage capacity increase action, the main crane, considered to be single-failure-proof by the staff (meets the intent of NUREG-0554, May 1979, entitled "Single-Failure-Proof Cranes for Nuclear Power Plants") will be utilized. The offsite radiological consequences of a Fuel Handling Accident would be similar to those of the previously analyzed Refueling Accident and well within the consequence limits of 10 C.F.R. Part 100. Thus, because the total number of fuel assembly movements due to the fuel storage capacity modification over the plant lifetime increase by about five percent, the actual risk due to Fuel Handling Accidents during plant lifetime is increased only slightly.

With respect to the consequences of additional amounts of defective fuel being stored in the spent fuel pools as a result of the modification, the final remaining 7 x 7 fuel assemblies were removed from the Dresden 3 core in February 1980. There are still 16 fuel assemblies of the 7 x 7R type in the Dresden 3 core, which are designed to avoid pellet-clad interaction type failures. These will be removed in January 1982. The sixty-one 7 x 7 fuel assemblies remaining in the Dresden 2 core will be removed in January 1981, along with most of the 7 x 7R assemblies.

All replacement assemblies in recent reloads have been of the improved 8 x 8 type. Sampling for fuel defects leading to leakage in 1000 8 x 8 assemblies from Dresden 2 and Dresden 3 have shown none. Fuel performance should, thus, be greatly improved in future cycles.

It can, therefore, be concluded that offsite radiological consequences due to postulated Fuel Handling Accidents should not be increased in the new spent fuel storage configuration from those of the Refueling Accident analyzed in the staff SER of October 1969; there would be only a slight increase in risk over plant lifetime due to these postulated accidents. Additionally, use of the improved 8 x 8 fuel, which has thus far shown no failures leading to leakage, will reduce noble gas release from the stored spent fuel.

MILLARD L. WOHL
PROFESSIONAL QUALIFICATIONS
ACCIDENT EVALUATION BRANCH
DIVISION OF SYSTEMS INTEGRATION

I am employed as a nuclear engineer in the Accident Evaluation Branch, Division of Systems Integration, U. S. Nuclear Regulatory Commission, Washington, D. C. My duties are to conduct site and accident analyses and various other safety-related studies for nuclear power and non-power reactor facilities.

I attended Case Western Reserve University (formerly Case Institute of Technology) and received a B. S. degree in Physics in 1956. I received an M. S. degree in Physics from Indiana University in 1958. I did graduate work in Nuclear Engineering at Columbia University and Case Western Reserve University from 1962 through 1964. I was a teaching assistant in Physics at Indiana University from 1956 - 1958. I have taught physics and mathematics in the evening divisions of Baldwin-Wallace College, the Ohio State University and Cuyahoga Community College from 1958 - 1973.

In 1958, I joined the NASA Lewis Research Center in Cleveland, Ohio. My initial duties involved the writing of Monte Carlo computer codes for the determination of radiation shielding requirements and propellant heating for proposed nuclear-powered rocket designs. Other assignments involved methods development and shielding and nuclear safety analyses for numerous proposed mobile nuclear vehicle applications. Numerous technical publications evolved

in the course of this work. Additionally, during the period 1958 - 1973, I had substantial research contract management responsibilities.

In 1973, I joined the General Atomic Company in La Jolla, California, as a nuclear engineer. At General Atomic I performed a variety of nuclear safety-related analyses for the High-Temperature Gas-Cooled Reactor (HTGR). These included the analysis of depressurization accidents and containment integrity studies, as well as computer code upgrading and modification.

In 1975, I joined the Accident Analysis Branch in the Division of Technical Review, U. S. Nuclear Regulatory Commission. My responsibilities involved site characteristic studies and accident analyses. Presently, I have similar but expanded responsibilities.

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	Docket Nos. 50-237 and 50-249
COMMONWEALTH EDISON COMPANY	)	(Spent Fuel Pool Modification)
(Dresden Station, Units 2 and 3)	)	

SUPPLEMENTAL TESTIMONY OF HORACE K. SHAW

ON FUEL CHANNEL BOWING

I am employed as a Senior Mechanical Engineer, Division of Licensing, Office of Nuclear Reactor Regulation, United States Nuclear Regulatory Commission. A statement of my professional qualifications is attached to this testimony.

Introduction

The purpose of this testimony is to present the results of the NRC review of Applicant's testimony concerning potential interference resulting between surfaces where certain fuel assemblies with large total deformations (bulge plus bow), which are to be stored in certain minimal-size storage locations within the proposed Dresden spent fuel racks.

Description

The Dresden Nuclear Power Plant Units 2 and 3 have proposed a spent fuel rack modification to accomplish high density spent fuel storage. New racks will be of 9x11- and 9x13- array configuration and will be fabricated by spacing stainless steel tubes at specific pitches. Because of the tolerances permitted in the fabrication process, dimensional deviations in the pitch would develop; some storage locations will be smaller than others.

Appendix C.

dupe of 8103250022

Spent fuel assemblies are deformed. During normal reactor operation, neutron flux tends to produce bowing of the fuel channel box and pressure differential across channel walls induced by core coolant flow tends to produce bulge deformation in fuel channels. Concern has thus been raised as to the possible interference between the deformed fuel assembly channel box and the storage rack walls that may develop during insertion or withdrawal of a deformed fuel assembly into or from a minimal-size storage location. Two possible interferences have been identified.

The first possible interference may develop between the wall of the fuel channel in mid-span where the total (bulge and bow) deformation is at a maximum, and that of the storage location. The second possible interference may exist at the top of a minimal size storage location where the lead-in clip further reduces the size of the opening. Our evaluation will assume the worst combination of dimensional interferences.

Discussion

The Commonwealth Edison Company has measured the inside dimensions of some storage location openings. Measurements taken from four 9x11 array racks currently stored in the Dresden facility indicated that only one storage rack location measures less than 5.74". The measured dimension is 5.729" with an accuracy of $\pm$ 0.01". Efforts were also made to measure 1736 channel sides. The total (bulge and bow) deformation found was not more than 0.15" and 0.2" respectively for 86% and 94.5% of all the channel sides measured. Only 15

sides have total deformations greater than 0.3". The greatest total deformation reading was found to be 0.43" (once) and the next greatest reading was found to be 0.39" (once). With the conservative assumption that the centrally situated channel with the greatest total deformation is in the smallest storage location, maximum interferences of 0.25" may exist at the mid-span of the channel, and 0.[illegible]3" may exist at the lead-in clips. Forces required to overcome drag caused by these interferences were estimated conservatively to be 310 lbs. and 200 lbs., respectively.

Fuel assemblies are inserted into storage locations by their own weights. Since each fuel assembly weighs 680 lbs. and will produce about 600 lbs. gravitational force even when it is fully submerged in water, there should be no other force required to insert the worst deformed fuel assembly into the smallest storage location. No extraordinary loadings will be experienced by the load handling system.

To withdraw this fuel assembly from the storage location, however, the handling system must produce forces to overcome the gravitational force caused by the weight of the fuel assembly as well as the drag force caused by the interferences. The maximum force is thus estimated to be 1190 lbs. This is well within the capability of the handling system. Analyses also indicated that stress level caused by this loading is below design for all components in the handling system. The structural integrity of the storage racks and fuel assemblies were also checked and found to be within the design capabilities.

Drag forces will be proportionally greater if actual interferences should be greater than the assumed figures. However, assuming the total deformation is 0.50" instead of 0.43" drag force will increase to 409 lbs. instead of 310 lbs. Even this unlikely deformation will not change the analytical results substantially. The Dresden facility currently is or shortly will be implementing the following procedures:

a. Channel boxes manufactured using a new heat treatment and fabrication process resulting in more dimensional stability for these channels will be used.

b. A screening process which will eliminate channels with large total deformation from further service.

c. An operating procedure which describes actions to be taken in case a fuel assembly is stuck in a storage location.

Conclusion

Based on the above evaluation, it is the conclusion of the NRC staff that the concern raised regarding interference developed between walls of fuel assemblies and storage locations within the proposed Dresden spent fuel racks does not represent a safety problem.

HORACE K. SHAW

Professional Experiences:

Senior Mechanical Engineer, USNRC, 1974-present

Specialist-Research, Member of Technical Staff,
Atomics International Div., Rockwell International Corp., 1965-1974

Consultant, Private Practice, 1964-1965

Project Engineer, Johnson and Johnson, 1955-1964

Design Engineer, Koppers Company, 1952-1955

Research Fellow, University of Washington, 1949-1950

Plant Engineer, Chinese Petroleum Corp., 1945-1948

Staff Engineer, Tzu-Yu Iron and Steel Works, 1943-1945

Educational Background

National Central University, China, BSME, 1943

University of Washington, Seattle, MSME, 1950

Registered Professional Engineer in Illinois