MAR 2 8 PDR

CP&L
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March 22, 1983

SHERWOOD H. SMITH, JR.
Chairman/President

Mr. James R. Tourtellotte, Chairman
Regulatory Reform Task Force
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Tourtellotte:

As requested by you, we have prepared a capital cost analysis of backfitting expenditures by Carolina Power & Light Company for the Brunswick Units 1 and 2 and Robinson Unit 2 nuclear power plants. These figures reflect both actual costs as well as estimates for modifications planned or in progress.

This analysis demonstrates the significant cost impact of the backfitting program for our nuclear power plants. The figures reflect actual expenditures for the period after commercial operation date through 1982 and estimated expenditures for 1983 and beyond.

Also, we have attempted to assess the cost impact of regulatory changes for Shearon Harris Unit 1 which is under construction.

CP&L does not expect the NRC to use this data in any type of comparative analysis. In fact, we believe any such attempt would be misleading, primarily because of the different accounting methodologies used by the respective utilities. In order for a meaningful comparison to be prepared, the NRC would have to establish strict criteria for cost accounting -- criteria that would address aspects such as the time period for including modification costs in the original plant cost as opposed to a backfitting cost, treatment of the financing cost of the modifications, allocation of support and administrative costs, and, most importantly, definitions for the three cost classifications. In summary, CP&L is providing this information to the NRC in order to highlight the magnitude of the modification effort. We do not, however, submit this data for the purpose of developing cost classification comparison or any type of inter-plant or inter-utility comparisons.

We are pleased that you are giving priority consideration to the backfitting issue. In addressing the magnitude of the economic impact of backfitting, you should be mindful that the true backfitting costs include not only the capital costs of plant modifications but also the differential fuel costs resulting from extended outages to effect the plant modifications.

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We are prepared to work with you in any way that we can be of assistance as your task force proceeds with the development of proposed rules to assure that only essential plant modifications are required in the future.

Yours very truly,

Sherwood H. Smith, Jr.

SHSjr/lcf

Attachments

BACKFITTING COST ON OPERATING NUCLEAR POWER PLANTS
CAROLINA POWER & LIGHT COMPANY

H. B. Robinson Unit 2

The Robinson Unit 2 PWR nuclear unit has a capacity of 665 MWe. Commercial operation was in March 1971; the total cost was $84 million, or $126 per KW.

Backfitting cost for Robinson Unit 2 through December 1982 has been $61 million. These costs can be allocated as $29 million for NRC imposed backfitting other than TMI lessons learned; $7 million for TMI lessons learned backfitting; and $25 million for utility initiated backfitting. An additional $64 million is anticipated for future regulatory imposed backfitting costs, of which $54 million is NRC imposed and $10 million is TMI backfitting. A detailed listing of the previous and projected backfitting costs is provided as Attachment A.

Brunswick Station - 2 Units

The Brunswick station consists of two BWR nuclear units with a combined capacity of 1580 MWe. Commercial operation of the first unit (Brunswick Unit 2) was in November 1975 and the second unit (Brunswick Unit 1) in March 1977. The total cost of the two units was $756 million, or $478 per KW.

Backfitting cost for the Brunswick units through December 1982 has been $159 million. These costs can be allocated as $104 million for NRC imposed backfitting other than TMI lessons learned; $15 million for TMI lessons learned backfitting; and $40 million for utility initiated backfitting. An additional $148 million is anticipated for future regulatory imposed backfitting costs, of which $124 million is NRC imposed and $24 million is TMI backfitting. A detailed listing of the previous and projected backfitting costs for Units 2 and 1 is provided as Attachments B and C, respectively.

REGULATORY IMPACT ON A NUCLEAR POWER PLANT UNDER CONSTRUCTION
CAROLINA POWER & LIGHT COMPANY

Shearon Harris Nuclear Power Station

The Harris station consists of two PWR nuclear units with a combined capacity of 1800 MWe. The current cost estimate for the two Harris units is $4,620 million, equal to $2,567 per KW. Commercial operation of Units 1 and 2 is currently scheduled for March 1986 and March 1990, respectively.

The 1974 Budget for Harris Unit 1, which represented the first definitive estimate, was $584 million with an in-service date of October 1979. The construction permit was issued by the NRC in January 1978; at that time, the approved budget for Harris Unit 1 was $1,387 million with an in-service date of March 1984. The current budget for Harris Unit 1 is $2,587 million with an in-service date of March 1986.

An approximation of the cost impact of regulatory changes for Harris Unit 1 can be determined by comparing the 1974 Budget to the 1983 Budget in base 1983 dollars. Such a comparison shows a change of $1,575 per KW; this change times the capacity of 900,000 KW results in additional costs of $1,417.5 million. Consistent with Duke Power and Commonwealth Edison's estimate, it is conservatively estimated that at least 60 percent of the increase is the result of NRC regulatory changes. The additional cost due to regulatory impact in 1983 dollars for Harris Unit 1 is $850.5 million or about 36 percent of Harris Unit 1 total estimated cost in 1983 dollars.

SHNPP UNIT 1

MWe Capacity	Budget	Approved Budget Total	Value/KW	1983 $	Value/KW
900	1974	$584,367,000	$649	$970,972,000	$1,079
900	1983	$2,587,985,000	$2,876	$2,388,212,000	$2,654
				Change	$1,575/KW

Additional Cost:

$1,575/KW x 900,000 = $1,417,500,000

60% Regulatory Impact - $850,500,000

40% Utility Improvements - $567,000,000

USNRC/211G
JSC/gcd
3/17/83

ROBINSON ORIGINAL COST DATA
NRC IMPOSED BACKFITTING
($000'S)

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT #2				
73576	Install Axial Power Monitoring System (Unit #2)	175	-	175
73897	Modify Containment Purge System For Unit #2	45	-	45
74029	Install Plant Security System	1,029	-	1,029
74039	Spare Fire Retardant Control Cable	11	-	11
74007.4	Purchase Spent Fuel Shipping Equipment	1	-	1
74142	Modify Existing Meteorological System	6	-	6
110.23	Purchase Integrated Leak Rate Test Equipment	73	-	73
379.01	Unit #2 Spent Fuel Storage Expansion Project	176	-	176
005.00012	Construct Security Screen Unit #2	2	-	2
427.01	Purchase Security System Spare Parts	34	-	34
110.83	Security System Spare Parts	22	-	22
110.50	Purchase Fire Protection Sys. & Microfilming Equip.	18	-	18
110.55	Upgrade Plant P.A. System Unit #2	27	-	27
393.01	Modify Radwaste	3,260	-	3,260
503.01	Add & Modify Security System	1,826	-	1,826
005.00096	Purchase Portal Monitor Unit #2	2	-	2
111.73	Modify Degraded Grid Voltage & Emer. Power System	34	-	34
431.01	Purchase Spent Fuel Cask Unit #2	4,476	-	4,476
657.01	Improve Spent Fuel Cask	157	-	157
657.11	Upgrade Stack Monitor	37	-	37
005.00213	Purchase Unit #2 Fire Protection System Spares	8	-	8
731.01	Alt Emer. Power Source For Ded. Shutdown System	2,338	8,368	10,706
505.01	Unit #2 Fire Protection Mods.	11,546	-	11,546
656.06	Expan. Of The Spent Fuel Stor. Facilities Unit #2	1,721	568	2,289
005.00235	Purchase Security Radio System Unit #2	16	-	16
757.03	Install Health Physics Records System Unit #2	296	-	296
738.01	Install Appendix I Data Processing System Unit #2	176	-	176
-	AFWS Analysis & Modification	-	2,679	2,679
-	Contain Hydrogen Recombiner	-	2,280	2,280
-	Refuel Water Storage Tank Heating	-	1,019	1,019
-	Health Physics Records System	-	642	642
-	Airborne Particulate Monitors	-	73	73

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT #2 (Continued)				
749.01	Purchase Security System Processing Equipment Unit #2	117	-	117
656.22	Security System Modification	-	6,737	6,737
656.14	Install Volume Reduction/Solidification Unit #2	1,371	31,717	33,088
	TOTAL	29,000	54,083	83,083

LB/gcd
3/17/83
P-HBRCost2/212J

Attachment A2

ROBINSON ORIGINAL COST DATA
NRC TMI BACKFITTING
($000'S)

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT #2				
729.01	Install An Aux. FW Indication System Unit #2	132	-	132
729.02	Install Safety Review Value Position Indication #2	210	-	210
729.03	Install Tech. Supp. Ctr. Rad. Monitors Unit #2	584	-	584
729.04	Install Containment Water Level Monitor Unit #2	164	-	164
729.05	Instl. Containment Pressure Indication Equip. Unit #2	112	-	112
729.06	Install Core Subcooling Monitor On Unit #2	136	-	136
729.23	Pur. Equip For Increasing The Range Of Rad. Mon. Sys	640	-	640
729.26	Purchase 2 Reactor Level Instrumentation Sys. Unit #2	1,020	-	1,020
729.28	Install Heat Exchanger Room Shielding Unit #2	61	-	61
657.37	Construct Office Tech. Support Center Unit #2	899	-	899
729.27	Install Post Accident Sample Sink Unit #2	1,189	-	1,189
153.21	Improve Primary Comm. Corporate Emergency Plant	43	-	43
729.07	Install Containment Hydrogen Monitor Unit #2	263	-	263
729.08	Install RCS High Point Vent System Unit #2	584	-	584
729.03	Install A Public Alerting System	634	-	634
729.36	Purchase Radiation Detection Instruments	50	-	50
729.37	Improve Back-Up Comm. Corporate Emergency Plan	65	657	722
729.40	Provide Corp. Emer. Plan Interim Back-Up Comm. SC	39	-	39
656.20	HBR EOF/TSC/Training Building	272	2,076	2,348
657.38	Furniture Tech. Support Center	33	-	33
656.21	HBR #2 - TMI Data System	-	7,011	7,011
	TOTAL	7,130	9,744	16,874

LB/gcd
3/17/83
P-HBRCost2/212J

BRUNSWICK ORIGINAL COST DATA
NRC IMPOSED BACKFITTING
($000'S)

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT 2				
356.04	Modify Security System	6,534	-	6,534
653.10	Replace Valves in CFD & CDD Systems	594		594
-	Health Physics Computer System	-	954	954
-	Drawing Update Program	-	114	114
-	125/250 Volt DC Battery Annunciators	-	21	21
652.33	Hot Shop Addition	94	8,558	8,652
652.20	Liquid Radwaste Modification	3,340	8,482	11,822
653.48	Purchase Furniture	24	-	24
734.02	Install PA Addition & Modification Unit 2 & Common	240	-	240
005.00152	Purchase Office Equip. for Operations Ctr. Cont. Rm.	6	-	6
563.01	Install Invessel Shielded Work Plft. & Wall Shield.	240	-	240
652.59	Fire Protection Safe Shutdown	-	6,221	6,221
652.65	Off-Gas Sample System Modification	-	81	81
652.67	Containment Purge Screens	-	77	77
652.52	Storm Drain Monitoring System	164	944	1,108
652.39	Electrical Distribution System Addition	102	5,225	5,327
652.41	Emergency Lighting	133	-	133
652.42	Security System Upgrade	732	-	732
652.50	Security System Upgrade	691	1,020	1,711
652.28	Guard Pipe for Reactor Vessel Nozzles	237	101	338
652.31	Volume Reduction & Solidification System	479	22,766	23,245
652.19	Spent Fuel Storage Expansion	1,926	1,321	3,247
652.22	Circulating Water Sys. Environ. Adds. & Mods.	14,992	3,642	18,634
652.24	AOG Charcoal Absorption System #2	1,970	2,872	4,842
356.03	Fire Protection Modifications	8,486	-	8,486
652.09	Torus Integrity Modifications	11,664	10,283	21,947
652.11	Off-Gas System Modifications	3,732	7,626	11,358
153.20	Improve primary Communications NC & SC	70	-	70
653.65	Convert Neutron Tip System into Gamma Tip Sys. Unit 2	228	-	228
653.69	Install RPS MG Set Upgrade Unit 2	173	-	173
653.28	Purchase Calibration Stndrd. Meter for Leak Rate Test.	12	-	12

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT 2 (Continued)				
653.25	Install Cable & Instru. for Integrated Leak Rate Test	7	-	7
652.03	Install Fish Diversion Screen at Intake Canal	247	-	247
652.04	Install HVAC System in Turbine Building	1,152	-	1,152
652.06	Install Flood Alarms RHR, HPCL & Core Spray Rooms	46	-	46
652.07	Install Main Steam Line Temperature Monitoring	36	-	36
496.01	Purchase Recirculating Pump Trip	397	-	397
111.62	Purchase Hi-Eff. Filter Collectors	29	-	29
428.02	Unit No. 2 Spent Fuel Expansion	2,037	-	2,037
653.68	Reactor Protection System Motor Generator Set Upgrade	155	-	155
	TOTAL	60,969	80,308	141,277

LB/gcd
3/17/83
BSEP-Cost2/212J

BRUNSWICK ORIGINAL COST DATA
NRC TMI BACKFITTING
($000'S)

Attachment B2

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT 2				
729.10	Increased Range Radiation Monitors (TMI)	1,930	239	2,169
729.12	Post Accident Sampling (TMI)	1,810	545	2,355
729.16	Containment Isolation Provisions (TMI)	465	-	465
729.18	Safety/Relief Valve Monitoring (TMI)	393	236	629
729.20	Primary Containment Level Indicator	483	166	649
729.25	Hydrogen Control Penetrations (TMI)	319	1,149	1,468
729.32	Containment Hydrogen Monitoring (TMI)	1,386	130	1,516
729.38	Corporate Plan to Improve Backup Comm. NC (TMI)	80	1,020	1,100
652.61	TMI Data System	-	5,304	5,304
652.63	Implementation Reg. Guide 1.97	-	1,173	1,173
652.70	Control Room Habitability	-	283	283
652.76	Technical Support Center Security Entrance	-	644	644
652.55	EOF/TSC/Training Building	1,616	2,370	3,986
652.45	Automatic Switchover of RCIC Suction - TMI	228	-	228
729.39	Provide Corp. Emer. Plant Interim Back-up Comm. NC	61	-	61
729.14	Purchase Instrumentation to Improve in Plant Iodine U2	33	-	33
729.22	Install Primary Containment Pressure Indication Unit 2	78	-	78
	TOTAL	8,882	13,259	22,141

LB/gcd
3/17/83
BSEP-Cost2/212J

BRUNSWICK ORIGINAL COST DATA
NRC IMPOSED BACKFITTING
($000'S)

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT 1				
357.05	Integrated Leak Rate Test Improvements	46	-	46
757.02	Health Physics Record System	262	761	1,023
653.78	BWR Simulator - BSEP	5,866	1,760	7,626
-	125/250 Volt DC Battery Annunciators	-	21	21
005.00294	Purchase Portable Security Booths	5	-	5
005.000227	Security Radio	6	-	6
753.01	Purchase (4) Radiation Monitors	136	-	136
005.00242	Purchase Equipment & Furniture for GET Program	4	-	4
652.17	Security Secondary Access Portal	600	-	600
483.10	Install Supervisory Remote Control Equipment	84	-	84
005.00066	Purchase Mock-Up of Reactor Turbine Generator Board	4	-	4
652.10	Off-Gas System Modifications	5,954	4,643	10,597
005.00070	Purchase Self-Cont. Breathing Apparatus	3	-	3
005.00073	Purchase Test Equip. In-Service Inspection of Pumps	3	-	3
652.58	Fire Protection of Safe Shutdown Capability	-	6,221	6,221
652.64	Off-Gas System Modifications	-	80	80
652.66	Containment Purge Screens	-	80	80
653.97	Media Center	-	60	60
652.75	Biological Lab	-	873	873
652.77	Media Center	-	622	622
652.18	Spent Fuel Storage Expansion	1,755	1,638	3,393
652.21	CW Environmental Modifications	5,295	2,479	7,774
652.23	AOG Charcoal Absorption System	4,370	1,581	5,951
653.67	Imp. Security Comm	1	84	85
357.03	Fire Protection Modifications	7,378	-	7,378
652.27	Guard Pipe for RV Nozzle	54	230	284
652.38	Electrical Disribution System	112	4,956	5,068
652.40	Emergency Lighting	135	-	135
653.72	Purchase & Install Respirator Fitting System	23	-	23
357.06	Recirculation Pump Trip	311	431	742
652.08	Torus Integrity Modifications	7,878	17,622	25,500

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT 1 (Continued)				
737.01	Purchase Low Level Radwaste Storage Building	272	-	272
653.44	Purchase HEPA Filtration Units	49	-	49
587.01	Expand Spent Fuel Pool System	26	-	26
593.01	Pur. a CEPO Compactor With Accessories for Radwaste	13	-	13
499.05	Purchase Portable Radios for Security System	17	-	17
378.41	Purchase Nekton Return Floating Basket	85	-	85
428.01	Spent Fuel Storage Expan. Proj. Engineering	2,030	-	2,030
005.00042	Combination Gas & Oxygen Indicating Meter	4	-	4
	TOTAL	42,781	44,142	86,923

LB/gcd
3/17/83
BSEP-Cost1/212J

BRUNSWICK ORIGINAL COST DATA
NRC TMI BACKFITTING
($000'S)

ER/WA	Title	Expen. Thru 12/82	Future Expen.	Total Capital Expen.
UNIT 1				
652.44	Auto Switch of RCIC TMI	101	74	175
652.60	TMI Data System	-	5,308	5,308
652.62	Implementation of Reg. Guide 1.97 - Rev. 2	-	1,172	1,172
729.09	Increased Range Rad. Mod. - BSEP 1 - TMI	982	657	1,639
729.11	Post Accident Sampling - BSEP 1 - TMI	1,504	818	2,322
729.13	Imp. In-Plt. Iodine Inst. - BSEP 1 - TMI	40	-	40
729.15	Containment Isolation Prov. - BSEP 1 - TMI	223	373	596
729.17	Safety Relief Valve Monitoring - TMI	384	252	636
729.19	Primary Containment Level Ind. - TMI	534	353	887
729.24	H_2 Control Penetration - TMI	474	1,357	1,831
729.31	Containment Hydrogen Monitoring - TMI	995	559	1,554
729.33	Alerting System - TMI	427	-	427
729.34	Emergency Plan Equipment - BSEP	71	-	71
729.21	Install Primary Containment Pressure Indication	95	-	95
	TOTAL	5,830	10,923	16,753

LB/gcd
3/17/83
BSEP-Cost1/212J