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SERIAL: NLS-85-190

JUL 09 1985

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Chairman/President

Mr. N. J. Palladino, Chairman
Mr. J. K. Asselstine
Mr. F. M. Bernthal
Mr. T. M. Roberts
Mr. L. W. Zech
United States Nuclear Regulatory Commission
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NOS. 50-325 & 50-324/LICENSE NO. DPR-62

Gentlemen:

Carolina Power & Light Company has previously committed and is prepared to shut down the Brunswick Steam Electric Plant Unit 2 (BSEP-2) by November 30, 1985 to comply with 10 CFR 50.49 (the EQ rule). The November 30 date is 120 days prior to a previously scheduled refueling outage. As demonstrated by an average 44 weeks per year of outage time over the last four years, the Company does not hesitate to keep the Brunswick Plant off line to complete regulatory required modifications. In this case, however, we do feel that removing BSEP-2 from service 120 days prior to a scheduled refueling outage simply to meet an arbitrary calendar date is not in the public interest. Paragraph (g) of 10 CFR 50.49 allows for extension beyond November 30, 1985 for exceptional cases. The Company believes that the situation for BSEP is an exceptional case and hereby requests that a schedule extension to March 30, 1986 for compliance with 10 CFR 50.49 be granted to allow BSEP-2 to maintain its normal refueling schedule.

Exceptional circumstances at BSEP-2 include:

1. Unique elements of plant design such as a concrete encased torus, a cryogenic augmented off-gas system, the reactor instrument penetration system, and the use of terminal blocks at electrical penetrations inside containment which have:

   a) increased the scope and complexity of the Environmental Qualification (EQ) program, or

   b) increased the scope and complexity of other regulatory required modifications during the same period that the EQ Program was being pursued.

2. The Company's commitment to the "living schedule" concept as evidenced by the April 29, 1985 license amendment request which is awaiting NRC Staff approval.

3. The availability of compensatory measures to enhance public health and safety.

4. The potential impact on the public and employees of a November 30, 1985 outage compared to a March 30, 1986 scheduled refueling outage. Areas impacted include: outage resource overlap, ALARA concerns, and CP&L system reliability.

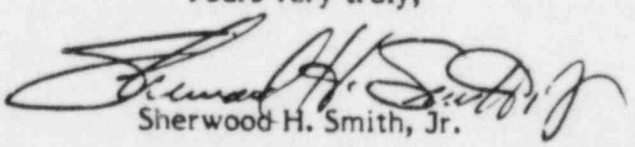
Carolina Power & Light Company has worked diligently to comply with the Environmental Qualification requirements. We have achieved compliance with the rule on Brunswick-1 and at Robinson-2 with no extension and will achieve compliance for Harris-1 on schedule. The Company has expended approximately $13 million to date on the Brunswick Plant to achieve compliance with the EQ rule. Current plans call for the expenditure of an additional $6 million to complete the program. Of a total of approximately 2,600 items that require verification of qualification at the Brunswick Plant, only about 195 remain to be completed on Unit 2. The number of items remaining to achieve compliance will vary from week to week, depending on the completion of our ongoing qualification effort, completion of work during plant operation, and new instruments added to the EQ program.

Continued operation to March 30, 1986 does not constitute an additional risk to public health and safety. As noted above, much of the work at the plant has already been completed. Moreover, the NRC Staff concurred with our Justifications for Continued Operation (JCO) on September 28, 1984. Nothing has occurred which would render the conclusions of those previously reviewed JCOs invalid if BSEP-2 were allowed to continue operation through March 30, 1986.

In April 1984, CP&L notified the NRC Staff that it might request an additional extension for BSEP-2 until March of 1986 to avoid the effects of overlapping or closely proximate outages on the two Units. In order to enhance our ability to meet the objectives of excellence in operation mandated by the Brunswick Improvement Program, we feel that overlapping or closely proximate outages should be avoided to the extent possible. Because the NRC Staff could not grant a request for extension past November 30, 1985, the Company requested, and was granted, an extension for BSEP-2 to November 1985 and the March 1986 refueling outage was rescheduled to November 1985. Commission concurrence for a 120-day extension would allow the Company to return the Brunswick-2 outage to the originally scheduled refueling interval commencing March 30, 1986.

The attachment to this letter describes more fully the basis for our request. We request your early action in arriving at a decision on our extension request to permit orderly planning for system operations. If it will assist your determinations, we would appreciate your scheduling an opportunity for the Company to make a presentation to you regarding this request and to answer any questions you may have.

Yours very truly,



Sherwood H. Smith, Jr.

SHSjr/mf (1546RWS)
Enclosures

cc: Mr. H. R. Denton
Mr. W. J. Dircks
Mr. D. G. Eisenhut
Dr. J. N. Grace
Mr. V. Stello
Mr. H. L. Thompson

ATTACHMENT

TO SERIAL: NLS-85-190

SUPPORTING DOCUMENTATION FOR CLASSIFYING BRUNSWICK UNIT 2
AS AN EXCEPTIONAL CASE PER 10CFR50.49(g)

UNIQUE DESIGN FEATURES IMPACTING THE BRUNSWICK EQ PROGRAM

The Brunswick Plant has several unique or unusual design features which have added to the scope and complexity of the Environmental Qualification Program. Chief among these are: a concrete encased torus, the Reactor Instrument Penetration System, and the use of terminal blocks at electrical penetrations inside containment. Each of these features and their impact on the EQ program is discussed below.

1. Unique Concrete Encased Torus:

Brunswick's unique concrete encased torus has certain inherent safety and economic advantages. However, it eliminates the torus enclosure available at other BWRs for routing high energy lines, such as HPCI and RCIC steam lines. At Brunswick, these high energy lines are routed such that a larger amount of equipment is exposed to a harsh environment in the event of a high energy line break (see Figures 1 and 2).

This has a dual impact on the EQ program at Brunswick: first, there is more equipment requiring qualification (approximately 2600 individual devices); second, Brunswick must seek equipment qualified to harsher environments than those experienced by most BWRs. The Brunswick Reactor Building environmental profile for design basis events identifies a peak temperature of 310°F for many pieces of equipment, whereas the "typical" vendor's profile is in the 200°F to 220°F range. Since vendor qualification is a very costly and lengthy process, equipment vendors concentrate their qualification efforts on the minimum environment necessary to encompass the needs of the most customers. For the reasons cited, Brunswick was often outside this envelope and could not take advantage of the vendor's initial test program. Examples are provided in Enclosure 1. When possible, CP&L participated jointly with other utilities to work with testing labs and equipment vendors to achieve equipment qualification (see Enclosure 2). When a joint effort was not possible, the only remaining option for Brunswick was to conduct additional analyses or commission individual qualification tests for Brunswick equipment. These Brunswick unique qualification programs are now being completed to support the current BSEP-1 outage.

2. Reactor Instrument Penetration System

Brunswick was built with a Reactor Instrument Penetration system designed to isolate instrument lines in the event of a rupture. This system presently includes approximately 42 flow switches, 87 limit switches, 25 pressure switches, and 157 solenoid valves per unit. In lieu of attempting to verify qualification of this equipment for the life of the plant, the Company elected to replace the devices with a system of passive, qualified excess-flow check valves similar to those used at most other BWRs. This system alone accounts for approximately 300 items on each unit at Brunswick which are not a problem at most other BWRs.

3. Terminal Blocks Inside Containment

The Brunswick Plant was designed with terminal connections inside containment in series with electrical penetrations as an aid to future maintenance, rather than direct cabling as at most other BWRs. When the current regulations for environmental qualification were applied, qualification of these terminal blocks could not be demonstrated. This has required that each unit be placed in a

shutdown condition to allow disabling of individual safety systems while lifting individual terminals and reconfiguring the system with a qualified hard splice bypassing the terminal blocks. This has added hundreds of individual-safety circuit splices to each unit's environmental qualification program with which most other BWRs have not had to contend. Approximately 50 percent of the required splices have been completed on Unit 2.

UNIQUE REGULATORY WORK SCOPE

Various factors, many unique to the Brunswick Plant, contributed to a large regulatory work scope throughout the 1980s. This resulted in demands on both manpower and monetary resources which might otherwise have been devoted to the Brunswick EQ Program. A review of the outage history of the Brunswick units since 1980 shows that our present situation has resulted from substantial efforts to achieve compliance with the many new regulatory directives imposed by the NRC (see Figures 3 and 4). During the past four years, the Brunswick Plant has undergone an average of 44 weeks of outages per year. Much of this outage time was in direct support of modifications and improvements in operations necessary to meet regulatory requirements. The relative priorities for completing these regulatory modifications are now established by the Brunswick Living Schedule, for which a request for License Amendment was filed on April 29, 1985.

Outage Scheduling

In April 1982, the Company began a Unit 2 refueling outage. This became the first refueling outage commencing after March 1982 as defined by 10CFR50.49 when the rule was issued in January 1983. Thus, the Company was caught with a minimum lead time for compliance with the EQ rule by "the second refueling outage commencing after March 1982." In July 1982, CP&L voluntarily took Brunswick 1 off the line while conducting investigations into the cause of violations that occurred on Unit 2. This investigation led to the creation of the Brunswick Improvement Program and extensive organizational changes at the plant. That program eventually became a model that has been used by other utilities for similar efforts.

During 1983, Brunswick 1 was shutdown for a scheduled outage of 27 weeks for refueling and implementation of numerous regulatory modifications including replacement of the Augmented Off Gas system, torus modifications, and installation of TMI modifications. The difficulty of this work and an extended period of procedure revision and training before startup eventually resulted in an extension of this outage to 37 weeks. As the Unit 1 outage extended beyond the scheduled 27 weeks, the Unit 2 maintenance outage was delayed to avoid simultaneous outages. The postponement of the maintenance outage caused more fuel to be burned earlier than originally expected in the cycle. As a result, the refueling outage was forced to occur closer and closer to the eventual maintenance outage until it was apparent that a combined maintenance/refueling outage was more practical and economical.

In the fall of 1983, the NRC ordered Unit 2 to shut down to conduct inspections of recirculation piping for intergranular stress corrosion cracking. This outage began on November 2, 1983 and lasted eight weeks. The combined maintenance/refueling outage on Unit 2 occurred from March to October of 1984 (see Figure 5).

The refueling outage described above became the second refueling outage after 1982, and the Company lost nine months of engineering and procurement lead time to support environmental qualification modifications. The Company recognized that with only one remaining refueling outage available for Unit 2 to comply with the environmental qualification rule, instead of the two outages (maintenance plus refueling) that were originally scheduled, we would need to file early notification for an extension for compliance with the environmental qualification rule. At the time the extension was filed (April 1984), CP&L notified the Staff that it may need to request an additional extension for BSEP-2 until March of 1986. The extension would have been required in

order to avoid overlapping outages on the two Units; a situation that is not conducive to meeting the objectives of the Brunswick Improvement Program. Because the Staff could not grant a request for extension past November 30, 1985, the Company requested, and was granted, an extension to November 1985 and the March '86 refueling outage was rescheduled to November 1985. This step was taken to insure that all involved personnel would understand the Company's commitment to completing this work on time. The Company subsequently determined that replacement of the recirculation piping was not required during the potentially competing Unit 1 outage. However, the alternative Induction Heat Stress Improvement work and the 163 modifications now underway at Brunswick Unit 1 still result in an outage of major proportions. The size of this outage strains our ability to simultaneously prepare for an extensive Unit 2 outage, to commence on November 30th, while successfully completing a 37-week* outage on Unit 1 (see Figure 5).

Mark I Torus Program

In 1978, the NRC raised a concern that the torus of a BWR could be subjected to loads of types and magnitudes not accounted for in original design specifications. The NRC subsequently required that all BWR plants perform necessary analyses and modify their torus if necessary. Guidance as to the schedule for the implementation and resolution of the Mark I Containment Long-Term Program was provided in March 1979. CP&L began to evaluate modifications to enhance the safety of the existing containment systems and participated in a Mark I Owners' Group Program at that time. The Company began both major safety modifications and minor modifications in 1980. However, due to the rigidity of Brunswick's unique concrete encased torus, the Company faced unique design considerations not encountered by other utilities. CP&L targeted completion of Mark I modifications during the refueling outages scheduled to conclude in February 1982 for Brunswick-2 and in May 1982 for Brunswick-1. Work proceeded with all due diligence towards the scheduled completion dates. However, due to the number and extent of internal modifications necessitated by the unique Brunswick concrete-encased torus and vendor difficulties in the completion of the Brunswick Plant unique analysis, CP&L was forced to extend completion of the Mark I Torus Program to Cycle 5 for Unit 1 and Cycle 6 for Unit 2. Final modifications were completed for Unit 2 during the refueling outage which ended in October 1984 and are currently being performed on Unit 1, in keeping with the revised orders. Thus, the Mark I Torus Program utilized resources which could have been devoted to the EQ Program for two years beyond our originally planned completion schedule.

Augmented Off-Gas (AOG) System

Unique design modifications to the AOG System required a substantial amount of work during the 1980s which other BWRs did not have to contend with. In an effort to conform with the NRC's zero release concept, a cryogenic off-gas treatment system was originally installed at Brunswick. Although other cryogenic installations were made, to our knowledge the system at Brunswick is the only one to have been operated under plant off-gas conditions. This system proved to be extremely unreliable. Several problems were encountered, including numerous small hydrogen explosions.

In mid-1980, CP&L began investigations to determine the feasibility of replacing the cryogenic system with a charcoal adsorber system, similar to the system used in most BWRs. On June 3, 1981, the NRC issued an amendment to the Brunswick Operating Licenses requiring the Company to have the AOG System operational by May 1983

* 31 weeks critical path plus 6-week contingency based on historical experience.

(Unit 1) and December 1982 (Unit 2). A commitment was also made to a major rebuilding of the air ejector rooms to relocate the hydrogen recombiners to upstream of the cleanup system. Installation was completed on schedule for Unit 1; however, revisions to the Unit 2 outage schedule required a schedule extension for system operability until two months following the end of the refueling outage, which began in March 1984. This extension was granted by an amendment to the Operating License on December 12, 1983, and Unit 2 modifications were subsequently completed on schedule.

The removal of the contaminated cryogenic equipment and installation of the deep bed charcoal filters, extensive supporting systems, and hydrogen recombiners in place of the original cryogenic off-gas treatment system required another substantial resource allocation, coincident with the EQ effort, which was not encountered by other utilities.

COMPENSATORY ITEMS

On March 5, 1985, the NRC Staff issued a safety evaluation on the EQ program for Brunswick Units 1 and 2. The safety evaluation included reviews of CP&L's submitted justifications for continued operation and concluded that:

1. "Carolina Power & Light's electrical equipment environmental qualification program complies with the requirements of 10CFR50.49."

2. "The proposed resolutions for each of the environmental qualification deficiencies identified in the December 20, 1982 SER and FRC TER are acceptable."

3. "Continued operation until completion of the licensee's environmental qualification program will not present undue risk to the public health and safety."

The NRC also concluded that the Company's JCOs were based on the same criteria as contained in 10CFR50.49(i). The Justifications for Continued Operation are not based on a calendar date and the basis for these justifications will remain valid through the 120-day extension period. No change to the program has occurred which would invalidate the Staff's conclusion that continued operation until completion of the EQ Program will not present undue risk to the public health and safety.

Until full compliance with the rule is achieved, several compensatory actions will be in effect for Brunswick during operation. These are:

1. Enhanced Drywell Leak Detection Criteria - Notwithstanding the Standard Technical Specification (STS) requirements, reactor coolant system leakage, as measured at the drywell sump, is limited to a 2 gpm increase in unidentified leakage within any 24-hour period, about 16% of the STS limit. This provides additional assurance of early detection of any leak which could become a precursor for a high-energy line break inside the drywell.

2. Additional Personnel in the Reactor Building - The reactor building is under observation throughout all phases of operations by a number of groups. Auxiliary operators, operations management personnel, health physics technicians, fire watch personnel, and security personnel routinely enter and provide a nearly continuous presence in most areas. Health physics technicians are present in the reactor building during approximately 90% of the day shift and 40% of the night shift. With the current effort to upgrade fire barrier penetrations, a virtually constant fire watch is being maintained in some portion of the reactor building. Security personnel tour the reactor building at least once per hour, 24 hours per day. Carolina Power & Light Company training emphasizes that personnel immediately report any unusual occurrence to the control room. The effectiveness of this training was recently demonstrated when a health physics technician reported a water hammer event.

3. Existing Instrumentation for Steam Leak Detection - Instrumentation currently is in place which enhances early detection of steam leaks in several auxiliary systems. This instrumentation is identified in our Technical Specifications. Experience has shown that these instruments are very reliable and tend to fail conservatively if at all. Because the instruments are channel checked monthly,

three or four surveillances will be performed during the proposed 120 day extension. In addition, the fire protection system is set such that it will actuate in the event of a steam leak in confined areas such as the HPCI/RCIC room. Finally, area radiation monitors in the Reactor Building will alarm in the event of a steam leak.

IMPACT OF A NOVEMBER OUTAGE

While the Company currently plans to shut down Unit 2 on November 30 in order to comply with the Staff's deadline, our normal refueling would not occur until March 1986. A November outage would cause a number of significant penalties:

1. Outage Resource Overlap

   A November Unit 2 outage would commence during the completion of a scheduled 37-week* outage on Unit 1. The planning efforts for the Unit 2 outage will be affected by its close proximity to the end of the Unit 1 outage. The most profitable planning activities occur when those same individuals involved in the installation activities in a previous outage have had time to review the "lessons learned" and incorporate them into the designs and procedures to be used in the next outage. With the existing outage schedule dictated by the Staff-allowed extension, such planning is not wholly possible. Instead of having time to evalute lessons learned from the previous outage problems, these individuals will be simultaneously involved in the implementation, checkout and startup activities on Unit 1 while trying to incorporate "lessons learned" field changes into design packages for the Unit 2 outage. This simultaneous activity would not support the goals of the Brunswick Improvement Program.

   In addition, outages generally require long periods of extended working hours for many key plant personnel. Postponing the Unit 2 outage to March would provide an important opportunity for those people to recover physically and mentally from seven months in a stressful environment.

2. ALARA Concerns

   Historical perspective indicates that the ability to incorporate "lessons learned" from the performance of a particular job into the controlling procedures and modification work packages for subsequent work can have a substantial effect on the ability to reduce the accumulated exposure.

   The current Unit 1 outage has a projected exposure of 1700 man-rem. Approximately 250 man-rem of this is attributable to modifications required to comply with the EQ rule alone. Exposure projections for the Unit 2 outage will be near this same level (1700 man-rem), even without torus work. This is primarily due to the overall higher radiation levels in Unit 2, especially in the drywell area, due to previous fuel history.

   Several major jobs with large projected cumulative exposures are currently being performed on Unit 1 that will be repeated on Unit 2, including: EQ modifications, Induction Heat Stress Improvement, Recirculation System Snubber Replacement, Local Power Range Monitor Cable Replacement, Reactor Water Clean-Up Piping/Penetration Replacement, and 10-year In-Service Inspection. These jobs account for approximately 42 percent of the total projected exposure for the Unit 1 outage.

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* 31 weeks critical path plus 6-week contingency based on historical experience.

With the number of "repeat" jobs to be performed on Unit 2, coupled with its higher overall radiation levels, it is important that any "lessons learned" that could contribute to lower cumulative exposures be factored into the control procedures and processes for the work. Moving the start-date of the outage would allow the time necessary to incorporate these "lessons learned."

Typical "lessons learned" may include:

-- better fabrication or routing techniques found during field installation (time is needed to prepare and issue revised drawings),

-- better work installation sequencing (work control documents must be revised),

-- identification of work that can be "pre-fabricated"; i.e., worked outside of the radiation area (drawings and work control procedures must be revised),

-- better utilization of shielding,

-- Better utilization of decontamination processes/techniques (time to design, obtain processes),

-- increased personnel efficiency from "having done it before." By moving the outage into another calendar year, it would be possible to use most of the same people for repeat work, where they might not have otherwise been available due to exposure limits).

From a historical perspective, a 10 percent reduction in cumulative exposure for "repeat" work is not uncommon on larger jobs. Based on this, a saving of 80 to 170 man-rem may be realized if the 120-day extension request is granted.

3. CP&L System Reliability

Removing Unit 2 from service on November 30, even though your Staff has determined that the unit is safe to operate (see NRC letter dated September 28, 1984) reduces reserve margins during the winter peak period. On January 21, 1985, we experienced an extremely cold period that severely strained the industry's ability to protect the public health and welfare and provide necessary heating power. CP&L experienced a peak demand more than 12 percent above the previous all-time peak set in the summer of 1983. Severe winter periods have the complicating effect of partially disabling many coal plants throughout the country as well, due to freezing of coal piles. It is impossible to predict during which years these extreme winter conditions will occur. Continued safe operation of Brunswick Unit 2 for an additional 120 days until March 1986 would help maintain adequate reserve margins, should the need arise. Should another severe winter period occur similar to last year, and Brunswick-2's 790 MW were not available, the additional cost for replacement power purchased off the Company's system if available could be as much as $3,200,000 for the equivalent seven-day period.

H. B. Robinson is currently scheduled to be refueled in February 1986. However, due to an exceptional capacity factor experienced thus far on the current cycle, the plant may need to be refueled earlier than anticipated. Should both Brunswick-2 and Robinson-2 be out of service during the peak winter period, reserve margins would be further impacted.

4. Refueling Complications

Refueling of Unit 2 in November would occur about 1800 megawatt days per ton short of the end of full power reactivity of the core. Due to this "underburn" on the existing core, up to 24 bundles would have to be prematurely discharged from the reactor in order to achieve an acceptable shutdown margin. There is no assurance that these fuel bundles could ever be reused. The cost for this early discharge could amount to $4,000,000.

5. Brunswick License Amendment for Living Schedule

Recognizing that the NRC's living schedule concept is based upon the premise that regulatory requirements should be tied to normal refueling cycles, we question the logic of imposing the arbitrary calendar deadline of November 30, 1985 on a unit such as Brunswick 2. As indicated by our April 29, 1985 request for a "living schedule" amendment to the Brunswick license, CP&L is committed to an orderly incorporation of regulatory requirements through the implementation of an integrated schedule. The Commission most recently endorsed and encouraged this approach in Generic Letter 85-07. We believe this should apply to the EQ program as well. In essence, it does little to grant an extension from the "second refueling after March 1982", if that extension is tied to an arbitrary calendar date of November 30 with no regard for refueling cycles, upon which all other integrated work schedules are based.

SUMMARY

Carolina Power & Light Company has pursued a diligent program to achieve environmental qualification. We have achieved compliance with the rule on Brunswick-1 and Robinson-2 with no extension and will achieve compliance for Harris-1 on schedule. We have not been reluctant to keep the Brunswick plant off the line to complete regulatory-required modifications and operational improvements, as witnessed by the average of 44 weeks of outage time per year for the last four years. For Brunswick Unit 2, however, we request that the Commission consider the following exceptional circumstances when evaluating our request to commence our normal refueling outage on March 30, 1986:

1. the unique elements of plant design which have increased the scope and complexity of the EQ Program

2. the unique plant design which has complicated the Company's good faith effort to achieve other regulatory required improvements

3. the request for a "living schedule" amendment to the Brunswick license which has been submitted to enhance the incorporation of regulatory requirements in an orderly manner, as requested by Generic Letter 85-07 and is keyed to scheduled refueling outages.

4. the compensatory actions available to enhance public health and safety

5. the improvements gained in incorporating lessons learned into the outage and the impact overlapping outages would have on employees and potentially on reliable system operations

ENCLOSURE 1

EXAMPLES OF BRUNSWICK EQUIPMENT QUALIFICATION

When equipment advertised as "Qualified to IEEE 323" first became available, the Company surveyed the market to determine which items met both the BSEP technical requirements and environmental requirements. We found that several items, most notably pressure switches and differential pressure (flow) switches, were unavailable to meet the environment(s) to which they would be exposed at BSEP.

Pressure Switches

In keeping with our policy of obtaining all items of a group qualified to the worst environment which any individual items of that group will see, it was necessary to obtain pressure switches qualified to our worst case environment. This is an enveloping curve which encompasses all accidents in the area in question and contains the required IEEE margins. This curve has a peak temperature of 310°F. There are approximately 60 pressure switches (three different manufacturers) affected per unit at BSEP. In 1982, two independent vendors began to market "qualified" pressure switches. We entered technical discussions with personnel from both companies. Each company had independently qualified their items to approximately 215°F. This number was apparently chosen because of the perceived success potential of testing as well as the wide applicability within the industry of a switch qualified to this level. After extensive discussions with both companies, each agreed to perform further tests on their equipment to meet BSEP qualification standards. Testing of one vendor's equipment was completed in 1984. Although these switches were determined to be qualified for the BSEP environment, they experienced significant accuracy and setpoint drift problems and, therefore, did not meet BSEP technical requirements.

The second supplier has recently completed testing and has delivered qualified pressure switches in support of the current Brunswick-1 outage. Brunswick-2 pressure switches are scheduled to be delivered by Summer 1985.

Differential Pressure Switches

The existing switches supplied by the NSSS supplier are from still another vendor. During the above referenced discussions with pressure switch vendors, CP&L also pursued qualified differential pressure switches. Differential pressure switches are not yet available from either of the two vendors discussed above. Differential pressure switches became available from the third vendor in 1984 and have been ordered. Delivery of Brunswick-1 items was expedited to support the current outage, and delivery of Brunswick-2 items is expected by mid-summer.

Level Switches

Two specific level switches were provided by the NSSS supplier for which we have been able to find no comparable supplier for replacements. The Company evaluated various alternate methods, such as transmitters or temperature sensitive level sensors, for accomplishing this function; but none of these methods was usable at BSEP without extensive modifications to primary containment. A test program was recently completed and preliminary results show the existing switches to be qualified. The final report is expected by late summer to support the current Brunswick-1 EQ program.

ENCLOSURE 2

CP&L PARTICIPATION IN INDUSTRY GROUP EFFORTS

Wisconsin Electric	Group of 12 utilities' effort to qualify the Rosemount 1153D pressure transmitter.
MCC Owners' Group	Group of 5 utilities seeking GE's assistance to provide qualification of the IC7700 MCC.
Patel Engineering	Qualification programs for components to be used in meeting EQ requirements.
Raychem	Retesting of the Flametrol cable.
BWROG for EQ	To generate qualification data on common BWR equipment.
Nuclear Utility Group on Equipment Qualification	Group of 22 utilities interfacing with NRC Staff.

It is common practice to share information on synergistic effects, plant experiences, and qualification testing data with other utilities.

FIGURE 1

Typical BWR Design

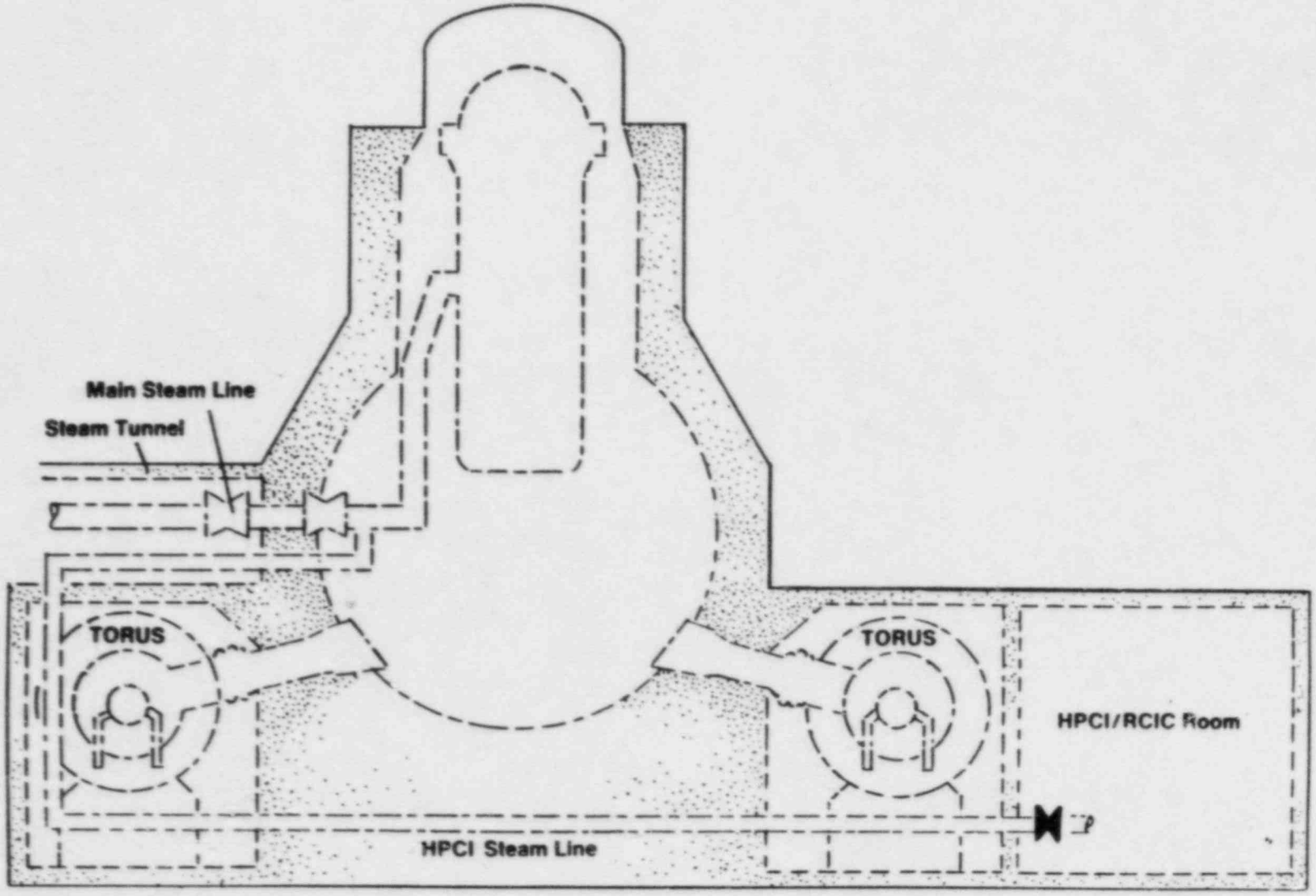

FIGURE 2
Brunswick Design

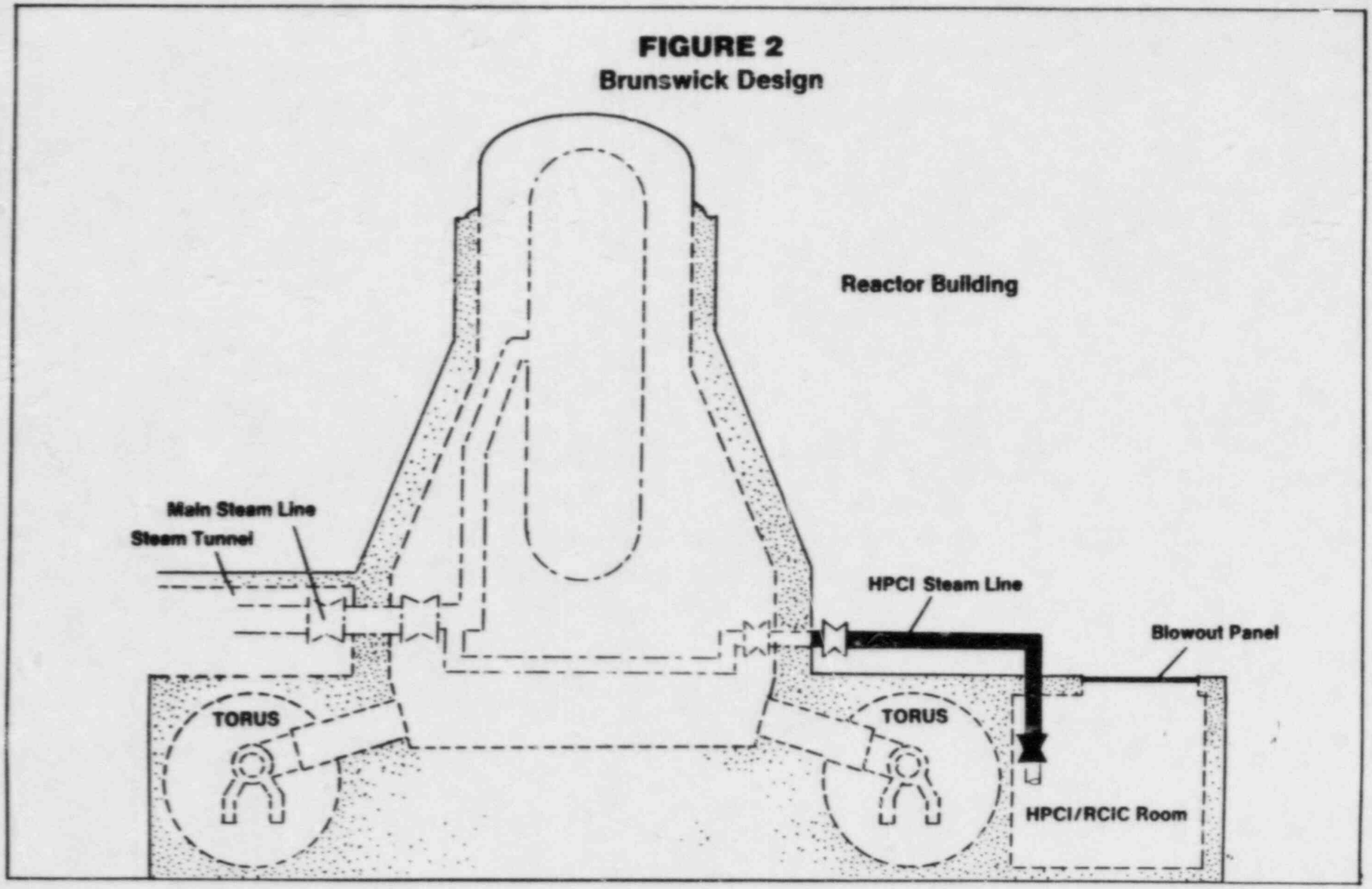

Figure 3
Brunswick Outage History

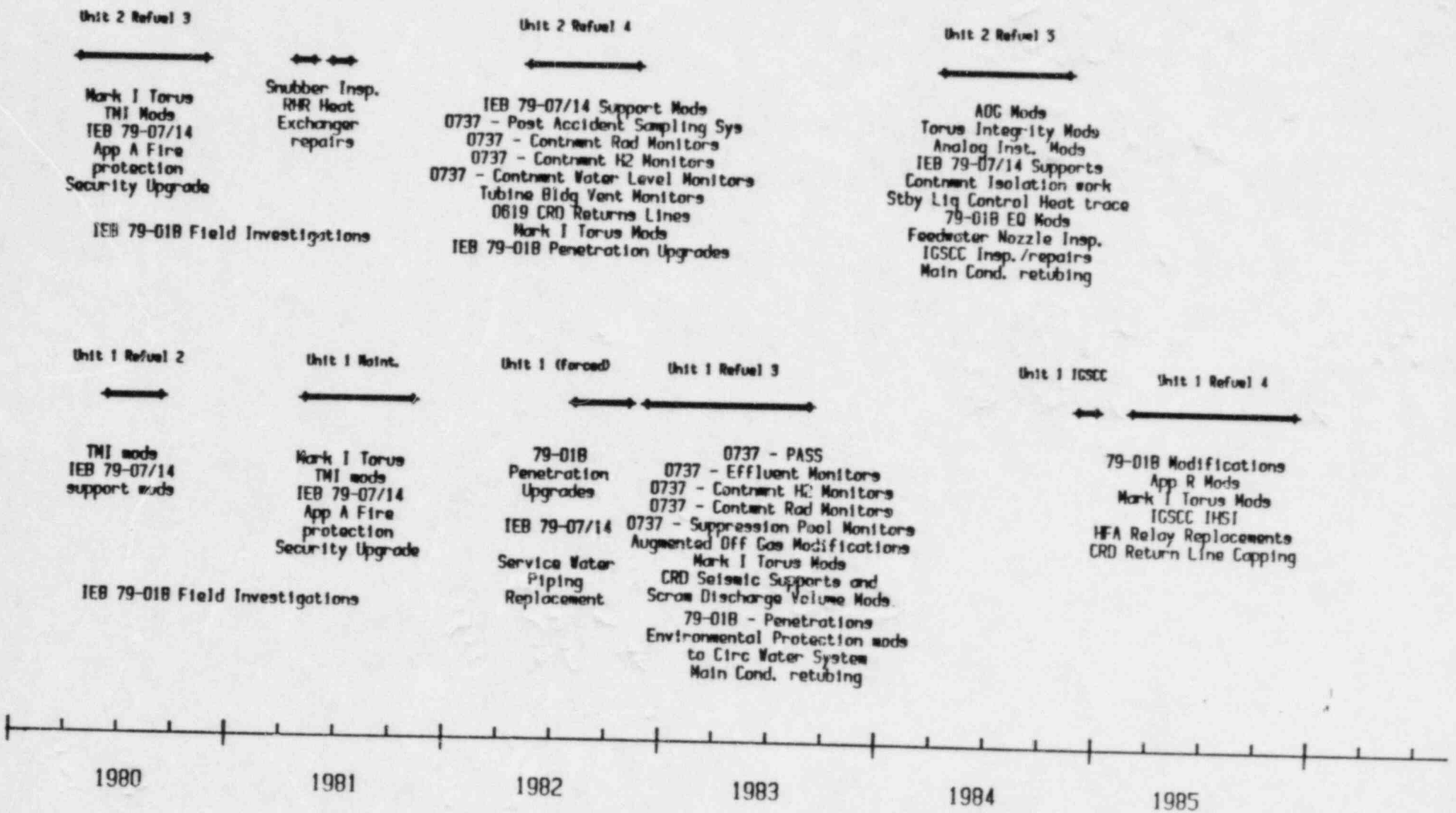

FIGURE 4

BRUNSWICK OUTAGE SCOPE

	1982	1983	1984	1985
Weeks of Outage	46	55	50	31
Manpower Requirements	1800	2000	2450	2200
Projects Costs (millions)	114	148	131	102
Regulatory Modifications	IEB 79-07/14 Support Mods 0737-Post Accident Sampling sys 0737-Contmnt Rad Monitors 0737-Contmnt H2 Monitors 0737-Contmnt Wtr Lvl Monitors Turbine Bldg Vent Monitors 0619-CRD Return Lines Mark I Torus Mods 79-01B Penetration Upgrades	0737-PASS 0737-Contmnt H2 Monitors 0737-Contmnt Rad Monitors 0737-Suppression Pool Monitors Augmented Off Gas Modifications AOG Upgrade Mark I Torus Mods CRD Seismic Supports and Scram Discharge Volume Mods 79-01B- Penetrations	AOG Mods Torus Integrity Mods Analog Inst Mods IEB 79-07/14 Supports Contmnt Isolation work Stby Liq Control Heat trace 79-01B EQ Mods Feedwater Nozzle Insp IGSCC Insp/repairs	79-01B Modifications App R Mods Mark I Torus Mods IGSCC IHSI HFA/HGA Relay Replacements CRD Return Line Capping
Reliability Modifications	ID Air Compressor Tie-In Main Turbine Blade Replacement Analog/Digital Mods on RPS & ECCS Complete RWCU System Mods Service Water Piping Upgrade	Condenser Retubing RCS Recirc Pump Upgrade Analog/Digital Mods on RPS & ECCS Fdwtr Htr/Extraction Stm Piping Service Water Piping Upgrade	Condenser Retubing Rctr Feed Pump Shaft Rplcmt SVC Wtr System Repairs Circ Wtr System Environ- mental Mods* Extraction Steam Pipe Rplcmt Rctr Feed Pump Turbine Bucket & Diaphragm Rplcmt	Svc Wtr Piping Upgrade Turbine Low Pressure Rotor Replacement

* Required by Environmental Regulations

(1486RWS/crs/mf)

Figure 5
CP&L OUTAGE PLAN HISTORY