ENCLOSURE 1

SAFETY EVALUATION
INTERNAL CONDUIT SMOKE SEALS
INSTALLED AT APPENDIX R FIRE BARRIERS
BOSTON EDISON COMPANY
PILGRIM NUCLEAR POWER STATION
DOCKET NO. 50-293

1.0 INTRODUCTION

By letter dated February 3, 1988 (BECo 88-017), the licensee provided their criteria for installing smoke seals inside electrical conduits that pass through fire barriers from one fire area to another. The licensee provided these criteria to answer staff concerns discussed during a meeting between BECo and the staff on November 24, 1987.

2.0 EVALUATION

Appendix R to 10 CFR 50 requires, among other things, that openings and other penetrations in rated fire barriers separating redundant trains of the safe shutdown systems and equipment shall be closed and sealed in a manner that maintains the required fire rating of the barrier. Specific requirements for fire barrier cable penetration seal qualification are contained in Section III.M of Appendix R to 10 CFR Part 50. Although Appendix R is silent as to requirements for sealing inside electrical conduits, BTP 9.5-1 does contain specific guidance concerning such seals in Section C.5.a.(3). That guidance provides that;

"Openings inside conduit larger than 4 inches in diameter should be sealed at the fire barrier penetration. Openings inside conduit 4 inches or less in diameter should be sealed at the fire barrier unless the conduit extends at least 5 feet on each side of the fire barrier and is sealed either at both ends or at the fire barrier with noncombustible material to prevent the passage of smoke and hot gases. Fire barrier penetrations that must maintain environmental isolation or pressure differentials should be qualified by test to maintain the barrier integrity under such conditions."

The criteria that the licensee has submitted conforms to the above guidance and subsequent guidance contained in Generic Letter 86-10.

The licensee's criteria for seals inside conduits specifies the following:

1. Only those barriers that separate redundant safe shutdown equipment will be evaluated for smoke seals.

2. Smoke seals are not required if automatic fire suppression is provided on both sides of a fire barrier.

3. Smoke seals are not required on one side of a fire barrier if automatic fire suppression is provided on the other side.

4. Smoke seals are not required if the passage of smoke does not jeopardize the operation of redundant safe shutdown equipment.

5. Smoke seals are not required if the quantity, nature and location of combustibles are such that smoke generation is not a threat.

6. Smoke seals are not required in conduits with a nominal size less than 3-inches in diameter if the conduit runs more than 10 linear feet before terminating.

7. Conduits greater than 4-inches in diameter will be sealed internally with smoke tight fire seals at the barrier.

8. Conduits 3 to 4-inches in diameter will be sealed internally at the barrier, or at the first opening on both sides of the barrier, or on one side of the barrier where it has been determined that only one smoke seal is necessary.

9. Conduits with a nominal size less than 3-inches in diameter will be sealed on any side of the barrier where the conduit terminates at smoke damageable safe shutdown equipment within a 10 foot linear run from the barrier. If termination does not occur at damageable safe shutdown equipment within a 10 foot linear run, the decision to seal the conduit shall be based on evaluation for Numbers 2 through 6 above.

10. Smoke seals are fabricated of non-combustible materials and are essentially air tight so as to preclude passage of significant amounts of smoke. In addition certain hardware components are acceptable in lieu of smoke seals. Acceptable hardware components include:

    - non-louvered and non-ventilated boxes;
    - outlet boxes;
    - key card boxes (readers);
    - GAI tronics boxes.

The staff agrees with the licensee that smoke seals installed inside electrical conduits in accordance with the above criteria will give reasonable assurance that smoke will not be transmitted from one fire area to another via electrical conduits in sufficient quantities to damage redundant safe shutdown systems or components.

3.0 CONCLUSION

On the basis of the above Evaluation, we conclude that the internal conduit smoke seals installed by the licensee in accordance with the criteria described in their letter of February 3, 1988 (BECo 88-017) are consistent with BTP 9.5-1 and, therefore, acceptable for the purposes described above and in their letter.

617-424-3864 Tim Ferris

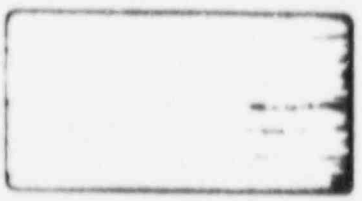
8-488-1200 Rob Bellamy
John White

492-4952 Leech
Frank Witt

Martin
Don White
Sheinbaky
Paszkiak
Meyer
Grey

Jim Keyes
Zeleznor
Ferris

Roberts
Burbeck
Tindeau
Whitney
Robert
Bryant
Fairbanks



2/

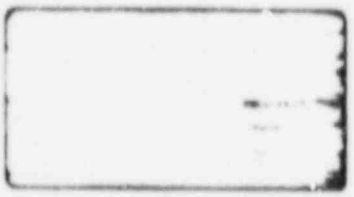
repair act
cracked line replace adjacent to
automatic cont. iso valve
proceeding down that line to place
where can tie during op

also a T

what is total of expected samples
16 from installed locations, including
plus stored pipe
currently cutting out 4 more

completion schedule - worst case 6/30/8

lowering heat tracing
liquid sampling functioning
but not containment atmosphere
sampling



Segments relief

1. where cracks found
   scope repair or replace
   [illegible]
   comp [illegible]

1. Fairbanks - cracking found (5) thru-wall
   in drywell B train [illegible] sample to
   H_2O_2 analyzer

   pitting + getting up to 1/4 wall thick -UT
   torus

   communicating [illegible]
   [illegible]
   [illegible]

   H_2O_2
   [illegible] A train
   [illegible]

Transgranular chloride-assisted
stress corr. cracking

compensatory measures

procedure 5732 backup sample sys
using T 19 panel in RB
draw actual atmosphere samples

white thinks probably no access to
take the samples - BECo does not
know source term.

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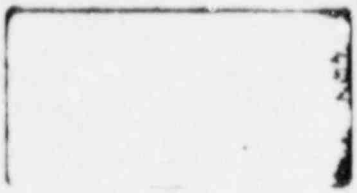
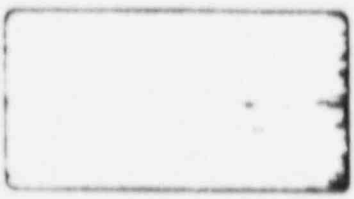
white

check on pre-op testing





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

PILGRIM NUCLEAR POWER STATION

SAFETY EVALUATION REPORT

FIRE PROTECTION PROGRAM

CONTROL ROOM UPGRADE - CARPET

By letter dated January 14, 1986, the Boston Edison Company (licensee) requested approval for the installation of carpeting in the control room at the Pilgrim facility. In terms of the licensee's Fire Protection Program for Pilgrim, concerns were raised that the carpet might represent a significant increase fire hazard from the standpoint of overall flammability and the potential for smoke production, if ignited.

In the January 14, 1986 letter, the licensee stated that based on results of fire tests conducted on the proposed carpet, it has demonstrated that it represents no greater fire hazard than the carpet currently installed in the control room ~~previously approved~~ that it will replace. Specifically, the Critical Radiant Flux was determined to be .58 watts per square centimeter as determined by the test method in ASTM E-648, which enables the carpet to be considered as a Class I interior finish. The smoke development rating of 450 or less as required by NFPA 101 "Life Safety Code" ~~the carpet was determined to be less than as determined by the test method in ASTM E-662. This compares to a flaming smoke development of 325 for vinyl asbestos tile.~~ We conclude that the installation of the carpet will not significantly decrease the level of fire safety in the control room, and therefore, represents an acceptable deviation from Section C.7.b of BTP CMEB 9.5-1.

2/9 Joe Nicholson at Pilgrim
- IT Nuclear -
Have chem cleaned 28, 22 + 12 in
portions of 18 + 20 in RHR
4" water cleanup

expect to finish removal of chemicals
tomorrow
for 5 more days + removing decon eq.

then mid next week
drywell - will remove ducts
etc in way - insulation

then will do x-ray + UT
of 28" piper

then continue UT RHR

in about 10 days, should know
what has to be removed - 28, in
piping etc. (previously decided to replace
8 in risers and 22 in header)
- first cut March 8

will decon drywell to cut down
exposure
conduction in August, start up

TAC 62793

Dick

This is one of the essential elements of one of the "missing" files. Marcus says (and after reading, I agree) it is an electrical not instrument issue. Perhaps we should see if BEB wants it before we send it to SELB. The computer shows it to be closed

in Keyes Beautiful words

Transferred to SELB on 5/12
Paul Gill 29474

T. Lyons says must have a T/S on this.
- How does he know?!

6/9 Talked with Gill for the first time - when Knight gets back they will decide whether Gill or someone else will do it - will call. Also will call when it's safe to Shelly
29474

7/24 Called Gill left word
7/25 John Knox is new reviewer - will respond by 9/15. He says all others are having a required T.S.

6/9

12/17 Keyser 617-424-2712 Witt 28360
heating F 275° would change to 150° which means sample wouldn't stabilize for
~~72~~ 24 hrs instead of 3 hrs.

Kahler, Keyser, Bob Fairbank, Bob Tracy, Jim Davis
Bob Grazio, Fred Mogolesko
Bart Waldo using GE Owners Group core damage procedures SOP 5.7.4.1.16

Keyser - lowering heat tracing to 150F would cause some condensation in the piping because containment would be over 200F. But don't use this for H_2 anyway. For H_2/O_2, analyzers will read erroneously high because steam would be condensing out - Frank suggested this could be compensated. Don't want to vent prematurely on erroneous high reading. Will be running "blind"

~~If detector requires dry air, the vendor~~

Mel Fields 29448
~~Gate~~

Grazio says no dryers are associated with the H_2/O_2 monitors. Using heat tracing to maintain steam inside the pipe at appropriate temp for monitoring containment after an accident

10 CFR 50.44

inerted - short term

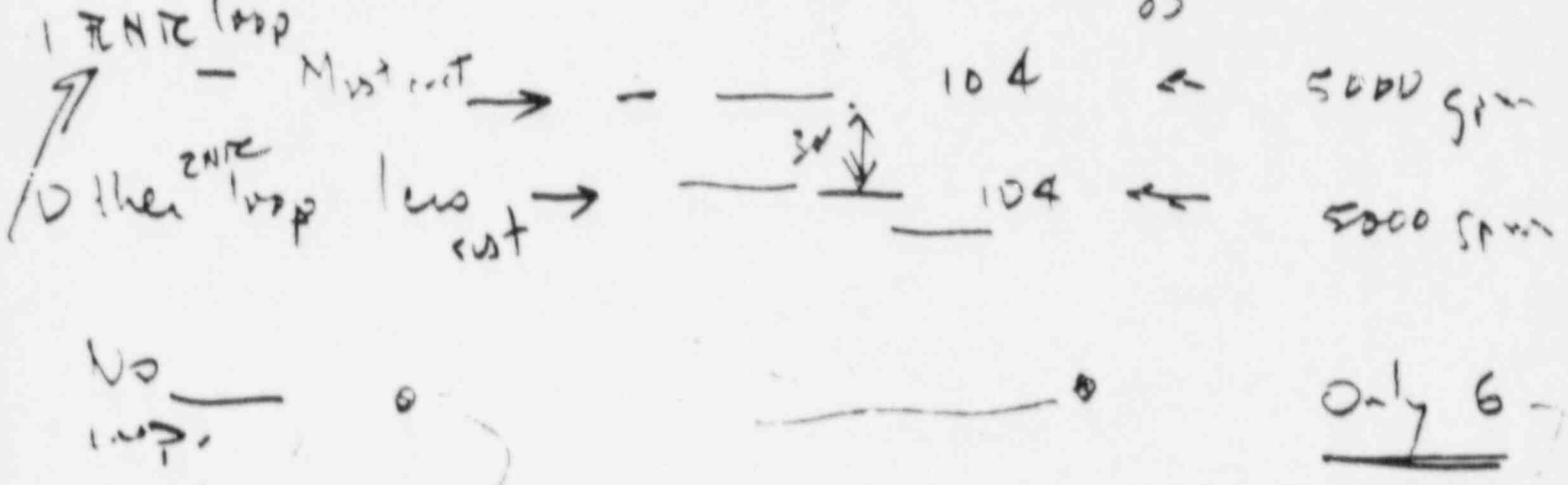
Witt says the above does not effect PASS capability. Fields discussed with Grazio what capability Pilgrim would have to measure H_2/O_2 ~~and~~ It appears that about 27 hrs would pass before containment temp would match ~~[illegible]~~ temp of heat tracing unless operator action raises the heat tracing to containment temp after ~~after~~ accident - that could be done within 45 minutes according to Keyes (Grazio?) after operator attends to it. Dr. Butler told me + Fields such interim measures are acceptable short term but BECo should propose long-term corrections and I informed Keyes this is need promptly.

Drywell

— 1 @ bottom of lite b.lb

1 10-15' above ground level
— b.lb

Nozzles



3

x 500 gpm

Design Change - only Drywell

Valving error on 2 isol valves
main
steam

10,000

2/11

To deal with GE Mark I Issue:

W. Lanning → Contact AEOD / ORAS ← M. Caruso / G Hulahan / M Virgilio

- Perf. Indicators Paper
- List BWR MK I's (23)
- SALP emphs.

Actions: pipe cracks & repairs
Actions: SALPs
& where approp. we take action & require utility actions
Plants with more difficulties get more attention from NRC.
We will not allow restart w/o satisf.

23 Mark I's are BWR 3 & 4
Drywell with free-standing steel
(or concrete - Brunswick)

G 1/2.

5/21 Mike Vaillancourt at channel 2 Boston
(617) 492-9293

215 351 5330
Carl Abraham 435-1335
Ann Overton

requested is Pilgrim

1. how often shutdown over past 2 yrs?
Table 7 8 times from 1/1/85 - 10/31/85

2. estimated startup from present outage - by End of May

3. rate of reportable events 35/13 (10/1/84 - 10/31/85)
Table 1 + 2

4. how many citations 27 during (10/1/84 - 10/31/85)
Table 5 14 inspections

Above info is from NRC SALP report for 10/1/84 - 10/31/85

told Sue Gagner at OPA list of my conversation with Mike Vaillancourt

DISCUSSION ISSUES

1. Justification for Continued Operation

   - leak before break
   - crack propagation
   - structural integrity

2. Discuss the issues believed to allow the facility be considered unique, as well as plant specific actions.

3. Discuss the qualifications of the inspection team to be used

   - IEB 82-03
   - IEB 83-02
   - performance in the round robin
   - basis for using teams

4. Discuss the availability of inspection teams

   - their training
   - timing of inspections

5. Discuss occupational exposure issues

   - expected ORE
   - advantages and disadvantages of decantamination
   - influence on inspector availability

6. Discuss the length of time required to perform the UT inspection

   - as described in the 50.54(f) letter
   - benefits gained by performing partial inspections following a forced shutdown
   - ability to perform the inspection should an outage of greater than ten days occur

7. Discuss commitments regarding leakage

   - proposed actions in addition to T/S
   - floor and equipment drains
   - sensitivity of measurement devices
   - feasibility of identifying leakage during outages

- BRUNSWICK

  - Details regarding previous inspections

  - Plant specific features

    - RHR piping
    - Recirc piping

PILGRIM

  - Commitment on leakage limits

  - Hydrotest in 1983

    - leakage measured
    - how was it conducted
    - applicability to pipe crack issue

  - Previous inspections (including round robin)

    - criteria as compared to IEB 83-02
    - technique
    - what terms were used

  - Impact on proposed integrated program

  - Breakdown of Costs - additional detail

    - direct and indirect
    - replacement power cost

  - Qualification of automated UT

QUAD CITIES 2 & DRESDEN 3

  - Use of IHSI on old operating plant

    - radiation exposure
    - effectiveness
    - potential adverse impact on deep cracks

  - Realism of the assumed sequence: six weeks to inspect Dresden 3; resumption of operation for four weeks

BROWNS FERRY 3

  - Impact other activities may have on BF 3 Shutdown

    - BF 1
    - Wattsbar
    - Sequoyah