10 CFR 50.90

PECO NUCLEAR
A Unit of PECO Energy

PECO Energy Company
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

April 12, 2000

Docket Nos. 50-277
50-278

License Nos. DPR-44
DPR-56

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

Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Meeting with U. S. Nuclear Regulatory Commission on GE14 Fuel

Dear Sir/Madam:

On March 29, 2000, PECO Energy Company and Global Nuclear Fuels met with the U. S. Nuclear Regulatory Commission to discuss the planned implementation of GE14 fuel at Peach Bottom Atomic Power Station, Units 2 and 3. Attachment 1 contains the non-proprietary slides associated with that meeting. Attachment 2 contains the proprietary version of these slides. General Electric requests that these slides be withheld from public disclosure in accordance with 10 CFR 2.790(a)(4). An affidavit supporting this request is contained in Attachment 3.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

James A. Hutton
Director - Licensing

Attachments

cc: H. J. Miller, Administrator, Region I, USNRC w/o enc
A. C. McMurtray, USNRC Senior Resident Inspector, PBAPS "
R. R. Janati, Commonwealth of Pennsylvania "

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Attachment 1

Non-Proprietary Slides

Global Nuclear Fuel

Glen A. Watford
Manager, Nuclear Fuel Engineering

A Joint Venture of GE, Toshiba, & Hitachi

Global Nuclear Fuel – Americas, LLC
Castle Hayne Road, Wilmington, NC 28401
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Glen.Watford@gnf.com

FLN-2000-002

April 7, 2000

Tom Loomis
PECO Energy

Subject: NRC/PECO/GE Presentation on GE14 Introduction – Non-proprietary Slides

Attached is the material presented by GE during the subject meeting. The attached slides are non-proprietary.

If you have any questions, please call me at (910) 675-5446.

Sincerely,

Glen A. Watford, Manager
Nuclear Fuel Engineering

Global Nuclear Fuel

A Joint Venture of GE, Toshiba, & Hitachi

Introduction of GE14

Glen A. Watford, Manager
Nuclear Fuel Engineering

Agenda

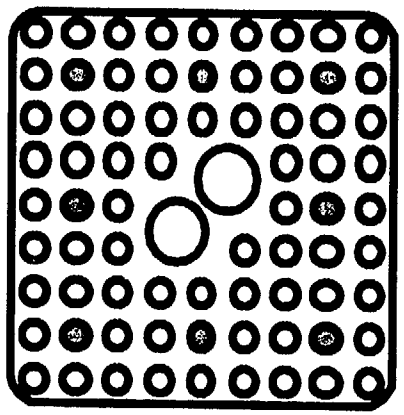
- Design
- Operating experience
- Performance
- Amendment 22 compliance

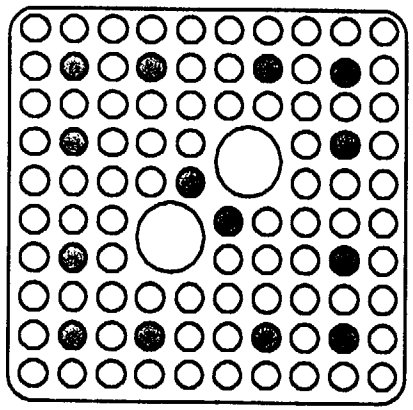
GE14 evolutionary design philosophy

- Based on proven GE12 experience
  - No material or burnup limit changes
  - No change to components (tie plates, end plugs, bundle hardware)
  - Zircaloy ferrule spacers
  - Axial spacer positions chosen to optimize thermal performance
  - Part length rods shortened to
    - maintain acceptable stability performance
  - Optimized fuel rod thermal-mechanical design
  - Debris filter standard

Comparison of GE13, GE12 and GE14

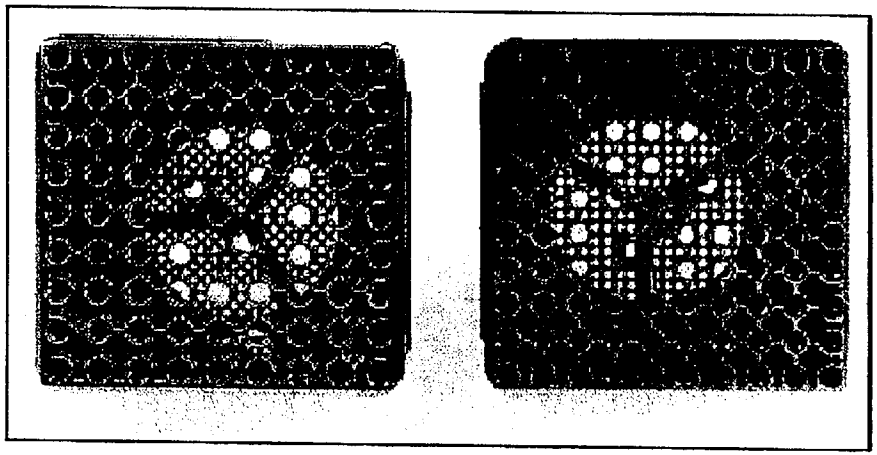
	GE13	GE12	GE14
Lattice	9x9	10 x10	Same as GE12
# of fuel rods	74	92	Same as GE12
# part length rods	8	14	Same as GE12
part length rod length			
# tie rods	8	same as GE13	Same as GE13
# spacers/type	8/ferrule	8/ferrule or unit cell	**8/ferrule**
Rod to rod pitch			Same as GE12
Water rods	2 large central	same as GE13	Same as GE13
Channel Features	Interactive with trippers	same as GE13	Interactive **without** trippers
LHGR limit	14.4 kw/ft	11.8 kw/ft	
Discharge exposure (peak pellet)	70000 MWd/MTU	same as GE13	Same as GE13





Debris Filter Lower Tie Plate

- 3500 in operation
- 42 GWd/MT lead LUA experience
- 3 inspections to date
  - No plugging
  - No structural problems
  - Debris filtering effectiveness confirmed



9x9 10x10

Standard feature for GE14

10x10 operating experience

- 1st GE12 introduced at Gundremmingen B in 8/93
- A total of 54 licensed and operating GE12 LUAs in:
  - Taiwan, US, Spain, Sweden, Finland, Germany
  - Lead assembly exposure ~ 60 GWd/MTU with inconel and ferrule spacers.
- LUAs inspected over entire lifetime
- > 1900 operating GE12 bundles by March 2000

GE12 experience applicable to GE14

GE14 operating experience

- 28 GE14 LUAs operating as of January 2000
- First LUAs loaded in 1998
- Two Production Reloads Complete- KKM (1999) and Cooper (2000)
- 1st LUA inspection completed August 1999 - KKM and KKL

GE14 - 1st cycle LUA inspection

- Rod growth as predicted

- Excellent spacer performance
- No spacer/channel interference

- Excellent rod-to-rod spacing

Visual examination:
Outstanding Performance

GE14 - 1st cycle LUA inspection

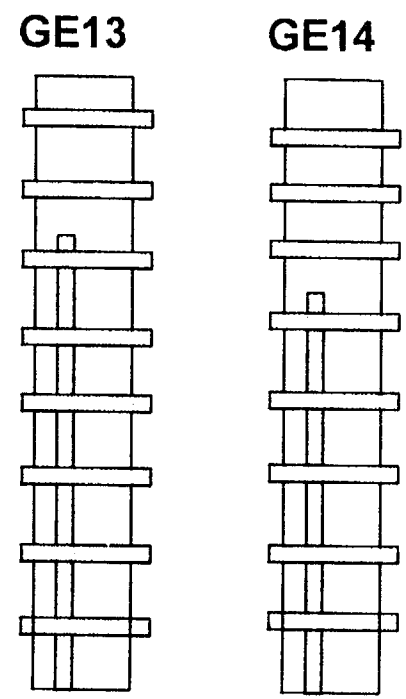
- **Excellent measured rod-to-rod spacing**
  - **As predicted**

- **Zircaloy spacers**
  - **Excellent performance**
  - **No spacer/channel interference**

Visual and Rod Gap Inspection:
Outstanding Performance

GE14 performance

- Optimized spacer/part length rod locations
  - Spacing at top of bundle for CPR performance
  -
  - Improved 2ϕ/1ϕ pressure drop



GE14 performance

- Increased heat transfer to coolant (smaller diameter fuel rod)
- Less negative void coefficient for 10x10
- Flow sensitivity/statistical adjustment factors
- Increased number of rods

Overall improved performance over GE13 design

GE14 licensing

- Amendment 22 evaluations completed in November 1998
  - No change in methods required
    Same R-factor methodology as GE12/GE13
  - All thermal-mechanical criteria satisfied
  - Full-scale hydraulic testing
    - Critical power database -
    - GEXL uncertainty included in SLMCPR
    - Pressure drop correlations developed
  - Nuclear evaluations unaffected
    - Same lattice design
  - SLMCPR methodology applicable to 10x10 designs
    - R-factor uncertainty accounts for 10x10 design

All Amendment 22 criteria satisfied

Summary

- GE14 is evolutionary change from GE12 10x10 design
  - GE12 experience directly applicable
  - Excellent experience to date with GE14 LUAs
- Overall improved fuel performance relative to GE13
- Amendment 22 evaluations completed
- Plant specific evaluations to be completed during reload licensing process

Prepared for GE14 reloads