November 3, 1989

Docket Nos. 50-424
and 50-425

LICENSEE: Georgia Power Company

FACILITIES: Vogtle Units 1 and 2

SUBJECT: SUMMARY OF MEETING HELD OCTOBER 5, 1989 TO DISCUSS THE FUTURE USE OF VANTAGE 5 FUEL

On October 5, 1989, the NRC staff met with representatives of the Georgia Power Company (GPC) at the NRC offices in Rockville, Maryland to discuss the future use of Vantage 5 fuel. Participants are listed in Enclosure 1.

GPC informed the NRC that they planned to use Vantage 5 fuel commencing with Unit 1 cycle 4 operation. The Vogtle fuel will be similar to that analyzed in WCAP-10444, "Reference Core Report VANTAGE 5 Fuel Assembly." GPC will perform the analysis of Vantage 5 fuel for Vogtle Units 1 and 2 considering 18 month fuel cycles and a 4 percent power upgrade; however, the Vantage 5 fuel licensing submittal will not request approval for power upgrade. Power upgrade will be requested by a subsequent amendment request. The handout used at the meeting is included as Enclosure 2.

/S/

Jon B. Hopkins, Project Manager
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Enclosures:
As stated

cc w/encls:
See next page

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FO1
1/1

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Enclosure 1

ATTENDANCE LIST

VANTAGE 5 FUEL - VOGTLE, UNITS 1 AND 2

October 5, 1989

NAME	ORGANIZATION
J. Hopkins	NRR/PD II-3
Y. Hsii	NRR/SRXB
S. Wu	NRR/SRXB
D. Fieno	NRR/SRXB
H. Majors	GPC
R. Florian	GPC
R. Armstrong	Southern Company Services
W. Andrews	Southern Company Services
S. DiTommaso	Westinghouse
S. Davidson	Westinghouse

Enclosure 2

VOGTLE VANTAGE-5 FUEL UPGRADE LICENSING MEETING WITH NRC

OCTOBER 5, 1989

VOGTLE VANTAGE 5

IMPLEMENTATION

OCTOBER 5, 1989

AGENDA

INTRODUCTION -	W. ANDREWS, SCS
VANTAGE 5 DESIGN FEATURES -	B. ARMSTRONG, SCS
VANTAGE 5 LICENSING HISTORY - AND COMPARISON OF DESIGN PARAMETERS	S. DAVIDSON, W
COMPARISON OF CURRENT AND - VANTAGE 5 LICENSING PARAMETERS	B. ARMSTRONG, SCS
LICENSING SUBMITTAL -	H. MAJORS - GP
SCHEDULE -	W. ANDREWS, SCS

VOGTLE VANTAGE 5

PRODUCT DESIGN FEATURES

- Optimized Fuel Rods (0.360" O.D.)
- Zirc Grids - 6 mid-grids
- Intermediate Flow Mixer (IFM) Grids
- Integral Fuel Burnable Absorbers (IFBA)
- Axial Blankets
- Removable Top Nozzle (RTN)
- Debris Filter Bottom Nozzle (DFBN)
- Extended Burnup Assembly Features

GENERAL CHARACTERISTICS OF VANTAGE-5 FUEL DESIGN

- VANTAGE-5 BASED ON THE OPTIMIZED FUEL ASSEMBLY (OFA) DESIGN WHICH HAS BEEN IN EXISTENCE FOR ABOUT TEN YEARS

  SLIGHTLY SMALLER FUEL ROD DIAMETER

  ZIRCALOY RATHER THAN INCONEL GRIDS

  ECONOMIC BENEFIT DUE TO BETTER URANIUM UTILIZATION

  INCREASED DNB MARGIN

CHRONOLOGY OF VANTAGE 5 LICENSING EVENTS

*	"Kickoff" Meeting Introducing VANTAGE 5 Design Features to NRC Core Performance Branch	MAY 1983
*	Submittal of "Reference Core Report VANTAGE 5 Fuel Assembly" - WCAP-10444	DEC 1983
*	Startup of full scale IFBA Demo Program in Turkey Point Unit 4, Cy 10	MAY 1984
*	Startup of IFM Grid Demo Program in McGuire Unit 1, Cy 2	JUN 1984
*	Startup of all VANTAGE 5 Features Demo Program in Virgil Summer Cy 2	DEC 1984
*	SER Issued on WCAP-10444	JUL 1985
*	Submittal of UE Callaway VANTAGE 5 Licensing Amendment	MAR 1987
*	SER issued for Callaway VANTAGE 5 Licensing Amendment	OCT 1987
*	Submittal of SCE&G Virgil Summer VANTAGE 5 Amendment	MAY 1988
*	SER Issued for Virgil Summer VANTAGE 5 Licensing Amendment	NOV 1988
*	Submittal of PG&E Diablo Canyon Units 1 and 2 VANTAGE 5 Licensing Amendment	NOV 1988

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✸	Submittal of CP&L Shearon Harris VANTAGE 5 Licensing Amendment	MAR 1989
✸	Issued for PG&E Diablo Canyon Units 1 and 2 VANTAGE 5 Licensing Amendment	MAY 1989
✸	Submittal of Byron/Braidwood VANTAGE 5 Licensing Amendment	AUG 1989
✸	Scheduled NRC SER for CP&L Shearon Harris VANTAGE 5 Licensing Amendment	SEP 1989
✸	Scheduled NRC SER for Byron/Braidwood VANTAGE 5 Licensing Amendment	FEB 1990

COMPARISON OF VANTAGE 5 LICENSING PARAMETERS AND DESIGN FEATURES

Parameter/ Feature	Vogtle		Diablo Canyon 1/2		Virgil Summer		Calloway	
	Cy3	Cy4	Cy3	Cy4	Cy4	Cy5	Cy2	Cy3
Fuel Type	Lopar	Lopar/V5	Lopar	Lopar/V5	Lopar	Lopar/V5	Lopar/OFA	Lopar/OFA/V5
Power	3411	3565	3338/3411	3338/3411	2775	2775	3411	3565
FDH	1.55	1.62/1.65	1.55	1.62/1.65	1.55	1.62/1.68	1.55	1.55/1.55/1.65
FQ	2.30	2.50	2.32	2.45	2.32	2.45	2.32	2.50
PMTC	Yes	Yes	Yes	Yes	No	Yes	No	No
RAOC/FQ Surv	No	Yes	Yes/No	Yes/Yes	No	Yes	No	No
SGTP	0	10%	<1%	15%	6%	15%	10%	10%
Thimble Plug Elim	No	Yes	No	Yes	No	Yes	No	No

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Vogtle Upgraded Licensing Parameters

	Current Licensing Values	Vantage 5 Licensing Value
- Core Thermal Power	3411	3411 MWt
- NSSS Thermal Design Flow per loop	95,700	95,700 gpm
- Core Inlet Temperature	558.9	558.9 F
- Reactor Coolant Pressure	2250	2250 psia
- Steam Generator Plugging Level	0	0%
- Core By-pass Flow	5.8%	8.4% (thimble plugs eliminated)
- Max $F_{\Delta H}$	1.55	1.65 (Vantage 5) 1.62 (Standard)
- Max F_Q	2.30	2.50
- AOC	CAOC	RAOC
- $F_Q K(z)$ Curve	3 Segments	2 segments
- DNB Correlation	W-3	WRB-2, RTDP
- LOCA Large Break	1981 Model	BASH
- LOCA Small Break	WFLASH	NOTRUMP
- Non LOCA	LOFTRAN	LOFTRAN
- Fuel Performance	PAD 3.4	PAD 3.4

CURRENT FUEL AND CORE DESIGN

- 17X17 Standard Westinghouse Fuel
- Cycle 2 Transition to 18-Month Cycles

  3.4 w/o Enrichment Feed Assemblies
- Cycle 3 Designed for High Capacity 18-Month Cycle

  4.3 w/o Enrichment Feed Assemblies
- Low Leakage Loading Pattern (In-In-Out)
- Wet Annular Burnable Absorbers (WABA)
- +7 pcm/°F HZP → 0 pcm/°F HFP MTC Limit

Reconstitutable Top Nozzles

- Extended Burnup Fuel Assembly Design Features

CURRENT FUEL AND CORE DESIGN (CONTINUED)

- 3,411 MW RATED THERMAL POWER
- 1.55 F-DELTA-H LIMIT
- 2.30 F_Q LIMIT
- -40 PCM/°F EOL MTC LCO LIMIT
- SPENT FUEL RACKS BEING LICENSED FOR 4.55 W/O ENRICHMENT

PLANNED CORE DESIGN STRATEGY

- 17X17 VANTAGE-5 WESTINGHOUSE FUEL
- HIGH ENERGY 18-MONTH CYCLES
  95% CF AT UPRATED POWER
  4.5 W/O ENRICHMENT FEED ASSEMBLIES
- LOW LEAKAGE LOADING PATTERN (IN-IN-OUT)
- INTEGRAL FUEL BURNABLE ABSORBERS (IFBA)
- AXIAL BLANKETS
- EXTENDED BURNUP FUEL ASSEMBLY DESIGN FEATURES

PLANNED CORE DESIGN STRATEGY
(CONTINUED)

- 3,565 MW RATED THERMAL POWER
- 1.65 F-DELTA-H LIMIT
- 2.50 F_Q LIMIT
- -50 PCM/°F EOL MTC LCO LIMIT
- POWER UPRATE ANALYSIS LICENSING REQUIRED

FUEL DESIGN CHANGES TO ACCOMMODATE HIGHER BURNUPS

- THINNER TOP AND BOTTOM NOZZLES
- LONGER FUEL RODS (LARGER PLENUM GAS VOLUMES)
- LARGER GAP BETWEEN ROD ENDS AND NOZZLES
- SLIGHTLY LONGER FUEL ASSEMBLY
- VOGTLE-1 CYCLE-3 AND VOGTLE-2 CYCLE-2 RELOADS WILL HAVE HIGH BURNUP FEATURES

THE RELATED TECHNICAL SPECIFICATION CHANGES ANTICIPATED FOR THE VANTAGE 5 UPGRADE FOR VOGTLE

- OVERPOWER DELTA T AND OVERTEMPERATURE DELTA T TRIP
- K(Z) CURVE
- ROD DROP TIMES
- DNBR COORELATION
- F-DELTA-H
- F_Q LIMIT
- AFD LIMITS
- DESIGN FEATURES
- THERMAL DESIGN FLOW

Licensing Submittal

GPC Transmittal Letter to NRC

Attachment 1 Safety Evaluation
Attachment 2 Technical Specification Change Pages
Attachment 3 Significant Hazard Evaluation

4. Non-LOCA Accident Analyses

5. LOCA Accident Analyses

6. Radiological Assessment

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VOGTLE

VANTAGE-5 FUEL CORE LICENSING SCHEDULE

JOINT MEETING WITH NRC TO INTRODUCE VOGTLE VANTAGE-5 TRANSITION LICENSING AMENDMENT.	10/89
GPC ISSUES FINAL LICENSING AMENDMENT REQUEST FOR VOGTLE TO THE NRC.	8/1/90

SCHEDULE OF MAJOR MILESTONES
(CONTINUED)

JOINT NRC/GPC/SCS/W MEETING TO PROVIDE AN OVERVIEW OF SUBMITTAL, TECH SPEC CHANGES, ETC. AND GPC REVIEW NEED AND SCHEDULE.	8/15/90
NRC REQUESTED SER TO GPC ON VOGTLE LICENSING AMENDMENT REQUEST FOR VANTAGE-5 FUEL.	3/15 /91
EARLIEST ESTIMATED CRITICALITY DATE FOR VOGTLE UNIT 1 CYCLE 4.	10/15/91