

October 12, 2006

Mr. James A. Spina, Vice President  
Calvert Cliffs Nuclear Power Plant, Inc.  
Constellation Generation Group, LLC  
1650 Calvert Cliffs Parkway  
Lusby, MD 20657-4702

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2, OPERATOR  
AND SENIOR REACTOR OPERATOR INITIAL EXAMINATION REPORT NO.  
05000317/2006301 AND 05000318/2006301

Dear Mr. Spina:

This report transmits the results of the Reactor Operator (RO) and Senior Reactor Operator (SRO) licensing examination conducted by the NRC during the period of August 28 - September 1, 2006. This examination addressed areas important to public health and safety and was developed and administered using the guidelines of the "Examination Standards for Power Reactors" (NUREG-1021, Revision 9).

Based on the results of the examination, all seven Senior Reactor Operator and all three of the Reactor Operator applicants passed all portions of the examination. The ten applicants included three ROs, four instant SROs and three upgrade SROs. Examination results indicated that the applicants were well prepared for the examination. Mr. Caruso discussed performance insights observed during the examination with training and operations management on September 1, 2006. On September 29, 2006, final examination results, including individual license numbers, were given during a telephone call between Mr. Caruso and Mr. Robert Pace.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). These records include the final examination and are available in ADAMS Package No. ML052200407 (RO and SRO Written - Accession Number ML062750236; RO and SRO Operating Section A - Accession Number ML062750245; RO and SRO Operating Section B - Accession Number ML062750262; and RO and SRO Operating Section C - Accession Number ML062750267). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Mr. James A. Spina

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Should you have any questions regarding this examination, please contact me at (610) 337-5046, or by E-mail at MDS1@NRC.GOV.

Sincerely,

**/RA/**

Marvin D. Sykes, Chief  
Operations Branch  
Division of Reactor Safety

Docket Nos. 050000317/05000318  
License Nos. DPR-53/DPR-69

Enclosure: Initial Examination Report No. 05000317/2006301 and 05000318/2006301

cc w/encl:

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Mr. James A. Spina

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<b>NAME</b>	CJBixler/CJB		JCaruso/JGC		MDSykes/MDS			
<b>DATE</b>	10/12/06		10/12/06		10/12/06			

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 05000317/05000318

License No: DPR-53/DPR-69

Report No: 05000317/2006301 and 05000318/2006301

Licensee: Constellation Energy Generation Group, LLC

Facility: Calvert Cliffs Nuclear Power Plant, Units 1 & 2

Dates: August 25, 2006 (Written Examination Administration)  
August 28 - September 1, 2006 (Operating Test Administration)  
September 13, 2006 (Facility Grading Complete)  
September 5-29, 2006 (Examination Grading)

Examiners: John Caruso, Senior Operations Engineer (Chief Examiner)  
Brian Haagensen, Operations Engineer  
Peter Presby, Operations Engineer  
Joseph Sullivan, Operations Engineer (under instruction)  
Marvin D. Sykes, Chief, Operations Branch (auditor)

Approved by: Marvin D. Sykes, Chief  
Operations Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

IR 05000317& 318/2006-301; August 25 - September 29, 2006; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Initial Operator Licensing Examination. Ten of ten applicants passed the examination (three reactor operators, four SRO instants, and three SRO upgrades).

The written examinations were administered by the facility and the operating tests were administered by three NRC region-based examiners. There were no inspection findings of significance associated with the examinations.

## Report Details

### 1. REACTOR SAFETY

#### Mitigating Systems - Reactor Operator (RO) and Senior Reactor Operator (SRO) Initial License Examination

##### a. Scope of Review

The NRC examination team developed the written and operating initial examinations and together with Calvert Cliffs Nuclear Power Plant, Units 1 and 2 training and operations personnel verified or ensured, as applicable, the following:

- The examination was prepared and developed in accordance with the guidelines of Revision 9 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." A review was conducted both in the Region I office and at the Calvert Cliffs Nuclear Power Plant, Units 1 and 2 plant and training facility. Final resolution of comments and incorporation of test revisions were conducted before, during and following the onsite preparation week.
- Simulation facility operation was proper.
- A test item analysis was completed on the written examination for feedback into the systems approach to training program.
- Examination security requirements were met.

The NRC examiners administered the operating portion of the examination to all applicants from August 28 - September 1, 2006. The written examination was previously administered by the Calvert Cliffs Nuclear Power Plant training staff on August 25, 2006.

##### b. Findings

#### Grading and Results

All ten applicants (seven SROs and three ROs) passed all portions of the initial licensing examination.

The facility had no post exam comments.

#### Examination Administration and Performance

The examination team's observations regarding administration and performance are listed in Attachment 2 of this report. These observations may indicate potential weaknesses in training, procedures, simulator performance, and plant labeling. These observations are not more than minor and therefore are not inspection findings.

Enclosure

40A6 Exit Meeting Summary

On September 29, 2006, the NRC provided conclusions and examination results to Calvert Cliffs Nuclear Power Plant, Units 1 and 2 management representatives via telephone. License numbers for all ten applicants were also provided during this time.

The NRC expressed appreciation for the cooperation and assistance that was provided during the preparation and administration of the examination by the licensee's training staff.

ATTACHMENTS:

1. Supplemental Information
2. Exam Observations

**ATTACHMENT 1**

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

LICENSEE

Bob Pace	General Supervisor, Nuclear Plant Operations
Ken Allor	Supervisor, Initial License Training
Nick Lavato	Supervisor, Requalification Training (Lead Exam Team Contact)
Mike Wasem	Instructor / Written Exam Developer (Exam Team Contact)
Al Kelly	Simulator Operator and Exam Reviewer

NRC

John Caruso	Senior Operations Engineer
Brain Haagensen	Operations Engineer
Peter Presby	Operations Engineer
Joseph Sullivan	Operations Engineer
Marvin Sykes	Chief, Operations Branch

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

<u>ITEM NUMBER</u>	<u>TYPE</u>	<u>DESCRIPTION</u>
NONE		

**ATTACHMENT 2 - EXAM TEAM OBSERVATIONS**

This attachment is being used to report observations. These observations are not more than minor and therefore are not inspection findings. The observations are arranged by general topic area in the following tables and the status columns for each table provide the licensee's response:

- Table I: Exam Observations - Potential Training Weaknesses  
 Table II: Procedure Observations  
 Table III: Simulator Observations  
 Table IV: Plant Label Observations

<b>TABLE I: EXAM OBSERVATIONS - POTENTIAL TRAINING WEAKNESSES</b>		<b><i>Entered in CAP IRE-017-345</i></b>
<b>#</b>	<b>DESCRIPTION</b>	<b>STATUS</b>
1	JPM-7, NI Cal: Several applicants exhibited a lack of knowledge about how to reset variable overpower trip from reactor protection system (RPS) panels.	Reviewed with applicants and added to RPS Lesson Plan (LP).
2	JPM-12, Lowering Refuel Pool Level: Applicants unfamiliar with fuel handling machine operations, including un-grappling operations.	Covered during refueling refresher training for selected Fuel Handling Supervisors.
3	Scenario 1, Tcold Instrument Failure: Applicants unfamiliar with features and display information on post accident monitor (PAM) flat panel displays. Confusion over fault indications. Difficulty diagnosing which particular instrument had failed.	Post exam training included a PAMs review. LP upgraded.

## ATTACHMENT 2 - EXAM TEAM OBSERVATIONS

TABLE I: EXAM OBSERVATIONS - POTENTIAL TRAINING WEAKNESSES		<i>Entered in CAP IRE-017-345</i>
#	DESCRIPTION	STATUS
4	JPM-10, Motor Control Center Cross-Tie: All applicants performed kirk-key operation at MCC-214 without following PR-1-103 procedure usage guidelines. Applicants did not comply with requirements for deviating from procedures.	Reviewed with applicants. Deviation requirements are a focus of General Supervisor-Nuclear Operations & Licensed Operator Requalification.

TABLE II: PROCEDURE OBSERVATIONS			<i>Entered in CAP IRE-017-341</i>
PROC	PROCEDURE TITLE	DESCRIPTION	STATUS
AOP-1A	Inadvertent Boron Dilution	Several alternate boration path attachments direct the start of ALL charging pumps. This could result in excessive boration.	RPA-2006-1259 accepted.
AOP-3B	Abnormal Shutdown Cooling Conditions	Step IV.C.5.m. directs the operator to shift FIC-306 to auto without matching set point, leading to CS pump run-out. Also, no warning about flow limitations.	RPA-2006-1260 accepted.
AOP-3G	Malfunction of Main Feedwater System	Step VI.B.7 prioritizes starting 11 or 12 AFW (auxiliary feed water) pumps, and provides alternative action to start 13 AFW pump, rather than giving the operator the option to start any desired AFW pump.	RPA-2006-1262 accepted.

## ATTACHMENT 2 - EXAM TEAM OBSERVATIONS

TABLE II: PROCEDURE OBSERVATIONS		<i>Entered in CAP IRE-017-341</i>	
PROC	PROCEDURE TITLE	DESCRIPTION	STATUS
AOP-6E	Loss of Refueling Pool Level	Step IV.A.2.c allows for un-grappling but does not provide necessary instructions for performing the evolution.	Selected fuel handling supervisors are trained pre-outage.
EOP-5	Loss of Coolant Accident	Step IV.AE.2 for balancing core flush flow is not clear.	RPA-2006-1261 accepted.
EOP-7	Station Blackout	Step IV.R.1.b.(2) refers to "bottom key" on interlock on MCC-214. The keys are side-by-side. Procedure not changed when breaker modified.	Revised by Change 1 to EOP-7.
EOP Attachment	EOP Attachment	Observed problems with use of Attachment 1, Page 2 for determining pressure below min pump operating press during a steam generator tube rupture scenario. This may create an error-likely situation, given graph resolution and proximity of the min pressure line to saturation conditions.	Post exam training covered use of pumps curves and monitoring techniques.

## ATTACHMENT 2 - EXAM TEAM OBSERVATIONS

TABLE III: SIMULATOR OBSERVATIONS		Entered in CAP IRE-017-344
#	DESCRIPTION	STATUS
	<p style="text-align: center;"><b>NOTE</b></p> <p><i>The simulator observations in this table do not constitute audit or inspection findings and, without further verification and review, are not indicative of noncompliance with 10 CFR 55.46. These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these simulator observations.</i></p> <p><i>Item #1 occurred in a scenario during exam administration, but did not adversely impact the examination. Items 2 through 14 were observed during scenario validation prior to the exam.</i></p>	
1	Mk VI turbine control communication lost after snapping initial conditions (IC) with the simulator in RUN.	MO#8200600028
2	Malfunction MS013 (Turbine Bypass Valve Controller Failure) does not provide expected valve response following a Loss of Offsite Power (LOOP), because malfunction has precedence over LOOP. Modified scenario to have malfunction removed prior to LOOP to obtain proper response.	DR on 07/27/06
3	Shutdown cooling (SDC) temperature elements TE-351X and TE-351Y on Control Board 1C09 recorder and on plant computer do not respond to changing conditions when aligned for SDC using a containment spray pump. Modified a JPM to work around this problem.	DR on 08/27/06 MO#8200600065
4	Containment humidity responds immediately to 10 gpm safety injection tank leak of water that is at containment ambient temperature. Not realistic, but not expected to affect exam.	DR on 08/08/06
5	OFF light for Control Element Drive System (CEDS) does not go OFF when MANUAL SEQUENTIAL is selected.	DR on 08/03/06

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TABLE III: SIMULATOR OBSERVATIONS		<i>Entered in CAP IRE-017-344</i>
#	DESCRIPTION	STATUS
6	CEA Motion Inhibit (CMI) Bypass light for CEDS does not come ON when CMI Bypass depressed.	DR on 08/03/06
7	13 Condensate Pump stopped without operator action or simulator operator intervention. Did not receive motor overload annunciator associated with pump trip from malfunction initiation. Possible hardware issue with motor handswitch 1-HS-4428 on Control Board 1C03.	DR on 08/03/06
8	Tavg – Tref tracking differently between Ch X and Ch Y on Control Board 1C05 recorders.	DR on 08/03/06
9	Pressurizer Low Range Pressure Indicator PI-103 on Control Panel 1C06 indicated 507 psi. Post Accident Monitoring (PAM) displayed 724 psi. Possible Yokogawa problem.	DR on 08/03/06
10	Sync scope on Control Panel 1C18B out of calibration. Could not use to establish synchronized conditions for paralleling a diesel generator to a 4 KV bus.	DR open since 2004. Simulator operator adjusted sync scopes just prior to the exam.
11	PAM flat panel display not updating. Displaying straight-lining parameters when the input parameters are changing. Communication issue between PAM and simulator models.	Simulator operator verified proper communication between device and simulator just before exam.
12	Mk VI digital turbine control system not communicating with simulation.	Simulator operator verified proper communication between device and simulator just before exam.

## ATTACHMENT 2 - EXAM TEAM OBSERVATIONS

TABLE III: SIMULATOR OBSERVATIONS		<i>Entered in CAP IRE-017-344</i>
#	DESCRIPTION	STATUS
13	Numerous panel lights out for switches and annunciators.	Simulator staff ran readiness test just before exam.
14	Unable to save simulator exam setup before exam without compromising exam security. This sets up an error-likely situation for exam administration. Cannot assure validated simulator response will be accurately reproduced on the exam. Situation is result of the recent Mk VI mods which eliminated capability of maintaining separate training and examination loads.	Simulator staff verified and saved simulator exam setup just before exam. CRE-016-254

TABLE IV: PLANT LABEL OBSERVATIONS		<i>Entered in CAP IRE-017-340</i>
#	DESCRIPTION	STATUS
1	Sign on Unit 2 air compressor fire hose connection hanging by one of two wire supports.	Fixed
2	Sign on fire jockey pump control (U1 TB NE) designates the handswitch with a "D" instead of a "0".	Fixed