

March 4, 2004

Dr. Barry M. Klein  
Vice Chancellor for Research  
Acting Director, Davis McClellan Nuclear Radiation Center  
One Shields Avenue  
Davis, California 95616-8671

SUBJECT: NRC SPECIAL INSPECTION REPORT NO. 50-607/2003-202

Dear Dr. Klein:

This refers to the special inspection conducted on January 13 - 15, 2004, at the University of California, Davis Nuclear Radiation Center. The inspection included a review of the selected reactor operational routine activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. Based on the results of this inspection, one Non-Cited Violation (NCV) of Technical Specification (TS) 6.1.4 requirements was identified. Specifically, the training and experience of the person filling the new Operations Manager position, approved by TS Amendment No. 6 in November 2003, did not satisfy the training and experience requirements in TS 6.1.4. The details regarding this matter can be found in Section 1 of the attached report. This was a non-repetitive, promptly corrected violation and is being treated as an NCV in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), NUREG 1600. The current Enforcement Policy is included on the NRC's Web site at [www.nrc.gov](http://www.nrc.gov); select **What We Do, Enforcement**, then **Enforcement Policy**. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this letter with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC, 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, without 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). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>.

Dr. Barry M. Klein

-2-

Should you have any questions concerning this inspection, please contact Mr. Thomas Dragoun in King of Prussia, Pennsylvania at 610-337-5373.

Sincerely,

*/RA/*

Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No. 50-607  
License No. R-130

Enclosure: NRC Inspection Report No. 50-607/2003-202

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University of California - Davis/McClellan MNRC

Docket No. 50-607

cc:

Test, Research, and Training  
Reactor Newsletter  
University of Florida  
202 Nuclear Sciences Center  
Gainesville, FL 32611

Dr. Barry M. Klein

-2- March 4, 2004

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U. S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No: 50-607

Report No: 50-607/2003-202

Licensee: University of California, Davis

Facility: McClellan Nuclear Radiation Center

Location: McClellan Park  
Sacramento, California

Dates: January 13 -15, 2004

Inspector: Thomas F. Dragoun

Approved by: Patrick M. Madden, Section Chief  
Research and Test Reactors Section  
New, Research and Test Reactors Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

University of California, Davis  
Report No: 50-607/2003-202

The focus of this special announced inspection was the on-site review of selected aspects of the licensee's Class 1 research reactor operations program. The routine operations program elements reviewed included organization and staffing, reviews and audits, surveillances, and the reactor operator requalification program.

### Organization and Staffing

The licensee will remove the recently added Operations Manager position from the Technical Specification to correct a Non-Cited Violation. The remainder of the licensee's organization and staffing remain in compliance with the requirements specified in the Technical Specification Section 6.

### Reviews and Audits

The oversight and audit of the safety programs by the NSC satisfied Technical Specification requirements.

### Surveillances

The performance of surveillances on safety related equipment satisfied Technical Specification requirements.

### Operator Requalification

Operator requalification was conducted as required by the Requalification Program.

## REPORT DETAILS

### **Summary of Plant Status**

The licensee's two megawatt custom designed TRIGA research reactor was operated 16 hours (2 shifts) per day, 5 days per week, in support of neutron radiography, medical isotope production, neutron tomography, experimental sample irradiation, and reactor operator training.

### **1. Organization and Staffing**

#### a. Inspection Scope (Inspection Procedure [IP] 39745)

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Technical Specification (TS) Section 6.1.3 and 6.1.4, Amendment No. 6, dated November 25, 2003, were being met:

- organizational structure
- management responsibilities
- staffing requirements for safe operation of the research reactor facility
- staff qualifications

#### b. Observations and Findings

The facility Director left about one month ago, in mid-December 2003. The University administration indicated that several highly qualified personnel have expressed interest in the position. A replacement was expected to be named soon. The Vice Chancellor for Research was the Acting Director for the interim.

The inspector attended the daily operations meeting and daily Plan of the Day meeting. Both meetings were lead by the Operations Manager. In subsequent reviews of the qualifications of the staff, the inspector determined that the Operations Manager's training and experience did not meet the requirements in ANS 15.4 as required by TS 6.1.4. He has occupied the position for a few months. The Operations Manager position was added to the facility organization as requested by the licensee and approved by the NRC in November 2003.

When informed that the TS had been violated, the licensee indicated that the intent of this new position was to provide coordination between the users and clients of the reactor and the reactor operations group. The university administration had clearly advised the incumbent that he had no authority in regards to reactor safety or radiation safety programs, which remained the sole responsibility of the Reactor Supervisor and the Health Physics Supervisor. Interviews with the staff confirmed this arrangement.

The inspector stated that the generally accepted interpretation of TS organization structures is that positions depicted in the organization chart have

reactor or radiation safety program responsibility. To fulfill that responsibility, specific training and experience is required. A discussion of this interpretation is found in guidance documents ANSI/ANS-15.1, ANSI/ANS-15.4, and NUREG-1537.

On being notified of this apparent violation, the Vice Chancellor for Research took immediate actions described in a January 15, 2004, letter, (ADAMS Accession No. ML040570840) from B. Klein (UCD) to T. Dragoun (NRC). This included discussions with the staff confirming their understanding of safety responsibilities and initiating the formal process of removing the Operations Manager position from the TS organization chart.

Based on the non-repetative nature of the apparent violation and immediate corrective action by management to resolve the matter permanently and effectively, this finding is classified as a Non-Cited Violation in accordance with the NRC Enforcement Policy. Completion of the corrective action will be reviewed in a future inspection (NCV 50-607/2003-202-01).

Some staff expressed a concern that the staffing level was becoming marginal to support a two-shift operation. This concern was echoed by the Nuclear Safety Committee (NSC) in a July 2003 audit and during the annual meeting in October 2003. Facility management was aware of the concerns. The inspector noted that staffing was marginal but acceptable.

c. Conclusions

The recently added Operations Manager position will be removed from the TS. The remainder of the licensee's organization and staffing remain in compliance with the requirements specified in the TS Section 6.

**2. Review and Audit Functions**

a. Inspection Scope (IP 40745)

The inspector reviewed selected aspects of:

- Nuclear Safety Committee minutes for March 28, 2003 and October 3, 2003
- 2003 Annual Audit completed July 14, 2003
- responses to safety reviews and audits
- review and audit personnel qualifications
- Charter of the Nuclear Safety Committee, revision 5, dated December 1998

b. Observations and Findings

Composition and qualifications of NSC members were as specified in TS 6.2.1. Minutes of meeting demonstrated that the committee met semiannually as

required by TS 6.2.2 and provided the reviews and oversight specified in TS 6.2.3. The committee chair retired on January 1, 2004, but agreed to continue until a replacement was identified.

The annual audit by the committee was very thorough and reviewed all safety activities. There were 13 recommendations and follow up on these items was timely and acceptable. The major item of concern expressed by the committee was the critical staffing level.

c. Conclusions

The oversight and audit of the safety programs by the NSC satisfied Technical Specification requirements.

**3. Surveillance**

a. Inspection Scope (IP 61745)

The inspector reviewed selected aspects of:

- Document 007, Preventative Maintenance/Surveillance Schedule
- Work Order 03-0494 for system 5330, completed on September 24, 2003 with resultant data stored in a computer file for the work order.
- Work Order 03-0485 for system 5140, completed September 22, 2003 with calculations and data stored in a computer file and verified by hand calculation.
- Work Orders 03-0512 completed September 4, 2003, and 03-0074 completed February 3, 2003, regarding semiannual measurement of rod drop times. Technique found acceptable. Data not reviewed by inspector.

b. Observations and Findings

The licensee's work schedules do not distinguish between routine, periodic maintenance and performance of surveillances in the TS. Schedules are projected out for a year in advance with most work done on Mondays during a scheduled reactor shut down. Reactor equipment was categorized by the numeric designator "system" to which it belongs. Each "system" was assigned to a systems expert/lead engineer who is responsible for performing the work and recording the results in the computerized tracking system. The inspector verified that TSs 4.1.1 and 4.2.1 were completed on schedule and generally accepted test protocol was followed. Test results were acceptable. A review of the computerized schedule indicates that surveillances were completed in accordance with TS requirements.

c. Conclusions

The performance of surveillances on safety related equipment satisfied Technical Specification requirements.

#### **4. Operator Requalification**

##### a. Inspection Scope (IP 69003)

The inspector reviewed selected aspects of:

- Document No. MNRC-0009-DOC-04, "Selection and Training Plan for Reactor Personnel" Revision 4, dated October 1999, Section 4.0, "Requalification and Relicensing Program"
- Requalification Schedule for 2004
- active operator licenses
- operator training, written examination, and physical evaluation records for January 2002 to January 2004
- operator active duty status

##### b. Observations and Findings

Operator license issue dates and progress in the requalification program for 3 operators was reviewed in detail and found to meet program requirements. Training material used in 12 instruction classes was reviewed and found satisfactory. Records showed that written exams administered after training lectures and biennial written and operating examinations of the operators were conducted as required. Content of the examinations was technically challenging. Monthly logs and personnel records showed that operators performed licensed activities and reactor manipulations at the periodicity and for the duration required by the program to maintain active duty status. The inspector noted that the renewal by the NRC of the 6-year operating licenses for all operators comes due in 2004.

##### c. Conclusions

Operator requalification was conducted as required by the Requalification Program.

#### **5 Exit Interview**

The inspection scope and results were summarized on January 15, 2004, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

J. Ching	Health Physics Supervisor
K. Kiger	Reactor Supervisor
B. Klein	Vice Chancellor for Research
Nathan	Operations Manager

## INSPECTION PROCEDURE USED

IP 39745	CLASS I	NON-POWER REACTORS ORGANIZATION AND OPERATIONS AND MAINTENANCE ACTIVITIES
IP 40745	CLASS I	NON-POWER REACTOR REVIEW AND AUDIT AND DESIGN CHANGE FUNCTIONS
IP 61745	CLASS I	NON-POWER REACTOR SURVEILLANCE
IP 69003	CLASS I	NON-POWER REACTOR OPERATOR LICENSES, REQUALIFICATION, AND MEDICAL ACTIVITIES

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

NCV 50-607/2003-202-01	IFI	Remove Operations Manager from TS organization
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### Closed

none

### Discussed

none

## PARTIAL LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
IP	inspection procedure
MNRC	McClellan Nuclear Radiation Center
NRC	Nuclear Regulatory Commission
SAIC	Science Applications International Corporation
TS	Technical Specifications
UCD	University of California, Davis