

August 23, 2006

Dr. Robert G. Flocchini, Director
UC-Davis McClellan Nuclear Radiation Center
5335 Price Avenue, Building 258
McClellan, CA 95652

SUBJECT: NRC INSPECTION REPORT NO. 50-607/2006-201

Dear Dr. Flocchini:

On July 31 - August 3, 2006, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at your University of California-Davis McClellan Nuclear Radiation Center. The enclosed report documents the inspection results, which were discussed on August 3, 2006, with W. Steingass, Reactor Supervisor, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the NRC's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified.

In accordance with Section 2.390, "Public inspections, exemptions, and requests for withholding," of Title 10 of the Code of Federal Regulations (CFR), a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Craig Bassett at 404-358-6515.

Sincerely,

/RA/

Johnny H. Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-607/2006-201
cc w/enclosure: See next page

University of California - Davis/McClellan MNRC

Docket No. 50-607

cc:

Mr. Jeff Ching
5335 Price Avenue, Bldg. 258
McClellan AFB, CA 95652-2504

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

August 23, 2006

Dr. Robert G. Flocchini, Director
UC-Davis McClellan Nuclear Radiation Center
5335 Price Avenue, Building 258
McClellan, CA 95652

SUBJECT: NRC INSPECTION REPORT NO. 50-607/2006-201

Dear Dr. Flocchini:

On July 31 - August 3, 2006, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at your University of California-Davis McClellan Nuclear Radiation Center. The enclosed report documents the inspection results, which were discussed on August 3, 2006, with W. Steingass, Reactor Supervisor, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the NRC's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified.

In accordance with Section 2.390, "Public inspections, exemptions, and requests for withholding," of Title 10 of the Code of Federal Regulations (CFR), a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Craig Bassett at 404-358-6515

Sincerely,

/RA/

Johnny H. Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

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

Enclosure: NRC Inspection Report No. 50-607/2006-201
cc w/enclosure: See next page

DISTRIBUTION:

PUBLIC	PRTB r/f	AAdams	CBassett
PDoyle	JEads	DHughes	EHylton
PLsaac	CLyon	MMendonca	JQuichocho
WSchuster	MVoth	KWitt	PYoung

DBarss (MS O6-H2) BDavis (Ltr only O5-A4)
NRR enforcement coordinator (Only for IRs with NOVs, O10-H14)
ACCESSION NO.: ML062350244

OFFICE	PRT:RI	PRT:LA	PRT:BC
NAME	CBassett:tls	EHylton:tls*	JEads
DATE	/ /2006	8/23/2006	08/ 23 /2006

OFFICIAL RECORD COPY

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

Docket No: 50-607

Report No: 50-607/2006-201

Licensee: University of California-Davis

Facility: McClellan Nuclear Radiation Center

Location: McClellan Park
Sacramento, California

Dates: July 31 - August 3, 2006

Inspector: Craig Bassett

Approved by: Johnny Eads, Branch Chief
Research and Test Reactors Branch B
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

University of California-Davis
McClellan Nuclear Radiation Center
Report No: 50-607/2006-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the licensee's 2 Megawatt Class I research and test reactor safety programs including: organizational structure and functions, review and audit and design change functions, operator requalification, reactor operations, maintenance and surveillance, fuel handling, experiments, procedural control, and emergency preparedness since the last NRC inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety and in compliance with NRC requirements.

Organizational Structure and Functions

- The organizational structure and staffing was generally consistent with Technical Specification requirements.
- The facility staffing level was under review by the licensee.

Review and Audit and Design Change Functions

- The Nuclear Safety Committee was meeting semiannually and reviewing the topics outlined in the Technical Specifications and conducting audits of facility programs as required.
- The review, evaluation, and documentation of changes to the facility generally satisfied NRC requirements.

Operator Requalification

- Operator requalification was conducted as required by the Requalification Program and the program was being maintained up-to-date.

Reactor Operations

- Reactor operations were conducted in accordance with procedure and the appropriate logs were being maintained.

Maintenance and Surveillance

- The Preventive Maintenance Program was being used to effectively accomplish maintenance and surveillance activities at the facility.

Fuel Handling

- Fuel movements and inspections were conducted in accordance with Technical Specification and procedural requirements.

Experiments

- The program for reviewing and conducting experiments satisfied Technical Specification and procedural requirements.

Procedures

- The procedure revision, control, and implementation program generally satisfied Technical Specifications requirements.

Emergency Preparedness

- The emergency preparedness program was conducted in accordance with the Emergency Plan.
- Emergency response equipment was being maintained and alarms were being tested as required.
- The Memorandum of Understanding between the County of Sacramento and McClellan Park was being maintained and the Memorandum of Understanding between the facility and the University of California-Davis Medical Center had been reestablished.
- Emergency drills were being conducted annually as required by the Emergency Plan.
- Emergency preparedness training for Senior Reactor Operator personnel was being completed through the Requalification Program.

REPORT DETAILS

Summary of Plant Status

The licensee continued to operate their 2 MW research and test reactor in support of neutron radiography, medical isotope production, neutron tomography, experimental sample irradiation, and reactor operator training. During the inspection, the reactor was being operated several hours per day to support laboratory experiments and conduct product irradiation.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69006)

The inspector reviewed the following regarding the University of California-Davis/McClellan Nuclear Radiation Center (UCD/MNRC) organization, staffing, and responsibilities to ensure that the requirements of Technical Specification (TS) Section 6.1, Revision (Rev.) Number (No.) 13, dated November 25, 2003, were being met:

- management responsibilities
- qualifications of facility personnel
- UCD/MNRC organizational structure and staffing
- staffing requirements for safe operation of the research reactor facility
- Facility Procedure UCD/MNRC-0045-DOC-01, "Quality Assurance Program for McClellan Nuclear Radiation Center (MNRC)," Rev. 1, approval dated November 22, 1999
- American Nuclear Society Standard 15.4 - 1988, "Selection and Training of Personnel for Research Reactor"

b. Observations and Findings

During a previous NRC inspection of facility staffing in December 2005, it was noted that the reactor operations staff consisted of 5 licensed Senior Reactor Operators (SROs). This number of operators was down from a total of 32 SROs who had worked at the facility in 2003. During this inspection, the inspector noted that the majority of the SROs also served in other capacities at the facility. Two of the SROs were also qualified radiographers, and because all the former health physics (HP) personnel had left the facility, 1 RO was appointed as the Radiation Safety Officer (RSO). From a review of records and interviews with the staff, the inspector determined that the current staff personnel satisfied the training and experience requirements associated with their positions. In addition, the workload had decreased and the schedule had been reduced to a one shift operation instead of the previous two or three shift operation.

The inspector noted that the Reactor Supervisor had written a Memorandum for personnel at the facility indicating that the RSO was responsible for all HP functions at the MNRC. Also, all the procedures that were formerly performed by HP technicians were to be performed by "knowledgeable individuals." This was meant to include SROs and radiographers who were to perform surveys and instrumentation maintenance on a case by case basis. The inspector indicated that this appeared to

be an adequate interim measure but that more full time personnel, either operations or HP, should be hired to provide the needed support for the operations.

In November 2005, a faculty member who had been the acting UCD/MNRC Facility Director was appointed to the position on a full time basis. During the inspection he reiterated that he would continue his 30 year association with the operation of the on-campus cyclotron (25% time commitment) while focusing the majority of his attention on the reactor facility (75% time commitment). The inspector reviewed the staffing situation with the Facility Director. The director indicated that the staffing situation was being reviewed on a high priority with input from the staff to ensure that safety was not compromised by past staff reductions.

The licensee's organizational chart for the UCD/MNRC indicated that the chain of command included an Operations Manager who would be in charge of reactor operations and to whom the Reactor Supervisor would report. The chart also indicated a staff position of HP Supervisor. Since these two positions were not part of the current organization, the inspector questioned the licensee about this. The licensee indicated that a TS change had been prepared but had not been submitted to date. The licensee was informed that updating and correcting the organizational chart specified in the TS would be followed by the NRC as an Inspector Follow-up Item (IFI) and would be reviewed during a future inspection (IFI 50-607/2006-201-01).

c. Conclusions

The licensee's organization and staffing remain in general compliance with the requirements specified in the TS Section 6. The facility staffing level was under review by the licensee.

2. Review and Audit and Design Change Functions

a. Inspection Scope (IP 69007)

To verify that the required reviews and audits were being completed and that facility changes were reviewed and approved as required by TS Section 6.2, the inspector reviewed selected aspects of:

- 2005 Annual Audit completed September 9, 2005
- Nuclear Safety Committee meeting minutes for June 2004 through the present
- UCD/MNRC "Facility Modification" Notebook containing the "Facility Modification Log" forms
- selected "Facility Modification Installation Authorization Forms" and the associated "Facility Modification Checklist" forms processed during 2004 and 2005
- Facility Procedure UCD/MNRC-0043-DOC-03, "Facility Modification Procedure," Rev. 3, approval dated June 30, 2000
- Facility Procedure UCD/MNRC-0045-DOC-01, "Quality Assurance Program for McClellan Nuclear Radiation Center (MNRC)," Rev. 1, approval dated November 22, 1999

b. Observations and Findings

(1) Review and Audit Functions

Composition of the Nuclear Safety Committee (NSC) and qualifications NSC members were as specified in TS 6.2.1. It was noted that a new committee chair had been appointed in December 2005. Minutes of NSC meetings 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. Through records review the inspector determined that safety reviews were conducted by the NSC or a designated representative. Topics of those reviews were as required by the TS and provided sufficient guidance, direction, and oversight to ensure acceptable use of the reactor.

The annual audit was very thorough and reviewed the activities specified in TS 6.2.4 including various aspects of the reactor facility operations and programs for calendar year 2005. There were 2 recommendations made as a result of the audit. The major item of concern expressed by the committee was the completion of TS changes to be submitted to the NRC.

(2) Design Change Functions

The regulatory requirements stipulated in Section 50.59 of Title 10 of the Code of Federal Regulations, "Changes, tests, and experiments," were implemented at the facility through Facility Procedure UCD/MNRC-0043-DOC-03, "Facility Modification Procedure." The procedure was developed to address activities that affected changes to the facility as described in the Safety Analysis Report (SAR), changes to MNRC procedures, and changes to or development of new tests or experiments not described in the SAR. The procedure adequately incorporated criteria provided by the regulations with additional requirements mandated by local conditions.

The inspector verified that all proposed facility modifications were presented to the Modification Review Committee (MRC) for screening and classification. The MRC classified the modifications (mods) as Class I, Class II, or Class III. Class I mods were those that involved a change to the TS and/or a change to the SAR. Class I mods required approval by the NSC and then were required to be submitted to the NRC for review and approval. Class II mods were those that did not involve a change to the TS but would result in a basic configuration change of the system or equipment described in the SAR. Class II mods were required to be submitted to the NSC for review and approval before implementation. Class III mods were those that did not involve a change to the TS and did not result in a basic configuration change of the system or equipment as described in the SAR. A Class III mod would be one that did not change form, fit, or function of the system under consideration but would require a system design drawing change or would involve replacing parts with like parts (not identical parts) that would require a drawing change. The modification packages were processed through and controlled by the Reactor Supervisor. The packages were required to be reviewed by the Reactor Supervisor, an HP representative, and approved by the

Facility Director. The changes and modifications were subsequently reviewed and approved by the Nuclear Safety Committee.

The inspector reviewed selected "Facility Modification Installation Authorization Forms" and the associated "Facility Modification Checklist" forms processed during 2004 and 2005. The completed forms showed that the proposed mods were acceptably reviewed in accordance with the procedure. It was noted that no 50.59 Evaluations were required to be completed during 2004 or to date in 2005. Also, none of the changes or modifications were determined to constitute a safety question or concern and none required a license or TS amendment.

The inspector noted that many of the recent facility modification packages had not been closed out. The licensee indicated that this was because the mods required a change to specific facility drawings and that work had not been completed. The licensee was informed that the issue of updating facility drawings so that they reflected current plant conditions would be followed by the NRC as an IFI and would be reviewed during a subsequent inspection (IFI 50-607/2006-201-02).

c. Conclusions

The NSC was meeting as required and reviewing the topics outlined in the TS. Audits of various reactor operations and programs were being conducted. The design change program generally satisfied NRC requirements.

3. Operator Requalification

a. Inspection Scope (IP 69003)

The inspector reviewed selected aspects of:

- active operator licenses
- selected operator physical evaluation records for the past four years
- operator active duty status documented on "MNRC Personnel Reactivity Manipulations and Active Duty Performance Record" forms
- Requalification Schedule for 2004-2005 and the subsequent schedule for 2006-2007
- operator training records for 2004 to 2006 documented on "MNRC Training Attendance Forms"
- annual operating tests and written examination records for 2004 through 2006 documented on "UCD/MNRC Reactor Facility Annual Operating Test for Senior Reactor Operators and Reactor Operators" forms and "MNRC Senior Reactor Operator Requalification Written Examination" forms
- Facility Procedure UCD/MNRC-0009-DOC-04, "Selection and Training Plan for Reactor Personnel," Rev. 4, approval dated January 18, 2000

b. Observations and Findings

There were five qualified SROs but currently no Reactor Operators (ROs) on staff at

the facility; two radiographers were listed as being in training. The Requalification Program was maintained up-to-date and SRO licenses were current. MNRC Personnel Reactivity Manipulations and Active Duty Performance Records and logs also showed that operators were maintaining active duty status as required.

A review of the logs and records showed that training was being conducted in accordance with the licensee's requalification and training program. Procedure reviews and examinations had been documented as required. Records of quarterly reactor operations, reactivity manipulations, other operations activities, and Reactor Supervisor activities, as indicated above, were being maintained. Records indicating the completion of the annual operations tests and supervisory observations were also being maintained as required. Biennial written examinations were being completed by the operators as required as well. In addition, the inspector noted that all operators were receiving the biennial medical examinations required by the program.

c. Conclusions

Operator requalification was being completed and being maintained up-to-date as required by the Requalification Program.

4. Reactor Operations

a. Inspection Scope (IP 69006)

To verify that the licensee was operating the reactor and conducting operations in accordance with TS Section 3 and procedural requirements, the inspector reviewed selected portions of the following:

- selected "UCD/MNRC Rounds Logs" for 2005 and 2006
- selected "UCD/MNRC Operations Logs" for 2005 and 2006
- selected "UCD/MNRC Startup Checklist" forms for 2005 and 2005
- selected "UCD/MNRC Shutdown Checklist" forms for 2005 and 2005
- Facility Procedure UCD/MNRC-0016-DOC-11, "UCD/MNRC Operating Instructions" Rev. 11, approval dated January 16, 2002
- Facility Procedure UCD/MNRC-0073-DOC-03, "UCD/MNRC Reactor Control Room Computer Operating Instructions" Rev. 3, approval dated June 27, 2006

b. Observations and Findings

The inspector reviewed selected UCD/MNRC Startup and Shutdown forms and Operations Log dating from October 2005 through the date of this inspection. The operating logs were complete and provided an acceptable indication of operational activities. The logs showed that operational conditions and parameters were consistent with license and TS requirements and that TS operational limits had not been exceeded. The licensee's Annual Report documented the abnormal events that had occurred during the year.

The inspector observed facility activities on various occasions during the week including routine reactor operations and the handling of items to be radiographed. The operations and item handling were conducted in accordance with the applicable procedures and the actions were documented in the required logs. The inspector was also able to observe a reactor startup and shutdown on two separate days during the inspection. The operations were completed according to procedure and the appropriate checklists and logs were filled out as well.

c. Conclusions

UCD/MNRC reactor operations were conducted in accordance with procedure and the appropriate logs were being maintained.

5. Maintenance and Surveillance

a. Inspection Scope (IP 69006, 69010)

To verify that the licensee was meeting the requirements of their Preventive Maintenance Program and complying with TS Sections 2, 3, 4, and 5, the inspector reviewed selected aspects of:

- Danger/Caution Tag Issue Forms and log
- UCD/MNRC "Preventive Maintenance Schedule for the Month of August"
- entries in the Preventive Maintenance database denoting equipment history
- Preventive Maintenance Program database maintained on the Control Room computer
- "McClellan Nuclear Radiation Center Preventive Maintenance System - Twelve Month Schedule" for the period from July 2006 through June 2007
- selected "MNRC Work Order" forms documenting various completed and pending maintenance tasks
- Facility Procedure UCD/MNRC-0007-DOC-05, "Maintenance Procedures," Rev. 5, approval dated November 23, 2005
- Facility Procedure UCD/MNRC-0030-DOC-04, "MNRC Tag-Out Procedure," Rev. 4, approval dated May 1, 2000
- Operation and Maintenance Manual (OMM) procedures including:
 - Facility Procedure UCD/MNRC-0012-OMM-5110-05, "Primary Cooling System," Rev. 5, approval dated November 12, 1999
 - Facility Procedure UCD/MNRC-0013-OMM-5140-04, "Control Rod Drives," Rev. 4, approval dated November 3, 2000
 - Facility Procedure UCD/MNRC-0022-OMM-5150-01, "Core Structure," Rev. 1, approval dated August 5, 1997
 - Facility Procedure UCD/MNRC-0025-OMM-5360-01, "Uninterruptible Power Supply," Rev. 1, approval dated April 14, 1997
 - Facility Procedure UCD/MNRC-0038-OMM-5330-00, "Nuclear Instrumentation," Rev. 0, approval dated March 4, 1991
 - Facility Procedure UCD/MNRC-0063-OMM-5340-00, "Reactor Protection System," Rev. 0, approval dated October 7, 1997

- Facility Procedure UCD/MNRC-0071-OMM-5160-00, "Emergency Core Cooling System," Rev. 0, approval dated June 29, 1998

b. Observations and Findings

The inspector reviewed the Preventive Maintenance Program that the licensee had developed to handle maintenance activities. The program was maintained on an EXCEL database system and was designed to ensure that all maintenance activities were planned and completed as scheduled. It was used to ensure that post maintenance testing was conducted and that the entire process was documented appropriately. The database was also setup to enable the licensee to maintain equipment histories for the various systems, components, and instruments in the program. The inspector noted that periodic surveillance activities were scheduled through this program as well. The program was setup to establish a work schedule for facility personnel. Weekly, monthly, or annual schedules were available as needed. The work schedules listed all the maintenance and surveillance activities that needed to be completed during the specified time interval.

The weekly/monthly work schedules were designed to generate MNRC Work Orders (MWOs) that were used to complete the maintenance and/or surveillance items. Most work was completed on Mondays during the routine scheduled reactor shutdown. It was noted that the MWOs were assigned to a lead SRO who was responsible to ensure that the work was performed and the results were recorded on the MWO. The data from each MWO was typically entered into the computerized tracking system by the Facility Supervisor. The inspector reviewed selected data recorded in the database and on the MWOs for various TS required surveillances. The records indicated that the verifications and calibrations had been completed on schedule and in accordance with licensee procedures. The results reviewed by the inspector were noted to be within the TS and procedurally prescribed parameters.

c. Conclusions

The Preventive Maintenance Program was being used by the licensee to effectively accomplish maintenance and surveillance activities at the facility.

6. Fuel Handling

a. Inspection Scope (IP 69009)

To ensure that the licensee was following the requirements of TS Sections 3.2.4, 4.2.4, and 5.3, the inspector reviewed selected aspects of the following:

- UCD/MNRC Fuel Transfer Forms
- UCD/MNRC Fuel Measurements Notebook
- UCD/MNRC Present Element Location forms
- UCD/MNRC Fuel Measurements Data Notebook
- UCD/MNRC Fuel Element Tracking Information Log Sheets
- Core and Storage Boards located in the Control Room and in the Reactor Room

- selected Fuel Inspection Sheets for 2004 and 2005 to date
- Visual Inspection forms completed for fuel elements inspected in 2004 and 2005
- selected Fuel Movement Sheets - developed prior to fuel movements that were typically completed on the weekly scheduled Maintenance Day
- Facility Procedure UCD/MNRC-0011-OMM-5240-05, "Fuel," Rev. 5, approval dated April 19, 2001
- Facility Procedure UCD/MNRC-0019-OMM-5220-03, "Fuel Handling Tools," Rev. 3, approval dated June 14, 1999

b. Observations and Findings

The inspector reviewed the fuel movement process and verified that fuel was moved according to established procedure and in conjunction with the specific fuel movement sheets developed by an SRO for each core loading. The inspector reviewed fuel movement sheets for 2005. They had been developed and used for fuel "shuffle" or core rearrangement to gain more reactivity, rearrangement of fuel storage, and for transferring new, unirradiated fuel from storage to the core. The inspector also compared the location of fuel elements in the reactor core with the information maintained on the Fuel Status Board in the Control Room and on the fuel movement sheet for the latest core, the Mixed "J" Core, dated October 25, 2005. No problems were noted.

The inspector also reviewed selected fuel inspection sheets that had been completed for 2005 and to-date in 2006. The inspections were completed in compliance with TS Section 3.2.4. The licensee indicated that various anomalies on certain fuel elements had been noted in the past and these elements were removed from service.

c. Conclusions

Fuel movements and inspections were conducted in accordance with TS and procedural requirements.

7. Experiments

a. Inspection Scope (IP 69005)

The inspector reviewed selected aspects of the following to verify compliance with TS Sections 3.8, 4.8, and 6.5:

- Facility Use Authorizations Forms
- UCD/MNRC Irradiation Request Forms
- UCD/MNRC Experiment Request Forms
- UCD/MNRC Irradiation Summary Forms
- UCD/MNRC Experimenter Certification Forms
- listing of current experiments and authorized users
- UCD/MNRC Experimenter Approval Request Forms
- Amendment for an Approved UCD/MNRC Experiment Forms
- UCD/MNRC Irradiation Request Forms for Silicon Ingot Doping

- Facility Procedure UCD/MNRC-0027-DOC-07, "Utilization of the University of California-Davis/McClellan Nuclear Radiation Center Research Reactor Facility," Rev. 7, approval dated January 18, 2000
- Facility Procedure UCD/MNRC-0033-DOC-05, "University of California-Davis/McClellan Nuclear Radiation Center Research Reactor Facility Experiment Review and Authorization Process," Rev. 5, approval dated July 2, 2003

b. Observations and Findings

The majority of the experiments conducted at the facility had been approved several years ago. All new experiments were required to be evaluated and reviewed by the Experiment Review Board (ERB) using the process stipulated in Facility Procedure UCD/MNRC-0027-DOC-07, "Utilization of the University of California-Davis/McClellan Nuclear Radiation Center Research Reactor Facility." The procedure required an approved experimenter, proposing a new experiment, to evaluate the irradiation of the target material. This was to verify that, if performed within the limitations stated in the safety analysis, the irradiation experiment would remain within the TS limits for experiments. The evaluation included a safety analysis which consisted of a review of various operational, radiological, and safety considerations. The proposed experiment then had to be reviewed by the Experiment Coordinator and by the ERB (as noted above), and finally approved by the MNRC Facility Director. All new experiments were required to be reviewed by the NSC as well.

The inspector reviewed various of the most recent experiments that had been submitted. The evaluation/safety analysis for each had been performed and the reviews and approvals completed. The experiments were conducted under the cognizance of the Reactor Supervisor and the SRO, and in accordance with TS requirements (e.g., reactivity limitations).

c. Conclusions

The program for reviewing and conducting experiments satisfied TS and procedural requirements.

8. Procedures

a. Inspection Scope (IP 69008)

To verify compliance with TS Section 6.4, the inspector reviewed selected portions of the following:

- "MNRC Document List"
- "Document Review" forms completed by staff members
- "UCD/MNRC Controlled Document Review and Approval Reference List"
- Various memoranda from the Reactor Supervisor to the staff indicating document review assignments and responsibilities
- Facility Procedure UCD/MNRC-0005-DOC, "Document Control Plan," Rev. 7, approval dated August 28, 2003

b. Observations and Findings

Technical Specification Section 6.4 required that procedures be prepared and approved for the activities listed in that section. The procedures were required to be approved by the UCD/MNRC Director. The UCD/MNRC staff was required to perform a periodic review of the procedures to assure that they were current. Changes to the procedures required the approval of the UCD/MNRC Director and all changes were required to be documented. The inspector noted that the UCD/MNRC procedures had been approved by the Director and that changes had also been approved as well.

The inspector noted that Facility Procedure UCD/MNRC-0005-DOC, "Document Control Plan," indicated that operational procedures were to be reviewed annually and that maintenance procedures were to be reviewed biennially. These reviews were discussed with the licensee. It was noted that some of the procedural reviews were still pending. The licensee was informed that the issuance of completing the procedural reviews would be followed by the NRC as an IFI and would be reviewed during a future inspection (IFI 50-607/2006-201-03).

c. Conclusions

The current procedure review, revision, control, and implementation program generally satisfied TS requirements.

9. Emergency Preparedness

a. Inspection Scope (IP 69011)

The inspector reviewed selected aspects of the following to verify compliance with the Emergency Plan for the University of California Research Reactor Facility, Rev. 14, dated October 31, 2005:

- assistance to be provided by offsite support groups
- 2004 and 2005 emergency drill documentation and critiques
- Letter of Agreement with the City of Sacramento dated October 21, 2005
- Annual Review of the Emergency Plan Implementing Procedures for 2004 conducted by the Reactor Manager
- Annual Review of the Emergency Plan Implementing Procedures for 2004 conducted by Facility Emergency Organization personnel
- Facility Procedure UCD/MNRC-0001-DOC-08, "Emergency Plan for the McClellan Nuclear Radiation Center (MNRC) TRIGA Facility," Rev. 8, approval dated June 1, 2006
- Facility Procedure UCD/MNRC-0018-DOC-06, "University of California-Davis/McClellan Nuclear Radiation Center Emergency Procedures," Rev. 6, approval dated May 9, 2003
- Facility Procedure UCD/MNRC-0078-DOC-02, "UCD/MNRC Emergency Procedures for Emergency Response Personnel - Class 0 Emergency - Personnel and Operation Events," Rev. 2, approval dated October 27, 2005

- Facility Procedure UCD/MNRC-0079-DOC-02, "UCD/MNRC Emergency Procedures for Emergency Response Personnel - Class I Emergency - Notification of Unusual Events," Rev. 2, approval dated October 27, 2005
- Facility Procedure UCD/MNRC-0080-DOC-02, "UCD/MNRC Emergency Procedures for Emergency Response Personnel - Class II Emergency - Alert," Rev. 2, approval dated October 27, 2005

b. Observations and Findings

The inspector reviewed the Emergency Plan (E-Plan) in use at the reactor and verified that the E-Plan was reviewed biennially as required. The UCD/MNRC Emergency Procedures were reviewed and revised as needed to ensure effective implementation of the E-Plan.

Through records review and interviews with SRO personnel (e.g., emergency responders), the inspector determined that they were knowledgeable of the proper actions to take in case of an emergency. Training for these individuals had been conducted annually through the Requalification Program and documented acceptably.

The inspector verified that the Memorandum of Understanding (MOU) between the County of Sacramento and McClellan Park remained in effect. The agreement verified that the Sacramento Metropolitan Fire District (SMFD) would provide support for the facility and would be available during an emergency. The MOU between the UCD/MNRC facility and UC Davis Medical Center had been reestablished and was also in effect. Communications capabilities with support groups were acceptable and the equipment (e.g., telephones) was in use daily. Emergency Call Lists had been revised and updated as needed and were available in the Control Room and in the various Emergency Cache Kits as required. The inspector also verified that emergency equipment was being inventoried semiannually as required.

The documentation of the drills conducted during the past two years was reviewed. Emergency preparedness and response training was being completed typically just prior to the drills during the meetings held to prepare for the drills. Through drill scenario and record reviews, off-site emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. Emergency drills had been conducted annually as required by the E-Plan. Critiques were written following the drills to document the strengths and weaknesses identified during the exercise. Action items were developed to correct the problems identified.

The inspector visited the SMFD, Station No. 7, met with the Battalion Chief and the crew on duty there, and observed the equipment at the station. The inspector determined that there were adequate supplies and equipment available at the station to handle a fire emergency at the facility. Through talking with the Battalion Chief, the inspector noted that FD representatives were very knowledgeable of their duties and responsibilities with respect to the MNRC. There appeared to be a good working relationship between the licensee and this support group.

c. Conclusions

The emergency preparedness program was conducted in accordance with the Emergency Plan.

10. Exit Interview

The inspection scope and results were summarized on August 3, 2006, with members of licensee management and staff. The inspector described the areas inspected and discussed in detail the inspection findings. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection. No dissenting comments were received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

H. Bollman	Facility Supervisor and SRO
M. Boussoufi	Experiment Coordinator
H. Egbert	Radiography Supervisor and SRO
R. Flocchini	MNRC Facility Director
R. Miller	Level II Radiographer and SRO
D. Reap	Radiation Safety Officer and SRO
W. Steingass	Reactor Supervisor and SRO

Other Personnel

M. Wells	Battalion Chief, Sacramento Metropolitan Fire District
----------	--

INSPECTION PROCEDURE USED

IP 69003	Class I Research and Test Reactor Operator Licenses, Requalification, and Medical Activities
IP 69005	Class I Research and Test Reactor Experiments
IP 69006	Class I Research and Test Reactor Organization, Operations, and Maintenance Activities
IP 69007	Class I Research and Test Reactor Review and Audit and Design Change Functions
IP 69008	Class I Research and Test Reactor Procedures
IP 69009	Class I Research and Test Reactor Fuel Movement
IP 69010	Class I Research and Test Reactor Surveillance
IP 69011	Class I Research and Test Reactor Emergency Preparedness

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-607/2006-201-01	IFI	Follow-up on the licensee's actions to update and correct the organizational chart specified in the TS by submitting the appropriate TS change request.
50-607/2006-201-02	IFI	Follow-up on the licensee's actions to update facility drawings so that they reflect current plant conditions.
50-607/2006-201-03	IFI	Follow-up on the licensee's actions to complete the procedural reviews as stipulated in Facility Procedure UCD/MNRC-0005-DOC, "Document Control Plan," Rev. 7, approval dated August 28, 2003.

Closed

None

PARTIAL LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
E-Plan	Emergency Plan
ERB	Experiment Review Board
HP	Health Physics
IFI	Inspector Follow-up Item
IP	Inspection procedure
MNRC	McClellan Nuclear Radiation Center
MOU	Memorandum of Understanding
MRC	Modification Review Committee
MWO	MNRC Work Order
NRC	Nuclear Regulatory Commission
NSC	Nuclear Safety Committee
Rev.	Revision
RO	Reactor Operator
RSO	Radiation Safety Officer
SMFD	Sacramento Metropolitan Fire District
SRO	Senior Reactor Operator
TS	Technical Specifications
UCD	University of California-Davis
UCD/MNRC	University of California-Davis/McClellan Nuclear Radiation Center