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

UFTR Safety Analysis Report
Revision 9, 8/95

Dear Sir/Madam:

Re: University of Florida Training Reactor (UFTR)
Facility License: R-56; Docket No. 50-83

The enclosed package contains Revision 9 pages for the UFTR Safety Analysis Report (SAR) dated January, 1981 submitted as part of our relicensing effort. Revision 9 consists of changes to two chapters. The revisions were initiated as a result of comments from a reviewer as part of the CY 1993 audit by the Reactor Safety Review Subcommittee. Though the changes were initiated for only several pages as a result of the audit, continuing review has resulted in changes on Pages 1 through 5 and Pages 19 and 20 of Chapter 12 and a complete update of all pages for Chapter 13. All changes have been reviewed by UFTR management and the UFTR Safety Review Subcommittee and are not considered to involve any unreviewed safety question or to impact the UFTR Safety Analysis as outlined below. In addition to the items delineated here, a number of simple wording clarifications and typographical error corrections have also been made in the interest of readability.

First, the changes in Chapter 12 are summarized. On Page 12-1, the name of the Department of Nuclear Engineering Sciences is corrected in the first line. In mid-paragraph, the name of the Radiation Control Office is updated to be the Radiation Control and Radiological Services Department per a reorganization some years ago. Near the end of the first paragraph, the date of the memorandum establishing the university-wide Radiation Protection Program is corrected to read September 23, 1960, the reference is changed to the "latest August, 1992 issue of the University of Florida Radiation Control Guide," and the reference at the end of the paragraph is corrected to be (43) not (34).

On Page 12-2, the Line Responsibility Flow Diagram for the UF Radiation Control "and Radiological Services Department" is updated to correct several position titles and to remove specific names from positions since the names change relatively frequently. Again, these changes are simply to update the SAR for changes in names and titles since the SAR was produced in 1982. These particular changes were among those cited by the RSRS audit review in March, 1994.

In item 4 on Page 12-1, for responsibilities of the University Radiation Control Committee, the last sentence is updated to indicate a staff member would have final recourse to the "Director of Environmental Health and Safety . . ." after approval for such action by the staff member's Dean or "Chairman." These changes merely correct errors in the original SAR or update the SAR for changes in names and administrative structure taking place since the SAR was produced in 1982.

On Page 12-3, one previously omitted responsibility (item 8) is added for the Radiation Control Committee along with new items 11 and 12. In addition, items 6, 9 and 10 are updated to reference the proper titles for the RSRS among other things. On this page, the reference number is corrected and several of the duties and responsibilities of the Radiation Control Officer are updated.

On Page 12-4, several expressions are corrected to improve descriptions and in the last paragraph of Section 12.1.1, the reference to 500 kWth operation of the UFTR is deleted since there are currently no active plans to increase power for the facility.

On Page 12-5, the names for the University of Florida Radiation Control Guide and the UFTR Requalification Training Program are updated in the first full paragraph. In the second paragraph, various references to procedures and their utilization are updated, corrected and better expressed. In the last full paragraph, the corrections include the RSRS name and references to the ALARA Program and using all reasonable means to reduce exposures.

On Page 12-19, in Section 12.3.3 in the first paragraph, a reference to the condensate from the air conditioning unit is added and indicates the unit is drained to the waste holdup tanks via a drain line emptying into the reactor cell sink, a change implemented several years ago. In the second paragraph, the reference to diluting fan air flow at approximately 10,000 cfm is corrected to match UFTR Technical Specification 3.3.1(3) to read "at least" 10,000 cfm.

On Page 12-20, Section 12.3.4.3 Air Monitoring System is rewritten to describe only a generic air particulate detector (APD), not any specific detector system. Since the facility now has two APDs, the paragraph as written allows either to be used. In the third paragraph of Section 12.3.4.4 Radiation Monitoring, a reference to taking and analyzing periodic air samples is added and the reference to using a gas flow counter is updated to read a gas flow proportional or equivalent counter. In the last paragraph on the page, the number of radiation-monitored locations outside the UFTR building is updated from seven (7) to "seven (7) or more." In addition, the reference to monitoring devices being evaluated monthly at R. S. Landauer, Jr. and Co. is changed to "evaluated monthly at a NVLAP-certified processor" to allow use of other vendors as has occurred in the past since this processor is selected by a bid process for the entire University.

Next the changes in Chapter 13 are summarized. On Page 13-1, in Section 13.1.1, the name of the department is corrected to be "Nuclear Engineering Sciences" and the reference is made to having operated the UFTR since 1959 versus saying for a specific length of time. In Section 13.1.2.1, one of UFTR management's specific duties is also listed as training.

On Page 13-2, the Line Responsibility Flow Diagram for Administrative Control of the UFTR is updated to remove specific names from positions since the names change relatively frequently. Again, these changes are simply to update the SAR for changes in names since the SAR was produced in 1982; the flow diagram change is one specifically cited by the RSRS audit review in March, 1994 as was a similar change previously described for Page 12-2.

In the last sentence of the last paragraph of Section 13.1.2.1, on Page 13-3, the reference to the Reactor Manager is that he is "qualified" in experimental reactor physics versus "well qualified" which may be misleading. In Section 13.1.2.2, the reference number at the end of the paragraph is corrected from (43) to (44) as it should be.

In Section 13.1.2.2.3, "or Facility Director" is added with the Reactor Manager; either position can fulfill the RSRS function. In item 4, new "or renewal" members of the RSRS are designated as being appointed by the Chairman of the University Radiation Control Committee (URCC).

In Section 13.1.2.2.4, items reviewed by the RSRS are expanded to include operating abnormalities in item 6 and annual facility reports in item 8.

The last paragraph of Section 13.1.2.2.5 is changed to require submission of a written report of the audit findings to the Dean of the College of Engineering and within three months after completion of the audit versus by March 1 each year to agree with the current requirements in the UFTR Technical Specifications.

Section 13.1.2.3 on the Radiation Safety Organization being overseen by the URCC is updated to indicate typical membership in the URCC versus current membership and refers to Table 13-1 as a list of typical departments with representation on the committee. Table 13-1 is not only updated but specific names are also removed, again because they change relatively frequently. Also, the discussion of other non-UFTR related functions of the URCC is removed from Section 13.1.2.3 as unnecessary.

Section 13.2 on training has a number of detailed changes in various sections. Overall, the changes in this Section are made to follow the order and requirements delineated in the last NRC-approved UFTR Requalification and Recertification Training Program Plan. The latest NRC approval is by a letter from Senior Project Manager Theodore Michaels dated August 1, 1995. This Plan requires more and different training, is more restrictive and somewhat more detailed than the previous contents of Section 13.2 and now covers Pages 13-6 to 13-12. Essentially, previous requirements were maintained while assuring that the current requirements of 10 CFR 55 are addressed.

In Section 13.3.1, the title of the "Emergency Plan for the UFTR" is corrected in the first paragraph and its contents are no longer referred to as "guidelines." In the second paragraph, references to outside agencies are updated to include the Alachua County Emergency Planning Office, the State of Florida Office of Radiation Control, Shands Teaching Hospital and Clinics, Gainesville Fire Department, Law Enforcement Offices, etc. In the third paragraph, the approval of the UFTR Emergency Plan is noted and other references are updated. In the fourth paragraph, the references to implementing procedures is included.

Throughout Section 13.4.1, references to classes of experiments designated as Classes 1, 2, 3 or 4 are corrected to Classes I, II, III or IV as designated in the UFTR Technical Specifications and the facility standard operating procedures. In addition to changes for readability throughout this section, several other changes include correlation with wording in the Technical Specification. For Class I experiments, it is indicated the Radiation Control Officer (RCO) "may be informed if deemed necessary" per the UFTR Technical Specifications. For Class III experiments, "approval by the Reactor Manager and RCO, after review and approval by the RSRS" is designated. The same change is made for Class IV experiments and additional wording is added to say, per the UFTR Technical Specifications, that "specific emergency operating instructions must be established for conducting such experiments." Finally, in the last paragraph of Section 13.4.1, two references to "scram" are changed to "trip" as a better term to describe the rapid insertion of all control blades.

In Section 13.5, in the second paragraph, available procedures and overview descriptions are updated to address the major types as presently constituted with some rewording to make the procedures description and overview for the facility more readable and to note the extensive types of procedures covering many more areas than what were available at the time the SAR was originally generated.

In Section 13.5.1.1 for key control, on Page 13-15, item 2 is expanded to indicate certain keys may be given to other than licensed reactor operators provided they are qualified personnel as designated by the Reactor Manager or Facility Director in agreement with the approved Physical Security Plan for the UFTR. In item 3 on Page 13-15, a reference to the "Security Plan" is corrected to be "Physical Security Plan."

In Section 13.5.2.1, on Page 13-5, the second person required for UFTR operations is required not only to be "duly qualified" but also "certified" meaning that documentation must exist approving the individual as a second person. In the list of responsibilities of the Operator-in-Charge (OIC), item 1 is corrected to indicate the OIC cannot leave the reactor "control room," not the reactor "cell" and that the OIC is normally observing the controls and instruments. Item 2 is corrected to say correct procedures are followed without specifying only a few. Item 5 is corrected to reference barriers or shielding that are "imposed" not "erected" which is too specific. Item 6 is corrected to indicate that the "Senior Reactor Operator or the Reactor Manager and the experimenter if necessary" are notified when an unexpected or unusual occurrence or a malfunction, etc., occurs versus only the experimenter and reactor manager as

was previously stated. Finally, item 7 refers to "Radiation Control Specialists" versus "Radiation Protection Specialists" to agree with the following paragraph and to "Health Physics Support" in place of the "Health Physicist" which is not usually necessary and is too restrictive for monitoring high radiation levels.

In the next to last paragraph in Section 13.5.2.1, now at the bottom of Page 13-16, the reference to "control rod positions" is changed to "control blade positions" as the preferred term for the UFTR.

In the last paragraph of Section 13.5.2.1, now at the top of Page 13-17, the contents of the "UFTR Standard Operating Procedures" Manual is updated to designate the various types of procedures available and to list other documents such as the ALARA Program, facility license, etc., which are maintained in the procedures manual.

In Section 13.5.2.2, on Page 13-17, the first sentence is corrected to refer to "safety-related equipment" versus "safety equipment." The second paragraph is updated to add "biennial" checks and "maintenance." A number of typographical and readability corrections are made in the third paragraph. The fourth paragraph is expanded to note that various results are included not only in the maintenance log but also in the operations log and surveillance files. In addition, separate reports are sent to the RSRS for more significant failures. The fifth paragraph qualifies the term "log book" to mean the "operations log" and corrects some difficulties in readability.

In Section 13.5.2.2.1, in the first paragraph at the bottom of the Page 13-17, the satisfactory completion of the Daily Pre-Operational Checkout is corrected to be within eight (8) hours prior to startup, not six (6), per the UFTR Technical Specifications. In addition, on Page 13-18, the reference to the Daily Pre-Operational Checklist in Figure 13-2 on Pages 13-20/13-21 is noted to be a "typical" checklist. Although it is a current checklist, it is for information only to show the scope of the checks and is "not required to be updated in the SAR as this form changes." In the summarized general requirements of these checks, the reference to "all" operational equipment in item 1 is deleted as unnecessary and in item 3 the reference to "proper functioning" is added for the nuclear instrumentation.

In Section 13.5.2.2.2, on Page 13-18, the reference to the Weekly Pre-Operational Checklist in Figure 13-3 on Page 13-22 is noted to be a typical checklist. Again, although it is a current checklist, it is for information only to show the scope of the checks and is "not required to be updated in the SAR as this form changes." In the summarized general requirements of these checks, the reference to "internally calibrated" in item 1 for the area radiation monitors and air particulate radioactivity monitor is deleted as it is not addressed in these checks. In item 3, the reference to control "rod" is changed to control "blade" as the preferred term. In item 6, on Page 13-19, the reference to "reactor pit" is clarified to read "reactor equipment pit." In item 7, the reference to "secondary" coolant resistivity is deleted as there have never been checks on this untreated water stream. Finally, item 10 is added to reference checking the security system without further specificity.

In Section 13.5.2.2.3 for quarterly checks, on Page 13-19, the air particulate detector is added to item 1, item 3g is clarified to reference loss of "detector" chamber high voltage and item 4 for radiological surveys, item 5 for facility posting and item 6 for fire alarm system checks are all added as quarterly checks.

In Section 13.5.2.2.4 on semiannual checks, on Page 13-23, item 4 is moved to item 1 and items 1, 2 and 3 are essentially moved to item 2 in the annual checks in Section 13.5.2.2.5 in agreement with the technical specification requirement on control blade worth and other reactivity checks. Seven additional items are then included in the list in Section 13.5.2.2.4 as follows: item 2, control blade controlled insertion times; item 3, control blade clutch current bulb replacement; item 4, special nuclear material inventory; item 5, stack effluent measurement; item 6, key inventories; item 7, neutron source leak checks; and item 8, updating of emergency call lists.

In Section 13.5.2.2.5 for the annual checks, on Page 13-23, item 1 is clarified to require a calorimetric heat balance for calibration of nuclear instrumentation, item 2 is moved from the semiannual checks and further clarified, item 3 is the previous item 2, while item 4 on calibration of instruments and test equipment and item 5 on measurements of the temperature coefficient of reactivity are added.

Similarly, Section 13.5.2.2.6 for the biennial checks is a new section. Item 1 is for void coefficient checks per the technical specifications and item 2 is for inspection of incore fuel elements per the technical specifications. Items 3 and 4 address checking procedure manuals for completeness as well as the procedures themselves for adequacy.

Section 13.5.2.2.7 is also a new section and addresses the need, again required by technical specifications, to inspect the control blade and drive systems for mechanical integrity on a five-year time interval.

Finally, Section 13.5 "Industrial Security" is renamed "Physical Security" to better delineate the scope of the section based on the Physical Security Plan withheld from public disclosure.

As indicated, these Revision 9 changes have been fully reviewed by UFTR management and by the Reactor Safety Review Subcommittee to assure no unreviewed safety questions were involved per a 10 CFR 50.59 evaluation and determination and so are not considered to relax the requirements for assuring protection of the health and safety of the public and of the reactor facility. The changes simply update the Safety Analysis Report to reflect the existing facility and its operations.

The entire enclosure consists of one signed original letter of transmittal with enclosure plus ten copies of the entire package. If further information is required, please advise.

Sincerely,

William G. Vernetson
Director of Nuclear Facilities

WGV/dms
Enclosures

Copies: USNRC Region II
T. Michaels, NRC Senior Project Manager
Reactor Safety Review Subcommittee
D. Simpkins, UFTR Reactor Manager

Sworn and subscribed this 15 day of September, 1995.

Notary Public

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MY COMMISSION # CC302416 EXPIRES
August 27, 1997
BONDED THRU TROY FAIN INSURANCE, INC.