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# UNIVERSITY OF MISSOURI RESEARCH REACTOR

## OPERATIONS MONTHLY SUMMARY

September 1995

Prepared by:  
Operations Staff

F-117

September 1995

The reactor operated continuously in September with the following exceptions: four shutdowns for scheduled maintenance and refueling; one unscheduled shutdown.

On September 28, a rod not in contact with magnet rod run-in occurred when a reactor operator accidentally bumped the offset mechanism for control blade 'C' while performing a normal P-6 sample handling evolution. We have reiterated to the operations staff the need to be extremely careful while working or handling samples near the offset mechanisms because they are extremely sensitive to contact by tools or sample holders. The reactor was subsequently refueled and returned to normal operation.

Major maintenance items for the month included: repositioning secondary valves S-211 (heat exchanger 521 discharge) and S-222 (spool piece drain).

#### UNSCHEDULED SHUTDOWNS

<u>Date</u>	<u>Number</u>	<u>Type</u>	<u>Cause</u>
9/28/95	1038	Rod Run-In	Accidentally bumped blade 'C' offset mechanism

#### OPERATION SUMMARY

HOURS OPERATED THIS PERIOD	671
TOTAL HOURS OPERATED	190,959
HOURS AT FULL POWER THIS PERIOD	669
TOTAL HOURS AT FULL POWER	187,975
INTEGRATED POWER THIS PERIOD	279 MWD
TOTAL INTEGRATED POWER	72,471 MWD

#### MAINTENANCE ACTIVITY

9/5/95	Refueled - removed core 95-36, loaded core 95-37. Completed repositioning of secondary valves S-221 and S-222.
9/11/95	Refueled - removed core 95-37, loaded core 95-38.
9/18/95	Refueled - removed core 95-38, loaded core 95-39.
9/25/95	Refueled - removed core 95-39, loaded core 95-40.
9/28/95	Refueled - removed core 95-40, loaded core 95-41.



UNIVERSITY OF MISSOURI-COLUMBIA

Research Reactor Center

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September 29, 1995

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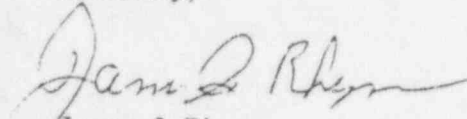
Dr. Gary Hughes  
7101 Sycamore Creek  
Rocheport, MO 65279

Gentlemen:

Thank you again for your review and assessment of the safety environment at MURR. This opportunity to gain from your collective experiences and insights is immeasurable. We have carefully studied your findings and recommendations, and with the assistance of all groups at MURR have implemented a major portion of your recommendations. We continue to work on the remainder.

The attached "Report of Progress" explains where MURR stands regarding each of your findings and recommendations. This report of progress will be sent also to NRC Region III. We welcome your evaluation of our responses for adequacy and effectiveness of addressing each issue.

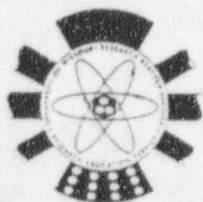
Sincerely,

  
James J. Rhyne  
Director

  
J. Charles McKibben  
Associate Director

enc

cc: Regional Administrator, NRC Region III  
T. Reidinger, NPR Project Engineer, NRC Region III  
S. Weiss, Chief-NRR/ONDP, NRC



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## REPORT OF PROGRESS ON RECOMMENDATIONS OF THE INDEPENDENT SAFETY ASSESSMENT TEAM (ISAT)

The recommendations of ISAT were provided under two headings, Climate For Safety and Chilling Effect and Fear of Retaliation. This report will use the same format as the ISAT report. To keep the findings, recommendations, and MURR responses in context each ISAT finding will be followed by the ISAT recommendations and MURR response. The response will include actions taken where there is agreement on particular findings and recommendations and a measure of the progress on action items that are on-going or planned.

### A. CLIMATE FOR SAFETY

**Finding #1:** *Although most individuals indicated that they did not have a concern about reporting safety issues, twelve individuals indicated that they did have concerns about the ability to report and to address safety issues. Although these concerns were expressed predominately in the Nuclear Analysis Program (NAP), there were four additional areas from which such concerns were expressed.*

**Recommendation #1:** *The Center management must continuously communicate, demonstrate, and encourage openness for employees to report safety issues. Further, the University Administration should clearly communicate its desire and expectation that employees will raise safety issues, if discovered, with a commitment that there will be no retaliation for raising such issues.*

#### **MURR Response to Recommendation #1:**

MURR management has communicated and encouraged openness for employees to report safety issues and demonstrated that there will not be retaliation for raising such issues.

In August 1994, the annual indoctrination/re-indoctrination training (emergency response, radiation and general safety and security) was revised to increase the emphasis on each persons responsibility to raise safety concerns and how this can be done both internally and externally (and anonymously). In late 1994, this revised indoctrination brochure was mailed to each individual granted access to MURR.



Additionally, to reinforce the importance of this issue, the indoctrination questionnaire was revised to include a question on both the internal and external ways to address unsafe conditions.

The annual seminars presented by licensed operators and health physics personnel, which have focussed on emergency response for persons not in the Facility Emergency Organization, have been expanded to include training on general safety issues, 10CFR50.7 issues and safety reporting channels.

Instructions for reporting safety issues are included in a policy (C4:016), Safety Concern Reporting. This policy established a center wide MURR Safety Oversight Committee (MSOC) which consists of Safety Representatives from each of seven groups in the center. Each group was allowed to design its own safety reporting and tracking system and has its own safety concerns subcommittee. Safety issues may be brought before a person's own safety committee or directly to the MSOC. These safety concern reports can be made anonymously.

The MU administration has communicated its policy on safety reporting in letters (attached) to each person at MURR from the Interim Vice Provost for Research, dated February 8, 1995 and the Chancellor, dated February 10, 1995.

The mechanisms are in place to reinforce and remind all persons at MURR of their responsibility to report safety concerns, the channels to make safety concerns known and the University commitment that retaliation for reporting safety concerns will not be tolerated.

**Finding #2:** *There is a lack of proactive response in addressing safety issues. For example, following the Department of Labor Administrative Law Judge's Recommended Decision and Order, there appeared to be hesitancy on the part of MURR management to be proactive in assuring MURR personnel that they should come forward with any safety issues without fear of retaliation. There was a tendency to await action by the upper-University administration and the outcome of the Independent Safety Assessment Team's (ISAT) report. Perhaps the traditional past culture and experience of openness in reporting such issues caused MURR management to consider it unnecessary to take immediate proactive efforts to assure personnel of managements expectations for continued openness and freedom of retaliation for reporting safety concerns. Efforts such as modifying indoctrination literature, Director's*

*memos and Director's and supervisor's meetings where undertaken following ISAT recommendations to be more proactive.*

**Recommendation #2:** *Center management and cognizant University personnel should take immediate proactive actions when actual or potential safety or regulatory concerns or violations become evident. MURR and the University personnel should not await outside advice or NRC action before undertaking a response to mitigate and correct such concerns or violations.*

#### **MURR Response to Recommendation #2:**

MURR management promotes taking immediate corrective action when actual or potential safety or regulatory concerns become evident. This has been a long standing policy at MURR and has included instances of self-reporting the events or issues and their associated corrective actions to the NRC that were not required to be reported by regulation.

In this particular case, MURR management erred in not appreciating the potential chilling effects that can result from even a claim of discrimination involving protected activity.

Part of the difficulty in the DOL case is that personnel action (promotions, demotions, etc.) and the reasons for such actions are considered confidential for personal privacy reasons. It makes it harder to actively reduce a perception of retaliation or discrimination when management is not free to publicly divulge the reasons for such actions or to explain such actions to staff in general.

The Vice Provost for Research & Dean of the Graduate School, in a letter to NRC dated Oct. 28, 1994, established that a written communication will be sent to all employees at MURR in the event of any subsequent allegations of discrimination related to protected activities of which MURR management became aware. This communication will advise them 1) an allegation has been made, 2) that the filing of such allegations is a right under federal law, and 3) that federal law prohibits retaliatory actions against an individual exercising such right, and 4) that any retaliatory action in violation of such federal law will subject the retaliator to disciplinary action. This commitment will be incorporated into the MURR Policy & Procedure Manual.

MURR management recognizes that better documentation of its personnel actions, and evaluation of such actions to assure there are no elements of 10CFR50.7 protected activities involved, can provide MURR staff confidence that discrimination or retaliation for such protected activities will not be tolerated. Two policies have been written to this end, one regarding disciplinary action and the other regarding personnel promotions (attached).

The policy for disciplinary action (P7:020) provides progressive discipline for all employees, including exempt level personnel. A requirement for written warnings for exempt level personnel is implemented at the Reactor Center and is not required by general policy of the University. The written warning is designed to provide each employee ample opportunity to respond to the constructive criticism and to assure that employees are aware of their rights to file a grievance through University established procedures.

The policy for promotions for Research Scientists (P3:021) requires all promotion requests to be made in writing to the Director with complete justification regarding the evaluation criteria. The promotion request will then be reviewed by an administrative supervisor at least one level above the immediate supervisor before an approval or denial of the promotion request is issued. The individuals making these reviews are also charged with evaluating the request with specific attention to the protection afforded by 10CFR50.7. A similar policy for promotion of non-scientific staff in exempt positions (e.g., managers) is being developed.

**Finding # 3:** *There is no integrated safety policy and procedure manual. This leads to a lack of consistent understanding of safety policy and procedures. For example, too frequently there was a lack of consistent indication by those interviewed as to whom one would report a safety concern beyond one's immediate supervisor. This was true even after recent memos and meetings intended to clarify such reporting paths.*

**Recommendation #3:** *Develop a safety policy and procedure manual on a timely basis with staff input and participation.*

#### **MURR Response to Recommendation #3:**

A MURR Policy and Procedure manual was issued December 1, 1994. This included a Safety policy (C4:015) and a Safety Concern Reporting policy (C4:016) that provide guidelines for reporting safety concerns, the avenues available to make

such reports and the information that such reporting is protected by University policy and NRC regulation.

Assurance that such safety reporting will not result in retaliation or discrimination are included in a new discrimination policy committing to zero tolerance for discrimination or retaliation. Additionally, a policy (P1:030) has been issued to not tolerate hostile aggressive behavior in the center and provides protection for any person who is subjected to such behavior.

Staff input was solicited for new policies/procedures and revision of those issued December 1, 1994. The policy and procedure manual continues to be revised to incorporate changes or additions recommended by staff.

**Finding #4:** *There is an inadequate written process for ensuring that safety issues, when identified, are prioritized, corrected, and tracked and to ensure that feedback is provided to the individual that raised the issue. Although there is an incident reporting system in Service Applications, it appears ineffective, needs further development, and has not been utilized Center-wide.*

**Recommendation #4:** *Develop a Center-wide policy for prioritizing, correcting, and tracking identified safety issues and ensuring that feedback is provided to the individual that raised the issue. While encouraging a climate where individuals feel free to openly identify safety issues, a mechanism should be provided for those individuals that might prefer to remain anonymous.*

#### **MURR Response to Recommendation #4:**

A center-wide policy (C4:016) [attached] has been developed for prioritizing, correcting, and tracking safety concerns. The policy provides for feedback to the individual who raised the concern and includes several mechanisms for anonymous submittals.

The policy, Safety Concern Reporting, Tracking and Resolution, includes formation of a MURR Safety Oversight Committee (MSOC) and seven Safety Concern Subcommittees, one for each of seven groups at MURR. This structure encourages safety reporting at the group level for possible resolution with review by MSOC. Direct reporting to the MSOC is also available to persons with safety concerns. Safety reporting at each level can also be done anonymously.

The implementation of the MSOC and the safety concern subcommittees was inspected by NRC June 19-22, 1995 with the observation that the MSOC process was adequately implemented to provide MURR employees a program to address safety concerns while preventing potential retaliation against employees. The inspectors felt that the MSOC representatives could use additional training in order for them to clearly recognize and address discrimination issues that may be raised by MURR personnel. As a first step to this training process, each MSOC member has been asked to read NUREG -1499, Reassessment of the NRC's Program for Protecting Allegers Against Retaliation, to get additional understanding of 10CFR50.7 and definitions of protected activity and discrimination.

**Finding #5:** *There is no formal root-cause analysis program. For example, there has been considerable attention given to the recent shipping problems; however, it appears that the symptoms are being treated rather than the fundamental cause.*

**Recommendation #5:** *Development and implement a formal root-cause analysis program, of scope appropriate for the activities conducted at MURR, for significant problems that have been identified.*

**MURR Response to Recommendation #5:**

We have had a long term practice of doing root cause analysis of safety issues in license related activities associated with Reactor Operations (e.g., License Event Reports). These analyses have not, however, been done by a formal program or procedure. A formal root cause analysis procedure has been implemented as part of Service Applications Quality Procedures, in Section 4.5 of SAQ-2, Incident Reports. This procedure currently is used to address Service Applications safety issues.

When we have gathered experience and feedback from Service Applications use of this procedure, we will revise it to a center-wide procedure.

*[Attach copy of SAQ-2, Section 4.5]*

**Finding #6:** *Considerable independent authority resides in Service Applications such that pressures to meet service requirements might override safety and ALARA considerations. For example, Service Applications can develop income-producing service clients, authorize the irradiation of client's targets (within a generically approved envelope), as well as ship irradiated targets to clients.*



**Recommendation #6:** *Develop a check and balance structure for areas in which single, independent authority exists. For example, strong consideration should be given to moving all (i.e., LLW, HLW, and target) shipping functions to Reactor Operations where there exists a culture for compliance with regulatory requirements and procedure adherence.*

**MURR Response to Recommendation #6:**

We do not agree that Service Applications has independent authority which makes it more likely to override safety and ALARA consideration. There is no question that Service Applications takes its customer service role seriously and that customer demand or the need for medical isotopes create some pressure while adhering to established procedure. The key point is to have a shipping group where there exists a culture for compliance with regulatory requirements and procedure adherence. The personnel within the shipping group have developed this culture and respect for regulatory requirements and procedure adherence.

The Safety Subcommittee reviewed this issue at the October 26, 1994 meeting and the subcommittee felt Reactor Operations should maintain their focus on safe operation of the reactor and not assume the shipping role. The subcommittee felt persons in shipping are being trained to be as disciplined as Reactor Operations with respect to procedure compliance.

The Service Applications shipping group is composed of the persons with the highest level of expertise in the area of transportation of radioactive and other hazardous material.

Certified shippers attend off-site training to develop the expertise needed to meet NRC, DOT and IATA (International Air Transportation Associates) regulations. The certified shippers review all shipments that leave the center.

**Finding #7:** *Training programs appear weak in certain areas. For example, several individuals indicated that there is a lack of adequate training of personnel in shipping and in the use of pneumatic tubes. Further, reactor operator requalification training is primarily limited to self reading and on-the-job training.*

**Recommendation #7:** *Evaluate the training needs in all areas of the Center, including the need for a Center-wide training coordinator. Develop and implement training programs where appropriate.*

### MURR Response to Recommendation #7:

Group leaders and managers were sent a questionnaire (attached) in July 1995 asking each group to identify specific training needs and specific training deficiencies. The completed questionnaires are used to target new areas of training for development, to improve existing training and combine training for groups with common training needs. The responses from group leaders and managers identify three major areas where training needs improvement: 1) general laboratory safety; 2) hazardous material (e.g., chemical) use, storage and disposal; and 3) general fire safety.

The Reactor Manager and Health Physics Manager will evaluate these identified training deficiencies and solicit assistance from Environmental Health and Safety Department to upgrade the training in these areas. The training may include lectures, demonstrations, video tapes and literature. We will try to schedule common training needs for large groups of personnel when possible (e.g., fire extinguisher training). Some of the training will need to be performed or coordinated by each group leader or manager to assure relevance to each group's needs.

The answers to the questionnaires from the various groups at MURR did not identify pneumatic tube user training or shipper training as areas of deficiency in training. From the Reactor Manager and Health Physics Manager's perspective, as the persons who must interview prospective p-tube users prior to their authorization, the training of pneumatic tube operators has been adequate.

The training of shippers has been significantly upgraded over the last three years. Shippers receive off-site training in DOT and IATA regulations regarding shipment of radioactive and other hazardous material. Shipper trainees are trained to perform or inspect specific tasks associated with a transportation package. Qualified shippers have demonstrated ability and training to perform or inspect all tasks on specific packages. Certified shippers are certified to perform all aspects of shipping.

The Reactor Safety Subcommittee discussed the finding regarding the operator requalification program. The program has met or exceeded NRC requirements and is inspected by NRC to assure that it does. Several upgrades in training have been done in the last several years, including reactor theory training at the Rolla Reactor and more extensive training with health physics staff.



The subcommittee inquired into an outside assessment of Operator Requalifications. The Reactor Manager suggested having the next Reactor Operations Audit focus on Operator Requalification. A Reactor Operations Audit, with emphasis on the operator requalification program, was performed March 24-26, 1995 by Rich Holm, Reactor Manager of the University of Illinois Nuclear Reactor Laboratory. This audit was reviewed by the Safety Subcommittee at a July 25, 1995 meeting. The audit indicated that training met the regulatory requirements and recommended some areas of improvement. These recommendations are currently being evaluated by the Operations Engineer, Operations Training Coordinator and the Reactor Manager.

The need for a center-wide training coordinator has been discussed for a number of years at group leader meetings and Reactor Advisory Subcommittee meetings with no clear consensus on the need for a center-wide coordinator. The training needs of each group need to be identified by each group leader or manager and they should accept responsibility for providing or coordinating the training.

**Finding #8:** *There is a need to reinforce the importance of adhering to safety rules and practices. For example, some individuals have exited the building when their use of the hand and foot monitor resulted in an alarm. (we note that these individuals were called back by other MURR personnel.) Further, there was a recent case in which equipment was operated when tagged-out. (We note that recent retraining has covered this topic of equipment tag-out.)*

**Recommendation #8:** *Enhance the communication of management's expectation of and insistence on adherence to safety rules and practices by strengthening periodic training and supervisory involvement.*

#### **MURR Response to Recommendation #8:**

The examples cited are isolated cases. Each time an incident such as these occurs both the individual and his sponsor/supervisor are counselled regarding the safety implication of their actions and warned of the consequences of a second incident.

We have tried to learn from each such incident and each case that is relevant to the entire center is incorporated into our training or is communicated by

memorandum to all staff. The training regarding danger tags has been added to the annual indoctrination/re-indoctrination literature and is covered as part of the training seminars for persons not in the Facility Emergency Organization (FEO).

The Center policy on Safety and Safety Reporting was discussed earlier in MURR Response to Recommendation #3 and #4.

**Finding #9:** *There is a need for improvement in the general area of industrial safety. For example, concerns were expressed about chemical storage, fire safety, work practices (including the movement of sample containers over the reactor; see sample letter in Appendix E), and stability of some heavily loaded lab benches.*

**Recommendation #9:** *Establish a permanent industrial safety advisory group that includes Center, UMC personnel, and outside industrial experts to evaluate the current practices at the Center and provide recommendations for improvement, as appropriate.*

#### **MURR Response to Recommendation #9:**

The MURR has an annual inspection by an Industrial Hygienist from the University department of Environmental Health and Safety to identify areas of industrial safety concern. Reactor Operations staff perform monthly audits of safety equipment at MURR (fire extinguishers, emergency lights, exit lights, fire loading/housekeeping, etc.)

The concern regarding movement of sample containers over the reactor was evaluated by Reactor Operations staff in November/December 1994 and was determined to not present a reactor safety problem. An NRC inspector reviewed the safety analysis during the Routine Safety Inspection October 31 through November 4, 1994.

The areas of training discussed in MURR Response to Recommendation #7 include upgrading general laboratory safety training, which includes industrial safety. Several other recommendations related to industrial safety were identified by the questionnaire process that bear consideration as MURR policy. These areas are chemical inventory and control and control of laboratory use.

The recommendation about chemical inventory and control involves designating a secure storage area for laboratory chemicals in general and restricted access to the MURR flammable storage locker.

The recommendation about control of laboratory usage involves developing a policy that requires a person, from other than the group responsible for a laboratory, to request use prior to use. This will allow the group responsible for the lab and the requestor or requestor's supervisor to determine any training needs for the individual specific to the use of the laboratory prior to the use.

**Finding #10:** *There is no formal process to capture and/or to address safety concerns from outside review groups or regulatory bodies. For example, the report provided by Dr. Marcus Voth raised issues about the target certification concerns and shipping process that, if acted upon promptly, potentially could have solved some of the significant shipping issues. There were also two action items lost when the Central Radiation Safety Committee (CRSC) disbanded, which were not transferred to the Reactor Advisory Committee (RAC). The two action items were a CRSC recommendation of ALARA training for Center-wide staff and CRSC concern about MURR Alcohol/Drug program ineffectiveness.*

**Recommendation #10:** *Implement a procedure to identify, to respond in a timely manner, and to track safety issues raised by outside review groups as well as by the RAC. The University should provide leadership in developing an effective alcohol/drug policy for MURR.*

#### **MURR Response to Recommendation #10:**

MURR has developed a tracking system for open items brought before the Reactor Advisory Committee (RAC) for safety issues from outside review groups or regulatory bodies.

The tracking of safety issues and follow-up will be done similar to how the Reactor Manager and Health Physics Manager respond to audits, by identifying items they intend to address with proposed actions. These items will then be reviewed by the relevant reactor subcommittee to assure all significant issues are identified. The Subcommittee can request specific dates for final action or feedback on particular items if necessary. This method is similar to what was used by the Shipping Task Force to track commitments.

The MURR Alcohol and Drug Use Policy was issued by memorandum to all persons with unescorted access to MURR on May 17, 1993. In July 1993, an alcohol

breath analyzer was purchased and staff have been trained in its use. The policy has been incorporated into the MURR Policy and Procedure Manual and includes an objective means for testing persons to verify or refute suspected impairment from alcohol.

## **B. CHILLING EFFECT AND FEAR OF RETALIATION**

**Finding #1:** *Our assessment is that there is a significant chilling effect and a fear of retaliation. Of the individuals interviewed, thirty-one reported a chilling effect and of those, seventeen reported a fear of retaliation. The chilling effect and the fear of retaliation, while highly evident in the NAP, were widespread and included individuals in almost all groups. (We note that the Indoctrination Program has recently been strengthened to clarify management's expectation of safety and that management's expectations of safety have been communicated verbally and in writing to various groups. This action should mitigate a perceived chilling effect for reporting safety issues.) While the assessment was being conducted, articles appeared in the local paper in which remarks attributed to the University Chancellor had a considerable chilling effect on a number of employees. (We note that the Chancellor attempted to clarify remarks attributed to him in the local paper; however, it is our assessment that this attempt was not entirely successful.) Other causes include the "demotion" of Dr. Steven Morris, and comments attributed to the Vice President for Human Services that University staff members are "at-will" employees. There is also employee anxiety related to the activities surrounding the Department of Labor proceeding, as well as the actual and veiled threats of employee lawsuits by one employee against another. Further, past use of recording conversations by employees without other employees' knowledge has caused some employees to be less open.*

**Recommendation #1:** *On a regular schedule, reinforce communication of MURR management's expectation that safety issues will be reported and its commitment that those making the reports need not fear retaliation. This should be conveyed verbally and in writing. Clarify the expectations of the UMC Chancellor regarding raising safety issues so that it is clear that there will be no retaliation against employees that raise safety issues. While staff may be "at-will" employees from the University's employment perspective, the University should indicate the importance of MURR staff in enabling the Center to reach its goals.*

### **MURR Response to Recommendation #1:**

This recommendation is partially addressed in MURR Response to Climate for Safety Recommendation #1. The Chancellor's position was clarified by a letter to each person at MURR dated February 10, 1995. The Chancellor's letter reiterated that "all employees should recognize their responsibility to be aware of safe practices and to report any instances that may be considered unsafe." He and the Vice Provost for Research (in his letter of Feb. 8, 1995) assured the persons at MURR that retaliation for safety reporting would not be tolerated. A copy of the Chancellor's letter is posted on the bulletin board near the safety reporting instructions.

We will stress in indoctrination/reindoctrination training the responsibilities of radiation workers in 10CFR19.12 Instructions to Workers. This regulation (in part) states that radiation workers "shall be instructed of their responsibility to report promptly to the licensee any condition which may lead to or cause a violation of Commission regulations and licenses or unnecessary exposure to radiation or radioactive material." This responsibility is directed towards radiation safety, but can be generalized to each worker's responsibility to report unsafe conditions or practices of any kind.

Our goal in this area is to keep the following two needs in mind in determining our actions and training. We need to not only encourage reporting concerns, but create the consequence that not reporting or covering up concerns or safety issues will lead to disciplinary action. We need to create the expectation that a person should be "chilled" if or when they don't report safety concerns or issues.

**Finding #2:** *All individuals interviewed indicate that they were aware of the recent claims of retaliation for raising safety issues. Most individuals indicated that they received their information from rumors and from the newspaper account, in contrast to any official MURR management notification. During the interviews, the Assessment Team asked for the individual's assessment of these claims in order to assess their perception as to whether the personnel actions taken were related to raising safety issues. If an assessment was offered, most, but not all, individuals indicated that it was their personal opinion that the actions taken were not in response to raising safety issues. However, it was not the intent of the Assessment Team to evaluate the correctness of the Department of Labor's finding or the University's position on the matter.*



**Recommendation #2:** *Post the procedures for reporting safety issues so it is extremely clear to whom safety issues should be reported. This procedure should also articulate the process to follow if the safety issue has not been sufficiently addressed from the reporting individual's perspective.*

**MURR Response to Recommendation #2:**

The procedures for reporting safety issues are posted near the entrance to the MURR laboratory. The same procedures are part of the Policy and Procedure Manual described in MURR Response to Climate for Safety Recommendation #3. These procedures have also been distributed to all center staff via memos and the MURR Newsletter.

MURR management developed a policy, Staff Access to Information (C1:051) to improve access to information concerning the MURR Center (attached). This policy established an information library in the front lobby. This library consists of notebooks which contain correspondence to and from regulatory agencies, committee meeting minutes, reports, research abstracts, etc. These materials were placed in a location that provides maximum access and allows for use of the copy machine if persons are interested in their own copy of certain information.

In order to alert staff in the event of any subsequent allegations of discrimination related to protected activities of which MURR management becomes aware, a written communication will be sent to all employees of MURR advising them 1) an allegation has been made, 2) that the filing of such allegations is a right under federal law, 3) that federal law prohibits retaliatory actions against an individual exercising such right, and 4) that any retaliatory action in violation of such federal law will subject the retaliator to disciplinary action. A policy to this effect is being developed for the MURR Policy & Procedure Manual.

**Finding #3:** *Several individuals indicated that the DOL hearing, the Administrative Law Judge's Recommended Decision and Order, and the Secretary of Labor's Preliminary Order had a positive effect inasmuch as it demonstrated that if retaliation were to occur in response to raising a safety concern, protection would be provided. However, some individuals sought assurance from the ISAT that a safety concern did not have to be ultimately proven valid before such protection would be provided.*

**Recommendation #3:** *Because of the apparent lack of familiarity at many levels within the University, the continuing uncertainty amongst some Center and University personnel about the "Whistleblower" protection afforded by the Energy Reorganization Act of 1974 and the changes made as part of the Comprehensive National Energy Policy Act of 1992, as well as the separate and distinct implementation responsibilities of the Department of Labor and the NRC, consideration should be given to further training in the provisions of the Act and its implementation at various levels at the University.*

**MURR Response to Recommendation #3:**

NRC staff from Washington, D.C. and Region III have met with the MU Chancellor. Recommendations have been made to conduct training for University administrators above the Director of MURR.

As a starting point for training of MURR managers and group leaders, ten copies of NUREG-1499, Reassessment of the NRC's Program for Protecting Allegers Against Retaliation, were ordered and are in routing to group leaders/managers for their information.





Office of Research  
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February 8, 1995

To: Research Reactor Center Personnel

From: John McCormick *John McCormick*  
Interim Vice Provost for Research  
and Dean of the Graduate School

Subject: Open Climate for Raising Issues

I was pleased to have the opportunity to join you at the recent meeting of Research Reactor Center personnel. What particularly impressed me was the professionalism and strong commitment to success of the Reactor Center that was consistently obvious from your comments. It was also clear that there is an appreciation of recent efforts to improve communication. Let me join the effort that Dr. Rhyne and others are making along this line. The focus mainly was on knowing about planning and in general "what's happening", but there's another important aspect of communication that I'd like to emphasize as well: I want to assure all of you that institutional policy encourages personnel to raise any issues concerned with conforming to University, State, and federal policy, regulations and law. Safety issues are of particular importance at the Reactor Center.

In fact, together with several representatives from the Reactor Center, I met with NRC officials in Lisle, Illinois, in relation to the issue of ensuring a climate of openness. I'm enclosing copies of the remarks I presented that addressed this matter. It's important to me and to this institution that you all know of our firm commitment to ensuring that all not only feel free and comfortable about raising concerns relating to safety, but that they also accept it as a responsibility. I hope the commitment I emphasized in my remarks to the NRC offer whatever reassurance you might need.

You're justifiably proud of the accomplishments at the Reactor Center, which is poised to "move to the next level" in capabilities and achievements. A commitment to safety, an atmosphere of openness, and a spirit of all pulling together will be important. You have both my congratulations for your accomplishments and best wishes for success!

enclosure  
cc: Chancellor Kiesler

## NRC July 22, 1994 Enforcement Conference

### Text Relating to Openness

I am John McCormick, Interim Vice Provost for Research and Dean of the Graduate School at the University of Missouri-Columbia. I'm pleased to take this opportunity to let you know that at the University and at the Research Reactor Center it has been and is very important that policies and practices ensure existence of an environment in which everyone feels free to raise issues regarding safety.

The University recognizes that in this enforcement conference the NRC is carrying out its responsibility to ensure that the Research Reactor Center promotes an environment that encourages everyone to raise safety issues. As the responsible University official here in the spirit of full cooperation with this responsibility of the NRC, I can provide assurance that the University, as well as the management of the Research Reactor Center, is fully committed to this goal.

The University understands, respects, and fully supports the protections accorded under 10CFR50.7 with regard to rights of an individual to challenge and report practices that are perceived to be unsafe or not in accord with regulations. The ability to freely report such incidents and the guarantee of no reprisal or retribution against the individual is a cornerstone of such legislation. These are also the principles under which the University of Missouri, including the Research Reactor Center, operates. Multiple avenues are available to individuals to take complaints, concerns, and grievances to a hearing by higher administrative officials. The Research Reactor Center has placed and continues to place a strong emphasis on self-reporting to the NRC and other agencies of any problem, even if not specifically required to do so by the applicable regulations.

Dr. Rhyne, who is with us today, can describe fully the past, current and future actions that are designed to ensure that neither the events related to Dr. Morris and Dr. Zinn nor any other events establish an atmosphere that suppresses the feeling of complete freedom to raise any safety issue at the Research Reactor. I will summarize them briefly: (1) We have taken immediate steps to comply fully with the Secretary of Labor's order; (2) Reactor management has arranged for a survey, just completed, by an external expert to assess whether there is any "chilling effect" as a result of the Morris/Zinn case; and (3) Reactor management has taken several specific steps to promote, and to test, an atmosphere that both educates and encourages everyone at the Research Reactor Center to be knowledgeable about safety issues and responsibilities at the Reactor; and (4) the Reactor Advisory Committee has involved itself in these discussions and policy matters and has strongly encouraged the University's upper administration to stay informed about and shape policy to take into account all forms of protected activity within the University.

The presence of seven of us here today is evidence that we take this responsibility seriously and an indication that we wish to have available for this discussion today all who might usefully serve as information resources.

Thank you.



Office of the Chancellor

105 Jesse Hall • Columbia, Mo. 65211 • Telephone 314-882-3337 • Fax 314-882-3447

February 10, 1995

To: Research Reactor Center Personnel

From: Charles A. Kiesler, Chancellor

Subject: Institutional Policy on Safety and Reporting

Conversations I have had with representatives from the NRC and with the three members of the Independent Assessment Team made me aware that there is some uncertainty about campus administrative commitment to safety matters, including the raising of safety concerns by individuals. I write now to dispel any uncertainty and to assure you about, and commitment to, an open and safe environment and freedom of expression on such matters.

We seek to have a climate that encourages all employees to raise concerns about safety without fear of reprisal or retribution. Indeed, all employees should recognize their responsibility to be aware of safe practices and to report any instances that may be considered unsafe or in some way out of compliance with University, State, or federal policy. I was pleased to learn that the Research Reactor Center recently has placed added emphasis on ensuring that all know the alternatives for raising safety issues. If for some reason you believe that you need to use routes beyond your supervisor, there are multiple avenues available to individuals to take concerns, complaints, and grievances. You are welcome to bring safety concerns to my attention. Further, self-reporting to the NRC, or other appropriate agencies, is an option that everyone is free to pursue.

The University is fully committed to fostering a safe and open environment. The Research Reactor Center has accomplished much, of which you all can be proud. Future success will be dependent on a continued strong emphasis on safety. Working together as a team, coupled with an emphasis on individual responsibility, I am confident that the Center will enjoy continued success.



# MURR Policy and Procedure Manual

## DISCIPLINARY ACTION

P7:020

Management guidelines for disciplinary actions are given in PE801. The introduction states that "Where problems with employee behavior or performance arise, a supervisor will seek to correct the problem with the least amount of disruption to the work environment. Discipline is a means to correct inferior employee behavior and performance."

*Progressive discipline* is the least severe action necessary to correct a performance or behavior problem. Progressive discipline may include oral warning, written warning, suspension and ultimately discharge. The MURR Center supports progressive discipline for all of its employees, and requires written warnings for all, including exempt level personnel. This goes beyond the general policy at the University of Missouri, which states that exempt employees are not usually subject to progressive discipline.

In the event of serious incidents, summary suspension or discharge may occur without prior warnings or attempts at progressive discipline. Another exception to using progressive discipline is with performance problems that are determined to be due to skill deficiency rather than rule violations or neglect of duty. In cases where reasonable attempts at training fail to correct the problem, the employee may be discharged without prior disciplinary action.

If disciplinary action is recommended, the written comments and intended disciplinary action are to be reviewed by an administrative supervisor at least one level above the immediate supervisor before the disciplinary action can be taken. Because all MURR Center employees are engaged in protected activities, the individuals making these reviews are charged with evaluating the request with specific attention to the protection afforded by 10CFR50.7. The written communication is to provide the employee ample opportunity to respond to the constructive criticism. The procedure will also assure that employees have sufficient knowledge to exercise their rights to file grievances through the established University grievance procedures.



# MURR Policy and Procedure Manual

## PROMOTION GUIDELINES FOR RESEARCH SCIENTISTS

P3:021

The usual promotion track for MURR scientists is from Research Scientist to Senior Research Scientist. This promotion normally is accompanied by a supplementary salary increment. Senior Research Scientists who have long-term established and well-funded research efforts, and who show scientific leadership potential, can be considered for appointment to Group Leader or Program Coordinator. Group Leader and Program Coordinator are internal titles at the Center and do not automatically result in salary increments. The associated administrative duties fulfill the service component expected of all scientists.

As defined by MU, Research Scientist positions are non-regular appointments; however, promotions are to be evaluated with the same criticality as equivalent promotions for regular faculty.

Promotion from Research Scientist to Senior Research Scientist (see below) will be considered using similar criteria of research competence, accomplishments, service, etc. as applied to promotion from Associate to Full Professor.

The promotion process to Senior Research Scientist normally will start with a request memo from the candidate's group leader to the Director. After preliminary review and concurrence, the Director will appoint a small advisory committee of MURR senior scientists and outside senior researchers in the candidate's field to evaluate the CV of the candidate, solicit external letters of recommendation, and to consider other factors as appropriate. The candidate will receive notice of the make-up of the committee and be given an opportunity to comment before formal appointment of the committee.

The suitability of a candidate for promotion should be entirely performance driven and not be subject to bias based on number of years in his/her present position.

### CRITERIA FOR PROMOTION FROM RESEARCH SCIENTIST TO SENIOR RESEARCH SCIENTIST

Normally the promotion committee will be asked to evaluate each of the three major components of a MURR Research Scientist's appointment separately—Basic or Applied Research, MURR service, and MU-MURR Collaborative interactions.

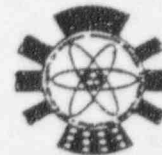
Example evaluation criteria in each of the three job components are:

1. Basic or Applied Research—50%
  - a. Development of an independent research program
  - b. Evidence of an international reputation in the field
  - c. Securing of peer-reviewed external funding
  - d. Publication in major journals
  - e. Invited presentations, national committees, review panels, etc.

# MURR Policy and Procedure Manual

## PROMOTION GUIDELINES FOR RESEARCH SCIENTISTS

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P3:021

2. MURR Service —25%
  - a. Serving on internal committees
  - b. Service work for other groups
  - c. General use instrument development
  - d. Contributions to income generation for the Center
3. MU-MURR Collaborative Service—25%
  - a. Development of collaborative research programs
  - b. Classroom teaching
  - c. Supervisor or committee member of PhD or MS students
  - d. University-wide or departmental committees





# MURR Policy and Procedure Manual

## SAFETY

C4:015

Safety and security are the two foremost concerns of everyone at the MURR Center. It is crucial that the MURR Center maintain a safe environment for employees and the community. Every member of the staff should feel free to raise safety concerns. In fact, we have an obligation to point out concerns. Any questions relating to security/emergency procedures/health physics should be directed to the appropriate member of the staff, as defined below.

If you have a safety concern or believe that a violation of NRC regulations has occurred, you should report it immediately to your supervisor, Reactor Control Room staff or Health Physics staff. If they do not address the problem, you should bring it to the attention of the MURR Center management or University administration. If you still believe that adequate corrective action is not being taken, you may report this to an NRC inspector or the NRC Region III office, telephone number 708/829-9500.

To help ensure that radiation workers feel free to voice their concerns, federal law prohibits an employer from firing or otherwise discriminating against you for bringing safety concerns to the attention of your employer or the NRC. Your protection from discrimination and the avenues open to you to seek protection from discrimination are outlined in the Code of Federal Regulations 10CFR50.7. A copy of these regulations may be obtained in the Health Physics Office.

Additional information on your rights and responsibilities as a radiation worker can be found on NRC Form 3 posted on the bulletin board located near the film badge racks.

Supervisors are to reinforce the principle of open reporting of safety concerns and the mechanisms for reporting inside and outside of MURR, free of any real or potential discrimination or reprisal by employees or supervisors at any level.

The Center is in the process of developing and implementing a Center-wide safety concern reporting and tracking system that will provide for an evaluation of the concern, assign a priority, provide feedback to personnel until the issue is closed, and allow for anonymous reporting. [See SAFETY CONCERN REPORTING, TRACKING AND RESOLUTION, C4:015.]

An employee may choose to make an anonymous report of a safety concern. Computer generated documents allow for a considerable degree of anonymity. Such reports may be placed in a supervisor's or Director's Office mail box, or office if unoccupied. There is a drop box on the north side of the laboratory building corridor leading to the personnel airlock that is checked regularly by a member of the MURR Safety Oversight Committee (MSOC).



# MURR Policy and Procedure Manual



## SAFETY

C4:015

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Every member of our staff has an obligation to himself, to the facility and to the general public to ensure a safe environment at MURR. Please do not let fear of discrimination or retaliation prevent you from reporting a safety concern. Federal law prohibits such discrimination or retaliation, and the MURR Center is committed to an open safety environment and a climate free of any inhibitions to report safety issues.



# MURR Policy and Procedure Manual

## SAFETY CONCERN REPORTING, TRACKING AND RESOLUTION

C4:016

Safety, security and regulatory compliance are foremost concerns of everyone at the MURR Center. It is crucial that the MURR Center maintain a safe environment for employees and the community, and that every member of the staff feels free to raise concerns regarding these issues. Indeed, we have an obligation to be aware of safety at all times, and to point out concerns or suggestions. Personnel are encouraged to bring questions, suggestions and concerns to their supervisors and other appropriate members of the staff (see **Safety, C4:015**).

This procedure should not interfere with or replace the normal interactions between employees and supervisors in addressing safety concerns, or the normal coordination between MURR groups that has resulted in a safe working environment over the years. This program provides staff members who feel their safety concerns were not addressed adequately in the normal workplace channels of communication with a method to give their safety concern more visibility and ensure their safety concerns are addressed formally. The procedure covers raising a safety concern, coordination of the efforts of the subcommittees and MURR Safety Oversight Committee (MSOC), reviewing concerns and directing them to the responsible person, review of proposed solutions, tracking progress on all concerns submitted, providing timely feedback, and accommodating anonymous reporting.

Because of the scope and complexity of the MURR Center programs and the importance of timely consideration of safety concerns, seven groups representing all of the MURR Center personnel have been designated to develop procedures for reporting, tracking and resolving their own groups' safety concerns. Each group will designate a Safety Representative and may create a Safety Concern Subcommittee (SCS). A centerwide MURR Safety Oversight Committee (MSOC) has been established as a clearinghouse for safety concerns handled by the Subcommittees as well as concerns submitted directly to the Oversight Committee. Any employee who feels that a safety concern has not or cannot be addressed adequately through normal channels may submit a report to any Safety Concern Subcommittee or to the MSOC. The seven Subcommittees represent the following staff divisions:

- Service Applications
- Facility Operations
- Reactor Operations
- Neutron Materials Science Program
- Biomedical Program
- Nuclear Analysis Program
- Computer Development, Health Physics, Instrument Development, Nuclear Engineering, Director's Office (CHIND)

### SAFETY CONCERN REPORT

Each of the seven groups as well as the Oversight Committee is responsible for designing its own report form for safety concerns. Any of the eight forms may be used to report a concern. The Oversight Committee's *Safety Concern Report* provides space for

# MURR Policy and Procedure Manual

## SAFETY CONCERN REPORTING, TRACKING AND RESOLUTION



C4:016

the concerned individual (the initiator) to give the date, a description of the concern and suggested solution, if applicable. Signing the form is optional.

Using a *Safety Concern Report* is preferred, not mandatory, but all concerns to be considered by the Committee should be made in writing. The concern should be clearly described and its safety significance indicated. Suggestions for resolution are welcomed and encouraged. The completed report, signed or unsigned, may be submitted to the MSOC or to any of the Subcommittees (in person to one of the members, via the Center mail boxes, electronic transmission, etc.).

Avenues for anonymous reporting are an essential element in this system. An initiator who chooses not to sign the form may deliver it to the Oversight Committee anonymously via the dropbox located at the northeast corner of the hallway leading to the containment building, the MSOC mailbox in the MURR mail room, or through the US mail:

MURR Safety Oversight Committee  
Research Reactor  
University of Missouri-Columbia  
Columbia, MO 65211

Blank report forms will be kept near the drop box and in the black forms cabinet in the lobby, top drawer, left-hand side.

### SAFETY CONCERN SUBCOMMITTEES

Each of the seven groups has developed procedures for reporting, tracking and resolving its own safety concerns. These procedures will be kept on file in the "Lobby Library." MSOC and Subcommittee procedures will be revised as necessary to meet the needs of the MURR Center and its staff. Groups will designate a Safety Representative and may form a Safety Concern Subcommittee from members within their groups. Membership, meeting frequency, method of handling safety concerns, etc., are at the discretion of the groups as long as they allow for anonymous reporting, timely action, staff involvement and feedback. They will report actions to the Oversight Committee as defined below. Each Safety Concern Subcommittee is responsible for ensuring that an updated procedure and copies of resolved safety concerns are placed in the safety concern book in the "Lobby Library."

### OVERSIGHT COMMITTEE

Each of the seven groups/Subcommittees will select a representative to serve on the Oversight Committee. The seven representatives will serve on a rotating basis, with the schedule to be determined based on the Committee's activity/demands and input from members in the seven groups. The groups/Subcommittees may designate alternates to serve on the Committee when their representative is absent. The Committee will elect a Chairperson and/or Secretary to coordinate the workload and maintain records. A simple majority will constitute a quorum.



# MURR Policy and Procedure Manual

## SAFETY CONCERN REPORTING, TRACKING AND RESOLUTION

C4:016

Because timely action is critical, the Committee will meet as necessary to address the concerns submitted, and any member may call a meeting. A designated member will routinely check the Committee's mailbox and dropbox for reports. The Committee will perform an initial review of safety concerns within 10 working days of their receipt (filing) to verify the safety significance and to assign a priority for resolution. Timely feedback will be provided to the initiator and will be made available to other Center personnel. The Reactor Manager and RSO/Health Physics Manager will be notified of safety concerns involving potential or actual regulatory violations as early in the resolution process as possible.

The Committee will review the safety concern to determine the validity and priority of the concern. Then the Committee will direct the safety concern to the appropriate MURR staff member(s), based on job responsibilities, for resolution. The Committee may reference requirements (regulations, standards, etc.) and possible solutions for consideration in resolving the concern, and set a desired response time. If possible, those individuals closest to or most affected by the safety concern should be involved in the resolution process—including the initiator whenever appropriate. Staff from other University departments or outside consultants may also be appropriate resources.

It may be necessary to solicit further information from the initiator of the safety concern. In the case of an anonymous report, questions from the Committee or responsible personnel may be posted in the case on the west wall outside the breakroom. It is expected that the initiator will respond promptly. Anonymity can be maintained via the avenues mentioned earlier, including the dropbox and US mail. Action toward resolution of the safety concern will proceed as effectively as possible with or without a response.

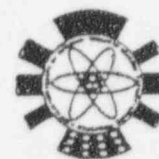
The responsible person will present proposed resolution(s) to the Oversight Committee, who will evaluate whether or not they consider the safety concern adequately resolved. The Committee may accept the proposal as adequate, or may request modification or further consideration of the issue. They should indicate specific reasons whenever a proposal is viewed as insufficiently addressing a valid safety concern. The Committee may find it necessary to direct the concern to a higher level in the organization until a satisfactory resolution is achieved.

Proposed corrective actions accepted as adequate by the Committee will be attached to the Safety Concern Report. Distribution will include the initiator (if the form is signed) and the Director's Office, and may include the Reactor Advisory Committee or one of its Subcommittees, and other MURR personnel. Corrective actions for anonymous reports will be posted on the bulletin board outside the breakroom. Due to budget limitations, alternate solutions may need to be considered for recommendations that require significant resources and/or allocations. Copies of final reports will be available in the "Lobby Library."

The Oversight Committee's responsibilities will include review and tracking of all safety concerns dealt with by the seven Subcommittees, as well as those concerns submitted directly to the Committee. Subcommittees will forward to the Oversight Committee the following:

# MURR Policy and Procedure Manual

## SAFETY CONCERN REPORTING, TRACKING AND RESOLUTION



C4:016

- safety concerns that have been resolved
- safety concerns that are in appeal (the appeal may come directly from an initiator)
- safety concerns referred to the Committee for resolution: anonymous concerns outside the Subcommittee's purview, those failing resolution at the Subcommittee level, and concerns that involve several MURR groups or require significant resources and/or allocations

The Oversight Committee will review the Subcommittees' resolutions for thoroughness, consistency, and applicability to other groups within the Center. When appropriate, the Committee may reopen a (resolved) safety concern if it determines that further corrective actions may be warranted.

### APPEALS

Initiators or other concerned parties may appeal a Subcommittee's actions to the Oversight Committee. The Committee will review appeals within 10 working days, following the same process described for directly submitted reports.

### RECOURSE

Resolutions that are unacceptable to the initiator or other concerned parties may be appealed directly to the MURR Director's Office or University Administration (Campus RSO, Vice Provost for Research, Provost, etc.). The University's Grievance Procedure (*UM Personnel Policy Manual* PE105) is another available avenue. Anyone who feels he/she or others have been subjected to intimidation or hostile-aggressive action at MURR due to raising safety concern questions should report immediately to the appropriate level of authority in accordance with MURR Policy P1:030, *Intimidation and Other Hostile-Aggressive Behavior*.

If at any time an individual believes that adequate corrective action is not being taken, he/she may report this to an NRC inspector or the NRC Region III office, telephone number 708/829-9500. To help ensure that radiation workers are free to voice their concerns, federal law prohibits an employer from firing or otherwise discriminating against an individual for bringing safety concerns to the attention of the employer or the NRC. Protection from discrimination and the avenues available to seek such protection are outlined in the Code of Federal Regulations 10CFR50.7. A copy of these regulations may be obtained in the Health Physics Office.

MSOC Tracking ID # \_\_\_\_\_

## MURR SAFETY CONCERN REPORT

DATE \_\_\_\_\_

SAFETY CONCERN  
(use additional sheet if necessary)

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

SUGGESTIONS FOR RESOLUTION (use additional sheet if necessary)

[illegible]

Initiator's name (optional)

MSOC Tracking ID # \_\_\_\_\_

### MURR SAFETY OVERSIGHT COMMITTEE TRACKING SHEET

#### SAFETY CONCERN

(use additional sheet if necessary)

#### RE FILING:

Date initial SCS action \_\_\_\_/\_\_\_\_/\_\_\_\_ Date referred to MSOC \_\_\_\_/\_\_\_\_/\_\_\_\_ or APPEALED \_\_\_\_/\_\_\_\_/\_\_\_\_

ASSIGNED TO \_\_\_\_\_ for review.

SUGGESTIONS FOR RESOLUTION (use additional sheet if necessary)

Date approved by MSOC (Initial) \_\_\_\_/\_\_\_\_/\_\_\_\_ (Long-term) \_\_\_\_/\_\_\_\_/\_\_\_\_

Date Initial Action implemented \_\_\_\_/\_\_\_\_/\_\_\_\_ Date Long-term Action implemented \_\_\_\_/\_\_\_\_/\_\_\_\_

#### RE DISTRIBUTION/POSTING

Date distributed to/posted for initiator, Subcommittee members, Lobby file \_\_\_\_/\_\_\_\_/\_\_\_\_



4.4 INCIDENT REVIEW TEAM (IRT) RESPONSIBILITIES

At this point of the process, the Incident Review Team (IRT) is responsible for the Root Cause Analysis and for devising Long Term Corrective Action(s); Steps 4.5 through 4.6.2.

4.5 ROOT CAUSE ANALYSIS*NOTE:*

*IF APPROPRIATE, USE THE FOLLOWING METHODS IN ORDER TO OBTAIN ALL THE APPARENT CAUSES:*

- *STEP BY STEP ANALYSIS*
- *WALK THROUGH ANALYSIS*

4.5.1 Root cause criteria:

- Incident would not have occurred if the causes were not present.
- Incident would not recur if the cause(s) are eliminated.
- Elimination of the cause(s) will prevent repetition of the incident.

4.5.1.1 If a probable Root Cause satisfies all three criteria, it is a valid Root Cause.

4.5.1.2 Root Cause Analysis Investigators should be Subject Matter Experts (SMEs) and have a thorough knowledge of this procedure and its systematic methods to ensure effective root cause determination.

4.5.2 Step By Step Analysis

## 4.5.2.1 Systematically evaluate each action until a cause is established which can be corrected in order to prevent recurrence of the incident.

Continue to ask the question WHY? until the question can not be answered.

For example: Use Pool Pump: P508 Analysis Flow Chart (Attachment 4); Pool pump became inoperative.

- Investigator: WHY?  
Originator: Investigated; Pump main breaker tripped - could not "Reset".
- Investigator: WHY?  
Originator: Investigated; P508 motor is "locked-up".
- Investigator: WHY?  
Originator: Inspected motor; shaft bearings froze.
- Investigator: WHY?  
Originator: Inspected bearings; no grease in bearings.
- Investigator: WHY?  
Originator: Verified recent scheduled lubrication from pump Machinery History.
- Investigator: WHY?  
• Originator: On investigation, discovered improper grease was used during lubrication.
- Investigator: WHY?  
• Originator: On further investigation, it was determined that the original entry into the Machinery History as to the type of grease to be used for P508 was incorrect.
- Investigator: WHY?  
• Originator: There is not a systematic method to review Machinery History data.
- Investigator: WHY?  
• Originator: Due to lack of structured approach.
- Investigator: WHY?  
• Originator: Due to lack of dedicated manpower.

- 4.5.2.2 From the preceeding example (Step 4.5.2.1) , it can be seen, an equipment malfunction occurred due to a human performance deficiency.
- 4.5.2.4 Consider the Root Cause Criteria of Step 4.5.1.
- 4.5.3 Walk through Analysis
- This method is a reenactment of the task as it was performed, using the personnel involved when the incident occurred. The investigator should be knowledgeable of the incident.
- 4.5.3.1 Use the MURR Incident Report Form (Attachment 2) and Service Applications Incident Review Form (Attachment 3) to obtain the preliminary information as to the incident.
- 4.5.3.2 If available, obtain the references/drawings, etc. required to aid in the reenactment.
- 4.5.3.3 Investigators are to specify which tasks will be investigated.
- 4.5.3.4 Have the individual(s) walk through the sequence slowly, using the appropriate procedure, reconstructing the occurrence.
- 4.5.3.5 The investigator should stop the walk through to ask questions, then continue the process.
- 4.5.3.6 Record all facts concerning the event.
- 4.5.3.7 Summarize all information collected.
- 4.5.3.8 Identify all probable problem areas; to include unclear, indirect effects.
- 4.5.3.9 List the most probable causes.
- 4.5.3.10 Consider the Root Cause Criteria of Step 4.5.1.

UNIVERSITY OF MISSOURI-COLUMBIA  
INTRA-DEPARTMENT CORRESPONDENCE

TO: Group Leaders, Managers  
FROM: *Jim* Rhyne, *Charlie* McKibben  
DATE: 7/14/95

SUBJECT: ISAT Recommendations to Evaluate Training Needs

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The ISAT committee recommended that MURR evaluate the training needs for the Center. To accomplish this evaluation we need each of you to identify your group's specific training needs and specific training deficiencies. We will use the information to target new areas of training for development and combine training for groups with common training deficiencies. Please answer the following questions and return to the Director's Office by July 31, 1995.

1. What training do individuals in your group receive beyond the standard indoctrination? Who provides this training?
2. Identify specific deficiencies in training for individuals in your group. Who would you recommend provide the training?
3. If individuals in your group need additional lab safety/industrial safety training, what specific areas of this type training would be most valuable (i.e., chemical use and storage, fire safety)?



# MURR Policy and Procedure Manual

## STAFF ACCESS TO INFORMATION

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C1:051

To improve the access to information concerning the MURR Center, an information library will be maintained in the front lobby. The library will contain notebooks of the following types of information:

- Correspondence to and from regulatory agencies (NRC, DOE, etc.)
- Committee meeting minutes (RAC, RSC, etc.)
- Reports (Annual, Review Groups, NRC, etc.)
- Preprints of current research work

The materials contained in the library need to remain in the lobby so they will be available to anyone wanting to review them. You may use the copier to make your own copy of any of the materials kept in this library.

Additionally a bulletin board near the front entry will be used to post new and current information. The following types of items will be posted:

- Recent letters between MURR and regulatory agencies
- New minutes from committee meeting.
- Notice of new items in the MURR library that are difficult to post.
- Long term goals and current priorities.
- New University and Center policies and procedures

We welcome your suggestions concerning improving access to information that can benefit all of us in doing our jobs.