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SUMMARY/MINUTES
ACRS HUMAN FACTORS SUBCOMMITTEE
December 12, 1989

The Human Factors Subcommittee met on December 12, 1989, Room P-110, 7920 Norfolk Avenue, Bethesda, Maryland. Mr. David Ward was the Subcommittee chairman for this meeting. Other ACRS members in attendance were J. Carroll, W. Kerr, C. Michelson and C. Wylie. H. Alderman was the Cognizant ACRS Staff Member for this meeting. The topics for discussion were:

1. Mr. Robert Stater's concerns regarding operator training
2. Proposed changes to 10 CFR 55 concerning compliance with Fitness-for-Duty programs
3. The proposed Access Authorization Rule

The first presenter was Mr. Robert Stater, a member of the public.

Mr. Stater discussed his background. He noted that he had 36 years of experience as a nuclear engineer. He has an MS in chemical engineering from Northwestern University. He attended the Oak Ridge School of Reactor Technology. He noted that he was employed at the Knolls Atomic Power Laboratory in Schenectady, New York for 33 years. For the past three years he has been

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publishing a reactor operator training letter. He noted that he was a licensed professional nuclear engineer.

While at KAPL, he spent ten years as the supervising physicist for initial start-up and lifetime physics testing on the Submarine Intermediate Reactor. He noted that he had spent about five years in large reactor design, advanced physics concepts, plant analysis, reactor safety and nuclear criticality safety.

He noted that while he was employed by KAPL, he developed and conducted simulator courses on plant start-up, shut-down, and various maneuvers. He taught courses on reactor dynamics, and reactor safety.

Mr. Stater noted that he would discuss four areas:

1. Why is the subject of reactor behavior important?
2. The quality of the material being taught.
3. The classroom study of reactor behavior
4. Why reactor behavior is important.

Mr. Stater noted his belief that reactor theory remained the way it was prior to the Three Mile Island accident.

Mr. Michelson pointed out that the Three Mile Island accident

was not a reactor theory event.

Mr. Stater stated that reactor theory being taught today is 1950 vintage material. He noted that it wasn't very good when it originated and it isn't any better today.

Mr. Stater pointed out what he believes is wrong with reactor theory as it is taught. He noted that:

- o The coverage is superficial for the needs of the reactor operator.
- o It lacks the ingredients for real understanding of reactor behavior.
- o It lacks integration.

He recommended the sequence of teaching should start with a simple model and then develop an equation that represents the model.

Mr. Stater noted that it isn't the multiplication factor that makes power increase, it is the source strength. He called it the delayed neutron source strength. He said the total source strength is a non-fission source plus the delayed neutrons.

He noted that the non-fission source disappears around

criticality and the delayed neutrons are the high power source.

Mr. Stater said a common misconception is that the only neutron source in the core is non-fission neutrons. He said this is not true. He pointed out that delayed neutrons are never treated as source neutrons.

Mr. Stater noted that reactor behavior must be a reactor operator special area of expertise. He said that the quality of training of the reactor operators is the best assurance of reactor safety.

Dr. Kerr said that it seems to him that Mr. Stater had redefined a number of concepts in a way which may be more satisfying to him.

Dr. Kerr noted that he wasn't convinced that this approach is better than the approach now used.

Dr. Kerr asked if Mr. Stater's position would be different if the people being taught had degrees in some technical subject and therefore a more sophisticated understanding of mathematics?

Mr. Stater replied that his position would not be different.

Mr. Michelson asked Mr. Stater to give an example of a safety

concern.

Mr. Stater said that the reactor could be super critical with the power going down and the operator could conclude that the reactor is sub-critical.

Dave Lange, Section Chief, Program Development and Review Section. Operator Licensing Branch, NRC, discussed the proposed changes to 10 CFR 55, operator licenses. He noted that the Commission directed the staff to condition 10 CFR 55.53 to indicate a specific area that the operators must comply with to maintain their license.

He noted that the staff has prepared a Commission paper that contains the proposed rule and the Commission paper is currently at the Executive Director's office. Once the EDO signs off on the paper, it will go to the Commission. If the Commission approves the paper, it will be placed in the Federal Register for public review and comment. He noted the time frame for public comment and review in the comments would be 180 days. The public comment period would be of the order of 60 to 90 days.

He noted the purpose of the proposed changes is to make clear to the operators what is expected from them as far as a fitness for duty standard. The emphasis is to understand the gravity of

violating the cutoff levels in the Part 26 fitness for duty rule and the specific enforcement sanctions that would be taken against them if they violated them.

Mr. Loren Bush said that the Part 26 rule states that nuclear plants must have fitness-for-duty program that tells the employees that they should not use alcohol and drugs and if they do they are violating policy and the utility will take action.

The proposed rule will allow the NRC to have some control over a specific group, the operators, and allow the NRC to have control through licensing.

Mr. Lange pointed out that the staff requirements memorandum directed the staff to establish 10 CFR 26 cutoff limits as an operator license condition, and to establish penalties to inform the operators of the gravity for exceeding cutoff limits. The staff was asked to amend 10 CFR Part 2 Appendix C to reflect the individual operator enforcement sanctions for exceeding those limits.

The proposed revisions are in two sections of Part 55. The first is 55.53 which is conditions of licenses and the staff is proposing to add the following: The operator shall not use alcohol within the power reactor protected area or the non-power

controlled access area. Licensees shall not use, possess or sell any illegal drugs.

Mr. Bush pointed out that non-power reactors are covered under the Federal Drug Free Work Place Act. This act requires any business entity that receives over 25,000 dollars of the total funds to have a program.

Mr. Lange noted a license condition will be that the operator shall not perform licensed duties while under the influence of any prescription, over the counter or illegal substance which could adversely affect performance.

Mr. Lange noted that for prescription and over the counter drugs, the licensee would have to be under the influence as determined by a medical review officer. The prescription or over the counter drug would have to adversely affect performance.

There was subcommittee discussion on whether or not prescription or over the counter drugs containing alcohol would be prohibited on site.

Mr. Bush explained that there was no intention to prohibit the legitimate use of medication. The intent was to prohibit abuse of medication as an example because of its alcohol content. He

noted that the staff expected the licensees programs to address this particular issue.

Dr. Kerr pointed out the potential for an inspector issuing a violation for an operator having a bottle of Nyquil in his possession. Mr. Perkins noted the need to address this issue.

Mr. Lange addressed the penalties for non-compliance with 10 CFR 55. He noted that the staff is proposing that the Commission may modify, revoke, or suspend a license for:

- o The sale, use, or possession of illegal drugs
- o The refusal to participate in the facilities drug and alcohol testing program
- o A confirmed positive test result for drugs or alcohol
- o The use of alcohol within power reactor protected areas or non-power reactor controlled access areas.

Mr. Carroll pointed out that union rules specify that if an employee is called in for unscheduled work and the employee says that he has been drinking and he can't, it could be insubordinate for not coming in. The employee shows up for work and is given an alcohol test, and he flunks the test. He could have his license modified, revoked or suspended. Mr. Carroll pointed out that this was unfair.

Mr. Lange said the intention was not to penalize an employee under these circumstances. He said that Part 55.61 was trying to address the employee showing up for scheduled work and being unfit for duty.

Mr. Perkins said he thought it was possible for a facility to call an individual in to help deal with a problem and not perform licensed duties.

Mr. Perkins said that the facility decides when to test for cause. If an individual came in for unscheduled work and was unfit for duty, it would be the facility's decision on whether or not to test for cause.

Mr. Ed Baker, Deputy Director for Enforcement, said that given the scenario of an employee called in for unscheduled work, who has had a couple of drinks, and was ordered to come in, given the employee stated that he was unfit for duty and was told to come in anyway, Mr. Baker said he didn't think the NRC would take any action in this case.

Mr. Baker pointed out that it was the operator's responsibility to inform his management when he was unfit for duty. If an operator came in for unscheduled work, and was unfit for duty and he didn't inform his management, then the NRC would take action.

Mr. Ward questioned what evidence would require penalties in the sale, use, or possession of illegal drugs. He asked if a conviction would be necessary to enforce the penalties.

Mr. Baker said he didn't think the operator's license would be revoked without a conviction.

Mr. Lange discussed the enforcement sanctions. He noted that 10 CFR Part 2, Appendix C will be amended when the proposed rule is made final. He noted the proposed enforcement sanctions.

1. For a first offense, the Commission may issue a notice of violation, a civil penalty or an order as warranted.
2. For a second offense, the Commission will, at a minimum, issue an order to suspend the license for three years.
3. For a third offense, the Commission will issue an order to revoke the operator's license.

Mr. Lange summarized the significant changes in the proposed rule:

- o The proposed rule goes beyond compliance with 10 CFR 26 cutoff levels.

- o The enforcement sanctions were extended to include impairment due to alcohol abuse.
- o It prohibits the operators from the sale, use or possession of illegal substances on or offsite. 10 CFR 26 prohibits illegal drugs onsite.

Access Authorization Rule

Mr. Zoltan Rosztoczy presented the chronology of the Access Authorization Rule. He noted that access authorization has been in existence since the early 1980's. In 1984 the Commission published a proposed rule for public comment. After evaluation of the public comments, the Commission decided to issue a policy statement. In 1989, the Commission asked the staff for an options paper on how to proceed. The Commission adopted the option for a rule on the basic requirements, to be accompanied by a regulatory guide which adopts the industry guidelines that have been developed by NUMARC.

Mr. Sher Bahadur, Branch Chief, discussed the proposed rule. He discussed the rationale for the rule.

- o The rule would provide a substantial increase in security protection.

- o The rule would provide a standard which does not exist at present.
- o The rule would ensure that those licensees who are not following the minimum requirement for access authorization will bring their program up to an acceptable level.
- o The rule would ensure that those licensees who have voluntarily raised their standards in the access authorization will continue to do so.
- o The rule would provide guidance for future licensees, future applications and future plants.

Mr. Bahadur pointed out the rule dealt with insider radiological sabotage. He stated it doesn't deal with external sabotage.

Mr. Bahadur pointed out that there are three major attributes to the rule. Background investigation, psychological assessment, and behavioral observation. The regulatory guide provides one acceptable way to meet the three attributes.

He noted the background investigation requires employment history for the prior five years, educational background for the prior five years, a credit check, military background and a criminal history check.

He noted the behavioral observation is indicated in the regulatory guide. The guide noted that the employee would be observed by the utility management.

Mr. Bahadur discussed the special cases of the access authorization rule.

An individual who has had six months of uninterrupted access authorization prior to the final rule will be grandfathered when the rule is final.

- o If the access authorization is interrupted for a period of less than a year, the access authorization can be reinstated without redoing the requirements for the rule.
- o Temporary access for an 180 day period can be provided with less stringent conditions.

Mr. Bahadur noted that temporary access requires fingerprinting, employment check for a year, a character history, and behavioral monitoring.

Mr. Bahadur discussed the exceptions that the regulatory guide has taken of NUMARC guidelines.

- o One exception is that both permanent and temporary

employees have appeal rights if the access authorization is denied.

- o Grandfathering now requires six months of access authorization instead of having access authorization grandfathering granted to those individuals having access authorization on the day the rule is made final.
- o The access authorization program shall be audited every year rather than once every two years.
- o The staff has taken exception to the guidelines relaxation of access authorization during cold shutdown. Relaxation of access authorization during cold shutdown will be judged on a case by case basis.

Mr. Bahadura discussed issues raised by CRGR.

1. The CRGR expressed the view that the rule does not provide the increased assurance of safety to meet the backfit requirement. Mr. Bahadur stated that the rule is needed because the NRC does not have a standard on access authorization.

The CRGR said the staff should not take an exception for the audit timeframe, that is should be audited every two years.

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The CRGR suggested that the implementation period for the rule should be increased from 180 days to one year.

The subcommittee was adjourned at 6:05 p.m.

NOTE:

A transcript of the meeting is available at the NRC Public Document Room, Gelman Blddg. 2120 "L" St., NW., Washington, D.C. Telephone (202) 634-3383 or can be purchased from Ann Riley & Associates, LTD., 1612 K St. NW., Suite 300, Washington, D.C. 20006, (202) 293-3950