

TEBRC - PERAR

TEBRC



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 2 1979

MEMORANDUM FOR: Gerald K. Tomlin, Chief
Safeguards Research Branch
Division of Safeguards, Fuel Cycle
and Environmental Research

FROM: Richard C. Robinson, Chairman
Transportation Research Review Group

SUBJECT: MINUTES OF THE TRANSPORTATION RESEARCH REVIEW GROUP

The Office of Nuclear Regulatory Research (RES) has a broad-based research project (A1173) with Sandia Laboratories, Albuquerque (SLA) called Effectiveness Evaluation Methods for Transportation Physical Protection. The first research review group (RRG) for this project was held during the afternoon of May 22, 1979 and a list of attendees is enclosed.

The meeting was opened by the Chairman, who explained that the primary interest of the group should be directed toward technical (or philosophical) aspects of the project, and not to get involved with emphasizing user office positions. The group readily concurred and this was reflected throughout the meeting.

Then Dr. Leon Chapman gave a half-hour presentation, covering the various tasks involved with the FY79 research program and some background on their genesis. This set the stage for the discussion. All members were later sent a copy of the vugraphs presented.

The primary matters discussed involved milestones, the upgrade rule task of the FY79 program, and the possibility of a considerable increase in waste transport requirements due to spent fuel shipments. Otherwise, the subjects discussed were spontaneous in nature, led by the interests of the group. The topics explored will now be addressed.

Milestones

Due to the late user request endorsement (March 1979) by NMSS and subsequent approval by the Commission (April 1979), the funding of the FY79 program was not released to the contractor until May 1979. Thus, all agreed that milestone slippage was inevitable since SLA could hardly be expected to commit unfunded manpower for many months. Dr. Chapman said that documentation of the SABRES (Simulation of Adversary Battle for Reactor SNM) combat models will be completed this fiscal year, but that the EARS (Emergency Assistance Request Simulator) communications model will probably slip over into FY80. No additional money is

790730 0139 488 184

required, however, to complete the initial EARS modeling effort including the ability to handle jamming. Mr. Giarratana said that the EARS slippage would not be critical since the SECOM II test was slow getting underway. The only other task in the FY79 program involves the upgrade rule methodology.

Upgrade Rule

At Mr. Robinson's request, Dr. Chapman explained the situation regarding the initiation of the task to develop an upgrade rule methodology for transportation, and reviewed his conversations with Tom Allen over the past few months concerning the status of the upgrade rule. In particular, Dr. Chapman had asked whether the approach SLA was using with upgrade rules for facilities, in terms of publishing a compendium or set of questionnaires related to each safeguards component, was acceptable for transportation. Mr. Allen had responded that the current rule is written as part of the facilities rule and was going to stay more or less as written. Thus, he felt enough work had already been done in that area and it probably didn't warrant any further effort.

Dr. Chapman then suggested that perhaps a better concentration of effort might be to look downstream at some integrated rule package; that is, simultaneously develop the structure for evaluating the rules along with the development of the rules themselves. The problem SLA has encountered with the current rule is that they're written from a legal aspect and SLA has had a difficult time structuring evaluation models exactly to each rule as written. He feels that a little more thought to the hierarchy of how the rules were written would have saved headaches and iterations (in the work done for facilities). Thus, Dr. Chapman proposed that in the transportation task, a revised effort may involve an iteration of 2 or 3 proposed rules with utility theory techniques to evaluate the compliance with that rule. Dr. Hockert responded that he believes interest is low in this area because there are so few SNM shipments. He feels they have some people fairly skilled in route analysis and, that with only a few shipments, they are able to use their current and more detailed method.

Dr. Lessler then suggested that he and Mr. Giarratana get together with Mr. Allen to pick out some specific areas for initial concentration of effort. When they have an internal plan ready, Mr. Robinson will meet with them to see if SLA needs to be redirected; and if needed, to fulfill procedural matters within NRC.

Waste Transport

Dr. Hockert raised the possibility of using the COPS (Count of Police Support) model and its population data base to analyze routes for spent fuel shipments. The prime purpose would be to identify high population density areas that should be avoided. He said that the current rule requires each transporter licensee

JUL 2 1979

to file a route plan with NRC for its approval. NRC does not suggest preferred routes. However, Mr. Giarratana pointed out that we shouldn't overlook the fact that both NRC and DOT are considering proposed rules and supporting guidance that would involve setting up route criteria and guidance to be used by the nuclear industry.

Dr. Chapman suggested that we may have a tradeoff problem between picking low population routes and the number of police available for emergency call. Dr. Hockert opened that LLEA availability isn't that critical to sabotage of spent fuel shipments. He said that a sabotage attempt would probably take place too quickly to expect LLEA response in time to have a significant impact on the outcome. Dr. Chapman said that this problem is going to require some aggregation of the entire route in a performance measure that will somehow compare routes. Mr. Giarratana suggested that this might be something like a cumulative population risk type of measure.

It was apparent from the discussion that this was an area of concern only if there were a large number of shipments, which is quite likely over the next five to seven years. Otherwise, for the short term, the present one-at-a-time review basis still appears to be adequate. Dr. Chapman noted that DOE created a comparable effort to COPS for which they collected actual data on LLEA; however, data are missing for many states and counties. Mr. Robinson said that COPS runs very efficiently and that some applications were made recently for NRR regarding LLEA availability in the vicinity of each licensed power reactor. He also noted that in lieu of entering updated census data into the COPS data bank, perhaps a scaling factor could be applied, based on the latest census figures.

SAI Phase V

Mr. Robinson raised a question as to why NMSS had not supported an RES proposal to complete the last phase of the Science Applications, Inc. (SAI) study. SAI had completed four previous tasks (\$160K) of a study to adapt NAM (Network Analysis Model) to simulate the entire communications network involved with SNM shipments, both extant and proposed. Phase V (\$45K) was to actually apply the model to some specific scenarios (developed by NMSS) for sensitivity analyses.

Mr. Robinson expressed dismay at coming this close to a potential payoff and then never finishing the job. In addition to its potential for calibrating the simpler EARS model, the NAM II model has the virtue that it could also be used as a check against the ITS (Institute of Telecommunications Sciences) model, which was developed for DOE as its "official" communications model. DOE has applied this model for both system performance evaluation and in developing upgrade systems design for the SECOM system. Both of these models are large and complex and Mr. Robinson feels that it would be very worthwhile to make some comparable runs with them. If the results differ, one would clearly want

to be able to explain why they differ, and perhaps this would lead to modifications of the ITS model. If the results agree, one would feel much more secure in applying the ITS model and in using it to calibrate EARS. Mr. Robinson has no problem with the fact that NMSS has adopted the ITS model for its use, since NAM II is an SAI proprietary model that would cost NRC a considerable amount to bring in-house.

Mr. Giarratana explained that the reason Phase V was not supported was that NMSS felt, as a result of the February 1979 briefing by SAI, that NAM II was not sufficiently debugged and ready for application. All agreed that there were inconsistent results presented at that briefing and that the model logic wasn't clear, raising the question of the model's validity and/or SAI's statistical treatment in using it. Dr. Hockert said he would have no objection to having SAI "clean up their act" and brief the NRC to demonstrate that NAM II is a credible model. Until this is done, NMSS would not be willing to talk about completing Phase V. Everyone concurred that this was a reasonable approach and Dr. Chapman agreed to "run this by" SAI and report back on their response. In response to a question, he said that SAI has already been paid for the first four tasks. [Since the meeting, Dr. Chapman has informed me that he has conacted SAI. They replied that since the work was done on a cost-plus-fixed-fee contract, and since they have used up all of the money provided, they could do no further work on NAM II without additional funding.]

Miscellaneous Topics

Several other topics were discussed that would not benefit by being reported in detail. These were:

- (1) an explanation of the operation of the National Energy Software Center at Argonne National Laboratory and why RES would like to put their codes in the NESC library,
- (2) how the upgrade rule may reduce the business incentive for nuclear transporters,
- (3) whether or not SECOM provides the capability for continuous communication,
- (4) previous applications of the SABRES models,
- (5) the Transportation Safeguards Effectiveness Model (TSEM), developed by DOE and BDM for \$500K over three years, which essentially duplicates SABRES II, and
- (6) ways to immobilize a transporter.

JUL 2 1979

Coordination with NMSS-78-5

There was a conditional endorsement by NMSS of the FY79 Transportation Safeguards Evaluation Methodology Research Program, as stated in a March 12, 1979 memorandum (NMSS-78-5) from W. J. Dircks to S. Levine. The subject of concern was some recommended changes to the milestones. These were readily accepted, but as noted above, the delay in funding has affected the initial schedule.

The memorandum also nominated three staff members for membership on the RRG who were present at this first meeting. Similar meetings will continue on a regular basis in an effort to assist in establishing research goals and to provide user offices with a formalized management mechanism for review and assessment of RES projects.

Richard C. Robinson

Richard C. Robinson, Chairman
Transportation Research Review Group

Enclosure: List of Attendees

488 188

ENCLOSURE

Sandia Albuquerque

Leon D. Chapman

Nuclear Regulatory Commission

*Dick Robinson, RES (Chairman)
Bruce Taylor, RES

*Jerry Giarratana, NMSS

*John Hockert, NMSS

*Lance Lessler, NMSS

*Ted Michaels, SD

*Designated RRG Member

488 189