

TESTIMONY OF SOL BURSTEIN
TO
NUCLEAR SAFETY OVERSIGHT COMMITTEE
SANTA BARBARA, CALIFORNIA

January 21, 1981

Thank you for your invitation to meet with you and to discuss nuclear plant staffing.

I should like to do so from my own perspective, using my Company's experience at Point Beach Nuclear Plant. As you noted, I am presently Executive Vice President of Wisconsin Electric Power Company. I was responsible for the Point Beach Nuclear Plant project from its inception in 1965 through its design, licensing, staffing, construction, and operation, beginning in 1970 to the present time. Point Beach enjoys an enviable record by every measure-- safety, reliability, and efficiency. I believe this record is due to proper design, good construction and, above all, a high level of operating and maintenance capability.

In this belief, we began our initial plant staffing by assigning to those who would ultimately operate and maintain the plant the responsibility for its design and engineering. We selected our initial staff to comprise a total of 86 men and women to cover a two-unit facility. The core of our staff had previous nuclear experience or fossil-plant qualifications. Some came from within our own organization. Most were hired from the outside.

All were screened for educational qualifications,

intelligence, mechanical comprehension and aptitudes, emotional stability, and other characteristics. This was a traditional part of our normal hiring practices and, thus, all of our staff, in-house employes, as well as new recruits, received the same screening. We use the same system today. Most of our new hires came from the nuclear navy, one from another nuclear utility, a few from nuclear vendors. Those who did not have nuclear training or experience with our type of pressurized water reactor plant were sent off site for up to two years of training at manufacturers' shops, other operating utility plants, schools, or simulator facilities.

As I mentioned earlier, the senior operating and maintenance staff assumed responsibility for design and engineering, and helped train their successors. As soon as construction progressed to the point of opportunity, these operating and maintenance personnel were reassigned to the plant site. There they performed inspection and audit functions, and prepared operating and maintenance procedures and completed their training. As portions of the plant were completed, these permanent operating and maintenance personnel assumed responsibility for equipment, structures, and systems and performed the testing and start-up functions.

Unit 1 was placed in commercial service in December 1970, with about 65 total plant staff. Unit 2 came on line in 1972 and required 21 additional people, who were assigned at various times over that 18-month interval. The plant manager, the headquarters nuclear engineering head, and even I knew each of these 86 plant people personally. We had a stable, close-coupled, intimate group

of competent people, and it remained so, essentially without change, for many years.

We recognized early that as the nuclear industry grew, there would be increasing demands for more, equally competent people. Even as our Unit 2 was going into service, we began planning future nuclear programs and future nuclear staff. We worked to help establish national standards in respect to nuclear plant personnel qualifications, and our Nuclear Operations Manager was the first chairman of the Standards Committee. We anticipated that we could meet future staff requirements as we had before, based on a predictable, programmed development schedule, with nuclear Navy alumni, with internal transfer, and training of existing employes, by occasional hiring of few experienced nuclear people from suppliers, consultants, and regulatory agencies and from schools and colleges. Mostly we planned to staff our new plants by promoting people from our Point Beach operations.

There were great motivation and dedication in our plant staff. It was an exciting and productive-- even glamorous-- time. Our staff people were welcomed as desirable citizens in their communities. They were highly skilled, well-paid, prima donnas to some extent, enjoying a special respect and admiration with an assured, rewarding future.

Our nuclear activities have always been segregated from others within our organization. This includes operations, engineering, licensing, staffing, fuel, and everything else,

except for accounting and financing.

Three Mile Island changed all of that. The impact of that accident on nuclear plant operating staff is perceived by them to be as severe as its effect on anything else, if not greater. From a special elite position of respectability, they now find themselves being blamed for everything. They are accused of having caused the accident, of being confused, lacking in recognition, improperly trained, even of hiding facts and lying to protect themselves. The Nuclear Regulatory Commission has said these things, the investigating committees, the plant designer, and even other utilities who have B&W plants. We seem to have a national need to find a scapegoat for TMI, to fix the blame, and to punish someone-- and nuclear plant operators believe they are it.

It is not easy to maintain one's dedication and motivation in the face of continued examples that charge distrust, incompetence, and suspicion. Operators perceive that most of these demotivating factors originate with the NRC. The Commission, and particularly the NRC staff, is under pressure from every quarter to make things right in the nuclear world and to restore its own credibility. TMI has given the agency a new mandate to do somethings. The constant stream of bulletins, notices, NUREG's, orders, and letters from the NRC go out to all licensees and permit holders, generally requiring at least investigations and responses by a certain arbitrary time, without regard for plant design differences, location, or vintage or for other work load. Sometimes conflicting instructions are

received. All of this presents a pattern of arbitrary-- some say arrogant-- regulation and causes plant operators to question the competence of regulators.

All of us with operating plants are involved in backfitting systems, controls, instrumentation, and structures to one degree or another. For us at Point Beach, it may cost some \$15 million, compared to some \$4 billion for Washington Public Power, if the January 8, 1981 Wall Street Journal report is correct, for three plants in their construction phase. Making modifications to an operating plant must be done very carefully in order to avoid creating a less safe consequence.

For ten years, we have operated Point Beach with a minimum of seven operators per shift. We are now required to have eight, and shortly that will be increased to thirteen, excluding the Shift Technical Adviser. We have had no explanation of why these numbers are required, nor what the additional staff are supposed to do.

For perhaps the same secret reason, we, like others, are required to have a minimum of five people available for a fire brigade. It does not seem to matter if we have a small compact, single control, single auxiliary building, or whether our housekeeping is good or bad or whether we are sprinklered or not.

The NRC's new requirements for increased training, higher minimum acceptable scores on reactor operator examinations, and higher minimum educational level requirements all infer that present plant staff are incompetent.

The requirement that a Shift Technical Adviser be assigned does not bolster an operator's confidence in himself.

The addition of NRC resident inspectors has been particularly demoralizing in many cases. Highly experienced operating and maintenance personnel resent inspectors, who are frequently less experienced individuals, questioning their operating judgments. The increased frequency of NRC inspections at all nuclear facilities encroaches on the time of licensed personnel and diverts them from assigned duties.

One of the most sensitive operating staff concerns is directed to plant security requirements. The NRC preoccupation with the "insider threat" treats all employees, who have passed our specified screening procedures, as potential saboteurs.

Changing and increasing volume of NRC-mandated operating procedures complicates training and increases the likelihood of operator confusion and perhaps error. The "on-again, off-again" instructions regarding reactor coolant pump operation in a LOCA illustrates the basis of frustration and lack of confidence felt by operators with respect to regulators.

All of these are examples of activities that demotivate operating and maintenance staff. They all require more staff. Let me give you a few more.

On October 7, 1980 the NRC adopted an interim policy on enforcement. Regardless of the desirability on some people's part for larger penalties against utilities and their personnel, plant

operators see their credibility and integrity being discredited and their personal and financial well-being threatened. Penalties can result not only from personnel action or inaction, but also by NRC interpretation. There is no up-to-date NRC compilation of reports as provided in Regulatory Guide 10.1 in 1977. Surely the Niagara Mohawk case involving not just a \$225,000 fine, but the removal of senior operating and perhaps executive personnel from nuclear activities is degrading and demoralizing to all utility staffs.

There are other examples. NRC management criteria and the requirements to report undefined events by the so-called "red" telephone to a remote NRC emergency center demotivate and confuse plant operators. The Sholly decision, as noted correctly yesterday by Professor Lewis, cannot only prevent NRC from issuing license amendments even under emergency situations, which may have its virtues, but it can be used to challenge the qualifications and competence of operating and maintenance staff, as is now being tried in the TMI Unit 1 restart proceeding.

In Florida a utility is being required to refund \$12.9 million for extra costs of power occasioned by the continued shutdown of a nuclear plant caused by the accidental dropping of a load on some fuel assemblies.

In New York, the recovery of extra power costs associated with Indian Point 2 shutdown due to containment cooler leakage damage is being challenged.

In Wisconsin, the question of who pays the cost of either repairing or replacing steam generators which have experienced tube deterioration is being litigated. Intervenors are charging that stockholders should pay these costs because the plant was not prudently operated.

You heard this morning some of the basic concerns as to who pays for TMI.

These examples have a chilling effect on the morale of nuclear plant operators, and certainly do not inspire people to accept responsible operating jobs.

One of the more serious results of what some see of these examples as "NRC harassment" has been the departure of experienced utility engineers and licensed operators from the nuclear industry--precisely at the time when more qualified and competent staff is needed. The increases in work load on my Company has caused the Point Beach plant staff to go from 86 to 143 in the last few years. The headquarters staff of professional engineers has doubled, and we are employing 3 consulting engineering firms, one nuclear steam supply system manufacturer, and a few owners groups to keep pace.

One manager of a multi-unit plant under construction was recently reported to have stated he needed 900 people to staff his facility, and he meant to cannibalize 5 from each unit operating or under construction. This pirating of people by other utilities is serious, but is further compounded by active recruitment of experienced nuclear plant operators by vendors, consultants, and the NRC. Even INPO gets its people from utilities.

Obviously, nuclear plant operators who are being demotivated and demoralized, who see a dim future, and who feel they are being singularly victimized, are not going to stay in the business. The ability for a utility to attract new people into such an environment is becoming more restricted. This is directly contrary to increased plant safety.

Unless we restore operator confidence, credibility, and glamour, we will have insufficient qualified people to operate and maintain our existing facilities-- and no amount of money is going to overcome it.



Nuclear Safety Oversight Committee

April 17, 1981

Honorable Ronald Reagan
President of the United States
The White House
Washington, DC 20500

Dear Mr. President:

Your Nuclear Safety Oversight Committee has conducted hearings to inquire into the progress of training and technical education within the nuclear power industry. As you know, the various investigations in the wake of the Three Mile Island accident all uncovered the need for a much stronger effort to assure that nuclear power plants are operated and managed by the best qualified and most highly trained personnel.

Most safety studies have stressed stronger regulation, directly by the NRC and indirectly by industry groups such as the Institute of Nuclear Power Operations (INPO). However, only the operating utility can ultimately assure safe operation; regulatory schemes can never be a substitute for strong utility management with high technical competence at all levels of plant operation.

We are frankly concerned that in the eagerness to correct the more readily identifiable problems arising from the Three Mile Island accident, not enough attention is being devoted to assuring uniform high quality engineering competence at the top levels of the utility industry. We are also disappointed at the lack of attention to this issue by INPO and industry groups which have thus far concentrated their work at the level of operation and maintenance. We recognize the inherent difficulty in assessing, much less enhancing by regulation, the overall technical caliber of a utility organization. Further, we doubt that NRC or, for that matter any governmental organization, has the experience or the competence to formulate direct regulatory measures in this area.

It is therefore all the more imperative that utilities themselves address this issue aggressively. The industry

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must actively discuss and seek methods and incentives, short of direct regulation, to stimulate more technical competence all the way to the top of the organization.

At the regulatory level, our inquiry revealed that both the Nuclear Regulatory Commission and the industry have taken many positive steps to correct deficiencies in training and staffing. For example, the Nuclear Regulatory Commission has imposed a variety of new requirements, including higher experience level standards, expanded training requirements in basic science and simulator use, and revised examination standards. The nuclear industry, through its Institute of Nuclear Power Operations (INPO) has taken steps to improve personnel training and to develop new training curricula. As a result, we believe that the overall competence of personnel within the industry will be improved and will uniformity of standards throughout the industry.

In some areas, however, the formal education requirements proposed by the Nuclear Regulatory Commission may exceed critical job requirements and could be counterproductive to safety. An example is the proposed NRC rule that shift supervisors and senior reactor operators have a Bachelor of Science degree with 60 hours in technical subjects as a prerequisite to certification. Such proposed requirements may be more prescriptive than could be justified by a careful analysis of task and job requirements. Moreover, the imposition of unnecessary academic criteria could drive out competent operator personnel without academic credentials at a time when there is already a serious manpower shortage within the industry.

For these reasons we believe that the imposition of further formal education requirements should be held in abeyance pending a systematic job and task analysis and a study of qualification standards within the nuclear power industry. Such an analysis has apparently never been carried out on an industry wide scale. The Institute of Nuclear Power Operations is currently preparing such a systematic assessment of job and task requirements; we strongly support that effort as the necessary preparation for the further refinement of training and job qualification definition.

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Non-reactor operator personnel, such as maintenance personnel, inspectors and technicians, (hereinafter "balance of plant personnel") are not licensed by the NRC. In lieu of a formal licensing system, the NRC has traditionally endorsed standards for balance of plant personnel developed by the American Nuclear Society and the American National Standards Institute.

We believe that this cooperative method of standards development is the preferable method for these positions. We note, however, that in many areas qualification standards for balance of plant personnel are very general in nature and provide little guidance to the utilities, much less a basis for regulatory audits by the NRC. Again, we strongly support the effort of INPO to develop job and task analysis for balance of plant personnel. INPO's work should be paralleled by an intensified effort by ANSI and the American Nuclear Society to develop meaningful balance of plant standards.

In the past utility training programs have not been subjected to careful oversight or accreditation by either industry or the Nuclear Regulatory Commission. The Institute of Nuclear Power Operations now proposes to implement a formal industry accreditation program. We urge your support for this effort because we believe that industry peer group accreditation, backed up by NRC audit, is preferable to imposing yet another regulatory obligation upon the Nuclear Regulatory Commission.

The draft training accreditation plan prepared by INPO is a promising start. The INPO proposal would set up an accreditation committee as the ultimate guarantor of training program quality; the Committee would consist of a mix of industry, academic and regulatory members, all appointed by INPO. Although INPO accreditation would take place outside the formal regulatory process, we believe the concept has promise and deserves active discussion and involvement by both your office and the NRC. An important question is whether the process would be strengthened by participation of professional standards groups and the educational community in the selection of accreditation committee members.

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Since Three Mile Island, proposals have been advanced for the establishment of a "Nuclear West Point" for training of nuclear power plant operators. We believe that the overall technical quality and expertise of a utility organization can actually be enhanced by in-house training. Given the diversity of utility organization and reactor types, there are strong arguments for allowing training programs to evolve from the existing environment rather than superimposing one national pattern. If the existing impetus toward higher standards and better training can be maintained, we advise against further consideration of national academy type proposals.

We are pleased to see increasing university participation in utility education and training; a good example is the program currently being offered to utilities (and leading to an optional degree) by Memphis State University. The participation of third parties such as universities in the training process appears to us to provide an important measure of quality control independent of both the utility and the regulatory system.

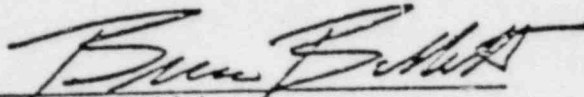
There is increasing evidence of a shortage of trained and experienced nuclear plant operators and other technical personnel. If not corrected, the effects of this shortage will become pervasive, affecting the ability of utilities to meet more stringent and increased operator staffing requirements. This problem needs more attention and concerted action at the highest level by industry, the educational community and government. We are most pleased to note that the Department of Energy has undertaken a comprehensive study of this problem. We urge you to give full support to that study.

In sum, there has been substantial progress in upgrading training and technical education within the industry. The systematic effort by INPO to develop task and job analysis as a predicate for standards and accreditation is particularly encouraging. However, the most important and difficult question

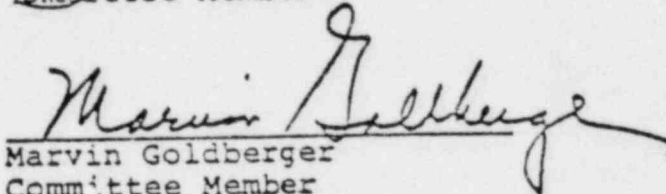
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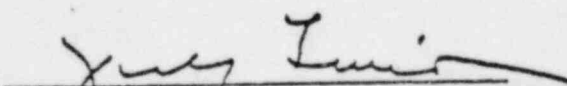
of all, technical competence at the utility management level, has not been as effectively addressed.

Sincerely,


Bruce Babbitt
Chairman


John Deutch
Committee Member


Marvin Goldberger
Committee Member


Harold Lewis
Committee Member

BB:kae

cc: Edwin Meese, III
Martin Anderson
David Stockman