SAFETY AND SECURITY OVERSIGHT OF THE NEW NATIONAL NUCLEAR SECURITY ADMINISTRATION

JOINT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER

AND THE

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

OF THE

COMMITTEE ON COMMERCE

HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

SECOND SESSION

MARCH 14, 2000

Serial No. 106–105

Printed for the use of the Committee on Commerce

U.S. GOVERNMENT PRINTING OFFICE

64–030CC WASHINGTON : 2000

Mr. STUPAK. Thank you, Mr. Chairman. I apologize for being late. My plane was late and I got in later than I thought, but I really did want to talk to this panel so I am glad I made it in time for that.

Dr. Burick, if I may, I read your testimony and that of the other witnesses today and, quite frankly, I don't have a clear sense of how this new autonomous agency is going to work and how the Secretary is going to make sure that the DOE's environmental and health and safety standards and legal commitments are being carried out. It took us a long time to get Defense Programs to even admit that there were such problems. The DOE area offices protected the weapons laboratories and production facilities from any effective supervision from headquarters and, frankly, I think they were part of the problem. Not surprisingly in your testimony today the laboratories which have a long history of refusing to take direction from DOE think we should go back to letting some variation of the area offices run things.

Having said that, we were provided a report here, and I would like to make it part of the record, Mr. Chairman, by Mr. Frank Rowsome, DP 45. It is dated February 28, 2000. I just received it late last night. But with unanimous consent I would like to have it——

Mr. UPTON. Without objection.

[The information referred to follows:]

Safety Basis Debacle 2/28/00

THE SAFETY BASIS DEBACLE
IN DOE'S NUCLEAR WEAPONS PROGRAM

by Frank Rowsome, DP-45

Abstract: Over a decade ago, safety professionals were brought into DOE to change the "safety culture" and safety requirements. By triggering resentments among the weapons professionals, they had the opposite of the intended effect. Line management of the nuclear weapons program is deprofessionalizing safety assurance. Complacency, self-satisfaction, and resistance to questioning the premises of the program are overriding the systematic search for safety weaknesses. Although the weapons program spends considerable time and money on the development of safety bases for work on nuclear weapons and hazardous nuclear facilities, these investments commonly have very little to do with the safety of actual operations. Few safety bases can be relied upon to discover or correct accident vulnerabilities that are not being resolved by other means. Management cannot rely upon them to illuminate safety decisions. As a result, much of the investment in safety bases is wasted. The pattern of stylized and ineffectual safety analysis, of accident precursor events unheeded, and of management complacency is strongly reminiscent of the NRC before the accident at Three Mile Island or NASA before the Challenger disaster. Follow-up studies and corrective actions are suggested. In addition to a reappraisal of safety programs, a major overhaul of safety requirements is needed to correct the problems identified.

It is well known throughout DOE's nuclear weapons community that it is maddeningly difficult to create successful safety basis documents. Whether for DP-sponsored nuclear facilities or nuclear explosive operations, attempts to create safety basis documents are commonly expensive, time-consuming, often delay the startup of new or modified facilities and operations. These painfully created safety basis documents are often judged to be failures by the experts called upon to judge their acceptability.

The problems with safety bases run deeper than these outward symptoms suggest. My objective is to bring to the attention of DP and NNES management a summary of the evidence for and causes of this situation – to pull the thread – and to suggest options for corrective action.

upon to follow their procedural cookbooks precisely, even with the best of intentions, they will be less alert than they might otherwise be to mistakes and anomalies. They resent the fact that they are accorded very much less stature and professional respect than the weapon engineers, even though their hands-on experience enables them see how naive and inexperienced many of the higher-status engineers really are about the problems that arise in weapons assembly and disassembly. These problems might be responsible for the flock of close calls we have had in recent years. These problems with the social psychology of our weapons work warrant expert evaluation, as does the evidence of the close calls, and safety research results.

A similar demoralization may be affecting MHC management. They are taking a lot of grief from DOE for failing to stay on schedule in an atmosphere of increasing expectations and declining budgets. They are not seeing respect for their accomplishments mirrored in their interactions with their DOE clients. So it should not be surprising to see some gamesmanship and spin doctoring from them. Does this affect the safety of their work? We cannot tell, but the potential is there.

Many in weapons program line management are tempted to blame Mason & Hanger for the deficiencies in the safety basis documents for Pantex facilities and operations (as well as to blame the safety basis experts in DOE). To be sure, many of their safety basis submittals have been poor to abysmal. Then, too, some in MHC management have taken to gamesmanship in dealing with their DOE clients in such matters. There is a school of thought that we should blame MHC for such problems, and that it is high time to fire the contractor.

I am inclined to view the MHC performance in a more sympathetic light. DOE's safety requirements are not formulated to be well-optimized for nuclear explosive operations. No one in DOE has ever officially conveyed to our contractors – or ourselves – a clear vision of how the abstract safety benefits of compliance with our safety directives are supposed to translate into practical benefits and useful insights that connect with what is done on the shop floor. DOE is notorious for interacting with its contractors through a cacophony of uncoordinated kibitzing. DOE has never disciplined itself to talk to its contractors with one voice.

Most of the misinformation about what safety basis documents are supposed to be that I detect in MHC can be traced to DOE employees who did not have a clear vision of what safety basis documents are for. Such people have been instructing them on what to do. Many in DOE management – including key overseers of Pantex operations – believe that safety basis documents really are meant only for outsiders and that it is legitimate for safety basis documents to be designed to justify the *status quo*. DOE has been expecting MHC to do more with ever-declining resources. The management of the weapons program is also notorious for trying to force fit weapons projects into unrealistic budgets and schedules.

We all like to think that if we ourselves were running Pantex, (or DP for that matter) it would be very much better managed and its problems would go away. Then, too, we would like to see our M&O contractors being more pro-active and anticipating and correcting problems before they come to DOE's attention. But a more realistic reading might well be that the best of us would do no better than MHC has done, with the conflicting signals, resources and information sources available to them.

The pattern of close calls, research results, and the breakdown of the safety bases suggest that accidents at Pantex could be much more likely and possibly more severe than the community believes. They may be far more likely than we would knowingly accept, so we need to look at the possible outcomes before we settle upon whether to shut Pantex down or not.

We have seen nuclear weapons accidentally destroyed but not exploded at Pantex in recent years. We might see an accident in which the chemical high explosive is detonated or burned while still in a nuclear weapon. That would destroy one bay or cell at Pantex, and kill the technicians (typically three to five) involved in the operation and possibly a few outside. It would spread some small but embarrassing quantities of plutonium into the environment. It should be pointed out that no such event has happened in the long history of nuclear explosive operations at Pantex, so the likelihood of one occurring in the years it may take to sort out the safety basis debacle is probably small.

Less likely than such a chemical explosive detonation is a nuclear explosive detonation. Were one to occur, the more likely scenarios would produce one of very low yield – a fizzle as nuclear weapons go. Dismantlement of a nuclear weapon often has the effect of bypassing or disabling some of the safety features that are built into fully assembled weapons. On the other hand, dismantlement usually entails removing some components needed to achieve a large nuclear explosive yield. At the severe end of the spectrum of likely accident possibilities, such an inadvertent nuclear detonation would destroy Zone 12 at Pantex, and kill the several hundred workers there, and induce the chemical explosive to go off in a few dozen other nuclear weapons, but probably without nuclear detonation in them. It would produce a cloud of radioactive fallout not unlike those resulting from one of our above ground nuclear weapon tests in the 1940's and 1950's. Today, the property damage costs associated with interdicting contaminated property would be substantial and viewed as scandalous. It would not damage Amarillo, beyond, e.g., shattering windows at the airport. Apart from such effects as the broken glass, it would not produce large numbers of casualties off site. It would be a political and diplomatic embarrassment of the first order. The likelihood of it occurring in the next few years is almost certainly fairly small, even if our confidence in Pantex is misplaced. Higher-yield nuclear explosions are substantially less likely. They might produce much more radioactive fallout, though, because such an accident might vaporize the many plutonium pits staged at Pantex,[9] but apart from that would not have dramatically higher off-site consequences away from the immediate vicinity.

It is worth noting that risk-based decision-making – along the lines I have just been suggesting – is *not* being done now to judge DOE's future actions at Pantex. The safety basis requirements are meant to lead to such decision-making, but that, too, has been compromised. Instead, management maintains that nuclear detonation is incredible at Pantex – and so not worth thinking about or analyzing or being prepared for. The NRC similarly maintained that core melt accidents were incredible and not worth analyzing and not worth being prepared for at nuclear power plants – until one happened at Three Mile Island.

Even though we do not have much as we would like that we can rely upon to judge the likelihood of such accidental outcomes, it appears that it is the stewardship of nuclear weapons that is most at risk – the mission of Pantex – rather than public safety or the environment. I think it is responsible to accept the risk while we go about correcting the safety basis debacle. Pantex serves an essential role in sustaining our nuclear stockpile and in dismantling the nuclear weapons we no longer need. Based upon what I know today, I do not recommend shutting Pantex down. The same is true for many of the nuclear facilities that support the weapons program elsewhere.

It is worth pointing out that shutting down Pantex might be an attractive diversionary tactic if this paper, an accident, or some other event proves to be particularly embarrassing to DP line management. It is all too natural – a consequence of human nature – to try to displace blame when things go wrong. The NRC succumbed to such temptations after the accident at Three Mile Island, and the nuclear power industry still bears an unwarranted burden from such regulatory displacement. We should not make this mistake with Pantex. First and foremost, it is DOE's management of Pantex operations that needs fixing. It is DOE's safety basis programs for nuclear explosive operations that should be "shut down."

Corrective Action I: Problem confirmation

Few readers of this paper will want to take my word for the problem diagnosis or the proposed corrective action. The allegations, though, are serious and deserve serious investigation. No path forward should be based on the limitations of one person's perspective of a complex reality. A thorough, disinterested, competent investigation is called for.

---

[9] The Safety Analysis Report for the storage of plutonium pits in Pantex building 12-116 failed to look into whether the pits might be vaporized in an accidental nuclear detonation in the bays or cells near by, or what the consequences would be if they were vaporized. This is one of many examples of the corruption of the safety basis process that is endemic in DOE's nuclear weapons work. The reports do not ask the right questions to support well-informed safety decision-making.