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Testimony

Before The

House Committee on Interior and Insular Affairs
Subcommittee on Energy and Environment

Re: Mr. Conran's Allegations

July 29, 1977

Thomas B. Cochran
Arthur R. Tamplin

NRDC ^{has}
~~we~~ have been concerned about the safeguards for special nuclear material (SNM) for a number of years. In January of 1976 ^{we} NRDC obtained two internal documents. The material contained in these documents, considered together with other information available to us, precipitated NRDC's decision on February 2, 1976, to petition the NRC for emergency safeguard actions. The petition was denied by the NRC. In responding to our concerns over safeguards, both with respect to our petition for emergency action and to our interrogatories related to our CRBR intervention, the NRC's actions were not just attempts at obfuscation but were, in some cases, downright fabrications. We submit that our experience with the NRC corroborates Mr. Conran's allegation on page 1 of his "Open Letter to the NRC" that:

In the extreme, it even appears that deliberately-misleading information has been promulgated regarding these sensitive aspects of safeguards, both publicly (to the Congress, intervenors, and the public-at-large) and internally (to cognizant, working-level, regulatory safeguards personnel, and to contractors and licensees, engaged in vital safeguards studies and/or directly responsible for the control and protection of SNM).

Moreover, because of these actions on the part of the NRC, we are now more convinced that emergency safeguard actions are essential to the maintenance of our national security.

^I We shall return to this later, but first ^I we would like to address another specific allegation made by Mr. Conran. This allegation, we feel, clearly demonstrates that an adequate system of safeguards is an impossibility, not just on a world-wide basis

and involving countries of questionable stability, but even here in the United States. On page 7 of his "Open Letter to the NRC" Mr. Conran states:

As a final chilling possibility, I have recognized, from early-on in my vain struggle to have the critical problems and conditions I observed addressed and remedied, that all of the information and indications available . . . are consistent with "symptoms" one would expect to see if a situation existed in which government officials were involved (or culpable) in the theft of SNM for personal financial gain, or in the "misappropriation" of SNM for other illegal or extralegal purposes.

Any and all of these possible "explanations" for what has happened are, of course, totally-inconsistent with the principles of open-and-honest government. What literally compels me to the course and action I have now taken is that two of these possible "explanations" I must now view as likely; and even the most sinister of them cannot be totally discounted (in fact, it seems somehow-the-more-congruous with so many other-wise-insensible aspects of all that has occurred and all information available).

Here is a young man who, as the rest of the letter indicates, not flippantly, but after compiling considerable information and giving it serious consideration, makes this accusation at considerable risk to his career. His scenario, if placed in the context of certain other countries, would probably gain wide acceptance as highly plausible. At the same time, it is not unreasonable to give it some credibility in the U.S. in the aftermath of Watergate and the CIA revelations. We can find no good reason to ignore it, particularly after reading the NRC "Report of the Task Force on the Allegations by James H. Conran." We have appended, as Attachment 1 to this testimony, page 4-13 of that report and would like to have it included in the record. This page indicates that Conran was concerned about a possible

diversion of highly-enriched uranium from the NUMEC facility in Apollo, Pennsylvania, in the mid-1960's. The Task Force states that a wide variety of information on this alleged diversion exists and that included in this body of information was a category which is sensitive. The Task Force indicated that senior NRC officials were briefed on this sensitive information but that the Task Force did not see or request to see this material. As a result, in the footnote on this page, they state that they do not know whether or not material was diverted. Because the Task Force left this allegation of Conran unresolved, we decided to make some inquiries on our own. In particular, we questioned how information could be sensitive if it proved that there was no diversion. It seems more likely that the information would be sensitive if it indicated that a diversion occurred or if it left open the possibility that a diversion occurred.

The case history compiled on the NUMEC facility which was released by the NRC indicates that one AEC investigation concluded that some 94 kg of highly-enriched uranium was unaccounted for in addition to 84 kg explained away as process losses. NUMEC made a cash settlement of \$929,000 for the loss of 67 kg under one contract. The case history, on pages 48-49, also indicates that the AEC and JCAE were seriously concerned that this material had been diverted. In fact, they asked the FBI to investigate the situation. For some reason, the FBI declined. Nevertheless, representative of its fears, the AEC interviewed a select group of some 400 NUMEC employees, both past and present, and all foreign transfers originating at NUMEC. This investigation, it is stated, developed no significant new information.

Our additional inquiries into this matter brought forth information which corresponds closely to that reported by Mr. Fialka in the Washington Star and Mr. Burnham in the New York Times. These articles are appended to this testimony as Attachment 2. A persistent rumor or suspicion in this matter is that SNM was diverted from NUMEC to Israel, possibly under CIA auspices. That would certainly make the undisclosed material sensitive and explain why the CIA was involved in the briefing on this matter for NRC officials.

The question remains, was SNM diverted from NUMEC? Even without the sensitive information, we can conclude that the answer is that it is a possibility. Does this sensitive information reveal that it actually did occur and possibly under the cover of the CIA? Are Conran's allegations close to the truth?

Regardless of the contents of the sensitive packet of information, the NUMEC case is a classic example of the nearly impossible nature of safeguards. In this respect, it is important to recognize that safeguard violations and significant quantities of material-unaccounted-for (MUF) have been a chronic problem at Apollo and similar facilities up to the present day. The best that can be said about present safeguards is that they indicate that past and present-day diversions are a possibility. Moreover, present-day safeguards point out that, confronted with a world-wide plutonium economy, adequate safeguards are totally impossible.

The mere existence of MUF carries with it the presumption that a diversion may have occurred. The reluctance of the NRC (ERDA) to acknowledge this is an example of its false and misleading statements on the adequacy of safeguards. The Task Force on Conran's allegations admits that NRC and ERDA have made false statements relative to MUF. On Page 4-12, it states:

In the case of public statements concerning threats to detonate CFE, it apparently has been the practice of ERDA and NRC staff to make statements to interested parties to the effect that no quantity of special nuclear material is missing or stolen from government or licensed facilities (95).

We find that such statements do not reflect the uncertainties associated with materials control and accounting. While the Task Force has no evidence that these uncertainties pose undue risk to the public, they do not permit absolute statements regarding diversion.

CFE in the above statement means clandestine fission explosive. Here again, as Conran alleged, the NRC has chosen to mislead the public concerning the difficulty associated with the construction of a low-technology nuclear explosive. The Task Force admitted on page 4-5 of its report that the NRC made such misleading statements to NRDC:

The Task Force has reviewed the documents specifically referenced by Mr. Conran as containing material false statements. The most questionable statement in the view of the Task Force was the "NRC Staff Response to NRDC, et al., Request for Admissions Relating to Contentions 5 and 2, Dated August 13, 1976," numbers 34 and 35.

The intent of ERDA and NRC here is clear. They want to minimize the importance that the Congress and the public will place on the problems of safeguards. Unfortunately, they have achieved considerable success in this misrepresentation on the

NRC even today has not corrected the record...

issue. We can only hope that Mr. Conran's open letter will serve as a stimulus for action because our present-day safeguards are totally inadequate. And, here again, the NRC history is one of false and misleading statements.

In late January of 1976, NRDC obtained two internal NRC documents. The material in these documents, considered together with other information available to us, precipitated NRDC's decision on February 2, 1976, to petition the NRC for emergency safeguards action. One document is a memorandum which reveals that at least some members of the NRC Staff are deeply concerned that nuclear bomb materials now held by private companies under NRC licenses may not be adequately protected from theft. A second document, a preliminary version of the Executive Summary of the NRC's Security Agency Study, suggested additional reasons for concern that plutonium and highly-enriched uranium in circulation today might be stolen.

In the memorandum, dated January 19, 1976, Carl H. Builder, the Director of the NRC's Division of Safeguards, conceded that he is "not in a position to judge current safeguards [against nuclear theft] as adequate or inadequate." The Builder memorandum went much further, however. It stated:

"I am concerned that some or even many of our currently licensed facilities may not have safeguards which are adequate against the lowest levels of design threat we are considering in GESMO" (which are 'for an internal [employee] threat, one person and, for an external threat, three persons')."

In short, the head of the NRC's safeguards program stated that he was concerned that the safeguards employed at some or

even many licensed facilities were not adequate to prevent plutonium or similar materials from being stolen even when only small efforts are involved, such as a theft attempt by one employee or three armed intruders.

Clearly, a letter, dated July 20, 1976, to Congressman Morris K. Udall from the Chairman of the NRC, Marcus A. Rowden, demonstrates the validity of Mr. Builder's concern and of the NRDC petition for emergency safeguards measures. Chairman Rowden admitted that deficiencies existed in every aspect of safeguards -- access control, exit search, on-site guard forces, off-site response force, and that 7 out of 15 facilities were judged to be inadequate for even this minimum threat level. Moreover, the Rowden letter serves to demonstrate that the safeguards situation is still critical. Since the NRC declined to take emergency measures, it can only be stated that so far, we have been lucky. Until adequate measures are taken to rectify the existing situation, we can only hope that luck will stay with us.

The response to the NRDC safeguards petition by the NRC can, at best, only be described as a cover-up -- an attempt to placate the public with assurances rather than the necessary action. The NRDC petition was filed on February 2, 1976. In a news release two days later, on February 4, the NRC stated:

"In the briefing February 2, the Commission was advised by Mr. Builder and Mr. Chapman that the ongoing safeguards review is proceeding on schedule and that, where warranted, procedures at specific plants have been adjusted on an individual basis although no plant has been determined to be out of compliance with existing regulations."

In a February 11, 1976, public memorandum to the NRC Commissioners, Mr. Chapman, Director, Office of Nuclear Materials Safety and Safeguards, gave additional assurances that safeguards were adequate:

"All of the affected 'licensees' listed in the NRDC petition are operating under safeguard plans reviewed and approved by the staff and all are in compliance with the present regulations in 10 CFR Parts 70 and 73."

* * *

"Based on knowledge derived from these sources, our review of current safeguard regulations, our ongoing studies in the safeguards area, and the results of our continuing inspection of the affected plants, I perceive no reasonable cause for taking actions beyond the prompt and thorough-going ones that have already been initiated."

Subsequently, in a letter to NRDC dated March 22, 1976,

Mr. Chapman stated:

"For the reasons given hereafter, I believe that the present safeguards programs of the licensees in question are adequate to provide a reasonable assurance of public health and safety and are not inimical to the common defense and security."

The Rowden letter demonstrates that these statements, particularly those of the Staff, were no more than fabric manufactured to cover up serious deficiencies in the safeguards program. In the discussion which follows, additional fabrications in the public statements of the NRC will be pointed out.

First, however, it is important to indicate how the Rowden letter perpetuates this cover-up. On page 1 of the letter it is stated:

"Although there are no specific threat levels defined in our regulations, the threat levels used for this review consisted of an internal threat of at least one employee occupying any position and an external threat comprised, at a minimum, of three well-armed, well-trained persons, who might possess inside knowledge or assistance. Licensee safeguards capabilities were expected to defeat this threat with high confidence."

Mr. Rowden did not explain that this threat represented the lowest level of threat considered credible and, thereby, leaves the impression that a system designed against this level of threat is adequate. Concerning this threat, Mr. Builder stated in his memorandum:

"I don't know of any serious suggestion that these levels are too high and that we should consider even lower levels as design threats for adequate safeguards."

This small threat of one to three individuals must be compared with the credible threat or, more prudently, the maximum credible threat. These threats are discussed in another NRC document, the Draft Executive Summary of the Security Agency Study:

"Congressional concern for adequate safeguards was heightened as a result of a special safeguards study done for the Atomic Energy Commission in 1974. That study, by David Rosenbaum and others, . . . expressed concern about the adequacy of protection afforded SNM by the private industrial security systems of licensees. One aspect of concern was the level of threat to facilities and SNM. The authors postulated a maximum credible threat consisting of 15 highly trained men, three of whom might be 'insiders,' employed by the licensee target firm."

* * *

"To estimate the credible threat, the office of Nuclear Materials Safety and Safeguards researched 19 relevant studies and conducted 9 interviews with individuals and groups of professional analysts from the FBI, the intelligence community, the Department of Defense and State and local law enforcement agencies.

"What emerged from this was a consensus estimate that an external threat group will probably number about 6-8 persons and very likely not exceed 12 persons. . . .

"[A] credible internal threat, for safeguards purposes, is estimated to consist of 2-3 persons in collusion."

A recent publication of the OTA discussed the level of threat that is suggested by various safeguard consultants.^{*/} They indicate that the range of credible threats (or prudent estimates) is from 7-15 individuals who could be aided by 2-3 insiders.

It is worth noting that in the minimum threat used by the NRC, the attackers are assumed to be armed with legally obtainable weapons, i.e., handguns to semi-automatic rifles. However, it is generally recognized that the attackers could possess any of the following equipment: handguns, semi-automatic and automatic rifles, shotguns, sub-machine guns, machine guns up to 50 caliber, hand grenades, dynamite, plastic explosives, shaped charges, light mortars, light anti-tank weapons, hand-held air-defense weapons, tear gas, mace, special purpose vehicles, fixed wing aircraft, helicopters.

Given threats of this size with the possible armaments, and considering the Rowden letter, it is clear that most, if not all, of the facilities which are licensed to possess and transport plutonium and highly-enriched uranium are not adequately safeguarded and perhaps never can be. Our luck cannot be expected to hold on forever. Moreover, the Rowden letter obscures the

^{*/} OTA, Nuclear Proliferation and Safeguards, Prepublication Draft, April 1977, pp. VII-6 to VII-9, and Appendix III.

continuing inadequacy of safeguards at reactor sites and for materials in transport even at this lowest level of threat.

The NRC consistently made statements in response to the NRDC petition that can, at best, be characterized as deceptive. For example, Mr. Rowden on page 1 of his July 20 letter admitted the following safeguards inadequacies:

"Weaknesses relative to the threat levels used in this review were found at each of the 15 facilities. The most prevalent weaknesses related to control of access to significant quantities of special nuclear material (both stored and in process), exit search procedures, and adequacy of response by onsite and offsite forces."

Yet Mr. Chapman, on pages 5 and 9 of his March 22 letter to NRDC, offered assurances that these very safeguards are adequate:

"Theft of plutonium by an employee would be extremely difficult to accomplish. As I mentioned earlier, most of the material now present in the private sector is in vault storage and essentially inaccessible to a lone insider. The material not in storage is handled or processed in enclosed, sealed containment or glove box process lines. Individuals are not allowed to work unobserved in areas housing these process lines, nor can a single individual make an authorized removal of material from such lines. If, under the scrutiny of his fellow employees, an individual is able to circumvent these measures, remove material, and conceal it on his person, he would still be subject to an exit search."

* * *

"It should be noted that the nuclear industry has customarily taken the approach of going beyond the normal precautions taken elsewhere in society in facing uncertain contingencies. The same conservative approach is being taken in nuclear safeguards, to the extent that we believe the total safeguards system for the industry, including on-site and off-site security forces, can protect against theft or sabotage attempts by groups larger than those thought to constitute the most likely threat."

With respect to the weakness in the response by on-site and off-site forces, the NRC Staff blatantly misrepresented the real situation in "NRC Staff Response to NRDC Motion for Commission Action in Response to Safeguards Petition," filed April 19, 1976 (hereinafter "NRC Staff Response"). On page 14 the Staff stated:

"the NRC safeguards evaluation review team concluded that the offsite response forces for the sites visited, when considered in conjunction with hardened alarm stations, redundant communications, and onsite armed guards, were sufficient for the intended purpose."

And similarly, on the same page, regarding access control and exit search, the NRC Staff stated:

"The current physical security and material control programs provide a redundant and diverse system of protection for plutonium. Authorized entry and removal of plutonium from work stations and storage areas are carefully controlled. In-depth protection is provided against the unauthorized and uncontrolled movement of plutonium by an employee for both safety and safeguards considerations."

On another matter, Chairman Rowden stated on page 2 of his letter:

"During the initial review, guard forces of some licensees were judged inadequate because of their stated reluctance to engage an attacking force or because of their lack of strength in numbers. Since then, one licensee has significantly increased his guard strength, two others have hired more watchmen and all licensees have affirmed their commitment to intervene to protect strategic quantities of special nuclear material.

"Of the 15 facilities involved in the safeguards review, eight facilities were judged to be adequate to withstand both the external and internal threats defined in the second paragraph of this letter. Of the remaining seven, one was judged adequate to protect against the external threat

but not the internal threat, four were judged adequate to defend against the internal threat but not the external threat, and two were judged not adequate to protect against either threat with high confidence."

These statements stand in stark contrast to the Staff statements quoted above and to this fabrication that appears on page 11 of the NRC Staff Response:

"the NRC Staff has completed a series of visits to eleven licensee sites and has assessed the guard forces at each location as being capable of performing their intended function in a satisfactory manner."

After upgrading the safeguards somewhat, a second round of on-site reviews were conducted in September and October of 1976. This time the review teams concluded that:

. . . all facilities visted have the capability of meeting the postulated threat. However, as to several facilities, the site reviews have suggested that the level of assurance underlying that judgment was not as great as for the remaining facilities. */

On January 21, 1977, the Commission itself ruled on the NRDC petition. The Commission's Order has the ring of bureaucratic doublespeak, designed to protect the licensees. Emergency action, they concluded, was a "drastic procedure," **/ that "could have had an unwarranted and severe impact on the operations of our licensees," ***/ what was required was "prompt remedial action," ****/

*/ Nuclear Regulatory Commission, In the Matter of Licensees Authorized to Possess or Transport Strategic Quantities of Special Nuclear Materials, Memorandum and Order, January 21, 1977, p. 9.

**/ Ibid, p. 15.

***/ Ibid, p. 11.

****/ Ibid, p. 10.

or "an orderly approach."^{*/} These conclusions were based on the findings of a Joint ERDA-NRC Task Force.^{**/}

In summary, the Commission in effect acknowledges that it does not have a high level of confidence that the existing licensed facilities can prevent the theft or diversion of strategic quantities of special nuclear material by a lowest level of threat considered credible. The Commission is slowly upgrading safeguards passing through the 3 + 1 threat level, but as the Joint Task Force notes, following normal, routine regulatory procedures, it could take up to four years to upgrade safeguards to protect against an internal threat defined as a conspiracy and an external defined as a determined violent assault. This total time according to the Task Force could be reduced to approximately two years by an extraordinary effort. Thus, the Commission is playing Russian roulette with public safety, relying in the intervening years on the hope that the safeguards will not be tested by a real threat larger than the minimum level now considered credible.

The NRC argues that emergency action is not necessary because the threat is not imminent. Yet, the Task Force on Conran's allegations states on pages 4-18 and 4-19:

Another aspect of Mr. Conran's concerns in this area involves internal NRC statements that indicate an ability for intelligence activities to detect an adversary group. Agencies in the intelligence community have specifically rejected this idea, (64) and the former Director, Division of Safeguards, stated that

^{*/} Ibid, p. 11.

^{**/} Joint ERDA-NRC Task Force on Safeguards (U), Final Report, NUREG-0095, ERDA 77-34, July 1976 (completed November, 1976, published February 1977).

he "abandoned" this concept in late 1975 (91). However, the Task Force finds evidence that this concept has not been abandoned by all concerned (65,74,85). In short, it appears that the intelligence community can provide no assurance of prior detection of adversary groups, unless group sizes become very large, that is, "army" size (91). Therefore, Mr. Conran's concern, to the extent that the above concept is viewed as valid by individual members of the staff, is well founded.

Moreover, the Department of Justice recently released a report on disorders and terrorism.^{*/} In the accompanying press release it stated:

"Although the violence and urban riots of the 1960s have largely subsided, the report said, the present tranquillity is deceptive and should not be taken as a sign that disorder is a thing of the past."

It is important to note that just a few days after the release of the report, the Hanafi Muslims laid seige on Washington, D.C. How much longer can we wait for adequate safeguards?

In short, the public and its elected representatives have been misled by the NRC. While the NRC has been and is offering bland assurances, a dangerous safeguard situation has and continues to exist. Immediate corrective action, including revocation of licenses where necessary, is the only appropriate response.

We would only add that we do not believe an adequate and socially acceptable system of safeguards is possible for the proposed plutonium economy of the future.

*/ National Advisory Committee on Criminal Justice Standards and Goals, Report of the Task Force on Disorders and Terrorism, Law Enforcement Assistance Administration, U.S. Department of Justice, 1976.

5. Mr. Conran is concerned that there is information on alleged past illicit diversion which has not been made available to NRC or adequately factored into the safeguards program.

Type and Relevance of Information. Information of this type is defined by the Task Force to be that which directly bears on the issue of whether nuclear materials, specifically materials suitable for clandestine fission explosives (CFE), have ever been illicitly diverted from a nuclear facility. Information in this category would, for example, include investigations and assessments to account for inventory discrepancies at a nuclear facility or to respond to questions or allegations that material had been illicitly diverted.

Of special interest to the Task Force in evaluating Mr. Conran's concern was information regarding an alleged diversion from a specific facility--the Babcock and Wilcox facility at Apollo, Pennsylvania, formerly the NUMEC facility. A wide variety of information exists on Apollo/NUMEC which deals with an alleged diversion from the facility in the mid-1960's (see, e.g., 46). Within this body of information is a category which is sensitive. The Task Force has been told that it is sensitive for reasons which do not relate to whether or not a diversion occurred (83,102).

The Task Force has not seen this category of Apollo/NUMEC information and has not requested to see it. This does not reflect a view that the sensitive information is not safeguards-related or important. On the contrary and in the abstract, if material had been diverted from a facility, it would, as the safeguards representative from ERCA said, "send us back to our drawing boards" (33). For example, from a hypothetical incident involving diversion, the NRC might take a closer look at and place more credence in the "insider threat," including what he can do, how he could do it, the path he could use, and generally, what position in the company, from lowest to highest, he could occupy. The Task Force is not suggesting that the NRC safeguards program does not sufficiently account for the inside threat, although the Task Force is aware of statements that there was a preoccupation by NRC with external threats in the past (e.g., 72 makes this same point). Rather, the Task Force simply notes what we see as the obvious effects of a hypothetical discovery that nuclear materials had been diverted, viz, a serious review, and perhaps change, of thinking.*

Consequently, to the extent the Apollo/NUMEC information in question bears on the issue of whether or not a diversion has occurred, the Task Force believes it is clearly relevant to safeguards design and implementation.

The Task Force cannot accept the proposition that an incident in the mid-1960's would have little meaning to today's safeguards. Continued inventory discrepancies at Apollo, while not constituting evidence of diversion in themselves, make information on an alleged past diversion worth NRC's consideration.

*The Task Force wishes to emphasize that we have no information of this sort upon which to base a belief that significant amounts of nuclear materials have, or have not, been diverted from any U.S. nuclear facility.

By John Flalka
Washington Star Staff Writer

The Nuclear Regulatory Commission is preparing to make the momentous announcement, according to several sources within the agency, that over the years the government has been unable to account for several tons of bomb-grade materials used in various nuclear fuel programs.

The problem, hinted at for years, will be described for the first time in specific numbers. Those numbers, according to the sources, will show that the great majority of the losses are traceable to "chronically sloppy" accounting procedures at facilities used to fabricate fuel for Adm. Hyman Rickover's nuclear submarine fleet.

The traditional explanation for what is known in this rather exotic trade as a "MUF," or Material Unaccounted For, is that it is material stuck somewhere in the pipes of a facility or material that has been mistakenly discarded as waste.

Research within the NRC, however, according to the sources, has shown that the agency cannot rule out the possibility that some of the material may have been stolen. "The accounting was so damn poor that there is no way for determining what happened to it," one source explained.

HIGHLY ENRICHED uranium, the material used to power submarine reactors, is an extremely dense metal. A cubic foot of it weighs over half a ton. A strategic quantity, the amount that could be made into a small atomic bomb, would fit into a container slightly larger than a teacup.

Fuel fabrication for the submarine reactors takes place at several sites throughout the country, but the one most familiar to NRC inspectors is probably a facility at Apollo, Pa., 30 miles northeast of Pittsburgh, where MUF's have gone on for years, where millions of dollars worth of bomb-grade metal has disappeared and where repeated violations of government regulations has produced little more than an occasional slap on the wrist for the plant's operators.

The full story of what has happened at Apollo is still shrouded in government secrecy. According to two NRC sources, the losses at Apollo and other submarine fuel facilities are so embarrassing that Adm. Rickover has been looking for ways to prevent the release of MUF numbers.

Asked for a comment, a Rickover spokesman said that this is not true. The responsibility to safeguard nuclear fuels in the fabrication stage has "never been the responsibility of the admiral," he added, pointing out that the jurisdiction has traditionally

Apollo's Losses of Nuclear Material

NUCLEAR

Continued From A-1

fallen to inspectors of the former Atomic Energy Commission and its regulatory successor, the NRC.

In recent weeks several documents have quietly been released by the NRC which begin to unravel the mysteries of Apollo.

IN LATE 1955 a company called NMEC was formed by three former AEC scientists led by Dr. Zalman M. Shapiro. They purchased an old steel fabrication plant at Apollo and began to solicit government contracts to process various nuclear materials.

AEC officials first began to worry about losses in the plant during the early '60s, when NMEC was processing a large quantity of highly enriched uranium for use in a nuclear rocket called NERVA, a project later scrapped by the AEC.

Since there was no formal regulatory apparatus at that time, the government officials wondered how to account for the mounting losses which had grown to the point that in 1964, when the Chinese detonated a nuclear device, some intelligence officials wondered whether the material had been stolen from Apollo. Later, when U-2 flights discovered uranium enrichment sites in China, their attention eased somewhat. But a year after that, the problem resurfaced when AEC inspectors, according to a NMEC case history released by the NRC, calculated that the loss of 206 pounds of the material — roughly enough to make 20 atomic bombs — could not be accounted for through any known "loss mechanism" at the plant.

One day after the survey at the plant was completed, according to this document, NMEC officials hired one of the principal AEC inspectors. The incident was reported to the Department of Justice as a possible conflict of interest, but Justice determined that "the matter did not warrant prosecutive action."

A BROAD SECRET investigation was mounted. Over 400 past and present NMEC employees were interviewed and a considerable portion of a waste burial ground at the plant was dug up in an effort which located some of the missing material. In the end, though, NMEC officials had to pay the government \$929,000, the value of uranium which could not be accounted for, according to the case history.

Zalman M. Shapiro, then NMEC's president, was described by one source as a man who "operated on the come," taking material from one batch and using it to account for losses in a prior batch until the losses became too big to cover up any more.

Reached for comment by The Washington Star, Shapiro termed the description "utterly ridiculous and totally untrue." Losses, he said, are inherent in the fuel fabrication business because of the highly complex process which uses uranium in solid, gaseous and liquid chemical forms and which results in a large amount of waste material at each step.

He gave an analogy: "If you're cooking a small thing in a large pot, then you have material that sticks to the pot."

Shapiro, who now works for Westinghouse, also explained the hiring of the AEC inspector. "We were looking high and low for good people. Obviously some of those people worked for the AEC."

SHAPIRO SOLD the Apollo plant in 1967 to the Atlantic Richfield Co., and ARCO sold the plant to another nuclear-related company, Babcock & Wilcox, in 1971. Throughout the various periods of ownership, according to the case history, the plant's tradition of noncompliance to AEC accounting procedures continues.

In April 1973, for example, the plant was cited for 14 different items of noncompliance in one inspection. In November of the same year a worried General Accounting Office team found 18 different security weaknesses at the plant, including guards that did not control property and three doors that were not locked.

The following year Babcock & Wilcox was fined \$12,170 for the security violations. In 1976 the company was fined another \$19,000 for inadequate accounting.

An NRC spokesman noted that inspections at the plant have escalated dramatically as the nation has become more aware of the possibility of a nuclear theft. There were 10 inspections in 1972 at the plant. So far this year, he said, there have already been 36 inspections. Regulations have proliferated during the same period.

Despite the increased pressures from the government to safeguard the plant, the NRC spokesman described Babcock & Wilcox as a "poor performer."

Asked to comment, a B&W spokesman in the company's New York headquarters said that "basically our accountability has been in accordance with regulations." The fines, he explained, "were related to technical details. The industry was not given time to implement the new requirement."

THE MYSTERIES that still surround the Apollo facility appear to go beyond the powers of the NRC, which was formed to take over the AEC's regulatory duties in 1975. NRC researchers discovered this last year when they were attempting to piece together a definitive account of events at the plant during the early 1960s.

Vital pieces of the story, they discovered, were still classified although they were 10 years old. They were in the locked files of the Energy Research and Development Administration, the nonregulatory half of the old AEC, and "other government agencies."

Despite the fact that the NRC investigators had the proper security clearances, they were "given the royal runaround," according to one source. There were secrets so secret that even the compilers of secrets were forbidden them.

The situation proved so exasperating that one of the NRC investigators, James H. Conrad, began a series of protests within the NRC. How could the NRC staff protect facilities against losses when some of the past information about losses was concealed from the staff? he argued.

A group of safeguards experts was assembled by the NRC to look into the matter. It was called "Task Force on Allegations by James H. Conrad." And on April 29 the task force issued an opinion that was later released by the NRC.

The task force admitted that it could not get to the bottom of the matter, either, because "the information is held by other agencies." However, the task force learned that the "other agencies" gave NRC's commissioners and top officials a briefing on the matter in 1976.

According to its report, the task force was not told the details of the

briefing either, but it did learn that the Apollo file "is sensitive for reasons which do not relate to whether or not a diversion occurred."

A REPORTER ASKED several sources and two spokesmen within the NRC what that phrase meant. None of them could provide an answer.

While the task force agreed with Conran that knowing what really happened at Apollo would be valuable to planning future safeguard efforts, it added:

"The task force understands that the degree of sensitivity has led to a narrowly construed accessibility and need-to-know."

What really happened at Apollo? That is still a matter of much speculation at the NRC. One theory is that the continued cover-up is necessary to conceal the fact that the Central Intelligence Agency was called in during the 1960s to investigate a diversion or removal of materials which ultimately wound up in a foreign country.

Which foreign country? Israel is the one most often mentioned. It is now believed to have accumulated material for several bombs, but most of this material is believed to be plutonium manufactured in a clandestine nuclear reactor obtained from the French.

The mystery at Apollo continues. For the moment, the NRC is preparing

to offer only the number of tons of material that are involved in what the agency calls MUF's there and elsewhere.

CIA Involved in Uranium Hunt

By John J. Fialka

Washington Star Staff Writer

The CIA has been involved in investigations concerning a company that experienced a still mysterious incident of missing nuclear materials in the early 1960s. At the time, the company had close ties with the atomic energy agencies of two foreign governments: Israel and Japan.

According to congressional sources who are investigating the matter, the CIA became involved in the case shortly after Atomic Energy Commission investigators concluded they could find no apparent reason why 93 kilograms of highly enriched uranium — enough for about 9 small nuclear weapons — could not be accounted for on the company's records.

Officials of the Nuclear Regulatory Agency who received a briefing on the matter from the CIA in early 1976 were told that, although the matter did not involve a violation of U.S. nuclear safeguards, the matter still "involved great sensitivity."

Just what may be at the bottom of the layers of secrecy still surrounding the activities of the company, called the Nuclear Materials and Equipment Corp. (NUMEC), is still not clear, although there is increasing speculation that it may have been a vehicle for the transfer of bomb-grade nuclear materials to Israel.

Zalman M. Shapiro, who was NUMEC's founder and president between 1960 and 1966 when the losses occurred, has asserted that the speculation is "ridiculous" and that the highly enriched uranium was lost in the waste processes of the company plant involved, located at Apollo, Pa., 30 miles northeast of Pittsburgh. (Shapiro sold the company to the Atlantic Richfield Corp. in 1967.)

DURING THE early 1960s NUMEC had a subsidiary which was half owned by the Israel Atomic Energy Commission. The subsidiary was called Israel Isotopes and Radiation Enterprises Ltd. and, according to a NUMEC financial report to company stockholders, the subsidiary was involved in the irradiation of strawberries, sugar beets and potatoes as a way of preventing spoilage.

According to NRC files, NUMEC had access to secret U.S. processes in the technologies of highly enriched uranium and plutonium — both of which are weapons grade materials. A company financial report states that it was the "first privately financed U.S. corporation to engage in

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plutonium research, development and production of fuel elements."

Another of the company's projects during the early 1960s, according to the report, was drawing up the plant and equipment design blueprints for Japan's first plutonium fuel laboratory at Tokai-Mura, Japan. Japan and the U.S. are now negotiating a serious dispute over whether Japan can separate the plutonium in spent U.S. nuclear fuel at the expanded Tokai-Mura complex without violating U.S. safeguards controlling the disposition of the fuel.

WHEN THE AEC disclosed the problem of the missing material at Apollo, at least four investigations were made of the incident — by the CIA; the FBI, the Government Accounting Office and the AEC.

The only public report of the investigation, the one made by the GAO, concluded that the company's records were in such poor condition that no estimate could be made as to when the losses occurred. "We found no evidence of diversion," the report states.

Ten years after the incident, in 1975 when the NRC took over the regulatory activities of the AEC, a young NRC investigator, James H. Conran, was assigned to develop a history of the incident. Although Conran had a security clearance, he discovered that the other half of the old AEC, the Energy Research and Development Administration, considered some of NUMEC files to be "top secret." He was denied access to them.

According to Capitol Hill sources attempting to unravel the matter, Conran began pressing his boss, Carl Builder, then head of NRC's division of safeguards, to get access to the material. When Builder refused, Conran took his case to several of the NRC's commissioners.

FINALLY, in early 1976, the NRC requested a briefing on the Apollo matter, and the commissioners, Builder and several other high NRC officials attended a meeting with officials of ERDA and the CIA, who were familiar with the case. After the briefing, the NRC decided to drop all further research into the case.

One NRC staff member prepared a memo of a conversation with Builder, afterwards. The memo states, "Builder felt the matter involved great sensitivity and that the responsible people were fully informed.

"It was also Builder's judgment that if the rank-and-file safeguards staff had this information that it would not change their perceptions of the safeguards problem. Builder could see no reason to pursue the matter further and felt that it was better left closed."

Builder, who has since left the NRC and now works for the Rand Corp. in Santa Monica, Calif., was asked about the memo. He said it was a "true account" of his feelings after the secret briefing, but declined to comment further. "I protested when they said that memo was going to be made public," he said.

A task force of safeguards experts was later assigned to look into Conran's complaint that the NRC staff who were assigned to improve existing safeguards could not get complete information on prior safeguards problems.

THE TASK FORCE'S report, written in April, stated that the information on Apollo did "contain a category which is sensitive. The task force has been told that it is sensitive for reasons which do not relate to whether or not a diversion occurred."

Last month, after Conran continued his internal campaign to get the Apollo information, he was transferred to another branch of the NRC.

Nuclear Plant Got U.S. Contracts Despite Many Security Violations

By DAVID BURNHAM
Special to The New York Times

WASHINGTON, July 2—A small nuclear materials processing plant in Pennsylvania has continued to receive Government contracts worth millions of dollars even though inspectors have repeatedly found the facility violating stringent safety and security regulations.

The most serious of the hundreds of violations cited over the last 20 years was a 1965 finding that the facility could not account for 381.6 pounds of highly enriched uranium, enough to serve as the raw material for at least 10 nuclear bombs.

Government officials have contended that the material was lost in complicated manufacturing processes and was not stolen. But inspectors from the General Accounting Office, the one independent agency that investigated, concluded that the evidence was insufficient to determine what had occurred.

400 Persons Questioned

A 90-page summary of the chronic enforcement problems at the Apollo, Pa., facility, prepared by the Nuclear Regulatory Commission in June 1975, reports that the loss of highly enriched uranium prompted the Atomic Energy Commission to question 400 persons and refer the case to the Federal Bureau of Investigation. For reasons that are not clear, the F.B.I. decided not to investigate.

The summary containing a detailed chronology of how the Government handled the health, safety and security failings of the privately owned plant was sent anonymously to several newsmen at a time when Congress and the Carter Administration are debating whether such nuclear processing operations should be enlarged because of the energy crisis or curtailed because of the dangers of nuclear proliferation. Nine facilities in the United States are licensed to handle strategic quantities of highly enriched uranium or plutonium.

Spokesmen for the Nuclear Regulatory Commission and Babcock & Wilcox, the energy company that now owns the Apollo facility, both argued in response to inquiries that the summary gave a misleading impression of ineptitude because the Government was continuously imposing tighter restrictions during the period involved.

However, officials of the Government agency and the nuclear processing facility disagreed about other aspects of the case. "This obviously was our worst performer," said James P. O'Reilly, the N.R.C. regional director with responsibility for enforcing the commission's rules at the facility.

"We operated within the rules and regulations," said Zaiman A. Shapiro, the founder and first president of the company. "I have been told by responsible officials that our operations were pretty much in the ball park, in the range of other similar facilities," he said. Mr. Shapiro now works for the Westinghouse Electric Corporation.

'Attempting to Cooperate'

The present manager of the Pennsylvania facility, Joseph S. Dziewisz, who took over two years ago, said: "We are attempting, and attempting very sincerely, to cooperate with the requirements of the Government. But there have been times when we were having fits just trying to understand what the Government wanted."

The facility employs about 600 persons to process low-enriched uranium, highly enriched uranium and plutonium. The low-enriched uranium is used to fuel conventional nuclear reactors, the highly enriched uranium to fuel the Navy's nuclear fleet, and plutonium for an experimental Government reactor now under construction in Washington state.

Government contracts bring the Babcock & Wilcox division about \$14 million a year. A spokesman for the Energy Research and Development Administration said the facility had received at least \$75 million in Government contracts since it began operation in the late 1950's.

The Government has continued to award these contracts despite a record that includes the following examples:

¶ In October 1969, the A.E.C. said the company had violated six separate health and safety regulations, adding that similar violations had been brought to the attention of the company on several previous occasions. "The pattern of repetitive violations demonstrates that the corrective measures taken were apparently ineffective and indicates inadequate management control over the company's radiation safety program as well as an apparent disregard of the commission's rules and regulations."

¶ On July 8, 1974, the Government said that it had noted 333 violations of ventilation requirements and that the company had failed to correct earlier problems.

¶ A 1960 inspection concluded that the company did not have adequate control over the nuclear materials in its possession. This was followed in 1964, according to the N.R.C. summary, by another finding that "internal control procedures were inadequate" and that the uranium reports being submitted "were not complete and factual."

On March 23, 1965, the Government informed the company that it would be billed \$2.8 million for 657 pounds of uranium that could not be found. The bill was later reduced to \$735,000.

Negotiations Over Amount

After months of bickering, Government inspectors decided that the cumulative loss as of October 1965 was actually 331.6 pounds of highly enriched uranium, approximately half of which could be identified as having been lost through what the summary called "known mechanisms."

The Atomic Energy Commission and its successor agency, the N.R.C., have repeatedly asserted that there was no evidence that the highly enriched uranium had been obtained by any unauthorized person or nation. The General Accounting Office said it could not come to a definite conclusion about what happened to the uranium. The condition of the company records, the summary reported, "did not permit the G.A.O. auditors to make a conclusive determination as to the time or the manner in which the losses occurred."

An F.B.I. spokesman, in response to an inquiry, declined to comment on why the bureau had chosen not to investigate. Three separate Federal officials familiar with the case, however, reported that the F.B.I. did investigate whether a senior official of the Apollo facility was an agent for a foreign country. The investigation, one official said, found no evidence that he was.

The problem of keeping track of the highly enriched uranium was not resolved after the 1965 incident. Inventories in 1970, 1971, 1973 and 1974 found various important discrepancies, and inspectors continued to record inadequate key control systems, poor lighting, faulty alarm systems and inadequate search procedures.

More Material Missing

On June 5, 1974, the company paid a fine of \$12,170 because it was unable to account for approximately 100 pounds of highly enriched uranium. On June 7, the top officials of the N.R.C. were told that inspections a few months earlier "showed a failure of the licensee to fully implement the Fundamental Nuclear Materials Control Plan and to achieve adequate accounting control of highly enriched uranium."

Mr. Dziewisz, the present head of the facility, noted that the company was now spending approximately \$750,000 to install the latest set of controls imposed by the N.R.C.

With all the continuing problems, why has the Apollo facility continued to receive Government awards? "There just aren't that many facilities around that can do that kind of work, and I don't think the A.E.C. had much choice in who they authorized to give the contract to," said R. G. Page, deputy director of the N.R.C.'s division of safeguards. "There were only a couple of people in the country who could do it."