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STATEMENT OF

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ON BEHALF OF

THE NATURAL RESOURCES DEFENSE COUNCIL, INC.

BEFORE THE

SUBCOMMITTEE ON COMMERCE, CONSUMER AND MONETARY AFFAIRS

OF THE

HOUSE GOVERNMENT OPERATIONS COMMITTEE

ON THE

ACQUISITION OF SANTA FE INTERNATIONAL CORPORATION

BY KUWAIT PETROLEUM CORPORATION

November 24, 1981

My name is Thomas B. Cochran. I am the Senior Staff Scientist with the Natural Resources Defense Council (NRDC). I hold a Ph.D in Physics from Vanderbilt University. I was a member of the Department of Energy (DOE)'s Ad Hoc Committee on Nuclear Non-Proliferation from 1977-1979, and am presently a member of DOE's Energy Research Advisory Board.

NRDC, a national non-profit environmental organization with a membership of approximately 46,000, has been working for the past ten years to prevent the proliferation of nuclear weapons capabilities and to halt the use of weapon-usable plutonium in civilian commerce. I am pleased to have this opportunity to present our views to the Subcommittee concerning the proposed acquisition of Santa Fe International Corporation by Kuwait Petroleum Corporation.

The directors of Santa Fe International Corporation have recently approved a bid by the Kuwait Petroleum Corporation, which is wholly owned by the government of Kuwait, to purchase Santa Fe International for $2.5 billion. C.F. Braun & Company, a subsidiary wholly owned by the Santa Fe International Corporation, has been extremely active as architect and engineer in several DOE facilities involved in the production, purification, and packaging of plutonium for nuclear weapons.

I have been requested by the Subcommittee to describe the DOE facilities where C.F. Braun & Company services have

been utilized, the know-how available to the architect-engineering contractor, the nuclear weapons proliferation problems associated with the proposed acquisition and the adequacy of relevant U.S. and other laws dealing with the nuclear weapons proliferation.

C.F. Braun & Company, one of the foremost engineering companies in the world, is currently the on-site architect-engineer at the DOE's Hanford Reservation, in the state of Washington. C.F. Braun is responsible for providing general engineering support services for a wide variety of activities at Hanford. Following competitive bidding, C.F. Braun was awarded the Hanford contract on October 1, 1981, based on their engineering excellence, depth of personnel, and experience gained from work on related nuclear materials production and processing facilities. In taking over from VITRO, the previous Hanford contractor, C.F. Braun inherited a permanent staff of approximately 200-250 personnel. C.F. Braun has provided five or six of its own experts to manage this operation.

At Hanford, the company is working on general modifications to the N-Reactor, which is a dual purpose reactor designed to produce plutonium and electricity. In operation since 1963, the N-Reactor has been the principal source of plutonium for the U.S. breeder reactor program. It is currently being converted to produce weapon-grade plutonium.

The N-Reactor is one of four plutonium production reactors currently operated by DOE to meet the needs of its nuclear weapons and research and development (R&D) programs.

C.F. Braun & Company is also engaged in modifications in preparation for the restarting of the PUREX Plant and associated facilities at the Hanford Reservation. The PUREX Plant is a large capacity reprocessing plant capable of extracting plutonium from spent nuclear fuel. It is being restarted in order to process N-Reactor spent fuel to recover plutonium for use in nuclear weapons and R&D. The N-Reactor, the PUREX Plant, and associated facilities at Hanford are described in more detail in Attachment 1-A.

C.F. Braun recently completed a conceptual design of a Nuclear Waste Hot Cell Development Facility for use at Hanford. This facility, which has not yet been constructed, consists of a small hot cell intended for taking samples of highly radioactive waste and performing test and research on these materials. This or a similar facility could be used to recover plutonium from highly radioactive spent fuel for weapons purposes. While the rate of plutonium recovery would be small compared to the large commercial or American nuclear weapons program reprocessing facilities, its size would be adequate for a country desiring its first, or a few nuclear weapons. It should be noted that this conceptual design work was not performed at Hanford, but by a different division of the C.F. Braun & Company at another location.

In addition, the Atomic Energy Commission, DOE's predecessor, employed C.F. Braun's architectural and engineering services at its nuclear weapons production plant at Rocky Flats, Colorado, in the early 1970s. The Rocky Flats Plant takes the plutonium produced at Hanford and the Savannah River Plant, purifies it and machines it into the fissile cores for nuclear weapons, as discussed further in Attachment 1-B. In other words, Rocky Flats is responsible for the production of the hearts of all U.S. nuclear fission warheads and the fission triggers of all U.S. thermonuclear weapons. Rocky Flats is also responsible for plutonium scrap recovery and the recovery and purification of the plutonium for the entire nuclear weapons complex. In this regard C.F Braun designed and engineered the plutonium recycling plant completed in 1979 and currently in use at Rocky Flats. In this plant plutonium from retired warheads is purified for reuse in new weapon components.

Finally, C.F. Braun was engaged in the design and engineering of a plutonium recovery operation at Lawrence Livermore National Laboratory, from 1972 to 1975. This plant is probably smaller, but similar in many respects to the Rocky Flats recycling facility.

As a result of its architectural and engineering activities at these DOE facilities, C.F. Braun & Company possesses practical, state-of-the-art knowledge of plutonium production, recovery and purification--knowledge that would be

invaluable to any country in acquiring a nuclear weapons capability or assisting others in such an endeavor. This knowledge is possessed by a highly-skilled cadre of Braun professionals and is embodied in several thousands of Braun drawings and design specifications of a sensitive nature, most of which are not subject to security classification.

It would be extremely short-sighted and dangerous to permit a foreign government in the most politically explosive region of the world to purchase an American company which possesses such vast technical knowledge of several important steps in the path to the production of atomic bombs. Such an action would pose a serious threat to U.S. non-proliferation policies and national security interests.

Following the lead of its more powerful Arab neighbors, Kuwait has expressed a desire to develop a cooperative Arab military strategy which would be capable of challenging the superpowers for influence in the region. Since such a capability is practically unobtainable without nuclear weapons, a possible desire by Kuwait to help the Arab world acquire a nuclear weapons cannot be ignored. Of equal concern is the fact that a very significant percentage of Kuwait's population consists of emigrants from neighboring areas, including many Palestinian nationals who have received education in engineering and technical fields, and some of whom openly maintain contacts with terrorist organizations. Thus,

the risk of sensitive information concerning the production, reprocessing and purification of plutonium for nuclear weapons being diverted for use contrary to U.S. interests is indeed formidable.

Officials of Santa Fe International, who undoubtedly have a vested financial interest in the takeover of Santa Fe by Kuwait Petroleum, have attempted to minimize the national security risks by suggesting that we can rely on the loyalty of U.S. employees and existing federal laws and procedures regarding personnel clearances and the protection of national security information. To demonstrate why these safeguards are wholly inadequate, it is useful to examine separately the three types of information that must be protected, namely: (a) Classified National Security Information and Restricted Data; (b) Information regarding facility security systems, much of which is unclassified; and (c) Unclassified, but sensitive information regarding the processing of nuclear materials. While the last of these is by far the most important with regard to the proposed acquisition, for reasons that will become apparent it is important to address the first two issues as well.

Protection of Classified National Security Information and Restricted Data

Given the nature of their work, it is highly likely that C.F. Braun & Company has one or more facilities which have been approved by DOE for the storage and handling of classified National Security Information and Restricted Data. It is likely that such facilities would not be limited to the Braun division at Hanford, but would include C.F. Braun & Company headquarters and possibly other divisions as well. The Subcommittee should have DOE identify all such facilities. In any case, the Kuwait acquisition of C.F. Braun is unlikely to preclude the company from obtaining future DOE contracts of a classified nature and obtaining the necessary facility clearances.

There are numerous examples of the failure of the existing programs to safeguard National Security Information and Restricted Data. The turnover of TITAN II missile information and manuals on the Big Bird spy satellite to the Soviet Union are but two recent incidents. Furthermore, concerns about the adequacy of U.S government's clearance system and reliance of national loyalties are not limited to disgruntled or low level employees. The postulated design basis threat assumed by agencies of the Federal government responsible for the protection of special nuclear materials, e.g., DOE, Department of Defense (DOD), and the Nuclear Regulatory Commission (NRC), assumes that any employee, or a

conspiracy of employees up to and including the president of the company, may be involved. Incidentally, this is consistent with evidence suggesting (and the belief by the CIA) that the president of NUMEC was involved in the diversion of a large quantity of highly enriched uranium from its facility in Apollo, Pennsylvania to Israel in the early 1960s. A similar scenario, involving senior company officials at Santa Fe International, would surely be worthy of concern in the event of its takeover by a foreign government.

Protection Regarding Facility Security Systems

C.F. Braun & Company employees have knowledge of the physical security measures at Hanford, Rocky Flats, and other facilities handling weapons usable nuclear material. This information would be useful to anyone wanting to steal these materials. It is difficult to envision anyone more knowledgeable about the security systems than the resident architect-engineer. Detailed engineering blueprints indicating the type and placement of physical security systems are not generally classified. In the past, the DOE and NRC have protected this kind of information from release under the Freedom of Information Act (FOIA) by questionable reliance upon the claim that this information is proprietary. Recently Congress passed legislation to permit the NRC to exempt this kind of information from release under the FOIA; and similar legislation applicable to DOE is presently before this Congress. Nevertheless, because this information is still not classified, it is routinely available to employees engaged in design and construction at the plant sites.

While this is not the most serious risk involved in the C.F. Braun acquisition, it is disquieting to consider that: (a) terrorism has become a principal political tool of Libya, the PLO, and other Middle East entities; (b) these organizations have not refrained from conducting terrorist activities in the U.S., (c) the U.S. intelligence community has

indicated that there can be no assurance of detection of adversary groups--e.g., a group of dedicated, well trained and well equipped terrorists--prior to an attempted malevolent act unless the group becomes very large (that is, "army size"); and (d) the General Accounting Office (GAO) in a series of reports during the past 8 years has time and again indicated that physical security at DOE, DOD and NRC licensed facilities that handle nuclear weapons and/or special nuclear materials are inadequate (see Attachment 2).

Protection of Sensitive Nuclear Material Processing Information

The basic principles regarding the design of low technology nuclear weapons are straightforward and widely known. For this reason, it is the consensus of the weapons design and arms control communities that it is not the lack of a capability to design a nuclear explosive device which is the major barrier to acquisition of a first nuclear weapon, but rather, it is the availability of nuclear weapons materials, plutonium or highly enriched uranium. Besides theft, there are two other ways to obtain nuclear weapons usable material. The first is to divert material from reactors and reprocessing and enrichment plants provided for peaceful purposes, and the second is to acquire the know-how to build such facilities. In regard to plutonium, general "text book" descriptions of methods for reprocessing spent fuel and purifying the resulting plutonium were declassified in the 1950s as a consequence of the "Atoms for Peace" program. However, very few non-nuclear-weapons countries have the practical technical knowledge needed to reprocess, purify, and safely handle plutonium. This is precisely the expertise possessed by C.F. Braun.

The U.S. has attempted to limit the spread of nuclear weapons through bilateral and multilateral controls on exports of nuclear materials, equipment, and sensitive technology. While these controls are not adequate, the acquisition of Braun by a foreign government may result in their total circumvention.

Although the parties to the transaction may offer various assurances to the U.S. Government, there are a number of ways in which the government of Kuwait may gain access to C.F. Braun's plutonium expertise, possibly even without detection. The Kuwait Petroleum Company, for example, could send engineers to the United States to participate in a C.F. Braun training program. It is worth recalling that the plans for the Pakistani uranium enrichment plant were stolen by Abdul Qadar Khan from the URENCO enrichment facility where he worked for a short time as an engineer. Even without the theft of a single blue-print, drawing, or design specification, a seemingly innocent training program could result in the transfer of a considerable amount of sensitive plutonium know-how.

Alternatively, the new owners of Santa Fe International could set up a nuclear technology division in a foreign country, perhaps in Europe. C.F. Braun's engineers and architects could form the nucleus of this new subsidiary company, which could essentially become a school for training Kuwaiti or other foreign nationals in spent fuel reprocessing and plutonium recovery and purification, for ostensibly peaceful purposes. With regard to this scenario, Section 57(b) of the Atomic Energy Act, 42 U.S.C. §2077 (b), provides broad authority to DOE to control virtually all activities by a U.S. citizen or firm abroad related to the production of special

nuclear material, except for the exports of nuclear materials and facilities covered by NRC. It would be very difficult, however, for DOE to effectively control the activities of C.F. Braun employees under these circumstances.

Furthermore, as noted by the GAO in its November 18, 1980 report there are two major loopholes in DOE's rules controlling foreign nuclear activities of U.S. firms and individuals. First, "by simply publishing the information, anyone can circumvent the need for obtaining the Secretary of Energy's authorization."[1/] The second loophole cited by GAO involves the lack of covenants governing exports of nuclear reactor manufacturing expertise and technology.[2/] In addition to these loopholes in DOE rules, the GAO found that "DOE and the other executive agencies responsible for controlling nuclear technology exports have failed to clearly define what exports are subject to Government control, what are the criteria governing approval, and what are the control jurisdictions between DOE and the Department of Commerce."[3/]

1/ Evaluation of Selected Features of U.S. Nuclear Non-Proliferation Law and Policy, GAO No. EMD-81-9 (Nov. 18, 1980, p. 79.

2/ Ibid., p. 80.

3/ Ibid., pp. 81-82.

Finally, it should be noted that the criteria and procedures for DOE authorizations contained in the Atomic Energy Act, as amended, and in DOE's implementing regulations (10 C.F.R. Part 810) are much weaker than NRC controls on nuclear exports, provide too much leeway for arbitrary Executive Branch decisions, and provide no opportunities for Congressional or public scrutiny. The GAO noted these problems in two separate reports to Congress on the Nuclear Non-Proliferation Act.[4/]

4/ GAO No. EMD-81-9 (Nov. 18, 1980) supra; The Nuclear Non-Proliferation Act of 1978 Should Be Selectively Modified, GAO No. OCG-81-2 (May 21, 1981).

Summary

In summary, the purchase of Santa Fe International Corporation by the Kuwait Petroleum Corporation would offer the Kuwait government a wealth of opportunities to gain expert, hands-on reactor-to-warhead plutonium knowledge, invaluable to any state pursuing a nuclear weapons option. U.S. nuclear non-proliferation controls meant to prohibit the transfer of such knowledge are wholly inadequate. Given the current, highly volatile environment in the Middle East, the proposed acquisition is contrary to U.S. national security interests.

ATTACHMENT 1

A. Hanford Reservation

The original mission of the Hanford Reservation was the supply of plutonium for weapons. Between 1943 and 1963, nine plutonium production reactors were constructed at Hanford for this purpose. The only production reactor currently operating is the dual-purpose N-Reactor, which began operating in 1963. The N-Reactor, designed with the capability to produce a variety of nuclear materials, has been used to date primarily to produce fuel-grade plutonium for civil reactor research and development. The N-Reactor is currently being converted to weapon-grade plutonium production.

N-Reactor support facilities at the Hanford site include: (a) fuel fabrication facilities, where N-Reactor spent fuel is fabricated; (b) the PUREX fuel processing plant for the processing of N-Reactor fuel; (c) a UO_3 plant used to convert UNH from the PUREX Plant to UO_3; and (d) a variety of waste management facilities including the B-Plant. The B-Plant, one of the original fuels separation facilities, was converted in 1968 to a waste fractionization plant where cesium and strontium are separated from high level waste and stored in the Waste Encapsulation Storage Facility.

The PUREX and UO_3 plants were used from 1956 to 1972 to process irradiated fuels produced by nine the plutonium

production reactors (the original eight graphite reactors and the N-Reactor) at the Hanford site. The PUREX Plant was the most recently constructed of the several fuel processing plants at Hanford.

The PUREX and UO_3 plants are of such large capacity that they could not economically be operated on a continuing basis after shutdown of the last of the eight graphite reactors in 1971. Consequently, the PUREX and UO_3 facilities were shut down in 1972 and have been maintained since in a standby condition awaiting resumption of operations at such time as procesing could be justified on the basis of defense requirements and research and development needs.

In FY 1981, Congress authorized funds to convert the N-Reactor at Hanford from fuel-grade to weapon-grade plutonium production and upgrade the PUREX Plant so that it could be used to process N-Reactor fuel. The N-Reactor will reach steady-state weapon-grade plutonium production about March 1983. The PUREX and UO_3 plants are now scheduled to restart in April 1984.

Plutonium finishing operations at Hanford, including conversion of plutonium nitrate from the PUREX Plant to plutonium oxide or metal, and processing plutonium scrap materials, were conducted in the Z-Plant. This facility is being deactivated and its conversion activities shifted to the PUREX Plant.

B. The Rocky Flats Plant

The Rocky Flats Plant manufactures plutonium and highly enriched uranium cores for nuclear fission weapons and the fission triggers for thermonuclear weapons. Tampers, and nuclear weapon component parts made of beryllium metal and special high strength stainless steel alloys, are also manufactured and assembled at Rocky Flats.

The plant is primarily concerned with metal production and chemical processing with heavy emphasis on production-related research. Production activities include fabrication of plutonium and uranium alloy as well as conventional metal components and their assembly. All plutonium fabrication, pit assembly, surveillance, and disassembly following weapons retirement is conducted here for the nuclear weapons complex, as well as chemical processing for the recovery of plutonium from fabrication-process residues (scrap) and weapon retirement. The plant is responsible for recovery of plutonium residues for the entire weapons complex.

Fabrication activities include subcomponent forming and joining, plus inspection and verification testing of finished components. In all these areas, the plant conducts applicable research and provides development support to the weapon laboratories. Emphasis is placed on specialized areas of technology, such as plutonium materials, processes, and handling, for which the plant is uniquely equipped.

Specialized support activities at Rocky Flats include accountability, safeguards, health, safety, environmental protection, and waste management.

ATTACHMENT 2

Listing of GAO Reports on Various Aspects of U.S. Nuclear Materials Security and Control (1973 to Present)

1. "Improvements Needed in the Programs for the Protection of Special Nuclear Material" (11/7/73)

2. "Protecting Special Nuclear Material In Transit: Improvements Made and Existing Problems" (4/12/74)

3. Letter to Chairman, Atomic Energy Commission, Re: security at commercial nuclear powerplants (10/16/74)

4. Unclassified summary of a classified report entitled, "Shortcomings in the Systems Used to Control and Protect Highly Dangerous Nuclear Material" (7/22/76)

5. Unclassified summary of a classified report entitled, "Safety and Transportation Safeguards at Rocky Flats Nuclear Weapons Plant" (1/11/77)

6. "Security at Nuclear Powerplants--At Best, Inadequate" (4/7/77)

7. Unclassified summary of a classified report entitled, "Commercial Nuclear Fuel Facilities Need Better Security" (5/2/77)

8. Letter to Chairman, John Dingell, U.S. House of Representatives, Re: unaccounted for nuclear material (5/5/78)

9. Unclassified summary of a classified report entitled, "States of Physical Security Improvements to ERDA Special Nuclear Material Facilities" (9/8/77)

10. "Federal Actions are Needed to Improve Safety and Security of Nuclear Materials Transportation" (5/7/79)

11. Letter to Secretaries of Energy and Defense, Re: transporation of nuclear weapons (8/1/79)

12. Unclassified summary of classified report entitled, "U.S. Nuclear Safeguards--A National Strategy is Needed" (2/19/80)

13. "Nuclear Fuel Reprocessing and the Problems of Safeguarding Against the Spread of Nuclear Weapons" (3/18/80)

14. Letter to Rep. Tim Wirth, Re: Alleged missing material from DOE's Rocky Flats weapons production plant (10/1/80)

15. Unclassified summary of a classified report entitled, "Secueity of U.S. Nuclear Weapons Overseas--Where Does it Stand?" (11/3/80)

16. "Nuclear Diversion in the U.S.? 13 Years of Contradictors and Confusion" (12/18/78) Classified report with no unclassified summary.