EDO Principal Correspondence Control

FROM: Representative Robert Andrews

DUE: 10/06/03

EDO CONTROL: G20030547
DOC DT: 09/04/03
FINAL REPLY:

TO:

Rathbun, OCA

FOR SIGNATURE OF : ** GRN **

Travers, EDO

CRC NO: 03-0588

DESC:

Hope Creek - Storage Methods of Spent Fuel
(Norm Cohen)

ROUTING:

Travers
Norry
Paperiello
Kane
Collins
Dean
Burns/Cyr
Miller, RI

DATE: 09/12/03

ASSIGNED TO: NMSS

CONTACT: Virgilio

SPECIAL INSTRUCTIONS OR REMARKS:

Template: SECY-017

E-RIDS: SECY-01

OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Sep 11, 2003 17:04

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AUTHOR:	Robert Andrews		
AFFILIATION:	REP		
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SUBJECT:	Hope Creek reactor		
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FILE LOCATION:	ADAMS		
DATE DUE:	10/06/2003	**DATE SIGNED:**	

ROBERT E. ANDREWS
FIRST DISTRICT, NEW JERSEY

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MEMBER, SUBCOMMITTEE ON INTELLIGENCE AND COUNTERTERRORISM

Congress of the United States
House of Representatives
Washington, DC 20515–3001

PLEASE REPLY TO:

☐ 2439 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225–6501

☐ 506–A WHITE HORSE PIKE
HADDON HEIGHTS, NJ 08035
(856) 546–5100

✓ 63 NORTH BROAD STREET
WOODBURY, NJ 08096
(856) 848–3900

E-MAIL:
rob.andrews@mail.house.gov

September 4, 2003

Mr. Dennis Rathbun, Director
Nuclear Regulatory Commission
Office Of Congressional Affairs
11555 Rockville Pike
Mail Stop 017A1
Rockville, MD 20852

Director Rathbun:

I write to you on behalf of Mr. Norm Cohen who has contacted my office for assistance regarding the Hope Creek reactor in Southern New Jersey.

Mr. Cohen opposes the proposed storage methods of spent fuel, specifically the use of above ground "dry cask" storage units. I would appreciate any effort taken to review and address Mr. Cohen's concerns.

Please respond directly to Mr. Cohen at 321 Barr Ave. in Linwood, NJ 08221 and kindly provide a copy of your reply for my Woodbury District Office. Thank you in advance for your attention to this matter.

Sincerely,

Robert E. Andrews

Robert Andrews
Member of Congress

REA:fd

Enclosures

ROBERT E. ANDREWS
FIRST DISTRICT, NEW JERSEY

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EDUCATION AND THE WORKFORCE
SENIOR RANKING DEMOCRAT, SUBCOMMITTEE ON EMPLOYER-EMPLOYEE RELATIONS
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MEMBER, SUBCOMMITTEE ON MILITARY PERSONNEL

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WOODBURY, NJ 08096
(856) 848–3900

E-MAIL:
rob.andrews@mail.house.gov

Request for Assistance Form

Name NORM COHEN E-mail Address NCOHEN12 @ COMCAST.NET

Address 321 BARR AVE

City LINWOOD State NJ ZIP 08221

Telephone (Home) 609 601 8537 (Work) 609 601 8583

Social Security Number and/or other relevant ID (OWCP#, ALIEN#, CA#, VA#, FILE#,LOAN#, etc.)
UNPLUG SALEM CAMPAIGN - COORDINATOR

Please describe exactly how Congressman Andrews can assist you. Attach copies of any accompanying documentation.

Write letter to NRC + others on getting a public hearing in South Jersey on the storage of nuclear waste At the Salem Nuclear Plant

* Coordinator of the Unplug Salem Campaign

Petitions attached.

Pursuant to the provisions of the Privacy Act of 1974, I hereby authorize you and your staff to request information from any federal or state department/agency or any other organization in reference to my inquiry. This authorization includes written correspondence, telephonic or any other means of communication. The agency/department or organization is authorized to furnish you copies of any documents, correspondence or information, including medical records, relative to my inquiry.

Signature _____ Date 6/23/03

CLOSE THE SALEM NUKES NOW
The UNPLUG SALEM Campaign
321 Barr Ave., Linwood NJ 08221
609-601-8583/601-8537; ncohen12@comcast.net
http://www.unplugsalem.org/

Date: 06/23/03

Dear Congressman Andrews,

At a sparsely attend and poorly advertised "public meeting" at the NRC regional headquarters in King of Prussia last week, PSEG outlined their plans for building above ground "dry cask" storage for their spent nuclear fuel. The Hope Creek reactor will run out of room in their spent fuel pool by 2007, and the two Salem units in the early 2010s.

On behalf of the 109 organizations of the UNPLUG Salem Campaign, we of course would prefer that PSEG decommission their nuclear plants when they run out of room in their spent fuel pool, rather than add on aboveground dry cask storage, which merely becomes one more terrorist target and begins the process whereby Artificial Island will become a permanent repository of high level nuclear waste.

In the very least, if PSEG is permitted by the NRC to construct dry cask storage, the storage should be as robust as possible to resist any terrorist attack. Enclosed is a copy of the summary report of a recent study discussing exactly how that could be achieved.

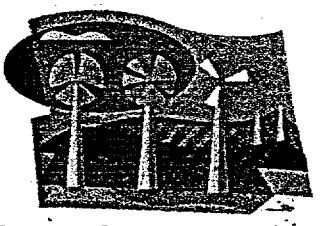
Thus, we ask if you would do the following to help make sure that if PSEG builds dry cask storage, that this storage is as safe as possible:

(1) Please write letters to the NRC, PSEG, Lower Alloways Creek Township Committee, and the Salem County Freeholder Board, requesting a public meeting on PSEG's plans for dry cask storage to be held at an accessible location in Salem County, as opposed to King of Prussia, so that concerned South Jersey citizens can be briefed on PSEG's plans. Please ask that any additional meetings on the dry cask storage be held in Salem County, not King of Prussia.

(2) Please write letters to the NRC, PSEG, Lower Alloways Creek Township, and the Salem County Freeholder Board to require that the dry cask system installed at Artificial Island be of the robust system as described in the enclosed report.

Sincerely,

Norman T. Cohen
Coordinator



CLOSE THE SALEM NUKES NOW - The UNPLUG SALEM Campaign
321 Barr Ave., Linwood NJ 08221
609-601-8583/601-8537; ncohen12@comcast.net
http://www.unplugsalem.org/

WHO WE ARE: The UNPLUG Salem Campaign - Close the Salem Nukes Now is a network of (as of 6/1/02) 108 organizations: national, regional, local, environmental, religious, student, political and civic, who work on issues concerning the two Salem Nuclear Plants, and the effects these nuclear plants have on the citizens of Delaware and Southern New Jersey.

WHAT ARE OUR GOALS:

(1) To shut down the aging and dangerous Salem Nuclear Plants. These two plants have a history of problems. Salem Unit 2's steam generator is defective; Both plants have defective fire barriers; Both plants continue to age and degrade; Both plants are not hardened against a 911-type attack and are terrorist targets.

(2) To Stop the Salem Nuke Fish Slaughter. PSEG needs to obey the Clean Water Act and install cooling towers. This will end 95% of the slaughter of billions of fish, other marine life, and endangered species caused by Salem's obsolete once-through cooling system.

(3) To act as a safety and public health watchdog. Cancer rates in Salem County, NJ, and in New Castle County, Del., are higher than the national average. Salem 1 and 2 emit continuous streams of low-level radiation, which weakens the immune systems of those most at risk - fetuses, infants, and the elderly.

(4) To promote alternative forms of energy. We support the 20-20 plan. 20% of our nation's electricity could be produced by alternatives by 2020, thus allowing the safe phase-out of nuclear power, starting with the oldest and most dangerous nukes first. We need to invest in wind, solar, wave, thermal, and other "green" alternatives.

WHAT WE DO: We work to educate the public about the safety and health issues concerning the Salem Nukes. We lobby Congress and our State politicians. We intervene with the Nuclear Regulatory Commission and the New Jersey and Delaware Departments of Environmental Protection. We testify at official hearings. We hold protests and educate. We'll keep at it until these nukes are closed.

JOIN CLOSE THE SALEM NUKES NOW - THE UNPLUG SALEM CAMPAIGN
Name_____ Address_____
Phone_____ Email/Fax_____
Individual Member (25.00)_____ Family Membership (35.00)_____
Sustainer (100.00)_____ Senior/Student/Fixed Income (10.00)_____
Visa/MasterCard available. Please write down your card number and expiration date. For a tax deduction, please make your check payable to "PAEF". Please mail to UNPLUG Salem Campaign, 321 Barr Ave, Linwood 08221.

ORGANIZATIONS - PLEASE JOIN THE UNPLUG Salem Campaign
Organization Name_____ Contact Person_____
Address_____ Phone_____
Email/Fax_____ Number of Members_____

INSTITUTE FOR RESOURCE AND SECURITY STUDIES
27 Ellsworth Avenue, Cambridge, Massachusetts 02139, USA
Phone: 617-491-5177 Fax: 617-491-6904 Email: irss@igc.org

ROBUST STORAGE OF SPENT NUCLEAR FUEL: A Neglected Issue of Homeland Security

by
Gordon Thompson
January 2003
(A report commissioned by
Citizens Awareness Network)

EXECUTIVE SUMMARY

The 103 nuclear power plants operating in the USA contain massive amounts of radioactive material in their reactor cores. In addition, the reactors have discharged more than 43,000 tonnes of irradiated fuel, containing an amount of long-lived radioactive material that substantially exceeds the amount in the reactor cores. This irradiated fuel is commonly described as "spent fuel", because it is no longer suitable for generating fission power. Cumulative national production of spent fuel is likely to exceed 80,000 tonnes over the currently-licensed lifetimes of existing nuclear power plants.

Most of the nation's spent fuel is now stored in high-density spent-fuel pools adjacent to the reactors, and the plant owners intend to continue using these pools at high density. As the pools become full, plant owners are building independent spent fuel storage installations (ISFSIs) to accommodate the growing inventory of spent fuel. Present and proposed ISFSIs are generally at reactor sites, but away-from-reactor ISFSIs may be established at Skull Valley, Utah, and elsewhere. In the USA, ISFSIs store spent fuel under dry conditions inside storage modules that are arrayed on concrete pads in the open air.

This situation poses a very high risk to people and the environment, because the loss of water from a high-density pool will cause spent fuel in the pool to heat up, self-ignite, burn and release a huge amount of long-lived radioactive material -- including tens of millions of Curies of the isotope cesium-137 -- to the atmosphere. Water could be lost from a pool by evaporation, displacement, siphoning, pumping, a breach in the pool floor or wall, or overturning of the pool. These mechanisms could be exploited in various ways by knowledgeable and determined attackers, who could thereby create a pool fire that contaminates large areas of US territory with radioactive material. Nuclear reactors are also vulnerable to attack. A successful attack

on an operating reactor would release large amounts of short- and long-lived radioactive material to the atmosphere. Knowledgeable and determined attackers could achieve this result in a variety of ways. Table 1 shows some potential modes of attack.

The safe operation of a reactor or a spent-fuel pool depends upon the continuing availability of cooling water, electrical power and operator attention. By contrast, ISFSI modules are passively cooled by natural circulation of air. Nevertheless, these modules are not designed to resist a determined attack. Moreover, ISFSI modules are comparatively easy to attack, because they are stored in the open air in a closely-spaced array.

Thus, nuclear power plants and their spent fuel can be regarded as pre-deployed radiological weapons that await activation by an enemy. The US government acts as if it were unaware of this threat. Responsibility for overseeing the security of civilian nuclear facilities has been delegated to the US Nuclear Regulatory Commission (NRC). This agency has a longstanding policy of not requiring its licensees to protect their facilities against enemy attack, and has continued this policy with little change since the terrorist attacks of September 2001. As a result, US nuclear facilities are lightly defended and are not robust against attack. This situation is symptomatic of an unbalanced US strategy for national security, in which offensive capabilities are assigned a higher priority than homeland defense. The lack of balance is a potentially destabilizing factor in the current international environment, because it could promote an escalating spiral of violence. Moreover, a weak defense of the homeland exposes US citizens to a variety of threats. In the case of nuclear facilities, the lack of defense exposes US citizens to the risk that an enemy will create widespread radioactive contamination.

This report offers a way forward in an important area of national defense. Specifically, the report articulates a strategy for providing robust storage of US spent fuel, where the word "robust" means that a facility for storing spent fuel is designed so as to be resistant to attack. Implementation of robust storage will be needed whether or not a repository is opened at Yucca Mountain, Nevada. The proposed robust-storage strategy should be implemented as a major element of a four-component strategy for the security of each US civilian nuclear facility. The four components are: site security; facility robustness; damage control; and offsite emergency response. Together, these components could provide a defense in depth for each nuclear facility, within the context of a national-security strategy that provides solid protection of our homeland. Figure 1 shows how robust storage of spent fuel would contribute to the national security of the USA.

A strategy for nuclear-facility security will have as its objective the reduction of the risk of a release of radioactive material. In the case of a reactor, the risk can be almost completely eliminated by shutting down the reactor and removing its fuel. In the case of spent fuel, the risk can be reduced but can never be eliminated. A strategy for robust storage of spent fuel must be judged by the extent to which it reduces risk. The strategy should assign the highest priority to reducing the highest risk.

The highest priority of a robust-storage strategy would be to re-equip spent-fuel pools with low-density, open-frame racks, as was the case when the present generation of nuclear plants began operating. This step would prevent fuel from igniting and burning if water were lost from a pool. Fuel that can no longer be accommodated in the pools would be stored in ISFSIs. Each pool would continue to operate at low density while its associated reactor remained operational, to provide storage space for fuel discharged from the reactor. After storage in the pool for several years, to allow its level of radioactive-decay heat to decline, fuel would be transferred to an ISFSI.

As a further measure of risk reduction, ISFSIs should be designed to incorporate hardening and dispersal. "Hardening" means that each fuel-storage module would be shielded from attack by layers of concrete, steel, gravel or other materials. "Dispersal" means that fuel-storage modules would not be concentrated at one location, but would be spread more uniformly across a site.

Hardening and dispersal of ISFSIs should not be conducted in a manner that encourages society to extend the life of an ISFSI until it becomes, by default, a repository. Therefore, a hardened ISFSI should not, unless absolutely necessary, be built underground. Also, the cost of implementing hardening and dispersal should be minimized, consistent with meeting performance objectives, and the timeframe for implementation should be similarly minimized. These considerations argue for the use, if possible, of dry-storage modules that are already approved by the NRC and are in common use.

The design of a hardened, dispersed ISFSI would be governed by a design-basis threat (DBT). This report articulates a two-tiered DBT. The first tier requires high confidence that no more than a small release of radioactive material would occur in the event of a direct attack on the ISFSI by a TOW (anti-tank) missile, a manually-placed charge, a vehicle bomb, an explosive-laden general-aviation aircraft or a fuel-laden commercial aircraft. The second tier requires reasonable confidence that no more than a specified release of radioactive material would occur in the event of a ground burst of a 10-kilotonne nuclear weapon at the ISFSI.

An ISFSI design approach that offers a prospect of meeting this DBT involves an array of vertical-axis dry-storage modules at a center-to-center spacing of perhaps 25 meters. Each module would be on a concrete pad slightly above ground level, and would be surrounded by a concentric tube surmounted by a cap, both being made of steel and concrete. This tube would be backed up by a conical mound made of earth, gravel and rocks. Channels for air cooling would be inclined, to prevent pooling of jet fuel, and would be configured to preclude line-of-sight access to the dry-storage module. Figure 2 provides a schematic view of the proposed design.

An alternative design approach might be used at a few reactor sites where space is insufficient to allow wide dispersal. In this approach, a number of dry-storage modules would be co-located in an underground, reinforced-concrete bunker. Similar bunkers would be dispersed across the site to the extent allowed by the site's geography. At especially-constricted sites, it could be necessary to ship some spent fuel from the site to an ISFSI at another location.

Any ISFSI, whether at a reactor site or an away-from-reactor site, should employ hardened, dispersed, dry storage. The design of an away-from-reactor ISFSI could, because the facility is entirely new, provide a degree of dispersal and a level of site security that may be difficult to achieve at some reactor sites. However, there are factors that argue against developing an away-from-reactor ISFSI: (i) overall transport risk would be increased, because fuel would be shipped twice before arriving at a repository; (ii) the massive amount of radioactive material concentrated at this ISFSI could provide an attractive target for an enemy; (iii) this ISFSI would not eliminate the need for at-reactor ISFSIs; (iv) this ISFSI could become, by default, an unsafe repository; and (v) storage in this ISFSI could be more expensive than storage at reactor sites.

Three major requirements must be met if a robust-storage strategy for spent fuel is to be implemented nationwide. First, full-scale experiments are needed to determine the ability of various dry-storage design approaches to accommodate various DBTs. Second, performance-based specifications for robust storage, addressing both short- and long-term risks, must be developed with stakeholder input. Third, robust storage of spent fuel must be seen as an important component of national security, to ensure that sufficient funding is available and robust storage is implemented quickly.

MODE OF ATTACK	CHARACTERISTICS	PRESENT DEFENSE
Commando-style attack	• Could involve heavy weapons and sophisticated tactics • Successful attack would require substantial planning and resources	Alarms, fences and lightly-armed guards, with offsite backup
Land-vehicle bomb	• Readily obtainable • Highly destructive if detonated at target	Vehicle barriers at entry points to Protected Area
Anti-tank missile	• Readily obtainable • Highly destructive at point of impact	None if missile launched from offsite
Commercial aircraft	• More difficult to obtain than pre-9/11 • Can destroy larger, softer targets	None
Explosive-laden smaller aircraft	• Readily obtainable • Can destroy smaller, harder targets	None
10-kilotonne nuclear weapon	• Difficult to obtain • Assured destruction if detonated at target	None

TABLE 1

SOME POTENTIAL MODES OF ATTACK ON CIVILIAN NUCLEAR FACILITIES

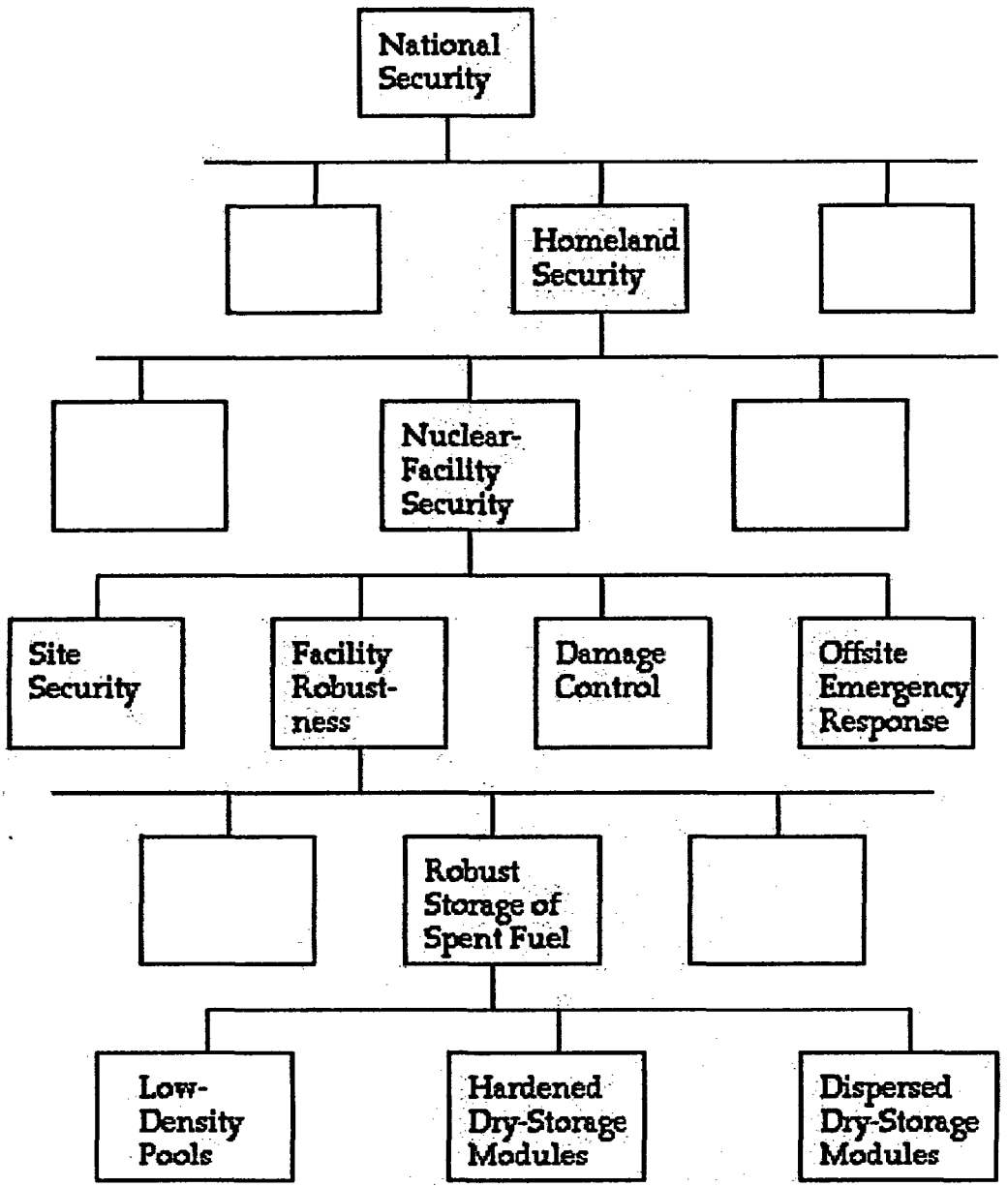


FIGURE 1

ROBUST STORAGE OF SPENT FUEL IN THE CONTEXT OF NATIONAL SECURITY

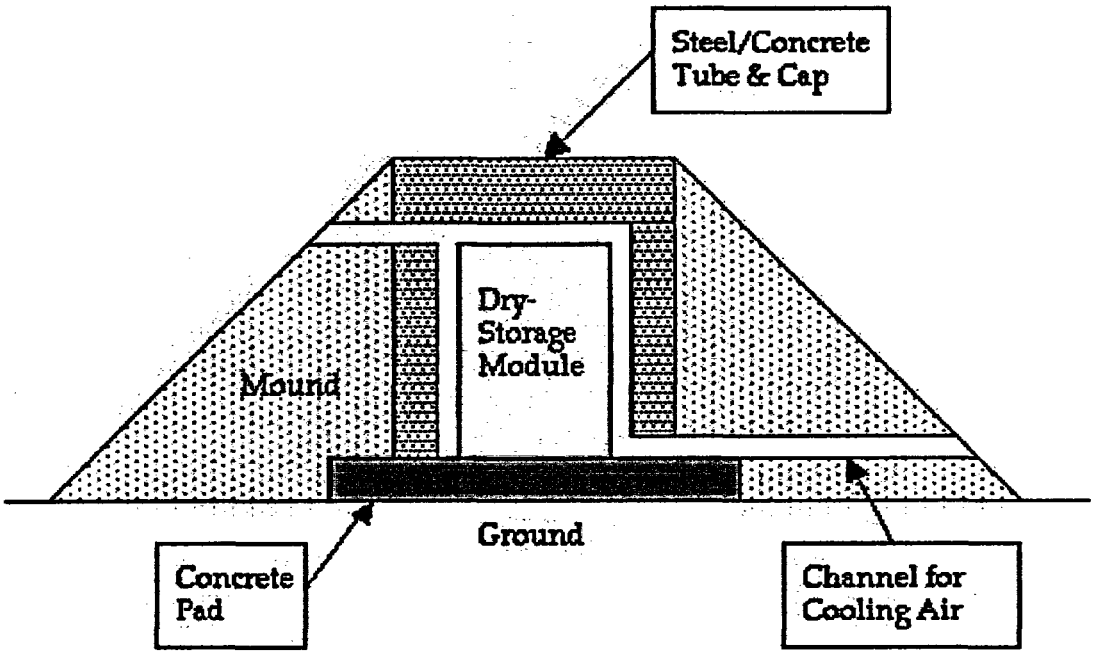


FIGURE 2

SCHEMATIC VIEW OF PROPOSED DESIGN
FOR HARDENED, DRY STORAGE

Notes

1. Cooling channels would be inclined, to prevent pooling of jet fuel, and would be configured to preclude line-of-sight access to the dry-storage module.
2. The tube, cap and pad surrounding the dry-storage module would be tied together with steel rods, and spacer blocks would prevent the module from moving inside the tube.
3. The steel/concrete tube could be buttressed by several triangular panels connecting the tube and the base pad.