Erwin Citizens Awareness Network, Inc. (ECAN)

Presentation

NRC PUBLIC WORKSHOP TO DISCUSS POTENTIAL POLICY ISSUES RELATED TO GROUNDWATER PROTECTION

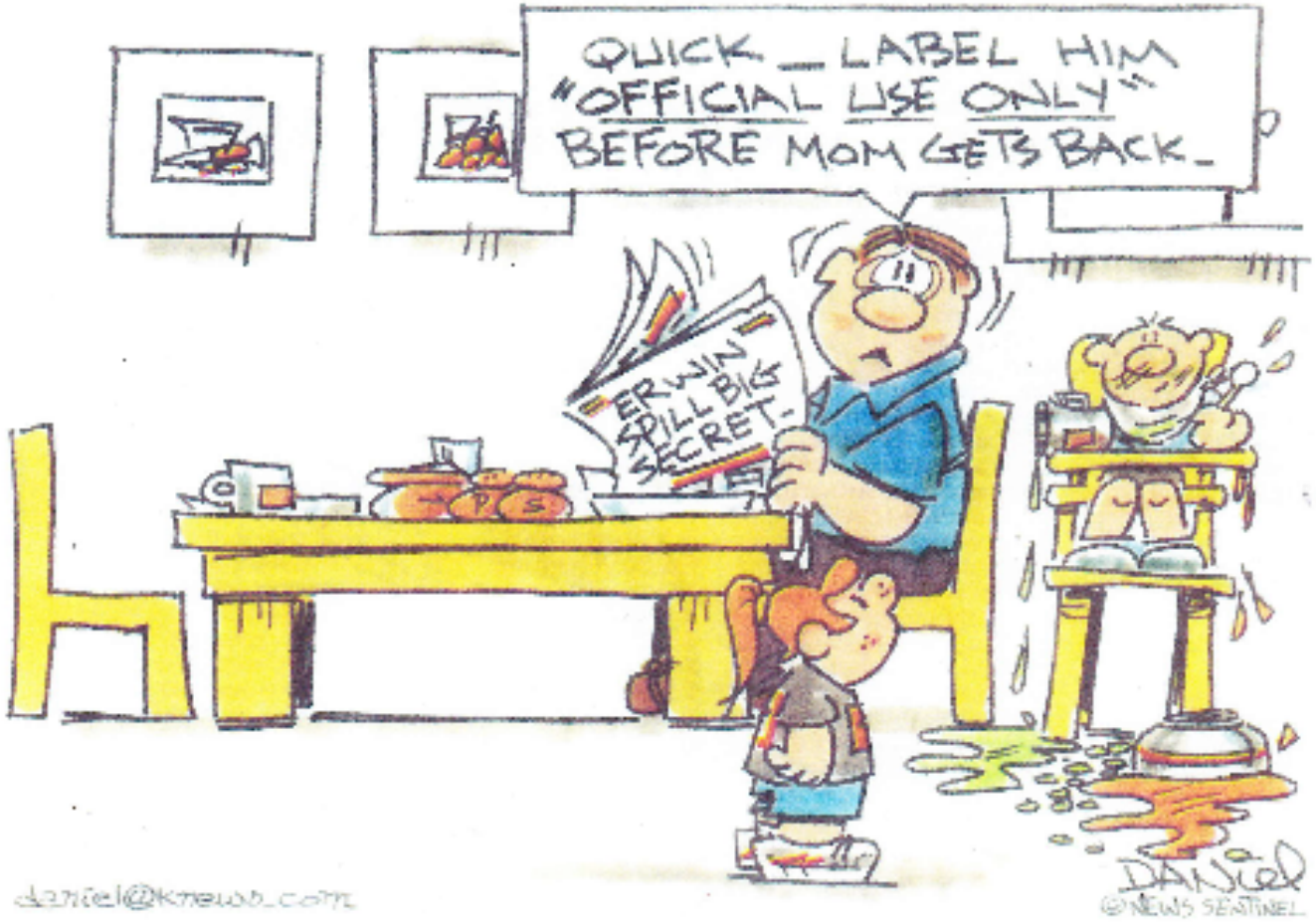
Monday, October 4, 2010

Topic 4: Strengthen Trust

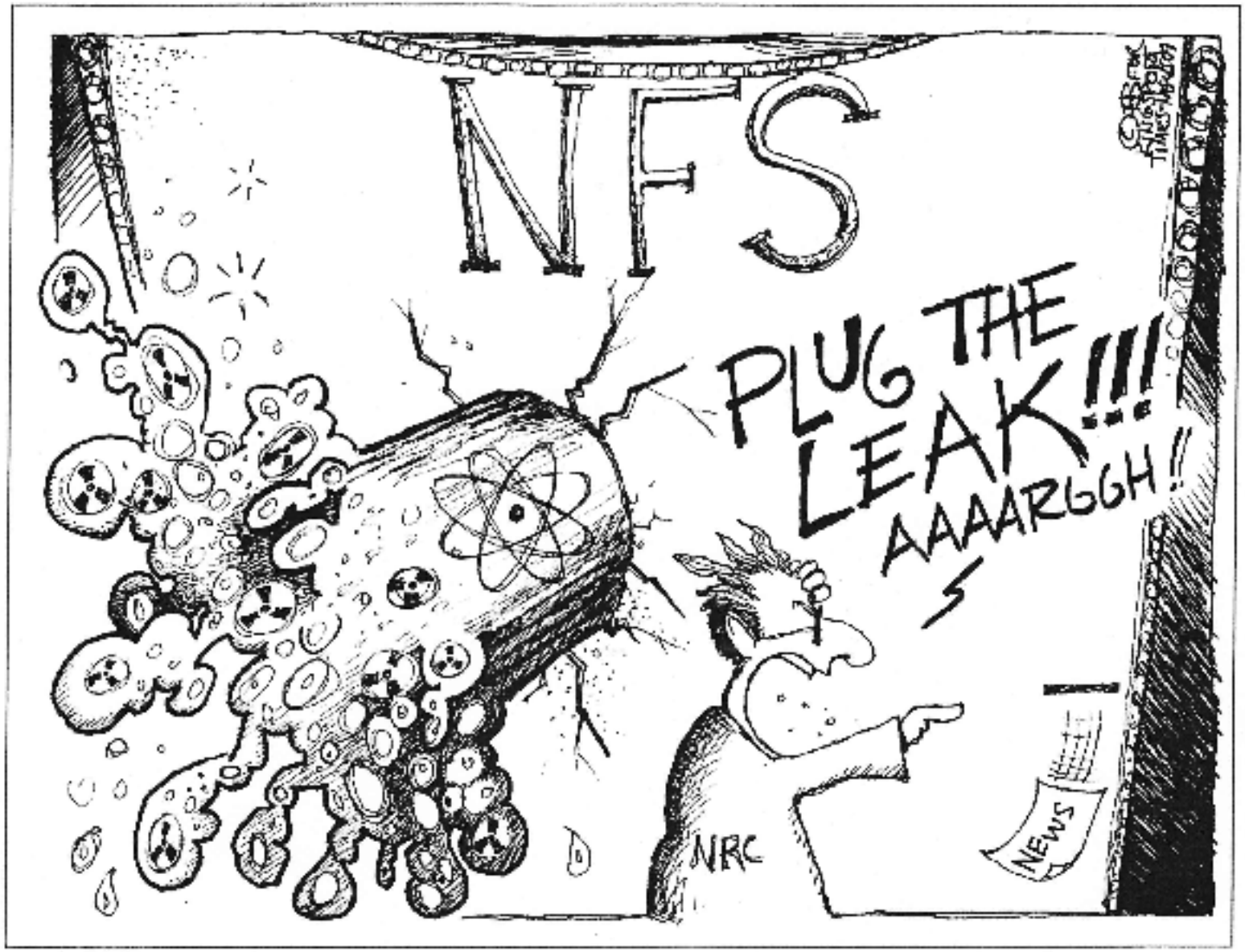
Linda Cataldo Modica
Jonesborough, Tennessee

NEWS SENTINEL
Established December 2, 1908

COMMENT



Publication: Sandusky - Kingsport News; **Date:** Aug 29, 2007; **Section:** Editorial; **Page Number:** 6A



ML050540096
30 June 2002

calculations are provided in the additional information letter (Ref. 5) and RAI response (Ref. 5). Effluent and dose calculation results by release point are provided in Tables 6.1 and 6.2. While some effluents for the proposed action are increasing in relation to current releases, the total annual dose estimate for the maximally exposed individual from all planned effluents is 0.022 mSv (2.2 mrem). This result is well below the annual public dose limit of 1 mSv (100 mrem) in 10 CFR Part 20 and the 0.1 mSv (10 mrem) ALARA constraint. The estimated dose is conservative because no solution control was assumed for a number of radionuclides (Ref. 5, Attachment 25, Table 2). For the proposed action effluents, BPF liquid effluents are discharged to the WWTF, and BLEU Complex liquid effluents are discharged to the sanitary sewer. Sanitary sewer releases are not included in the dose calculations because the dose receptor used for the calculations (maximally exposed individual) would not be exposed to the sewer effluent exposure pathways.

The documentation of effluent estimates includes detailed radionuclide data for feed material, mass balance and process flow diagrams, bases for release fractions for various processing steps, pollution control removal efficiencies, and tabulation of results. For dose assessment, the effluent estimates were multiplied by unit dose coefficients calculated using pathway dose assessment software for each type of release scenario (i.e., airborne, liquid).

Table 6.1 Comparison of current liquid effluent releases with estimated effluents and dose from the proposed action

Element	Removal Factor[a]	Proposed Action WWTF Effluent (Ci/yr)[b]	Current WWTF Effluent (Ci/yr)	As Percentage of Current WWTF Effluent (%)	Proposed Action Effluent Dose (mrem/yr)[c]
Uranium	0.0004	1.26E-4	5.3E-4	16.6	2.02E-3
Thorium	0.0004	9.10E-3	4.4E-6	2.12E+3	1.01E+0
Polonium	1.0000	3.06E-2	5.3E-7	5.8E+4	4.36E-1
Americium	1.0000	6.66E-4	—	—	9.72E-2
Neptunium	1.0000	7.87E-3	—	—	4.48E-1
Actinium	1.0000	1.96E-4	—	—	1.16E-1
Cesium	1.0000	6.72E-4	—	—	1.92E-2
Technetium	1.0000	1.75E-4	1.0E-3	17	2.96E-4
Strontium	1.0000	3.45E-04	—	—	3.45E-3
Total					2.04E-0

+16.6%
+210,000%
+5,800,000%

[a] The removal factor represents the assumed fraction of radionuclide remaining in all unit processes treated at the WWTF. A factor of one assumes no treatment and that a conservative 0.004% treatment is provided.
[b] To convert Ci to Bq, multiply by 3.70E+10.
[c] To convert mrem to mSv, multiply by 0.01.
[d] Not applicable/no current releases.

Source: S.M. Moore, Nuclear Fuel Services, Inc., Letter to U.S. Nuclear Regulatory Commission, "Additional Information to Support an Environmental Assessment for BLEU Project," January 15, 2002, Ref. 5, Attachment 25.

Source: NRC, EA for Proposed License Amendments to SNM License No. SNM-124 Regarding Downblending & Oxide Conversion of Surplus HEU, June 2002

Amendment 39 - UNB + Increased Possession Limit. July 7, 2003

Environmental Impacts of the Proposed Action

NRC staff reviewed the proposed consolidation and expansion activities, the licensed radiation protection program, and the potential for release of radioactive materials from the Service Facility. The work practices and safety controls as specified in the Array's application, so that operational activities will meet the 10 CFR Part 20 radiation protection requirements. Worker and public doses will be limited so that exposures will not exceed Part 20 requirements and are as low as reasonably achievable.

NUCLEAR REGULATORY COMMISSION

[Docket No. 70-143]

Environmental Assessment and Finding of No Significant Impact of License Amendment for Nuclear Fuel Services, Inc.

AGENCY: Nuclear Regulatory Commission.

ACTION: Amendment of Nuclear Fuel Services, Inc., Materials License SNM-124 to authorize construction and operation of the Array Nitric Storage Facility.

Tennessee, and to increase the 235U possession limit. This action is part of the Blended Low-Enriched Uranium (BLEU) project described below. The other related future activities which were considered in cumulative to the environmental impacts for this project are: construction and operation of the Oxide Conversion Building (OCB), construction and operation of a new Effluent Processing Building (EPB), and relocation of downblending operations within the NFS protected area, to a BLEU Preparation Facility (BPF).

On March 4, 2002, NRC issued a notice of intent to prepare an environmental assessment (EA) for

SNM-124 Amendment 47 - BPF - Effective: Jan. 13, 2004

NUCLEAR REGULATORY COMMISSION

[Docket No. 70-143]

Nuclear Fuel Services, Inc., Environmental Assessment and Issuance of Finding of No Significant Impact Related to Proposed Amendment to License No. SNM-124 for the Blended Low-Enriched Uranium Preparation Facility

AGENCY: Nuclear Regulatory Commission.

ACTION: Finding of no significant impact and availability of environmental assessment.

SUPPLEMENTARY INFORMATION:

I. Introduction

The U.S. Nuclear Regulatory Commission (NRC) is considering the issuance of a license amendment to NRC Materials License No. SNM-124 to authorize operation of the Blended Low-Enriched Uranium Preparation Facility (BPF) in Erwin, Tennessee and has prepared an Environmental Assessment (EA) as support of this action. Based upon the EA, the NRC has concluded that a Finding of No Significant Impact (FONSI) is appropriate, and therefore, an Environmental Impact Statement (EIS) will not be prepared.

Nuclear Fuel Services (NFS) request for the proposed action was initially

II. Environmental Assessment

Background

The NFS facility in Erwin, TN is authorized under SNM-124 to manufacture fuel-bundled nuclear reactor fuel. NFS is undertaking the Blended Low-Enriched Uranium Project (BLEU Project) to manufacture low-enriched uranium reactor fuel. NFS is considering a new campus at the Erwin site to house the operations involving low-enriched uranium. On July 29, 2003, Amendment 39 to License SNM-124 was issued to authorize storage of low-enriched uranium in the new complex. This was the first of three amendments planned for the BLEU Project. Manufacturing operations in

Amendment 51 - OCB/EPB - Effective Date: July 30, 2004

subject to the conditions set forth below. The NRC staff has further found that the application for the proposed license amendment complies with the standards and requirements of the Atomic Energy Act, of 1954, as amended, and the Commission's rules and regulations set forth in 10 CFR chapter I; the facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission; there is reasonable assurance that the activities authorized by the proposed license amendment can be conducted without endangering the health and safety of the public and that such activities will be conducted in compliance with the Commission's regulations; the issuance of the proposed license amendment will not be inimical to the common defense and security or the health and safety of the public; and the issuance of the proposed amendment will be in accordance with

Also, Dominion Energy Kewaunee shall inform the NRC in writing any time that it elects upon the $61 million commitment.

(b) Dominion Energy Kewaunee is required to provide unofficial decommissioning funds with a new (after tax) net value of no less than $[illegible] million for radiologic decommissioning purposes. The funds will be deposited in an external trust fund to be segregated from Dominion Energy Kewaunee's other assets and outside its administrative control, as required by NRC regulations and Dominion Energy Kewaunee shall take all necessary steps to ensure that the external trust fund is maintained in accordance with the requirements of the Code applicable to trustees of the Kewaunee operating license and with the solely administrative responsibility for the Code.

NUCLEAR REGULATORY COMMISSION

[Docket No. 70-143]

Nuclear Fuel Services, Inc., Environmental Assessment and Finding of No Significant Impact Related to Proposed License Amendment Authorizing Operations at the Oxide Conversion Building and the Effluent Processing Building at the Blended Low-Enriched Uranium Complex

AGENCY: Nuclear Regulatory Commission.

ACTION: Finding of no significant impact and environmental assessment.

FOR FURTHER INFORMATION CONTACT: Kevin M. Ramsey, Fuel Cycle Facilities Branch, Division of Fuel Cycle Safety and Safeguards, Office of Nuclear

NUCLEAR FUEL SERVICES (NFS)

OI substantiated that a senior executive of NFS, willfully violated the provisions of the NFS Fitness for Duty (FFD) Procedure by consuming alcohol within the prohibited five-hour time period prior to reporting to work on March 9, 2006. Further, OI substantiated that two Security Managers at NFS willfully failed to take actions required by the FFD Procedure and the Behavioral Observation Program to prevent a potentially impaired worker (the senior executive) from entering the Protected Area at NFS. OI also substantiated that NFS personnel willfully failed to report the violation within 24 hours to the NRC as required. Additional OI investigative effort concluded in August 2008, and substantiated that the NRC's request for information dated March 31, 2006, contained incomplete and inaccurate information and that an executive willfully provided the response containing the incomplete and inaccurate information to the NRC. Enforcement action is pending.

NUCLEAR FUEL SERVICES

An OI investigation substantiated that a contract physician for Nuclear Fuel Services Inc. (NFS) deliberately failed to provide complete and accurate information to the NRC regarding two security officers' medical examinations. The contract physician signed and dated medical forms as complete for two security officers despite the fact no hearing tests were administered for the officers. During the interview with OI, the physician admitted signing the medical forms knowing that no hearing tests had been administered. The licensee and contract physician were issued separate Confirmatory Orders on November 23, 2009, as a result of successful Post-Investigation Alternate Dispute Resolution mediation.

FACTUAL SUMMARY
OF OI No. 2-2006-017

On April 20, 2006, an investigation was initiated by the U.S. Nuclear Regulatory Commission (NRC) Office of Investigations (OI), Region 3 (RIII) to determine whether on March 7, 8, and 9, 2006, [redacted] of Nuclear Fuel Services Inc., (NFS) willfully violated the provisions of the NFS Fitness for Duty (FFD) procedure by consuming alcohol within the prohibited five hour time period prior to coming to work on one or all of the above listed dates. Additionally, the investigation sought to determine whether other employees of NFS willfully failed to follow procedural and regulatory requirements during NFS' review and response to this matter.

On the night of March 7, 2006, during a force on-force exercise, [redacted] thought he smelled alcohol on the breath of [redacted], but was not certain. The next day, on March 8, 2006, [redacted] reported to [redacted] that [redacted] thought he may have smelled alcohol on the breath of [redacted] the previous night [redacted] instructor [redacted] to monitor [redacted] during the two remaining force-on-force exercises. [redacted] accompanied [redacted] during the March 8, 2006, force-on-force exercise and testified that he was 60% sure that he detected the smell of alcohol on the breath of [redacted] during that force-on-force exercise. [redacted] later told [redacted] that [redacted] smelled alcohol [redacted] on March 8. [redacted] accompanied [redacted] during the March 9, 2006, force-on-force exercise, and testified that he was 90% sure that he smelled alcohol on [redacted] breath during that exercise [redacted] did nothing to remove or initiate removal of [redacted] for testing [redacted] testified that he was uncertain about what he should have done and that he did not know if the 5 hour abstinence rule applied to [redacted] because [redacted] did not know whether [redacted] presence was a scheduled working tour, or whether the rule applied to regular duty [redacted] understood that the NFS Fitness for Duty policy requires for cause testing of armed guards if alcohol is detected on their breath, and had sent an armed guard to for cause testing solely because the smell of alcohol had been detected on the guard, but [redacted] did not know if other employees were treated the same or differently under the policy. [redacted] did not review the NFS policy or otherwise seek guidance to determine whether to send [redacted] to for cause testing.

[redacted] smelled a strong odor of alcohol on [redacted] around midnight on March 9, 2006, during the post-exercise critique at the NFS Training Center, approximately 5 hours after [redacted] had entered the NFS Protected Area. [redacted] also observed [redacted] engage in an unprovoked, angry, inappropriate outburst at an NRC inspector. However, [redacted] took no action to remove [redacted] or initiate for cause testing of [redacted] testified that he did not remove [redacted] or initiate for cause testing of [redacted] because the outburst was typical behavior for [redacted] and, therefore, did not constitute aberrant behavior. [redacted] also testified that he did not send [redacted] to for cause testing because the smell of alcohol alone is not enough to send an employee to for cause testing, and because he was not sure if [redacted] was the source of a very faint odor of alcohol when [redacted] was sitting next to [redacted] testified that he did not want to think that [redacted] behavior might have been the result of alcohol, but that if [redacted] had smelled alcohol on [redacted] would

probably have asked [redacted] to submit to a test. However, on March 10, 2006, [redacted] told [redacted] that he assumed the smell of alcohol came from [redacted] and told [redacted] of the U.S. Naval Nuclear Propulsion Program, that [redacted] could smell alcohol all over [redacted] and that [redacted] inappropriate conduct was the alcohol talking. On March 10, 2006, [redacted] apologized to the NRC Resident Inspector [redacted] behavior of the previous evening, and said that [redacted] hoped it was not the alcohol talking. Sometime between March 19 and 25, 2006, [redacted] told [redacted] that [redacted] smelled alcohol on [redacted] breath during the post-exercise critique at the Training Center.

In response to a March 31, 2006, NRC inquiry concerning the detection of alcohol on [redacted] of NFS during the March 2006 force-on-force exercises, [redacted] submitted correspondence to the NRC which stated, in an attachment to a letter signed by [redacted] that [redacted] had entered a substance abuse rehabilitation program, when in fact [redacted] had not done so. [redacted] testified that he did not prepare the attachment, but was sure that he reviewed the attachment before signing the letter. [redacted] testified that, at the time, he did not know whether or not [redacted] had entered a substance abuse program, and that no one told him that [redacted] had done so. [redacted] testified that he learned sometime after [redacted] returned to duty in May 2006 that [redacted] had not entered a substance abuse rehabilitation program. [redacted] testified that his correspondence was a mischaracterization of what actually took place but that it was not intentional.

The New York Times

June 23, 1992

Nuclear Agency's Chief Praises Watchdog Groups

By MATTHEW L. WALD

ROCKVILLE, Md., June 22— Seeking to defuse years of distrust and conflict among the nuclear industry, the regulators and the public, the chairman of the Nuclear Regulatory Commission said today that twice in the last year his agency had been pushed in the right direction on safety issues because of the pleas and protests of nuclear watchdog groups.

He even suggested that the groups that picket nuclear plants and petition his commission to shut them were worthy of the public's financial support.

In a session with reporters at the end of his first year as chairman, Ivan Selin said the commission had been influenced by environmentalists on shutting two nuclear plants.

The commission staff said that one of those plants, Yankee Rowe, an aging reactor in Rowe, Mass., met all applicable safety requirements, but that the five commissioners ordered it shut until tests determined whether crucial metal parts were too brittle; the plant's owners decided instead to retire the plant. And Sequoyah Nuclear Fuels, a uranium fabrication plant in Gore, Okla., was temporarily shut by the commission because of safety violations. Effort to Build Trust

Mr. Selin said that his highest priority after safe operation of nuclear plants was building the public's trust, and he said that listening to the public was part of that process. He added about nuclear watchdog groups, "I would hate to see, in these days when it's really tough to raise money for all kinds of causes, them to back off the nuclear industry question."

Mr. Selin is not the only member of the commission ever to see some value in the activities of citizen groups who raise safety questions. But his comments are in marked contrast to the last few chairmen, including his immediate predecessor, Kenneth Carr, a retired admiral who once asserted that the public could have confidence in the safety of reactors because their operators were patriotic Americans.

The groups in the Yankee Rowe case were the New England Coalition on Nuclear Pollution, based in western Massachusetts and adjacent Vermont, and the Union of Concerned Scientists, which is based in Washington and Boston. Over the years the union has brought several challenges to the commission's rulings and procedures that have resulted in major changes in reactors around the country.

In the Sequoyah case, the critics included the Native Americans for a Clean Environment and the Cherokee nation.

In a one-hour session with reporters, Mr. Selin also said that the stalemate in finding a place to dispose of high-level nuclear waste was the single biggest impediment to building new reactors. Progress has been made on reforming the licensing system, he said, and on standardizing plant design, but those improvements are meaningless without solving the waste problem. He added that the lack of progress was even dissuading utilities that operate aging reactors from applying for license extensions.

Mr. Selin also said that for years the nuclear industry sought the acquiescence of the public, so that it could continue operating existing plants or continue work on construction projects, but he said it now needed more support for permission to extend plant licenses or build new plants. The industry and the commission need to be more open, he said.

For years, he said, the nuclear industry had a culture "that nuclear power was not something you discussed with lay people."

"You have to get used to the fact that telling people something they might use against you later is better than not telling them and letting them imagine things," he said.

Mr. Selin also said he thought that when the commission examined the operations of reactors with safety problems it should pay attention to the financial condition of the owners. In some cases, he said, the utilities are simply not dedicating adequate resources to running their plants.

In addition, Mr. Selin said he would consider establishing an independent group of reviewers to evaluate major accidents, and whether regulatory decisions contributed to those accidents. The suggestion was made in a recent report by the National Academy of Sciences.

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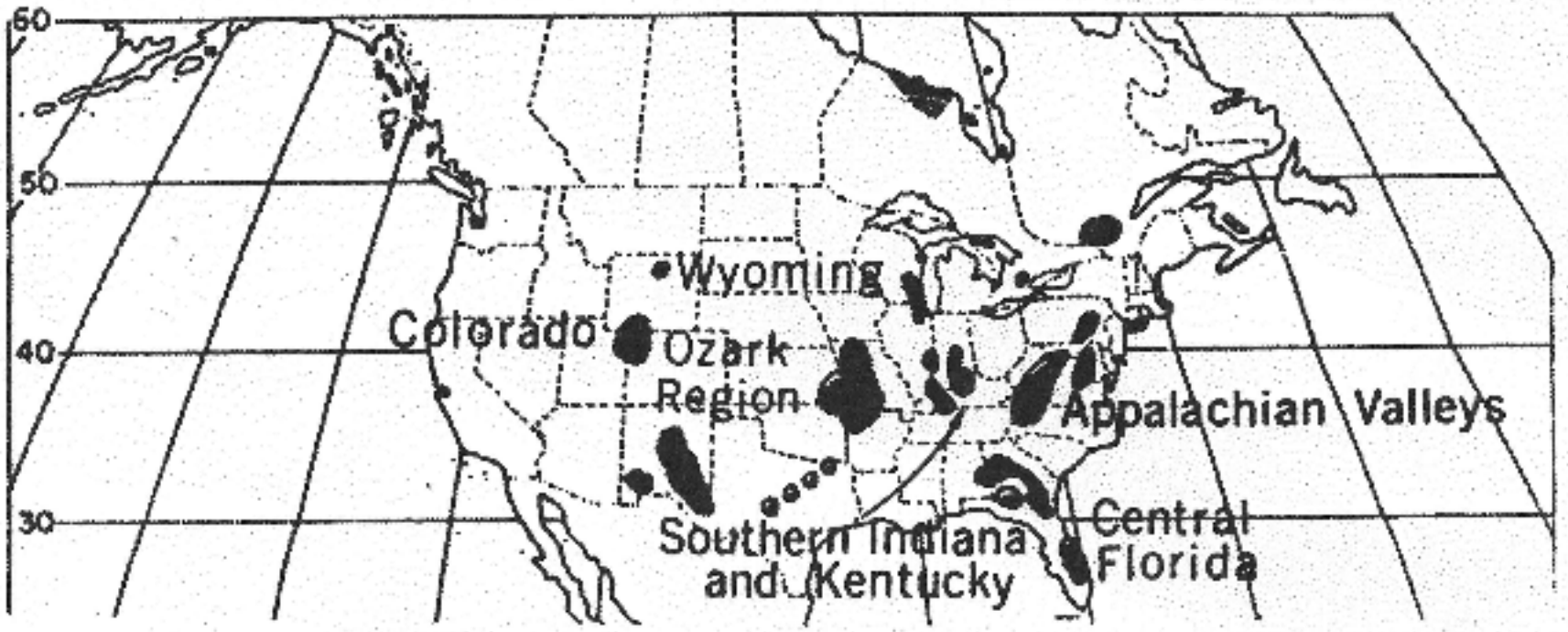
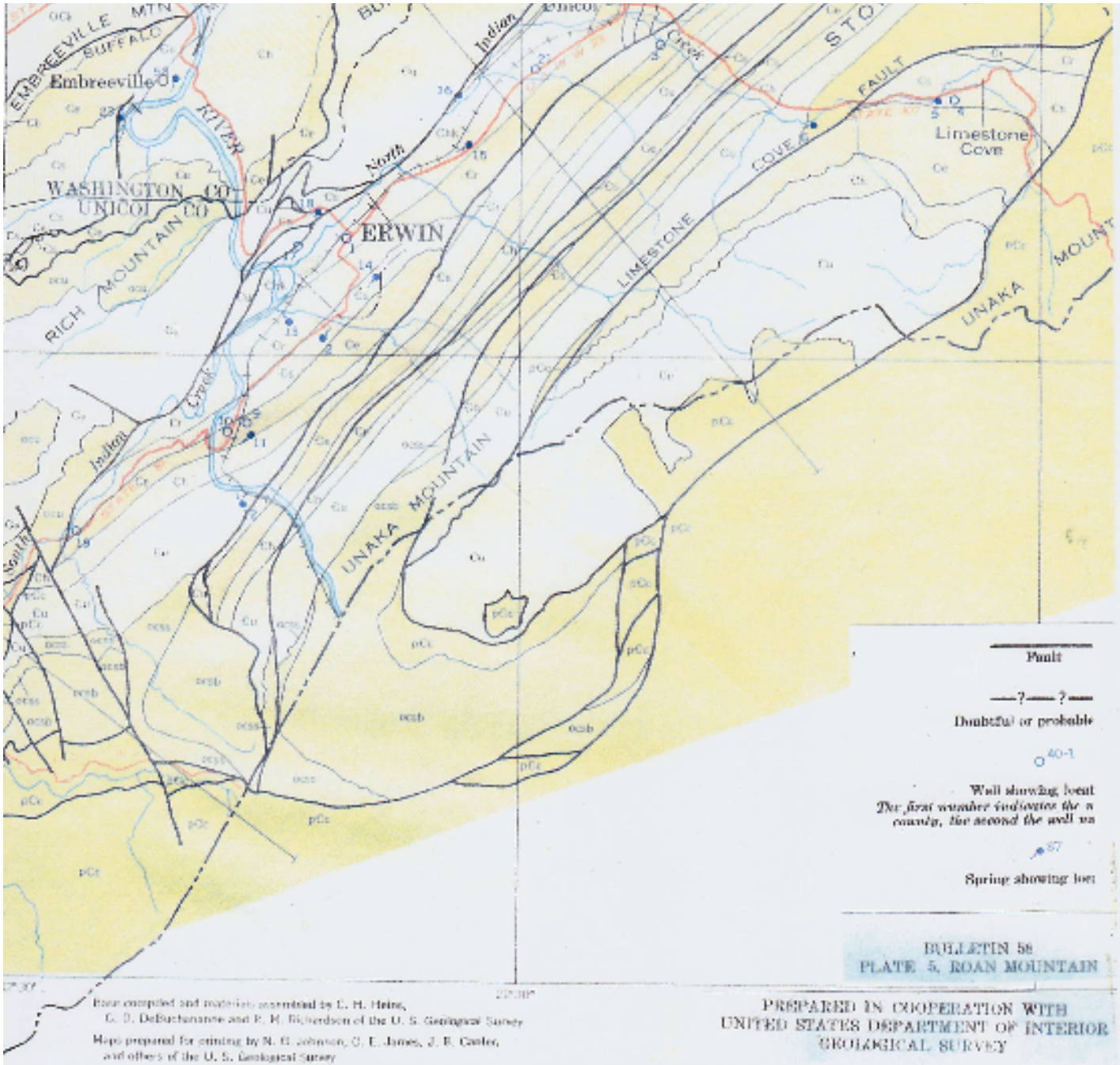
Major Limestone Cave Areas of the U.S.:



Note on the Poster:

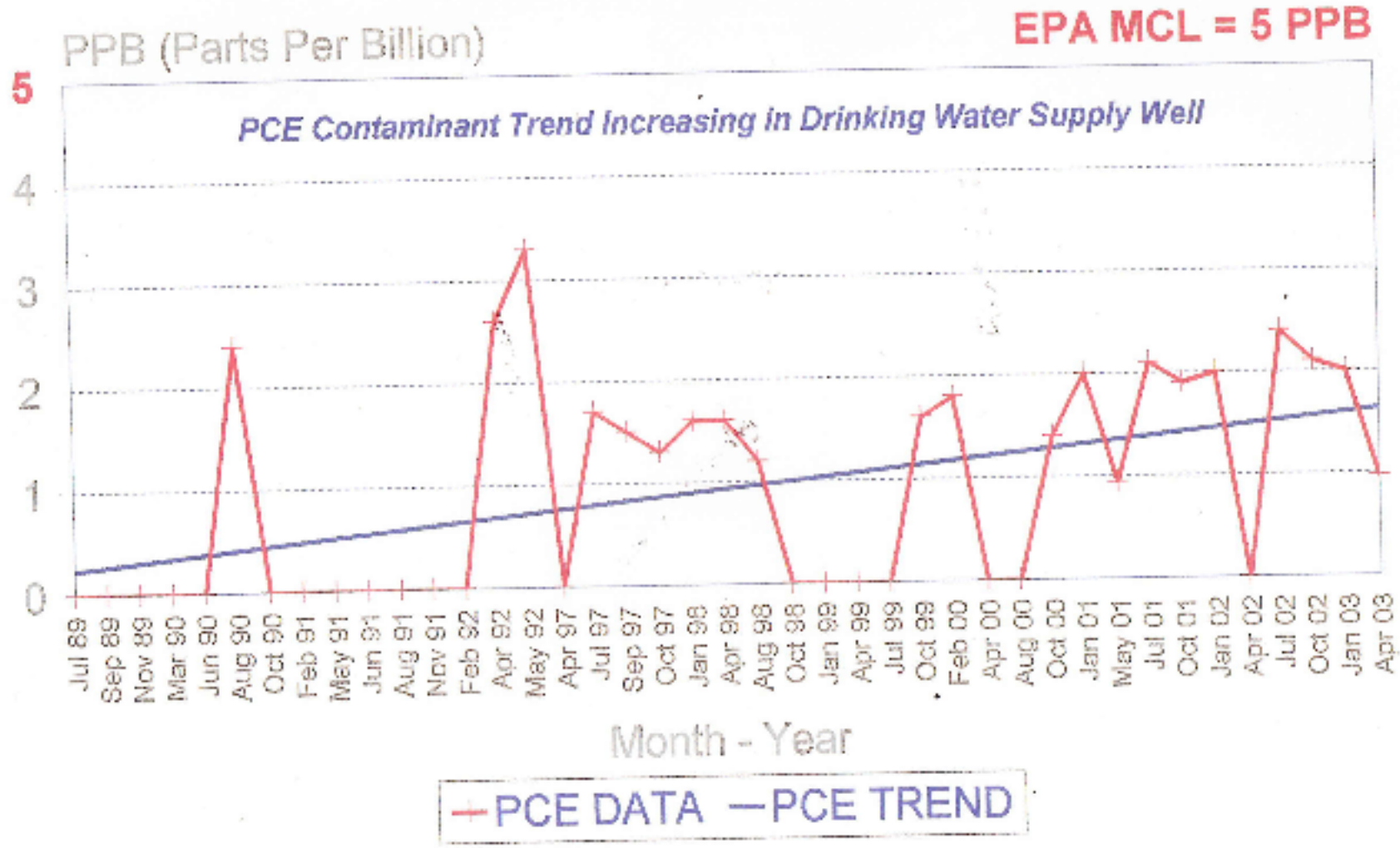
This poster, showing habitats typical of the "cedar glades" of Middle Tennessee, is o
of 6 created from original artwork in the **Tennessee Wildlife Viewing Guide** (Falco
Press 1993) with grants from the agencies whose logos are shown below.



GEOLOGIC MAP OF EAST TENNESSEE: ROAN MOUNTAIN
SHOWING LOCATION OF WELLS AND SPRINGS

Erwin Utilities Railroad Well

Tetrachloroethylene (PCE)

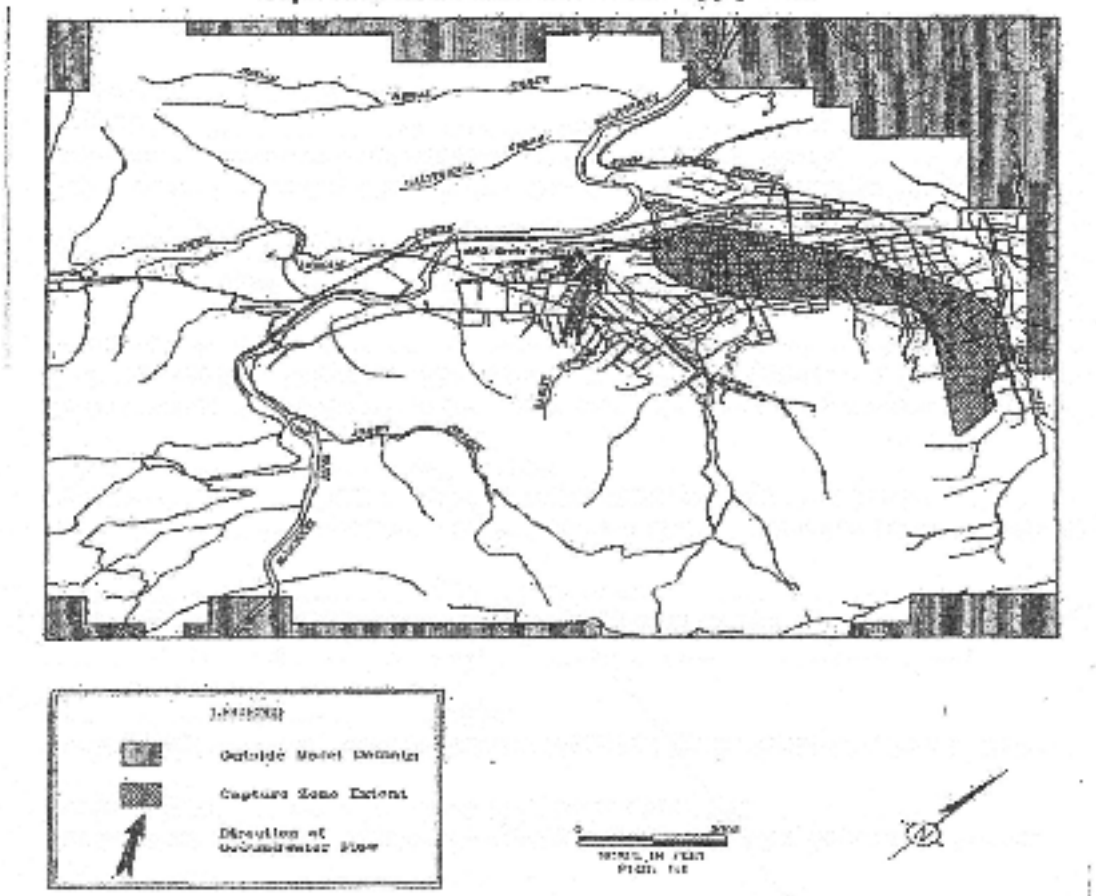


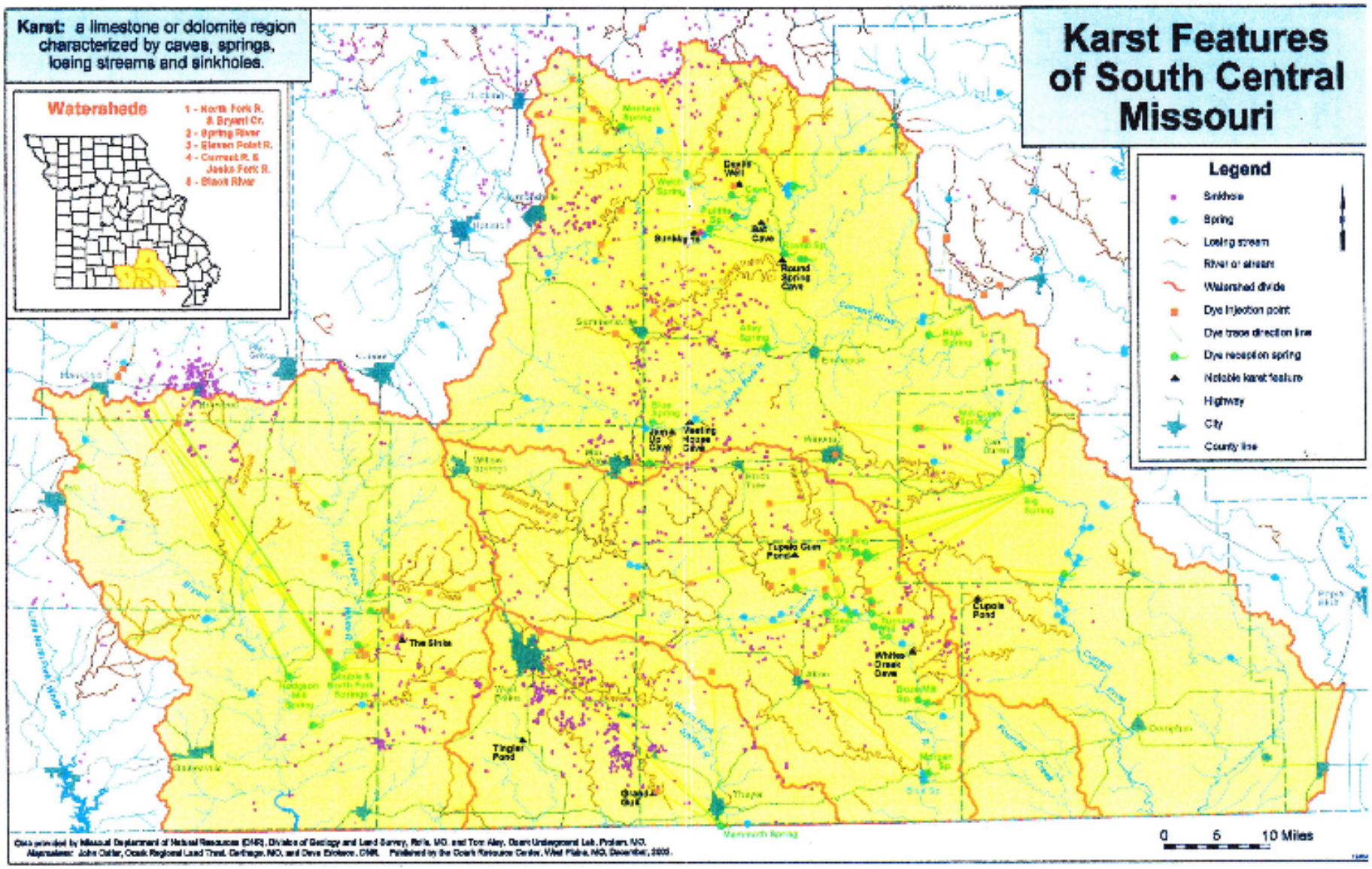
"PCE is a CONFIRMED CARCINOGEN with experimental carcinogenic, neoplastigenic and teratogenic data."

-- Hazardous Chemicals Desk Reference, Third Edition, 1993

"contour") maps. **Figures 7, 8, and 10** provide isopleths for the concentrations of contaminants on site.

Figure 10
Capture Zone for Railroad Water Supply Well





Source: Living on Karst, Dec. 2003

Is Erwin an atomic Love Canal?

By TOM MADDEN
United Press International

Erwin, Tenn. — Scarcely noticed, workers wearing special security badges have passed for years through the prison-like gates of the Nuclear Fuel Services, Inc., plant to go about their hush-hush business of making uranium into fuel for the nation's atomic submarines.

[illegible] this sleepy community in the East Tennessee mountains, the plant opened quietly in 1957. For the most part, it operated with little fanfare, churning out fuel and spewing small amounts of radioactive dust into the atmosphere.

Of greatest interest to the city's 3,700 residents was it that it provided steady jobs and paychecks to some 450 workers.

Today, some people say the plant — a cluster of red brick buildings surrounded by a 10-foot high fence — has become a nuclear waste cemetery and is a ticking health time bomb.

Erwin is a typical Tennessee mountain town. To passersby, there are no clues that it lies within a few miles of one of the nation's vital defense establishments. Nuclear Fuel Services, a subsidiary of the giant Getty Oil conglomerate, is the only plant in the nation that fabricates uranium for use in the Navy's submarines. The military says it must stay open.

But the plant is, and has been, a production center for atomic materials. It also has become an atomic garbage dump.

For example, in addition to the uranium fabricating facility, there is a plutonium factory, ponds where radioactive uranium has collected and more than 200 spots where low-level atomic waste has been buried.

Environmentalists claim the plant has lived its nearly 30-year life and should be closed and cleaned up. They claim the operators have a "total disrespect" for the environment and the health of the people around the facility.

Federal officials said it is unlikely the plant will, or is, having any adverse impact on humans or animals. But officials admit radioactive uranium is being released into the air and the area's water supply.

Nuclear Regulatory Commission officials say there is no rule on how long a fuel fabrication facility can function and there are no current plans to dismantle the facility in the near future.

"A plant like this does not have a life expectancy," said NRC spokesman Ken Clark. "The license is for five-year periods, but there is no automatic cutoff. There could be a time when the plant could no longer meet regulatory requirements, then I guess it would have to be closed."

The plant has been a center of controversy in recent years. Since 1968 the plant has not been able to account for 245 pounds of the highly enriched uranium, enough to make several atomic bombs.

The Nuclear Fuel Services complex was shut down in 1979 because officials could not figure out what happened to 42 pounds of the high-enriched uranium. The plant reopened last March after all but 11 pounds of the material was accounted for and on the urging of Navy officials. A large part of The missing uranium was found caked in the floor and clogged in the equipment at the plant. One source said plant officials took jackhammers and tore up the concrete floor to retrieve some of the lost uranium.

The plant has been the site of several accidental releases of radioactive uranium into the atmosphere. In 1979, almost 3,000 grams of radioactive uranium were vented into the atmosphere. NRC officials stress no evidence of harm was reported from the release or other accidental discharges.

NRC officials say there has been no evidence to indicate any significant increase in cancer among the population.

Bob Lilly, an antique dealer from Jonesboro, has been active in a group protesting the plant.

"Here we have a dangerous plutonium facility, we have settling ponds that have overflowed on occasion, we have materials buried in the ground — what we have is a dumping ground like the Barnwell (S.C.) dump," Lilly said. "We know the radioactive uranium is being put into the atmosphere and it is seeping into and being flushed into the Nolichucky River.

"I don't know how people can say it is not doing any harm. What it boils down to is the defense needs outweigh the people of this area," Lilly said.

The plutonium facility, located away from the uranium processing center at the plant site, began processing plutonium for experimental and commercial reactors in the 1960s, but halted the operation in 1972.

The plant operators hope to dismantle the plutonium facility next year, but plans are uncertain because the authority has not been given to dispose of any plutonium-contaminated materials from commercial operations.

"The facility simply is not needed any more," Clark said.

Plutonium is a key element used in nuclear weapons and atomic reactor fuel and is one of the most toxic substances known to man.

Clark said the equipment and possibly the building where the plutonium operation was centered will have to be disassembled if disposal is allowed.

"At the present time I know of no specific agreement for the disposal of any plutonium," Clark said. "There is some contamination on the inside of the plant but we believe it could return to unrestrictive use."

Clark said low-level waste was buried legally on the site of the 57-acre compound, but he said no trash is currently being buried. He said the burials stopped in the "last couple of years."

Since the plant opened in 1957, more than 200 different sites were used to bury the waste. Clark said the buried materials contained radioactive uranium and thorium.

Clark said the plant operators do not have to report to the NRC when waste is buried.

"As long as the material is buried 4 feet deep and 6 feet apart they can legally do it," Clark said.

"We do not have complete records on how much is buried because for part of the time, the plant was under the supervision of the Atomic Energy Commission (now defunct)," he said.

The plant uses water in its system of fabricating the uranium and the liquid is sometimes discharged into two "settling" ponds. Here the uranium is allowed to settle to the bottom of the ponds and the cleaned water is then pumped into Banner Creek that runs into the Nolichucky River.

Clark said when the plant is closed the ponds will be drained and the uranium waste taken to a dumping area.

But environmentalist Lilly said the pond has a clay bottom and seepage problems are already present.

"We do not believe we are having a seepage problem, but we can't say we have never had a problem," Clark said.

"Some uranium is routinely discharged into the Nolichucky River, but they (plant operators) are allowed to do this," Clark said. "We have found that the river above the plant is more highly radioactive from background radiation than the river below the plant."

Clark said when the plant is closed, a decision will have to be made on what to do with the buried waste.

"It might be better to leave it where it is," Clark said.

Clark said the Erwin plant could be closed and cleaned up. He said a similar operation, the privately owned U.S. Nuclear Fuel facility in Oak Ridge, Tenn., was cleaned up and no restrictions are now in place on use of the land.

Clark said Nuclear Fuel Services is presently upgrading its equipment and there are no immediate plans to close the Erwin facility.

NRC leaders, however, have specified that plant officials place $116,000 yearly in an escrow account to pay for the cost of closing and cleaning the plant.

Clark said NRC officials would not anticipate any problems in getting the plant closed and cleaned up.

"We don't believe we would have any problems here. If we did, we could bring the weight of the federal government to bear," Clark said.

But the closing of a plant owned by Nuclear Fuel Services near Buffalo, N.Y., has become a controversial issue. The plant reprocessed atomic fuel and shut down because of prohibitive costs of meeting stringent earthquake resistance guidelines.

There are 600,000 gallons of highly radioactive liquid wastes in two underground tanks at the West Valley plant and 170 tons of spent nuclear fuel rods are being kept in a large water pool at the plant.

The New York State Energy Research and Development Authority calls West Valley a "symbol of the nation's failure to cope fully with the back end of the nuclear fuel cycle."

The federal government has agreed to pay 90 percent of the cost of solidifying the liquid wastes and perhaps transporting it to an as yet-undetermined federal repository. A place for disposing of the spent fuel rods also has not been selected.

The plant is currently involved in a state lawsuit with New York over who has responsibility for low-level waste buried at the site.

The federal Energy Department expects to spend about $5 million this year on preliminary studies on ways to clean up the site.

Lilly said his group has been concerned that Nuclear Fuel Services could pass the costs of closing and cleaning of the Tennessee plant off on state or federal officials.

"People know these folks' track record. I think New York brought that out. It is a very big concern that the taxpayers will eventually have to pay the bill for cleaning up Erwin," Lilly said.

Nuclear Fuel Services, headquartered in Rockville, Md., is required to put up the $116,000 until the escrow account reaches $3.2 million.

"That wouldn't go anywhere near paying for the cleanup," Lilly said.

Clark said the Tennessee and New York operations could not be compared because the Tennessee facility is a fabrication plant handling natural uranium, while the New York reprocessing plant dealt with highly radioactive materials.

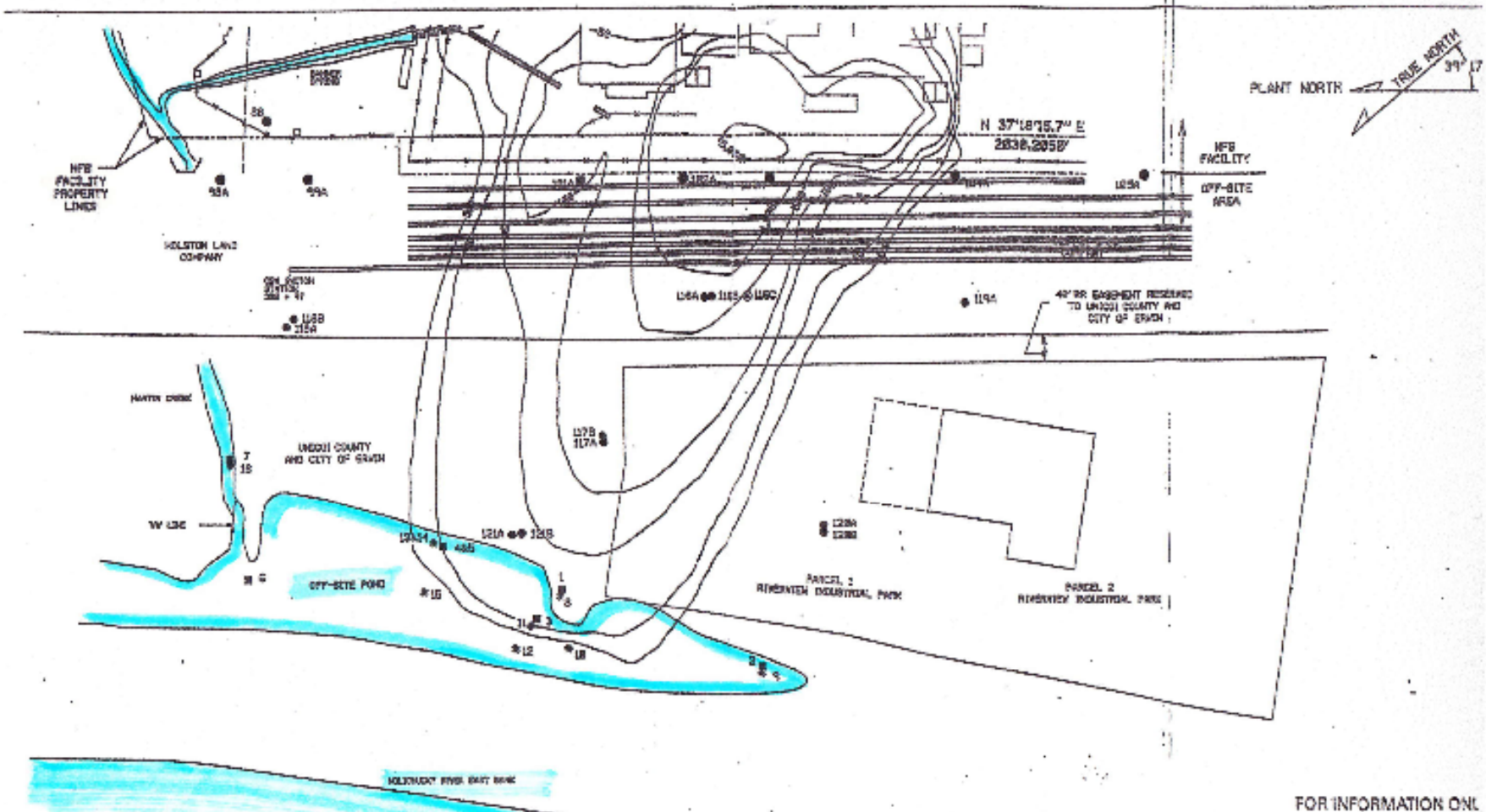
"It is hard to get people to listen up here. The nuclear plant is the largest employer and pays good bucks," said Lilly. "I'm afraid of what the plant might be doing to people's health and the environment."

KINGSPORT TIMES-NEWS
Sunday, January 22, 1981

0
.5Km
0
.25MI

Groundwater PCE Plume, Offsite NFS, 1997 Estimate

Figure 2-3



FOR INFORMATION ONL

Source: NFS, "Groundwater Risk Assessment," June 1997

LEGEND

- ■ SURFACE WATER SAMPLING LOCATIONS (JAN. 1996)
- ▲ SURFACE WATER SAMPLING LOCATIONS (DEC. 1996)
- ◆ EXISTING MONITORING WELLS
- —00— ESTIMATED PCE CONCENTRATIONS (µg/l) IN GROUNDWATER

BY	DATE	REVISION	LET
		REVISED TO SHOW OFF-SITE WELLS REPLACES DWG. 000-C0237-6	
	08-17-97	ORIGINAL ISSUE	

TOLERANCE UNLESS SPECIFIED: FRACTIONAL ± 1/64; ANGULAR ± 1/2°; DECIMAL .XX ± .01, .XXX ± .005

NFS

NUCLEAR FUEL SERVICES, I
ERWIN, TENNESSEE

OFF-SITE INVESTIGATION AND SURFACE WATER SAMPL LOCATIONS

DRAFTER: H.P. REEVER
SCALE 1" = 150'
DATE 08-02
DRAWING NO. 005-C00

Losses of SNM & of Containment, Fires & Other Major "Events"
Nuclear Fuel Services-Erwin, TN

1962:	10 kilograms (kg) high-enriched UF6 gas released through building exhaust fan
1964:	>4 kg high-enriched UF6 gas released
1972:	15 kg of high-enriched UF6 gas released, though NRC says 40% of the HEU was recovered
1979:	19.8 - 48 pounds (lbs) of HEU unaccounted for, though NRC says 24.5 lbs were in scrubber
1979:	60 kg of LEU stolen
1979:	>3 kg (3000 grams (g) or 7 lbs) of high-enriched UF6 gas released
1981:	100 g of high-enriched UF6 gas released
1983:	Fire in HEU incinerator vent duct exterior, Building 302; radioactive releases not quantified
1988:	30 gallons of nitric acid spilled from tank, an undisclosed amount reached Banner Spring Branch
1992:	100,000 gallons of uranium- & thorium-contaminated water ran into storm sewer, then offsite
1996:	Fire in HEU incinerator & ducting on roof of Bldg.302; 800 grams of HEU available for release
2001:	Substantial amount of HEU unaccounted for during 6-week period
2002:	Loss of containment of 50 liters of liquid HEU in Navy Fuels; 2 workers contaminated
2004:	Downblending begins in BLEU Preparation Facility (BPF) operated by AREVA
2005:	Stack samples exceeded alpha limits 415 times & beta limits 39 times
2005:	Fire/explosion in waste furnace pre-filter, damaging HEPA filter and melting part of vent duct
2006:	Loss of containment of 37 liters of liquid HEU; 2 criticality accidents could have occurred
2007:	Millions of kilograms of HEU, LEU, natural U, DU, and Thorium imported from Italy
2009:	Amendment 88 allows NFS to process UF6 in Commercial Development (CD) Line
2009:	Heat from nitrogen-gas reaction melts equipment, and 33 days later, fire in CDLine glovebox

TABLE 2
SCUBA TEAM CONCLUSIONS
NRC RIS 2006-13 SAFETY CULTURE COMPONENTS – REGULATORY EXPECTATIONS

SAFETY CULTURE COMPONENT	2009/2010 ISCA SCUBA TEAM CONCLUSION	2007/2008 ISCA SCUBA TEAM CONCLUSION
OVERALL SAFETY CULTURE	**Does not meet regulatory expectations**	**Does not meet regulatory expectations**
> Decision Making	Does not meet regulatory expectations	Does not meet regulatory expectations
> Resources	Does not meet regulatory expectations	Does not meet regulatory expectations
> Work Control	Does not meet regulatory expectations	Does not meet regulatory expectations
> Work Practices	Does not meet regulatory expectations	Does not meet regulatory expectations
> Corrective Action Program (PIRCS)	Does not meet regulatory expectations	Partially meets regulatory expectations
> Operating Experience	Does not meet regulatory expectations	Does not meet regulatory expectations
> Self-/Independent Assessment	Does not meet regulatory expectations	Does not meet regulatory expectations
> Environment for Raising Concerns	Meets minimum regulatory expectations	Meets minimum regulatory expectations
> Prevent, Detect, and Mitigate Perceptions of Retaliation	Meets minimum regulatory expectations	Meets minimum regulatory expectations
> Accountability	Does not meet regulatory expectations	Does not meet regulatory expectations
> Continuous Learning Environment	Does not meet regulatory expectations	Does not meet regulatory expectations
> Organizational Change Management	Does not meet regulatory expectations	Does not meet regulatory expectations
> Safety Policies	Partially meets regulatory expectations[8]	Meets minimum regulatory expectations

[8] In that generally appropriate Safety Policies exist and that the minimum level of Training is provided.

SCUBA II found several long-standing NFS cultural deficiencies:

- Lack of a questioning attitude/willingness to proceed in the face of uncertainty;
- Non-conservative decision-making/susceptibility to production pressure;
- Lack of formality &/or systematic approach;
- Lack of management oversight;
- A standard of "minimal regulatory compliance".

SCUBA II MAJOR FINDINGS

Management problems & fraud at NFS affect Public & Worker Safety, Effectiveness Review & Corrective Action Programs:

1. NFS made only nominal progress in improving safety culture since the 2007/2008 SCUBA I findings, so 2009/2010 findings are essentially repeats.
2. Areas in need of improvement increased from 41 in 2007/2008 to 74 in 2009/2010.
3. Despite repetitive urgings by the SCUBA team, NFS senior management had not conducted a single Effectiveness Review of the safety culture
4. initiatives that were declared to have been completed by NFS management
5. Actions/commitments processed through the Corrective Action Program (CAP) are inappropriately closed out based on future actions/promises that are frequently not rigorously followed up; approximately 50% of those completed actions do not meet acceptable standards for closure of an action.
6. Signing that an action was complete when it was not are examples of falsification and/or fraudulent behavior that are unacceptable.
7. There were a number of areas where NFS did not meet OSHA requirements; executive management was not aware of these.
8. Chemical Safety is an area of risk at the Site.
9. The injury rate for the site does not compare favorably with the industry & any emphasis to improve the situation has been limited and not a priority.
10. Significant problems related to accountability have continued to exist within NFS. It is highly unlikely that NFS will be able to operate
11. without another significant loss event unless/until it can resolve its accountability issues – especially those that exist in senior management.
12. The tendency to downplay the significance of errors typified the Site's approach to problem solving, largely because these behaviors were practiced
13. at the most senior levels of NFS management.
14. NFS does not routinely drill its Emergency Response Organization to ensure it will operate well in an actual accident or event. Site practice avoids invoking the ERO. There is essentially only one trained team and no back-up team in the event of an emergency.

Intimidation of workers & fear of retaliation from management persist at NFS:

15. There is still evidence that employees perceive negative outcomes and retaliation from management and peers for raising concerns & safety issues.
16. Inappropriate use of management authority may suppress questioning attitude.

NFS continues to put production over safety:

17. NFS has demonstrated a bias for production, cost and schedule priorities over safety.
18. Production pressures negatively influenced organizational priorities in that the support for required new projects compromised safe facilities operations. NFS policies indicating safety as the overriding priority were not practiced or reinforced.
19. Rather than improving its safety culture and performance, NFS has continued to divert its resources to pursue new business opportunities.
20. Decisions are not consistently developed with the requisite degree of conservatism, particularly when a potential for personal injury is involved; non-conservative assumptions are tolerated.
21. NFS has not yet demonstrated that it can successfully take on new processes without having safety and regulatory related upsets and problems.

Deficient equipment & degraded infrastructure continue to be tolerated at NFS:

22. NFS continues to tolerate recurring equipment problems, operational burdens and workarounds, and degraded infrastructure issues.
23. Equipment problems have become accepted on a basis of "run to failure" philosophy, including Safety Related Equipment.
24. Fire dampers had not been inspected since 2003 and inaccurate information was given to NRC.
25. There is significant potential for the list of degraded equipment/processes to undergo substantial expansion.
26. There are no stated plans to back fit the large number of existing condition reports to assist with analyzing repeat or recurring events.

he Washington Post

uclear regulator broke rules, says spector general

official said to have sought jobs from firms while on el

Steven Mufson
Washington Post Staff Writer
Friday, October 29, 2009

former member of the Nuclear Regulatory Commission lated government ethics rules by directly contacting ential employers with business before the NRC before end of his term in mid-2007, according to a report by commission's inspector general.

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frey S. Merrifield twice cast votes on matters involving companies he had contacted about job prospects, report says. The firms -- the Shaw Group, Toshiba's Westinghouse Electric and General Electric -- uld potentially have benefited financially from his votes . . . during the specific timeframes in which rrifield was negotiating with the three companies,' the report concludes.

addition, the NRC's inspector general's report says that Merrifield had called a senior executive at elon, a Chicago-based utility, and asked the executive to call companies that were not returning phone ls to Merrifield's attorney, who was trying to negotiate jobs on Merrifield's behalf.

rrifield, who served on the NRC from 1998 to 2007, is now a senior vice president of the Shaw Group, a struction firm that provides services to most nuclear reactor projects.

y job search had no impact on any decision I made as a Commissioner of the NRC,' Merrifield said in e-mail Wednesday. "Subject to the guidance I received from attorneys from the NRC Office of the neral Counsel and my own personal staff, I sought to comply with all regulations and laws applicable to ernment employees seeking work in the private sector." He said he was proud of his 18 1/2 "faithful rs" of working for the federal government.

e of the two votes in question in the report involved approval of a plan by Shaw to cooperate with China a Westinghouse Electric nuclear reactor model. The other was to approve a change in the criteria for ergency cooling systems, which could also affect work done by Shaw.

e inspector general's report says it had "determined that Merrifield did not take effective measures to vent a potential conflict of interest during the last 2 months of his term." It added that even though rrifield arranged for a close friend and lawyer to pursue jobs on his behalf, 'Merrifield stopped following arrangement prior to the end of his term and began negotiating directly with potential employers.'

rrifield also failed to report $3,552.47 of reimbursed travel expenses for him and his family, most of ich he received after accepting a job with Shaw but just prior to the end of his term at the end of June

2007, the report says.

The inspector general's investigation was undertaken in response to allegations by the Project on Government Oversight, an independent watchdog group. Its executive director, Danielle Brian, sent a letter Wednesday to NRC Chairman Gregory B. Jaczko asking him to bar Merrifield from communicating with the NRC for the maximum time allowable and to refer the case to the Justice Department for civil action.

Brian said that the NRC should show that officials "will be held accountable for violating their public responsibility and potentially misusing their public post for private gain."

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