

# REGULATOR INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL:STN-50-528 Palo Verde Nuclear Station, Unit 1, Arizona Publi 05000528  
 STN-50-529 Palo Verde Nuclear Station, Unit 2, Arizona Publi 05000529  
 AUTH.NAME AUTHOR AFFILIATION  
 SCOTT,M.L. Coalition for Responsible Energy Education  
 RECIP.NAME RECIPIENT AFFILIATION  
 DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Requests consideration of Coalition for Responsible Energy  
 Educ 850506 petition re spray pond microbiologically  
 influenced corrosion potential for bacterial contamination  
 of other sys.News articles encl.

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 TITLE: Request for NRR Action (e.g. 2,206 Petitions) & Related Correspondence

NOTES:Standardized plant. 05000528  
 OL:12/31/84  
 Standardized plant. 05000529

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1. The purpose of this document is to provide information regarding the activities of the [redacted] and the [redacted] in the [redacted] area.

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Activity	Location	Time	Status	Remarks
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H PDR

COALITION FOR RESPONSIBLE  
ENERGY EDUCATION  
315 W. Riviera Drive  
Tempe, AZ 85282  
May 16, 1985

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

RE: Show Cause Petition Pursuant to 10 CFR 2.206(a), PVNGS-1 and 2,  
Docket Nos. 50-528, 50-529 (License No. NPF-34 and Construction  
Permit No. 142).  
PETITION: May 6, 1985.  
TELECON with M. Licitra, May 14, 1985.

Dear Mr. Denton:

On May 6, 1985, the Coalition for Responsible Energy Education (CREE) filed a 2.206(a) petition with your office regarding the spray pond MIC condition at Palo Verde Nuclear Generating Station. The petition sought various forms of relief including hearings at two points in time: (1.) pre-PVNGS-1 initial criticality license suspension; (2.) resolution of points mentioned in petition pre-full-power licensing determination.

As noted in the petition:

10 CFR 2.206(b) establishes that the appropriate director shall institute said proceeding or advise the person requesting said proceeding in writing of the reasons for denying the request "within a reasonable time."

In a telephone communication with Manny Licitra, your office, May 14, CREE was informed that the petition was believed to be in the initial stages of processing as a 2.206(a) petition prior to assignment to a staff member for review. Arizona Public Service has set May 19 as its target date for beginning initial criticality. It is our understanding that criticality will not actually be achieved until May 21. In any event, as our petition makes clear, our concern with low-power testing would encompass the entire process and subsequent low-power testing.

That concern, as set forth in said petition, involves probability that operation of ECWS will transport the MIC-related bacteria to additional safety systems. That concern is supported by accompanying affidavits and published scientific papers. In light of the immanence of initial criticality and the progress of the afore-mentioned petitioned, it is not likely that those points will be considered in a timely fashion in accordance with a common-sense interpretation of "reasonable time" in the current context.

The general issue of the PVNGS spray pond MIC condition, moreover, is one with which the NRR staff is already familiar, having been the topic of a technical meeting with the licensee on May 10, 1985. However, in the above-mentioned telephone conversation with Mr. Licitra, it appeared that the technical meeting focused exclusively on the existing spray pond situation, not on the potential for contamination of other systems. (See infra.) Therefore, it is not at all clear

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that the issues raised in the CREE petition have been at all addressed as they relate to initial criticality and low-power testing.

While we are not indifferent to the possible due process implications of this situation, our main concern is that the points addressed in the CREE petition be dealt with in a manner that does not ignore their potential safety implications until additional damage occurs. We are concerned to find the most prudent course.

During his site visit to PVNGS, May 6, 1985, Chairman Palladino indicated that he did not foresee the MIC situation delaying initial criticality but believed that it could affect the timing of a full-power determination. (Mr. Palladino pointed out that he had not seen the CREE petition and was not expressing a judgment on it.) According to 50 Fed. Reg. 18612 (May 1, 1985), such a decision was initially scheduled for May 23, 1985.

We do not wish to suggest that an appropriate response to our petition would be foreclosed by initial criticality. Nor do we advocate that it be given consideration so expeditious as to be merely cursory. As our petition pointed out, we recognize that the safety implications of the MIC situation would be most severe at full-power. Moreover, as we also pointed out, consideration pre-full power could be accomplished, including the requested inspections and hearings, with no negative impact on PVNGS scheduling whatsoever. (However, we would be concerned that the further operation would intensify the need for additional inspections.)

Therefore, it appears possible to address our concerns adequately post-initial criticality, so long as it is done pre-full power licensing. We do wish to emphasize, however, that we continue to regard pre-initial criticality action as the optimally prudent approach.

In any event, we question whether it is appropriate, given the obligation to respond to 2.206(a) petitions within a "reasonable time," to allow the time specifically requested for part of the relief sought to lapse without at least an initial review of that portion of the petition. Therefore, we are bringing this concern to your attention.

Whatever the final disposition of our request re., initial criticality and of a full-power licensing decision, our petition requests specific actions (e.g., additional inspections and monitoring, pipe weld replacement and removal of bacterial deposits) which remain relevant to any on-going treatment program at PVNGS. Similarly, the petition seeks to place before the NRR, information of a scientific nature gathered from published studies and consultations with microbiologists, chemists and engineers active in the field. That information may be of use to the staff and reflects a broader empirical base than anecdotal information from one or more given plants. Hearings would further facilitate such information sharing.

As set forth in the petition, our primary concern is that the potential for innoculating additional safety systems with MIC bacteria indicates that a thorough removal of the bacteria deposits and corrosion products, followed by adequate monitoring and treatment to prevent future infestations, is the most prudent preventative course of action. As stated supra, this concern does not appear to have been as yet addressed by NRR.

On May 11, 1985, the Phoenix Gazette D.C. correspondent reported:



[Licitra] said his staff believes Gallionella may be the cause of the problem and the proposed solution - treating the water with biocides and flushing stagnant water from the system - may be effective. (See enclosure.)

On May 14, Mr. Licitra confirmed that his technical staff tentatively concluded that APS' proposed biocidal treatment program may be effective "in improving the situation." Based on the scientific evidence cited from Pope, Booth, et al. in the CREE petition, it must be concluded that "the situation" can only refer to the prevention of future incidences of MIC corrosion, not removal of the current MIC bacteria infestation or prevention of spreading of that infestation and its corrosion products. Pertinently, Mr. Licitra indicated that he had not yet seen the CREE petition, although he had seen a press summary released by CREE.

In a May 6, 1985, Phoenix Gazette article, Prof. Daniel Pope of the Rensselaer Polytechnic Institute was quoted:

...Pope said the chemical treatment APS wants to use to kill the microorganism may not be effective, and failure to remove existing corrosion could cause further damage.

Daniel Pope... said the bacteria that ate its way through welds in a cooling system at Palo Verde may have migrated to other parts of the plant. (See enclosure.)

The point is that qualified technical experts clearly differ. The public is entitled to greater surety than the expectation that a given course of action may prevent future safety problems. As we noted in our petition, petitioners are not required to assume the burden of proof (p. 5, ¶ 13). Certainly, staff should not be denied information relevant to its on-going responsibilities due to the failure to give a 2.206(a) petition timely consideration.

Similarly, the effects of flushing cited in the May 11 story do not address the concerns raised in the CREE petition. The augmented monitoring program requested by NRR could assist in detecting additional incidences of MIC, but it does not appear likely to be designed with that goal in mind.

When asked if the technical meeting addressed the potential for spreading the infestation, Mr. Licitra responded negatively, and added, in what he characterized as a purely personal opinion, that he felt that should not be a problem because the high temperatures in the reactor and secondary cooling systems could be relied upon to kill any bacteria.

Certainly, that result could occur, but, again, the public is entitled to something more than surmise. On the evidence, there is no assurance that all potentially harmful bacteria will be killed after being transported. In the CREE petition, the principal concern expressed is for the integrity of the ECWS and the diesel generators, which are essential for safe shutdown. Those temperatures will not be high enough all the time (or even most of the time). Neither, of course, are they uniformly high throughout the system. The potential for damage to components situated before the jacket water heat exchanger at least is clearly far from negligible. Such incidents are known to have occurred before at other plants. One example may suffice to demonstrate our concern:

[At Rancho Seco 1, May 18, 1981:] During a refueling outage, the licensee observed that the inlet plenum of the safety-related lube oil cooler on each of the high pressure injection



pumps was 80 - 90% clogged with corrosion products. The cause was attributed to excessive corrosion of the lube oil cooler cast steel heads. Routine surveillance testing did not previously verify performance of this equipment. ( 47 Fed. Reg. 21653 [May 19, 1982].)

In any event, it is important not to prejudge these issues. It is important to decide the issues in possession of the fullest array of information possible. It is obligatory, also, to give the CREE petition timely consideration. We remain confident that that will occur, but the immanence of critical dates in the licensing and testing process made this additional communication appropriate.

It should be added that the utility's attitude toward this problem may reflect upon the disposition of CREE's earlier 2.206 request for action on the safety impact of incentive plan deadlines and other financial factors.

Finally, it should be reemphasized that the delays we request are undeniably brief and, we are also convinced, prudent in the interests of public health and long-term efficiency.

Respectfully,

A handwritten signature in dark ink, appearing to read "Myron L. Scott", with a stylized, flowing script.

Myron L. Scott

executive director  
COALITION FOR RESPONSIBLE  
ENERGY EDUCATION



Long-term plan requested

## NRC asks Palo Verde safeguard

F-4

By Sean Griffin 5-10-85  
*Gazette* Washington Bureau

WASHINGTON — License reviewers for the Nuclear Regulatory Commission have asked officials of the Palo Verde Nuclear Generating Station to devise a long-term plan to monitor corrosion occurring in spray-pond pipe welds.

Technical specialists from the NRC met this morning with Palo Verde technicians and representatives from Arizona Public Service Co. and the Bechtel Corp. because of concerns about the weld corrosion. If unchecked, the corrosion could cause problems during a shutdown of the facility.

Cooling towers will be used to remove heat generated from nuclear fission during normal plant operations. But when the plant is shut down, whether for refueling or in an emergency, pipes carry heated water up through the ponds. The water then is sprayed into the air to cool it.

A visual inspection by Palo Verde technicians showed water seeping through two or three of the pipe welds, according to NRC project manager Emanuel Licitra. Radiographs, similar to X-rays, indicated 40 to 50 other welds where corrosion seemed to be occurring.

In a report delivered to the NRC April 3, Palo Verde officials said the corrosion was "microbiologically influenced" and blamed a microscopic organism called *Gallionella*.

Licitra called for today's meeting because of questions raised by his staff about the report.

"We were trying to better understand why they felt that was the cause of it," Licitra said.

He said his staff believes *Gallionella* may be the cause of the problem and the proposed solution — treating the water with biocides and flushing stagnant water from the system — may be effective.



# Bacteria may be eating up Palo Verde units

5-6-85

By Victor Dricks  
The Phoenix Gazette

D-1

Key components of the Palo Verde Nuclear Generating Station may have been contaminated with metal-eating bacteria when project officials flushed a tainted cooling system.

And one of the nation's leading authorities on nuclear power plant corrosion said steps proposed at Palo Verde to rid the plant of the bacteria *Gallionella* may not be effective.

Daniel Pope of Rensselaer Polytechnic Institute of Troy, N.Y., said the bacteria that ate its way through welds in a cooling system at Palo Verde may have migrated to other parts of the plant.

And although project officials have discounted that possibility, they detected microbiologically influenced corrosion in another plant component last summer, according to a report filed with the U.S. Nuclear Regulatory Commission.

Pope said a similar corrosion problem occurred at the federal government's Savannah River plutonium plant in Aiken, S.C., several years ago. *Gallionella* that invaded a supposedly isolated plant system — like the one at Palo Verde — subsequently damaged another system.

Pope, an associate professor of biology, is writing a study on microbiologically influenced corrosion for the Electric Power Research Institute, a trade group of electric utilities.

In late March, Palo Verde officials reported that *Gallionella* had corroded dozens of pipes and had caused pinhole-sized leaks in about 30 welds of a cooling system for Units 1 and 2.

The contaminated spray pond cooling system is used every time the plant shuts down — either routinely or during an

emergency — to remove heat from the nuclear reactor and its support components.

Preparations are under way for initiating nuclear criticality in the Unit 1 reactor later this month, with commercial operation scheduled by the end of the year.

Arizona Public Service Co. officials said the leaks will not affect plant operations.

APS Executive Vice President Ed Van Brunt Jr., told the NRC and the state Corporation Commission that the leaks are "insignificant," and the bacteria that caused them can be killed with chemicals.

But Pope said the chemical treatment APS wants to use to kill the microorganism may not be effective, and failure to remove existing corrosion could cause further damage.

Three consultants — NALCO Chemicals of Naperville, Ill.; Bechtel M&QS of San Francisco; and David Buquette, a metallurgist at Rensselaer — identified a microorganism as the cause of the corrosion.

Palo Verde officials already have spent \$65,000 studying the problem and told the state Corporation Commission it could cost an additional \$6 million if it became necessary to replace all the affected welds.

"There are ways to go about treating a problem scientifically in contrast to dumping a bunch of chemicals into a cooling system and thinking black magic will cure it," Pope said.

But APS officials think the chemical treatment will work.

Don Karner, APS assistant vice president for nuclear production, said, "We think our corrective action plan will be effective."

The Coalition for Responsible Energy Education, a Palo Verde opponent group, plans to file a request with the NRC later this week asking that it compel APS to clean the existing corrosion on all affected areas; inspect other systems for bacterial contamination and test its proposed treatment program in the lab to see if it is effective, executive director Myron Scott said recently.

The full dimensions of the corrosion problem also have the NRC concerned, Roy Zimmerman, senior site inspector for the Palo Verde project, said.

"This microorganism is all around," Zimmerman said. "It's in the spray pond system. How do we know it's not somewhere else?"

Zimmerman said members of the NRC's Bethesda, Md., Office of Nuclear Reactor Regulation will question APS officials about the possibility microorganisms have invaded other parts of Palo Verde when they meet with them in Washington, D.C., next week.

Last year Van Brunt reported that technicians found microbiologically influenced corrosion on the blades of a cooling water pump at Unit 2.

The corrosion occurred because technicians had failed to completely flush contaminated water out of the inside of a pump after testing, he wrote. The water was left standing for six months.

"MIC (microbiologically influenced corrosion) bacteria probably exist(s) in other safety-related systems at PVNGS (Palo Verde Nuclear Generating Station)," Van Brunt told the commission.

