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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FOSTER

July 31, 1982

MEMORANDUM FOR: Thomas H. Novak, Assistant Director for Licensing, DL

FROM: Robert J. Bosnak, Chief
Mechanical Engineering Branch, DE

SUBJECT: LASALLE/ZACK CO. ALLEGATIONS; HVAC SYSTEM

The LaSalle HVAC report, requested by H. Denton, was prepared from verbal and written inputs received from ASB, QAB, EQB, MTEB, CMEB, AEB and MEB. The inputs were relayed to me on July 29 and 30 and represent the status of our response to allegations known by staff members at that time. The part 21 notification on welder qualification has not been seen by any of the staff members, however, the recommendations have attempted to consider its potential impact with the minimum information received.

Attachment 1 represents an NRR report which could be an appendix to the more comprehensive report being prepared by Region III. C. Norelius of Region III and myself have had preliminary discussions, but a final decision on how to accomplish the end objective of integrating the Region and NRR inputs has not been reached.

Staff conclusions/recommendations to acceptably complete our review of the Zack Co. allegations as we know them as of this date are as follows:

1) The conservative design used for ducting and supports appears to have provided more than adequate margin to compensate for the variability of material properties of the specific items questioned to date and, therefore, these should be acceptable. The results of the Region III material test program (when available) will require reconciliation but are expected to support this conclusion. The part 21 notification concerning welder qualification must also be reconciled when known. If these are dealt with and there are no other identified problems then the ducting and supports will be structurally acceptable. (MEB)

2) CECo should make a positive determination that the failure of all non-safety related HVAC systems will not deleteriously interact with safety related equipment. (ASB)

3)a) Zack purchased and installed "HVAC accessories" should be physically confirmed by CECo in the as installed position to be the proper item as required by CECo specifications. EQB may perform a mini SQRT audit on certain Zack purchased "HVAC accessories". (EQB, CMEB)

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3)b) The extent of Zack purchased "HVAC accessories" needs to be determined by CECo. If the number of or kinds of Zack purchased HVAC accessory items is greater than that identified in Appendix 1, the effect requires evaluation. All additional items should be included in the 3(a) program.

4) CECo should confirm that Zack HVAC installations are in conformance with approved drawings and specifications. The use of independent persons to perform this audit is advisable.

Robert J. Bosnak, Chief
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Enclosure: HVAC Report

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ATTACHMENT 1

LaSalle Heating, Ventilation and Air Conditioning (HVAC) Systems Report

Background/Introduction

Government Accountability Project (GAP) in its letter of July 26 to Chairman Palladino submitted a number of allegations related to the performance of the Zack Company at LaSalle in its work ordering, fabricating, and installing the HVAC systems. The allegations relate generally to absence of, and other discrepancies associated with required quality assurance documentation, including non-conformance reports (NCR) and welder qualification.

The report discusses the HVAC systems, their function, staff requirements and our SER findings highlighting both the systems/functional and material/structural aspects.

It was our original understanding that the Zack Company scope of involvement was one of: (1) purchasing material, fabricating, and installing the duct work and supports, or (2) installing HVAC related equipment purchased by Commonwealth Edison (CECo) or others. We were advised on July 29, 1982 by CECo that the Zack Co. was also authorized to purchase and install certain "HVAC accessories" as specified by CECo. In this third mode, the Zack Co. was said to receive specific purchase requirements from CECo and was required to provide documentation to CECo that the proper item had been purchased and installed. Sargent and Lundy, acting for CECo, telecopied to us (Appendix 1), on July 30, 1982 a listing of all equipment purchased by the Zack Co. under this "purchase HVAC accessories" mode.

I. Systems/Functional Aspects HVAC

General

The LaSalle heating, ventilation and air conditioning systems consists of various individual systems, each of which are designed to maintain the specific building or area of a building within certain limits required for habitability and/or equipment operability. Only those systems or portions thereof which serve safety related equipment that are required to operate during abnormal or accident condtions are here in described. In NUREG-0519 (SER for LaSalle) we found each of the following subsystems of the HVAC acceptable:

A. Control Room HVACS

1. Functional Requirements/Staff Review
The control room heating, ventilation, and air conditioning system is designed to maintain the control room within the thermal and air

quality limits required for operation of plant controls and uninterrupted safe occupancy of required manned areas during normal operation, shutdown and post-accident conditions.

The control room heating, ventilation, and air conditioning system consists of two redundant trains, each powered from an independent emergency bus. Normally, one train is operating and the other remains in a standby condition. All components of the system, except for the heating and humidification equipment, are designed to meet the seismic Category I requirements and are located in a seismic Category I, tornado-missile protected structure. The heating and humidification equipment is non-seismic but is seismically supported. The failure of the heating and humidification equipment will not impair the safety-related aspects of the control room heating, ventilation and air conditioning system. The control room air conditioning system is also designed to maintain the control room under slightly positive pressure during normal operations and accident conditions so that outleakage can be maintained.

Two 100-percent-capacity seismic Category I control room direct expansion refrigeration systems remove the heat from the cooling coils of the air conditioning units so that the control room environment can be maintained at a temperature of 73 degrees Fahrenheit and at a relative humidity of approximately 45 percent.

Normally fresh air is replenished from the outside atmosphere. All air intakes and exhausts are tornado-missile protected. During a design basis accident, two separate and remote outside air intakes are used to provide an assured source of outside air. The intakes are located so that a continuous supply of noncontaminated air is provided for control room pressurization. During this accident condition, oustide air can be supplied from either of the remote air intakes located 340 feet apart. The redundant control room emergency makeup air fans are automatically started to direct outside supply air through the control room charcoal filter train. Radiation monitors in each air intake alarm in the control room.

The control room heating, ventilation, and air conditioning system prevents inleakage of radioactive materials and toxic gas during an accident by pressurizing the control room and filtering all outside replenishment air. Upon detection of high radiation or toxic gas, the normal replenishment isolation valves close and the emergency makeup valves open in both trains.

2. Staff Requirements

The staff requirements are GDC 1, 2, 4, 5 and 19. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.26, 1.29, 1.117 and SRP section 9.4.1.

B. Auxiliary Electric Equipment Room HVACS

1. Functional Requirements/Staff Review

The auxiliary electric equipment room heating, ventilation, and air conditioning system is an essential safety feature system and is shared by both Units 1 and 2. It serves the auxiliary electric equipment rooms, the computer room, and the computer storage room, and is designed to provide habitability to those areas during normal and accident conditions.

The design of the system is similar to the control room heating, ventilation, and air conditioning system in that it is designed with sufficient redundancy to meet the single failure criteria, essential portions of the system are designed to Seismic Category I requirements and the equipment is powered from redundant essential buses. Also, replenishment air is supplied to the system from the normal and emergency makeup air ducts of the control room heating, ventilation, and air conditioning system.

2. Staff Requirements

The staff requirements are GDC 1, 2, 4 and 5. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.26, 1.29, 1.117 and SRP Section 9.4.5.

C. Reactor Building Ventilation System

1. Functional Requirements/Staff Review

The reactor building ventilation system is only required to function under normal station operating conditions. During abnormal or accident conditions, the standby gas treatment system is operated. The reactor building secondary containment isolation valves are part of the standby gas treatment system. The isolation valves and the duct work between the valves and secondary containment are seismic Category I in order that containment integrity can be maintained during accident conditions.

2. Staff Requirements

The staff requirements are GDC 1, 2, 4 and 5. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.26, 1.29, 1.117 and SRP Section 9.4.2.

D. Fuel Pool Ventilation System

1. Functional Requirements/Staff Review

The fuel building ventilation system is an inseparable part of the reactor building ventilation system and is only required to function under normal plant operating conditions. It is designed to maintain the fuel building atmosphere within acceptable temperature and humidity limits for personnel and equipment, to maintain the building at a negative pressure, and to mitigate the consequences of a fuel handling accident by filtration of the exhaust air. For emergency conditions, the supply and exhaust systems are isolated and the exhaust system diverts contaminants through the reactor building standby gas treatment system.

The exhaust from the fuel handling area during normal operation is discharged through the station vent by the normal exhaust system without filtration. A slight negative pressure is maintained in the fuel building by this exhaust system. The reactor building standby gas treatment system, when used as the fuel building emergency ventilation system, is designed to operate in conjunction with the exhaust system to mitigate the consequences of the fuel handling accident. The standby gas treatment system is designed to seismic Category I requirements. The ductwork between the reactor building penetrations and the secondary containment isolation dampers is designed to conform to seismic Category I requirements to maintain the integrity of the secondary containment on abnormal plant operating conditions. The secondary containment isolation dampers also meet the seismic Category I requirements.

In the event of a fuel handling accident, a high radiation signal from the radiation monitors in the exhaust air duct automatically actuated both systems. Motor-operated dampers are closed in the normal supply and exhaust ventilation system to direct contaminated exhaust through the redundant charcoal filter banks in the standby gas treatment system prior to discharge to the atmosphere through the station vent.

2. <u>Staff Requirements</u>

The staff requirements are GDC 1, 2, 4 and 5. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.13, 1.26, 1.29, 1.117 and SRP Section 9.4.2.

E. <u>Diesel Generator Building HVACS</u>

1. <u>Functional Requirements/Staff Review</u>

The diesel-generator building heating and ventilation system is designed to maintain a suitable environment for the operation of the diesel-generators, the high pressure core spray pumps, and their auxiliary components during all modes of plant operation, including accident conditions. Independent diesel-generator heating and ventilation systems and air supply and exhaust systems are provided for each of the five diesel-generators and the two high pressure core spray diesel driven pumps to satisfy the required environmental conditions and combustion air requirements during diesel operation.

The diesel-generator room ventilation system is designed to (1) seismic Category I requirements, and (2) maintain the diesel-generator rooms below 122 degrees Fahrenheit whenever the diesel-generators are in operation. The combustion air supply is drawn from the room ventilation air supply. Neither meteorological changes nor accident conditions can affect all diesel air supplies. The outside air intakes and exhausts are tornado-missile protected.

2. Staff Requirements

The staff requirements are GDC 1, 2, 4 and 5. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.26, 1.29, 1.117, SRP Section 9.4.5, and NUREG/CR-0660.

F. Emergency Switchgear Heat Removal System

1. Functional Requirements/Staff Review

The ventilation system for the emergency switchgear area provides air to the emergency switchgear rooms and the battery rooms for heat removal. The system consists of two 100-percent-capacity seismic Category I ventilation system for each switchgear room. The battery rooms receive air from the switchgear rooms. The battery rooms are provided with separate exhaust fans so that they can be maintained at a negative pressure with respect to the switchgear rooms. The switchgear heat removal system removes heat from the switchgear rooms to maintain a temperature range of 65 degrees Fahrenheit to 104 degrees Fahrenheit.

2. Staff Requirements

The staff requirements are GDC 1, 2, 4 and 5. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.26, 1.29, 1.117 and SRP Section 9.4.5.

G. Emergency Core Cooling System Equipment Area Cooling System

1. Functional Requirements/Staff Review

The emergency core cooling system (ECCS) equipment area cooling system is designed to maintain a suitable environmental for the ECCS equipment during normal, abnormal and accident conditions. This system consists of a fan-coil unit for each emergency core cooling system equipment cubicle except for the residual heat removal service water pump cubicles located in the diesel building. Each system is seismic Category I and power from the essential buses serving the cubicle from which the equipment is powered. Full redundancy exists throughout the entire emergency core cooling system equipment area. The seismic Category I core standby cooling water system is circulated in the cooling coils in order to limit the maximum room temperature to 148 degrees Fahrenheit after a design basis accident. Ventilation air for the emergency core cooling system equipment cubicles is provided by the redundant reactor building heating, ventilation, and air conditioning system.

The ventilation system for the residual heat removal service water pump cubicles provides a mixture of outside and recirculated air and directs this air to the cubicle through a duct system to maintain a maximum temperature of approximately 104 degrees Fahrenheit. The ventilation air for the system is provided by outside air intakes and exhausts that are tornado-missile protected.

2. Staff Requirements

The staff requirements are GDC 1, 2, 4 and 5. Guidance for the acceptance criteria are provided by the applicable portions of Regulatory Guides 1.26, 1.29, 1.117 and SRP Section 9.4.5.

Non-Safety HVAC Systems

Those ventilation systems which are not safety related, and are not required to function during abnormal or accident conditions are:

1. Auxiliary and Radwaste Aras Ventilation System
2. Auxiliary Building Office HVAC System
3. Auxiliary Building Laboratory HVAC System
4. Radwaste Area Ventilation System
5. Turbine Building Area Ventilation System
6. Pump House Ventilation System
7. Off Gas Building HVAC System
8. Off Gas Building HVAC System
9. Primary Containment HVAC System

10. Primary Containment Purge System

11. Service Building HVAC System

12. Service Building Storeroom Ventilation System

CECo is required to determine that all non-safety related HVAC systems are designed and supported so as not to damage safety related equipment to the extent which would preclude safe shutdown or result in an unacceptable radiation release.

CECo should demonstrate that all portions of the plant's HVAC system which were purchased, fabricated or installed by the Zack Company conform to the requirements of the Appendix A.- GDC 1 and Appendix B to 10 CFR 50. Those portions which do not conform to the above requirements should be replaced in order to meet compliance.

II. Material/Structural Aspects HVAC

A. Quality Assurance

The staff reviewed Table 3.2-1 of the LaSalle FSAR to identify the safety-related items which must be controlled under the applicant's QA program required by 10 CFR 50 Appendix B. Safety-related items are /designed to meet seismic category I requirements and required to prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. As a result, the table was revised by CECo as required to satisfy staff concerns. For the purpose of this report, that portion of the table showing the HVAC items has been extracted and is included herein (Articles XXX and XXXVIII).

The table shows mostly "I" under the column headed "Quality Assurance Requirements," indicating that 10 CFR 50 Appendix B applies and the items so shown are safe y-related. The staff has reviewed the applicant's description of the QA program to assure that it meets the requirements of Appendix B. This program applies to all safety-related plant items. It should be noted that criterion II of 10 CFR 50 Appendix B permits the applicability of QA controls over activities affecting the quality of these items to an extent consistent with the importance to safety of the item. The applicant determines the QA controls to be applied to each specific safety-related item in accordance with the safety function of the item, and our regional inspectors through the audit inspection program assess the acceptability of these controls. Chapter 17 of the Standard Review Plan (NUREG-0800), Regulatory Guides, and endorsed ANSI Standards provide

TABLE 3.2-1

STRUCTURES, EQUIPMENT, AND COMPONENT CLASSIFICATIONS

	PRINCIPAL COMPONENT(1)	LOCATION(3)	SEISMIC(5) CATEGORY	QUALITY (4a) GROUP CLASSIFICATION	QUALITY (4b) ASSURANCE REQUIREMENT	ELECTRICAL (4c) CLASSIFICATION	PURCHASE DATE(2)	COMMENTS
XXX.	Primary Containment Ventilation and Ventilation Water System							
	1. All components, except containment isolation valves and penetration piping	PC,RB	II	NA	II	NON 1E	--	
	2. Valves, containment isolation	RB	I	B	I	1E	12-73	
	3. Piping, penetration	PC,RB	I	B	I	NA	9-74	
XXXVIII.	HVAC Systems							
	1. Control Room HVAC System							
	a. Refrigeration units	A	I	NA	I	1E	1-76	
	b. Fans and motors	A	I	NA	I	1E	5-76	
	c. Cooling coils	A	I	NA	I	NA	5-76	
	d. Refrigerant piping and accessories	A	I	NA	I	NA	2-76	
	e. Ductwork and accessories	A	I	NA	I	NA	2-76	
	f. Elec. & instrument with a safety function	A	I	NA	I	1E		
	g. Filters	A	I	NA	I	NA		
	2. Auxiliary Electric Equipment Room HVAC System							
	a. Refrigeration units	A	I	NA	I	1E	1-76	
	b. Fans and motors	A	I	NA	I	1E	5-76	
	c. Cooling coils	A	I	NA	I	NA	5-76	
	d. Refrigerant Piping and accessories	A	I	NA	I	NA	2-76	
	e. Ductwork and accessories	A	I	NA	I	NA	2-76	
	f. Elec. & instrument with a safety function	A	I	NA	I	1E		
	g. Filters	A	I	NA	I	NA		
	3. Diesel Generator Room Vent System All components	A	I	NA	I	1E	5-76, 2-76	
	4. Essential Switchgear Room Ventilation System All components	A	I	NA	I	1E	5-76, 2-76	

TABLE 3.2-1 (Cont'd)

PRINCIPAL COMPONENT(1)	LOCATION(3)	SEISMIC(5) CATEGORY	QUALITY(4a) GROUP CLASSIFICATION	QUALITY(4b) ASSURANCE REQUIREMENT	ELECTRICAL(4c) CLASSIFICATION	PURCHASE DATE(2)	COMMENTS
5. CS'S Equipment Area Cooling System							
Fan motor	RB	I	NA	I	1E	5-76	
Damper actuator	RB	I	NA	I	1E	10-76	
Control switch	RB	I	NA	I	1E	10-76	
Temperature switch	RB	I	NA	I	1E	10-76	
Diff. pressure indicator	RB	I	NA	II	NON-1E	10-76	(26)
Temperature element	RB	I	NA	I, II	NON-1E, 1E	10-76	(26)
Temperature indicating controller	RB	I	NA	I, II	NON-1E, 1E	10-76	(26)
Temperature controller	RB	I	NA	I	1E	10-76	
6. Reactor Building Vent System							
Secondary containment isolation dampers	A	I	NA	I	1E	8-76	
7. Primary Containment Purge System							
Primary containment isolation valves	RB	I		I	1E	--	
Secondary containment isolation valves	A	I		I	1E	--	

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EQUIPMENT CLASSIFICATION COMMENTS

(4) b. I - The equipment meets the quality assurance requirements of 10 CFR 50, Appendix B.

II - The equipment is not required to meet the quality assurance requirements of 10 CFR 50, Appendix B.

(5) I - The equipment is designed in accordance with the seismic requirements for the SSE.

II - The seismic requirements for the SSE are not applicable to the equipment.

guidance to applicants on estab ishing a QA program to meet 10 CFR 50 Appendix B requirements.

As noted in Table 3.2-1 Article XXX.1, all components of the primary containment ventilation system with the exception of the containment isolation valves and the penetration piping are designated as "II" under the "Quality Assurance Requirement" column. These components have b en judged to be important to safety, but not safety-related. Criterion 1 of 10 CFR 50 Appendix A requires a QA program be established and implemented in order to provide adequate assurance that such items will satisfactorily perform their safety functions. As with safety-related items, the applicant determines the QA controls to be applied to items important to safety in keeping with the required safety function. Because of the lesser importance to safety of such items as compared to safety-related items, no specific QA guidance has been developed by the staff nor is the applicant requeste to describe the QA controls to be applied to such items in the SAR (except in the areas of fire protection and waste management). A commitment to meet General Design Criterion 1 is all that is required.

This graded approach to QA with heavy emphasis on the most important items (i.e., safety-related) and minimal emphasis on the remaining items provides reasonable confidence that nuclear power plants can be designed, constructed, and operated in a safe manner.

Nonconformances

The following information regarding QA control for nonconformances was extracted from the CECo QA topical report.

Items which are nonconforming will be controlled to prevent their inadvertent use or installation. Nonconforming items are identified, documented and segregated for disposition. Technical evaluations will be made by qualified personnel to determine the disposition of nonconforming items. When nonconforming items are accepted "as-is" or reworked to an acceptable condition, a documented technical evaluation will assure that the final condition will not adversely affect safety, Code requirements, operability, or maintainability.

During construction the Project Engineer has responsibility for resolution of nonconformances. Each resolution will be approved by the Site Quality Assurance Superintendent or designee at the construction site. The CECo program covers all nonconformance including those of contractors such as the Zack Company. Construction deficiences involving material or equipment are documented and reported to the Nuclear Regulatory Commission and to Commonwealth executive management.

The following information regarding QA controls for nonconformances was extracted from the S&L QA topical report.

Procurement specifications include provisions for the vendor to submit nonconformances together with their recommended disposition ("use-as-is," rework, or repair) to S&L for review and recommendation of disposition to CECo.

Quality Assurance for Commercial "Off-the-Shelf" Items

The quality assurance requirements for a safety-related item in accordance with Appendix B to 10 CFR 50 to which an applicant commits are intended to provide the necessary confidence that the end item meets the applicable design criteria, codes and standards, and regulatory requirements to assure that it can perform its safety function. The safety-related item would be subjected to design control requirements (Criterion III of Appendix B) including independent design verification either by itself, depending upon its complexity, or as part of a system. The item may be identified as either special for nuclear application or as a commercial "off-the-shelf" item. For items produced specially for nuclear application, the pertinent quality assurance requirements are delineated in purchase documents by the purchaser or its agent for implementation by the supplier. Appropriate documentation (as required by Criterion VII of Appendix B) is provided by the supplier to demonstrate conformance to the purchase document.

For commercial "off-the-shelf" items, have a safety related function which comprise a portion of HVAC systems, it may not be practicable nor possible to impose special quality assurance requirements on the supplier. Therefore, the burden of demonstrating that the item meets requirements and will perform its intended safety function then falls on the purchaser who must perform special testing, analysis and/or inspections (see SRP Section 17.1, Rev. 2, item 7B4, P. 17.1-16) to assure that the item purchased is proper for its safety related application. The identification of commercial "off-the-shelf" items and the special verification activities to be conducted by the purchaser are not specified by regulatory documents but are determined by the applicant.

B. Applicable Codes and Standards for Ducting and Supports

For HVAC systems, there are no national codes or industry standards which provide specific requirements for their overall design, fabrication, or installation. The only national standard which addresses the design and construction of duct systems in a limited way is ANSI N509, "Nuclear Power Plant Air Cleaning Units and Components". ANSI N510 covers the functional system testing aspects. The ANSI N509 standard does not require specific material documentation.

Because there are no national codes nor standards for HVAC systems which specify the documentation required, the documentation requirements become the responsibility of the Utility (or its architect-engineer) to define.

For LaSalle County Station 1 & 2, the architect-engineer, Sargent & Lundy (S&L), design specification for HVAC work (J2590) states that, ". . . all appropriate documentation, as hereinafter specified, or as required by applicable code, standard, and criteria shall be submitted . . .". The Specification further states the minimum documentation required and includes:

" a. Certified Material Test Report, which shall include the actual results of all chemical analyses and mechanical test required by the material specifications."

The Sargent & Lundy Standard Specification for HVAC duct work (Form 320) requires specific materials to be used. The requirements for galvanized duct work is shown below.

Material	Material Type	Size	Material Spec.	Coating Designation
Sheet	Galvanized Steel	16-gauge and lighter	ASTM A527	ASTM A525 G-90
		14-gauge and heavier	ASTM A526	
Stiffeners, Hangers, and Supports	Carbon Steel, Hot dipped Galvanized	2½" x 2½" x ¼" and smaller	ASTM A527 Grade M-1020	ASTM A123
		3" x 3" x ¼" & larger	ASTM A36	
Bolts	Galvanized Steel	All	ASTM A307	ASTM A153 Class D Commerical Coating
Rivets	Galvanized Steel	All	ASTM A152	
Sheet Metal Screws	Galvanized Steel	All	ASTM A548	

As shown in the table, the material used for this application is no different from that used in any industrial or commerical application. Nuclear power plant galvanized duct work does not have any additional manufacturing or "exotic" material requirements. One hundred percent of the HVAC ducting and supports may be of commercial grade.

C. Staff Requirements and SER; Ducting and Supports

The Standard Review Plan (NUREG-75/087 dated May 1980), to which LaSalle was reviewed, provides a minimum amount of guidelines pertaining specifically to the design of HVAC systems. In Section 3.2.2, "System Quality Group Classification" under the review procedures, the SRP lists fluid systems important to safety for BWR plant and the list includes "Ventilation Systems for Areas such as Control Room and Engineered Safety Features Rooms."

In the SRP (NUREG-0800 dated July 1981) Section 3.9.2, "Dynamic Testing and Analysis of Systems, Components, and Equipment," the acceptance criteria states that the "seismic analysis of all Category I systems, components, equipment, and their supports (including supports for conduit and cable trays and ventilation ducts) should utilize either a suitable dynamic analysis method or an equivalent static load method, if justified."

The staff in the LaSalle Safety Evaluation Report (NUREG-0519 dated March 1981) concludes in Section 3.7.2 that the "seismic system and subsystem analysis procedures and criteria utilized by the applicant are in conformance with the applicable acceptance criteria delineated in Sections 3.7.2 and 3.7.3 of the Standard Review Plan." (NUREG-75/087)

D. (1) HVAC Accessories (Environmental Qualification of Electrical Equipment)

Equipment which is used to perform a necessary safety function must be capable of maintaining functional operability under all service conditions postulated to occur during its installed life for the time it is required to operate. This requirement, which is embodied in General Design Criteria 1, 2, and 4 of Appendix A and Sections III and XI of Appendix B to 10 CFR Part 50, is applicable to equipment located inside as well as outside containment. More detailed guidance relating to the methods and procedures for demonstrating the environmental qualification of electrical equipment has been set forth in NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," which supplements IEEE Standard 323, and NRC Regulatory Guides which endorse ancillary daughter standards (e.g. IEEE Stds. 317, 334, 382, and 383. Commission Memorandum and Order CLI-80-21 issued on May 23, 1980 states that NUREG-0588 forms the requirements that license applicants must meet regarding environmental qualification of safety-related electrical equipment in order to satisfy those aspects of 10 CFR Part 50, Appendix A, GDC 4 which relate to environmental qualification of safety-related electrical equipment. The position contained in this NUREG provides guidance on (1) how to establish environmental service conditions, (2) how to select methods which are considered appropriate for qualifying equipment in different areas of the plant, and (3) other areas such as margin, aging, and documentation.

The scope of the NRC staff's review included the list of systems and electrical equipment to be qualified, the criteria which they must meet, the environments in which they must function, and the data supporting qualification. It was limited to safety-related electrical equipment which must function in order to prevent or mitigate the consequences of a loss-of-coolant accident, or high or moderate energy line breaks, inside or outside of containment, while subjected to the harsh environments associated with these accidents. For equipment located in areas that may be subjected to a harsh environment, the staff performed an onsite examination of the equipment, an audit of qualification documentation, and a review of the applicant's submittals for completeness and acceptability of systems and equipment, qualification methods, and accident environments. The criteria described in NUREG-0588 form the basis for the staff evaluation of the adequacy of the applicant's qualification program.

The staff did not review and evaluate the environmental qualification of equipment located in mild enviornment areas, i.e., located in areas not subjected to harsh environments. However, this equipment must still be environmentally qualified and detailed guidance for demonstrating that qualification was sent to all applicants by a April 20, 1982 letter from D. Eisenhut.

Zack Company involvement with the purchase of environmentally qualified electrical equipment has not been determined.

(2) HVAC Accessories (Seismic, Fire)

The staff's Seismic Qualification REview Team (SQRT) has reviewed available information and made a site visit on November 17 through 21, 1980 to confirm the extent to which the qualification of equipment, as installed in LaSalle, meets current licensing criteria as described in Sections 3.9.2 and 3.10 of the Standard Review Plan. A sample of seismic Category I mechanical and electrical equipment, including both nuclear steam supply system and balance-of-plant. were selected for the site review. The review consisted of field observations of the actual equipment configuration and its installation, followed by the review of the corresponding test and/or analysis documents. The sample did not include items purchased by the Zack Co.

The staff's conclusion as reported in the SER was that an appropriate qualification program has been defined for the seismic Category I mechanical and electrical equipment which will provide adequate assurance that such equipment will function properly during and after the excitation from vibratory forces imposed by the safe shutdown earthquake or hydrodynamic loads associated with discharges into the suppression pool, or by the combined earthquake and hydrodynamic loads.

With respect to fire dampers, the staff concluded that CECo was providing equipment which satisfied Appendix A of BTP ASB 9.5-1 with respect to approving laboratory rating and are therefore acceptable.

III. Rereview[5] of Ducting and Supports Following Zack Allegations

Structural Design Adequacy

In order to determine the structural adequacy of the HVAC system (supports, stiffeners, and ducting), it is necessary to ask ourselves the following question, "Is the structural design of the HVAC system adequate if the materials used are questionable?" It logically follows that if the design margin to failure is large and if the range or possible variation in material properties in question (e.g. mechanical strength) is small, then we can reasonably conclude that the design is adequate. The adequacy of design margin can be expressed in the form:

$$\text{design margin} = \frac{\text{allowable stress}}{\text{calculated stress}} = \frac{S_A}{S}$$

For the components to be acceptable the design margin must be greater than 1.0. The larger the value, the more design margin is available. If the design margin is less than 1.0, then the question arises, "Will the component fail?" In order to answer the question, it is necessary to define what is meant by "failure". It is also important to understand what the basis is for the allowable stress.

It should be noted that there are no national codes or industry standards that control the overall design, fabrication, and installation of HVAC systems. There exists an ANSI standard (N-509) which covers the design, construction, and testing of nuclear power plant air cleaning units and components. However, the limited scope does not cover comfort heating, air conditioning, or ventilation to achieve ordinary cooling objectives.

The ANSI N-509 standard provides a stress allowable for ducts equal to 0.7 of the elastic limit. However, the standard also requries that galvanized steel (ducts) be in accordance with ASTM A526 and A527 coated to ASTM A525 G90 designation. The LaSalle design specification for HVAC galvanized ductwork is in agreement with the ANSI standard material requirements. The LaSalle design specification[3] for HVAC materials requires only the use of commercial grade materials. It should be noted that ASTM A526 and A527 does not require a mechanical strength test and no minimum yield stress is specified. Thus, the allowable stress and design margin cannot be calculated without knowledge of the minimum yield stress value.

For LaSalle, Sargent & Lundy (S&L) selected a value of 18 ksi for an allowable stress. Because the value is arbitrary, exceeding the allowable value does not necessarily imply failure. The acceptability of the 18 ksi value can be demonstrated through test data. U.S. Steel developed typical ranges of yield stress for three common grades of galvanized sheet metal[1] as shown below.

ASTM Designation	Range of Minimum Yield Stress
A526 (commercial quality)	35-50 ksi
A528 (drawing quality)	25-38 ksi
A642 (drawing quality)	25-35 ksi

(For A527 material, the yield stress would be equivalent to A528). As noted by U.S. Steel,[1] unless the galvanized sheet metal is ordered with a minimum strength specified, the supplier cannot guarantee the strength properties of the material. For sheet metal, formability is important, not strength.

It should be noted that because of the inherent ductile nature of sheet metal, exceeding the yield stress will not lead to an immediate failure (collapse) of the material. Thus, the allowable stress value of 18 ksi used by S&L for ducting appears to provide a minimum design margin of at least an additional 50% of the allowable stress before initial yielding occurs.

The calculated stress for the ducting must be less than 18 ksi. In order to assure that the allowable stress is not exceeded, S&L had evaluated all HVAC duct sizes applicable to LaSalle and determined the optimum span for spacing the supports. The supports are designed to accommodate loads occurring in vertical and horizontal directions due to dead weight and various dynamic loadings (earthquake, safety relief valve discharge, and loss-of-coolant-accident loadings). The ducting was designed to remain in the rigid range and remain below the 18 ksi stress allowable. It was thus determined that a 14 ft. span between supports would be applicable for all ducting sizes to maintain a rigid body assumption. For most duct sizes the 14 ft. span would result in a calculated stress significantly below the 18 ksi allowable. In the actual installation, spans shorter than 14 ft. would result in even smaller stresses in the ducting.

Thus, even without quantifying the design margin it becomes obvious that the design methodology for the ducting is conservative and results in a large design margin to failure.

For the HVAC supports, the LaSalle design specification requires the use of ASTM A36 material. The ASTM specification for A36 material requires both a chemical and mechanical strength test. The ASTM specification requires a minimum of 36 ksi minimum yield stress.

For LaSalle, the HVAC supports were requalified by S&L using a "load and frequency controlled design method". The supports which remained in the rigid range of the dynamic responses spectra were qualified to an allowable maximum stress of 12 ksi (1/3 Sy). For critical supports which could be affected by the response spectra peak accelerations, an allowable maximum stress value of 22 ksi (or about 0.6 Sy for ASTM A36 material) was used. The NRC staff acceptance criteria is 1.2 Sy for faulted laod conditions. Thus, it can be concluded that a large design margin to failure also exists in the HVAC supports.

The LaSalle design specification (J2590)[3] requires the use of ASTM A575 Grade M-1020 material for HVAC stiffeners. The staff was concerned that because several grades of A575 are available with lesser carbon content (and thus lesser strength) than Grade M-1020, we requested that the strength properties of the lesser grades be determined to evaluate whether the design adequacy could have been compromised. ASTM A575 specification does not require a mechanical strength test. S&L obtained typical test results from Northwestern Steel and Wire Company for the various grades of A575 material. The values are shown in the table below.

ASTM A575	Minimum Yield Strength
Grade M1008	34.0 ksi
Grade M1010	35.7 ksi
Grade M1015	36.1 ksi
Grade M1020	37.2 ksi

The staff called Northwestern Steel and Wire Company and the above values were verified.(4) Thus, it appears that the lowest grade (M1008) of A575 material could exhibit strength properties 10% less than the maximum yield strength required by the design specification.

The staff was also concerned with the structural requirements for the HVAC system and whether a lesser quality bolt could have been used. During the staff visit to Sargent & Lundy offices on July 27, 1982, it was determined that early in construction, the Zack Company had requested to use "Huck" bolts (AISI C-1035 Carbon Steel) rather than the typcial A307 bolts required by the design specification.(5) The use of Huck bolts would result in a more expedient installation of the HVAC system. The bolts were used in the companion angle flanges which connect the duct system together. S&L accepted the Huck bolts because the bolts exhibited the same (or better) mechanical properties as the A307 bolts. For example, a 1/4 inch standard A307 bolt had a tensile strength of 1900 lbs. while a 1/4 inch Huck bolt had a 3000 lbs. tensile strength.

In the same vein, the use of commercial quality welding rod in lieu of that which was specfied by Sargent and Lundy to fabricate these carbon materials would result in negligible loss of strength.

The staff also questioned whether the design and materials were different in the safety related HVAC systems than in the non-safety grade systems. It was determined that for galvanized ductwork, the materials used in safety related systems are identical to those used in non-safety grade systems. The HVAC system design is identical with respect to material sizes, stiffener spacing, and support spans (except in the service building where the support spans were allowed to be greater than 14 ft.) The only apparent design difference is the ducting flange joint connection. The use of a slip joint (or lock joint) was allowed for the HVAC systems that were not safety related.

In summary, the overall conservative design procedures used in the LaSalle plant for the the HVAC ducting and supports appears to have provide adequate design margin to compensate for the variability of the material properties in question. The conclusion is based on the resulting strength properties of typical test samples from independent steel fabricators. The actual mechanical strength properties of the material installed in the LaSalle plant by Zack Company could be less than those used in this report. The results of the physical testing program being conducted by Region III are expected to further quantify this fact.

If further review of additional non-conformance reports, questionable welder qualifications or test results cast serious doubts about the strength properties for a specific material, weld or component, then additional testing, volumetric examination or replacement may be required.

Note: A telephone call to Region III (7-31) indicates that test results confirm the acceptability of the materials tested.

References for Section III:

(1) Telecon with Mr. Raymond Phillips (U.S. Steel) and D. Terao (USNRC) on 7/28/82.

(2) "Load and Frequency Controlled Design", by F. L. Cho and A. E. Meligi (Sargent & Lundy). Paper presented at 1980 Pressure Vessel and Piping Technology Conference.

(3) Sargent & Lundy, "Design Specification (J2590) for LaSalle County Station 1 & 2 HVAC work."

(4) Telcon with Mr. J. Shinville (Northwestern Steel and Wire Company) and D. Terao (USNRC) on 7/28/82.

(5) Trip Report dated 7/30/82; D. Terao to R. Bosnak (Appended to report, Appendix 2).

References for Section 1:

1. 10 CFR Part 50, Appendix A, General Design Criterion 1, "Quality Standards and Records."
2. 10 CFR Part 50, Appendix A, General Design Criterion 2, "Design Bases for Protection Against Natural Phenomena."
3. 10 CFR Part 50, Appendix A, General Design Criterion 4, "Environmental and Missile Design Bases."
4. 10 CFR Part 50, Appendix A, General Design Criterion 5, "Sharing of Structures, Systems, and Components."
5. 10 CFR Part 50, Appendix A, General Design Criteria 19, "Control Room."
6. Regulatory Guide 1.13, "Fuel Storage Facility Design Basis."
7. Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants."
8. Regulatory Guide 1.29, "Seismic Design Classification."
9. Regulatory Guide 1.117, "Tornado Design Classification."
10. Standard Review Plan (NUREG-75/087) Section 9.4.1, "Control Room Area Ventilation System."
11. Standard Review Plan (NUREG-75/087) Section 9.4.2, "Spent Fuel Pool Area Ventilation System."
12. Standard Review Plan (NUREG-75/087) Section 9.4.5, "Engineered Safety Feature Ventilation System."
13. NUREG/CR-0660, "Enhancement of On-Site Emergency Diesel Generator Reliability."

Appendix 1 to
Attachment 1

A-1-1

SARGENT & LUNDY TELECOPY REQUEST

7499x

DATE: 7-29-82

TO: D. G. Eisenhut

CITY: ______ STATE: ______

FROM: Arnberg / Paschal

COVER SHEET PLUS 3 PAGE(S)

SENT FROM A PANAFAX 1200 AUTOMATIC TELECOPIER
OUR TELECOPIER NUMBERS ARE: (312) 269-3680 SET ON 6 MINUTES
(312) 269-3596 SET ON 4 MINUTES

TO REPORT TROUBLE IN RECEIVING OR SENDING A TELECOPY MESSAGE
CALL EITHER (312) 269-3569 OR (312) 269-2000

[illegible]

BY THE ZACK COMPANY FOR THE

LASALLE COUNTY NUCLEAR GENERATING STATION

Material/ Equipment Designation	Specified Materials/ Equipment	Furnished Materials/ Equipment	Safety-Related (SR) or Non-Safety-Related (NSR) (See Note 1)	Commercial (C) Or Special (S)	COMMENTS
• FIRE DAMPERS		ADVANCED AIR, RUSKIN	SR	C	All other equipment furnished by Zack now non-safety related
• REFRIGERATION SPECIALTIES		VARIOUS	SR	C	
• GRAVITY DAMPERS		AMERICAN WARNING	SR	C	
• SILENCERS		IAC	SR	C	
• BALANCING DAMPERS		AMERICAN WARNING	SR	C	
• GRILLES, REGISTERS, DIFFUSERS		TITUS	SR	C	
• AIR FLOW MEASURING STATIONS		AIR MONITOR CORP.	SR	C	
• VENTILATION FILTERS		FARR	SR	C	

LASALLE COUNTY STATION
SAFTEY RELATED HVAC SYSTEMS

ACRONYM	SYSTEM NAME	REFERENCE FSAR FIGURE NUMBER	COMMENTS.
VC	CONTROL ROOM	9.4-1 (SHT. 1 + 2)	ALL DUCTWORK WERE FABRICATED AND INSTALLED BY ZACK. REFRIGERANT PIPING AND FITTINGS WERE SUPPLIED AND INSTALLED BY ZACK. Fire dampers, balancing dampers, airflow elements and silencers were by Zack
VD	DIESEL-GENERATOR	9.4-9 (SHT 1 + 2)	ALL DUCTWORK WERE FABRICATED AND INSTALLED BY ZACK. Fire dampers, balancing dampers, gravity dampers were purchased & installed by Zack. See D/G Combustion air filters were furnished and installed by [illegible]
VE	AUX. ELECTRIC EQUIP. ROOM	9.4-2 (SHT 1 + 19)	All ductwork were by Zack. Refrigerant piping and fittings were by Zack. Fire Dampers, balancing dampers airflow elements [illegible] and silencers were by ZACK.

Pg 2 of 2

VG	STANDBY GAS TREATMENT SYSTEM	6.5-1	20"Ø DUCT FROM FAN (1/2VG03C) SUCTION UP TO ISOLATION DAMPERS (1VG01Y & 2VG02Y) WORK BY ZACK. AIRFLOW MEASURING STATIONS [illegible] (1FE-VG002, -VG009, & 2FE-VG002 & -VG009) WERE BY ZACK.
VX	SWITCHGEAR HEAT REMOVAL SYSTEM	9.4-10 (SHT. 1 → 24)	All duct work, fire dampers, balancing dampers, gravity dampers, silencers, airflow elements were by Zack.
VY	ECCS EQUIPMENT AREAS COOLING SYSTEM	9.4-11 (SHT. 1 → 12)	All duct work, fire dampers and balancing dampers were by Zack.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Appendix 2
to Attachment 1

A2-1

JUL 30 1982

MEMORANDUM FOR: R. J. Bosnak, Chief, MEB, DE

THRU: H. L. Brammer, Section Leader, MEB, DE

FROM: D. Terao, MEB, DE

SUBJECT: TRIP REPORT FOR REVIEW OF LASALLE HVAC SYSTEM DESIGN

HVAC Meeting at Region III

On July 26, 1982, the applicant for the LaSalle County Station 1 & 2 (Commonwealth Edison Company) and its architect-engineer (Sargent & Lundy) met with the NRC staff at the Region III offices in Glen Ellyn, Illinois to discuss the safety implications of the allegations concerning deficiencies in the quality assurance of the Zack Company and, specifically, the effect on the HVAC system ductwork and support design. The major questions and concerns focused on by the staff were:

1) How were the specifications developed for the HVAC system (ductwork and supports)?
2) What is the significance of using materials which cannot be determined to conform to their specifications?
3) What is the Sargent & Lundy role in resolving non-conformance reports (NCR)?

Sargent & Lundy (S&L) stated that the safety-related ducting for HVAC systems are composed of galvanized sheet material required to meet the specifications of ASTM A526 (14 gauge and heavier) or ASTM A527 (16 gauge and lighter). S&L further stated that there are no national codes nor standards pertaining to the overall design, fabrication, or installation of HVAC systems. There is only an ANSI-N509 standard which pertains to air cleaning systems and it requires the use of A526 and A527 material for galvanized steel ducts and the use of A36 material for structural shapes. The S&L design specification (J2590) is in agreement with the ANSI material requirements.

The S&L design specification (J2590) required the results of all chemical analyses and mechanical tests as required by the material specification. The NCR's centered around the lack of documentations [certified material test reports (CMTR) and certification of conformance (C of C)]. For galvanized sheet metal (A526 and A527), the ASTM specification only requires a chemical test and does not require mechanical strength tests. S&L stated that the ducting was designed to a maximum allowable stress value of 18 ksi and that there was a large design margin available.

Similarly, for the structural stiffeners and supports, the S&L design specification required the use of ASTM A575 Grade M-1020 and ASTM A-36, respectively. A 575 (M-1020) only requires a chemical test not a mechanical test. A-36 requires both a chemical and a mechanical test. S&L stated that the support members were conservatively designed with a large design margin and that, generally, the weld was the weakest point in the support design (not the structural member). That is, the weld would fail before the structural member.

Sargent & Lundy further stated that the materials required by the S&L specification were not high-strength low alloy steel materials but were from the family of steels normally classified as "carbon steel". Within that family, there was no lesser quality material that could have been substituted with significantly lesser strength properties.

The staff caucassed for a few minutes and had two major concerns that required further action. The staff wanted to determine how much design margin existed in the HVAC system supports and ducting. The staff decided to audit the S&L calculations for the HVAC system design the next day. Secondly, the staff had a concern regarding the strength of ASTM A575 material used for stiffeners. Because A575 material is available with different carbon content and in some cases, Grades M-1010 and M-1015 with lesser carbon content were used instead of M-1020, the staff wanted to know the differences in mechanical strength for the different grades of A575 material. The applicant (and S&L) agreed to provide this information.

HVAC Meeting at Sargent & Lundy

On July 27, 1982, I met with the architect-engineer (Sargent & Lundy) for the LaSalle 1 & 2 plant at their offices in Chicago, Illinois. The purpose of the visit was to review the design calculations for the LaSalle 1 & 2 HVAC System as agreed upon at the previous day's meetings held at the Region III offices. The list of attendees is included as Attachment A.

In the morning, we discussed the design methodology used by Sargent & Lundy (Component Qualification Division) to reassess the HVAC ducting and supports. The reassessment of the HVAC supports was performed to qualify the supports to the LaSalle hydrodynamic loads. The supports were requalified using the load and frequency controlled design method as presented in Attachment B. The supports which remained in the rigid range (beyond the peaks in the response spectra) were qualified to an allowable maximum stress of 12,000 psi (1/3 Sy). For the critical supports which could be affected by the dynamic response spectra peaks, an allowable maximum stress value of 22,000 psi (0.6 Sy for ASTM-A36) was used. I reviewed the HVAC calculation[1,2] for qualifying the typical support details and the critical supports (non-rigid). I randomly selected three calculations to determine whether the methodology was appropriate. The calculations appeared to be acceptable.

In general, it appears that the HVAC supports have a large design margin as stated by S&L previously. In performing the reassessment for hydrodynamic loads, S&L found supports in which the allowable stress was exceeded, however, the support was reinforced as needed and requalified.

We also discussed the design procedures used by S&L in reassessing the ducting sheet metal. S&L evaluated all duct sizes and determined the optimum span for the spacing of seismic supports. In order for the ducting to remain in the rigid range and within the 18,000 psi stress allowable, S&L used a maximum allowable span of 14 feet. The 14 feet maximum span was selected to encompass all duct sizes in order to maintain a rigid body assumption for the ducting. The methodology appears to be reasonable and acceptable.

Sargent & Lundy provided me with the previously requested material strength values for the various grades of A575 material. The yield stresses were obtained from Northwestern Steel and Wire Company. The values are as follows:

ASTM A575	Maximum Yield Strength
Grade M1008	34.0 ksi
M1010	35.7 ksi
M1015	36.1 ksi
M1020	37.2 ksi

Thus, it appears that the lowest grade (M1008) could be approximately 10% weaker than the S&L design specification requirement (M1020).

We also discussed the design and material differences between the safety related HVAC system and the HVAC system that are not safety-related. S&L stated that the materials used for galvanized ductwork is the same regardless of its safety class. The design is identical with respect to

1 "Analysis of HVAC Seismic Hangers in Auxiliary Building - LaSalle County Station - 1, Supplement to Phase I and Phase II dated 7/23/80. (EMD-024713)

2 Same title as above (Phase II) dated 7/25/81. (EMD-020798)

stiffener spacing and support spacing (except in the service building where the seismic support spacing was not required). The only major design differences appears to be in the ducting flange joint connection. The use of a slip joint rather than a companion angle was allowed for the HVAC system that are not safety-related.

Sargent & Lundy stated that, in the bolting requirements, Zack had requested to use "Huck" bolts rather than the A307 bolts required by the S&L specification. The use of Huck bolts (AISI C-1035 Carbon Steel) would result in a more efficient installation of the bolts. S&L accepted the Huck bolts because the bolts exhibited the same (or better) properties than A307 bolts. For example, a ¼ inch A307 bolt had a tensile strength of 1900 lbs. while a ¼ inch Huck bolt had a 3000 lbs. tensile strength.

In summary, the overall design methodology used for the requalification of the HVAC ducting and supports appears to result in a conservative design, thus providing an adequate design margin. However, the actual margin to failure is dependent on the mechanical strength of material. The possible tolerances in the expected property values for material where the ASTM specification does not require mechanical testing will be addressed separately by MTEB.

D. Terao

D. Terao
Mechanical Engineering Branch
Division of Engineering

cc: R. Vollmer, DE
J. Knight, DE
A. Bournia, DL
C. Norelius, RIII
R. Lanksbury, RIII
C. Sellers, DE

TC

3-82-057

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

August 23, 1982

MEMORANDUM FOR: J. E. Foster, Acting Director, Office of Investigation, Region III

FROM: A. Bert Davis, Deputy Regional Administrator

SUBJECT: ZACK INVESTIGATION

Based on a discussion that I had with Mr. James Fitzgerald on August 19, 1982, I am requesting that the Office of Investigation perform an inquiry or investigation, as appropriate, to determine the reason for discharge of Mr. Howard and Ms. Marello from the Zack Corporation. Further information on this subject is contained in my August 16, 1982 memorandum for James Fitzgerald, which is enclosed. If you have any questions on this matter, please contact me.

A Bert Davis

A. Bert Davis
Deputy Regional Administrator

Enclosure: As stated

cc w/enclosure: R. L. Spessard
C. E. Norelius
I. N. Jackiw
R. D. Lanksbury
R. D. Walker

#3/4

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

August 16, 1982

Tickle 8/20

MEMORANDUM FOR: James Fitzgerald, Director, Office of Investigation

FROM: A. Bert Davis, Deputy Regional Administrator, Region III

SUBJECT: TELEPHONE CALL FROM MYRON CHERRY CONCERNING ZACK INVESTIGATION

This memorandum will confirm our telephone conversation of August 12, 1982.

Mr. Myron Cherry called Mr. Keppler and talked to me in his absence concerning the Zack Investigation. He stated that he was representing Mr. Howard and Ms. Marello who were discharged by Zack. Mr. Cherry believes these people were discharged because they brought forth information to the NRC. He believes that the intent of the Atomic Energy Act is to protect individuals who take such action. He also believes it is mandatory that the NRC investigate the reasons for the discharge of Mr. Howard and Ms. Marello and to take strong and appropriate enforcement action against the Zack Corporation, and the Utilities which used Zack as a subcontractor for heating, ventilating, and air conditioning systems.

Mr. Cherry requested that he be informed as to the proposed NRC action. He stated that he wants our complete cooperation in investigating why Mr. Howard and Ms. Marello were discharged. He indicated that if the NRC did not pursue this investigation vigorously he would involve appropriate NRC personnel personally in a law suit. He stated that government officials who did not perform their duties in a responsible manner could be personally sued.

As agreed in our telephone conversation, you will consider this matter, determine whether the requested investigation will be pursued, and let me know the results so I may pass the information on to Mr. Cherry.

For your information, I have discussed this matter with Mr. Stephen Burns, ELD, and he participated in the second telephone conversation with Mr. Cherry and me when I told Mr. Cherry his request was under consideration. Since Mr. Cherry also indicated that he intended to call Commissioner Gilinsky on this matter, I have also briefed Mr. William Manning, Commissioner Gilinsky's legal assistant.

Also, Mr. Cherry stated that he was concerned that the NRC permitted subcontractors such as Zack to hire unqualified people such as Howard and Marello for work in their quality assurance/quality control organization. He further stated that he believed Howard and Marello's replacement were equally as unqualified as Howard and Marello to perform these duties. I intend to pursue this matter with the Region IV Vendor Inspection Branch to determine appropriate NRC action with regard to the qualifications of these people.

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During the conversation, Mr. Cherry also indicated that the NRC should take action to shut down Zack and the Utilities that used Zack materials in their heating, ventilating, and air conditioning systems. I informed him that our investigation was in progress and appropriate actions would be taken at the conclusion of the investigation. I also informed him of the Commission vote with respect to LaSalle, which came after they had been briefed on the Zack problems and investigation.

If you have any questions on this matter, please feel free to contact me.

A. Bert Davis
Deputy Regional Administrator

cc: S. Burns, ELD
J. Collins, RIV
C. Norelius, RIII
R. Spessard, RIII
I. Jackiw, RIII
J. Foster, RIII
C. Weil, RIII