PDR

C-E Power Systems
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Tel. 203/688-1911
Telex 99297

POWER SYSTEMS

August 15, 1979

License No. SNM-1067
Docket No. 70-1100

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. L. C. Rouse, Chief
Fuel Processing & Fabrication Branch
Division of Fuel Cycle & Material Safety

Reference: Letter from Mr. H. V. Lichtenberger to Mr. L. C. Rouse, dated 7/30/79

Gentlemen:

The action level for declaring a site emergency (in terms of uncontrolled release of airborne radioactive particulates) was discussed further by Mr. N. Ketzlach of your staff and Mr. G. A. Johnstone of my staff on August 14, 1979. It was agreed that a lower action level of 25 μCi in 24 hours would be acceptable in view of our continued low annual release rates. This action level is specifically mentioned in several places in our previous submittal. Accordingly, it is requested that pages 4-4, 4-5, 4-6, 4-7, 6-3, 6-5 and page 1 of the Appendix dated 7/30/79 be withdrawn and replaced by the corresponding revised pages dated 8/14/79.

Very truly yours,

H V Lichtenberger

H. V. Lichtenberger
Vice President-Nuclear Fuel
Nuclear Power Systems-Manufacturing

HVL/GJB/ssb
Enclosures

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4.3 Plant Emergency (Cont'd)

of damage to plant equipment; (2) a positive observation that radiation monitors do not indicate the possibility of a criticality accident and; (3) the recognition by personnel in the area involved that the situation is beyond their capability to resolve. The non-nuclear alarm may be sounded by any person cognizant of the situation. Declaring and classifying the emergency is the responsibility of the Emergency Director.

Examples of action levels for plant emergencies are:

- Major process leak or spill (toxic or radioactive)
- Fire (not controllable by personnel in the immediate vicinity)
- Explosion contained within building

The Emergency Director may request that off-site agencies which may be required to respond to a particular emergency assume an alert condition until the emergency is terminated. For example, the Windsor Fire Department would be requested to stand by in case of a fire that is not easily extinguishable.

Notification of C-E management and appropriate off-site agencies to alert them to the nature and extent of a plant emergency is to be made in accordance with instructions contained in the NFM-Windsor Emergency Procedures.

4.4 Site Emergency

Emergency situations more severe than plant emergencies are not expected to occur during the life of the plant because of design features and other measures taken to guard against their occurrence.

Nevertheless, it is necessary and prudent to make provisions for a class that involves an uncontrolled release of radioactive materials into the C-E Windsor site environs, outside the Building #17 manufacturing or Building #5 laboratory areas. An "uncontrolled release" is defined as any release of
* 25 μCi or greater of airborne radioactive particulates averaged over a 24-hour period into the Windsor site environs. Notification of off-site emergency organizations will be made for all site emergencies. The State of Connecticut's Office of Civil Preparedness is the main off-site agency that will be notified (See Section 5.4). They have agreed to coordinate all emergency response efforts required by participating governmental and local agencies as necessary to cope with any emergency involving off-site impact. Protective actions include evacuation of personnel from the affected building to the designated emergency assembly

4.4 Site Emergency (Cont'd)

areas and/or warning of site employees to remain inside other site buildings until the emergency condition is terminated.

These communications will be handled through the emergency intercom and paging system. This system is activated by the Security Guard when the 5555 call (the Windsor Site Emergency Telephone Number) is received. There are nine emergency telephones located throughout the Windsor site that can be activated from a central control panel at the guardhouse by the guard. The guard will contact all nine of these locations by simply pressing one button that keys in the emergency intercom system. Picking up the handset rings all nine telephones simultaneously and allows the guard to describe the emergency to all nine people at the same time. This provides notification to key emergency personnel. One of these nine locations is the Vice President Nuclear Fuel (Emergency Director). The Emergency Director is then able to communicate with all of the other key emergency personnel at the same time via this conference call and request assistance from the appropriate services.

The guard also can contact the Windsor Police Dispatcher via the emergency hot line in the guardhouse. This is a direct line to the Windsor Fire and Safety complex where assistance from both the fire and police departments of surrounding townships is obtained. No dialing is needed; picking up the handset activates the system and puts the guard in contact with the Windsor Police Dispatcher. These communications are on emergency power.

Associated assessment actions include radiological monitoring and provisions for monitoring the environment.

A site emergency is declared by (1) automatic sounding of the nuclear (criticality) alarm when levels exceed 5 mr/hr at the criticality detector or (2) sounding of the non-nuclear alarm, initiated automatically or by any person cognizant of the emergency situation. (These alarms initiate immediate evacuation) or (3) a re-
* lease averaged over a 24-hour period that is equal to or greater than 25 μCi of airborne radioactive particulates (determined by analysis of stack samples). Declaring and classifying the emergency is the responsibility of the Emergency Director.

4.4 Site Emergency (Cont'd)

Examples of site emergencies are:

- Confirmed criticality accident
- Major fire or explosion which is not easily controllable by on-site emergency response organizations
- * Release of 25 µCi of airborne radioactive particulates into the C-E Windsor site environs averaged over a 24-hour period.

Two ammonia tanks located within the Building #17 fenced manufacturing area have been analyzed for all credible accidents. A large ammonia release is considered to be incredible based on the following:

All lines into the ammonia tanks are equipped with excess flow valves. These valves are protective devices that provide a means of protecting personnel and property from accidents caused by excessive ammonia loss due to hose rupture or breakage of pipelines. Excess flow valves are designed to close at flows in excess of their normal rated flows. Any rupture or break in a line that increases the flow above the rated flow rate of the valve will close the valve. These valves are also recessed within the ammonia tanks so that even if the line is sheared off at the tank the valve will still form a seal and stop the release.

Also, the tanks are design-tested at 325 psi (vapor pressure of NH_3 at 100°F is 200 psi) and supported by two solid concrete supports (one at each end of the tank). These concrete supports have concave shaped tops so the tanks rest within the supports. The tanks are also located within the Building #17 controlled access area where there is minimal, if any, traffic flow. Finally, the tanks are surrounded by a 12 foot high reinforced chain link fence.

4.5 General Emergency

Accidents that have the potential for serious radiological consequences to the public health and safety have been analyzed previously and were not found to be credible for the C-E NFM-Windsor facility.

4.6 Spectrum of Postulated Accidents

Off-site impact of the spectrum of accidents discussed in the Environmental Impact Information is shown in the following table:

4.6 Spectrum of Postulated Accidents (Cont'd)

	Accident	Classification	Off-Site Impact
	Injured Employee	Personnel Emergency	None
	Contaminated Employee	Personnel Emergency	None
	Process Leak or Spill	Plant Emergency	None
	Fire	Plant Emergency	None
*	Release of 25 uCi of Airborne Radioactive Particulates into CE Site Environs	Site Emergency	<50% of MPC for insoluble U^{235} at site boundary
	Criticality Accident	Site Emergency	Whole body dose .216 RAD Thyroid Dose 1.32 RAD
	Emergency Alert	Emergency Alert	None (off-site impact from Emergency Alerts which are reclassified into Plant or Site Emergencies are described above).

6.3 Plant Emergency (Cont'd)

endent hot line in the Main Guard House to the Windsor Police Dispatcher.

Use of respiratory protection is determined by a trained member of the Manufacturing or Laboratory H. P. Staff. Personnel decontamination will be performed by or under the supervision of a trained Health Physics representative. Notification of and transportation to off-site medical facilities if necessary, is also under the direction of the Emergency Director. A Health Physics representative will accompany potentially contaminated victims to any off-site treatment facility.

The Windsor Site Emergency Procedures contain instructions for the specific emergency teams during the emergency. When the emergency has been controlled, Health Physics will survey the affected area and release it for clean-up or return to normal operations.

6.4 Site Emergency

A site emergency can be initiated in several ways:

a) Sounding of the nuclear alarm (continuously sounding horn), automatically sounded when levels of 5 mr/hr or greater are present at the criticality detector.

b) Sounding of the non-nuclear alarm (continuously ringing bell), automatically sounded or sounded by any personnel cognizant of an actual or impending emergency that may have impact outside of Building #17 or Building #5.

* c) Detection of an airborne radioactive particulate release of 25 µCi or greater averaged over a 24-hour period.

Examples of Site Emergencies are:

- Criticality accident
- Major fire or explosion
- * Release of 25 µCi or greater or airborne radioactive particulates into CE Windsor site environs averaged over a 24-hour period.

The non-nuclear alarm is usually sounded to designate a plant emergency. At the discretion of the Emergency Director, a site emergency may be declared in accordance with the criteria discussed in Section 4.4. At this time, personnel are instructed to further evacuate to the designated Emergency Assembly Areas. The emergency actions are then directed and any necessary off-site notifications made from the Emergency Control Center.

6.4 Site Emergency (Cont'd)

Exposures during subsequent re-entry operations will be limited. Specific instructions, based on actual equipment or process involved, will be issued to minimize the possibility of causing additional criticality excursions.

Allowed exposure for any individual will be kept as low as reasonably achievable. However, doses in excess of the legal limits are permissible in emergency situations during or immediately after an accident. The justification for this is the rescue of individuals, the prevention of exposure of a large number of people, or the savings of a valuable installation. In an emergency where life saving actions are needed, the guidelines listed below will be followed.

1) Rescue personnel will be informed of the risks involved before they accept such exposures.
2) Permissible dose to the whole body will not exceed 100 rems.
3) Other factors being equal, volunteers over the age of 45 will be selected.

The emergency actions requiring less urgent response, the permissible whole body dose will not exceed 25 rems.

Time-of-stay during re-entry shall be limited. Such time-of-stay will commence upon penetrating beyond the 100 mr/hr boundary and terminated upon recrossing it while exiting.

No personnel are allowed to re-enter the affected plant areas unless authorized by the Emergency Director.

Prior to start-up after a site emergency, the plant will be returned to a safe condition. Spills will be cleaned up and no radiation levels in excess of normal operating levels as specified in the SNM-1067 license will be present.

* Radiological and nonradiological monitoring will be conducted as appropriate for a noncriticality site emergency.

APPENDIX

EMERGENCY PROCEDURES

The following is a listing of written emergency procedures which implement the NFM- Windsor Emergency Plan:

1.0 Immediate Action Procedures

- 1.1 Reporting the Emergency
- 1.2 Personnel Emergency
- 1.3 Emergency Alert
- 1.4 Plant Emergency (Non-Nuclear Alarm Activation)
- 1.5 Site Emergency (Nuclear and Non-Nuclear Alarm Activation)
- 1.6 Evacuation (Routes & Assembly Areas)

2.0 Emergency Action Procedures

- 2.1 Notification of Key Personnel

  (Emergency Communications System)
  a) Day Shift
  b) Evening and Night Shifts
  c) All Other Times
- 2.2 Site Call-In List
- 2.3 ReEntry & Rescue
- 2.4 Confimation of Criticality
- 2.5 Handling of Injured Personnel (Obtaining Medical Assistance)
- 2.6 Notification of Off-Site Agencies
- 2.7 Monitoring of Personnel Following a Nuclear Accident
- 2.8 Handling of Contaminated Victims (Personnel Decontamination)
- 2.9 Firefighting
- * 2.10 Industrial Hygiene

3.0 Assessment Procedures

- 3.1 Magnitude of Off-Site release
- 3.2 Nuclear Accident Dosimetry
- 3.3 Neutron Dose Estimates
- 3.4 Environmental Sampling
- 3.5 Recovery & Decontamination
- 3.6 Press Releases

4.0 Special Procedures

- 4.1 Bomb Threat
- 4.2 Discovery of a Potentially Destructive Device
- 4.3 Method of Handling Multiple Casualties
- 4.4 Civil Disobedience and Disorder

4.0 SPECTRUM OF EMERGENCY CONDITIONS

Section 6 of NFM-Windsor's Environmental Impact Information evaluates the consequences of all credible accidents. In all cases examined, the probability of a major accident was found to be extremely low. This low probability is derived from the fact that: 1) all process equipment is designed to incorporate permanently engineered safeguards; 2) strict administrative control of production processes is maintained; 3) the double contingency principle is adhered to in the preparation of safety evaluations; and 4) generous safety factors are included in all facility limits.

A classification system has been employed, however, which covers the entire spectrum of possible emergency situations regardless of the probability of their occurrence.

This section of the Emergency Plan describes how the spectrum of postulated accidents are encompassed within the emergency characterization classes. Each class defined is associated with a particular set of immediate actions to be taken to cope with the situation. These actions are described in Section 6.

It should be noted that various classes of accidents require a graded scale of responses, which form the basis for the classification system. Also, a small problem, such as a fire, may increase in severity and therefore move up from one class of accident to another.

4.1 Personnel Emergency

This class involves accidents and occurrences on-site in which emergency treatment of one or more individuals is required. It includes those situations that have no potential for escalation to more severe emergency conditions. There may be no effect on the facility, and immediate operator action to alter facility status is not necessarily required. A personnel emergency does not activate the entire emergency organization, but may activate teams such as the first aid team. It may also require special local services such as ambulance and medical. Emergencies in this class can reasonably be expected to occur during the life of the plant.