ASSOCIATION VINÇOTTE -1640 RHODE-SAINT-GENESE - BELGIUM.
Association sans but lucratif
Contrôles - Réceptions - Expertises
Rhode-Saint-Genèse

Téléphone : (02) 58 35 80
Télex : (02) 225 50
Chèques Postaux : 377 02
Société Générale de Banque : 78 222
Banque de Bruxelles : A. 02/2165
Banque de Paris et des Pays-Bas : 30635

DÉPARTEMENT SÉCURITÉ NUCLÉAIRE

October 14, 1971.

Dr. Clifford K. BECK
Deputy Director of Regulation
U.S. ATOMIC ENERGY COMMISSION

U.S.A. - WASHINGTON D.C. 20545.

Nuclear Safety 02/017.

223

Dear Dr. Beck,

I received on october 5 the letter dated september 13, 1971, and signed by Dr. Stephen D. Hanauer, in your absence at Geneva where we met.

I am deeply impressed by the attention your staff provided to my concerns, in the midst of your ECCS review. For this, and for our amiable conversation in Geneva, I reiterate my expression of continued gratitude.

Please find hereunder the information requested by your letter; it concerns one Doel unit:

- reactor type : Westinghouse P.W.R.,
- reactor power : 1192 MW-th,
- station power : 390 MW-e net,
- number of loops : 2,
- containment free volume : 43,000 m^3,
- purging rate (2 alternate motors for one inlet ventilator, 2 alternate motors for one outlet ventilator) : 60,000 or 150,000 m^3/hour,
- purging valves closure time (2 valves per duct) : 2 seconds, (plus 1 valve per duct for secondary containment, closing automatically at a later presently unavailable time),
- safety injection and containment closure and containment full internal ventilation, high containment pressure set point : 0.29 kg/cm^2eff= 4.1 psig (2 out of 3 system),
- containment spray, high containment pressure set point : 1.45 kg/cm^2eff = 20.6 psig (2 out of 3 system, fully independant from system above),

./.. A

Nuclear Safety 02/017.

- containment closure, high radioactivity set point : not available (1 out of 1 system for radioactive gases, 1 out of 1 system for radioactive dust).

I do hope that the present unavailability of the high radioactivity set point shall not preclude your examination of our problem. Indeed, if the loss-of-coolant accident originating in the vapor portion of the pressurizer, should occur at hot shut-down, while the containment is being purged at full flow, it appears that

- the high radioactivity signal could be a single 1 out of 1 system to close the containment building, allow the pressure to rise, and finally generate the safety injection signal;
- the initial radioactivity in the containment atmosphere and in the primary water could be low, hence delaying the containment closure until fission products start escaping.

Indeed I should be obliged if you would care to specify the set point.

The questions I raised in my previous letters are as follows :

1. Is the present situation acceptable, in view of the postulated loss-of-coolant accident originating in the vapor portion of the pressurizer ?

2. If not, would you suggest a solution, such as a safety injection and containment closure signal, to supplement the low level signal in the coïncident pressurizer low-pressure-low-level signal (a high level signal may not be adequate, as indicated in my letter of june 25, 1971) ?

3. In the examination of this postulated accident, should a larger breach than a rupture of the largest connecting pipe be assumed ? A man-way is provided on top of the pressurizer.

I would take advantage of your continued cooperation to raise a further question, which is presently under discussion here. This question is related to a loss-of-coolant accident originating anywhere in the primary circuit.

./..

Nuclear Safety 02/017.

4. Since there does not seem to be any fundamental difference between a loss-of-coolant accident occurring at hot shut-down, and a loss-of-coolant accident occurring at full reactor power : should containment purging be prohibited while the reactor is at power ? If not, would you provide an explanation ?

I thank you much again, and remain,

Sincerely yours

H. DOPCHIE
Directeur.