

Supplementary Testimony of Sherwood Davies,
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Q1. Are you familiar with the question asked by Dr. Briggs on March 21, 1971, transcript page 685, to wit:

"In connection with the emergency plans, there are procedures that are to be followed in the event of an emergency. These are procedures that have been provided by the Applicant and others provided by the State of New York. If the Applicant has analyzed an accident, one that would involve extensive threat of radioactivity such as the State of New York to be called in, we would like there to be some discussion of the accident and the time that is involved.

Certainly the amounts of time required to notify people and take measurements. I have seen no description of a typical accident; I should call it an accident that is not typical, one that involves a considerable threat of radioactivity, and the time allowed for carrying out these operations according to the Staff's safety analysis; within two hours at the site boundary one could approach the 10 CFR Part 100 limits under certain conditions and 12 hours seems to be a fairly short time to carry out all of the emergency actions called for in the emergency plan.

We would like to have some discussion about the kind of accidents that have been analyzed and the amount of time considered to be available for carrying out these plans and how they compare with this two-hour business at the site boundary."?

A1. Yes, I am.

Q2. Would you please answer this question from the standpoint of the State's Emergency response?

A2. To adequately respond to the question - to give not only timing estimates but also an outline of the activities to be carried on - will require a multi-part response.

The basic parts of the timing estimates (as they relate to State activities) involve the period required for notification, the period required for assessment and the period required to commence response actions.

I. Notification

In the event that a serious accident occurs, Consolidated Edison is to notify the State Warning Point. The Warning Point at the State Emergency Operating Center is manned 24 hours a day and has multiple incoming lines. The operator at the EOC has instructions to obtain information regarding time of incident, estimate of activity released or that may be released, wind speed, wind direction, etc., and to obtain a return call phone number for verification. The operator has instructions to contact a list of Health Department officials.

The contacted Health official is then to return the call to the Con Edison contact number (the number given to the EOC operator) for verification of the information and to obtain the available information to give a rough appreciation of the magnitude of the occurrence. (He would obtain as much information as is then available but at least information concerning: does the accident result from a primary system rupture or is it a gas puff type release or a water release to the river; do the safeguards appear to be operating; is there any estimate of the amount of release or of the off site doses.)

It is estimated that from the time a call is made to the Warning Point until an official of the Health Department is contacted and returns the call to verify the alarm and to obtain necessary information would take during work hours some 10 to 15 minutes and at the outside one to one and a half hours during non-working hours.

II. Assessment and Prompt Actions

Substantial Releases - specific response actions have been assessed for accidents ranging up to substantial releases resulting in two hour site-boundary doses up to about 30 rad to the thyroid from inhalation.

For an accident this large, primary actions would include:

- 1) Controlled access to the site along Bleakley Avenue and along Broadway.
- 2) Local police notification (bull horn) of the people living along Bleakley Avenue to remain indoors with windows closed.

The need for these actions can be assessed promptly and would be recommended promptly to the Commissioner of Health by the key health official notified at any time day or night from home. It is estimated that it would take some 30 minutes after the key health official obtained necessary information to initiate such actions. This includes the time necessary to contact the Commissioner or his on-duty deputy; to make recommendations to the Commissioner, for the Commissioner to authorize institution of these protective actions; for contacting State Police Radio Network and for State and local police to institute these protective actions.

The time at which subsequent protective actions could be taken would depend on whether the accident occurred during working hours, in which event such actions could be initiated in about 30-60 minutes after verification. If the accident occurred after working hours, these additional actions would be directed from the State

Emergency Operating Center, where there is adequate communications. In this event, there would be required an additional amount of time needed for key officials to gather at the Emergency Operating Center. It is estimated that this would entail from 30 minutes to a maximum of about 1 1/2 hours.

These subsequent actions would include:

- 1) Notification of appropriate local officials
- 2) Notification and advice to school and hospital authorities
- 3) Public notice via radio (TV, etc.) informing the public of the situation and advising them
- 4) Notification to dairy farmers within 20-30 miles (or less depending on wind conditions, etc.) and advise to remove cows from pasture (in order to protect milk supply).

All of the foregoing actions could be taken within one hour from the time the accident is verified if the accident occurs during working hours and within two hours from the time the accident is verified if the accident occurs during non-working hours.

Smaller Accidents - for severe accidents (primary system failures) with smaller off site consequences, or for lesser accidents with lesser off site consequences, the same series of prompt protective actions would be considered for any accidents where off site consequences were more than a few rem (3 rem thyroid at site boundary for two hours). For these smaller accidents the need for each of the prompt protective actions would be considered in light of the estimated effects of the accident.

Protective Actions After the First Few Hours (Monitoring) - protective actions after the first few hours (or in the event of the smaller accidents which pose no eminent hazard) would be based upon measurements of activity actually released or actually found in the environment.

Consequently, one of the first actions taken by the State after receipt of notice that an accident has taken place would be to alert agencies with portable monitoring ability to marshal such forces and start taking measurements under the direction of the State Health Department. These would include measurements not only of airborne activity, but would include evaluation of deposition on pasture and land surfaces, radiological analyses

of lakes, reservoirs and water courses used as source of water supply. This would continue for some time, including milk monitoring at processing plants and/or farms for some period (weeks) thereafter.

It is estimated that from State sources alone, at least 15 professionals with portable equipment would be available for field monitoring and/or assessment. The necessary logistical support would be available from many State sources.

III. Very Severe Accidents

In developing emergency response plans we initially considered protective measures, as outlined in the Commission's Siting Guides (10 CFR 100) - which includes consideration of protection of people within the low population zone if necessary. We recognized that such actions could readily be accomplished, considering the limited number of people in this zone (some 20 houses). However, we felt that the doses at which protective action should be considered are substantially lower than those set forth in Part 100 (e.g. protective actions for I₁₃₁ exposure should be considered or taken in the range of 10-30 rad).

On the other hand, the off site doses computed for the largest design basis accident appeared unrealistically high and that the assumptions upon which such computations were based seemed to assume far too little effectiveness for the various safety features within the plant.

We discussed this with the applicant and received his judgment that the off site consequences of accidents from the facility would be significantly less than Part 100 values.

We also discussed the matter with the USAEC regulatory staff. In these discussions, the Commission concurred with our belief that action should be taken at exposures well below 300 rem thyroid and that the consequences of accidents at the facility would be substantially below those used in calculational siting models for Part 100. The staff indicated that the degree of conservatism of the assumptions for calculating the potential consequences of the design basis accidents described in Safety Analysis Reports provide a high degree of assurance that such improbable accidents, should one occur, will be significantly less severe, probably by a factor greater than ten, than those determined in accordance with the conservative methods and models used.

Thus the USAEC has indicated that emergency planning based upon limiting doses to 30 rem thyroid or less in the event of accidents where off site consequences extend to 10% of the consequence of the calculational models used for the largest design basis accidents, provide a prudent basis for an emergency program. Such a program results in the same scope of protection to the people within the low population zone as would be provided by use of the

guide numbers of Part 100, but provides a more realistic and meaningful program of detailed response for consequences beyond the low population zone.

Accordingly, the State's program for response to emergencies includes preplanned protective measures for limiting dose to 30 rem thyroid or less for major accidents having off site consequences up to 10% of the theoretical consequences of the design basis accident. The State's program also includes arrangements for bringing the State's large-scale general emergency response capacity to bear in the event that actual conditions prevailing at the time of an accident were to indicate that such consequences would be exceeded.

The timing estimates in this portion are based upon bringing such capacity into operation in the event of a hypothetical accident with offsite consequences approaching Part 100 values.

For such an accident, the objective of emergency action would be the same as set forth in the Emergency Plan, to minimize radiation exposure to the population.

The key Health official would immediately (from home or office at any time of day or night) inform the Commissioner of Health or his on-duty deputy and recommend that he immediately take charge of emergency actions and request that the State's Disaster Coordinator (Commissioner of Transportation) obtain all possible assistance from all State agencies.

Command facilities including multiple communications channels (phone lines, etc.) are available at the EOC and emergency operations would be directed from that point.

It is estimated to take from 15 to 30 minutes (working hours or one to one and one half hours non-working hours) from the time that the key health official obtained information of the very severe event until the authorized responsible officials of the various agencies are assembled at the EOC. Within some 30 minutes thereafter, a public notice could be issued via radio, television, etc. informing the public of the accident and issuing protective action instructions. At the EOC are facilities of the New York State Emergency Radio Network composed of 33 commercial broadcast facilities. This network is tested daily and can be activated by the Governor in the event of an

emergency to enable the Governor or his designee to make an emergency public announcement via these stations from any point in the State.

While officials are being assembled at EOC, State and local police would be contacted and on-the-spot notice (via bull horns) would begin. Movement of the people in the low population zone would begin.

Subsequent actions including evacuation (if necessary), identification of specific temporary shelters (armories), obtaining emergency medical assistance (primarily non-radiological first aid) would depend upon the specific conditions existing at the time.

In summary, in the event of a hypothetical accident where off site consequences approached Part 100 values it is estimated that from the time of notification of the Warning Point until the time full emergency command operations are established and a public warning is issued would take from 45 minutes to 1 hour during working hours or from two to three hours during non-working hours.

Movement of the people in the low population zone would have been undertaken before this time - about one half to one hour after Notification of the Warning Point.

Q3. Are you familiar with the question asked by Dr. Geyer on March 24, 1971, transcript p. 688, to wit: "Emergencies don't necessarily happen when the weather is fine and everybody is home listening to the telephone so that the question of backup and organizational changes that are required because people aren't available or communication isn't just what is expected to be, might be discussed in some detail.

The plan looks like a good one and it is quite elaborate if everything works out as it is expected to in that plan. But if it doesn't work out, what then happens?"

A3. Yes, I am.

Q4. Would you please answer this question from the standpoint of the State's emergency response?

A4. The Warning Point phone at the State Emergency Operating Center has multiple incoming lines and is manned on a twenty-four hours continuous basis by an employee of the Division of State Police.

The officer on duty has available a list of home and office numbers of four members of the Bureau of Radiological Health, three members of other bureaus in the Department of Health, a list of the home numbers for the Commissioner and Deputy Commissioners of Health, a list of office and home phone numbers of five other Technical Resource Personnel of other Departments.

In addition, the Disaster Coordination group within the Department of Transportation maintains a duty roster with an executive official on call at all times from the Warning Point.

In addition to personnel backup, the communications system is also backed up in depth.

In addition to the multiple incoming telephone lines, the Warning Point is connected to the NAWAS (National Warning System) network. The USAEC is also connected to NAWAS and the State Warning Point can be contacted through NAWAS by the AEC. The Westchester County Parkway Police (Hawthorne Circle), the Peekskill Police (926 Central Street) and the Westchester County Civil Defense Office (County Office Building, White Plains) are also connected to NAWAS. In addition, local State Police stations (Annsville Circle) are connected by radio and teletype to the State Police Headquarters in Albany, which is also in the same building with the Warning Point.

Q5. Are you familiar with a document entitled "Statement of Proposed Factual Findings with References to Supporting Data Submitted by the Citizens Committee for the Protection of the Environment" submitted by Citizens Committee by a letter of June 4, 1971?

A5. I have read the document with particular interest in those portions relating to the State Emergency Plan. (Pages 13 and 14).

Q6. Are you familiar with the allegation that the State Emergency Plan is deficient in that there is no discussion of precise safety measures to be taken by the public or a program of training for the public in the use of these methods?

A6. Yes, I am familiar with that allegation.

Q7. Do you agree with this allegation? And briefly give your reasons.

A7. No, I do not agree with this allegation.

Citizens Committee apparently misunderstands the function of the State Emergency Plan. The Emergency Plan is not and was not intended to describe the precise actions that will be taken to protect the public.

The Emergency Plan provides the overall framework for providing emergency response by the State to major radiation accidents. The response actions to be taken would be determined, as provided in the plan, under authority of the Commissioner of Health, based upon the nature and scope of the accident which has occurred and upon other salient factors existing at the time of the accident.

The Emergency Plan provides the framework, procedures and principles to be applied by the State in determining actions to be taken in the event of a major radiation accident. Information needed to determine specific response actions has been compiled for the facility location and specific consideration has been given to response actions that may be required to be carried out promptly in the event of a major accident.

With respect to public training, the Emergency Plan does not rely upon the need for sophisticated self protective actions

by the public for which public training is required. Such actions as may be desired to be taken by the public for its immediate protection, may include staying indoors and closing windows and turning off ventilation upon notice to do so by public officials or public broadcast, or the direction to temporarily relocate from limited areas upon notice to do so by public officials or public broadcast and in such case to follow traffic instructions.

Q8. Are you familiar with the allegation that the State's Emergency Plan is deficient in that there is no evacuation plan and no public information with regard to the use of such a plan?

A8. Yes, I am familiar with that allegation.

Q9. Do you agree with this allegation? And briefly give your reasons.

A9. No, I do not agree with this allegation. There are no preplanned evacuation procedures, because there is no need for such preplanned procedures.

For the range of accident consequences for which preplanned responses have been assessed, the off site radiological consequences and the "dose savings" that could be accomplished would not warrant movement of people beyond those in the low population zone.

For the 20 houses in the low population zone, the dose savings resulting from remaining indoors with the windows closed for 2-4 hours provides more radiological protection than movement, particularly if inclement weather, etc. would subject such persons to substantial hazard in attempting to evacuate.

However, this limited number of people can readily be moved for a short period (a few hours) if the key health officials decide that this would be desirable.

We have not preplanned responses to very severe accidents approaching Part 100 values. The basis for this is outlined above (Answer 2, Part III).

For these cases, the State's general emergency response capacity would be brought to bear.

In this event, evacuation of people could be undertaken under control and supervision of State and local police located nearby. In view of the large number of good highways in this area, which provide rapid access north, south and east, a substantial number of people could be evacuated readily.

Q10. Are you familiar with the allegation that the State Emergency Plan is deficient in that there is no system which will guarantee warnings to all members of the public within a short time after the emergency and no program to train those responsible for giving warnings in order to prevent panic from such announcements?

A10. Yes, I am familiar with the allegation.

Q11. Do you agree with it? And briefly give your reasons.

A11. No, I do not agree with that allegation.

This is incorrect as regards the State.

Public warnings via radio broadcast will be provided through State Department of Health officials using available communications facilities. These include, in the event of a serious emergency, the use of the State Emergency Broadcast Network described above.

To assure actual notice, supplementing radio broadcast, to nearby residents - those most immediately affected - local police would provide an on-the-spot alert via bull horns.

No specific program of training in the subject of providing public notice or warnings is felt necessary. The officials of the State Department of Health, Public Information Office, have adequate background so that such training is felt unnecessary.

Q12. Are you familiar with the allegation that the State Emergency Plan is deficient in that it fails to reveal the precise conditions under which it will go into effect?

A12. Yes, I am familiar with this allegation.

Q13. Do you agree with it? And briefly give your reasons.

A13. No, I do not agree with this allegation.

The "Plan" will go into effect upon notification to the State Warning Point by the facility operator that a major radiation accident has occurred. The State has requested, and Consolidated Edison has agreed, that Con Ed will notify the State Warning Point as soon as a "site contingency" occurs.

Upon such notification, the State Warning Point will contact officials of the State Health Department, and such officials will verify the occurrence of the accident, obtain information as to the magnitude of the accident, assess the needs for protective action, and make recommendations for action directives to the Commissioner of Health, under whose authority and direction such protective actions, as may be required, would be carried out.

Q14. Are you familiar with the allegation that the State Emergency Plan is deficient in that there are no provisions for supplemental food or water supplies or control of shipment of contaminated products?

A14. Yes, I am familiar with this allegation.

Q15. Do you agree with it? And briefly give your reasons.

A15. No, I do not agree with this allegation.

While contamination of locally grown food products primarily leafy green vegetables would be evaluated and protective action taken with respect to nearby items found contaminated,

supplemental food supply would be necessary only for events resulting in widespread contamination of a food supply.

The State Emergency Plan does not preplan responses for such events (which would substantially exceed Part 100 values). The basis for this is outlined above (Answer 2, Part III).

Nonetheless, as part of the State's general emergency response capacity, supplementary food supplies would be available through the natural disaster officials from sources including the U.S. Department of Agriculture, the Red Cross.

The primary food supply of concern would be the milk supply, because of the "concentration" factor of the air-grass-cow-milk cycle. The Emergency Plan calls for protection of this supply by prompt widespread notification (by radio broadcast) to dairy farmers for some distance from the facility to remove cows from pasture and utilize stored feed.

This would protect the cow and its milk production from contamination and result in minimizing damage to the milk supply. Of course, processing plants would be monitored for some time after the event to assure that contaminated milk did not get through to consumers. Aerial surveillance would be undertaken to evaluate the extent of pasture and land contamination.

Water supplies would be among the very first items monitored for determination of contamination in the event of an accident. Use of a water supply that would be permitted would depend on the results of this monitoring. For the range of consequences considered, there would be no need for auxiliary water supplies or for major restrictions on community usage. There might be circumstances under which limited restrictions would be imposed on potable usage for particular younger age groups.