UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY, ET AL.	)	Docket No. 50-289
	)	(Restart)
(Three Mile Island Nuclear Station, Unit 1)	)	
	)	

NRC STAFF TESTIMONY OF DALE E. DONALDSON ON EMERGENCY PLANNING CONTENTIONS

FEBRUARY 9, 1981

OUTLINE

NRC STAFF TESTIMONY OF DALE E. DONALDSON ON EMERGENCY PLANNING CONTENTIONS

This testimony addresses ANGRY Contention IIIA(F) (EP-4D) on the mobilization of offsite health physics support in the accident assessment phase of an emergency at TMI-1. It shows that the initial accident assessment function, including the dispatching of personnel offsite for verification of dose projections, is performed by onsite personnel and that the onsite staffing is adequate to perform this function for the period of time needed for offsite health physics support to arrive.

This testimony also addresses Sholly Contention 9 (EP-18) on the offsite radiation monitoring program. It shows that the licensee has significantly upgraded its offsite monitoring capability and that adequate numbers and types of radiation survey instruments are provided for emergency use. It also indicates, however, that full and final implementation of the program for the maintenance and calibration of emergency portable radiation monitoring equipment and for the training of personnel in its use is not yet completed.

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ON EMERGENCY PLANNING CONTENTIONS

ANGRY CONTENTION IIIA(F) (EP-4D)
SHOLLY CONTENTION 9 (EP-18)

Q.1. State your name and position with the NRC.

A. My name is Dale E. Donaldson. I am a Radiation Specialist assigned to the Region I Office of Inspection and Enforcement, Emergency Planning Section.

Q.2. Have you prepared a statement of professional qualifications?

A. Yes. A copy is attached to this testimony.

Q.3. State the nature of the responsibilities that you have had with respect to the Three Mile Island Nuclear Generating Station, Unit 1 (TMI-1).

A. My primary involvement has been the inspection of the licensee's implementation of the Emergency Plan. This involved reviews and evaluations in the areas of the emergency organization, emergency

facilities and equipment, implementing procedures, coordination with offsite agencies, drills and exercises, training and management overview.

Q.4. You stated that you review and evaluate implementation of the licensee's Emergency Plan. Do you also review and evaluate the Emergency Plan itself?

A. The primary responsibility for review and evaluation of the Emergency Plan rests with the Project Managers in the Headquarters, Inspection and Enforcement, Division of Emergency Preparedness. The Project Manager for the Three Mile Island site requested that I review the Three Mile Island Unit 1 Plan on two occasions. The first review was of the licensee's initial submittal which was prepared prior to the issuance of NUREG-0654. The second review was of a subsequent revision that was prepared to incorporate the guidance contained in NUREG-0654. In addition, I provided input for, and reviewed the Staff's Safety Evaluation Report on the status of Emergency Preparedness for TMI-1.

Q.5. What is the purpose of your testimony?

A. My testimony supplements that of Mr. Chesnut and others from the Headquarters Division of Emergency Preparedness. Whereas their testimony involves adequacy of the Emergency Plan, my testimony addresses adequacy of the licensee's implementation of the Emergency Plan.

Q.6. What is the distinction between the Emergency Plan and Implementation of the Plan?

A. There are some very important differences between the Emergency Plan and its implementation, the most important difference being that the Plan is not a working document, but rather a general presentation of concept. The Plan describes important considerations and response objectives as well as the rationale behind the objectives. It does not contain detail that is subject to change such as names, telephone numbers, specific items of equipment or step-by-step procedures.

Implementation involves the detailed translation of the general planning considerations and response objectives into a workable system. This is accomplished, in part, through the development of Emergency Plan Implementating Procedures which describe, in detail, what, when, how and by whom actions are performed to meet the Emergency Plan's stated concepts and objectives. Implementation review, therefore, involves extensive review of the details related to the maintenance of a readiness posture as well as the workability and useability of the response scheme described in the Emergency Plan which would be implemented in the event of an emergency. It involves first-hand inspection of the actual equipment, facilities, procedures and people at the site. Simply stated, implementation review involves a determination that the licensee is doing or can do what the Emergency Plan says they are or can.

Essentially, once the Emergency Plan is written and approved, how well the licensee implements the Plan comes to the forefront and is the

real determinant of the effectiveness of the response program. The plan is, therefore, a licensing document which represents requirements. The review of the Plan is essentially a "paper" review to insure that all important planning considerations have been addressed.

Q.7. Upon what are you basing your testimony?

A. My testimony is based on the findings of a two-week evaluation of the licensee's implementation status conducted from July 28 through August 8, 1980 as part of the NRC Health Physics Appraisal Program.

Q.8. Would you briefly summarize the status of the licensee's planning at that time based on your findings.

A. At the time of the review, the licensee had not yet received final NRC approval of the Emergency Plan written to conform to the guidelines of NUREG-0654. Consequently, the licensee was still finalizing many aspects of implementation. This did not, however, preclude an implementation review since the remaining shortcomings in the Plan were relatively few in number. My findings were used by the Division of Emergency Preparedness in the evaluation of the NUREG-0654 Plan submittal and in preparation of the Staff SER on emergency planning.

Q.9. What specific contentions do you address in this testimony?

A. My testimony addresses ANGRY Contention III.A(F) (EP-4D) and Sholly Contention 9 (EP-18).

PROTECTIVE ACTION DECISIONS

ANGRY III.A.F (EP-4D)

Q.10. ANGRY Contention III.A(F) (EP-4D) states:

> The licensee's Onsite Emergency Organization (Sec. 4.5.1.3) contains insufficient personnel and expertise in the area of Health Physics to discharge adequately the responsibilities of dose assessment and projection in the event of a rapidly developing accident sequence. The time required for the mobilization of offsite health physics support (2-4 hours, -See Table 8), which is given responsibility for "overall assessment of the impact of liquid and gaseous effluents with respect to ... protective action guides" (p. 5-12), is inconsistent with adequate radiological assessment capability.

Who in the licensee's emergency organization is assigned responsibility for performing offsite dose assessment?

A. Initially, it is the responsibility of the Radiological Assessment Coordinator. Subsequently, when the onsite organization has been augmented, the responsibility shifts to the Environmental Assessment Coordinator.

Q.11. Are the titles Radiological Assessment Coordinator and Environmental Assessment Coordinator unique to certain individual(s)?

A. No. These are generic, functional titles given to positions in the emergency organization. In that sense they are unique to the emergency organization, but not to specific individuals or groups of individuals.

Q.12. Has the licensee designated people to fill these two positions in the emergency organization?

A. Yes, however, at the time of my evaluation, the designation was not clear. One of the findings resulting from my evaluation of the licensee's implementation related specifically to the need for clarification of the assignment of individuals to the functional areas of emergency activity by normal duty title or position. Since my evaluation, the licensee has developed an Emergency Duty Roster System and submitted revisions to the Emergency Plan to clarify these assignments.

Q.13. The licensee's emergency plan indicates that 2-4 hours will be required for the mobilization of offsite health physics support. What effect will this have on the licensee's assessment capability?

A. No adverse effect will result from the 2-4 hour period required to mobilize offsite health physics support. Initially, as mentioned previously, radiological assessment is performed by the person on the Emergency Duty Roster filling the Radiological Assessment Coordinator Position. This initial assessment is based on installed effluent instrumentation and enables the licensee to project offsite radiological consequences within minutes of emergency declaration. These initial projections are made available to offsite authorities, namely the Pennsylvania Bureau of Radiation Protection, which, in turn, evaluates the information in comparison with Protective Action Guides.

Subsequent to the initial projections based on installed effluent instrumentation, the licensee has provisions for dispatching up to four environmental radiation survey teams. Their purpose is to perform onsite and offsite verification surveys. Results obtained from their survey efforts are evaluated in conjunction with the initial projections of radiological consequences under the direction of the Radiological Assessment Coordinator. Consequently, the information from these survey teams represents a confirmation and refinement of the initial projections based on the installed instrumentation. Both aspects of the environmental radiation assessment, i.e., the initial projections and actual environmental radiation and air surveys, can be accomplished by the onsite emergency organization. Offsite health physics support referred to in the contention is intended to provide replacement personnel and backup support functions, such as dosimetry and trend evaluation, to the in-plant aspects of radiation protection. The licensee's Environmental Assessment Group is also available to augment the onsite emergency organization in the area of environmental radiological assessment. During periods of minimal staffing such as backshifts and weekends, 2-4 hours may be required before this augmentation group is in place. When it is in place, the overall command and control of the environmental radiological assessment activity shifts to that group, thus freeing the onsite emergency organization to concentrate on assessment of in-plant radiological conditions.

The concept of operations adopted by the licensee for performing environmental radiological assessment is acceptable and, in fact,

substantially improved over the previous concept in that there are clear provisions for augmentation of the onsite organization in the area of environmental monitoring should the nature of the emergency require it.

Augmentation by offsite health physics support can be likened to the response of fire departments. If a house catches fire, the first company to respond is the one in whose district the house is located. If the fire is large or stubborn and requires relief for the primary company, additional companies may be called in to augment the first, thereby providing periods of rest for the primary responding company or additional equipment or support services of a non-critical nature. It would be impractical for all fire companies within a mutual aid district to respond to every fire immediately and automatically. It would create coordination problems. Rather, response is in a controlled, phased manner. The same is true of the licensee's method for augmenting health physics functions. The onsite organization is fully capable of performing radiological assessment activities for periods far in excess of the 4-hour maximum time estimated for full augmentation to occur.

RADIATION MONITORING

SHOLLY 9 (EP-18)

Q.14. Sholly Contention 9 (EP-18) states:

> It is contended that the licensee's environmental radiation monitoring program contains an insufficient number of monitoring sites and an inadequate distribution of monitoring sites within twenty miles of the Unit 1 site to provide sufficient protection of the

public health and safety. It is further contended that there is in the licensee's environmental radiation monitoring program an unwarranted reliance on the use of thermoluminescent dosimeters (TLDs) for providing information used to calculate radiation exposure data, and that this unwarranted reliance on TLDs seriously underestimates radiation doses to the public. It is also contended that the licensee does not possess adequate portable radiation monitors to provide additional information in the event of an offsite radiation release, and that the licensee does not exercise adequate administrative control over the maintenance of these units, nor the training of personnel in their use. It is contended that the radiation monitoring program of the licensee must be greatly upgraded prior to restart to ensure adequate protection of the public health and safety.

How many offsite monitoring locations does the licensee have?

A. For initial offsite monitoring performed by teams, there are an unlimited number of offsite monitoring locations since teams are dispatched to sampling locations which are selected based on wind direction and atmospheric stability conditions. This is a basic advantage of using a team approach in initial offsite monitoring as opposed to fixed stations. The teams are mobile. In addition to the teams, the licensee has 90 offsite environmental TLD locations and 8 offsite fixed air-sampling stations. These are in addition to the 59 TLD locations which the NRC has established around the facility. The specific locations of the licensee's TLD and fixed air monitoring stations are set forth in the Tables, provided by the licensee, which are attached to this testimony.

Q.15. What is the intended use of these TLD and air sampling sites in an emergency?

A. The environmental air sampling and TLD stations are an academic "after-the-fact" form of monitoring. They would be primarily used to corroborate the environmental surveys performed by the teams and the dose projections made based on the team readings and release rate calculations. In this sense they will give a picture of the integrated radiation dose to the population.

Q.16. What role do the TLDs play in projecting doses to the public for the purpose of recommending protective actions?

A. TLDs will not be used or relied upon for dose projection or protective action recommendations. Plant status, release rates, meteorological data and actual field measurements by survey teams will be the prime sources of data which provide the bases for projecting and estimating doses to the public during the response phase of an emergency. TLD results would be important for refining calculations of doses to the population and in this sense their value to the emergency response phase is purely academic. There may be a case where low level releases occur for a longer period of time. In such a case TLD results may be helpful in projecting or detecting a long-term exposure problem but that does not encompass a situation in which prompt emergency response during the course of an accident is required. For the shorter duration emergencies exhibiting high level releases over a short period of time, they are of little value and are not relied

upon for dose projections or the assessment of required emergency actions.

Q.17. With regard to the use of TLDs to determine the actual exposure to the public resulting from an accidental release, does the licensee place unwarranted reliance on the use of the TLDs to determine this exposure?

A. No. The use of TLDs in conjunction with other readily available data (field surveys and liquid, particulate and gaseous effluent analyses) have been demonstrated to be effective devices for quantifying radiation doses to persons in the offsite environment. The TLDs presently used by the licensee are the same type as those that were in use at the time of the TMI-2 accident (Teledyne, $CaSO_4$:Dy), although there are many more locations now. In addition, the licensee is evaluating a new type of dosimeter, the Panasonic, model UD801A. This TLD incorporates two different types of TLD material and three types of filters to aid in the identification of radiation types (i.e., beta or gamma) and, by application of a computer algorithum, the dose received by the badge. The 90 TLD stations, as operated by the licensee in the locations and distribution shown in the attached Tables, are sufficient in number and location to quantify doses to the environment. The licensee also participates in the USDOE sponsored International Dosimeter Intercomparisons which provide one measure of dosimeter precision in comparison to those used by many facilities world-wide. No single component in any

licensee's environmental monitoring program is sufficient to allow a complete characterization of the radiation dose to the population. However, the combination of TLD data with other known parameters (i.e., air monitoring, liquid effluents, radioanalysis of biota, fuel, and power history) does allow a valid determination of population doses.

Q.18. The Commission's August 9, 1979 Order on restart of TMI-1 directed, among other things, that the licensee "upgrade offsite monitoring capability, including additional thermoluminescent dosimeters or equivalent." (Order item 3(c)). What are your views as to the licensee's compliance with this directive?

A. In my view, the licensee has significantly upgraded its offsite monitoring capability and has complied with this Commission directive.

Q.19. Sholly Contention 9 also alleges that the licensee does not possess adequate portable radiation monitors and that there is inadequate administrative control over the maintenance of the monitors and training of personnel in their use. Approximately how many portable radiation survey devices does the licensee have available onsite which are set aside for emergency use?

A. According to a draft procedure inventory listing, about 75 instruments will be set aside in kits for emergency use only. This equipment will consist of 25 air samplers, 25 dose rate meters, 20 beta/gamma survey meters and 5 dual-channel analyzers. This equipment is configured to

support in-plant radiation protection and emergency onsite and offsite environmental monitoring.

Q.20. What, if any, other sources of instruments are available?

A. In addition to those 75 instruments set aside for emergency use, the licensee has about 625 more instruments available onsite that are in day-to-day use which may be drawn upon to supplement or replace emergency stocks. The licensee also has arrangements with other utilities, as described in the Emergency Plan, which could provide additional instruments if necessary.

Q.21. Are the numbers of instruments available for emergency use adequate to assure that timely offsite surveys can be made?

A. Yes. Of the 75 instruments, 15 are set aside to support environmental radiation monitoring activities - 5 air samplers, 5 dose rate meters and 5 dual-channel analyzers. This equipment would be adequate to support up to 5 environmental survey teams; however, the licensee will usually dispatch only up to four teams, keeping one kit in reserve.

Q.22. How does the licensee assure that the instruments set aside in emergency reserve are properly maintained and ready for use?

A. The licensee has a procedure governing the performance of regularly scheduled inventories, operational checks and calibrations.

Q.23. What was your evaluation as to the adequacy for the licensee's provisions in this regard?

A. The only basis I had to evaluate this was a draft procedure. This, in conjunction with the fact that all emergency instrumentation had not been placed in accordance with the new plan, caused me to defer evaluation in this area until such time as the equipment placement and procedures have been finalized. I can say that the calibration and maintenance of instruments in the routine program was adequate.

Q.24. Is the training program for use of the instrumentation complete at this time?

A. No.

Q.25. Are you at this time able to provide your final evaluation as to the adequacy of the training of emergency personnel in the use of the portable radiation monitoring equipment?

A. No. This evaluation will be made once the training program has been finalized and emergency personnel have been trained using this program and have participated in a drill.

Q.26. Has the licensee provided sufficient numbers of people to operate the environmental survey equipment?

A. Yes. The details related to this question are presented in the response to ANGRY Contention III.A(F).

Q.27. How would you evaluate the overall emergency environmental monitoring program proposed by the licensee?

A. From the viewpoint of the Emergency Plan, the program appears to have addressed all important aspects. From the standpoint of implementation of the program concepts described in the Plan, the licensee had, at the time of my evaluation, a number of improvements to make in order to complete implementation of the concepts articulated in the Plan. Our followup evaluation of the licensee's revised implementation scheme has not yet been undertaken.

THREE MILE ISLAND FIXED AIR SAMPLING STATIONS

Station Designation	Distance from Site	Azimuth
1S2	.4 mi	0°
5A1	.4 mi	101°
12B1	1.6	253°
1C1	2.6	355°
8C1	2.3	159°
7F1	9.8	127°
9G1	12.6	180°
15G1	13.4	306°

THREE MILE ISLAND TLD PROGRAM - STATION LOCATIONS & DESCRIPTION

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TM-ID-1S2	4	0.4	0	North weather station M&Q - QA M&Q	E, QC
TM-ID-2S2	3 1/2	0.7	23	North bridge M&Q	E
TM-ID-4S2	3 1/4	0.3	71	Top of dike M&Q - QA M&Q	QC
TM-ID-5S2	4	0.2	95	Top of dike M&Q - QA M&Q	QC
TM-ID-8S1	6	0.4	167	Pole 433-ME-T-60 Q	E
TM-ID-9S2	4 1/2	0.8	184	South TMI M&Q	E
TM-ID-10S2	6	0.4	200	Pole #ME-33-T-28 Q	E
TM-ID-11S1	4	0.1	221	Mechanical draft towers M&Q - QA M&Q	QC
TM-ID-13S1	7	0.4	270	Due west on Shelly's Island Q	
TM-ID-14S2	3 1/2	0.4	293	Shelley's Island M&Q	
TM-ID-15S1	6 1/2	0.3	317	Shelley's Island Q	
TM-ID-16S1	4	0.2	340	North boat dock M&Q - QA M&Q	E, QC
TM-ID-3A1	3	0.6	35	Route 441 Q - QA Q	E, QC
TM-ID-4A1	7	0.5	65	Laurel Road M&Q	E

Status: E = ETS location, QC = quality control location, N = new location

M = Monthly
Q = Quarterly
QA = Quality Assurance (RMC)

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TM-ID-5A1	3	0.4	66	Observation Center M&Q - QA M&Q	E, QC
TM-ID-6A1	6	0.5	117	Route 441 on light pole Q	E
TM-ID-7A3	3	0.6	143	Route 441 Q - QA Q	E, QC
TM-ID-11A2	6	0.5	221	Beach Island Q	
TM-ID-16A1	4	0.4	332	Kohr Island M&Q	
TM-ID-10B1	2 1/2	1.1	204	Shelley's Island M&Q	
TM-ID-11B1	6	1.9	227	Route 262 Pole #ME2890, B7722-306 Q	E
TM-ID-12B1	6	1.3	251	Goldsboro Air Station M	E
TM-ID-13B1	7	1.2	265	Goldsboro Marina on light pole Q - QA Q	E, QC
TM-ID-14B1	7	1.4	290	Still House Road on tree Q	E
TM-ID-15B1	6	1.8	304	Still House Road Pole #ME2397NB, 233L-35L Q	E
TM-ID-1C1	4	2.6	0	Middletown substation M&Q	E
TM-ID-8C1	4	2.3	159	Falmouth-Collins substation M&Q - QA M&Q	QC
TM-ID-1E4	6	4.3	3	Vine Street exit from 283, Pole #ME2481-LO Q	E
TM-ID-2E1	6	4.8	18	School House Lane & Miller Road, Pole #ME782-LO Q	E
TM-ID-3E3	6	4.5	46	Kennedy Lane, Pole #74-ME-97 Q	E

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TM-ID-4E5	4	4.9	71	Beagle Road Q	E
TM-ID-5E1	6	4.6	85	N. Market St. (Rt. 230) & Zaeger Road, Pole #PP&L 31084, 830386 Q	E
TM-ID-6E6	6	4.6	115	Amosite Road, .ole #PP&L 31016, 529272 Q	E
TM-ID-7E6	6	4.8	131	Bainbridge Road (Route 241) & Risser Road, Pole #ME825	E
TM-ID-11A2	6	0.5	221	Beach Island Q	
TM-ID-16A1	4	0.4	332	Kohr Island M&Q	
TM-ID-10B1	2 1/2	1.1	204	Shelley's Island M&Q	
TM-ID-11B1	6	1.9	227	Route 262 Pole #ME2290, BK722-306 Q	E
TM-ID-12B1	4	1.3	253	Goldsboro Air Station M	E
TM-ID-13B1	7	1.2	265	Goldsboro Marina or light pole Q - QA Q	E, QC
TM-ID-14B1	7	1.4	290	Still House Road on tree Q	E
TM-ID-15B1	6	1.8	304	Still House Road Pole #ME 2397 NB, 233L-35L Q	E
TM-ID-1C1	4	2.6	0	Middletown substation M&Q	E
TM-ID-8C1	4	2.3	159	Falmouth-Collins substation M&Q - QA M&Q	QC
TM-ID-1E4	6	4.3	0	Vine Street exit from 233, Pole #ME2481-LO Q	E
TM-ID-2E1	6	4.8	11	School House Lane & Miller Road, Pole #ME782-LO Q	E

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TM-ID-3E3	6	4.5	46	Kennedy Lane, Pole #74-ME-97 Q	E
TM-ID-4E5	4	4.9	71	Beagle Road Q	E
TM-ID-5E1	6	4.6	85	N. Market St. (Rt. 230) & Zaeger Road, Pole &PP&L 31084, 830386 Q	E
TM-ID-6E6	6	4.6	115	Amonite Road, Pole #PP&L 31016, 829272 Q	E
TM-ID-7E6	6	4.8	131	Bainbridge Road (Route 241) & Risser Road, Pole ME825 Q	E
TM-ID-8E2	6 1/2	4.1	161	Guard shack at Brunner Island Q	E
TM-ID-9E1	6	4.9	182	Canal Road, Conewago Heights, Pole #ME497EM, EK244122 Q	E
TM-ID-10E3	6	3.0	200	Conewago Creek Road, Strinestown, Pole #ME924CE, RANK 231-139 Q	E
TM-ID-11E3	6	4.1	228	Stevens & Wilson Roads, Pole #ME2521NB Q	E
TM-ID-12E4	6	4.3	245	Lewisberry & Roxberry Roads, Newberrytown, Pole #ME725NE Q	E
TM-ID-13E1	6	4.9	268	Yocumtown Road & Old Trail, Pole #ME1050NB Q	E
TM-ID-14E4	6	4.9	281	Route 262 & Beinhower Road, Pole #ME135FA Q	E
TM-ID-15E1	6	3.0	313	Lumber Street, Highspire, Pole #PP&L 26827, 831990 Q	E
TM-ID-2F1	6	9.0	15	West Areba Avenue & Mill Street, Hershey, Pole #PP&L 30383, 834608 Q	E
TM-ID-5F1	6	8.8	89	Hummelstown St. Elizabethtown, Pole #PP&L 32190, 830207 Q	E

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TM-ID-7F1	4	9.0	132	Drager Farm M&Q - QA M&Q	QC
TM-ID-3G1	4	19.7	47	Cumberland Street (Route 422) at 16th Street substation, Labanon Q	
TM-ID-4G1	6	10.0	68	Route 241 M&Q - QA M&Q	E, QC
TM-ID-6G1	6	21.1	113	Steel Way & Loop Road, Lancaster, Pole #PP&L 21274, 836930 Q	
TM-ID-7G1	3 1/2	15.0	124	Columbia M&Q	E
TM-ID-9G1	4	13.0	183	North York substation M&Q	E
TM-ID-14G1	6	12.2	100	Ereford Road, Camp Hill, Pole #PP&L (ATTCH) 23347, 833615 Q	
TM-ID-15G1	1 1/2	15.0	308	West Fairview M&Q - QA M&Q	E, QC
TM-ID-15G2	6	11.5	307	Penn & Forster Streets, Harrisburg, Pole #PP&L 24035, S14066 Q	
TM-ID-16G2	6	11.2	330	Route 22 & Colonial Road, Colonial Park, Pole #PP&L 25874, S35291 Q	E
TM-ID-16E1	6	4.9	339	Spring Garden Drive & Route 441, Pole #PP&L 27816, 832497 Q	E
TM-ID-3F1	6	7.16	48	(Conewago School) Met-Ed 1039 CW 764/183 on School House Rd. ∿ 1/8 mi. West of Schanks Church Q	N
TI-ID-4F1	6 1/2	8.53	72	(Bellaire) PP&L 32920 S31503 1/4 mile East of Bellaire crossroads on Mt. Gretne Road Q	N

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TI-ID-6F1	6	9.36	113	(Donegal Springs) PP&L 33225 South 28173 1/8 mile West of Colebrook Road & Donegal Springs Road intersection on Donegal Springs Road Q	N
TI-ID-8F1	6 1/2	13.15	157	(Wilshire Hills) MI 693SE Southwest corner of Orchard Road and Stonewood Road, Wilshire Hills Q	N
TI-ID-9F1	6 1/2	6.48	177	(Manchester) C53-LIN ME 24C MT on Maple Street in Manchester across from High Street at corner of Cemetery Drive Q	N
TI-ID-10F1	6 1/2	7.35	196	(Zion's View) ME 1459 CE 5E corner of Coppenhaffer Road & Rt. 295 Intersection Q	N
TI-ID-10G1	6 1/2	12.69	204	(Weiglestown) LL&P (old Met-Ed) 6632 opposite corner of Alta Viste Road & Fix Run Road ∿ 100 yds. East of Rt. 74 Q	N
TI-11F1	6 1/2	7.96	225	(Andersontown) ME611 DO 2017/100 on Anderstation Road ∿ 1/8 mile on Southwest of Orchard Q	N
TI-11C1	6 1/2	11.71	225	(Mt. Royal) ME 3053 DO Bank 321-232 West side of Rt. 74 at Mt. Royal Full Gospel Church Q	N
TI-12F1	6 1/2	8.36	242	(Maytown) 16E/78/END DJ/63 on Alpine Road ∿ 150 yards South of Route 117 at Maytown Q	N
TI-12G1	6 1/2	11.94	236	(Rossville) ME 374 WR Bank 474-100 West side of Route 74 ∿ 1/4 mile from Route 177 crossroads by Earth Craft Barn Q	N
TI-13F1	6 1/2	7.77	240	(Lewisberry) PP&L 24599 South 29513 West side of Route 382 ∿ 1/4 mile North of Lewisberry Q	N

Location	Height Feet	Distance Miles	Azimuth o	Description	Status
TI-13G2	6 1/2	10.40	274	(Lieburn) PP&L 23149 South 30333 Northwest corner of Lisburn Road and Main Street of Lisburn (Route 114) Q	N
TI-13G1	6 1/2	13.19	276	(Mt. Allen) Attach 21728 South 30984 corner of Orchard Lane & Hertzler Road due South of water tower Q	N
TI-14F1	6 1/2	7.96	292	(Resser's Summit) Attach 24737 South 31644 on Evergreen Road by Fairview Brethren in Christ Church Resser's Summit Q	N
TI-15F1	6 1/2	8.49	308	(Steelton) PP&L 21570 832926 across from parking lot of Steelton Water Company Q	N
TI-16F1	7	8.07	140	(Rutherford Heights) Attach 17290 634073 on Derry Street at 66th Street Rutherford Heights, Northeast corner Q	N
TI-8F1	6	7.25	165	Starview Q	

DALE E. DONALDSON

PROFESSIONAL QUALIFICATIONS

I am a Radiation Specialist in the Emergency Planning Section of the Region I Office of Inspection and Enforcement. I am responsible for inspecting the implementation of licensee Emergency Plans.

I received a Bachelor of Science Degree in Microbiology from the Ohio State University in 1969.

In March 1970, I entered active duty with the United States Army as a Second Lieutenant in the Chemical Corps. I was initially assigned to the First Army Chemical, Biological and Radiological School as an instructor and Team Leader for the First Army Chemical and Nuclear Accident/Incident Control Team. Subsequently I was assigned as a Project Test Officer with the United States Army Material Command at the United States Army Tropic Test Center. During this assignment I was responsible for planning, conducting and reporting the results of integrated engineering and service tests of chemical and nuclear equipment.

In 1973 I was re-assigned to the 24th Air Defense Artillary Group in Coventry, Rhode Island as the Group CBR Officer. In this capacity I was responsible for maintaining a readiness posture for operations in a nuclear environment and for response to nuclear incidents.

My final assignment with the United States Army was in the Training and Doctrine Command as a Project Officer. During this assignment, I was responsible for developing performance criteria for radiation detection and

counting equipment and for developing concepts of operation for use in nuclear environments.

In September 1975 as a Captain, I left active duty and joined the NRC in my present capacity. In this capacity, I have been responsible for inspecting emergency planning, radiation protection and environmental monitoring programs at nuclear power reactors, nuclear fuel facilities and test and research reactors; developing and maintaining a Regional Incident Response Plan; and serving as co-chairman of three Federal Regional Advisory Committees and the Federal Field Assistance Cadre for assistance to states in radiological emergency response planning. I was also a member of the NRC Office of Inspection and Enforcement Investigation Team for the accident at Three Mile Island, a contributing author of NUREG-0654 and the ongoing NRC health physics appraisal program, and a member of a Nuclear Regulatory Commission Health Physics Appraisal Team.

Apart from my formal undergraduate education, I have received the following additional training:

Management Oversight and Risk Tree; US Department of Energy; 2/80; Systems analysis technique for detecting management oversights and assigning relative degrees of risk to oversights.

Radiological Emergency Response Operations; US Nuclear Regulatory Commission; 2/78.

Planning for Nuclear Emergencies; Harvard University School of Public Health; 5/76.

Boiling Water Reactor Fundamentals; US Nuclear Regulatory Commission; 3/76.

Pressurized Water Reactor Fundamentals; US Nuclear Regulatory Commission; 10/76.

Boiling Water Reactor / Pressurized Water Reactor Radwaste Fundamentals; US Nuclear Regulatory Commission; 3/76.

Radiation Protection; US Army Ordnance Center and School; 1975.

US Army Officer Advanced Course; US Army Ordnance Center and School; 8/74 - 4/75; Maintenance, procurement, research and development, budgeting, systems analysis, personnel management and labor relations.

Management; University of Southern California; 1975.