September 17, 1988

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

before the

ATOMIC SAFETY AND LICENSING BOARD

In the Matter of PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE, et al. (Seabrook Station, Units 1 and 2)	Docket Nos. 50-443-OL-1 50-444-OL-1 (On-Site Emergency Planning and Safety Issues)

AFFIDAVIT OF TRAVIS N. BEARD

I, Travis N. Beard, being on oath, depose and say as follows:

1. I am a Senior Emergency Planner for New Hampshire Yankee. A statement of my professional qualifications are attached hereto and marked "A".

2. The purpose of this affidavit is to address allegations in Contention Bases A.5 and B.3. The allegations I address are: (1) the time required to get the VANS vehicles on the road, after driver alert, and set the vehicles up at the acoustic locations in combination with the transit and siren activation time will exceed 15 minutes [Basis A.5]; and (2) the airborne system sound coverage is inadequate [Basis B.3].

Basis A.5: VANS Dispatch and Setup Time

3. I was the New Hampshire Yankee Test Director for the VANS dispatch and setup timing tests conducted on August 25 and 26, 1988. The test procedure is documented as Emergency Preparedness and Community Relations Procedure No. 90520, "VANS Dispatch and Setup Timing Test Procedure", dated August, 1988. The objective of the test procedure was to provide direction for testing the time required for the VANS operator to accomplish the following tasks following notification to dispatch the VANS vehicle:

a. Prepare VANS vehicles for dispatch and exit the simulated staging area;

b. Prepare siren/boom for elevation;

c. Set outriggers; and

d. Raise siren/boom to operable position.

4. The New Hampshire Yankee prototype VANS vehicle and an onsite simulated staging area were used in the tests. The test procedure sequence for dispatch and setup was executed 50 times and was timed with a stopwatch.

5. Dispatch timing started when the VANS operator acknowledged notification and included the time required for the VANS operator to acknowledge activation notification, walk 100 feet to the vehicle, prepare the VANS vehicle for drive-out (disconnect external power cord to battery charger), start the vehicle and roll the vehicle. Dispatch

timing stopped when the rear of the vehicle cleared the simulated staging area door.

6. Setup timing started when the vehicle stopped rolling and included the time required for the VANS operator to proceed from the vehicle cab and prepare the siren/boom for elevation, set outriggers, raise the siren/boom from the stored position (i.e., to the 80° position with the two outer boom sections positioned within the first boom section and clear the limit switch).

7. The results of the test are attached to this affidavit, Attachment "B". The test results are summarized as follows:

	TIMES (seconds)	AVERAGE (seconds)
DISPATCH	33.39 to 53.35	38.98
SET UP	43.81 to 64.80	49.79

8. At the staging areas the VANS drivers are responsible for ensuring that the vehicles are ready at all times for immediate dispatch, SPMC procedure IP 2.16.

Basis B.3: Airborne System Coverage

9. The Seabrook airborne alerting system is a standard helicopter with the amplifiers and batteries located in the cabin behind the pilot. Controls for the system are mounted near the forward right seat to make them accessible to the co-pilot/flight director. Loudspeakers are mounted in a configuration adapted to the mechanical constraints of the helicopter airframe but designed to

achieve wide coverage on the ground when the helicopter is flying at low altitudes.

10. The primary loudspeaker consists of 28 drivers mounted on the left side of the helicopter in a 4-wide x 7-high array. The drivers' horns have a square mouth and a center-to-center distance of about 4 and 9/16 inches. This array is driven with three 900-watt and one 450-watt battery-powered amplifiers. The loudspeaker array is mounted in the left rear doorway with its angle of symmetry pointing 90 degrees to the left of the helicopter heading and slightly down at a 5-degree angle.

11. A second set of two loudspeaker arrays is mounted under the helicopter between the landing skids. Each of these consists of a horizontal array of four in-line drivers with 7-inch square horns. The axes of the two speaker arrays are pointed left and right at (+-)20 degrees from the helicopter's heading. They also are tilted downward at a 5-degree angle. This orientation was devised to provide optimum acoustic coverage in front of the helicopter where the helicopter-generated ambient noise levels are lower. The smaller arrays are driven by a 900-watt amplifier.

12. The helicopter sound system was provided by

is a major supplier of airborne sound systems. Examples of the use of helicopter alerting systems are:

(a) uses four helicopter systems for primary notification of

helicopter alerting system was evaluated by FEMA and was determined to be satisfactory.

(b) Two helicopter-mounted are used as part of the primary public alerting system for the nuclear plants.

(c) The U.S. Coast Guard uses on helicopters for control of boat traffic and are being installed on U.S. Customs .

(d) In , the U.S. Navy purchased for their HH-46 Boeing Helicopters for use in search and rescue missions. Additional systems have been purchased in the past two years for the same mission.

(e) The Police Department has been flying since 1972 and currently has 25 operational systems for its fleet of helicopters. The is ordering a 1400-Watt System for their Command Helicopter for emergency evacuation notification requirements.

13. There are no regulatory requirements or guidelines for supplemental or back up systems to primary public alerting systems; therefore, the steady 3 to 5 minute tone, as mentioned in the contention basis, is not considered an applicable requirement for the Seabrook airborne alerting system. Nevertheless, even though this airborne system is

supplemental, New Hampshire Yankee has designed, implemented, and tested its airborne alerting system so that its performance is compatible with NRC and FEMA guidelines for a primary mobile siren alerting system (FEMA-REP-10, paragraph E.6.2.2).

14. I was the Project Test Director for the New Hampshire Yankee evaluation tests of the airborne alerting system. The test results are documented in Wyle Research Report WR 88-6(R) which is contained in Appendix B of the Seabrook Station FEMA-REP-10 Design Report. This report shows that the airborne system can:

- Achieve a siren sound level of 70 dBC (for areas of high population density, as required by FEMA-REP-10); or
- Achieve a siren sound level of 60 dBC in areas of lower population density (less than 2,000 persons per square mile); and, for either case,
- Achieve a level of 10 dB above the total helicopter masking noise level in the one-third octave band (630 Hz) containing the siren fundamental tone of 680 Hz; and
- Comply with the above for a period of at least 30 seconds.

15. The report also shows that, for a siren tone, the width of the coverage band for the helicopter flying 40 miles per hour at 500 feet varies from a minimum of 6,700 feet to a

maximum of 11,200 feet for 70 dBC and 60 dBC tone levels respectively.

Travis N. Beard

STATE OF NEW HAMPSHIRE

Rockingham, ss. September 16, 1988

The above-subscribed Travis N. Beard appeared before me and made oath that he had read the foregoing affidavit and that the statements set forth therein are true to the best of his knowledge.

Before me,

Notary Public
My Commission Expires: 3-6-90

TRAVIS N. BEARD

EDUCATION
Georgia State University: M.B.A., 1983
Texas A&M University: M.S., Health Physics, 1975
U.S. Naval Academy: B.S., 1963

EXPERIENCE
1986 to present:
Public Service Company of New Hampshire, New Hampshire Yankee Division

POSITION: Senior Emergency Planner
DUTIES: Manage the existing Seabrook Station emergency siren system and develop plans for alternate public alerting systems. Provide technical review for the site emergency plan and implementing procedures.

1980 to 1986:
Institute of Nuclear Power Operations
POSITION: Program Manager
DUTIES: Developed criteria for program review and assistance to nuclear utility emergency preparedness programs. Led emergency preparedness assistance teams in visits to nuclear power plants. Developed a workshop for utility radiological assessment teams. As member of INPO Evaluation and Assistance teams, evaluated utility radiological protection programs.

As Manager, Country Services, was responsible for development and implementation of methods for exchange of operating experience between INPO utility members and far eastern utilities. Planned and participated in assistance visits to Taiwan and South Korea.

1976 to 1980:
U.S. Department of Energy
POSITION: Emergency Planning Specialist, Project Officer and Health Physicist.
DUTIES: As Emergency Planning Specialist at D.O.E. Headquarters, conducted independent reviews of D.O.E. field office programs. Project Officer for Aerial Measurement System program. As Health Physicist at the Idaho Falls National Engineering Laboratory, conducted independent appraisals of contractor radiological safety programs. Supervised two engineering professionals as acting Branch Chief.

1975 to 1976:
Westinghouse Electric Corporation
POSITION: Senior Radiological Control Engineer
DUTIES: Investigated potential radiological health problems and conducted audits at the Naval Reactors Facility, Idaho Falls. Emergency planning coordinator for site.

1973 to 1975:
Texas A&M University, Graduate Student in Health Physics.

1963 to 1973:
United States Navy
POSITION: Naval Aviator

90520

FIGURE 3

ELAPSED TIME DATA SHEET: DISPATCH

Sheet 1 of 1

Timer: Norman LaFlamme Badge #: P1387 Date: 8/25/88

Stopwatch: Type Digital Model 8668 Ser # RS-1420 Calibration Due: 9-4-88

Elapsed time to: acknowledge activation (start timing), prepare VANS vehicle for dispatch, drive out (vehicle rear clears simulated staging area: stop timing).

Run 1	Sec:	36.60	Run 26	Sec:	43.25
Run 2	Sec:	36.27	Run 27	Sec:	43.93
Run 3	Sec:	37.15	Run 28	Sec:	39.35
Run 4	Sec:	35.13	Run 29	Sec:	37.66
Run 5	Sec:	35.01	Run 30	Sec:	38.55
Run 6	Sec:	35.83	Run 31	Sec:	36.34
Run 7	Sec:	38.83	Run 32	Sec:	36.75
Run 8	Sec:	40.34	Run 33	Sec:	39.69
Run 9	Sec:	34.86	Run 34	Sec:	38.51
Run 10	Sec:	38.62	Run 35	Sec:	37.66
Run 11	Sec:	43.95	Run 36	Sec:	37.31
Run 12	Sec:	44.77	Run 37	Sec:	37.10
Run 13	Sec:	43.60	Run 38	Sec:	39.04
Run 14	Sec:	44.74	Run 39	Sec:	35.67
Run 15	Sec:	40.75	Run 40	Sec:	37.04
Run 16	Sec:	41.89	Run 41	Sec:	35.60
Run 17	Sec:	43.03	Run 42	Sec:	34.31
Run 18	Sec:	44.72	Run 43	Sec:	35.86
Run 19	Sec:	53.33	Run 44	Sec:	34.38
Run 20	Sec:	43.77	Run 45	Sec:	33.59
Run 21	Sec:	40.30	Run 46	Sec:	35.13
Run 22	Sec:	42.01	Run 47	Sec:	38.16
Run 23	Sec:	42.01	Run 48	Sec:	35.08
Run 24	Sec:	40.09	Run 49	Sec:	34.63
Run 25	Sec:	44.02	Run 50	Sec:	33.45

Total All Runs: Sec: 1949.23

Mean Time (Total Time/50 Runs): Sec: 38.98

90520

FIGURE 4

ELAPSED TIME DATA SHEET: SETUP

Sheet 1 of 1

Timer: NORMAN LAFLAMME Badge #: P1387 Date: 8/25/88

Stopwatch: Type ~~Digital~~ Model 8668 Ser # FCS-1420 Calibration Due: 9-4-88

Elapsed time to: vehicle stops (start timing),
siren/boom prepared for elevation, set out-riggers,
siren/boom extended to siren operable position
(first section of boom fully erect and clearing limit switch: stop timing).

Run 1	Sec:	47.30	Run 26	Sec:	51.92
Run 2	Sec:	44.95	Run 27	Sec:	52.36
Run 3	Sec:	47.04	Run 28	Sec:	50.98
Run 4	Sec:	44.54	Run 29	Sec:	48.28
Run 5	Sec:	46.42	Run 30	Sec:	51.09
Run 6	Sec:	47.63	Run 31	Sec:	49.06
Run 7	Sec:	47.34	Run 32	Sec:	47.14
Run 8	Sec:	43.81	Run 33	Sec:	48.25
Run 9	Sec:	57.38	Run 34	Sec:	46.48
Run 10	Sec:	46.56	Run 35	Sec:	47.70
Run 11	Sec:	64.80	Run 36	Sec:	47.59
Run 12	Sec:	53.73	Run 37	Sec:	47.25
Run 13	Sec:	51.64	Run 38	Sec:	47.47
Run 14	Sec:	53.45	Run 39	Sec:	50.85
Run 15	Sec:	48.88	Run 40	Sec:	49.25
Run 16	Sec:	56.57	Run 41	Sec:	46.86
Run 17	Sec:	53.50	Run 42	Sec:	46.38
Run 18	Sec:	54.51	Run 43	Sec:	47.47
Run 19	Sec:	49.17	Run 44	Sec:	47.34
Run 20	Sec:	53.81	Run 45	Sec:	45.98
Run 21	Sec:	58.85	Run 46	Sec:	46.89
Run 22	Sec:	51.99	Run 47	Sec:	45.92
Run 23	Sec:	58.55	Run 48	Sec:	47.11
Run 24	Sec:	51.03	Run 49	Sec:	47.22
Run 25	Sec:	53.74	Run 50	Sec:	46.19

Total All Runs: Sec: ~~2432.76~~ 2489.64 JWB

Mean Time
(Total Time/50 Runs): Sec: ~~48.66~~ JWB
49.79

VANS DISPATCH AND SET-UP TIMING TEST 08/25,25/88

DISPATCH ELAPSED TIME DATA SHEET
DATE:08/25/88

Run #	Time: Sec
Run 01	36.60
Run 02	36.27
Run 03	37.15
Run 04	35.13
Run 05	35.01
Run 06	35.83
Run 07	38.83
Run 08	40.34
Run 09	34.86
Run 10	38.62
Run 11	43.95
Run 12	44.77
Run 13	43.60
Run 14	44.74
Run 15	40.75
Run 16	41.89
Run 17	43.03
Run 18	44.72
Run 19	53.35
Run 20	43.47
Run 21	40.30
Run 22	42.01
Run 23	42.01
Run 24	40.09
Run 25	44.02
Run 26	43.25
Run 27	43.93
Run 28	39.35
Run 29	37.66
Run 30	38.55
Run 31	36.39
Run 32	36.75
Run 33	39.69
Run 34	38.51
Run 35	37.66
Run 36	37.31
Run 37	37.10
Run 38	39.04
Run 39	35.67
Run 40	37.04
Run 41	35.60
Run 42	34.31
Run 43	35.86
Run 44	34.38
Run 45	33.39
Run 46	35.13
Run 47	38.16
Run 48	35.08
Run 49	34.63
Run 50	33.45

SET-UP ELAPSED TIME DATA SHEET
DATE:08/25/88

Run #	Time: Sec
Run 01	47.30
Run 02	44.95
Run 03	47.04
Run 04	44.54
Run 05	46.42
Run 06	47.65
Run 07	47.34
Run 08	43.81
Run 09	57.38
Run 10	46.56
Run 11	64.80
Run 12	53.73
Run 13	51.64
Run 14	53.45
Run 15	48.88
Run 16	56.57
Run 17	53.50
Run 18	54.51
Run 19	49.17
Run 20	53.81
Run 21	58.25
Run 22	51.99
Run 23	58.55
Run 24	51.03
Run 25	53.74
Run 26	51.92
Run 27	52.36
Run 28	50.98
Run 29	48.28
Run 30	51.09
Run 31	49.06
Run 32	47.14
Run 33	48.25
Run 34	46.48
Run 35	47.70
Run 36	47.59
Run 37	47.25
Run 38	47.47
Run 39	50.85
Run 40	49.25
Run 41	46.86
Run 42	46.38
Run 43	47.47
Run 44	47.34
Run 45	45.98
Run 46	46.89
Run 47	45.92
Run 48	47.11
Run 49	47.22
Run 50	46.19

VANS DISPATCH AND SET-UP TIMING TEST 08/25,25/88

Total	1949.23
Mean	38.98
Std. Dev.	3.95
Minimum	33.39
Maximum	53.35

Total	2489.64
Mean	49.79
Std. Dev.	4.18
Minimum	43.81
Maximum	64.80