WATTS BAR NUCLEAR

SPECIAL PERFORMANCE TEST PROCEDURE

SPT-039-01
REVISION 1

CO_2 ENCLOSURE DOOR FAN TESTING

SPT-039-01 /R1

Prepared by — Date 12-2-94

Reviewed by — Date 12-2-94

Approved by — Date 12-2-94

INITIALS/DATE

6.1 CO_2 Protected Enclosure, U-1 Auxiliary Instrument Room

6.1.1 **DETERMINE** the dimensions of the enclosure by measurement of the following:

Height	19'	Ft.	5 1/2	in.
Length	86	Ft.	2 1/2	in.
Width	42	Ft.	0	in.

/ 12-10-94

6.1.2 **CALCULATE** the room volume in Cubic Ft. as follows:

H 19'5 1/2" x L 86'2 1/2" x W 42' = 70461.2 Cu.Ft.

/ 12-10-94

6.1.3 **RECORD** vendor calculations of the maximum developed head (in. W.C.) of the CO_2/air mixture column. (Using the measured room height, CO_2 System Design information, and previous concentration test results).

.078 in. W.C.

/ 12-10-94

6.1.4 **INSTALL** the Door Fan Apparatus in the door which provides the most favorable relief area (i.e., Leaks which leave the room during pressurization can be readily returned to the Fan Apparatus through a return air path).

/ 12-10-94

6.1.5 **SEAL** the Fan Apparatus completely in the door opening.

/ 12-10-94 CNQ

6.1.6 **MANIPULATE** the ~~following to simulate the~~ equipment listed on Appendix 9.1 ~~positions~~ to ~~simulate~~ the required positions to simulate the condition immediately following CO_2 discharge into the protected area. ~~and RECORD specific actions or verifications in the Chronological Log.~~

/ 12-10-94

~~A. Vent or exhaust fans OFF~~ /

~~B. Doors CLOSED or door opening SEALED with door fan Apparatus.~~ /

~~C. Dampers in AFTER DISCHARGE position per design.~~ /

INITIALS/DATE

6.1.7 **RECORD** the measured Pressure Differential across the door fan.

in. W.C. .006

CM / 12-10-94

6.1.8 IF the pressure measurement in Step 6.1.7 is 25% or more of the previously calculated column pressure using absolute values, **DETERMINE** the cause of the excessive static pressure and **REDUCE** to less than 25%.

CM / 12-10-94

6.1.9 **OPEN** Doors, Ventilation openings, etc. in the adjacent areas on each side, above and below the enclosure being tested to the maximum extent possible to provide a return air path for all leakage leaving the enclosure. Any adjacent areas in which a return air path cannot be established are to be evaluated by the Contractor.

CM / 12-10-94

6.1.10 **UNSEAL** Fan Apparatus and **OPERATE** fan in the De-pressurization mode. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per the NFPA procedure).

CM / 12-10-94

NOTE: IF it is not possible to achieve sufficient pressure due to excessive leakage, either find the source of the leakage and seal, or, in the case of ventilation openings in the wall or ceiling slab, measure the opening (in^2) and temporarily seal. When sufficient pressure is achieved continue to next step.

INITIALS/DATE

6.1.11 **RECORD** under DE-PRESSURIZATION mode the following;

A. Diff. Press. Across Fan Opening (in. W.C.) .090 .

B. Flow through Fan(s) CFM 1381.82

C. Inside temperature 67.6 °F.

D. Outside Temperature 70.0 °F.

/ 12-10-94

6.1.12 **REVERSE** Fan position and **PRESSURIZE** enclosure. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per NFPA Procedure).

/ 12-10-94

6.1.13 **RECORD** the following Data while pressurizing the Enclosure.

A. Diff. Press. Across Fan Opening. (in. W.C.) .090 .

B. Flow through Fan(s). CFM 1440

C. Inside temperature 68.8 °F.

D. Outside temperature 67.8 °F.

/ 12-10-94

NOTE: Steps 6.1.5 through 6.1.13 may be reperformed as necessary until acceptable results are obtained.

NOTE: IF the Retention time predicted for the minimum protected Height is less than the desired hold time, use the fan apparatus and a smoke pencil to find the leakage, and seal as necessary.

INITIALS/DATE

6.1.14 **RECORD** vendor calculation results of the equivalent leakage area (Sq. in.) using recorded data, and the retention time through use of the fan apparatus testing software, using the previously determined hold time and the minimum protected height. CN03

Whole Room Leakage Area 277.2 Sq. in. 12.9.94

BCLA 138.6 Sq. in.

37.7 Retention Time (≥ 20 minutes)

12-10-94

6.1.15 **REMOVE** Door Fan Apparatus from doorway.

12-10-94

6.1.16 **RETURN** doors, fans, and dampers to NORMAL per Appendix 9.1 CN02

12-10-94

6.1.17 **NOTIFY** SOS that Door Fan Test in U-1 Auxiliary Instrument Room is COMPLETE.

12-10-94

INITIALS/DATE

6.2 **CO_2 Protected Enclosure, U-2 Auxiliary Instrument Room**

6.2.1 **DETERMINE** the dimensions of the enclosure by measurement of the following:

Height	19	Ft.	6½	in.
Length	92	Ft.	6	in.
Width	42	Ft.	0	in.

/ 12/10/94

6.2.2 **CALCULATE** the room volume in Cubic Ft. as follows:

H 19'6½" x L 92'6" x W 42 = 75,912.9 Cu.Ft.

/ 12/10/94

6.2.3 **RECORD** vendor calculations of the maximum developed head (in. W.C.) of the CO_2/air mixture column. (Using the measured room height, CO_2 System Design information, and previous concentration test results).

0.087 in. W.C.

/ 12/10/94

6.2.4 **INSTALL** the Door Fan Apparatus in the door which provides the most favorable relief area (i.e., Leaks which leave the room during pressurization can be readily returned to the Fan Apparatus through a return air path).

/ 12/10/94

6.2.5 **SEAL** the Fan Apparatus completely in the door opening.

/ 12/10/94 CRW

6.2.6 **MANIPULATE** the ~~following to simulate the~~ equipment listed on Appendix 9.1 to ~~simulate~~ the required partition + simulate the condition immediately following CO_2 discharge into the protected area, ~~and RECORD specific actions or verifications in the Chronological Log.~~ 12.2.94

12/12/94

~~A. Vent or exhaust fans OFF~~

/

~~B. Doors CLOSED or door opening SEALED with door fan Apparatus.~~

/

~~C. Dampers in AFTER DISCHARGE position per design.~~

/

INITIALS/DATE

6.2.7 **RECORD** the measured Pressure Differential across the door fan.

in. W.C. 0.029 12-14-94 0.018

12-10-94

6.2.8 IF the pressure measurement in Step 6.2.7 is 25% or more of the previously calculated column pressure using absolute values, **DETERMINE** the cause of the excessive static pressure and **REDUCE** to less than 25%.

TDN 94 2198

12/11/94

6.2.9 **OPEN** Doors, Ventilation openings, etc. in the adjacent areas on each side, above and below the enclosure being tested to the maximum extent possible to provide a return air path for all leakage leaving the enclosure. Any adjacent areas in which a return air path cannot be established are to be evaluated by the Contractor.

12/10/94

6.2.10 **UNSEAL** Fan Apparatus and **OPERATE** fan in the De-pressurization mode. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per the NFPA procedure).

12/11/94

NOTE: IF it is not possible to achieve sufficient pressure due to excessive leakage, either find the source of the leakage and seal, or, in the case of ventilation openings in the wall or ceiling slab, measure the opening (in^2) and temporarily seal. When sufficient pressure is achieved continue to next step.

INITIALS/DATE

6.2.11 **RECORD** under DE-PRESSURIZATION mode the following;

A. Diff. Press. Across Fan Opening (in. W.C.) 0.082 .

B. Flow through Fan(s) CFM 1572.73

C. Inside temperature ~~64.8~~ 64.8 °F.

D. Outside Temperature 66.4 °F.

[signature] 1/14/94

6.2.12 **REVERSE** Fan position and **PRESSURIZE** enclosure. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per NFPA Procedure).

[signature] 1/14/94

6.2.13 **RECORD** the following Data while pressurizing the Enclosure.

A. Diff. Press. Across Fan Opening. (in. W.C.) 0.118 .

B. Flow through Fan(s). CFM 1232.73

C. Inside temperature 66.4 °F.

D. Outside temperature 66.0 °F.

[signature] 1/14/94

NOTE: Steps 6.2.5 through 6.2.13 may be reperformed as necessary until acceptable results are obtained.

NOTE: IF the Retention time predicted for the minimum protected Height is less than the desired hold time, use the fan apparatus and a smoke pencil to find the leakage, and seal as necessary.

INITIALS/DATE

6.2.14 **RECORD** vendor calculation results of the equivalent leakage area (Sq. in.) using recorded data, and the retention time through use of the fan apparatus testing software, using the previously determined hold time and the minimum protected height.

Whole Room Leakage Area 261.45 sq in. 12.9.94 CR 03

BCLA 130.72 Sq. in.

37.7 Retention Time (≥ 20 minutes)

14/10/94

6.2.15 **REMOVE** Door Fan Apparatus from doorway.

14/10/94 CR 02

6.2.16 **RETURN** doors, fans, and dampers to NORMAL per Appendix 9.1.

12.9.94 14/10/94

6.2.17 **NOTIFY** SOS that Door Fan Test in U-2 Auxiliary Instrument Room is COMPLETE.

14/10/94

INITIALS/DATE

6.10 **CO_2 Protected Enclosure, Diesel Generator Room 1A-A**

6.10.1 **DETERMINE** the dimensions of the enclosure by measurement of the following:

Height	17	Ft.	0	in.
Length	78	Ft.	0	in.
Width	29	Ft.	0	in.

12/9/94

6.10.2 **CALCULATE** the room volume in Cubic Ft. as follows:

H 17 x L 78 x W 29 = 38,454 Cu.Ft.

12/9/94

6.10.3 **RECORD** vendor calculations of the maximum developed head (in. W.C.) of the CO_2/air mixture column. (Using the measured room height, CO_2 System Design information, and previous concentration test results).

0.065 in. W.C.

12/9/94

6.10.4 **INSTALL** the Door Fan Apparatus in the door which provides the most favorable relief area (i.e., Leaks which leave the room during pressurization can be readily returned to the Fan Apparatus through a return air path).

12/9/94

6.10.5 **SEAL** the Fan Apparatus completely in the door opening.

12.9.94

12/9/94 CNO2

6.10.6 **MANIPULATE** the ~~following to simulate the~~ equipment listed on Appendix 9.1 to the required position to simulate the condition immediately following CO_2 discharge into the protected area. ~~and **RECORD** specific actions or verifications in the Chronological Log.~~ 12.9.94 12.9.94 12.9.94

12/9/94

~~A. Vent or exhaust fans OFF~~ 12.8.94

~~B. Doors CLOSED or door opening SEALED with door fan Apparatus.~~ 12.8.94

~~C. Dampers in AFTER DISCHARGE position per design.~~ 12.8.94

INITIALS/DATE

6.10.7 **RECORD** the measured Pressure Differential across the door fan.

in. W.C. 0.002 /12/9/94

6.10.8 IF the pressure measurement in Step 6.10.7 is 25% or more of the previously calculated column pressure using absolute values, **DETERMINE** the cause of the excessive static pressure and **REDUCE** to less than 25%. /12/9/94

6.10.9 **OPEN** Doors, Ventilation openings, etc. in the adjacent areas on each side, above and below the enclosure being tested to the maximum extent possible to provide a return air path for all leakage leaving the enclosure. Any adjacent areas in which a return air path cannot be established are to be evaluated by the Contractor. /12/9/94

6.10.10 **UNSEAL** Fan Apparatus and **OPERATE** fan in the De-pressurization mode. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per the NFPA procedure). /12/9/94

NOTE: IF it is not possible to achieve sufficient pressure due to excessive leakage, either find the source of the leakage and seal, or, in the case of ventilation openings in the wall or ceiling slab, measure the opening (in^2) and temporarily seal. When sufficient pressure is achieved continue to next step.

INITIALS/DATE

6.10.11 **RECORD** under DE-PRESSURIZATION mode the following;

A. Diff. Press. Across Fan Opening (in. W.C.) 0.062 .

B. Flow through Fan(s) CFM 518.4

C. Inside temperature 72.4 °F.

D. Outside Temperature 69.8 °F.

12/9/94

6.10.12 **REVERSE** Fan position and **PRESSURIZE** enclosure. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per NFPA Procedure).

12/9/94

6.10.13 **RECORD** the following Data while pressurizing the Enclosure.

A. Diff. Press. Across Fan Opening. (in. W.C.) 0.067 .

B. Flow through Fan(s). CFM 559.6

C. Inside temperature 73.2 °F.

D. Outside temperature 64.8 °F.

12/9/94

NOTE: Steps 6.10.5 through 6.10.13 may be reperformed as necessary until acceptable results are obtained.

NOTE: IF the Retention time predicted for the minimum protected Height is less than the desired hold time, use the fan apparatus and a smoke pencil to find the leakage, and seal as necessary.

INITIALS/DATE

6.10.14 **RECORD** vendor calculation results of the equivalent leakage area (Sq. in.) using recorded data, and the retention time through use of the fan apparatus testing software, using the previously determined hold time and the minimum protected height.

12/9/94 CN 03

Whole Room Leakage Area 15,591.85 Sq in.

BCLA 145.07 Sq. in.

18.4 Retention Time (≥ 10 minutes)

12/9/94

6.10.15 **REMOVE** Door Fan Apparatus from doorway.

ATLAS CN02 12/9/94

6.10.16 **RETURN** doors, fans, and dampers to NORMAL per Appendix 9.1.

12.8.94 12/9/94

6.10.17 **NOTIFY** SOS that Door Fan Test in Diesel Generator Room 1A-A is COMPLETE.

12/9/94

INITIALS/DATE

6.11 CO_2 Protected Enclosure, Diesel Generator Room 1B-B

6.11.1 **DETERMINE** the dimensions of the enclosure by measurement of the following:

Height	17	Ft.	0	in.
Length	78	Ft.	0	in.
Width	29	Ft.	0	in.

12/9/94

6.11.2 **CALCULATE** the room volume in Cubic Ft. as follows:

H 17 x L 78 x W 29 = 38,454 Cu.Ft.

12/9/94

6.11.3 **RECORD** vendor calculations of the maximum developed head (in. W.C.) of the CO_2/air mixture column. (Using the measured room height, CO_2 System Design information, and previous concentration test results).

0.065 in. W.C.

12/9/94

6.11.4 **INSTALL** the Door Fan Apparatus in the door which provides the most favorable relief area (i.e., Leaks which leave the room during pressurization can be readily returned to the Fan Apparatus through a return air path).

12/9/94

6.11.5 **SEAL** the Fan Apparatus completely in the door opening.

12/8/94

12/9/94 CV02

6.11.6 **MANIPULATE** the ~~following to simulate the~~ equipment listed on Appendix 9.1 to the required positions to simulate the condition immediately following CO_2 discharge into the protected area. ~~and **RECORD** specific actions or verifications in the Chronological Log.~~

12.8.94

12.8.94

12/9/94

~~A. Vent or exhaust fans OFF~~ 12.8.94

~~B. Doors CLOSED or door opening SEALED with door fan Apparatus.~~ 12.8.94

~~C. Dampers in AFTER DISCHARGE position per design.~~ 12.8.94

INITIALS/DATE

6.11.7 **RECORD** the measured Pressure Differential across the door fan.

in. W.C. 0.005 12/9/94

6.11.8 IF the pressure measurement in Step 6.11.7 is 25% or more of the previously calculated column pressure using absolute values, **DETERMINE** the cause of the excessive static pressure and **REDUCE** to less than 25%. 12/9/94

6.11.9 **OPEN** Doors, Ventilation openings, etc. in the adjacent areas on each side, above and below the enclosure being tested to the maximum extent possible to provide a return air path for all leakage leaving the enclosure. Any adjacent areas in which a return air path cannot be established are to be evaluated by the Contractor. 12/9/94

6.11.10 **UNSEAL** Fan Apparatus and **OPERATE** fan in the De-pressurization mode. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per the NFPA procedure). 12/9/94

NOTE: IF it is not possible to achieve sufficient pressure due to excessive leakage, either find the source of the leakage and seal, or, in the case of ventilation openings in the wall or ceiling slab, measure the opening (in^2) and temporarily seal. When sufficient pressure is achieved continue to next step.

INITIALS/DATE

6.11.11 **RECORD** under DE-PRESSURIZATION mode the following;

A. Diff. Press. Across Fan Opening (in. W.C.) 0.06 .

B. Flow through Fan(s) CFM 552.0

C. Inside temperature 70.4 °F.

D. Outside Temperature 71.8 °F.

12/9/94

6.11.12 **REVERSE** Fan position and **PRESSURIZE** enclosure. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per NFPA Procedure).

12/9/94

6.11.13 **RECORD** the following Data while pressurizing the Enclosure.

A. Diff. Press. Across Fan Opening. (in. W.C.) 0.07 .

B. Flow through Fan(s). CFM 603.98

C. Inside temperature 72.0 °F.

D. Outside temperature 66.8 °F.

12/9/94

NOTE: Steps 6.11.5 through 6.11.13 may be reperformed as necessary until acceptable results are obtained.

NOTE: IF the Retention time predicted for the minimum protected Height is less than the desired hold time, use the fan apparatus and a smoke pencil to find the leakage, and seal as necessary.

INITIALS/DATE

6.11.14 **RECORD** vendor calculation results of the equivalent leakage area (Sq. in.) using recorded data, and the retention time through use of the fan apparatus testing software, using the previously determined hold time and the minimum protected height.

Whole Room Leakage Area 15,595.32 Sq in
BCLA 153.62 Sq. in.

17.0 Retention Time (≥ 10 minutes)

12/9/94 CN 03

12/9/94

6.11.15 **REMOVE** Door Fan Apparatus from doorway.

12/9/94 CN 02

6.11.16 **RETURN** doors, fans, and dampers to NORMAL per Appendix 9.1.

12.9.94 12/9/94

6.11.17 **NOTIFY** SOS that Door Fan Test in Diesel Generator Room 1B-B is COMPLETE.

12/9/94

INITIALS/DATE

6.12 **CO_2 Protected Enclosure, Diesel Generator Room 2A-A**

6.12.1 **DETERMINE** the dimensions of the enclosure by measurement of the following:

Height	17	Ft.	0	in.
Length	78	Ft.	0	in.
Width	29	Ft.	0	in.

12-9-94

6.12.2 **CALCULATE** the room volume in Cubic Ft. as follows:

H 17 x L 78 x W 29 = 38454 Cu.Ft.

12-9-94

6.12.3 **RECORD** vendor calculations of the maximum developed head (in. W.C.) of the CO_2/air mixture column. (Using the measured room height, CO_2 System Design information, and previous concentration test results).

0.065 in. W.C.

12-9-94

6.12.4 **INSTALL** the Door Fan Apparatus in the door which provides the most favorable relief area (i.e., Leaks which leave the room during pressurization can be readily returned to the Fan Apparatus through a return air path).

12-9-94

6.12.5 **SEAL** the Fan Apparatus completely in the door opening.

12-8-94

12/9/94 CN02

6.12.6 **MANIPULATE** the ~~following to simulate the~~ equipment listed on Appendix 9.1 to the required position to simulate the condition immediately following CO_2 discharge into the protected area. ~~and RECORD specific actions or verifications in the Chronological Log.~~

12-8-94 12-8-94 12-8-94

12/9/94

~~A. Vent or exhaust fans OFF~~ 12-8-94

/

~~B. Doors CLOSED or door opening SEALED with door fan Apparatus.~~

/

~~C. Dampers in AFTER DISCHARGE position per design~~

/

INITIALS/DATE

6.12.7 **RECORD** the measured Pressure Differential across the door fan.

in. W.C. 0.003 / 12/9/94

6.12.8 IF the pressure measurement in Step 6.12.7 is 25% or more of the previously calculated column pressure using absolute values, **DETERMINE** the cause of the excessive static pressure and **REDUCE** to less than 25%. / 12/9/94

6.12.9 **OPEN** Doors, Ventilation openings, etc. in the adjacent areas on each side, above and below the enclosure being tested to the maximum extent possible to provide a return air path for all leakage leaving the enclosure. Any adjacent areas in which a return air path cannot be established are to be evaluated by the Contractor. / 12/9/94

6.12.10 **UNSEAL** Fan Apparatus and **OPERATE** fan in the De-pressurization mode. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per the NFPA procedure). / 12/9/94

NOTE: IF it is not possible to achieve sufficient pressure due to excessive leakage, either find the source of the leakage and seal, or, in the case of ventilation openings in the wall or ceiling slab, measure the opening (in^2) and temporarily seal. When sufficient pressure is achieved continue to next step.

INITIALS/DATE

6.12.11 **RECORD** under DE-PRESSURIZATION mode the following;

A. Diff. Press. Across Fan Opening (in. W.C.) 0.062 .

B. Flow through Fan(s) CFM 481.7

C. Inside temperature 79.0 °F.

D. Outside Temperature 73.6 °F.

[signature] 12/9/94

6.12.12 **REVERSE** Fan position and **PRESSURIZE** enclosure. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per NFPA Procedure).

[signature] 12/9/94

6.12.13 **RECORD** the following Data while pressurizing the Enclosure.

A. Diff. Press. Across Fan Opening. (in. W.C.) 0.068 .

B. Flow through Fan(s). CFM 536.7

C. Inside temperature 79.8 °F.

D. Outside temperature 64.6 °F.

[signature] 12/9/94

NOTE: Steps 6.12.5 through 6.12.13 may be reperformed as necessary until acceptable results are obtained.

NOTE: IF the Retention time predicted for the minimum protected Height is less than the desired hold time, use the fan apparatus and a smoke pencil to find the leakage, and seal as necessary.

INITIALS/DATE

6.12.14 **RECORD** vendor calculation results of the equivalent leakage area (Sq. in.) using recorded data, and the retention time through use of the fan apparatus testing software, using the previously determined hold time and the minimum protected height.

12/9/94 CN 03

Whole Room Leakage Area 15,582.03 Sq. in
BCLA 137.91 Sq. in.

19.1 Retention Time (≥ 10 minutes)

12/9/94

6.12.15 **REMOVE** Door Fan Apparatus from doorway.

12/9/94 CN02

6.12.16 **RETURN** doors, fans, and dampers to NORMAL, per Appendix 9.1.

12/9/94 12.9.94

6.12.17 **NOTIFY** SOS that Door Fan Test in Diesel Generator Room 2A-A is COMPLETE.

12.9.94

INITIALS/DATE

6.13 **CO_2 Protected Enclosure, Diesel Generator Room 2B-B**

6.13.1 **DETERMINE** the dimensions of the enclosure by measurement of the following:

Height	17	Ft.	0	in.
Length	78	Ft.	0	in.
Width	29	Ft.	0	in.

/12.9.94

6.13.2 **CALCULATE** the room volume in Cubic Ft. as follows:

H 17 x L 78 x W 29 = 38,454 Cu.Ft.

/12.9.94

6.13.3 **RECORD** vendor calculations of the maximum developed head (in. W.C.) of the CO_2/air mixture column. (Using the measured room height, CO_2 System Design information, and previous concentration test results).

0.065 in. W.C.

/12.9.94

6.13.4 **INSTALL** the Door Fan Apparatus in the door which provides the most favorable relief area (i.e., Leaks which leave the room during pressurization can be readily returned to the Fan Apparatus through a return air path).

/12.9.94

6.13.5 **SEAL** the Fan Apparatus completely in the door opening.

CN02
/12.9.94

6.13.6 **MANIPULATE** the ~~following to simulate the~~ equipment listed on Appendix 9.1 to the required positions to simulate the condition immediately following CO_2 discharge into the protected area. ~~and RECORD specific actions or verifications in the Chronological Log.~~

/12.9.94

/12.9.94

~~A. Vent or exhaust fans OFF~~

/

~~B. Doors CLOSED or door opening SEALED with door fan Apparatus.~~

/

~~C. Dampers in AFTER DISCHARGE position per design.~~

/

INITIALS/DATE

6.13.7 **RECORD** the measured Pressure Differential across the door fan.

in. W.C. 0.002 / 12.9.94

6.13.8 IF the pressure measurement in Step 6.13.7 is 25% or more of the previously calculated column pressure using absolute values, **DETERMINE** the cause of the excessive static pressure and **REDUCE** to less than 25%. / 12.9.94

6.13.9 **OPEN** Doors, Ventilation openings, etc. in the adjacent areas on each side, above and below the enclosure being tested to the maximum extent possible to provide a return air path for all leakage leaving the enclosure. Any adjacent areas in which a return air path cannot be established are to be evaluated by the Contractor. / 12.9.94

6.13.10 **UNSEAL** Fan Apparatus and **OPERATE** fan in the De-pressurization mode. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per the NFPA procedure). / 12.9.94

NOTE: IF it is not possible to achieve sufficient pressure due to excessive leakage, either find the source of the leakage and seal, or, in the case of ventilation openings in the wall or ceiling slab, measure the opening (in^2) and temporarily seal. When sufficient pressure is achieved continue to next step.

INITIALS/DATE

6.13.11 **RECORD** under DE-PRESSURIZATION mode the following;

A. Diff. Press. Across Fan Opening (in. W.C.) 0.063 .

B. Flow through Fan(s) CFM 1860

C. Inside temperature 80.6 °F.

D. Outside Temperature 71.0 °F.

/ 12.9.94

6.13.12 **REVERSE** Fan position and **PRESSURIZE** enclosure. (**CONTROL** fan speed such that the absolute value of the pressure developed matches the calculated column pressure, adjusted for the previously measured static pressure, per NFPA Procedure).

/ 12.9.94

6.13.13 **RECORD** the following Data while pressurizing the Enclosure.

A. Diff. Press. Across Fan Opening. (in. W.C.) 0.067 .

B. Flow through Fan(s). CFM 1790

C. Inside temperature 80.0 °F.

D. Outside temperature 68.2 °F.

/ 12.9.94

NOTE: Steps 6.13.5 through 6.13.13 may be reperformed as necessary until acceptable results are obtained.

NOTE: IF the Retention time predicted for the minimum protected Height is less than the desired hold time, use the fan apparatus and a smoke pencil to find the leakage, and seal as necessary.

INITIALS/DATE

6.13.14 **RECORD** vendor calculation results of the equivalent leakage area (Sq. in.) using recorded data, and the retention time through use of the fan apparatus testing software, using the previously determined hold time and the minimum protected height.

12/9/94 CN 03

Whole Room Leakage Area = 15,593.59 Sq. in.

BCLA 146.9 Sq. in.

17.0 Retention Time (≥ 10 minutes)

12.9.94

6.13.15 **REMOVE** Door Fan Apparatus from doorway.

12.9.94 CN02

6.13.16 **RETURN** doors, fans, and dampers to NORMAL per Appendix 9.1.

12.8.94 12.9.94

6.13.17 **NOTIFY** SOS that Door Fan Test in Generator Room 2B-B is COMPLETE.

12.9.94

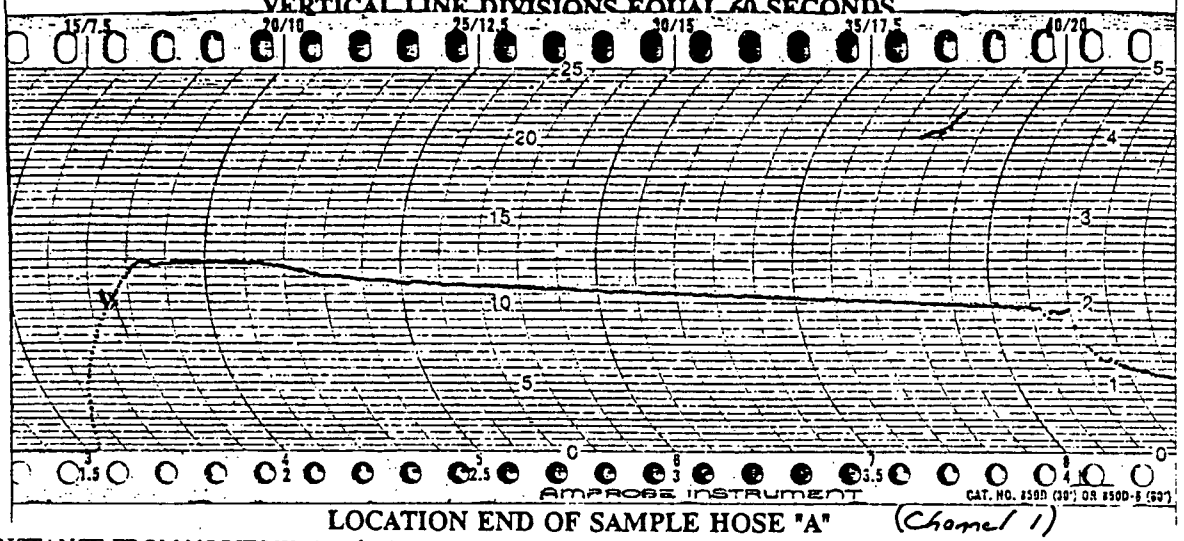
ATTACHMENT 6

CO_2 CONCENTRATION TEST CHARTS

HGI NO. 88004 FACILITY TVA - Watts Bar

DATE 3/25/95 AREA TESTED Aux. Inst. Room - Unit 2 Test No. 2

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



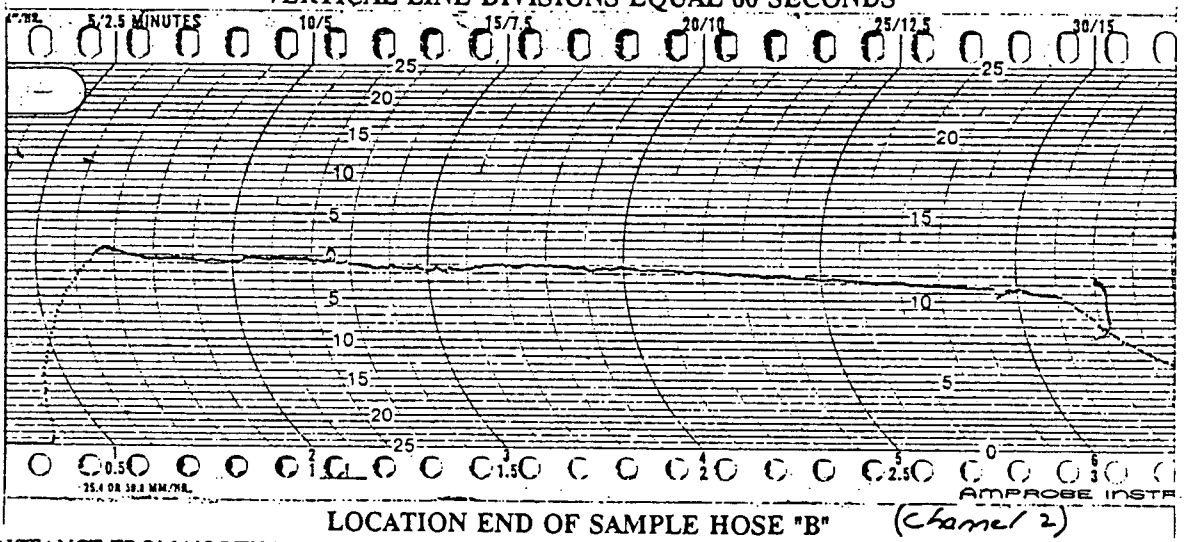
LOCATION END OF SAMPLE HOSE "A" (Chanel 1)

DISTANCE FROM: NORTH WALL 16.42 FT.: EAST WALL — FT.: SOUTH WALL — FT: WEST WALL 5.58 FT.

DISTANCE ABOVE: FLOOR 14.63 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 19.5 FT.: UNDERFLOOR HEIGHT: — FT.

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



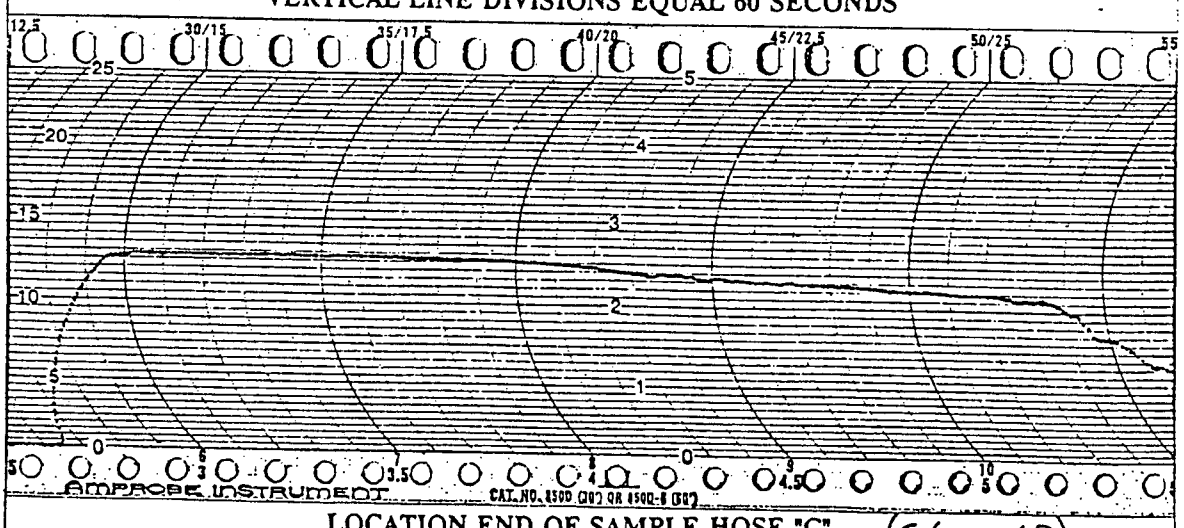
LOCATION END OF SAMPLE HOSE "B" (Chanel 2)

DISTANCE FROM: NORTH WALL — FT.: EAST WALL 3.83 FT.: SOUTH WALL 12.75 FT: WEST WALL — FT.

DISTANCE ABOVE: FLOOR 13.63 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 19.5 FT.: UNDERFLOOR HEIGHT: — FT.

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



LOCATION END OF SAMPLE HOSE "C" (Chanel 3)

DISTANCE FROM: NORTH WALL 7.17 FT.: EAST WALL — FT.: SOUTH WALL — FT: WEST WALL 46.67 FT.

DISTANCE ABOVE: FLOOR 12.63 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 19.5 FT.: UNDERFLOOR HEIGHT: — FT.

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ATTACHMENT 9.16

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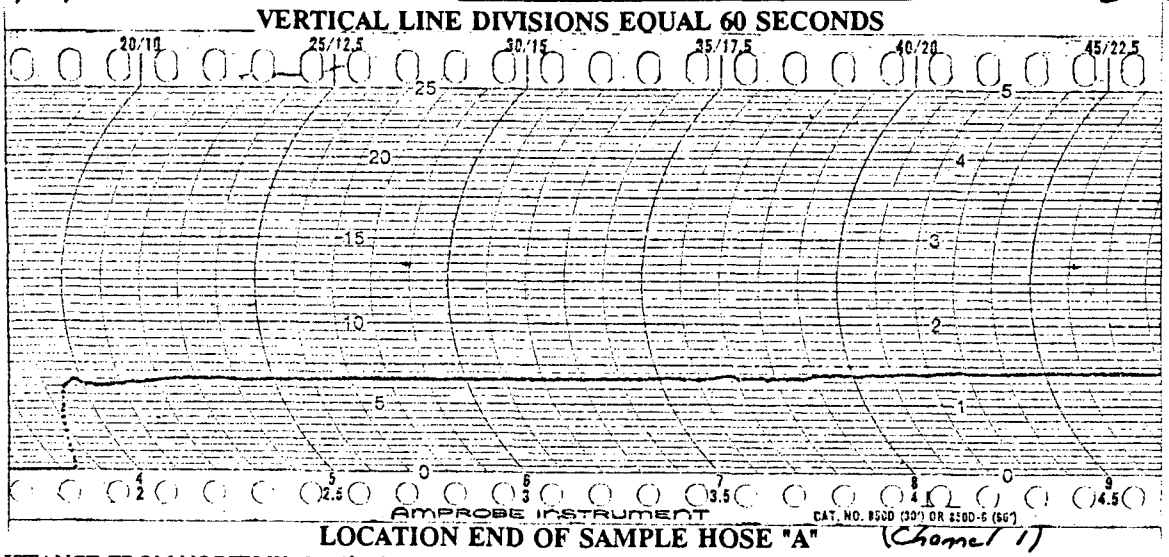
HGI NO. 88004 FACILITY TVA - Watts Bar

DATE 3/23/95 AREA TESTED Aux. Inst. Room - Unit 2 Test No. 1

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



CARBON DIOXIDE CONCENTRATION PERCENTAGES

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

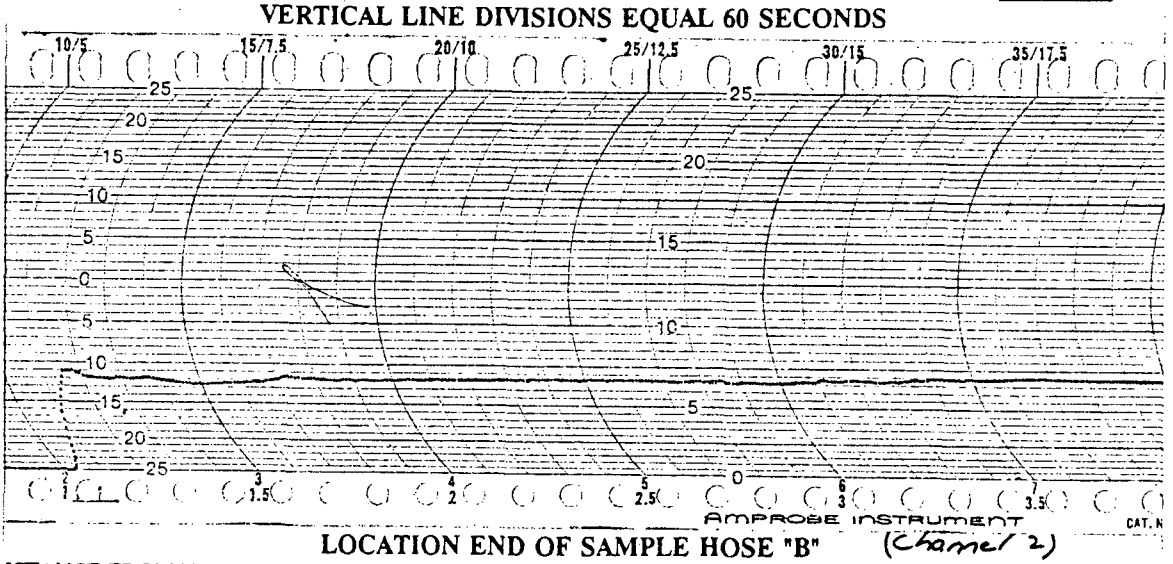
LOCATION END OF SAMPLE HOSE "A" (Channel 1)

DISTANCE FROM:NORTH WALL 16.42 FT.:EAST WALL — FT.:SOUTH WALL — FT:WEST WALL 5.58 FT.

DISTANCE ABOVE: FLOOR 14.63 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 19.5 FT.: UNDERFLOOR HEIGHT: — FT.

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



CARBON DIOXIDE CONCENTRATION PERCENTAGES

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

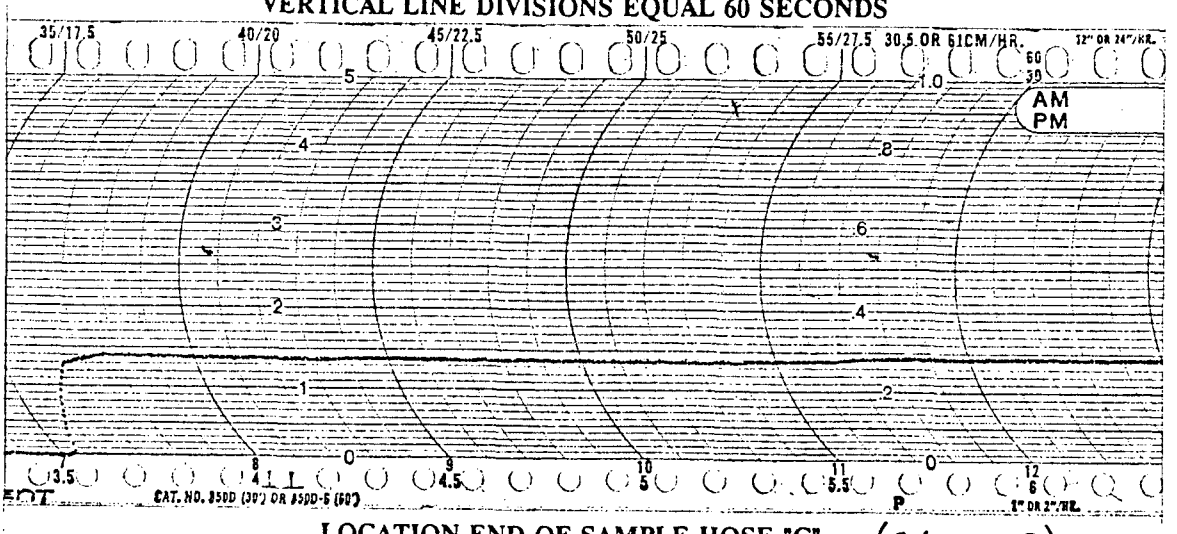
LOCATION END OF SAMPLE HOSE "B" (Channel 2)

DISTANCE FROM:NORTH WALL — FT.:EAST WALL 3.83 FT.:SOUTH WALL 12.75 FT:WEST WALL — FT.

DISTANCE ABOVE: FLOOR 13.63 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 19.5 FT.: UNDERFLOOR HEIGHT: — FT.

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



CARBON DIOXIDE CONCENTRATION PERCENTAGES

100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

LOCATION END OF SAMPLE HOSE "C" (Channel 3)

DISTANCE FROM:NORTH WALL 7.17 FT.:EAST WALL — FT.:SOUTH WALL — FT:WEST WALL 46.67 FT.

DISTANCE ABOVE: FLOOR 12.63 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 19.5 FT.: UNDERFLOOR HEIGHT: — FT.

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ATTACHMENT 9.16
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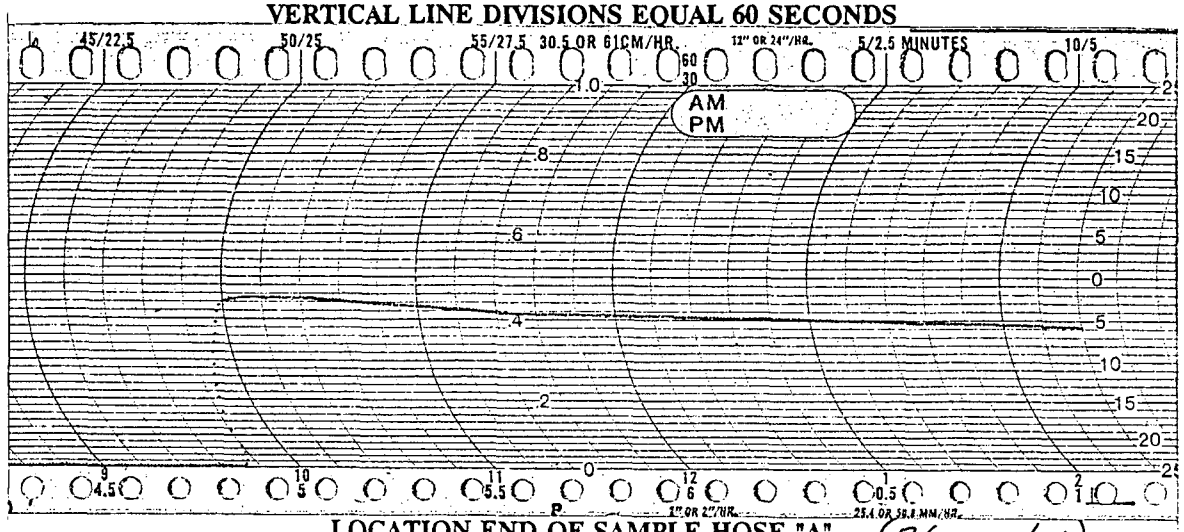
HGI NO. 88004 FACILITY TVA - Watts Bar

DATE 3/3/95 AREA TESTED D/G Room 2B-B Test No. 2

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



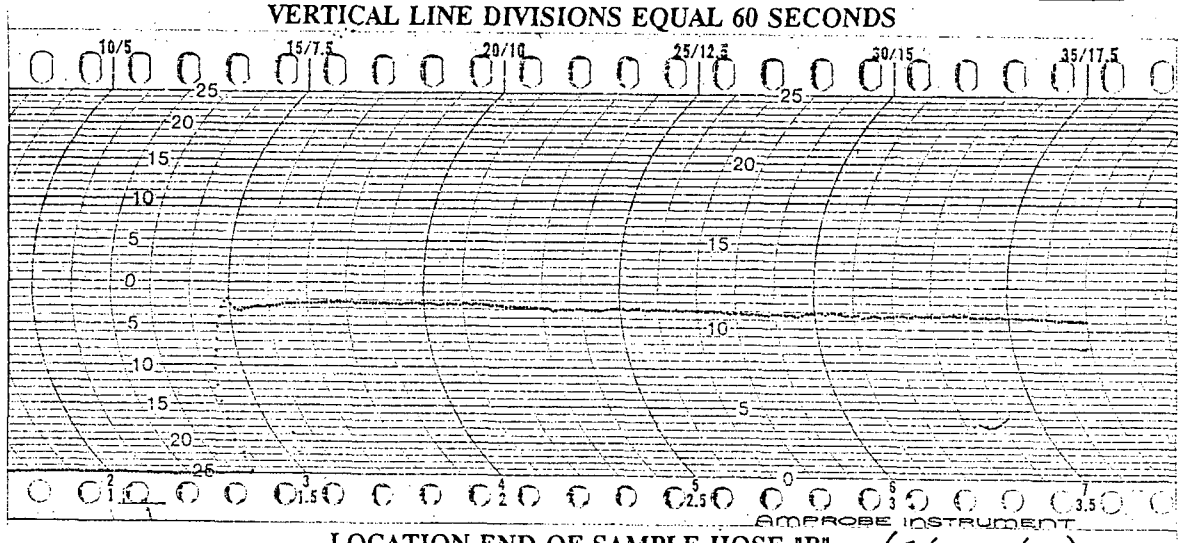
LOCATION END OF SAMPLE HOSE "A" (Channel 1)

DISTANCE FROM:NORTH WALL — FT.:EAST WALL — FT.:SOUTH WALL 11.25 FT:WEST WALL 11.25 FT.

DISTANCE ABOVE: FLOOR 10.75 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 17.0 FT.: UNDERFLOOR HEIGHT: — FT.

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



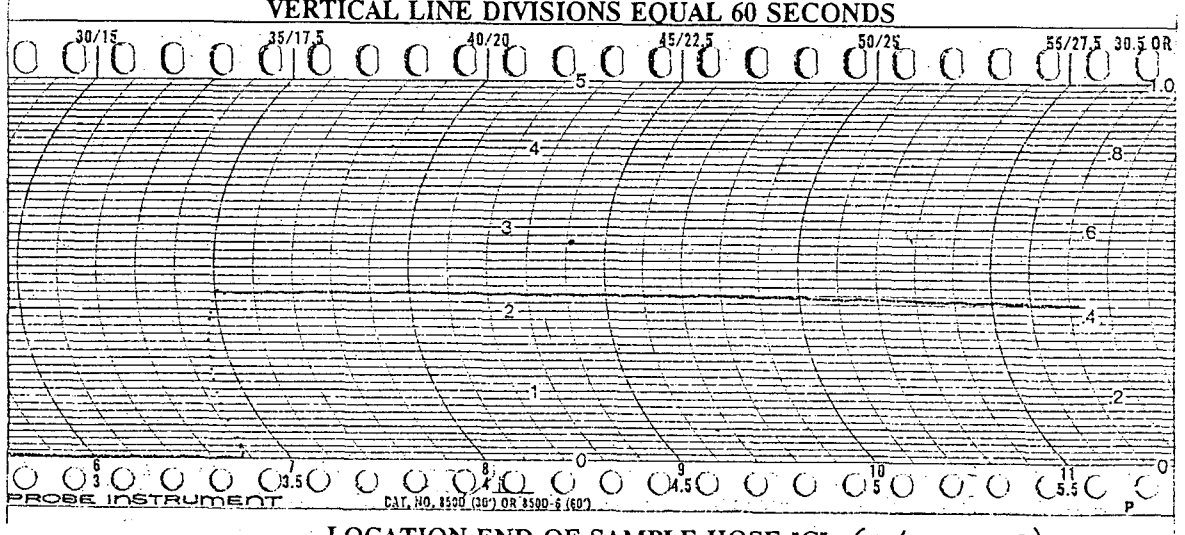
LOCATION END OF SAMPLE HOSE "B" (Channel 2)

DISTANCE FROM:NORTH WALL 34.25 FT.:EAST WALL 6.42 FT.:SOUTH WALL — FT:WEST WALL — FT.

DISTANCE ABOVE: FLOOR 11.75 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 17.0 FT.: UNDERFLOOR HEIGHT: — FT.

VERTICAL LINE DIVISIONS EQUAL 60 SECONDS



LOCATION END OF SAMPLE HOSE "C" (Channel 3)

DISTANCE FROM:NORTH WALL — FT.:EAST WALL — FT.:SOUTH WALL 38.75 FT:WEST WALL 2.42 FT.

DISTANCE ABOVE: FLOOR 12.75 FT.: RAISED FLOOR — FT.: SUBFLOOR — FT.

HAZARD HEIGHT: FLOOR TO CEILING 17.0 FT.: UNDERFLOOR HEIGHT: — FT.

ENCLOSURE 2
WATTS BAR NUCLEAR PLANT (WBN)
REPLY TO REQUEST FOR ADDITIONAL INFORMATION

COMMITMENT

1. TVA will revise the system design description for the CO_2 system supplying the auxiliary instrument rooms (Units 1 and 2) to include a minimum soak time. The soak time will be to maintain CO_2 concentration greater than 45% for at least 15 minutes. The revision will be completed by June 30, 1995.