UFP2-80-110

Westinghouse Electric Corporation Power Systems

Nuclear Fuel Division
Box 355
Pittsburgh, Pennsylvania 15230

July 8, 1980

Docket No. 70-2909

U.S. NUCLEAR REGULATORY COMMISSION
Attention: Dr. E. Y. Shum
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and Material Safety
Washington, DC 20555

Sir:

Enclosed are responses to questions related to the Environmental Report of the proposed Westinghouse Nuclear Fuel Fabrication Plant (ANFFP) near Prattville, Alabama. These questions were formally transmitted in your letter, received by me on June 10, 1980.

The information embodied in these responses represents state-of-the-project estimates available at the current level of facility planning and design. I trust you will find this additional information complete. If you have any questions concerning this enclosure, please call me at (412)-273-6300.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

F. Cellier
ANFFP Project Manager

Enclosures

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QUESTIONS AND RESPONSES RELATED TO PRATTVILLE ER
- NUCLEAR FUEL FABRICATION PLANT -

1. (ER: Section 2-2; p. 2-4; Demography)

Please provide a map indicating the location of the residence onsite (if any) and all residences within a 1-mile radius of the plant. Also, provide the distances (in meters) of the nearest residence at each of the 16-azimuthal sectors from the plant.

RESPONSE

A map is provided as Attachment 1.1. Tabulation of the distance from the plant to the nearest off-site residence in each of the 16 sectors is given in the Table below. (The existing on-site residents at the one on-site residence will be relocated prior to plant operation.)

Sector	Direction	Distance from Plant to Nearest Residence (meters)
1	N	670
2	NNE	1210
3	NE	1330
4	ENE	1220
5	E	3760
6	ESE	970
7	SE	2720
8	SSE	2400
9	S	3630
10	SSW	1440
11	SW	1490
12	WSW	1850
13	W	1280
14	WNW	1230
15	NW	770
16	NNW	700

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REASON

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2. (ER: Section 2-2.2; p. 2-16 Land Use)

(a) Please describe land use (e.g., industrial, residential, agricultural) immediately adjacent to the site boundary. Include direction from the site, and for agricultural land, indicate the type of crop such as cotton, alfalfa, wheat, pasture grasses, etc.

(b) Are the forested areas onsite harvested? If so, discuss the productivity of such areas.

(c) Are any prime and unique farmlands, as defined by the U.S. Soil Conservation Service (SCS), present on the site? Provide a letter from the SCS verifying the presence or absence of such lands, and if present provide a map showing the location of these lands.

(d) Does the Prattville Agricultural Experiment Station have experimental plots located in the vicinity of the site? If so, discuss their location with respect to the plant site and discuss the types of crops grown.

(e) Please give the location and type of the nearest forage crop with respect to the proposed plant.

RESPONSE

(a) The two nearest residents to the east of the site primarily raise cattle, and grow hay and winter wheat for forage and cattle feed. These cattle farmers presently lease parts of the site area for pasture grazing area and also pasture the cattle in areas immediately east of the site. A significant portion of the area immediately adjacent to the site in the easterly direction is forested and further east is the Prattville landfill, a solid waste disposal facility.

The area across the Alabama River directly south of the site is primarily a lowland, lightly forested flood plain, but there is a small commercial area consisting of two boat landings with marinas, store, and cabins southeast of the site. Southwest of the site, the land is occupied for farming and residential use. Farming consists of cattle grazing and limited size orchards of pecan trees.

The land directly west of the site is commercially zoned, and is occupied by the Union Camp Paper Manufacturing plant. Northeast of the site

(across Autauga Creek) is primarily a residential area with numerous mobile homes and permanent dwellings located in the area between Washington Ferry Road, County Route 4 and the Creek. In the triangular area bounded by the GMO & ICS railroad spur, County Route 4, and the northern site boundary, several permanent dewellings are located and a sewage treatment plant is being installed nearby.

North of the site boundary is primarily farmland and residential area. The large Whittaker house located directly across County Route 4 raises cattle, grows pasture grass and sometimes grows the forage crop sericea lespedeza. Directly east of this farm, is the Prattville Agricultural Experiment station where cotton, soybeans, corn, sericea lespedeza, and sorgum are grown (see response to item 2d below). Other farmlands to the northeast of the site primarily raise cotton and/or soybeans.

b. Forested areas on site are not harvested, and show no evidence of having been harvested for many years.

c. Approximately 27.5 percent of the site (or 223 acres) consists of 0.2 percent slopes of Lucedale fine sandy loam, 16.2 percent (132 acres) of 2-5 percent slopes Lucedale fine sandy loam, and 11.5 percent (93 acres) of Ochrepts, loamy, 0-5 percent slopes - which the USSCS defines as prime farmland because of its good qualities for growing the prime crops cotton, corn and soybeans. No unique farmlands are located on the site (see Attachment 2.1 letter from the U.S. Department of Agriculture Soil Conservation Service district office located in Prattville, AL, and Table 2-12 of Environmental Report).

d. The Prattville Agricultural Experiment Station does have experimental plots located in the vicinity of the site. A total of 80 acres, located directly north of County Route 4, opposite the northeast quadrant of the site (see map associated with item 1), is dedicated to experimental study of crop growth and insect treatment. The crops grown include cotton, soybeans, corn, sericea lespedeza, sorgum, truck (garden) crops, and other forage crops (grasses and clover). Present acreages for these crops are shown in the Table Attachment 2.2. Exact location and acreages of the individual crops cannot be given, since the area and location of annual crops varies from one year to the next. The growing season for the annual crops is generally from April through December, but varies for each crop.

e. The nearest forage crops with respect to the proposed plant location are on the Whittaker property immediately north of the site, across County Route 4 and west of the Prattville Experiment Station. The crops consist of pasture grass and (periodically) sericea lespedeza.

Attachment 2.1

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JUN 12 1980

June 10, 1980

Westinghouse
Electric Corporation
Power Systems
Penn. Center 2-200
Box 355
Pittsburgh, Pa. 15230

Dear Mr. Cellier,

There is no unique farmlands on your property south of The Auburn University Prattville Agricultural Experiment Station, but there is some prime farmlands. I am attaching a soils map and legend of the prime farm land on your property.

Yours sincerely,

Bert K. Curtis

Bert K. Curtis
District Conservationist
Soil Cons. Service

PRIME FARMLAND LEGEND

AUTAUGA COUNTY, ALABAMA

The soil map units in this list are prime farmland except where the use is urban or built-up land 1/ or they fail to meet the criteria indicated by footnote.

Map Symbol	Map Unit	Acres
AtA	Altavista loam, 0 to 2 percent slopes	2,553
AtB	Altavista loam, 2 to 5 percent slopes	969
Be	Benndale loamy fine sand	4,369
Ha	Harleston loamy fine sand	8,398
LdA	Lucedale fine sandy loam, 0 to 2 percent slopes	7,126
LdB	Lucedale fine sandy loam, 2 to 5 percent slopes	9,510
Mc	McQueen silt loam	7,093
NfA	Norfolk loamy fine sand, 0 to 2 percent slopes	1,422
NkB	Norfolk fine sandy loam, 2 to 5 percent slopes	2,397
NkC	Norfolk fine sandy loam, 5 to 8 percent slopes	818
OcB	Ochrepts, loamy, 0 to 5 percent slopes	1,946
PfB	Pine Flat sandy loam, 0 to 5 percent slopes	4,389
RuA	Ruston fine sandy loam, 0 to 2 percent slopes	1,994
RuB	Ruston fine sandy loam, 2 to 5 percent slopes	4,730
Va	Vaiden silty clay	579
WaB	Wickham loamy sand, 0 to 5 percent slopes	1,584
WkA	Wickham fine sandy loam, 0 to 2 percent slopes	3,482
WkB	Wickham fine sandy loam, 2 to 5 percent slopes	2,209
	TOTAL	65,568

1/ Urban and built-up is defined to be any contiguous unit of land 10 acres or more in size that is used for residences, industrial sites, commercial sites, railroad yards, small parks, cemeteries, golf courses, sewage treatment areas, water control structures and so forth.


T. 16 N.
T. 17 N.
(Joins sheet 48)
(Joins sheet 55)
(Joins sheet 42)
R. 16 E.
ALABAMA
MONTGOMERY
ELMORE COUNTY
water
Scale 1:20,000
5,000 Feet.
Z

ATTACHMENT 2.2

Type and Extent (Acres) of Agricultural Crops
Grown at the Prattville Experiment Station

(Total Acreage of Prattville Experiment Station - 80A)

Cotton	~ 15A
Soybeans	15A
Corn	6A
Sericea Lespedeza (forage crop)	8A
Other Forage Crops (grass and clover	2A
Sorgum (sweet and grain)	4A
Pines	1A
Truck Crops (Vegetable gardens)	1A
Uncultivated and Boundary Rows	28A

Growing Season - April through December

3. (ER: Section 2-2.3; p. 2-18; Water Use)

(a) The Prattville Water System consists of nine wells. Please identify the aquifer(s) tapped by each well. Please supply any additional hydrologic data for each well. How is the aquifer(s) recharged?

(b) Please provide a map indicating the location of all wells located within a five-mile radius of the proposed site. Indicate the aquifer tapped by these wells. Are there any potentiometric surface maps published for the aquifers in this area? If yes, please provide.

RESPONSE

a. All nine wells of the Prattville water system tap the Gordo aquifer. Depth, pumping capacity in gallons per minute (gpm), drawdown characteristics at approximately the pumping capacity, and other physical characteristics of these wells are shown in Attachment 3.1 Table A. Based on the 1960 Geological survey by Scott et al (included in this submittal in response to item 18b), as represented by figure 2-9 in the Environmental Report, these wells would be expected to be recharged by gravity flow rather than by artesian conditions.

b. A map showing all residential dwellings within two miles of the proposed plant is presented in response to item 1. A complete survey has not been performed; however, it is generally observed that each dwelling located outside the Prattville city limits will require its own well, while dwellings within city limits will receive their water from the nine wells of the Prattville municipal system previously described. Aquifers tapped are from the Gordo and/or Eutaw formation (see Table 2-14, Environmental Report). A potentiometric surface map is included in the 1960 Geological Survey report provided with this submittal.

TABLE A

Attachment 3.1

PHYSICAL AND HYDROLOGICAL CHARACTERISTICS OF
PRATTVILLE MUNICIPAL WATER SUPPLY

	Depth (feet)	Diameter (inches)	Capacity (GPM)	Static Level (feet)	Drawdown (ft) @ GPM	Air line length (feet)	Column length to pump (feet)
Well #2 Pratt Park	408	16	350	70	180 @ 345	248	220
Well #3 Davis St.	538	20	500	205	91 @ 503	300	270
Well #4 Underpass	445	20	400	70	122 @ 400	210	180
Well #5 W. Fourth	450	20	500	60	66 @ 502	127	110
Well #6 Patrick St.	520	20	400	120 (originally)	94 @ 402	250	250
Well #7 Newton Park	467	24	320	96 (originally)	74 @ 302	220	220
Well #8 82 @ 14	320	20	400	87	55 @ 403	228	200
Well #9 N. Chestnut				108	101 @ 402	256	230
Well #10 Hunt's Alley						229	

4. (ER: Section 2.3.1; p. 2-20; Historical and Cultural Landmarks)

Please provide a clearance letter from the Alabama State Historic Preservation Office regarding historic and archeological sites.

RESPONSE

On October 21, 1979, a copy (then draft) of Environmental Report paragraph 2.3; "Regional Historic, Scenic Cultural, and Natural Landmarks", was reviewed with the State Historic Preservation Officer, in Montgomery, Alabama. He recommended that reference to a new Prattville wilderness park, containing giant Chinese bamboo, be included in the paragraph on "Natural and Scenic Landmarks"; and, that an indepth survey of the proposed site be performed by a professionally-trained archeologist (including a report to be reviewed by his office prior to construction activities).

Information on the Prattville wilderness park was subsequently included in the "Natural and Scenic Landmarks" paragraph of the final Environmental Report.

Westinghouse has contracted Auburn University at Montgomery to perform the archeological study; the study is in progress. The requested report will be submitted to the State Historic Preservation Office, and a clearance letter regarding historic and archeological sites will be provided.

5. (ER: Section 2-4.3; p. 2-27; Seismology)

Please include historical or instrumentally-recorded data indicating the number and magnitude and/or intensity of earthquakes that have occurred within a 160 km (100 mile) radius of the proposed site.

RESPONSE

Attachment 5.1 is a summary of the history of earthquakes in Alabama for the period 1886 to 1975. A few minor earthquakes have occurred since 1975 but none were of any consequence.

Attachment 5.1

EARTHQUAKES OF ALABAMA 1886-1975[1]
compiled by
James A. Drahovzal
Geological Survey of Alabama

NO.	DATE-TIME[2]	LOCALITY	INTENSITY AND/OR MAGNITUDE[3]	REMARKS
1	Feb. 4, 1886 20:00	Valley Head (34.6N., 85.6W.)	III	West to east movement of earthquake wave, may have been stronger to east. Felt in northern and western Alabama, northwestern Georgia
2	Feb. 5, 1886 07:00-08:00	Linden-Jefferson (32.3N., 87.8W.)	IV	Shook houses and rattled dishes on table.
2	Feb. 13, 1886 07:00-08:00	Tombigbee River (32.3N., 87.9W.)	V	Houses substantially shaken, some people thrown from feet, but other than broken dishes no damages or injuries. Top of Black Bluff slid into river 10 feet of subsidence behind bluff in several acre area. Felt from Moscow to Tompkins Bluff, but not away from river

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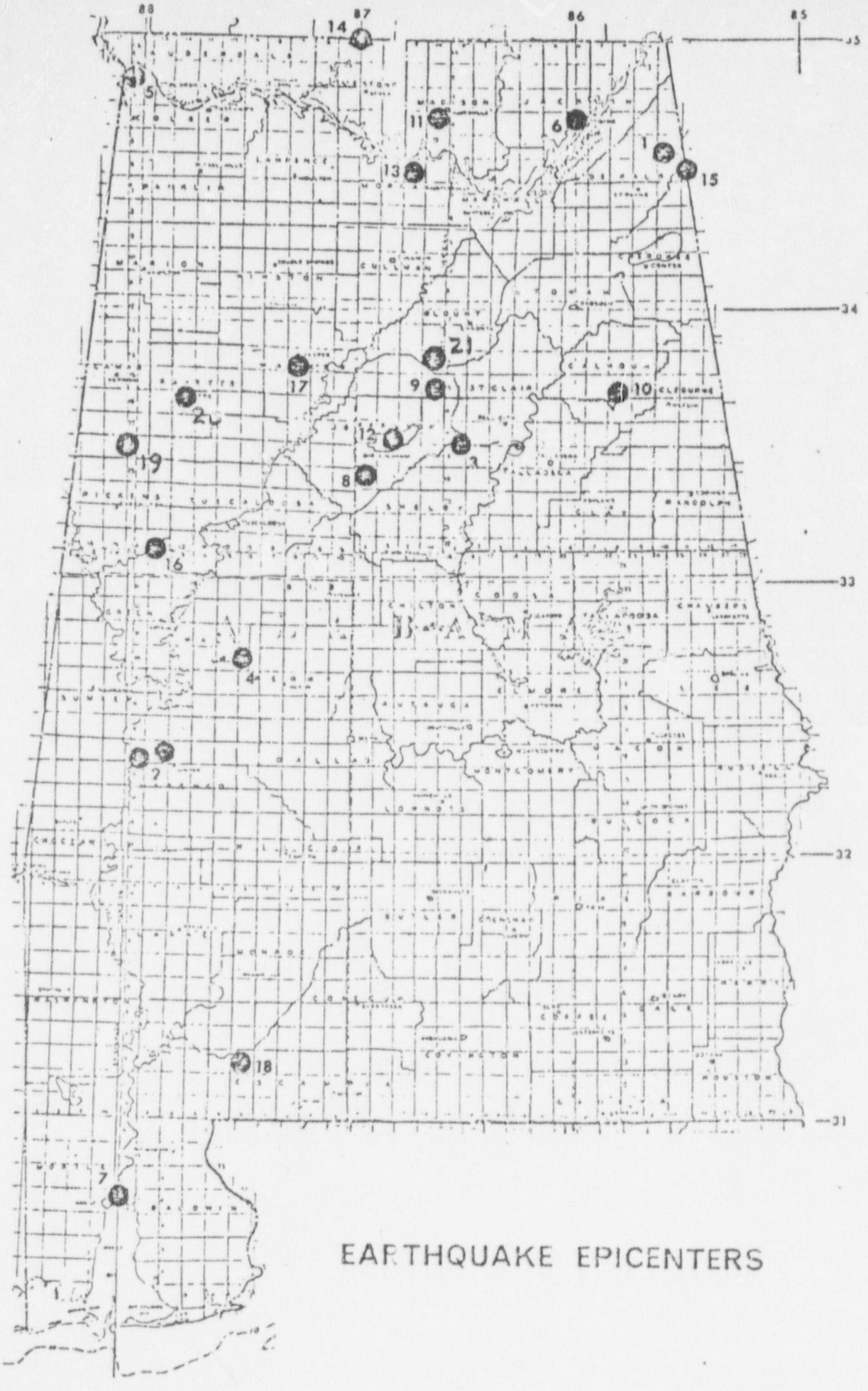
1) Based on information from Eppley, R. A., 1965, "Earthquake History of the United States"; Coffman, J. L., and von Hake, C. A., 1973, "Earthquake History of the United States"; Wollard, G. P., 1968, "A Cataloque of Earthquakes in the United States Prior to 1925, Based on Unpublished Data Compiled by Harry Fielding Reid and Published Sources Prior to 1930"; "United States Earthquakes", U. S. Department of Commerce, Coast and Geodetic Survey, 1928-1968; "Preliminary Determination of Epicenters", U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Earthquake Information Center, 1971; "Monthly Weather Review", U. S. Weather Bureau, 1886, 1916, 1917; U. S. Department of Commerce, written communication, 1971; G. A. Bollinger, written communications 1971-1973; U. S. Department of Interior, National Earthquake Information Service, written communication, 1975; L. T. Long, oral communication, 1975; F. E. Followill oral communication; 1975. As a result of personal interviews and newspaper research, the 1905 Gadsden earthquake has been attributed to a dynamite blast at Tumlin Gap railroad tunnel during its construction. It therefore is excluded from this list.

2) Central Standard Time

3) Intensity - Modified Mercalli Scale (Roman numeral), Magnitude-near equivalent of Richter magnitude (Arabic number)

NO.	DATE-TIME	LOCALITY	INTENSITY AND/OR MAGNITUDE	REMARKS
3	Oct. 18, 1916 16:04	Dunnavant (33.5N., 86.5W.)	VII-VIII	Windows broken, Chimneys toppled. 2 and possibly 3 aftershocks felt over 100,000 square-mile area.
4	June 29, 1917 20:23, 20:50	Rosemary (32.7N., 87.5W)	V	Rumbling noise, 12 shocks at Greensboro.
5	Oct. 28, 1923 11:15	Riverton (34.9N., 88.1W.)	III	Rattled dishes and windows, one after shock on Dec. 31.
6	June 16, 1927 07:00	Hollywood (34.7N., 86.0W.)	V	Little damage. Felt over 2,500 square-mile area.
7	June 13, 1929 08:44	Mobile (30.7N., 88.0W.)	I-II	Swaying in east-west direction Felt by few.
8	Dec. 1, 1930 09:10-09:45	Bessemer (30.4N., 87.0W.)	?	Possibly not seismic, unusual series of tremors.
9	May 5, 1931 07:18	North Alabama (33.7N., 86.6W.)	V-VI	Felt over 6500 square mile area, knocked objects from walls, bricks fell from chimney.
10	May 4, 1939 21:45[1]	Anniston (33.7N., 85.8W.)	V	Moved furniture, rattled dishes, canned goods thrown from shelves, people ran into streets.
11	June 24, 1939 05:27	Huntsville (34.7N., 86.6W)	IV	Rattled dishes and windows, telephone poles swayed. Felt over a 500 square-mile area. 3 shocks.
12	Feb. 6, 1952 10:12	Birmingham (33.5N., 86.8W.)	IV	Slightly cracked wall. Felt over 50 square-mile area.

NO.	DATE-TIME	LOCALITY	INTENSITY AND/OR MAGNITUDE	REMARKS
13	April 23, 1957 04:23:39	North Alabama (34.5N., 86.8W)	VI	Cracked masonry, knocked objects from tables; people ran into streets. Felt over 11,500 square-mile area.
14	Aug. 12, 1959 13:06:07	Alabama-Tennessee (35.0N., 87.0W.)	VI	Newly constructed building damaged, bricks shaken from chimney, cracked plaster. People ran into streets. Felt over 2,800 square-mile area.
15	Feb, 18, 1964 04:31:12	Alabama-Georgia (34.5N., 85.5W.)	V	Rock shaken from chimney, dishes fell from shelves, people awakened. 15km. depth
16	March 14, 1971 11:27:52	Carrollton (33.1 N, 87.9W.)	3.9	Felt by few at Carrollton, one aftershock. 1 km. depth.
17	Nov. 2, 1974 01:25:50	Jasper (33.8N., 87.3W.)	?	Possibly not seismic
17	Nov. 4, 1974 10:03	Jasper (33.8N., 87.3W.)	?	Possibly not seismic
18	Dec. 10, 1974 24:1:37	Huxford (31.3N., 87.5W.)	3	10km. depth
19	March 1, 1975 05:50:1	Palmetto (35.5N, 88.0W.)	II 3.4	18km. depth. Felt at Smithville MS. (II) and Winfield, AL.
20	June 24, 1975 05:15	Fayette (33.7N, 87.8W.)	III 3.7	Cracked window, unrooted tree, rattled windows.
21	Aug. 28, 1975 22:22:52	Cedar Spring (33.84N., 86.6W.)	VI 4.4	Cracked plaster, rattled windows, mud in a few wells. 10km. depth. Maximum intensity at Palmerdale.



EARTHQUAKE EPICENTERS

GEOLOGICAL SURVEY OF ALABAMA

6. (ER: Section 2-4, p. 2-22-27; Geology)

Are there any known mineral resources that can be developed economically on or surrounding the proposed plant site?

RESPONSE

There is no evidence of withdrawal of oil or gas on the site, although exploratory activities are known in the region surrounding the site. There is no evidence of surface mining at the site, but surface mining (sand and gravel) has occurred approximately one and one-half miles east of the site, one-half mile northeast of site, and south of the site (across the Alabama River).

7. (ER: Section 2.5.2; p. 2-37; Groundwater)

(a) Does groundwater in the Gordo and Eutaw formations occur under confined or unconfined conditions? Is there hydraulic communications between these two formations? Does groundwater occur in the Coker formation? Under what conditions?

(b) Do wells No. R-54 and R-60 in Table 2-14 correspond to W-1 and W-3 given in Figure 2-7, respectively? Please match all wells shown in Figures 2-7 and 6-4 with the well data given in Table 2-14 if possible. If data is absent, please explain why.

RESPONSE

a. Groundwater in Autauga County occurs both under gravity and artesian conditions. Typically, the flowing artesian wells are developed in the Coker and Gordo formations, which underlie the Eutaw formation at the proposed site. The gravity water table conditions prevail in the areas of terrace and alluvial deposits, as well as in outcrop areas of the Coker, Gordo, and Eutaw formations.(6) The Geological survey performed by John Scott(5) of the USGS (1960) provides more information on subsurface water in Autauga County. A copy of this report is enclosed with this submittal.

b. Wells No. R-54 and R-60 in Table 2-14 do correspond to wells W-1' and W-3 respectively, as shown in Figure 2-7 of the Environmental Report. These are the only wells (indicated in Figure 2-9 and Table 2-14 of the Report) which were sampled during the four-season preoperational survey. Other nearby wells which were not sampled, since they would be expected to be less effected by on site activities, include Well R-61 (on the F. L. Lipscomb property east of the site), Well R-53 (on the Whittaker property, used for crop irrigation), and Well R-52 (on the Prattville Experiment Station property located directly north of the ANFFP site across County Route 4). Well No. R-56 (indicated in Table 2-14 as an on-site, surface well) has not been located, and it is likely that it has now been filled in. Well W-2 (Figure 2-7), located at the only on-site residence, is not shown on Figure 2-9 or Table 2-14. (It is probable that this well was drilled after the 1960 water resource survey(5) [from which the Table 2-14 data was taken] was completed.)

8. (ER: Section 2-6.3; p. 2-62 and 2-65; Section 6-3.1; p. 6-33; Meteorology)

(a) Meteorological data are available from Dannelly Field from 1944 to date. Provide justification for using data from the time period 1956 through 1960 for calculation of dispersion factors.

(b) Why are the meteorological data from Dannelly Field (9 miles SSE of the site) expected to be more representative of the site than data from the Maxwell Air Force Base (6 miles ESE of the site)?

(c) Provide atmospheric dispersion factors for accidental and annual average releases using the appropriate stack release heights or ground-level release including building-wake effect; state all assumptions. Provide the plant's building dimensions.

RESPONSE

a. The 1956-60 period was chosen because the TDF tapes for the period contain hour-by-hour information, which is essential in determining the maximum persistence of wind direction and stability class. For more recent years (post 1964), the United States Weather Bureau has transcribed only every third hour to the magnetic tape format. There is no significant difference in the climatology of the ANFFP site area between the 1950's and the present, and none is expected in the near future. Therefore, this data is quite suitable for evaluation of average and extreme meteorological events affecting atmospheric dispersion.(3)

b. "Five years of data (1956-1960) were also obtained for the Maxwell Air Force Base. This data is available primarily as a backup source of information to the Dannelly Field information. It is the opinion of DeNardo and McFarland as professional meteorologists, that the FAA station data, taken at a Class 1 meteorological station by trained observers, is likely to be more consistent and reliable than the Air Force base data. Also, the monitor site elevation and exposure at Dannelly Field is more closely related to that of the project area, even though the physical location of the Air Force base is closer to the project area."(3)

D & M

WEATHER SERVICE

ALTERNATE TABLES 2-25 & A-1

ATMOSPHERIC DISPERSION FACTORS (X/Q, sec/m^3) FOR ACCIDENTAL RELEASES

Eight Hour Averaging Period

Downwind Distance (miles)	95th Percentile	50th Percentile
.50	3.82 E-04	2.39 E-04
.75	1.93 E-04	1.21 E-04
1.00	1.22 E-04	7.63 E-05
1.50	6.64 E-05	4.15 E-05
2.00	4.39 E-05	2.74 E-05
2.50	3.21 E-05	2.01 E-05
3.00	2.50 E-05	1.56 E-05
3.50	2.03 E-05	1.27 E-05
4.00	1.70 E-05	1.06 E-05
4.50	1.45 E-05	9.07 E-06
5.00	1.26 E-05	7.89 E-06
7.50	7.47 E-06	4.67 E-06
10.00	5.18 E-06	-
15.00	-	-
20.00	-	-
25.00	-	-
30.00	-	-
35.00	-	-
40.00	-	-
50.00	-	-

D & M

WEATHER SERVICE

ATTACHMENT 8.2

ALTERNATE TABLE A-2

ATMOSPHERIC DISPERSION FACTORS (X/Q, sec/m^3) FOR ACCIDENTAL RELEASES

Twenty-four Averaging Period

Downwind Distance (miles)	95th Percentile	50th Percentile
.50	2.55 E-04	1.10 E-05
.75	1.29 E-04	4.71 E-06
1.00	8.14 E-05	2.59 E-06
1.50	4.43 E-05	1.11 E-06
2.00	2.93 E-05	6.03 E-07
2.50	2.14 E-05	3.81 E-07
3.00	1.67 E-05	2.60 E-07
3.50	1.35 E-05	1.88 E-07
4.00	1.13 E-05	1.42 E-07
4.50	9.67 E-06	1.11 E-07
5.00	8.42 E-06	9.55 E-08
7.50	4.98 E-06	6.36 E-08
10.00	3.45 E-06	4.77 E-08
15.00	2.08 E-06	3.18 E-08
20.00	1.46 E-06	2.39 E-08
25.00	1.11 E-06	1.91 E-08
30.00	-	1.59 E-08
35.00	-	1.36 E-08
40.00	-	1.19 E-08
50.00	-	9.55 E-09

D & M

WEATHER SERVICE

ATTACHMENT 8.3

ALTERNATE TABLE A-3

ATMOSPHERIC DISPERSION FACTORS (X/Q, sec/m^3) FOR ACCIDENTAL RELEASES

Four Day Averaging Period

Downwind Distance (miles)	95th Percentile	50th Percentile
.50	1.91 E-04	6.83 E-06
.75	9.64 E-05	3.39 E-06
1.00	6.11 E-05	2.09 E-06
1.50	3.12 E-05	1.31 E-06
2.00	2.19 E-05	7.79 E-07
2.50	1.61 E-05	5.61 E-07
3.00	1.25 E-05	3.50 E-07
3.50	1.01 E-05	2.74 E-07
4.00	8.43 E-06	2.22 E-07
4.50	7.26 E-06	1.85 E-07
5.00	6.32 E-06	1.57 E-07
7.50	3.73 E-06	8.29 E-08
10.00	2.59 E-06	5.30 E-08
15.00	1.56 E-06	2.83 E-08
20.00	1.09 E-06	1.81 E-08
25.00	8.34 E-07	1.28 E-08
30.00	6.68 E-07	9.71 E-09
35.00	5.55 E-07	7.66 E-09
40.00	4.72 E-07	6.24 E-09
50.00	3.62 E-07	4.43 E-09

D & M

WEATHER SERVICE

ALTERNATE TABLE A-4

ATMOSPHERIC DISPERSION FACTORS (X/Q, sec/m^3) FOR ACCIDENTAL RELEASES

Thirty Day Averaging Period

Downwind Distance (miles)	95th Percentile	50th Percentile
.50	1.97 E-05	6.14 E-06
.75	9.86 E-06	3.07 E-06
1.00	6.20 E-06	1.92 E-06
1.50	3.33 E-06	1.03 E-06
2.00	2.18 E-06	6.71 E-07
2.50	1.59 E-06	4.86 E-07
3.00	1.23 E-06	3.75 E-07
3.50	9.92 E-07	3.02 E-07
4.00	8.26 E-07	2.51 E-07
4.50	7.04 E-07	2.14 E-07
5.00	6.11 E-07	1.85 E-07
7.50	3.58 E-07	1.07 E-07
10.00	2.46 E-07	7.38 E-08
15.00	1.47 E-07	4.37 E-08
20.00	1.03 E-07	3.04 E-08
25.00	2.77 E-08	2.29 E-08
30.00	6.21 E-08	1.83 E-08
35.00	5.14 E-08	1.51 E-08
40.00	4.37 E-08	1.28 E-08
50.00	3.33 E-08	9.72 E-09

D & M

WEATHER SERVICE

ALTERNATE TABLE A-5

HOURLY X/Q VALUES AS FUNCTION OF STABILITY CLASS-WIND VELOCITY RANGE, FOR A DOWNWIND DISTANCE OF 1.00 MILE

Ranking	X/Q (sec/m^3)	Stability Class	Wind Speed Range	MPH
1	1.221 E-04	G	1	0-3
2	8.189 E-05	F	1	0-3
3	2.730 E-05	F	2	4-7
4	1.803 E-05	E	2	4-7
5	1.734 E-05	C	1	0-3
6	1.014 E-05	E	3	8-12
7	8.867 E-06	B	1	0-3
8	6.962 E-06	D	3	8-12
9	5.731 E-06	C	2	4-7
10	4.285 E-06	D	4	13-18
11	3.251 E-06	C	3	8-12
12	3.011 E-06	D	5	19-24
13	2.955 E-06	B	2	4-7
14	2.370 E-06	D	6	>24
15	2.002 E-06	C	4	13-18
16	1.637 E-06	A	1	0-3

ATTACHMENT 8.6

ALTERNATE TABLE 2-26

AVERAGE ATMOSPHERIC DILUTION FACTORS (X/Q, $\frac{Sec.}{M^3}$)

FOOF TOP RELEASE FOR ALPHA 1 PROJECT — SEASON: ANNUAL — PERIOD: 1956-1960
NO DECAY, UNDEPLETED

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) — DISTANCE IN MILES

SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	3.278E-05	1.088E-05	5.444E-06	3.419E-06	1.834E-06	1.201E-06	8.721E-07	6.748E-07	5.449E-07	4.537E-07	3.866E-07
SSW	1.333E-05	4.391E-06	2.194E-06	1.375E-06	7.358E-07	4.808E-07	3.487E-07	2.695E-07	2.174E-07	1.808E-07	1.540E-07
SW	4.100E-05	1.361E-05	6.814E-06	4.279E-06	2.296E-06	1.504E-06	1.093E-06	8.456E-07	6.830E-07	5.688E-07	4.847E-07
WSW	1.428E-05	4.650E-06	2.321E-06	1.452E-06	7.735E-07	5.037E-07	3.642E-07	2.808E-07	2.260E-07	1.876E-07	1.595E-07
W	2.928E-05	9.612E-06	4.800E-06	3.007E-06	1.607E-06	1.049E-06	7.600E-07	5.869E-07	4.732E-07	3.934E-07	3.348E-07
WNW	1.069E-05	3.471E-06	1.731E-06	1.081E-06	5.754E-07	3.744E-07	2.705E-07	2.084E-07	1.677E-07	1.392E-07	1.183E-07
NW	2.518E-05	8.316E-06	4.156E-06	2.607E-06	1.396E-06	9.131E-07	6.625E-07	5.122E-07	4.134E-07	3.440E-07	2.930E-07
NNW	8.726E-06	2.836E-06	1.415E-06	8.847E-07	4.711E-07	3.067E-07	2.217E-07	1.708E-07	1.375E-07	1.141E-07	9.697E-08
N	2.921E-05	9.646E-06	4.826E-06	3.028E-06	1.622E-06	1.061E-06	7.697E-07	5.951E-07	4.801E-07	3.995E-07	3.402E-07
NNE	9.411E-06	3.042E-06	1.518E-06	9.478E-07	5.037E-07	3.273E-07	2.362E-07	1.818E-07	1.462E-07	1.212E-07	1.029E-07
NE	2.545E-05	8.395E-06	4.197E-06	2.632E-06	1.410E-06	9.218E-07	6.687E-07	5.170E-07	4.171E-07	3.471E-07	2.956E-07
ENE	1.090E-05	3.576E-06	1.787E-06	1.119E-06	5.980E-07	3.903E-07	2.826E-07	2.182E-07	1.758E-07	1.462E-07	1.243E-07
E	1.998E-05	6.560E-06	3.276E-06	2.053E-06	1.097E-06	7.165E-07	5.192E-07	4.010E-07	3.233E-07	2.689E-07	2.289E-07
ESE	9.988E-06	3.250E-06	1.622E-06	1.015E-06	5.404E-07	3.518E-07	2.543E-07	1.960E-07	1.577E-07	1.309E-07	1.113E-07
SE	2.730E-05	8.948E-06	4.471E-06	2.801E-06	1.496E-06	9.764E-07	7.072E-07	5.459E-07	4.399E-07	3.656E-07	3.111E-07
SSE	1.268E-05	4.141E-06	2.069E-06	1.295E-06	6.906E-07	4.500E-07	3.256E-07	2.511E-07	2.022E-07	1.679E-07	1.427E-07

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) — DISTANCE IN MILES

BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	3.355E-07	1.962E-07	1.351E-07	8.059E-08	5.620E-08	4.260E-08	3.403E-08	2.817E-08	2.393E-08	2.074E-08	1.825E-08
SSW	1.336E-07	7.799E-08	5.364E-08	3.195E-08	2.227E-08	1.688E-08	1.348E-08	1.115E-08	9.476E-09	8.210E-09	7.225E-09
SW	4.207E-07	2.463E-07	1.697E-07	1.013E-07	7.068E-08	5.361E-08	4.283E-08	3.547E-08	3.015E-08	2.613E-08	2.300E-08
WSW	1.381E-07	8.013E-08	5.486E-08	3.247E-08	2.254E-08	1.703E-08	1.356E-08	1.120E-08	9.497E-09	8.215E-09	7.219E-09
W	2.903E-07	1.693E-07	1.163E-07	6.917E-08	4.818E-08	3.649E-08	2.912E-08	2.409E-08	2.046E-08	1.772E-08	1.559E-08
WNW	1.024E-07	5.943E-08	4.065E-08	2.409E-08	1.673E-08	1.264E-08	1.007E-08	8.321E-09	7.056E-09	6.105E-09	5.366E-09
NW	2.542E-07	1.486E-07	1.023E-07	6.098E-08	4.253E-08	3.224E-08	2.576E-08	2.132E-08	1.812E-08	1.570E-08	1.382E-08
NNW	8.396E-08	4.871E-08	3.335E-08	1.974E-08	1.370E-08	1.035E-08	8.241E-09	6.806E-09	5.771E-09	4.992E-09	4.387E-09
N	2.950E-07	1.722E-07	1.184E-07	7.045E-08	4.905E-08	3.715E-08	2.964E-08	2.452E-08	2.082E-08	1.804E-08	1.587E-08
NNE	8.904E-08	5.148E-08	3.515E-08	2.073E-08	1.435E-08	1.082E-08	8.604E-09	7.095E-09	6.009E-09	5.193E-09	4.559E-09
NE	2.564E-07	1.498E-07	1.030E-07	6.137E-08	4.277E-08	3.241E-08	2.588E-08	2.142E-08	1.819E-08	1.576E-08	1.387E-08
ENE	1.078E-07	6.270E-08	4.301E-08	2.553E-08	1.776E-08	1.343E-08	1.071E-08	8.854E-09	7.514E-09	6.505E-09	5.720E-09
E	1.984E-07	1.157E-07	7.953E-08	4.732E-08	3.295E-08	2.495E-08	1.992E-08	1.648E-08	1.399E-08	1.212E-08	1.066E-08
ESE	9.635E-08	5.587E-08	3.824E-08	2.262E-08	1.570E-08	1.185E-08	9.440E-09	7.795E-09	6.609E-09	5.716E-09	5.023E-09
SE	2.696E-07	1.569E-07	1.076E-07	6.389E-08	4.441E-08	3.359E-08	2.678E-08	2.213E-08	1.878E-08	1.625E-08	1.429E-08
SSE	1.236E-07	7.174E-08	4.912E-08	2.908E-08	2.018E-08	1.524E-08	1.214E-08	1.002E-08	8.499E-09	7.351E-09	6.460E-09

ALTERNATE TABLE A-9

AVERAGE ATMOSPHERIC DILUTION FACTORS (X/Q, $\frac{Sec.}{M^3}$)

PROF TOP RELEASE FOR ALPHA 1 PROJECT — SEASON: WINTER — PERIOD: 1956-1960
NO DECAY, UNDEPLETED

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) — DISTANCE IN MILES

SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	3.313E-05	1.096E-05	5.493E-06	3.443E-06	1.847E-06	1.208E-06	8.764E-07	6.775E-07	5.465E-07	4.547E-07	3.871E-07
SSW	1.174E-05	3.847E-06	1.922E-06	1.203E-06	6.418E-07	4.185E-07	3.029E-07	2.337E-07	1.883E-07	1.565E-07	1.331E-07
SW	3.690E-05	1.224E-05	6.129E-06	3.848E-06	2.062E-06	1.350E-06	9.756E-07	7.577E-07	6.116E-07	5.091E-07	4.337E-07
WSW	1.068E-05	3.448E-06	1.721E-06	1.074E-06	5.692E-07	3.692E-07	2.660E-07	2.045E-07	1.642E-07	1.360E-07	1.154E-07
W	2.233E-05	7.289E-06	3.638E-06	2.276E-06	1.213E-06	7.904E-07	5.717E-07	4.409E-07	3.550E-07	2.949E-07	2.507E-07
WNW	5.906E-06	1.898E-06	9.476E-07	5.910E-07	3.131E-07	2.030E-07	1.461E-07	1.123E-07	9.008E-08	7.458E-08	6.323E-08
NW	2.074E-05	6.846E-06	3.424E-06	2.143E-06	1.151E-06	7.526E-07	5.460E-07	4.221E-07	3.405E-07	2.833E-07	2.413E-07
NNW	7.833E-06	2.569E-06	1.285E-06	8.052E-07	4.302E-07	2.807E-07	2.032E-07	1.568E-07	1.263E-07	1.050E-07	8.928E-08
N	2.993E-05	9.950E-06	4.988E-06	3.134E-06	1.682E-06	1.101E-06	7.995E-07	6.184E-07	4.993E-07	4.156E-07	3.540E-07
NNE	7.069E-06	2.288E-06	1.142E-06	7.147E-07	3.798E-07	2.466E-07	1.778E-07	1.367E-07	1.098E-07	9.101E-08	7.722E-08
NE	2.360E-05	7.829E-06	3.921E-06	2.462E-06	1.320E-06	8.642E-07	6.274E-07	4.853E-07	3.917E-07	3.261E-07	2.777E-07
ENE	1.193E-05	3.928E-06	1.966E-06	1.233E-06	6.594E-07	4.306E-07	3.120E-07	2.409E-07	1.942E-07	1.614E-07	1.373E-07
E	2.131E-05	6.997E-06	3.500E-06	2.193E-06	1.171E-06	7.644E-07	5.536E-07	4.273E-07	3.443E-07	2.861E-07	2.434E-07
ESE	1.289E-05	4.215E-06	2.111E-06	1.322E-06	7.052E-07	4.594E-07	3.322E-07	2.560E-07	2.060E-07	1.710E-07	1.453E-07
SE	3.388E-05	1.113E-05	5.571E-06	3.492E-06	1.865E-06	1.217E-06	8.811E-07	6.799E-07	5.477E-07	4.551E-07	3.870E-07
SSE	1.347E-05	4.380E-06	2.191E-06	1.370E-06	7.291E-07	4.743E-07	3.425E-07	2.637E-07	2.121E-07	1.759E-07	1.494E-07

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) — DISTANCE IN MILES

BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	3.357E-07	1.957E-07	1.344E-07	7.986E-08	5.554E-08	4.201E-08	3.350E-08	2.769E-08	2.350E-08	2.034E-08	1.789E-08
SSW	1.153E-07	6.702E-08	4.594E-08	2.725E-08	1.895E-08	1.433E-08	1.142E-08	9.441E-09	8.010E-09	6.932E-09	6.095E-09
SW	3.762E-07	2.199E-07	1.513E-07	9.021E-08	6.290E-08	4.768E-08	3.808E-08	3.152E-08	2.678E-08	2.321E-08	2.043E-08
WSW	9.977E-08	5.749E-08	3.917E-08	2.304E-08	1.594E-08	1.200E-08	9.538E-09	7.862E-09	6.655E-09	5.749E-09	5.045E-09
W	2.172E-07	1.262E-07	8.647E-08	5.128E-08	3.555E-08	2.696E-08	2.150E-08	1.777E-08	1.508E-08	1.305E-08	1.148E-08
WNW	5.463E-08	3.139E-08	2.134E-08	1.251E-08	8.617E-09	6.472E-09	5.130E-09	4.220E-09	3.566E-09	3.075E-09	2.695E-09
NW	2.093E-07	1.221E-07	8.393E-08	4.994E-08	3.477E-08	2.633E-08	2.101E-08	1.738E-08	1.475E-08	1.278E-08	1.124E-08
NNW	7.734E-08	4.491E-08	3.077E-08	1.823E-08	1.266E-08	9.564E-09	7.620E-09	6.295E-09	5.339E-09	4.619E-09	4.060E-09
N	3.071E-07	1.794E-07	1.234E-07	7.348E-08	5.117E-08	3.875E-08	3.093E-08	2.559E-08	2.173E-08	1.882E-08	1.656E-08
NNE	6.675E-08	3.845E-08	2.619E-08	1.539E-08	1.062E-08	7.986E-09	6.338E-09	5.219E-09	4.415E-09	3.811E-09	3.342E-09
NE	2.410E-07	1.408E-07	9.687E-08	5.771E-08	4.021E-08	3.046E-08	2.432E-08	2.012E-08	1.709E-08	1.481E-08	1.303E-08
ENE	1.190E-07	6.920E-08	4.744E-08	2.813E-08	1.954E-08	1.477E-08	1.177E-08	9.722E-09	8.245E-09	7.134E-09	6.271E-09
E	2.109E-07	1.226E-07	8.408E-08	4.986E-08	3.464E-08	2.618E-08	2.086E-08	1.723E-08	1.462E-08	1.265E-08	1.112E-08
ESE	1.258E-07	7.277E-08	4.971E-08	2.933E-08	2.029E-08	1.529E-08	1.216E-08	1.003E-08	8.489E-09	7.334E-09	6.438E-09
SE	3.352E-07	1.947E-07	1.333E-07	7.895E-08	5.478E-08	4.138E-08	3.295E-08	2.721E-08	2.307E-08	1.995E-08	1.753E-08
SSE	1.292E-07	7.467E-08	5.096E-08	3.002E-08	2.076E-08	1.564E-08	1.243E-08	1.024E-08	8.670E-09	7.489E-09	6.573E-09

ALTERNATE TABLE A-10

ATTACHMENT 8.8

AVERAGE ATMOSPHERIC DILUTION FACTORS (X/Q, $\frac{Sec.}{M^3}$)

CCF TOP RELEASE FOR ALPHA 1 PROJECT
O DECAY, UNDEPLETED

SEASON: SPRING PERIOD: 1956-1960

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

SECTOR	0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	2.721E-05	9.015E-06	4.511E-06	2.832E-06	1.518E-06	9.539E-07	7.216E-07	5.583E-07	4.507E-07	3.752E-07	3.197E-07
SSW	1.110E-05	3.678E-06	1.841E-06	1.156E-06	6.207E-07	4.066E-07	2.954E-07	2.286E-07	1.847E-07	1.538E-07	1.311E-07
SW	2.757E-05	9.119E-06	4.556E-06	2.859E-06	1.532E-06	1.003E-06	7.283E-07	5.635E-07	4.550E-07	3.788E-07	3.228E-07
WSW	1.034E-05	3.381E-06	1.688E-06	1.056E-06	5.640E-07	3.679E-07	2.663E-07	2.056E-07	1.656E-07	1.376E-07	1.171E-07
W	3.324E-05	1.099E-05	5.496E-06	3.449E-06	1.848E-06	1.209E-06	8.778E-07	6.789E-07	5.480E-07	4.561E-07	3.885E-07
WNW	1.410E-05	4.645E-06	2.322E-06	1.456E-06	7.786E-07	5.086E-07	3.686E-07	2.848E-07	2.296E-07	1.910E-07	1.626E-07
NW	2.808E-05	9.212E-06	4.595E-06	2.878E-06	1.538E-06	1.005E-06	7.282E-07	5.626E-07	4.537E-07	3.773E-07	3.212E-07
NNW	1.095E-05	3.563E-06	1.776E-06	1.110E-06	5.918E-07	3.855E-07	2.789E-07	2.151E-07	1.732E-07	1.439E-07	1.224E-07
N	3.208E-05	1.055E-05	5.275E-06	3.307E-06	1.769E-06	1.156E-06	8.379E-07	6.473E-07	5.219E-07	4.341E-07	3.695E-07
NNE	9.541E-06	3.034E-06	1.509E-06	9.354E-07	4.964E-07	3.211E-07	2.309E-07	1.772E-07	1.420E-07	1.175E-07	9.955E-08
NE	2.129E-05	6.968E-06	3.474E-06	2.175E-06	1.162E-06	7.585E-07	5.495E-07	4.244E-07	3.422E-07	2.845E-07	2.421E-07
ENE	1.052E-05	3.452E-06	1.724E-06	1.080E-06	5.774E-07	3.769E-07	2.731E-07	2.109E-07	1.700E-07	1.413E-07	1.203E-07
E	2.038E-05	6.701E-06	3.349E-06	2.100E-06	1.124E-06	7.341E-07	5.323E-07	4.113E-07	3.317E-07	2.759E-07	2.349E-07
ESE	9.542E-06	3.090E-06	1.542E-06	9.635E-07	5.121E-07	3.328E-07	2.402E-07	1.848E-07	1.486E-07	1.232E-07	1.046E-07
SE	2.287E-05	7.441E-06	3.714E-06	2.323E-06	1.237E-06	8.058E-07	5.826E-07	4.491E-07	3.614E-07	3.001E-07	2.551E-07
SSE	1.024E-05	3.357E-06	1.679E-06	1.052E-06	5.616E-07	3.664E-07	2.653E-07	2.047E-07	1.649E-07	1.371E-07	1.166E-07

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED) DISTANCE IN MILES

BEARING	5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	2.774E-07	1.623E-07	1.117E-07	6.664E-08	4.647E-08	3.522E-08	2.813E-08	2.326E-08	1.978E-08	1.714E-08	1.509E-08
SSW	1.137E-07	6.656E-08	4.584E-08	2.735E-08	1.907E-08	1.446E-08	1.155E-08	9.563E-09	8.126E-09	7.043E-09	6.199E-09
SW	2.802E-07	1.642E-07	1.132E-07	6.761E-08	4.722E-08	3.583E-08	2.865E-08	2.373E-08	2.018E-08	1.750E-08	1.541E-08
WSW	1.015E-07	5.906E-08	4.052E-08	2.407E-08	1.674E-08	1.267E-08	1.011E-08	8.357E-09	7.094E-09	6.142E-09	5.402E-09
W	3.371E-07	1.970E-07	1.356E-07	8.085E-08	5.638E-08	4.274E-08	3.414E-08	2.826E-08	2.401E-08	2.081E-08	1.831E-08
WNW	1.410E-07	8.218E-08	5.645E-08	3.358E-08	2.339E-08	1.771E-08	1.414E-08	1.170E-08	9.932E-09	8.603E-09	7.568E-09
NW	2.786E-07	1.628E-07	1.120E-07	6.675E-08	4.656E-08	3.530E-08	2.820E-08	2.335E-08	1.984E-08	1.719E-08	1.514E-08
NNW	1.061E-07	6.176E-08	4.240E-08	2.520E-08	1.754E-08	1.328E-08	1.060E-08	8.768E-09	7.445E-09	6.448E-09	5.673E-09
N	3.203E-07	1.867E-07	1.283E-07	7.627E-08	5.308E-08	4.018E-08	3.206E-08	2.651E-08	2.251E-08	1.949E-08	1.714E-08
NNE	8.595E-08	4.931E-08	3.348E-08	1.960E-08	1.350E-08	1.014E-08	8.037E-09	6.611E-09	5.586E-09	4.817E-09	4.222E-09
NE	2.100E-07	1.226E-07	8.427E-08	5.019E-08	3.499E-08	2.652E-08	2.118E-08	1.753E-08	1.489E-08	1.291E-08	1.136E-08
ENE	1.042E-07	6.073E-08	4.170E-08	2.479E-08	1.726E-08	1.307E-08	1.043E-08	8.627E-09	7.325E-09	6.345E-09	5.582E-09
E	2.037E-07	1.188E-07	8.167E-08	4.859E-08	3.383E-08	2.562E-08	2.045E-08	1.691E-08	1.436E-08	1.244E-08	1.094E-08
ESE	9.049E-08	5.228E-08	3.568E-08	2.104E-08	1.456E-08	1.098E-08	8.731E-09	7.201E-09	6.099E-09	5.271E-09	4.628E-09
SE	2.209E-07	1.281E-07	8.772E-08	5.202E-08	3.603E-08	2.721E-08	2.167E-08	1.789E-08	1.517E-08	1.312E-08	1.153E-08
SSE	1.010E-07	5.869E-08	4.022E-08	2.384E-08	1.657E-08	1.252E-08	9.981E-09	8.247E-09	6.996E-09	6.054E-09	5.322E-09

ALTERNATE TABLE A-11

ATTACHMENT 8.9

AVERAGE ATMOSPHERIC DILUTION FACTORS (X/Q, $\frac{Sec.}{M^3}$)

RCCE TOP RELEASE FOR ALPHA 1 PROJECT

NO DECAY, UNDEPLETED

SEASON: SUMMER PERIOD: 1956-1960

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

BEARING	DISTANCE IN MILES 0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.0	4.500
S	2.405E-05	8.584E-06	4.281E-06	2.684E-06	1.438E-06	9.406E-07	6.828E-07	5.283E-07	4.265E-07	3.552E-07	3.026E-07
SSW	1.100E-05	3.594E-06	1.790E-06	1.119E-06	5.969E-07	3.892E-07	2.819E-07	2.176E-07	1.754E-07	1.458E-07	1.241E-07
SW	3.996E-05	1.324E-05	6.617E-06	4.154E-06	2.230E-06	1.461E-06	1.061E-06	8.216E-07	6.637E-07	5.529E-07	4.713E-07
WSW	1.242E-05	4.047E-06	2.017E-06	1.262E-06	6.730E-07	4.388E-07	3.176E-07	2.451E-07	1.974E-07	1.641E-07	1.396E-07
W	2.995E-05	9.761E-06	4.881E-06	3.054E-06	1.630E-06	1.064E-06	7.703E-07	5.947E-07	4.793E-07	3.985E-07	3.391E-07
WNW	1.150E-05	3.691E-06	1.834E-06	1.142E-06	6.052E-07	3.925E-07	2.829E-07	2.176E-07	1.748E-07	1.449E-07	1.230E-07
NW	2.876E-05	9.499E-06	4.745E-06	2.976E-06	1.594E-06	1.043E-06	7.569E-07	5.854E-07	4.725E-07	3.933E-07	3.351E-07
NNW	9.189E-06	2.962E-06	1.475E-06	9.206E-07	4.891E-07	3.179E-07	2.295E-07	1.767E-07	1.420E-07	1.178E-07	1.001E-07
N	3.590E-05	1.181E-05	5.901E-06	3.700E-06	1.980E-06	1.294E-06	9.388E-07	7.255E-07	5.852E-07	4.868E-07	4.145E-07
NNE	1.335E-05	4.325E-06	2.156E-06	1.347E-06	7.163E-07	4.660E-07	3.366E-07	2.593E-07	2.086E-07	1.732E-07	1.471E-07
NE	3.874E-05	1.274E-05	6.365E-06	3.990E-06	2.135E-06	1.395E-06	1.011E-06	7.815E-07	6.303E-07	5.243E-07	4.463E-07
ENE	1.359E-05	4.431E-06	2.211E-06	1.383E-06	7.373E-07	4.804E-07	3.475E-07	2.680E-07	2.158E-07	1.793E-07	1.525E-07
E	2.150E-05	6.992E-06	3.479E-06	2.175E-06	1.159E-06	7.555E-07	5.467E-07	4.219E-07	3.399E-07	2.825E-07	2.403E-07
ESE	8.856E-06	2.872E-06	1.428E-06	8.916E-07	4.747E-07	3.091E-07	2.236E-07	1.725E-07	1.389E-07	1.154E-07	9.816E-08
SE	2.220E-05	7.245E-06	3.607E-06	2.256E-06	1.204E-06	7.859E-07	5.694E-07	4.397E-07	3.545E-07	2.948E-07	2.509E-07
SSE	8.399E-06	2.715E-06	1.350E-06	8.423E-07	4.480E-07	2.915E-07	2.107E-07	1.624E-07	1.307E-07	1.085E-07	9.225E-08

ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

BEARING	DISTANCE IN MILES 5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	2.628E-07	1.541E-07	1.063E-07	6.362E-08	4.447E-08	3.377E-08	2.702E-08	2.239E-08	1.905E-08	1.652E-08	1.455E-08
SSW	1.076E-07	6.293E-08	4.332E-08	2.584E-08	1.803E-08	1.368E-08	1.093E-08	9.051E-09	7.693E-09	6.669E-09	5.871E-09
SW	4.092E-07	2.399E-07	1.654E-07	9.887E-08	6.906E-08	5.242E-08	4.191E-08	3.472E-08	2.952E-08	2.560E-08	2.255E-08
WSW	1.210E-07	7.043E-08	4.854E-08	2.872E-08	1.998E-08	1.512E-08	1.206E-08	9.976E-09	8.468E-09	7.332E-09	6.449E-09
W	2.940E-07	1.715E-07	1.179E-07	7.017E-08	4.890E-08	3.706E-08	2.959E-08	2.449E-08	2.080E-08	1.802E-08	1.586E-08
WNW	1.064E-07	6.155E-08	4.206E-08	2.485E-08	1.724E-08	1.302E-08	1.036E-08	8.556E-09	7.253E-09	6.273E-09	5.511E-09
NW	2.908E-07	1.702E-07	1.172E-07	7.000E-08	4.887E-08	3.708E-08	2.964E-08	2.455E-08	2.087E-08	1.810E-08	1.594E-08
NNW	8.658E-08	5.013E-08	3.426E-08	2.023E-08	1.401E-08	1.057E-08	8.405E-09	6.933E-09	5.872E-09	5.075E-09	4.456E-09
N	3.595E-07	2.097E-07	1.442E-07	8.578E-08	5.974E-08	4.524E-08	3.610E-08	2.987E-08	2.536E-08	2.196E-08	1.932E-08
NNE	1.274E-07	7.389E-08	5.058E-08	2.993E-08	2.077E-08	1.569E-08	1.249E-08	1.031E-08	8.744E-09	7.563E-09	6.646E-09
NE	3.870E-07	2.258E-07	1.552E-07	9.233E-08	6.430E-08	4.870E-08	3.887E-08	3.215E-08	2.730E-08	2.365E-08	2.081E-08
ENE	1.321E-07	7.675E-08	5.261E-08	3.120E-08	2.169E-08	1.640E-08	1.308E-08	1.081E-08	9.171E-09	7.938E-09	6.980E-09
E	2.083E-07	1.215E-07	8.353E-08	4.974E-08	3.469E-08	2.630E-08	2.101E-08	1.739E-08	1.478E-08	1.281E-08	1.127E-08
ESE	8.519E-08	4.964E-08	3.412E-08	2.033E-08	1.418E-08	1.076E-08	8.594E-09	7.117E-09	6.049E-09	5.243E-09	4.616E-09
SE	2.177E-07	1.272E-07	8.756E-08	5.223E-08	3.644E-08	2.764E-08	2.209E-08	1.829E-08	1.555E-08	1.348E-08	1.186E-08
SSE	7.991E-08	4.648E-08	3.188E-08	1.894E-08	1.319E-08	9.985E-09	7.969E-09	6.592E-09	5.597E-09	4.848E-09	4.265E-09

ALTERNATE TABLE A-12

ATTACHMENT 8.10

AVERAGE ATMOSPHERIC DILUTION FACTORS (X/Q, $\frac{SEC}{M^3}$)

FOOF TOP RELEASE FOR ALPHA 1 PROJECT
NO DECAY, UNDEPLETED

SEASON: FALL PERIOD: 1956-1960

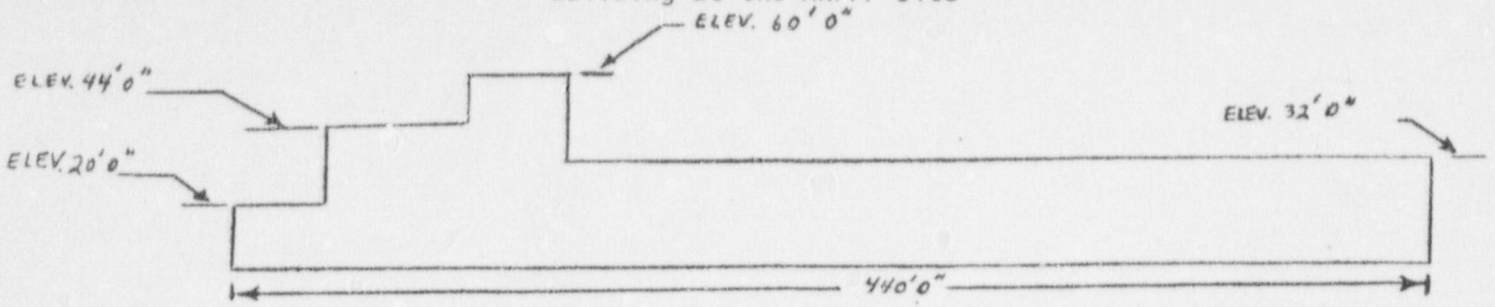
ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

SECTOR	DISTANCE IN MILES 0.250	0.500	0.750	1.000	1.500	2.000	2.500	3.000	3.500	4.000	4.500
S	4.493E-05	1.501E-05	7.527E-06	4.734E-06	2.545E-06	1.669E-06	1.213E-06	9.396E-07	7.592E-07	6.325E-07	5.392E-07
SSW	1.946E-05	6.442E-06	3.222E-06	2.022E-06	1.083E-06	7.087E-07	5.143E-07	3.978E-07	3.211E-07	2.672E-07	2.276E-07
SW	5.900E-05	1.967E-05	9.861E-06	6.199E-06	3.330E-06	2.183E-06	1.586E-06	1.228E-06	9.920E-07	8.253E-07	7.043E-07
WSW	2.333E-05	7.616E-06	3.807E-06	2.382E-06	1.270E-06	8.272E-07	5.982E-07	4.612E-07	3.713E-07	3.083E-07	2.620E-07
W	3.165E-05	1.039E-05	5.193E-06	3.253E-06	1.738E-06	1.134E-06	8.215E-07	6.343E-07	5.112E-07	4.250E-07	3.616E-07
WNW	1.117E-05	3.633E-06	1.811E-06	1.132E-06	6.022E-07	3.919E-07	2.832E-07	2.183E-07	1.757E-07	1.459E-07	1.240E-07
NW	2.317E-05	7.696E-06	3.853E-06	2.420E-06	1.299E-06	8.506E-07	6.178E-07	4.781E-07	3.861E-07	3.215E-07	2.739E-07
NNW	7.022E-06	2.282E-06	1.140E-06	7.126E-07	3.791E-07	2.465E-07	1.779E-07	1.370E-07	1.101E-07	9.136E-08	7.758E-08
N	1.919E-05	6.368E-06	3.189E-06	2.003E-06	1.075E-06	7.034E-07	5.107E-07	3.951E-07	3.189E-07	2.655E-07	2.262E-07
NNE	7.378E-06	2.422E-06	1.212E-06	7.590E-07	4.054E-07	2.645E-07	1.915E-07	1.478E-07	1.191E-07	9.895E-08	8.416E-08
NE	1.590E-05	5.269E-06	2.636E-06	1.655E-06	8.872E-07	5.807E-07	4.216E-07	3.261E-07	2.633E-07	2.192E-07	1.868E-07
ENE	7.722E-06	2.546E-06	1.274E-06	7.986E-07	4.273E-07	2.792E-07	2.024E-07	1.564E-07	1.261E-07	1.049E-07	8.929E-08
E	1.705E-05	5.653E-06	2.829E-06	1.776E-06	9.524E-07	6.234E-07	4.526E-07	3.501E-07	2.826E-07	2.353E-07	2.005E-07
ESE	8.901E-06	2.901E-06	1.443E-06	9.060E-07	4.830E-07	3.147E-07	2.276E-07	1.755E-07	1.413E-07	1.173E-07	9.975E-08
SE	3.073E-05	1.014E-05	5.077E-06	3.186E-06	1.706E-06	1.115E-06	8.091E-07	6.253E-07	5.044E-07	4.196E-07	3.572E-07
SSE	1.868E-05	6.136E-06	3.071E-06	1.924E-06	1.028E-06	6.709E-07	4.859E-07	3.751E-07	3.022E-07	2.512E-07	2.137E-07

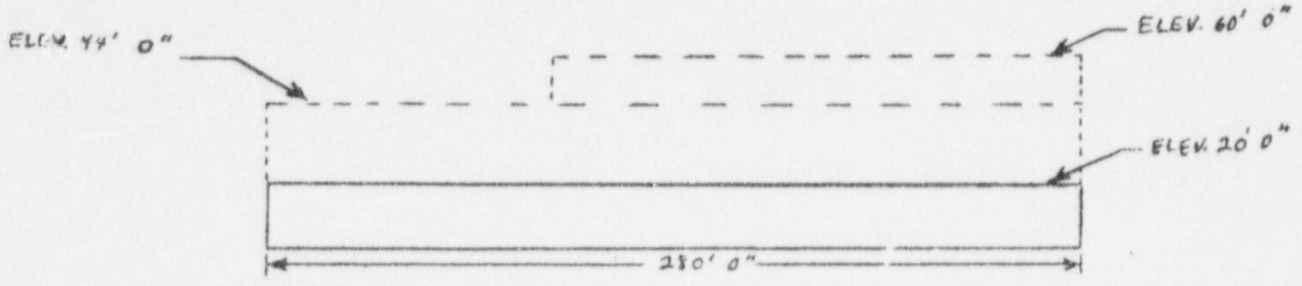
ANNUAL AVERAGE CHI/Q (SEC/METER CUBED)

BEARING	DISTANCE IN MILES 5.000	7.500	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000
S	4.681E-07	2.741E-07	1.889E-07	1.127E-07	7.865E-08	5.964E-08	4.765E-08	3.945E-08	3.353E-08	2.906E-08	2.558E-08
SSW	1.975E-07	1.154E-07	7.945E-08	4.737E-08	3.304E-08	2.505E-08	2.001E-08	1.656E-08	1.407E-08	1.219E-08	1.073E-08
SW	6.113E-07	3.577E-07	2.464E-07	1.470E-07	1.025E-07	7.772E-08	6.208E-08	5.139E-08	4.367E-08	3.784E-08	3.331E-08
WSW	2.269E-07	1.316E-07	9.066E-08	5.327E-08	3.695E-08	2.790E-08	2.221E-08	1.833E-08	1.554E-08	1.344E-08	1.180E-08
W	3.135E-07	1.827E-07	1.254E-07	7.456E-08	5.190E-08	3.929E-08	3.135E-08	2.593E-08	2.201E-08	1.906E-08	1.677E-08
WNW	1.074E-07	6.238E-08	4.275E-08	2.535E-08	1.762E-08	1.333E-08	1.063E-08	8.784E-09	7.454E-09	6.452E-09	5.673E-09
NW	2.377E-07	1.391E-07	9.580E-08	5.715E-08	3.986E-08	3.023E-08	2.415E-08	1.999E-08	1.699E-08	1.472E-08	1.296E-08
NNW	6.712E-09	3.881E-08	2.651E-08	1.564E-08	1.083E-08	8.163E-09	6.492E-09	5.355E-09	4.536E-09	3.920E-09	3.443E-09
N	1.962E-07	1.146E-07	7.887E-08	4.695E-08	3.274E-08	2.480E-08	1.980E-08	1.638E-08	1.391E-08	1.205E-08	1.061E-08
NNE	7.293E-08	4.242E-08	2.905E-08	1.726E-08	1.199E-08	9.064E-09	7.224E-09	5.969E-09	5.064E-09	4.382E-09	3.852E-09
NE	1.621E-07	9.482E-08	6.530E-08	3.896E-08	2.718E-08	2.061E-08	1.647E-08	1.362E-08	1.159E-08	1.004E-08	8.840E-09
ENE	7.741E-08	4.511E-09	3.098E-08	1.841E-08	1.281E-08	9.696E-09	7.735E-09	6.396E-09	5.429E-09	4.701E-09	4.134E-09
E	1.739E-07	1.018E-07	7.007E-08	4.179E-08	2.914E-08	2.209E-08	1.765E-08	1.461E-08	1.241E-08	1.076E-08	9.466E-09
ESE	8.629E-08	5.015E-08	3.435E-08	2.034E-08	1.412E-08	1.067E-08	8.500E-09	7.020E-09	5.953E-09	5.150E-09	4.526E-09
SE	3.097E-07	1.805E-07	1.240E-07	7.368E-08	5.124E-08	3.876E-08	3.090E-08	2.555E-08	2.168E-08	1.877E-08	1.650E-08
SSE	1.851E-07	1.076E-07	7.377E-08	4.370E-08	3.035E-08	2.293E-08	1.826E-08	1.508E-08	1.279E-08	1.106E-08	9.723E-09

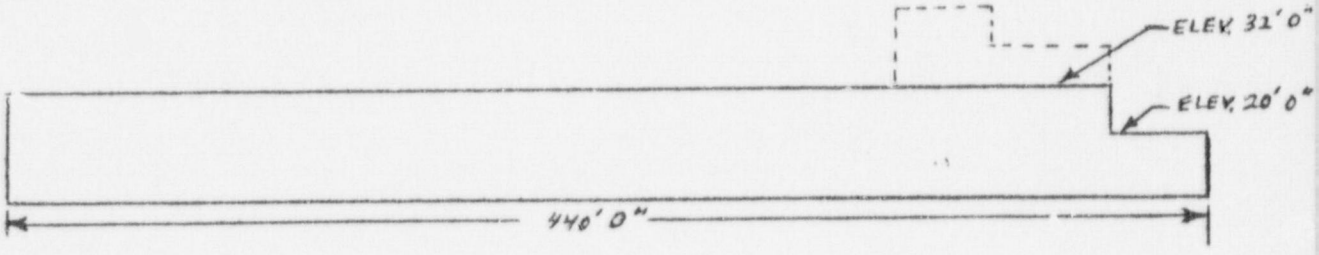
Four Directional Elevation Views of the SNM Building at the ANFFP Site



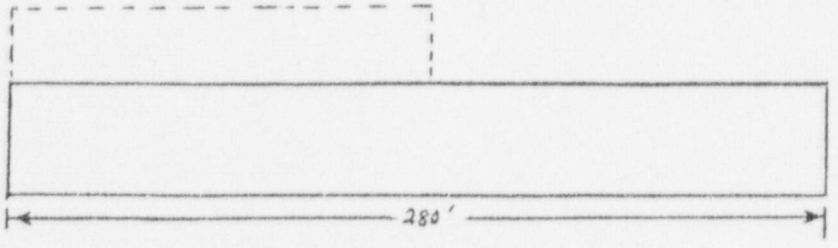
Outside Wall Elevation View
(Looking Northwest)



Outside Wall Elevation View
(Looking Northeast)



Outside Wall Elevation View
(Looking Southeast)



Outside Wall Elevation View
(Looking Southwest)

Attachment 8.11

c. Alternate atmospheric dispersion factors for short term and annual average release conditions are provided in alternate tables (Attachments 8.1 through 8.10). The factors, as originally submitted, were based on ground level release with building wake effects considered, and, with a very conservative terrain recirculation correction factor included. These alternate factors are also based on ground level release with building wake effects considered; however, the terrain recirculation correction factor has been omitted - more in accord with Regulatory Guide 1.111, Revision 1, recommendations. (The net effect of this less conservative approach is to reduce the concentration per unit source strength (X/Q) at the site boundary by a factor of four less than the original, very conservative, submittal.)

The current best estimate of the plant's building dimensions is submitted as Attachment 8.11.

9. (ER: Section 2-7.1; p. 2-65: Terrestrial Ecology)

(a) This section repeatedly refers to the terrestrial ecological field survey conducted in the fall of 1978 (December 5-9). However, paragraph 6-1 indicates that terrestrial ecological surveys were conducted during four seasons. Please give the actual sampling dates corresponding with the four seasons. Does Section 2-7.1 contain all data from the four seasons? If not, please update this section.

(b) Please estimate the grazing capacity (AUM) for pasture land on the ANFFP site and within Autauga County.

RESPONSE

a. Actual sampling dates were December 4-10, 1978; February 26-March 2, 1979; May 18-23, 1979; and August 6-10, 1979.

The schedule for submitting the Environmental Report did not initially permit inclusion of all four seasons of data; now, however, a summary of the total four seasons of terrestrial ecology data has been compiled in the "Summary Report of the Four Seasons Survey", as referenced. A copy of this Summary Report is included with this submittal.

b. The existing grazing land (pasture) on the ANFFP site amounts to 314 acres (see page 2-65 of the Environmental Report). (If existing cottonfields were also converted to pasture, this could add another 150 acres.) During the summer site survey, 117 head of cattle were counted grazing on the upland and lowland pastures.

In the whole of Autauga County, the grazing land amounts to approximately 40,000 acres. This pastured approximately 26,000 head of cattle in 1977, and 23,000 head in 1978.