

INSERTION INSTRUCTIONS FOR AMENDMENT 3

Remove old pages and insert Amendment 3 pages as instructed below (amendment pages bear the amendment number and date at the foot of the page).

Vertical bars (change bars) have been placed in the outside margins of revised text pages and tables to show the location of any technical changes originating with this amendment. A few unrevised pages have been reprinted because they fall within a run of closely spaced revised pages. No change bars are used on figures or on new sections, appendices, questions and responses, etc. Change bars from previous amendments have been deleted.

Transmittal letters along with these insertion instructions should either be filed or entered in Volume I of Part I, in front of any existing letters, instructions, distribution lists, etc.

LEGEND

Remove/Insert Columns

Entries beginning with "T" or "F" designate table or figure numbers, respectively. All other entries are page numbers:

T2.3-14 = Table 2.3-14

FG5-3 = Figure G5-3

2.1-9 = Page 2.1-9

EP2-1 = Page EP2-1

vii = Page vii

Pages printed back to back are indicated by a "/":

1.2-5/6 = Page 1.2-5 backed by Page 1.2-6

T2.3-14 (5 of 5) / 15 (1 of 3) = Table 2.3-14, sheet 5 of 5, backed by Table 2.3-15, sheet 1 of 3

Location Column

Ch = Chapter, S = Section, Ap = Appendix

| <u>Remove</u> | <u>Insert</u> | <u>Location</u> |
|----------------|-------------------------------------|---------------------------|
| | <u>VOLUME 1</u> | |
| None | EP-1 through -15 (List of Ef. Pgs.) | after Volume 1 title page |
| 2-1 thru 2-xxv | None | after Ch2 tab |
| None | 2.1-i thru 2.1-v | after S2.1 tab |
| None | 2.2-i thru 2.2-v | after S2.2 tab |

NYSE&G PSAR

| | | |
|------|--------------------|----------------|
| None | 2.3-i thru 2.3-xiv | after S2.3 tab |
|------|--------------------|----------------|

VOLUME 2

| | | |
|------|------------------|----------------|
| None | 2.4-i thru 2.4-v | after S2.4 tab |
|------|------------------|----------------|

| | | |
|----------|----------|--|
| 2.4-5/-6 | 2.4-5/-6 | |
|----------|----------|--|

| | | |
|-------------------------------|--|--------------|
| T2.4-1(1 of 1)/T2.4-2(1 of 1) | T2.4-1(1 of 1)T2.4-2(1 of 2) T2.4-2(2 of 2)/blank | after 2.4-34 |
|-------------------------------|--|--------------|

| | | |
|---------|---------|--|
| F2.4-11 | F2.4-11 | |
| F2.4-12 | F2.4-12 | |
| F2.4-13 | F2.4-13 | |

| | | |
|------|-------------------|----------------|
| None | 2.5-i thru 2.5-ix | after S2.5 tab |
|------|-------------------|----------------|

VOLUME 3

| | | |
|------|-------------|----------------|
| None | 2.6-i/blank | after S2.6 tab |
|------|-------------|----------------|

VOLUME 6

| | | |
|------|---------------------|--|
| None | Volume 6 title page | |
|------|---------------------|--|

| | | |
|----------------|----------------|---------------|
| 7-i thru 7-iii | 7-i thru 7-iii | after Ch7 tab |
|----------------|----------------|---------------|

| | | |
|------------------|------------------|--|
| 7.1-1 thru 7.1-7 | 7.0-1 thru 7.0-7 | |
|------------------|------------------|--|

| | | |
|------|--------|--|
| None | F7.1-2 | |
|------|--------|--|

| | | |
|---------------------------------|---------------------------------|--------------|
| 9.5-5/-6 | 9.5-5/-6 | |
| 11.2-1/-2 | 11.2-1/-2 | |
| T11.2-1(1 of 1)/T11.2-2(1 of 3) | T11.2-1(1 of 1)/T11.2-2(1 of 4) | after 11.2-7 |
| T11.2-2(2 of 3)/T11.2-2(3 of 3) | T11.2-2(2 of 4)/T11.2-2(3 of 4) | |
| | T11.2-2(4 of 4) | |

| | | |
|----------|----------|-----------------------------------|
| T11.2-8 | T11.2-8 | |
| 13.5-1 | 13.5-1 | after S13.5 tab |
| Q-i/Q-ii | Q-i/Q-ii | after Questions and Responses tab |

| | | |
|------|----------|----------------|
| None | Q032.4-1 | after Q032.3-1 |
|------|----------|----------------|

| | | |
|----------|----------|----------|
| Q442.1-1 | Q442.1-1 | Q441.3-1 |
|----------|----------|----------|

| | | |
|----------|----------|--|
| Q442.2-1 | Q442.2-1 | |
|----------|----------|--|

NYSE6G PSAR

LIST OF EFFECTIVE PAGES
(Amendment 3, April 1979)

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| Title Page | 0 |
| iii thru viii | 3 |
| 1-1 | 0 |
| 1-ii | 0 |
| 1.1-1 | 0 |
| 1.2-1 thru 1.2-2 | 0 |
| 1.3-1 | 0 |
| 1.4-1 thru 1.4-3 | 0 |
| 1.5-1 | 0 |
| 1.6-1 | 0 |
| 1.7-1 | 0 |
| 1.8-1 | 0 |
| T1.8-1 (1 of 8 thru 8 of 8) | 0 |
| T1.8-2 (1 of 2 thru 2 of 2) | 0 |
| T1.8-3 (1 of 2 thru 2 of 2) | 0 |
| 2.1-1 | 3 |
| 2.1-iii | 3 |
| 2.1-v | 3 |
| 2.1-1 | 0 |
| 2.1-2 thru 2.1-4 | 1 |
| 2.1-4a | 1 |
| 2.1-5 through 2.1-13 | 0 |
| T2.1-1 (1 of 1) | 0 |
| T2.1-2 (1 of 1) | 0 |
| T2.1-3 (1 of 1) | 0 |
| T2.1-4 (1 of 1) | 0 |
| T2.1-5 (1 of 1) | 0 |
| T2.1-6 (1 of 1) | 0 |
| T2.1-7 (1 of 1) | 0 |
| T2.1-8 (1 of 1) | 0 |
| T2.1-9 (1 of 1) | 0 |
| T2.1-10 (1 of 1) | 0 |
| T2.1-11 (1 of 1) | 0 |
| T2.1-12 (1 of 1) | 0 |
| T2.1-13 (1 of 1) | 0 |
| T2.1-14 (1 of 1) | 0 |
| T2.1-15 (1 of 1) | 0 |
| T2.1-16 (1 of 1) | 0 |
| T2.1-17 (1 of 1) | 0 |
| T2.1-18 (1 of 1) | 0 |
| T2.1-19 (1 of 1) | 0 |
| T2.1-20 (1 of 1) | 0 |
| T2.1-21 (1 of 3 thru 3 of 3) | 0 |
| T2.1-22 (1 of 1) | 0 |
| T2.1-23 (1 of 1) | 0 |
| T2.1-24 (1 of 1) | 0 |
| T2.1-25 (1 of 1) | 0 |
| T2.1-26 (1 of 1) | 0 |
| F2.1-1 thru F2.1-7 | 0 |
| 2.2-1 | 3 |
| 2.2-iii | 3 |
| 2.2-v | 3 |
| 2.2-1 thru 2.2-7 | 0 |
| T2.2-1 (1 of 3 thru 3 of 3) | 0 |
| T2.2-2 (1 of 4 thru 4 of 4) | 0 |
| T2.2-3 (1 of 1) | 0 |
| T2.2-4 (1 of 1) | 0 |
| T2.2-5 (1 of 1) | 0 |

418 200

NYSE&G PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| T2.2-6 (1 of 1) | 0 |
| F2.2-1 | 0 |
| 2.3-1 | 3 |
| 2.3-iii | 3 |
| 2.3-xiv | 3 |
| 2.3-1 | 0 |
| 2.3-2 thru 2.3-2a | 1 |
| 2.3-3 | 0 |
| 2.3-4 thru 2.3-6b | 1 |
| 2.3-7 thru 2.3-8 | 2 |
| 2.3-9 thru 2.3-30 | 1 |
| 2.3-31 thru 2.3-36b | 1 |
| 2.3-37 thru 2.3-40 | 0 |
| 2.3-41 thru 2.3-42a | 1 |
| 2.3-43 thru 2.3-44 | 0 |
| T2.3-1 (1 of 1) | 1 |
| T2.3-1a (1 of 1) | 1 |
| T2.3-2 (1 of 1) | 0 |
| T2.3-3 (1 of 1) | 0 |
| T2.3-4 (1 of 1) | 0 |
| T2.3-5 (1 of 1) | 0 |
| T2.3-6 (1 of 1) | 0 |
| T2.3-7 (1 of 1) | 0 |
| T2.3-8 (1 of 1) | 0 |
| T2.3-9 (1 of 1) | 0 |
| T2.3-10 (1 of 1) | 0 |
| T2.3-11 (1 of 1) | 0 |
| T2.3-12 (1 of 1) | 0 |
| T2.3-13 (1 of 1) | 0 |
| T2.3-14 (1 of 2 thru 2 of 2) | 0 |
| T2.3-15 (1 of 1) | 0 |
| T2.3-16 (1 of 1) | 0 |
| T2.3-17 (1 of 1) | 0 |
| T2.3-18 (1 of 1) | 0 |
| T2.3-19 (1 of 1) | 0 |
| T2.3-20 (1 of 1) | 0 |
| T2.3-21 (1 of 1) | 0 |
| T2.3-22 (1 of 2 thru 2 of 2) | 0 |
| T2.3-23 (1 of 1) | 0 |
| T2.3-24 (1 of 1) | 0 |
| T2.3-25 (1 of 1) | 0 |
| T2.3-26 (1 of 1) | 0 |
| T2.3-27 (1 of 1) | 0 |
| T2.3-28 (1 of 2 thru 2 of 2) | 0 |
| T2.3-29 (1 of 1) | 0 |
| T2.3-30 (1 of 1) | 0 |
| T2.3-31 (1 of 1) | 0 |
| T2.3-32 (1 of 1) | 0 |
| T2.3-33 (1 of 1) | 0 |
| T2.3-34 (1 of 1) | 0 |
| T2.3-35 (1 of 1) | 0 |
| T2.3-36 (1 of 2 thru 2 of 2) | 0 |
| T2.3-37 (1 of 1) | 0 |
| T2.3-38 (1 of 1) | 0 |
| T2.3-39 (1 of 1) | 0 |
| T2.3-40 (1 of 13 thru 13 of 13) | 0 |
| T2.3-41 (1 of 13 thru 13 of 13) | 0 |
| T2.3-42 (1 of 2 thru 2 of 2) | 0 |
| T2.3-43 (1 of 1) | 0 |
| T2.3-44 (1 of 1) | 0 |
| T2.3-45 (1 of 1) | 0 |
| T2.3-46 (1 of 1) | 0 |
| T2.3-47 (1 of 1) | 0 |

NYSE&G PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| T2.3-48 (1 of 1) | 0 |
| T2.3-49 (1 of 1) | 0 |
| T2.3-50 (1 of 1) | 0 |
| T2.3-51 (1 of 1) | 0 |
| T2.3-52 (1 of 91 thru 91 of 91) | 0 |
| T2.3-53 (1 of 91 thru 91 of 91) | 0 |
| T2.3-54 (1 of 1) | 0 |
| T2.3-55 (1 of 1) | 0 |
| T2.3-56 (1 of 1) | 0 |
| T2.3-57 (1 of 1) | 0 |
| T2.3-58 (1 of 1) | 0 |
| T2.3-59 (1 of 1) | 0 |
| T2.3-60 (1 of 1) | 0 |
| T2.3-61 (1 of 1) | 0 |
| T2.3-62 (1 of 1) | 0 |
| T2.3-63 (1 of 1) | 0 |
| T2.3-64 (1 of 1) | 0 |
| T2.3-65 (1 of 1) | 0 |
| T2.3-66 (1 of 1) | 0 |
| T2.3-67 (1 of 1) | 0 |
| T2.3-68 (1 of 13 thru 13 of 13) | 0 |
| T2.3-69 (1 of 13 thru 13 of 13) | 0 |
| T2.3-70 (1 of 13 thru 13 of 13) | 0 |
| T2.3-71 (1 of 1) | 0 |
| T2.3-72 (1 of 1) | 0 |
| T2.3-73 (1 of 1) | 0 |
| T2.3-74 (1 of 1) | 0 |
| T2.3-75 (1 of 1) | 0 |
| T2.3-76 (1 of 1) | 0 |
| T2.3-77 (1 of 1) | 0 |
| T2.3-78 (1 of 2 thru 2 of 2) | 0 |
| T2.3-79 (1 of 1) | 0 |
| T2.3-80 (1 of 1) | 0 |
| T2.3-81 (1 of 1) | 0 |
| T2.3-82 (1 of 1) | 0 |
| T2.3-83 (1 of 1) | 0 |
| T2.3-84 (1 of 1) | 0 |
| T2.3-85 (1 of 1) | 0 |
| T2.3-86 (1 of 1) | 0 |
| T2.3-87 (1 of 1) | 0 |
| T2.3-88 (1 of 1) | 0 |
| T2.3-89 (1 of 1) | 0 |
| T2.3-90 (1 of 1) | 0 |
| T2.3-91 (1 of 1) | 0 |
| T2.3-92 (1 of 1) | 0 |
| T2.3-93 (1 of 1) | 0 |
| T2.3-94 (1 of 1) | 0 |
| T2.3-95 (1 of 13 thru 13 of 13) | 0 |
| T2.3-96 (1 of 13 thru 13 of 13) | 0 |
| 2.3-97 (1 of 13 thru 13 of 13) | 0 |
| 2.3-98 (1 of 1) | 0 |
| 2.3-99 (1 of 1) | 0 |
| 2.3-100 (1 of 1) | 0 |
| 2.3-101 (1 of 1) | 0 |
| 2.3-102 (1 of 1) | 0 |
| 2.3-103 (1 of 1) | 0 |
| 2.3-104 (1 of 1) | 0 |
| 2.3-105 (1 of 13 thru 13 of 13) | 0 |
| 2.3-106 (1 of 13 thru 13 of 13) | 0 |
| 2.3-107 (1 of 1) | 0 |
| 2.3-108 (1 of 1) | 0 |
| 2.3-109 (1 of 91 thru 91 of 91) | 0 |
| 2.3-110 (1 of 1) | 0 |
| 2.3-111 (1 of 1) | 0 |

418 201

NYSE&G PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| 2.3-112 (1 of 1) | 0 |
| 2.3-113 (1 of 1) | 0 |
| 2.3-114 (1 of 1) | 0 |
| 2.3-115 (1 of 1) | 0 |
| 2.3-116 (1 of 1) | 0 |
| 2.3-117 (1 of 13 thru 13 of 13) | 0 |
| 2.3-118 (1 of 1) | 0 |
| 2.3-119 (1 of 3 thru 3 of 3) | 0 |
| 2.3-120 (1 of 3 thru 3 of 3) | 0 |
| 2.3-121 (1 of 1) | 0 |
| 2.3-122 (1 of 2 thru 2 of 2) | 0 |
| 2.3-123 (1 of 1) | 0 |
| 2.3-124 (1 of 1) | 0 |
| 2.3-125 (1 of 1) | 0 |
| 2.3-126 (1 of 1) | 0 |
| 2.3-127 (1 of 1) | 0 |
| 2.3-128 (1 of 1) | 0 |
| 2.3-129 (1 of 13 thru 13 of 13) | 0 |
| 2.3-130 (1 of 1) | 0 |
| 2.3-131 (1 of 13 thru 13 of 13) | 0 |
| 2.3-132 (1 of 1) | 0 |
| 2.3-133 (1 of 1) | 0 |
| 2.3-134 (1 of 1) | 0 |
| 2.3-135 (1 of 1) | 0 |
| 2.3-136 (1 of 91 thru 91 of 91) | 0 |
| 2.3-137 (1 of 91 thru 91 of 91) | 0 |
| 2.3-138 (1 of 1) | 0 |
| 2.3-139 (1 of 1) | 0 |
| 2.3-140 (1 of 1) | 0 |
| 2.3-141 (1 of 1) | 0 |
| 2.3-142 (1 of 1) | 0 |
| 2.3-143 (1 of 1) | 0 |
| 2.3-144 (1 of 1) | 0 |
| 2.3-145 (1 of 1) | 0 |
| 2.3-146 (1 of 1) | 0 |
| 2.3-147 (1 of 1) | 0 |
| 2.3-148 (1 of 1) | 0 |
| 2.3-149 (1 of 1) | 0 |
| 2.3-150 (1 of 1) | 0 |
| T2.3-151 (1 of 1) | 1 |
| T2.3-152 (1 of 1) | 0 |
| T2.3-153 (1 of 1) | 1 |
| F2.3-1 thru F2.3-14 | 0 |
| 2.4-1 | 3 |
| 2.4-111 | 3 |
| 2.4-v | 3 |
| 2.4-1 thru 2.4-34 | 0 |
| 2.4-5 thru 2.4-8 | 1 |
| 2.4-9 thru 2.4-18 | 0 |
| 2.4-19 thru 2.4-20b | 1 |
| 2.4-21 thru 2.4-22 | 0 |
| 2.4-23 | 1 |
| 2.4-24 thru 2.4-27 | 0 |
| 2.4-28 thru 2.4-28a | 1 |
| 2.4-29 | 1 |
| 2.4-30 thru 2.4-32 | 0 |
| 2.4-33 thru 2.4-33a | 1 |
| T2.4-1 (1 of 1) | 0 |
| T2.4-2 (1 of 1) | 0 |
| T2.4-3 (1 of 1) | 0 |
| T2.4-4 (1 of 1) | 0 |
| T2.4-5 (1 of 1) | 0 |
| T2.4-6 (1 of 1) | 0 |

418 203

NYSE6G PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| T2.4-7 (1 of 1) | 0 |
| T2.4-8 (1 of 1) | 0 |
| T2.4-9 (1 of 2 thru 2 of 2) | 0 |
| T2.4-10 (1 of 16 thru 16 of 16) | 1 |
| T2.4-11 (1 of 1) | 0 |
| T2.4-12 (1 of 1) | 0 |
| F2.4-1 thru F2.4-2 | 0 |
| F2.4-3 | 1 |
| F2.4-4 thru F2.4-13 | 0 |
| F2.4-14 | 1 |
| F2.4-15 thru F2.4-25 | 0 |
| F2.4-26 | 1 |
| 2.5- thru 2.5-iii | 3 |
| 2.5-v | 3 |
| 2.5-viii thru 2.5-x | 3 |
| 2.5-1 thru 2.5-v | 1 |
| 2.5-viii thru 2.5-ix | 1 |
| 2.5-10 | 0 |
| 2.5-11 thru 2.5-18d | 1 |
| 2.5-19 thru 2.5-20 | 0 |
| 2.5-21 | 1 |
| 2.5-22 thru 2.5-24 | 0 |
| 2.5-25 thru 2.5-34a | 1 |
| 2.5-35 thru 2.5-39 | 0 |
| 2.5-40 thru 2.5-46a | 1 |
| 2.5-50 | 0 |
| 2.51 | 0 |
| 2.5-52 | 1 |
| 2.5-53 thru 2.5-74 | 0 |
| 2.5-75 | 1 |
| 2.5-105 thru 2.5-158 | 0 |
| 2.5-76 thru 2.5-76c | 2 |
| 2.5-77 thru 2.5-104c | 1 |
| T2.5-1 (1 of 55 thru 55 of 55) | 0 |
| T2.5-2 (1 of 3 thru 3 of 3) | 0 |
| T2.5-3 (1 of 4 thru 4 of 4) | 0 |
| T2.5-4 (1 of 1) | 0 |
| T2.5-5 (1 of 1) | 1 |
| T2.5-6 (1 of 1) | 1 |
| T2.5-7 (1 of 4 thru 4 of 4) | 1 |
| T2.5-8 (1 of 1) | 1 |
| T2.5-9 (1 of 1) | 1 |
| T2.5-10 delete notice | 1 |
| T2.5-11 (1 of 1) | 1 |
| T2.5-12 | 2 |
| F2.5-1 thru F2.5-66 | 0 |
| F2.5-5A thru F2.5-5B | 1 |
| F2.5-6 thru F2.5-8 | 0 |
| F2.5-9 | 1 |
| F2.5-10 thru F2.5-11 | 0 |
| F2.5-12 thru F2.5-13A | 1 |
| F2.5-14 | 1 |
| F2.5-15 thru F2.5-48 | 0 |
| F2.5-49 thru F2.5-62 | 1 |
| F2.5-63 | 0 |
| F2.5-64 | 1 |
| F2.5-65 thru 2.5-66 | 0 |
| F2.5-67 thru 2.5-69 | 2 |
| 2.6-1 | 3 |
| 2.6-1 thru 2.6-2 | 0 |
| App 2.5A title page | 0 |

418 204

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| 2.5A-1 thru 2.5A-17 | 0 |
| F2.5A-1 thru F2.5A-33 | 0 |
| App 2.5B title page | 0 |
| 2.5B-1 thru 2.5B-8 | 0 |
| F2.5B-1 thru 2.5B-12 | 0 |
| App 2.5C title page | 0 |
| 2.5C-1 | 1 |
| 2.5C-2 (R-Borings) title page | 0 |
| R-1 (1 of 5 thru 5 of 5) | 0 |
| R-2 (1 of 4 thru 2 of 4) | 0 |
| R-2 (3 of 4 thru 4 of 4) | 1 |
| R-3 (1 of 8 thru 8 of 8) | 0 |
| R-4 (1 of 5 thru 5 of 5) | 0 |
| R-5 (1 of 2 thru 2 of 2) | 1 |
| R-6 (1 of 3 thru 3 of 3) | 1 |
| R-7 (1 of 2 thru 2 of 2) | 1 |
| R-8 (1 of 3 thru 3 of 3) | 1 |
| R-9 (1 of 2 thru 2 of 2) | 1 |
| R-10 (1 of 3 thru 3 of 3) | 1 |
| R-11 (1 of 3 thru 3 of 3) | 1 |
| R-12 (1 of 4 thru 4 of 4) | 1 |
| R-13 (1 of 3 thru 3 of 3) | 1 |
| R-14 (1 of 4 thru 4 of 4) | 1 |
| R-15 (1 of 4 thru 4 of 4) | 1 |
| R-16 (1 of 3 thru 3 of 3) | 1 |
| R-17 (1 of 4 thru 4 of 4) | 1 |
| R-18 (1 of 3 thru 3 of 3) | 1 |
| R-19 (1 of 5 thru 5 of 5) | 1 |
| R-20 (1 of 2 thru 2 of 2) | 1 |
| R-21 (1 of 2 thru 2 of 2) | 1 |
| R-22 (1 of 3 thru 3 of 3) | 1 |
| R-23 (1 of 4 thru 4 of 4) | 1 |
| R-24 (1 of 3 thru 3 of 3) | 1 |
| R-25 (1 of 3 thru 3 of 3) | 1 |
| R-26 (1 of 2 thru 2 of 2) | 1 |
| R-27 (1 of 2 thru 2 of 2) | 1 |
| R-28 (1 of 2 thru 2 of 2) | 1 |
| R-29 (1 of 2 thru 2 of 2) | 1 |
| N/A (1 of 2 thru 2 of 2) | 1 |
| 314 (1 of 1) | 1 |
| L-1 (1 of 1) | 1 |
| L-4 (1 of 1) | 1 |
| L-8 (1 of 1) | 1 |
| 2.5C-3 (S-Borings) title page | 0 |
| S-1 (1 of 2 thru 2 of 2) | 0 |
| S-2 (1 of 2 thru 2 of 2) | 0 |
| S-3 (1 of 2 thru 2 of 2) | 0 |
| S-4 (1 of 2 thru 2 of 2) | 0 |
| S-5 (1 of 2 thru 2 of 2) | 0 |
| S-6 (1 of 2 thru 2 of 2) | 0 |
| S-7 (1 of 2 thru 2 of 2) | 0 |
| S-8 (1 of 2 thru 2 of 2) | 0 |
| S-9 and S-9A (1 of 2) | 0 |
| S-9A (2 of 2) | 0 |
| S-10 (1 of 2 thru 2 of 2) | 0 |
| S-11 (1 of 2 thru 2 of 2) | 0 |
| S-12 (1 of 3 thru 3 of 3) | 0 |
| S-13 (1 of 2 thru 2 of 2) | 0 |
| S-14 (1 of 2 thru 2 of 2) | 0 |
| S-15 (1 of 2 thru 2 of 2) | 0 |
| S-16 (1 of 3 thru 3 of 3) | 0 |

418 205

NYSE&G PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| S-17 (1 of 2 thru 2 of 2) | 0 |
| S-18 (1 of 2 thru 2 of 2) | 0 |
| S-19 (1 of 2 thru 2 of 2) | 0 |
| S-20 (1 of 2 thru 2 of 2) | 0 |
| S-21 (1 of 2 thru 2 of 2) | 0 |
| S-22 (1 of 2 thru 2 of 2) | 0 |
| S-23 (1 of 2 thru 2 of 2) | 0 |
| S-24 (1 of 2 thru 2 of 2) | 0 |
| S-25 (1 of 2 thru 2 of 2) | 0 |
| S-26 (1 of 3 thru 3 of 3) | 0 |
| S-27 (1 of 2 thru 2 of 2) | 0 |
| S-28 (1 of 2 thru 2 of 2) | 0 |
| S-29 (1 of 2 thru 2 of 2) | 0 |
| S-30 (1 of 2 thru 2 of 2) | 0 |
| S-31 (1 of 2 thru 2 of 2) | 0 |
| S-32 (1 of 2 thru 2 of 2) | 0 |
| S-33 (1 of 2 thru 2 of 2) | 0 |
| S-34 (1 of 2 thru 2 of 2) | 0 |
| S-35 (1 of 6 thru 6 of 6) | 0 |
| 2.5C-4 (G-Borings) title page | 0 |
| G-1 (1 of 2 thru 2 of 2) | 0 |
| G-2 (1 of 2 thru 2 of 2) | 0 |
| G-3 (1 of 3 thru 3 of 3) | 0 |
| G-4 (1 of 2 thru 2 of 2) | 0 |
| G-5 (1 of 4 thru 4 of 4) | 0 |
| G-6 (1 of 4 thru 4 of 4) | 0 |
| G-6 (Geologic) (1 of 4 thru 4 of 4) | 0 |
| G-7 (1 of 2 thru 2 of 2) | 0 |
| G-8 (1 of 4 thru 4 of 4) | 0 |
| G-9 (1 of 2 thru 2 of 2) | 0 |
| G-9 (1 of 2 thru 2 of 2) | 0 |
| G-10 (1 of 2 thru 2 of 2) | 0 |
| G-11 (1 of 4 thru 4 of 4) | 0 |
| G-12 (1 of 2 thru 2 of 2) | 0 |
| G-13 (1 of 1) | 0 |
| G-14 (1 of 2 thru 2 of 2) | 0 |
| G-15 (1 of 1) | 0 |
| G-16 (1 of 2 thru 2 of 2) | 0 |
| G-17 (1 of 2 thru 2 of 2) | 0 |
| G-18 (1 of 1) | 0 |
| G-19 (1 of 2 thru 2 of 2) | 0 |
| G-20 (1 of 2 thru 2 of 2) | 0 |
| G-21 | 0 |
| G-22 (1 of 2 thru 2 of 2) | 0 |
| G-23 (1 of 4 thru 4 of 4) | 0 |
| G-23 (Geologic) (1 of 4 thru 4 of 4) | 0 |
| G-24 (1 of 4 thru 4 of 4) | 0 |
| G-24 (Geologic) (1 of 4 thru 4 of 4) | 0 |
| G-25 (1 of 4 thru 4 of 4) | 0 |
| G-26 (1 of 4 thru 4 of 4) | 0 |
| G-26 (Geologic) (1 of 4 thru 4 of 4) | 0 |
| G-27 (1 of 4 thru 4 of 4) | 0 |
| G-27 (Geologic) (1 of 4 thru 4 of 4) | 0 |
| G-28 (1 of 2 thru 2 of 2) | 0 |
| G-29 (1 of 4 thru 4 of 4) | 0 |
| G-30 (1 of 4 thru 4 of 4) | 0 |
| G-31 (1 of 4 thru 4 of 4) | 0 |
| G-32 (1 of 2 thru 2 of 2) | 0 |
| G-33 (1 of 4 thru 4 of 4) | 0 |
| G-34 (1 of 2 thru 2 of 2) | 0 |
| G-35 (1 of 2 thru 2 of 2) | 0 |
| G-36 (1 of 4 thru 4 of 4) | 0 |
| G-37 (1 of 2 thru 2 of 2) | 0 |

418 206

NYSE&G PSAK

| Page, Table (T), or Figure (F) | Amount Number |
|--------------------------------------|------------------|
| G-38 (1 of 4 thru 4 of 4) | 0 |
| G-39 (1 of 1) | 0 |
| G-40 (1 of 2 thru 2 of 2) | 0 |
| G-41 (1 of 2 thru 2 of 2) | 0 |
| G-42 (1 of 2 thru 2 of 2) | 0 |
| G-43 (1 of 2 thru 2 of 2) | 0 |
| G-44 (1 of 1) | 0 |
| G-45 (1 of 1) | 0 |
| G-46 (1 of 1) | 0 |
| G-47 (1 of 1) | 0 |
| G-48 (1 of 2 thru 2 of 2) | 0 |
| G-49 (1 of 1) | 0 |
| G-50 (1 of 1) | 0 |
| G-51 (1 of 1) | 0 |
| G-52 (1 of 1) | 0 |
| G-53 (1 of 1) | 0 |
| G-54 (1 of 1) | 0 |
| G-55 (1 of 2 thru 2 of 2) | 0 |
| G-56 (1 of 2 thru 2 of 2) | 0 |
| G-57 (1 of 1) | 0 |
| G-58 (1 of 1) | 0 |
| G-59 (Geologic) (1 of 3 thru 3 of 3) | 0 |
| G-60 (1 of 1) | 0 |
| G-61 (1 of 1) | 1 |
| G-62 (1 of 1) | 1 |
| G-63 (1 of 1) | 1 |
| G-64 (1 of 1) | 1 |
| G-65 (1 of 1) | 1 |
| G-66 (1 of 1) | 1 |
| G-67 (1 of 2 thru 2 of 2) | 1 |
| G-68 (1 of 2 thru 2 of 2) | 1 |
| G-69 (1 of 1) | 1 |
| G-70 (1 of 1) | 1 |
| G-71 (1 of 1) | 1 |
| G-72 (1 of 1) | 1 |
| G-73 (1 of 3 thru 3 of 3) | 1 |
| G-74 (1 of 3 thru 3 of 3) | 1 |
| G-75 (1 of 5 thru 5 of 5) | 1 |
| G-76 (1 of 4 thru 4 of 4) | 1 |
| G-77 (1 of 1) | 1 |
| G-78 (1 of 1) | 1 |
| G-79 (1 of 1) | 1 |
| G-80 (1 of 1) | 1 |
| G-81 (1 of 1) | 1 |
| G-82 (1 of 1) | 1 |
| G-83 (1 of 1) | 1 |
| 2.5C-5 (B-Borings) title page | 0 |
| B-1 (1 of 1) | 0 |
| B-2 and B2A (1 of 1) | 0 |
| B-3 (1 of 2 thru 2 of 2) | 0 |
| B-4 (1 of 1) | 0 |
| B-5 (Geologic) (1 of 4 thru 4 of 4) | 0 |
| B-6 (1 of 1) | 0 |
| B-7 and B-7A (1 of 1) | 0 |
| Explanation of Boring Logs | 0 |
| 2.5C-6 (T-Borings) | 0 |
| T-1 (1 of 2 thru 2 of 2) | 1 |
| T-2 (1 of 2 thru 2 of 2) | 1 |
| T-3 (1 of 2 thru 2 of 2) | 1 |
| T-4 (1 of 2 thru 2 of 2) | 1 |
| T-5 (1 of 2 thru 2 of 2) | 1 |

418 207

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| 2.5C-7 (Gamma Logs) | 0 |
| K-1 (1 of 5 thru 5 of 5) | 0 |
| R-3 (1 of 8 thru 8 of 8) | 0 |
| App 2.5D title page | 0 |
| 2.5D-1 thru 2.5D-3 | 0 |
| 2.5D.1-1 thru 2.5D-2 | 0 |
| F2.5D-1A | 0 |
| F2.5D-1 thru F2.5D-25 | 0 |
| App 2.5E title page | 0 |
| 2.5E-1 thru 2.5E-2 | 0 |
| T2.5E-1 (1 of 1) | 0 |
| F2.5E-1 thru F2.5E-3 | 0 |
| App 2.5F title page | 0 |
| 2.5F-1 thru 2.5F-2 | 0 |
| 2.5F.1-1 thru 2.5F.1-16 | 0 |
| 2.5F.2-1 thru 2.5F.2-23 | 0 |
| 2.5F.3-1 thru 2.5F.3-17 | 0 |
| 2.5F.4-1 thru 2.5F.4-99 | 0 |
| 2.5F.5-1 thru 2.5F.5-12 | 0 |
| App 2.5G title page | 0 |
| TP1 (1 of 1) | 0 |
| TP2 (1 of 1) | 0 |
| TP3 (1 of 1) | 0 |
| TP4 (1 of 1) | 0 |
| TP5 (1 of 1) | 0 |
| TP6 (1 of 1) | 0 |
| TP7 (1 of 1) | 0 |
| TP8 (1 of 1) | 0 |
| TP9 (1 of 1) | 0 |
| TP10 (1 of 1) | 0 |
| TP11 (1 of 1) | 0 |
| TP12 (1 of 1) | 0 |
| TP13 (1 of 1) | 0 |
| TP14 (1 of 1) | 0 |
| TP15 (1 of 1) | 0 |
| TP16 (1 of 1) | 0 |
| TP17 (1 of 1) | 0 |
| TP18 (1 of 1) | 0 |
| TP19 (1 of 1) | 0 |
| TP22 (1 of 1) | 0 |
| TP23 (1 of 1) | 0 |
| TP24 (1 of 1) | 0 |
| TP25 (1 of 1) | 0 |
| App 2.5H title page | 0 |
| 2.5H1 thru 2.5H6 | 0 |
| F2.5H-1 thru F2.5H-18 | 0 |
| App 2.5I title page | 1 |
| 2.5I-1 thru 2.5I-48 | 1 |
| T2.5I-1 thru T2.5I-2 | 1 |
| F2.5I-1 thru F2.5I-35 | 1 |
| (2.5I)A1 Cover (Att 1) | 1 |
| (2.5I)A1-1 thru A1-23 (Att 1) | 1 |
| (2.5I)A1 Figure Cover (Att 1) | 1 |
| (2.5I)F A1-1 thru A1-18 (Att 1) | 1 |
| 2.5I)A2 Cover (Att 2) | 1 |
| (2.5I)A2 REI Report Cover (Att 2) | 1 |
| (2.5I)A2 REI Cover Description (Att 2) | 1 |
| (2.5I)A2 REI-1 thru TEI-6 (Att 2) | 1 |

NYSE&G PSAR

| Page, Table (T), or Figure (F) | Amendment Number |
|-------------------------------------|---------------------|
| (2.5I)A2 REI App A-1 (Att 2) | 1 |
| (2.5I)A2 REI T-1 (Att 2) | 1 |
| (2.5I)A2 REI F-1 (Att 2) | 1 |
| (2.5I)A2 REI App B Cover (Att 2) | 1 |
| (2.5I)A2 REI Htg Exp #38 | 1 |
| (2.5I)A2 REI Htg Exp #37 | 1 |
| (2.5I)A2 REI Htg Exp #35 | 1 |
| (2.5I)A2 REI Htg Exp #40 | 1 |
| (2.5I)A2 REI Htg Exp #36 | 1 |
| (2.5I)A2 REI Htg Exp #33 | 1 |
| (2.5I)A2 REI Htg Exp #24 | 1 |
| (2.5I)A2 REI Htg Exp #31 | 1 |
| (2.5K)A2 REI Htg Exp #23 | 1 |
| (2.5I)A2 REI Htg Exp #18 | 1 |
| (2.5I)A2 REI Htg Exp #15 | 1 |
| (2.5I)A2 REI Htg Exp #16 | 1 |
| (2.5I)A2 REI Htg Exp #10 | 1 |
| (2.5I)A2 REI Htg Exp #22 | 1 |
| (2.5I)A2 REI Htg Exp #21 | 1 |
| (2.5I)A2 REI Htg Exp #59 | 1 |
| (2.5I)A2 REI Htg Exp #55 | 1 |
| (2.5I)A2 REI Htg Exp #56 | 1 |
| (2.5I)A2 REI Htg Exp #54 | 1 |
| (2.5I)A2 REI Htg Exp #61a, b | 1 |
| (2.5I)A2 REI Htg Exp #50 | 1 |
| (2.5I)A2 REI Htg Exp #44 | 1 |
| (2.5I)A2 REI Htg Exp #43 | 1 |
| (2.5I)A2 REI Htg Exp #45 | 1 |
| (2.5I)A2 REI Htg Exp #46 | 1 |
| (2.5I)A2 REI Htg Exp #49 | 1 |
| (2.5I)A2 REI Htg Exp #42 | 1 |
| (2.5I)A2 REI Htg Exp #6 | 1 |
| (2.5I)A2 REI Htg Exp #5 | 1 |
| (2.5I)A2 REI Htg Exp #9 | 1 |
| (2.5I)A2 REI Htg Exp #1 | 1 |
| (2.5I)A2 REI Htg Exp #4 | 1 |
| (2.5I)A3 Cover (Att 3) | 1 |
| (2.5I)A3 Chem Anal 1 thru 3 (Att 3) | 1 |
| (2.5I)A4 Cover (Att 4) | 1 |
| (2.5I)A4 Lgr R-204-1 thru R-204-7 | 1 |
| (2.5I)A5 Cover (Att 5) | 1 |
| (2.5I)A5 Chem Anal 1 thru 7 (Att 5) | 1 |
| App 2.5J title page | 0 |
| 2.5J-iii | 0 |
| 2.5J-1 | 0 |
| 2.5J-3 thru 2.5J-13 | 0 |
| T of C (G-2-D&A Report) | 0 |
| 1 thru 5 | 0 |
| T1 (1 of 2 thru 2 of 2) | 0 |
| T2 (1 of 2 thru 2 of 2) | 0 |
| T3 (1 of 2 thru 2 of 2) | 0 |
| F1 thru F22 | 0 |
| App 2.5K title page | 0 |
| 2.5K-iii | 0 |
| 2.5K-1 | 0 |
| 2.5K-3 thru 2.5K-7 | 0 |
| 2.5K-9 thru 2.5K-17 | 0 |
| 2.5K-19 | 0 |
| 2.5K-21 thru 2.5K-31 | 0 |
| 2.5K-33 | 0 |
| 2.5K-35 thru 2.5K-38 | 0 |

418 209

NYSE6G PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| App 2.5L title page | 0 |
| 2.5L-1 thru 2.5L-2 | 0 |
| F2.5L-1 thru F2.5L-2 | 0 |
| 2.5M title page | 1 |
| 2.5M-1 thru 2.5M-11 | 1 |
| 2.5-1 thru 2.5M-13 | 1 |
| T2.5M-1 (1 of 1) | 1 |
| F2.5M-1 thru F2.5M-4 | 1 |
| Attach I title page | 1 |
| I2.5M-1 thru I2.5M-34 | 1 |
| Attach II title page | 1 |
| II2.5M-1 thru II2.5-11 | 1 |
| Attach III title page | 1 |
| III2.5M-1 | 1 |
| Attach IV title page | 1 |
| IV2.5M-1 thru IV2.5M-7 | 1 |
| Attach V title page | 1 |
| V2.5M-1 thru V2.5M-6 | 1 |
| Attach VI title page | 1 |
| VI2.5M-1 thru VI2.5M-6 | 1 |
| 3-1 thru 3-iii | 2 |
| 3.1-1 thru 3.1-2 | 0 |
| 3.2-1 | 0 |
| T3.2-1 (1 of 1) | 0 |
| 3.3-1 | 0 |
| 3.4-1 | 1 |
| 3.5-1 thru 3.5-2 | 0 |
| 3.6-1 | 0 |
| 3.7-1 | 1 |
| 3.8-1 | 0 |
| 3.9-1 | 1 |
| T3.9-1 | 0 |
| 3.10-1 | 0 |
| 3.11-1 | 1 |
| App 3A title page | 0 |
| 3A-1 thru 3A-11 | 0 |
| 3A-iii thru 3A-iv | 0 |
| 3A.1-1 thru 3A.1-3 | 0 |
| 3A.1-4 thru 3A.1-4a | 1 |
| 3A.1-5 | 0 |
| 4.0-1 | 0 |
| 5-1 | 0 |
| 5.0-1 thru 5.0-2 | 0 |
| 6-1 | 2 |
| 6-iii | 0 |
| 6-v | 0 |
| 6.0-1 thru 6.0-2 | 0 |
| 6.0-3 thru 6.0-4 | 1 |
| T6.2-1 (1 of 1) | 0 |
| T6.2-2 (1 of 1) | 0 |
| T6.2-3 (1 of 2 thru 2 of 2) | 0 |
| T6.2-4 (1 of 1) | 0 |
| P6.2-1 | 1 |
| F6.2-2 | 0 |
| 7-1 | 3 |
| 7-iii | 3 |
| 7.0-1 thru 7.0-2 | 0 |

418 210

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| 77.1-1 | 0 |
| F7.1-2 | 3 |
| 8-1 | 0 |
| 8-iii | 0 |
| 8.1-1 thru 8.1-2 | 0 |
| 8.2-1 thru 8.2-4 | 0 |
| F8.2-1 | 0 |
| F8.2-2 | 0 |
| 8.3-1 | 0 |
| 8.4-1 thru 8.4-2 | 1 |
| 9-1 thru 9-iii | 2 |
| 9-v | 2 |
| 9-vii | 0 |
| 9.1-1 thru 9.1-4 | 0 |
| 9.2-1 thru 9.2-4 | 0 |
| 9.2-5 thru 9.2-6a | 2 |
| 9.2-7 thru 9.2-8 | 0 |
| T9.2-1 (1 of 1) | 0 |
| T9.2-2 (1 of 1) | 2 |
| T9.2-3 (1 of 2 thru 2 of 2) | 0 |
| T9.2-4 (1 of 1) | 0 |
| T9.2-5 (1 of 2 thru 2 of 2) | 2 |
| F9.2-1 thru F9.2-9 | 0 |
| 9.3-1 | 0 |
| 9.4-1 thru 9.4-3 | 0 |
| F9.4-1 | 0 |
| 9.5-1 thru 9.5-4a | 1 |
| 9.5-5 thru 9.5-6 | 0 |
| 9.5-7 thru 9.5-12 | 1 |
| F9.5-1 thru F9.5-3 | 1 |
| 10-1 | 0 |
| 10-iii | 0 |
| 10-v | 0 |
| 10.1-1 | 0 |
| 10.2-1 | 0 |
| 10.3-1 | 0 |
| 10.4-1 thru 10.4-2 | 0 |
| 10.4-3 thru 10.4-4a | 1 |
| 10.4-5 thru 10.4-6 | 0 |
| T10.4-1 | 0 |
| F10.4-1 thru F10.4-7 | 0 |
| 11-1 | 0 |
| 11-iii thru 11-v | 0 |
| 11.1-1 | 0 |
| 11.2-1 thru 11.2-2 | 3 |
| 11.2-1 thru 11.2-7 | 0 |
| T11.2-1 (1 of 1) | 0 |
| T11.2-2 (1 of 3 thru 3 of 3) | 3 |
| T11.2-3 (1 of 2 thru 2 of 2) | 0 |
| T11.2-4 (1 of 2 thru 2 of 2) | 0 |
| T11.2-5 (1 of 2 thru 2 of 2) | 0 |
| T11.2-6 (1 of 2 thru 2 of 2) | 0 |
| T11.2-7 (1 of 1) | 0 |
| T11.2-8 (1 of 1) | 3 |
| T11.2-9 (1 of 1) | 0 |
| F11.2-1 | 0 |
| 11.3-1 thru 11.3-5 | 0 |
| T11.3-1 (1 of 1) | 0 |
| T11.3-2 (1 of 1) | 0 |
| T11.3-3 (1 of 1) | 0 |
| T11.3-4 (1 of 1) | 0 |

418 211

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| T11.3-5 (1 of 1) | 0 |
| T11.3-6 (1 of 1) | 0 |
| T11.3-7 (1 of 1) | 0 |
| 11.4-1 | 0 |
| 11.5-1 | 0 |
| 11.6-1 thru 11.6-3 | 0 |
| T11.6-1 (1 of 3 thru 3 of 3) | 0 |
| F11.6-1 | 0 |
| 12-1 | 2 |
| 12-iii | 2 |
| 12.1-1 thru 12.1-2a | 1 |
| 12.1-3 thru 12.1-4 | 1 |
| T12.1-1 | 0 |
| T12.1-2 | 0 |
| T12.1-3 | 0 |
| F12.1-1 | 1 |
| 12.2-1 thru 12.2-2 | 0 |
| T12.2-1 | 0 |
| 12.3-1 thru 12.3-3 | 0 |
| 12.4-1 | 0 |
| 13-1 thru 13-iii | 2 |
| 13-v | |
| 13-vii | |
| 13.1-1 thru 13.1-11 | 2 |
| T13.1-1 | 0 |
| T13.1-2 | 0 |
| T13.1-3 | 0 |
| F13.1-1 thru F13.1-7 | |
| 13.2-1 thru 13.2-2 | 0 |
| 13.2-3 thru 13.2-4a | 1 |
| 13.2-5 thru 13.2-7 | 0 |
| F13.2-1 | |
| 13.3-1 thru 13.3-7 | |
| T13.3-1 | |
| T13.3-2 | |
| F13.3-1 thru F13.3-3 | |
| 13.4-1 | 0 |
| 13.5-1 | 1 |
| 13.6-1 | 0 |
| 14-1 | 0 |
| 14.1-1 thru 14.1-2 | 1 |
| 15-1 | 0 |
| 15-iii | 0 |
| 15.0-1 thru 15.0-2 | 0 |
| T15.1-1 (1 of 1) | 0 |
| T15.1-2 (1 of 1) | 0 |
| 16-1 thru 16-ii | 0 |
| 16-iii | |
| 16-v | 0 |
| 16.0-1 thru 16.0-12 | 0 |
| T16.6-1 (1 of 1) | 0 |
| F16.6-1 thru F16.6-6 | 0 |
| 17-1 thru 17-iii | 2 |
| 17-v | 0 |
| 17.1-1 thru 17.1-10 | 0 |
| 17.1-11 thru 17.1-12a | 1 |
| 17.1-13 thru 17.1-30 | 0 |

NYSE&G PSAK

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|--|-----------------------------|
| 17.1-31 thru 17.1-32a | 1 |
| 17.1-33 thru 17.1-34 | 0 |
| T17.1-1 | 0 |
| T17.1-2 | 0 |
| T17.1-3 | 0 |
| T17.1-4 | 0 |
| F17.1-1 | 0 |
| F17.1-2 | 0 |
| F17.1-3 | 0 |
| F17.1-4 | 0 |
| 17.2-1 | 0 |
| Acceptance Review Questions and Responses | 3 |
| Q010.1 (1 p) | 1 |
| Q022.1 (1 p) | 1 |
| Q022.2 (1 p) | 1 |
| Q032.1 (1p) | 2 |
| Q032.2 (1p) | 2 |
| Q032.3 (1p) | 2 |
| Q032.4 (1p) | 3 |
| Q032.5 (1p) | 2 |
| Q032.6 (1p) | 2 |
| Q032.7 (1p) | 2 |
| Q040.1 (3 p) | 1 |
| Q040.2 (3 p) | 1 |
| Q040.3 (1 p) | 1 |
| Q040.4 (2 p) | 1 |
| Q040.5 (1 p) | 1 |
| Q040.6 (1 p) | 1 |
| Q040.7 (1 p) | 1 |
| Q040.8 (1 p) | 1 |
| Q112.1 (1 p) | 1 |
| Q130.1 (1 p) | 1 |
| Q130.2 (1 p) | 1 |
| Q130.3 (1 p) | 1 |
| Q221.1 (2 p) | 1 |
| Q231.1 (1 p) | 1 |
| Q312.1 (1 p) | 1 |
| Q321.1 (1 p) | 1 |
| Q321.2 (1 p) | 1 |
| Q321.3 (1 p) | 1 |
| Q321.4 (1 p) | 1 |
| Q331.1 (1 p) | 1 |
| Q331.2 (1 p) | 1 |
| Q331.3 (1 p) | 1 |
| Q361.1 (1 p) | 1 |
| Q361.2 (1 p) | 1 |
| Q361.3 (1 p) | 1 |
| Q361.4 (1 p) | 1 |
| Q361.5 (1 p) | 1 |
| Q361.6 (1p) | 2 |
| Q361.7 (1 p) | 1 |
| Q361.8 (1 p) | 1 |
| Q361.9 (1 p) | 1 |
| Q371.1 (1p) | 1 |
| Q371.2 (1p) | 1 |
| Q371.3 (1 p) | 1 |
| Q371.4 (1 p) | 1 |
| Q371.5 | 1 |
| Q371.6 (1 p) | 1 |

418 213

NYSEEG PSAR

| <u>Page, Table (T), or Figure (F)</u> | <u>Amendment Number</u> |
|---|-----------------------------|
| Q371.7 (1p) | 1 |
| Q371.8 (1p) | 1 |
| Q371.9 (1p) | 1 |
| Q371.10 (1p) | 1 |
| Q371.11 (1p) | 1 |
| Q371.12 (1p) | 1 |
| Q371.13 (1p) | 1 |
| Q371.14 (1p) | 1 |
| Q371.15 (1p) | 1 |
| Q371.16 (1p) | 1 |
| Q371.17 (1p) | 1 |
| Q371.18 (1 p) | 1 |
| Q371.19 (1 p) | 1 |
| Q371.20 (1 p) | 1 |
| Q371.21 (1 p) | 1 |
| Q371.22 (1 p) | 1 |
| Q371.23 (1 p) | 1 |
| Q371.24 (1 p) | 1 |
| Q371.25 (1 p) | 2 |
| Q371.26 (1 p) | 1 |
| Q371.27 (1 p) | 1 |
| Q371.28 (1p) | 2 |
| Q372.1 (1 p) | 1 |
| Q372.2 (1 p) | 1 |
| Q372.3 (1 p) | 1 |
| Q372.4 (1 p) | 1 |
| Q372.5 (1 p) | 1 |
| Q372.6 (1 p) | 1 |
| Q372.7 (1 p) | 1 |
| Q372.8 (1 p) | 1 |
| Q372.9 (1 p) | 1 |
| Q372.10 (1 p) | 1 |
| Q372.11 (1 p) | 1 |
| Q372.12 (1 p) | 1 |
| Q372.13 (1 p) | 1 |
| Q372.14 (1 p) | 1 |
| Q372.15 (1 p) | 1 |
| Q421.1 (1 p) | 1 |
| Q421.2 (1 p) | 1 |
| Q421.3 (1 p) | 1 |
| Q421.4 (1 p) | 1 |
| Q423.1 (1 p) | 1 |
| Q441.1 (1 p) | 1 |
| Q441.2 (1 p) | 1 |
| Q441.3 (1 p) | 1 |
| Q442.1 (1 p) | 1 |
| Q442.2 (1 p) | 1 |

TABLE OF CONTENTS

SECTION 2.1

NOTE: Missing section numbers will be found in SWESSAR-Pl.

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|---|-------------|
| 2.1 | GEOGRAPHY AND DEMOGRAPHY | 2.1-1 |
| 2.1.1 | Site Location and Description | 2.1-1 |
| 2.1.1.1 | Specification of Location | 2.1-1 |
| 2.1.1.2 | Site Area Map | 2.1-1 |
| 2.1.1.3 | Boundaries for Establishing Effluent Release Limits | 2.1-1 |
| 2.1.2 | Exclusion Area Authority and Control | 2.1-2 |
| 2.1.2.1 | Authority | 2.1-2 |
| 2.1.2.2 | Control of Activities Unrelated to Plant Operation | 2.1-3 |
| 2.1.2.3 | Arrangements for Traffic Control | 2.1-3 |
| 2.1.2.4 | Abandonment of Relocation of Roads | 2.1-4 |
| 2.1.3 | Population and Population Distribution | 2.1-4 |
| 2.1.3.1 | Population Projection Methodology | 2.1-4 |
| 2.1.3.2 | Population within 10 Miles of Site | 2.1-5 |
| 2.1.3.3 | Population Between 10 and 50 Miles of Site | 2.1-6 |
| 2.1.3.4 | Transient Population | 2.1-7 |
| 2.1.3.5 | Low Population Zone | 2.1-9 |
| 2.1.3.6 | Population Center | 2.1-11 |
| 2.1.3.7 | Population Density | 2.1-12 |

NYSE&G PSAR

LIST OF TABLES

SECTION 2.1

| <u>Table</u> | <u>Title</u> |
|--------------|--|
| 2.1-1 | Distances from Release Points to the Restricted Area Boundary |
| 2.1-2 | Current (1978) Property Owners |
| 2.1-3 | 1970 Population of Settlements within 10 Miles of Site |
| 2.1-4 | 1970 Population and Population Density within 10 Miles of Site |
| 2.1-5 | Projected Population and Population Density, by Sector, within 10 Miles of Site, 1991 |
| 2.1-6 | Projected Population and Population Density, by Sector, within 10 Miles of Site, 1993 |
| 2.1-7 | Projection Population and Population Density, by Sector, within 10 Miles of Site, 2000 |
| 2.1-8 | Projected Population and Population Density, by Sector, within 10 Miles of Site, 2010 |
| 2.1-9 | Projected Population and Population Density, by Sector, within 10 Miles of Site, 2020 |
| 2.1-10 | Projected Population and Population Density, by Sector, within 10 Miles of Site, 2030 |
| 2.1-11 | Age Distribution of the Population within 10 Miles for Station Midlife |
| 2.1-12 | 1970 Population of Cities and Towns of 50,000 Persons or More between 10 and 50 Miles of Site |
| 2.1-13 | 1970 Population and Population Density, by Sector, between 10 and 50 Miles of Site |
| 2.1-14 | Projected Population and Population Density, by Sector, between 10 and 50 Miles of Site, 1991 |
| 2.1-15 | Projected Population and Population Density, by Sector, between 10 and 50 Miles of Proposed Site, 1993 |
| 2.1-16 | Projected Population and Population Density, by Sector, between 10 and 50 Miles of Proposed Site, 2000 |
| 2.1-17 | Projected Population and Population Density, by Sector, between 10 and 50 Miles of Site, 2010 |

NYSE&G PSAR

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.1-18 | Projected Population and Population Density by Sector, between 10 and 50 Miles of Site, 2020 |
| 2.1-19 | Projected Population and Population Density, by Sector, between 10 and 50 Miles of Site, 2030 |
| 2.1-20 | Age Distribution of the Population between 10 and 50 Miles for Station Midlife |
| 2.1-21 | Transient Population within 10 Miles of the Site |
| 2.1-22 | Population Distribution Including Peak Transients and Residents for the Low Population Zone (3.0 Mile Radius), 1975 |
| 2.1-23 | Transient Population within Low Population Zone |
| 2.1-24 | Facilities between 3 and 5 Miles of the Site Center |
| 2.1-25 | Institutional Facilities within the Low Population Zone |
| 2.1-26 | Recreational Facilities within the Low Population Zone |

418 217

LIST OF FIGURES

| <u>Figure</u> | <u>Title</u> |
|---------------|---|
| 2.1-1 | General Location Map |
| 2.1-2 | Site Area Map |
| 2.1-3 | Property Map |
| 2.1-4 | Population Distribution Map 0-10 Miles |
| 2.1-5 | Population Distribution Map 10-50 Miles |
| 2.1-6 | Transient Population Map 0-10 Miles |
| 2.1-7 | Population Concentrations in the Low Population Zones |

TABLE OF CONTENTS

SECTION 2.2

NOTE: Missing section numbers will be found in SWESSAR-Pl.

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|---|-------------|
| 2.2 | NEARBY INDUSTRIAL, TRANSPORTATION, AND MILITARY FACILITIES . . . | 2.2-1 |
| 2.2.1 | Locations and Routes | 2.2-1 |
| 2.2.2 | Descriptions of Nearby Industrial, Transportation, and Military Facilities | 2.2-1 |
| 2.2.2.1 | Description of Facilities | 2.2-1 |
| 2.2.2.2 | Description of Products and Materials | 2.2-1 |
| 2.2.2.3 | Pipelines | 2.2-2 |
| 2.2.2.4 | Waterways | 2.2-2 |
| 2.2.2.5 | Airports | 2.2-2 |
| 2.2.2.6 | Projections of Industrial Growth | 2.2-3 |
| 2.2.3 | Evaluation of Potential Accidents | 2.2-4 |
| 2.2.3.1 | Explosions | 2.2-4 |
| 2.2.3.2 | Flammable Vapor Clouds | 2.2-5 |
| 2.2.3.3 | Onsite and Nearby Offsite Toxic Chemical Releases | 2.2-5 |
| 2.2.3.4 | Fires | 2.2-6 |
| 2.2.3.5 | Collisions with Intake Structure | 2.2-6 |
| 2.2.3.6 | Liquid Spills | 2.2-6 |
| 2.2.3.7 | Aircraft Hazard | 2.2-6 |

418 219

LIST OF TABLES

SECTION 2.2

| <u>Table</u> | <u>Title</u> |
|--------------|--|
| 2.2-1 | Industrial Facilities and hazardous Material Use within 10 Miles of the Site |
| 2.2-2 | Primary Access Routes, Capacities and Volumes 1977;1989 |
| 2.2-3 | Storage and Distribution of Bottled Gases in Areas Near the Site |
| 2.2-4 | Onsite Storage of Toxic Chemicals |
| 2.2-5 | Offsite Transportation of Toxic Chemicals |
| 2.2-6 | Maximum Control Room Toxic Gas Concentrations (ppm) |

NYSE&G PSAR

LIST OF FIGURES

SECTION 2.2

| <u>Figure</u> | <u>Title</u> |
|---------------|---|
| 2.2-1 | Industrial and Trans. Facilities and Pipelines within 5 Miles |

418 221

TABLE OF CONTENTS

SECTION 2.3

NOTE: Missing section numbers will be found in SWESSAR-P1

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2.3 | METEOROLOGY | 2.3-1 |
| 2.3.1 | Regional Climatology | 2.3-1 |
| 2.3.1.1 | General Climate | 2.3-1 |
| 2.3.1.2 | Regional Meteorological Conditions for Design and Operating Bases | 2.3-2 |
| 2.3.1.2.1 | Severe Weather Analysis | 2.3-2 |
| 2.3.1.2.2 | Potential for High Air Pollution | 2.3-4b |
| 2.3.1.2.3 | Freezing Rain | 2.3-5 |
| 2.3.1.2.4 | Extreme Snow Loads | 2.3-5 |
| 2.3.1.2.5 | Meteorological Parameter Values Used for Evaluating the Ultimate Heat Sink | 2.3-6 |
| 2.3.1.2.6 | Design Basis Tornado | 2.3-6 |
| 2.3.1.2.7 | One Hundred Year Fastest Mile Wind Speed | 2.3-6 |
| 2.3.2 | Local Meteorology | 2.3-7 |
| 2.3.2.1 | Normal and Extreme Values of Meteorological Parameters | 2.3-7 |
| 2.3.2.1.1 | Long Term Data | 2.3-7 |
| 2.3.2.1.1.1 | Temperature and Humidity | 2.3-8 |
| 2.3.2.1.1.2 | Winds | 2.3-9 |
| 2.3.2.1.1.3 | Stability | 2.3-10 |
| 2.3.2.1.1.4 | Precipitation | 2.3-11 |
| 2.3.2.1.1.5 | Fog | 2.3-12 |
| 2.3.2.1.1.6 | Mixing Depth | 2.3-13 |
| 2.3.2.1.2 | Twelve-Month Onsite Data | 2.3-13 |
| 2.3.2.1.2.1 | Temperature and Humidity | 2.3-13 |
| 2.3.2.1.2.2 | Winds | 2.3-14 |
| 2.3.2.1.2.3 | Stability | 2.3-15 |
| 2.3.2.1.2.4 | Precipitation | 2.3-15 |
| 2.3.2.1.3 | Data Representativeness Study | 2.3-15 |
| 2.3.2.1.3.1 | Representative Climatological Data Base | 2.3-15 |
| 2.3.2.1.3.2 | Temporal Representativeness | 2.3-21 |
| 2.3.2.2 | Potential Influence of the Plant and Its Facilities on Local Meteorology | 2.3-26 |
| 2.3.2.2.1 | Fogging and Icing | 2.3-27 |
| 2.3.2.2.2 | Visible Plume Length and Solar Radiation Reduction | 2.3-27 |
| 2.3.2.2.3 | Humidity Enhancement | 2.3-28 |
| 2.3.2.2.4 | Rain, Snow, and Cloud Modification | 2.3-28 |
| 2.3.2.2.5 | Effects Due to Facility Structural Features | 2.3-29 |
| 2.3.2.2.6 | Regional Topographic Features | 2.3-30 |
| 2.3.2.3 | Local Meteorological Conditions for Design and Operating Bases | 2.3-30 |
| 2.3.3 | Onsite Meteorological Measurements Program | 2.3-30 |
| 2.3.3.1 | Preoperational and Operational Programs | 2.3-30 |
| 2.3.3.1.1 | Meteorological Measurements | 2.3-30 |

TABLE OF CONTENTS (Cont'd)

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2.3.3.1.2 | Meteorological Instrumentation | 2.3-31 |
| 2.3.3.1.3 | Digital Recording System | 2.3-31a |
| 2.3.3.1.4 | Analog Recording System | 2.3-31a |
| 2.3.3.1.5 | Instrument Calibration Methods | 2.3-31a |
| 2.3.3.1.6 | System Maintenance and Operation Procedure | 2.3-32 |
| 2.3.3.1.7 | Data Analysis Procedures | 2.3-32 |
| 2.3.3.1.8 | Operational Program | 2.3-32a |
| 2.3.3.2 | Joint Wind-Stability Frequency Distribution | 2.3-33 |
| 2.3.4 | Short-Term (Accident) Diffusion Estimates | 2.3-34 |
| 2.3.4.1 | Objective | 2.3-34 |
| 2.3.4.2 | Calculations | 2.3-34 |
| 2.3.5 | Long-Term (Routine) Diffusion Estimates | 2.3-37 |
| 2.3.5.1 | Objective | 2.3-37 |
| 2.3.5.2 | Calculation Techniques | 2.3-37 |
| 2.3.5.2.1 | Nomenclature | 2.3-37 |
| 2.3.5.2.2 | X/Q Modeling Technique | 2.3-38 |
| 2.3.5.2.3 | (X/Q) and D/Q Modeling Technique | 2.3-41 |
| 2.3.5.2.4 | Methodology Employed for an Intermittent Release | 2.3-41 |

113 223

NYSE&G PSAR

LIST OF TABLES

SECTION 2.3

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-1 | Syracuse and Rochester Thunderstorm Days |
| 2.3-1a | 20,000 Ampere Lightning Strike Probabilities for Safety Related Structures - Either Unit |
| 2.3-2 | Occurrences of Hail of Any Size as Recorded at the Syracuse or Rochester, N.Y. NWS Stations during the Period 1950-1977 |
| 2.3-3 | Hailstorms with Hail of 0.75 Inch or Greater Diameter Occurring in New York State during the Period 1955-1967. |
| 2.3-4 | Seasonal Distributions of Tornadoes by F-Scale Intensity Occurring within 125 Nautical Miles of the New Haven Site |
| 2.3-5 | Tornado History 1950-1975 within 50 Nautical Miles of New Haven Site |
| 2.3-6 | Number of Freezing Rain/Drizzle Episodes during Each Winter Season |
| 2.3-7 | Distribution of Freezing Rain/Drizzle Episodes Based upon Number of Hours Duration |
| 2.3-8 | Observed Fastest Miles Wind Speed at the Syracuse NWS Station, 1949-1977 |
| 2.3-9 | Long-Term Data Resour. |
| 2.3-10 | Syracuse Weather Service Data - Diurnal Variations of Temperature (°F) |
| 2.3-11 | Watertown Weather Service Data - Diurnal Variations of Temperature (°F) |
| 2.3-12 | Syracuse Weather Service Data Temperature Statistics |
| 2.3-13 | Watertown Weather Service Data Temperature Statistics |
| 2.3-14 | Average Monthly and Annual Temperature (°F) at the Syracuse NWS Station |
| 2.3-15 | Extreme Values of Average Monthly on Annual Temperature (°F) at the Syracuse NWS Station |
| 2.3-16 | Average Monthly and Annual Temperature (°F) at the Watertown NWS Station |

418 224

NYSE&G PSAR

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-17 | Extreme Values of Average Monthly and Annual Temperature (°F) at the Watertown NWS Station |
| 2.3-18 | Syracuse Weather Service Data - Diurnal Variations of Dew Point (°F) |
| 2.3-19 | Watertown Weather Service Data - Diurnal Variations of Dew Point (°F) |
| 2.3-20 | Syracuse Weather Service Data - Dew Point Statistics |
| 2.3-21 | Watertown Weather Service Data - Dew Point Statistics |
| 2.3-22 | Average Monthly and Annual Dew Point (°F) at the Syracuse NWS Station |
| 2.3-23 | Extreme Values of Average Monthly and Annual Dew Point (°F) at the Watertown NWS Station |
| 2.3-24 | Average Monthly and Annual Dew Point (°F) at the Watertown NWS Station |
| 2.3-25 | Extreme Values of Average and Monthly and Annual Dew Point (°F) at the Watertown NWS Station |
| 2.3-26 | Syracuse Weather Service Data - Diurnal Variations of Relative Humidity (%) |
| 2.3-27 | Watertown Weather Service Data - Diurnal Variations of Relative Humidity (%) |
| 2.3-28 | Average Monthly and Annual Relative Humidity (%) at the Syracuse NWS Station |
| 2.3-29 | Extreme Values of Average Monthly and Annual Relative Humidity (%) at the Watertown NWS Station |
| 2.3-30 | Average Monthly and Annual Relative Humidity (%) at the Watertown NWS Station |
| 2.3-31 | Extreme Values of Average Monthly and Annual Relative Humidity (%) at the Watertown NWS Station |
| 2.3-32 | Syracuse Weather Service Data - Diurnal Variations of ABS Humidity (gm/m ³) |
| 2.3-33 | Watertown Weather Service Data - Diurnal Variations of ABS |

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| | Humidity (gm/m ³) |
| 2.3-34 | Syracuse Weather Service Data - Absolute Humidity Statistics (g/cu m) |
| 2.3-35 | Watertown Weather Service Data - Absolute Humidity Statistics (gm/cu m) |
| 2.3-36 | Average Monthly and Annual Absolute Humidity (gm/m ³) at the Syracuse NWS Station |
| 2.3-37 | Extreme Values of Average Monthly and Annual Absolute Humidity (gm/cu m) at the Syracuse NWS Station |
| 2.3-38 | Average Monthly and Annual Absolute Humidity (gm/cu m) at the Watertown NWS Station |
| 2.3-39 | Extreme Values of Average Monthly and Annual Absolute Humidity (gm/cu m) at the Watertown NWS Station |
| 2.3-40 | Syracuse Weather Service Data - Percentage Frequencies of Wind Direction and Speed |
| 2.3-41 | Watertown Weather Service Data - Percentage Frequencies of Wind Direction and Speed |
| 2.3-42 | Extreme Values of Average Monthly and Annual Wind Speed at the Syracuse NWS Station |
| 2.3-43 | Extreme Values of Average Monthly and Annual Wind Speed at the Syracuse NWS Station |
| 2.3-44 | Monthly and Annual Wind Speed (mph) at the Watertown NWS Station |
| 2.3-45 | Extreme Values of Average Monthly and Annual Wind Speed (mph) at the Watertown NWS Station |
| 2.3-46 | Syracuse Weather Service Data - Distribution of Peak Winds |
| 2.3-47 | Watertown Weather Service Data - Distribution of Peak Winds |
| 2.3-48 | Syracuse Weather Service Data Occurrences of Wind Direction Persistence by 22.5 Deg Sector |
| 2.3-49 | Watertown Weather Service Data Occurrences of Wind Direction Persistence by 22.5 Deg Sector |

NYSE&G PSAR

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-50 | Syracuse Weather Service Data Wind Speed Associated with Max Wind Direction Persistence by 22.5 Deg Sector (mph) |
| 2.3-51 | Watertown Weather Service Data Wind Speed Associated with Max Wind Direction Persistence by 22.5 Deg Sector (mph) |
| 2.3-52 | Relative Frequency Distribution |
| 2.3-53 | Relative Frequency Distribution |
| 2.3-54 | Frequency Distribution of Hourly Occurrence of Stability Class, by Year, for the Syracuse, NY NWS Station |
| 2.3-55 | Frequency Distribution of Hourly Occurrence of Stability Class, by Year, for the Watertown, NY NWS Station |
| 2.3-56 | Extreme Monthly and Annual Stability Class Frequencies Based on 1945 through 1975 STARJ Stability Class Frequencies for the Syracuse, NY NWS Station |
| 2.3-57 | Extreme Monthly and Annual Maxima and Minima Stability Class Frequencies Based on 1950 through 1964 Stability Class Frequencies for the Watertown, NY NWS Station |
| 2.3-58 | Average, Extreme, and Extreme 24-hour Precipitation (inches) Measured at the Syracuse, NY NWS Station |
| 2.3-59 | Average, Extreme, and Extreme 24-hour Precipitation (inches) by Month, Measured at the Rochester, NY NWS Station |
| 2.3-60 | Average and Extreme Monthly Snowfall (inches) Measured at the Syracuse, NY NWS Station |
| 2.3-61 | Average and Extreme Monthly Snowfall (inches) Measured at the Rochester, NY NWS Station |
| 2.3-62 | Average and Extreme Number of Hours of Precipitation (≥ 0.01 inch/hour) for Monthly and Annual Periods as Observed at the Syracuse, NY NWS Station |
| 2.3-63 | Average and Extreme Number of Hours of Precipitation (≥ 0.01 inch/hour) for Monthly and Annual Periods at the Rochester, NY NWS Station |
| 2.3-64 | Daily Precipitation Rate Distribution Averaged by Month and Year as Observed at the Syracuse, NY NWS Station |

418 227

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|--|
| 2.3-65 | Daily Precipitation Rate Distribution Averaged by Month and Year as Observed at the Rochester, NY NWS Station |
| 2.3-66 | Hourly Precipitation Rate Distribution, Averaged by Month and Year as Observed at the Syracuse, NY NWS Station |
| 2.3-67 | Hourly Precipitation Rate Distribution, Averaged by Month and by Year as Observed at the Rochester, NY NWS Station |
| 2.3-68 | Syracuse Weather Service Data - Percentage Frequencies of Wind Direction and Speed during Precipitation |
| 2.3-69 | Rochester Weather Service Data - Percentage Frequencies of Wind Direction and Speed during Precipitation |
| 2.3-70 | Watertown Weather Service Data Percentage Frequencies of Wind Direction and Speed during Precipitation |
| 2.3-71 | Syracuse Weather Service Data Frequency Distribution of Fog and Heavy Fog Days |
| 2.3-72 | Watertown Weather Service Data Frequency Distribution of Fog and Heavy Fog Days |
| 2.3-73 | Syracuse Weather Service Data - Occurrence of Fog by Hour of Day |
| 2.3-74 | Watertown Weather Service Data - Occurrence of Fog by Hour of Day |
| 2.3-75 | Syracuse Weather Service Data - Occurrence of Fog by Wind Direction |
| 2.3-76 | Watertown Weather Service Data - Occurrence of Fog by Wind Direction |
| 2.3-77 | Extreme Values of Monthly and Annual Percent of Fog Days at the Syracuse NWS Station |
| 2.3-78 | Values of Monthly and Annual Percent of Fog Days at the Syracuse NWS Station |
| 2.3-79 | Extreme Values of Monthly and Annual Percent of Fog Days at the Watertown NWS Station |
| 2.3-80 | Values of Monthly and Annual Percent of Fog Days at the Watertown NWS Station |
| 2.3-81 | Average Morning Minimum and Afternoon Mixing Heights (M AGL) for Buffalo, NY NWS Station |

NYSE&G PSAR

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-82 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Temperature (°F) at New Haven 10 m |
| 2.3-83 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Relative (%) at New Haven 10 m |
| 2.3-84 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Abs Humidity (g/m³) at New Haven 10 m |
| 2.3-85 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Dewpoint (°F) at New Haven 10 m |
| 2.3-86 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Temperature (°F) at New Haven 100 m |
| 2.3-87 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Relative Humidity (%) at New Haven 100 m |
| 2.3-88 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Absolute Humidity (g/m³) at New Haven 100 m |
| 2.3-89 | NYSE&G Onsite Meteorological Data - Diurnal Variations of Dewpoint (°F) at New Haven 100 m |
| 2.3-90 | Maximum and Minimum Hourly Temperature (°F) Measured at 10 m at New Haven Onsite Meteorological Tower |
| 2.3-91 | Maximum and Minimum Hourly Dewpoint (°F) Measured at 10 m at New Haven Onsite Meteorological Tower |
| 2.3-92 | Maximum and Minimum Temperature (°F) Measured at 100 m at New Haven Onsite Meteorological Tower |
| 2.3-93 | Maximum and Minimum Dewpoint (°F) Measured at 100 m at New Haven Onsite Meteorological Tower |
| 2.3-94 | Average Daily Maximum and Minimum Temperature (°F), Dew Point (°F), and Absolute Humidity (gm/cu m) Monthly and Annually as Measured at 10 m on the New Haven Onsite Meteorological Tower |
| 2.3-95 | NYSE&G Onsite Meteorological Data Percentage Wind Direction and Speed Occurrence New Haven (10 m) |
| 2.3-96 | NYSE&G Onsite Meteorological Data Percentage Wind Direction and Speed Occurrence New Haven (61 m) |

418 229

NYSE&G PSAR

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-97 | NYSE&G Onsite Meteorological Data Percentage Wind Direction and Speed Occurrence New Haven (100 m) |
| 2.3-98 | Maximum Wind Speed (mph) Measured at 10 m at New Haven Onsite Meteorological Tower |
| 2.3-99 | Onsite Meteorological Data - Occurrences of Wind Direction Persistence by 22.5Deg Sector |
| 2.3-100 | Onsite Meteorological Data - Wind Speed Associated with Maximum Wind Direction Persistence by 22.5Deg Sector |
| 2.3-101 | Monthly and Annual Stability Class Frequency Distribution, Based on New Haven 61-10 m ΔT Onsite Meteorological Tower Data from April 1977-March 1978 |
| 2.3-102 | Monthly and Annual Frequency Distribution of Consecutive Hourly Persistence of Inversion Conditions ($\Delta T / Z > 0$), According to the 61-10 m ΔT . New Haven Onsite Data for April 1977-March 1978 |
| 2.3-103 | Monthly and Annual Total Precipitation and Number of Precipitation Hours ($\geq .01$ inch/hour) Measured at New Haven Onsite Meteorological Station |
| 2.3-104 | Hourly Rainfall Rate Distribution Determined from New Haven Onsite Data |
| 2.3-105 | NYSE&G Onsite Meteorological Data Percentage Wind Direction and Speed Occurrence |
| 2.3-106 | Syracuse Weather Service Data - Percentage Frequencies of Wind Direction and Speed |
| 2.3-107 | Syracuse Weather Service Data - Diurnal Variations of Abs Humidity (gm/m^3) |
| 2.3-108 | Syracuse Weather Service Data Diurnal Variations of Rel Humidity(%) |
| 2.3-109 | Syracuse Weather Service Data Diurnal Variations of Dewpoint ($^{\circ}F$) |
| 2.3-110 | Relative Frequency Distribution |
| 2.3-111 | Monthly and Annual Frequency of Occurrence (Percentage of Day of Fog and Heavy Fog as Observed at the Syracuse NY NWS Station during the Period April 1977-March 1978 |
| 2.3-112 | Syracuse Weather Service Data Occurrence of Fog by Hour of Day |

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|--|
| 2.3-113 | Average Monthly Mixing Heights (m AGL) at Buffalo, NY for April 1977-March 1978 (Based on Holzworth Method) |
| 2.3-114 | Monthly and Annual Total Precipitation (inches) and Snowfall (inches) Measured at the Syracuse, NY NWS Station during the period April 1977-March 1978 |
| 2.3-115 | Daily Precipitation Rate Distribution by Month as Observed at the Syracuse NY NWS Station during the Period April 1977-March 1978 |
| 2.3-116 | Hourly Precipitation Rate Distribution by Month and Annually, as Observed at the Syracuse, NY NWS Station during the Period April 1977-March 1978 |
| 2.3-117 | Syracuse Weather Service Data - Percentage Frequencies of Wind Direction and Speed during Precipitation |
| 2.3-118 | Relative Percentage of Fog Occurrence by Wind Direction, as Observed at the Syracuse NY NWS Station during the Period April 1977-March 1978 |
| 2.3-119 | Syracuse Weather Service Data - Percentage Frequency Distribution of Wet Bulb Temperature vs Dry Bulb Temperature |
| 2.3-120 | Syracuse Weather Service Data - Percentage Frequency Distribution of Wet Bulb Temperature vs Dry Bulb Temperature |
| 2.3-121 | Comparison of Monthly and Annual Average Wet Bulb Temperatures for the Onsite and Offsite Stations |
| 2.3-122 | One Degree Distribution and Percentage of Wet Bulb Temperature Based on 10 m Onsite Data |
| 2.3-123 | Syracuse Weather Service Data - One Degree Distribution and Percentage of Wet Bulb Temperature |
| 2.3-124 | Rochester Weather Service Data - Diurnal Variations of Temperature (°F) |
| 2.3-125 | Rochester Weather Service Data - Diurnal Variations of Dewpoint (°F) |
| 2.3-126 | Rochester Weather Service Data - Diurnal Variations of Relative Humidity (%) |
| 2.3-127 | Comparison of Monthly and Annual Average Wet Bulb Temperature for the Onsite and Rochester Stations |

418 231

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-128 | Rochester Weather Service Data - One Degree Distribution and Percentage of Wet Bulb Temperature |
| 2.3-129 | Rochester Weather Service Data - Percentage Frequencies of Wind Direction and Speed |
| 2.3-130 | Monthly and Annual Total Precipitation (Inches) and Snowfall (Inches) Measured at the Rochester, N.Y. NWS Station during the Period April 1977-March 1978 |
| 2.3-131 | Hourly Precipitation Rate Distribution Averaged by Month and Annually, as Observed at the Rochester, N.Y. NWS Station during the Period April 1977-March 1978 |
| 2.3-132 | Hourly Precipitation Rate Distribution Averaged by Month and Annually, as Observed at the Rochester, N.Y. NWS Station during the Period April 1977-March 1978 |
| 2.3-133 | Onsite Meteorological Parameter Data Recovery Rates |
| 2.3-134 | Onsite Annual Coincident Meteorological Data Recovery Rates |
| 2.3-135 | Meteorology Monitoring Equipment |
| 2.3-136 | NYSE&G Onsite Meteorological Data Percentage Wind Direction and Speed Occurrence - New Haven (10 m) |
| 2.3-137 | NYSE&G Onsite Meteorological Data Percentage Wind Direction and Speed Occurrence - New Haven (61 m) |
| 2.3-138 | Five-Percent Equal Risk 0- to 2-Hr X/Q Values at the Exclusion Area Boundary |
| 2.3-139 | Five-Percent Equal Risk X-Q Values at the Low Population Zone |
| 2.3-140 | Fifty-Percent Equal Risk X/Q Values at the Exclusion Area Boundary |
| 2.3-141 | Distances (in Meters) of Nearest Maximum Individual Receptors to the Release Point |
| 2.3-142 | Release Point Characteristics |
| 2.3-143 | Annual Average Undecayed Undepleted X/Q Values x 10 ⁷ (s/cu m) for Ventilation Vent Release |
| 2.3-144 | Grazing Season Average Undecayed Undepleted X/Q Values X 10 ⁷ (s/cu m) for Ventilation Vent Release |

LIST OF TABLES (Cont'd)

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.3-145 | Annual Average D/Q x 10 ⁶ (m ⁻²) for Ventilation Vent Release |
| 2.3-146 | Grazing Season Average D/Q Values x 10 ⁶ (m ⁻²) for Ventilation Vent Release |
| 2.3-147 | Annual Average Undecayed Undepleted X/Q Values x 10 ⁷ (s/cu m) for Ventilation Vent Purge |
| 2.3-148 | Grazing Season Average Undecayed Undepleted X/Q Values x 10 ⁷ (s/cu m) for Ventilation Vent Purge |
| 2.3-149 | Annual Average D/Q Values x 10 ⁶ (m ^{0.2}) for Ventilation Vent Purge |
| 2.3-150 | Grazing Season Average D/Q Values x 10 ⁶ (m ^{0.2}) for Ventilation Vent Purge |
| 2.3-151 | Tornado History 1950-1975 for Tornadoes Having Measured Swath Areas Within 125 Nautical Miles of the New Haven Site |
| 2.3-152 | Meteorological Data Base, Hours (Percentage of Analog Data Utilized by Month |
| 2.3-153 | New Haven Meteorological Tower - Significant Instrument Outages |

418 233

LIST OF FIGURES

| <u>Figure</u> | <u>Title</u> |
|---------------|---|
| 2.3-1 | New Haven Regional Tornadoes |
| 2.3-2 | Syracuse Climatological Windrose |
| 2.3-3 | Watertown Climatological Windrose |
| 2.3-4 | 10 m Onsite Annual Windrose - Data Base Year |
| 2.3-5 | 61 m Onsite Annual Windrose - Data Base Year |
| 2.3-6 | 100 m Onsite Annual Windrose - Data Base Year |
| 2.3-7 | Syracuse Annual Windrose - Data Base Year |
| 2.3-8 | Rochester Annual Windrose - Data Base Year |
| 2.3-9 | Cumulative Percentage Frequency Occurrence of Visible Plume Length (km) and Direction |
| 2.3-10 | Percent Reduction of Sunlight Reaching the Top of the Plume Natural Draft Towers |
| 2.3-11 | Relative Humidity Increase in Natural Draft Towers |
| 2.3-12 | 50-Mile Radius Map |
| 2.3-13 | Maximum Elevation vs Distance by Sector |

418 234

TABLE OF CONTENTS

SECTION 2.4

NOTE: Missing section numbers will be found in SwESSAR-Pl.

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|---|-------------|
| 2.4 | HYDROLOGIC ENGINEERING | 2.4-1 |
| 2.4.1 | Hydrologic Description | 2.4-1 |
| 2.4.1.1 | Site and Facilities | 2.4-1 |
| 2.4.1.2 | Hydrosphere | 2.4-1 |
| 2.4.1.2.1 | General Description | 2.4-1 |
| 2.4.1.2.2 | Bathymetry | 2.4-1 |
| 2.4.1.2.3 | Lake Levels | 2.4-1 |
| 2.4.1.2.4 | Lake Circulation | 2.4-3 |
| 2.4.1.2.5 | Local Water Currents | 2.4-4 |
| 2.4.1.2.6 | Surface Water Supply | 2.4-4 |
| 2.4.1.2.7 | Onsite Streams | 2.4-6 |
| 2.4.2 | Floods | 2.4-7 |
| 2.4.2.1 | Flood History | 2.4-8 |
| 2.4.2.2 | Flood Design Considerations | 2.4-9 |
| 2.4.2.3 | Effects of Local Intense Precipitation | 2.4-10 |
| 2.4.3 | Probable Maximum Flood on Streams and Rivers | 2.4-12 |
| 2.4.3.1 | Probable Maximum Precipitation | 2.4-12 |
| 2.4.3.2 | Precipitation Losses | 2.4-12a |
| 2.4.3.3 | Runoff Model | 2.4-12a |
| 2.4.3.4 | Probable Maximum Flood Flow | 2.4-12a |
| 2.4.3.5 | Water Level Determinations | 2.4-12b |
| 2.4.3.5.1 | Probable Maximum Flood Water Levels | 2.4-12b |
| 2.4.3.5.2 | Spillage of Probable Maximum Flood | 2.4-12c |
| 2.4.3.5.3 | Alteration of Stream Courses | 2.4-12c |
| 2.4.3.5.4 | Erosion Potential | 2.4-12d |
| 2.4.3.6 | Coincident Wind Wave Activity | 2.4-12f |
| 2.4.4 | Potential Dam Failures | 2.4-12f |
| 2.4.5 | Probable Maximum Surge and Seiche Flooding | 2.4-12f |
| 2.4.6 | Probable Maximum Tsunami Flooding | 2.4-12f |
| 2.4.7 | Ice Effects | 2.4-13 |
| 2.4.8 | Cooling Water Canals and Reservoirs | 2.4-13 |
| 2.4.9 | Channel Diversions | 2.4-13 |
| 2.4.10 | Flooding Protection Requirements | 2.4-13 |
| 2.4.11 | Low Water Considerations | 2.4-13 |
| 2.4.11.1 | Low Flow in Streams | 2.4-13 |
| 2.4.11.2 | Low Water Resulting from Surges, Seiches, or Tsunamis | 2.4-14 |
| 2.4.11.3 | Historical Low Water | 2.4-14 |
| 2.4.11.4 | Future Controls | 2.4-15 |
| 2.4.11.5 | Station Requirements | 2.4-15 |
| 2.4.11.6 | Heat Sink Dependability Requirements | 2.4-15 |
| 2.4.12 | Dispersion, Dilution and Travel Times of Accidental Releases of Liquid Effluents in Surface Waters | 2.4-16 |

TABLE OF CONTENTS (Cont'd)

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2.4.12.1 | Transport Models | 2.4-16 |
| 2.4.12.2 | Sediment Uptake Models | 2.4-20 |
| 2.4.12.3 | Water Use Models | 2.4-20 |
| 2.4.13 | Ground Water | 2.4-20a |
| 2.4.13.1 | Description and Onsite Use | 2.4-20a |
| 2.4.13.1.1 | Regional Ground Water | 2.4-20a |
| 2.4.13.1.2 | Site Ground Water Conditions | 2.4-20b |
| 2.4.13.1.3 | Plant Requirements | 2.4-22 |
| 2.4.13.2 | Sources | 2.4-22 |
| 2.4.13.2.1 | Regional Ground Water Use | 2.4-22 |
| 2.4.13.2.2 | Ground Water Levels and Fluctuations | 2.4-23 |
| 2.4.13.2.3 | Aquifer Characteristics | 2.4-24 |
| 2.4.13.3 | Accident Effects | 2.4-25 |
| 2.4.13.3.1 | Tank Failure and Dilution/Dispersion Modes | 2.4-25 |
| 2.4.13.3.2 | Vertical Travel and Horizontal Dispersion Source Configuration | 2.4-25 |
| 2.4.13.3.3 | Horizontal Dispersions and Travel Time | 2.4-26 |
| 2.4.13.3.4 | Sorption and Decay | 2.4-28 |
| 2.4.13.3.5 | Radioactive Nuclide Concentrations | 2.4-28 |
| 2.4.13.4 | Monitoring and Safeguard Requirements | 2.4-28a |
| 2.4.13.5 | Design Basis for Subsurface Hydrostatic Loading | 2.4-29 |
| 2.4.14 | Technical Specification and Emergency Operation Requirements | 2.4-29 |

418 236

LIST OF TABLES

SECTION 2.4

| <u>Table</u> | <u>Title</u> |
|--------------|--|
| 2.4-1 | Monthly Mean Water Levels of Lake Ontario at Oswego, New York for Years 1900 to 1976 |
| 2.4-2 | Identification and Description of Public and Private Water Supply Systems Drawing from Lake Ontario within 50 Miles across Water from the Planned Power Plant Intake Structure |
| 2.4-3 | Probable Maximum Precipitation Short Duration Values at Station |
| 2.4-4 | Probable Maximum Precipitation |
| 2.4-5 | HEC-1 Hydrograph Optimization Parameters |
| 2.4-6 | Parameters and Results for Each Stream Under Study |
| 2.4-7 | Manning's Roughness Coefficients (n) Used for Site Drainage and Flood Studies |
| 2.4-8 | PMF Peak Discharges after Construction |
| 2.4-9 | Public Ground Water Systems |
| 2.4-10 | Individual Water Supplies |
| 2.4-11 | Parameters Used to Determine Horizontal Dispersion and Travel Time |
| 2.4-12 | For Field Model Sensitivity Study - Dilution Factors for Various Ambient Current Velocities (V), Horizontal Diffusion Coefficients (E) and Plume Depths (D) |

418 238

LIST OF FIGURES

SECTION 2.4

| <u>Figure</u> | <u>Title</u> |
|---------------|--|
| 2.4-1 | Great Lakes - St. Lawrence River - Drainage System |
| 2.4-2 | Lake Ontario Bathymetry |
| 2.4-3 | Bathymetric Map - Lake Ontario |
| 2.4-4 | Current Moorings in Lake Ontario |
| 2.4-5 | Rose Diagram Summaries: May-October 1 Upper |
| 2.4-6 | Rose Diagram Summaries: May-October 2 Upper |
| 2.4-7 | Rose Diagram Summaries: May-October 1 Lower |
| 2.4-8 | Rose Diagram Summaries: May-October 2 Lower |
| 2.4-9 | Rose Diagram Summaries: November-March 1 Lower |
| 2.4-10 | Rose Diagram Summaries: November-March 2 Lower |
| 2.4-11 | Water Users within 50 Miles of Discharge |
| 2.4-12 | Probable Maximum Flood Level |
| 2.4-13 | Catfish Creek PMF Levels |
| 2.4-14 | Streams and Watersheds at Site |
| 2.4-15 | Time of Concentration of Rainfall on Small Drainage Basins |
| 2.4-16 | Time Distribution of Probable Maximum Precipitation |
| 2.4-17 | Locations of Offsite Streams and Precipitation Stations |
| 2.4-18 | Sterling Creek Optimized Hydrograph (9/25/75) |
| 2.4-19 | Beaverdam Brook Optimized Hydrograph (5/19/76) |
| 2.4-20 | Sterling Creek Conservative Hydrograph (9/25/75) |
| 2.4-21 | Beaverdam Brook Conservative Hydrograph (5/19/76) |
| 2.4-22 | Diverted Stream PMF Hydrograph |
| 2.4-23 | Public Ground Water Systems |

LIST OF FIGURES (CONT'D)

| <u>Figure</u> | <u>Title</u> |
|---------------|---|
| 2.4-24 | Individual Ground Water Supplies |
| 2.4-25 | Extended Ground Water Fluctuations |
| 2.4-26 | Onsite Water Quality Sampling Locations |

418 240

water to industries in the Syracuse area and to a few users outside Onondaga County, such as the Miller Brewing Company's facility in the Town of Volney. The Oswego Water Department provides potable water to two power generating stations in Scriba. Both plants also have their own intakes on Lake Ontario to obtain water for cooling systems. The James A. FitzPatrick Nuclear Generating Station of the Power Authority of the State of New York is estimated to use an average of 259.2 mgd from Lake Ontario for "open cycle" cooling. The Niagara Mohawk Power Corporation's Nine Mile Point No. 1 power plant pumps an average of 180.0 mgd from the lake at an adjoining location⁽²³⁾ also for "open cycle" cooling. These intakes are located approximately 5.9 and 6.2 radial mi, respectively, west-northwest of NYSE&G 1 and 2 and approximately 3.6 and 4.1 water mi west of the intake structure.

The center of the proposed site is 2.0 mi south of Lake Ontario. NYSE&G 1 and 2 utilize lake water for cooling purposes. The average consumptive water use by the plant is 52 cfs, or 34 mgd. Lake Ontario is the major water resource in the region. The New York State Department of Environmental Conservation has classified it as a Class A - Special (International Boundary Waters), a rating which indicates its best use as water supply for drinking, culinary, or food processing, primary contact recreation, and any other use. This rating is reflected in Lake Ontario as a source of water for communities within 50 water mi of the discharge point, which have a total population of 107,700 in 1978⁽²⁴⁾. The water taken from Lake Ontario must be filtered and chlorinated to assure a good potable water supply, but the lake remains a very large reservoir of treatable drinking water. Localized pollution results from the discharge of waste water and sewerage in the metropolitan areas which border the lake, for example Rochester and Toronto⁽²⁵⁾. Lake Ontario also suffers from indirect pollution coming from Lake Erie and Lake Buffalo.

Table 2.4-2 presents data for all municipal and industrial water systems drawing on Lake Ontario within a distance of 50 mi from the station discharge structure. The U.S. potable water systems identified in Figure 2.4-11 serve users in Cayuga, Jefferson, Onondaga, Oswego, and Wayne Counties with a total average withdrawal of 498.9 mgd. This figure represents 59.73 mgd average municipal use, and 439.2 mgd for "open cycle" cooling by the Nine Mile Point No. 1 power plant, and the James A. FitzPatrick Nuclear Generating Station. Thus, the two existing nuclear generating stations located in the Town of Scriba account for 88 percent of present withdrawals. Canadian municipal water users are also identified on Table 2.4-2. Among the smaller towns and villages which draw upon Lake Ontario, water use fluctuates by season, with demand greater in the months June through December due to summer vacationer visitation and autumn food processing. The seasonal difference in withdrawals from the lake is estimated at 10.0 mgd and is not significant in relation to total water availability.

Except for power generation, there are no projections available regarding future withdrawals from Lake Ontario for industrial uses. The Niagara Mohawk Power Corporation's second nuclear-fueled unit at Nine Mile Point, a closed cycle cooling plant now under construction, will not require significantly greater quantities of water from the lake than other existing stations; however, consumptive use will be greater than that of presently operating "open cycle" systems on the lake. It is assumed that present industrial users

will take water at approximately the same rates of use as at present. Domestic consumptive use will increase along the 50-mi stretches of shore east and west from the proposed intake as local populations grow and per capita rates of water use increase. By 2020, residential and commercial uses within this radius will require approximately 200 mgd, an increase of 235 percent from the 59.6 mgd figure for current use. This will be chiefly due to increased development in the Syracuse Standard Metropolitan Statistical Area, which is a major user of water from Lake Ontario.

2.4.1.2.7 Onsite Streams

The onsite streams at New Haven site are Catfish Creek and Butterfly Creek (Figure 2.4-14). Section 2.4.2 discusses flooding and presents additional hydrologic information for these streams. Flow measurements of these streams were taken weekly at the locations presented in Figure 2.4-26 during the period April 1977 to March 1978 (except when measurement was prevented due to ice formation).

Catfish Creek

Current Velocity

Current velocities ranged from less than 0.02 to 1.2 m/sec with a mean of 0.09 m/sec for the April through December sampling period. Current velocities increased during periods of rainfall; and the lowest velocities were observed during dry periods, especially the summer months. The highest monthly mean current velocities of 0.16 and 0.17 m/sec were recorded in October and November, respectively. Lowest current velocities were recorded at the eastern-most tributary, upstream of the site (location 3, Figure 2.4-26), and on Catfish Creek downstream of the site (location S10, Figure 2.4-26). The highest current velocities were recorded at location S11 (Figure 2.4-26). location 1 (Figure 2.4-26), the mouth of Catfish Creek, was not taken due to the influence of the inflowing water from Lake Ontario.

Stream Flow

Stream flows ranged from less than 0.0003 to 6.0 cu m/s with a mean of 0.42 cu m/s. Stream flow was generally greatest at location S10 (Figure 2.4-26) where the creek was the widest and deepest (greater than 4 m). Stream flow measurements at upstream Location 3 and S11 (both Figure 2.4-26) usually were similar, and greater flows were measured at downstream location 2 (Figure 2.4-26). The greatest stream flows were recorded during April, October, and November and coincided with periods of rainfall. The mean stream flow was 0.61 cu m/s in April, 0.41 cu m/s in October, and 1.1 cu m/s in November.

Butterfly Creek

Current Velocity

Current velocity ranged from less than 0.02 to 2.5 m/sec with a mean of 0.21 m/sec. Current velocities were generally low throughout the year, although small increases were observed after periods of rainfall. The lowest current

218 212

TABLE 2.4-1

MONTHLY MEAN WATER LEVELS
OF LAKE ONTARIO AT OSWEGO, NEW YORK FOR YEARS 1900 TO 1976

| <u>Month</u> | <u>Water Level in ft above msl (IGLD 1955)</u> | | |
|--------------|--|-----------------|-----------------|
| | <u>Average</u> | <u>Maximum</u> | <u>Minimum</u> |
| January | 245.22 (244.00) | 247.32 (246.10) | 242.89 (241.67) |
| February | 245.30 (244.08) | 247.68 (246.46) | 242.81 (241.59) |
| March | 245.58 (244.36) | 247.99 (246.77) | 243.30 (242.08) |
| April | 246.25 (245.03) | 248.91 (247.69) | 243.60 (242.38) |
| May | 246.66 (245.44) | 249.17 (247.95) | 243.89 (242.67) |
| June | 246.80 (245.58) | 249.28 (248.06) | 244.13 (242.91) |
| July | 246.71 (245.49) | 248.96 (247.74) | 243.97 (242.75) |
| August | 246.36 (245.14) | 248.67 (247.45) | 243.48 (242.26) |
| September | 245.93 (244.71) | 248.13 (246.91) | 243.16 (241.94) |
| October | 245.54 (244.32) | 247.55 (246.33) | 242.94 (241.72) |
| November | 245.29 (244.07) | 247.40 (246.18) | 242.67 (241.45) |
| December | 245.20 (243.98) | 247.41 (246.19) | 242.70 (241.48) |

418 243

TABLE 2.4-2

IDENTIFICATION AND DESCRIPTION OF PUBLIC AND PRIVATE
WATER SUPPLY SYSTEMS DRAWING FROM LAKE ONTARIO WITHIN
50 MILES ACROSS WATER FROM THE STATION DISCHARGE STRUCTURE

| <u>Map*</u> <u>Code</u> | <u>Name of System</u> | <u>Water</u> <u>Miles from</u> <u>Discharge</u> | <u>Direction</u> <u>from Site</u> <u>by Major</u> <u>Compass</u> <u>Point</u> | <u>Average</u> <u>Withdrawal</u> <u>Rate</u> <u>1977</u> <u>(mgd)</u> | <u>Type of Use</u> |
|----------------------------|--|---|---|---|---|
| 1 | Williamson Water District Williamson, N.Y. | 47 | WSW | 3.0 | Domestic and Process |
| 2 | Village of Sodus Sodus, N.Y. | 42 | WSW | 0.3 | Domestic, Institutional, and Process |
| 3 | Village of Sodus Point Sodus Point, N.Y. | 39 | WSW | 0.2 | Domestic |
| 4 | Village of Wolcott Wolcott, N.Y. | 32 | WSW | 0.1 | Domestic |
| 5 | City of Oswego | 11.3 | W | 10.0 | Domestic |
| 6 | Metropolitan Water Board of Onondaga County Syracuse, N.Y. | 11.3 | W | 35.0 | Boiler Make-up, Domestic and Process |
| 7 | Niagara Mohawk Power Corp. Scriba, N.Y. | 6 | WNW | 180.0 | Cooling |
| 8 | Power Authority of the State of New York Scriba, N.Y. | 6 | WNW | 259.2 | Cooling |
| 9 | Village of Sacketts Harbor | 33 | NNE | 0.2 | Domestic |
| 10 | Chaumont Water District Chaumont, N.Y. | 39 | NNE | 0.7 | Domestic |
| 11 | Village of Cape Vincent Cape Vincent, N.Y. | 43 | NNE | 0.2 | Domestic |

NOTE:

*See Figure 2.4-11

SOURCE:

Harbridge House, Inc., 1978, based on information supplied by the New York State Department of Health, Division of Sanitary Engineering and the Niagara Mohawk Power Corporation.

NYSE&G PSAR

TABLE 2.4-2 (Cont'd)

| Map* Code | Name of System | Water Miles from Discharge | Direction from Site by Major Compass Point | Average Withdrawal Rate 1977 (mgd) | Type of Use |
|--------------|--|----------------------------------|--|--|-------------|
| 12 | Kingston Water Intake Plant Kingston, Ontario | 50 | N | 20 (16.5 imprl) | Domestic |
| 13 | Kingston Township | 50 | NNW | 2.4 (2.0 imprl) | Domestic |

418 245

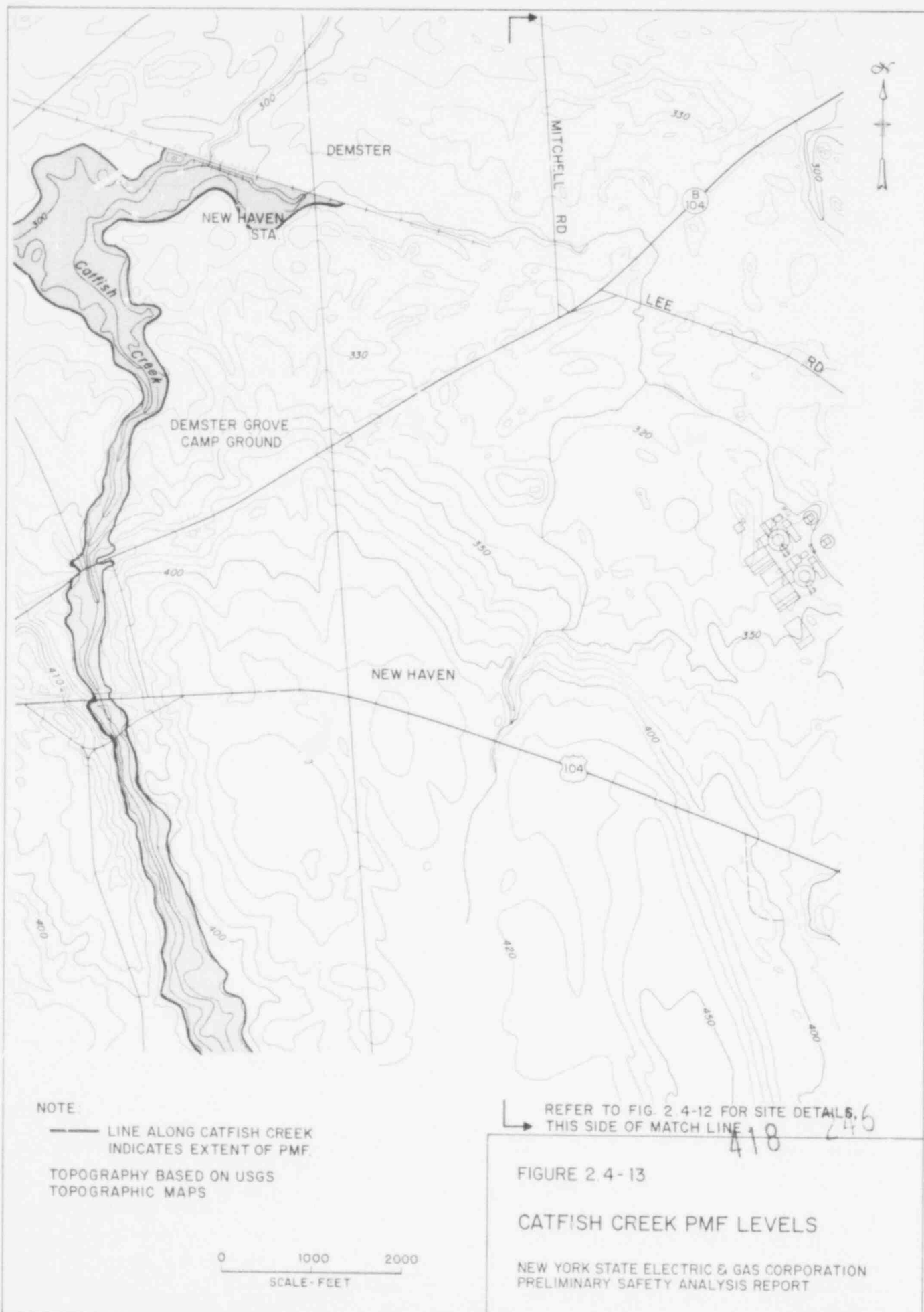


TABLE OF CONTENTS

SECTION 2.5

NOTE: Missing section numbers will be found in SWESSAR-Pl.

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2.5 | GEOLOGY AND SEISMOLOGY | 2.5-1 |
| 2.5.1 | Basic Geologic and Seismic Information | 2.5-3 |
| 2.5.1.1 | Regional Geology | 2.5-3 |
| 2.5.1.1.1 | Regional Physiography and Geomorphology | 2.5-3 |
| 2.5.1.1.1.1 | Introduction | 2.5-3 |
| 2.5.1.1.1.2 | Central Lowland Province (Site Province) | 2.5-4 |
| 2.5.1.1.1.3 | Appalachian Plateaus Province | 2.5-4 |
| 2.5.1.1.1.4 | Adirondack Province | 2.5-5 |
| 2.5.1.1.1.5 | Valley and Ridge Province | 2.5-5 |
| 2.5.1.1.1.6 | Laurentian Highlands Province | 2.5-6 |
| 2.5.1.1.1.7 | St. Lawrence Lowlands Province | 2.5-6 |
| 2.5.1.1.1.8 | New England Province | 2.5-6 |
| 2.5.1.1.1.9 | Piedmont Province | 2.5-7 |
| 2.5.1.1.1.10 | Coastal Plain Province | 2.5-8 |
| 2.5.1.1.1.11 | Physiographic Development | 2.5-8 |
| 2.5.1.1.2 | Regional Surficial Geology | 2.5-8 |
| 2.5.1.1.2.1 | Introduction | 2.5-8 |
| 2.5.1.1.2.2 | New England Sector | 2.5-9 |
| 2.5.1.1.2.3 | New York/Great Lakes Sector | 2.5-9 |
| 2.5.1.1.3 | Regional Bedrock Geology | 2.5-10 |
| 2.5.1.1.3.1 | Introduction | 2.5-10 |
| 2.5.1.1.3.2 | Eastern Stable Platform (Site Province) | 2.5-10 |
| 2.5.1.1.3.3 | Appalachian Plateau Province | 2.5-11 |
| 2.5.1.1.3.4 | Adirondack Mountains | 2.5-12 |
| 2.5.1.1.3.5 | Frontenac Arch Sector of Eastern Stable Platform | 2.5-13 |
| 2.5.1.1.3.6 | Western Quebec Seismic Zone | 2.5-13 |
| 2.5.1.1.3.7 | Northern Valley and Ridge Province | 2.5-14 |
| 2.5.1.1.3.8 | New England - Maritime Province | 2.5-15 |
| 2.5.1.1.3.9 | Piedmont Province | 2.5-16 |
| 2.5.1.1.4 | Regional Tectonics | 2.5-17 |
| 2.5.1.1.4.1 | Introduction | 2.5-17 |
| 2.5.1.1.4.2 | Eastern Stable Platform (Site Province) | 2.5-17 |
| 2.5.1.1.4.3 | Appalachian Plateau Province | 2.5-18 |
| 2.5.1.1.4.4 | Adirondack Mountains | 2.5-18d |
| 2.5.1.1.4.5 | Frontenac Arch Sector of Eastern Stable Platform | 2.5-19 |
| 2.5.1.1.4.6 | Western Quebec Seismic Zone | 2.5-19 |
| 2.5.1.1.4.7 | Northern Valley and Ridge Province | 2.5-20 |
| 2.5.1.1.4.8 | New England - Maritime Province | 2.5-21 |
| 2.5.1.1.4.9 | Piedmont Province | 2.5-21 |
| 2.5.1.1.5 | Regional Geologic History | 2.5-22 |
| 2.5.1.1.5.1 | Introduction | 2.5-22 |
| 2.5.1.1.5.2 | Paleozoic | 2.5-22 |
| 2.5.1.1.5.3 | Mesozoic | 2.5-25 |
| 2.5.1.1.5.4 | Cenozoic | 2.5-27 |

TABLE OF CONTENTS (Cont'd)

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2.5.1.2 | Site Geology | 2.5-27 |
| 2.5.1.2.1 | Physiography of Site Area | 2.5-27 |
| 2.5.1.2.2 | Stratigraphy of Site Area and Site | 2.5-28 |
| 2.5.1.2.2.1 | Introduction | 2.5-28 |
| 2.5.1.2.2.2 | Pulaski - Oswego Formational Boundary | 2.5-29 |
| 2.5.1.2.2.3 | Pulaski Shale | 2.5-31 |
| 2.5.1.2.2.4 | Oswego Sandstone | 2.5-32 |
| 2.5.1.2.2.5 | Stratigraphic Summary | 2.5-39 |
| 2.5.1.2.3 | Structural Geology Site Area and Site | 2.5-40 |
| 2.5.1.2.3.1 | Introduction | 2.5-40 |
| 2.5.1.2.3.2 | Tectonic Structures | 2.5-41 |
| 2.5.1.2.3.3 | Minor Geologic Structures | 2.5-43 |
| 2.5.1.2.4 | Surficial Geology | 2.5-45 |
| 2.5.1.2.4.1 | Site Area | 2.5-45 |
| 2.5.1.2.4.2 | Site | 2.5-48 |
| 2.5.1.2.5 | Geologic History | 2.5-50 |
| 2.5.1.2.5.1 | Introduction | 2.5-50 |
| 2.5.1.2.5.2 | Site Area | 2.5-51 |
| 2.5.1.2.6 | Site Engineering Geology | 2.5-52 |
| 2.5.1.2.7 | Site Ground Water Conditions | 2.5-53 |
| 2.5.1.2.8 | Mineral Resources | 2.5-53 |
| 2.5.1.2.8.1 | Site and Local Resources | 2.5-53 |
| 2.5.1.2.8.2 | Local Mineral Extraction Activities | 2.5-53 |
| 2.5.1.2.8.3 | Summary and Conclusions | 2.5-54 |
| 2.5.1.2.9 | Geologic Hazards | 2.5-54 |
| 2.5.2 | Vibratory Ground Motion | 2.5-54 |
| 2.5.2.1 | Seismicity | 2.5-54 |
| 2.5.2.1.1 | Local and Regional Seismicity | 2.5-54 |
| 2.5.2.1.1.1 | Data Base | 2.5-55 |
| 2.5.2.1.1.2 | Recent Revision of Some Historical Events | 2.5-58 |
| 2.5.2.1.2 | Zones of Concentrated Seismic Activity | 2.5-61 |
| 2.5.2.2 | Geologic Structures and Tectonic Activity | 2.5-65 |
| 2.5.2.2.1 | Introduction | 2.5-65 |
| 2.5.2.2.2 | Eastern Stable Platform Province | 2.5-66 |
| 2.5.2.2.3 | Frontenac Arch Sector of the Eastern Stable Platform | 2.5-66 |
| 2.5.2.2.4 | Appalachian Plateau Province | 2.5-66 |
| 2.5.2.2.5 | Adirondack Mountains Province | 2.5-67 |
| 2.5.2.2.6 | Northern Valley and Ridge Province | 2.5-67 |
| 2.5.2.2.7 | New England - Maritime Province | 2.5-68 |
| 2.5.2.2.8 | Western Quebec Seismic Zone | 2.5-69 |
| 2.5.2.3 | Correlation of Earthquake Activity with Geologic Structures or Tectonic Provinces | 2.5-70 |
| 2.5.2.3.1 | Limitations on Possible Correlations | 2.5-70 |
| 2.5.2.3.2 | Correlations with Structures | 2.5-70 |
| 2.5.2.3.3 | Interpretations of Gravity and Its Possible Relationships to Earthquakes and Deep Seated Structures | 2.5-71 |
| 2.5.2.3.3.1 | Data Base | 2.5-71 |
| 2.5.2.3.3.2 | Procedures and Interpretations | 2.5-71 |
| 2.5.2.4 | Maximum Earthquake Potential | 2.5-73 |
| 2.5.2.5 | Seismic Wave Transmission Characteristics of the Site | 2.5-75 |

NYSE&G PSAR

TABLE OF CONTENTS (Cont'd)

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|--|-------------|
| 2.5.2.6 | Safe Shutdown Earthquake | 2.5-75 |
| 2.5.2.7 | Operating Basis Earthquake | 2.5-75 |
| 2.5.3 | Surface Faulting | 2.5-75 |
| 2.5.3.1 | Geologic Conditions of the Site | 2.5-76 |
| 2.5.3.2 | Evidence of Fault Offset | 2.5-76 |
| 2.5.3.3 | Earthquakes Associated with Capable Faults | 2.5-76 |
| 2.5.3.4 | Investigation of Capable Faults | 2.5-76 |
| 2.5.3.5 | Correlation of Epicenters with Capable Faults | 2.5-76 |
| 2.5.3.6 | Description of Capable Faults | 2.5-77 |
| 2.5.3.7 | Zone Requiring Detailed Faulting Investigation | 2.5-77 |
| 2.5.3.8 | Results of Faulting Investigation | 2.5-77 |
| 2.5.4 | Stability of Subsurface Materials | 2.5-77 |
| 2.5.4.1 | Geologic Features | 2.5-77 |
| 2.5.4.2 | Properties of Subsurface Materials | 2.5-78 |
| 2.5.4.2.1 | Recent Alluvium | 2.5-78 |
| 2.5.4.2.2 | Glacial Lake Deposits | 2.5-79 |
| 2.5.4.2.3 | Kame Deposits | 2.5-80 |
| 2.5.4.2.4 | Glacial Till | 2.5-81 |
| 2.5.4.2.5 | Bedrock | 2.5-81 |
| 2.5.4.3 | Exploration | 2.5-83 |
| 2.5.4.4 | Geophysical Surveys | 2.5-84 |
| 2.5.4.5 | Excavations and Backfill | 2.5-84 |
| 2.5.4.5.1 | Excavations | 2.5-84 |
| 2.5.4.5.2 | Backfill | 2.5-86 |
| 2.5.4.6 | Ground Water Conditions | 2.5-87 |
| 2.5.4.7 | Response of Soil and Rock to Dynamic Loading | 2.5-88 |
| 2.5.4.8 | Liquefaction Potential | 2.5-89 |
| 2.5.4.9 | Earthquake Design Basis | 2.5-89 |
| 2.5.4.10 | Static Stability | 2.5-89 |
| 2.5.4.11 | Design Criteria | 2.5-90 |
| 2.5.4.12 | Techniques to Improve Subsurface Conditions | 2.5-90 |
| 2.5.4.13 | Surface and Subsurface Instrumentation | 2.5-91 |
| 2.5.4.14 | Construction Notes | 2.5-91 |
| 2.5.5 | Slope Stability | 2.5-91 |
| 2.5.5.1 | Slope Characteristics | 2.5-92 |
| 2.5.5.1.1 | Rock Cuts | 2.5-92 |
| 2.5.5.1.2 | Soil Slopes and Embankments | 2.5-92 |
| 2.5.5.2 | Design Criteria and Analyses | 2.5-93 |
| 2.5.5.2.1 | Rock Cuts | 2.5-93 |
| 2.5.5.2.2 | Soil Slopes and Embankments | 2.5-93 |
| 2.5.5.3 | Logs of Core Borings | 2.5-94 |
| 2.5.5.4 | Compaction Specifications | 2.5-94 |
| 2.5.6 | References for Section 2.5 | 2.5-94 |
| 2.5.6.1 | Cited References | 2.5-94 |
| 2.5.6.2 | Bibliography for Geology, Seismology, and Geotechnical Engineering | 2.5-104b |

LIST OF TABLES

SECTION 2.5

| <u>Table</u> | <u>Title</u> |
|--------------|---|
| 2.5-1 | Earthquakes Located in the Northeast Region |
| 2.5-2 | Events not Plotted in Figure 2.5-22 |
| 2.5-3 | Earthquakes Felt at New Haven |
| 2.5-4 | In Situ Velocity Values and Elastic Moduli Calculations |
| 2.5-5 | Engineering Properties of Glacial Lake Deposits |
| 2.5-6 | Percolation Test Results |
| 2.5-7 | Test Boring Information |
| 2.5-8 | Test Pit Information |
| 2.5-9 | Water Pressure Test Results |
| 2.5-10 | Deleted |
| 2.5-11 | Aquifer Characteristics |
| 2.5-12 | Index U-2 Imagery and Aerial Photographs |

~~418~~ ~~248~~

418 250

LIST OF FIGURES

| <u>Figure</u> | <u>Title</u> |
|---------------|---|
| 2.5-1 | Regional Physiographic Map |
| 2.5-2 | Regional Surficial Geology |
| 2.5-3 | Regional Bedrock Geology |
| 2.5-4 | Diagrammatic Regional Geologic Profile A-A' |
| 2.5-5 | Regional Tectonics |
| 2.5-5A | Principal Structural Features of Central-Western New York State |
| 2.5-5B | Magnetic Contour Map - Northeastern New York State |
| 2.5-6 | Reconstructed Composite Geologic Column - Site Province, Central New York |
| 2.5-7 | Topographic Map - Site Area |
| 2.5-8 | Composite Geologic Column Site Area and Northern Oswego County |
| 2.5-9 | Bedrock Geology/Structure Site Area |
| 2.5-10 | Boring and Section Location Map - Site Area |
| 2.5-11 | Geologic Cross Section A-A' - Site Area |
| 2.5-12 | Geologic Cross Section B-B' - Site Area |
| 2.5-13 | Geologic Cross Section C-C' and C ₁ -C ₂ Site Area |
| 2.5-13a | Geologic Cross Section D-D' Site Area |
| 2.5-14 | Structure Contour Map Top of Pulaski Shale Site Area |
| 2.5-15 | Structure Contour Map Top of Oswego Sandstone Zone 1 Site Area |
| 2.5-16 | Structure Contour Map Top of Oswego Sandstone Zone 4 Site Area |
| 2.5-17 | Structure Contour Map Top of Oswego Sandstone Zone 4 Site |
| 2.5-18 | Surficial Geology - Site Area |
| 2.5-19 | Surficial Geology - Site Area |
| 2.5-20 | Boring Plan - Site (on Surficial Geology Base) |
| 2.5-21 | Bedrock Surface Contour Map - Site |

418 251
~~418 251~~

LIST OF FIGURES

- 2.5-22 Cumulative Seismicity Map
- 2.5-23 Population Distribution in Northeastern United States 1700-1790
- 2.5-24 Dates of Settlements in Eastern Canada
- 2.5-25 Seismograph Station Location Map
- 2.5-26 Epicenter-Tectonic Map
- 2.5-27 Total Bouguer Gravity Anomaly Map
- 2.5-28 Smoothed Bouguer Gravity Anomaly Map (20-km average) with Seismicity
- 2.5-29 Regional Bouguer Gravity Anomaly Map (80-km average)
- 2.5-30 Residual Gravity Anomaly Map
- 2.5-31 Intensity Attenuation Curves for Eastern North America
- 2.5-32 Intensity Acceleration Relationships
- 2.5-33 Borehole Location Plan - Site Area
- 2.5-34 Subsurface Exploration Plan - Plant Area
- 2.5-35 Subsurface Profile A-A
- 2.5-36 Subsurface Profile B-B
- 2.5-37 Subsurface Profile C-C
- 2.5-38 Subsurface Profile D-D
- 2.5-39 Subsurface Profile E-E
- 2.5-40 Plasticity Chart
- 2.5-41 Engineering Properties of Glacial Lake Deposits
- 2.5-42 Excavation Profile A-A
- 2.5-43 Excavation Profile B B
- 2.5-44 Excavation Profile C-C
- 2.5-45 Excavation Profile D-D
- 2.5-46 Excavation Profile E-E

418 252

LIST OF FIGURES

- 2.5-47 Excavation Plan
- 2.5-48 Groundwater Contour Map
- 2.5-49 Piezometric Data
- 2.5-50 Piezometric Data
- 2.5-51 Piezometric Data
- 2.5-52 Piezometric Data
- 2.5-53 Piezometric Data
- 2.5-54 Piezometric Data
- 2.5-55 Piezometric Data
- 2.5-56 Piezometric Data
- 2.5-57 Piezometric Data
- 2.5-58 Piezometric Data
- 2.5-59 Piezometric Data
- 2.5-60 Piezometric Data
- 2.5-61 Piezometric Data
- 2.5-62 Piezometric Data
- 2.5-63 Lateral Pressure Distribution
- 2.5-64 Plant Roads & Finished Grading Plant Area
- 2.5-65 Joint Orientation - Exploratory Trench
- 2.5-66 Slope Stability Calculation
- 2.5-67 Index Map of Available Imagery and Aerial Photographs
- 2.5-68 ERTS Imagery & Location of Lineaments/Linears-Site Region
- 2.5-69 U-2 Imagery & Location of Linears-Site Area

418 253

TABLE OF CONTENTS

SECTION 2.6

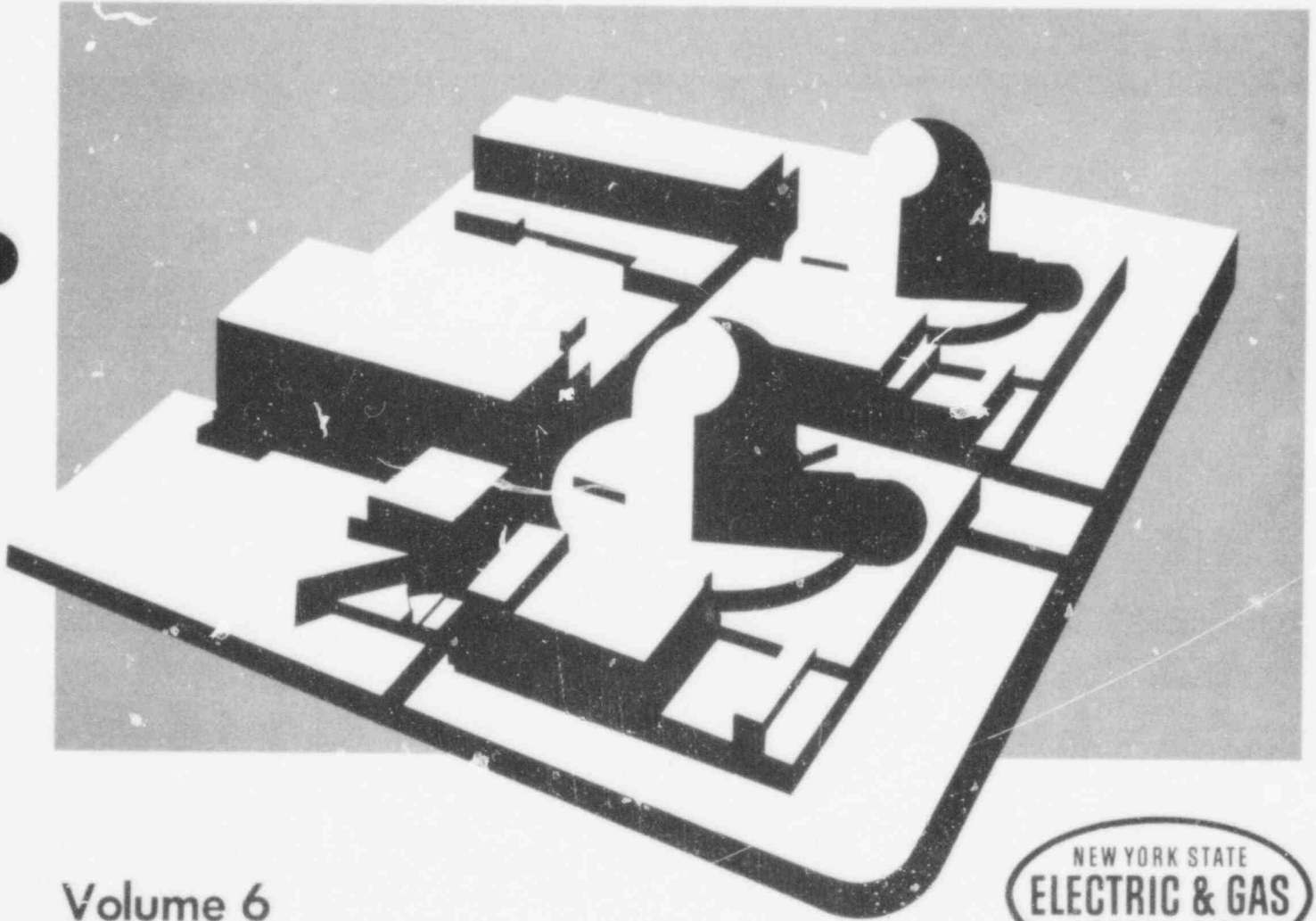
NOTE: Missing section numbers will be found in SWESSAR-P1.

| <u>Section</u> | <u>Title</u> | <u>Page</u> |
|----------------|---|-------------|
| 2.6 | INTERFACE REQUIREMENTS | 2.6-1 |
| 2.6.1 | Snow | 2.6-1 |
| 2.6.2 | Temperature | 2.6-1 |
| 2.6.3 | Atmospheric Dispersion Factor (K/Q) | 2.6-1 |
| 2.6.4 | Station Yard Grade | 2.6-1 |
| 2.6.5 | Seismology | 2.6-2 |

418 254

• Preliminary Safety Analysis Report

NYSE&G 1 and 2



Volume 6



418 255

TABLE OF CONTENTS

CHAPTER 7

INSTRUMENTATION AND CONTROLS

NOTE: Missing section numbers will be found in SWESSAR-P1.

| <u>Section</u> | <u>Title</u> | <u>Page No.</u> |
|----------------|---|-----------------|
| 7.1 | INTRODUCTION | 7.0-1 |
| 7.2 | REACTOR PLANT PROTECTION SYSTEM. | 7.0-3 |
| 7.2.4 | CPPS FIBER OPTICS COMMUNICATION SYSTEM | 7.0-3 |
| 7.3 | ENGINEERED SAFETY FEATURES SYSTEMS | 7.0-5 |
| 7.3.3.12.1 | Protection Functions Which are Only Partially Tested During Power Operation. | 7.0-5 |
| 7.4 | SYSTEMS REQUIRED FOR SAFE SHUTDOWN | 7.0-5 |
| 7.5 | SAFETY RELATED DISPLAY INSTRUMENTATION | 7.0-5 |
| 7.6 | ALL OTHER INSTRUMENTATION SYSTEMS REQUIRED FOR SAFETY. | 7.0-5 |
| 7.7 | CONTROL SYSTEMS NOT REQUIRED FOR SAFETY. | 7.0-6 |
| 7.7.1.1.10 | Loose Parts Monitoring System (LPMS). | 7.0-5 |
| 7.8 | INTERFACE REQUIREMENTS | 7.0-7 |

418 256

LIST OF FIGURES

CHAPTER 7

| <u>Figure</u> | <u>Title</u> |
|---------------|---|
| 7.1-1 | Reactor Trip Switchgear System Block Diagram |
| 7.1-2 | Compartmented Plant Protection System Equipment Arrangement |

CHAPTER 7

INSTRUMENTATION AND CONTROLS

7.1 INTRODUCTION

Refer to Section 7.1 of SWESSAR-Pl as it relates to the NSSS described in CESSAR.

Systems designed and supplied by Stone & Webster are as provided in SWESSAR-Pl as it relates to the NSSS described in CESSAR.

Except as indicated herein, systems designed and supplied by Combustion Engineering are as provided in the Yellow Creek Nuclear Power Plants (Docket Nos. 50-566 and 50-567 which incorporates topical report CENPD 172A). References to the Yellow Creek PSAR are for Chapter 7 only, i.e., references in Chapter 7 of the Yellow Creek PSAR to other sections of the Yellow Creek PSAR are not included.

The Instrumentation and Control Introduction Section is as provided in the Yellow Creek Nuclear Power Plant Section 7.1, with the following exceptions:

1. Section 7.1.1.3 Engineered Safety Features Systems (ESF Systems)

These systems are listed below:

| <u>ESF SYSTEM:</u> | <u>RESPONSIBILITY</u> | | |
|---|--------------------------|----------------------------|-------------------|
| | <u>Signal Generation</u> | <u>Actuated Components</u> | <u>ESF Signal</u> |
| a) Containment Isolation System | CE | S&W | CIAS |
| b) Containment Spray System | CE | S&W | CSAS |
| c) Iodine Removal System | CE | S&W | CSAS |
| d) Main Steam Isolation System | CE | S&W | MSIS |
| e) Safety Injection System | CE | CE | SIAS |
| f) Emergency (Auxiliary) Feed-water System | S&W | S&W | EFAS |
| g) Supplementary Leak Collection and Release System | CE | S&W | CIAS |
| h) Containment Atmosphere Recirculation System | CE | S&W | SIAS |
| i) Combustible Gas Control System | None | S&W | Manual |

NYSE&G PSAR

| 2. Section 7.1.1.4 Safe Shutdown Systems | <u>RESPONSIBILITY</u> |
|--|-----------------------|
| a) Standby Diesel Generator | S&W |
| b) Standby Diesel Generator Fuel Oil System | S&W |
| c) Emergency Power Distribution System | S&W |
| d) Reactor Plant Service Water System | S&W |
| e) Reactor Plant Component Cooling Water System | S&W |
| f) Emergency (Auxiliary) Feedwater System | S&W |
| g) Atmospheric Dump System | S&W |
| h) Shutdown Cooling System | CE |
| i) Chemical & Volume Control System (Boron Addition Portion) | S&W |
| j) Safety Related HVAC Systems | S&W |

In addition, equipment and systems are provided to allow emergency shutdown from outside the control room.

Note: For Section 7.1.2.20 (Interface Requirements) - Refer to SWESSAR Section 7.8.

3. Sections 7.1.1.3 and 7.1.1.4 define the scope responsibility for ESF systems and Safe Shutdown Systems respectively.

The following systems/components, although not directly related in PSAR Sections 7.1.1.3 and 7.1.1.4, are in CE scope and will be provided as described in either the Yellow Creek PSAR or NYSE&G PSAR as indicated:

| <u>System/Component</u> | <u>Reference</u> |
|--|---------------------------------|
| Solid State Component Control System (SSCCS) | Yellow Creek PSAR - Section 7.3 |
| Solid State Plant Protection System (SSPPS) | Yellow Creek PSAR - Section 7.2 |
| CE Topical Report-CENPD-172A | |

418 259

NYSE&G PSAR

Compartmented Plant Protection System (CPPS)
(Repackaging of SSPPS) NYSE&G PSAR - Section 7.2

Reactor Trip Switchgear Revisions NYSE&G PSAR - Section 7.2

Plant Monitoring System Yellow Creek PSAR - Section 7.7

7.2 REACTOR PLANT PROTECTION SYSTEM

Refer to Section 7.2 of SWESSAR-P1 as it relates to the NSSS described in CESSAR.

The reactor plant protection system is as provided in the Yellow Creek Nuclear Power Plant (Docket Nos. 50-566 and 50-567) Section 7.2 with the following exceptions:

1. Protection system electronics as supplied for Yellow Creek are contained in cabinets which incorporate mechanical and thermal barriers between four redundant channels (i.e., Solid State Plant Protection System Cabinet and Auxiliary Protective Cabinet). For NYSE&G, the Compartmented Plant Protection System (CPPS) provides four separate enclosures, one for each channel of electronics. This approach allows redundant protection system equipment to be located in separate plant areas on a channel basis. The isolated CPPS inter-cabinet interfaces are provided by means of fiber optics.
2. The Reactor Trip Switchgear, as defined in the Yellow Creek Nuclear Plant Preliminary Safety Analysis Report, consists of a single enclosure containing nine trip circuit breakers. The NYSE&G design includes four separate enclosures for the trip circuit breakers; circuit breaker configuration and bus work have been modified for compatibility with the repackaging as shown in Figure 7.1-1.
3. For Sections 7.2.1.1.9. and 7.2.2.3.1 refer to CESSAR. Note: For Section 7.2.3 (Interface Requirements) - Refer to SWESSAR Section 7.8.

The NYSE&G design incorporates the following additional changes to CESSAR:

1. Solid State Plant Protection System as identified in CE Topical Report CENPD-172A
2. Revisions to the Reactor Trip Switchgear
3. Compartmented Plant Protection System (CPPS)

7.2.4 CPPS Fiber Optics Communication System

All four Compartmented Plant Protection System cabinets are interconnected by means of a fiber optic communication system, (as shown in Figure 7.1-2) which

NYSE&G PSAR

consists of transmitters, receivers, and fiber optic cables. These cables provide inherent interchannel isolation and independence consistent with that achieved through the use of independent enclosures for each channel equipment.

The design bases and criteria for the CPPS are the same as those specified for the SSPPS previously reviewed and approved in CE Topical Report CENPD-172A. (Refer to Sections 9.0, 9.1, and Question 223.1)

The design bases and criteria for the fiber optic communication systems are the same as those specified for the SSPPS interconnection design (including interchannel isolation and ESFAS initiation signal to actuation train isolation) previously reviewed and approved in CE Topical Report CENPD-172A. (Refer to Question 223.9)

Each transmitter is located in the channel which generates the signal. The transmitter circuitry converts the analog or digital signal to a signal which can be readily transmitted over the optical cable. Each receiver is located in the channel which receives the signal. The receiver circuitry reconstructs the transmitted signal to the original intelligence. Each optical path transmits signals in one direction only.

The purpose of providing the protection system in this physical arrangement is to allow the cabinets associated with each channel to be located in the red, green, yellow, and blue essential relay and instrument areas of the Control Room (refer to SWESSAR-P1, Figure 1.2-5, sheet 3) so that maximum physical independence of safety channels can be achieved.

The fiber optic communications system performs the same functions between CPPS cabinets as the interconnection design for the SSPPS described and reviewed in CE Topical Report CENPD-172A. These functions are reiterated here for descriptive purposes.

1. Transmit the bistable trip signals, bistable trip bypass signals, initiation test interlock signals, selective 2/4 interlock signals, automatic test system signals, and several miscellaneous signals such as the manual test system interlocks.
2. Transmit analog CEA position information from CPPS cabinets A and B to cabinets B and C respectively.

Test circuitry is provided such that the transfer accuracy of each analog signal may be ascertained without disrupting the supplied input signal, and to provide a means of periodically testing each analog interface from its associated CPPS cabinet.

The test circuitry is electrically interlocked by means of an external test enable signal to ensure that the appropriate test conditions exist prior to the test commencing.

3. Transmit digital CEA calculator output information from CPPS cabinets B and C to the four CPC inputs.

418 261

NYSE&G PSAR

Also, digital ESFAS initiation signals and selective 2/4 status signals are transmitted between the CPPS cabinets and the Solid State Component Control System (SSCCS) cabinets.

7.3 ENGINEERED SAFETY FEATURES SYSTEMS

Refer to Section 7.3 of SWESSAR-P1 as it relates to the NSSS described in CESSAR.

The Engineered Safety Features Systems for CE scope are as provided in the Yellow Creek Nuclear Power Plant, (Docket Nos. 50-566 and 50-567) Section 7.3, with the following exception:

1. For Section 7.3.1.2 refer to CESSAR

Note: For Section 7.3.3 (Interface Requirements) - Refer to SWESSAR Section 7.8.

The NYSE&G design incorporates the following changes to CESSAR:

1. A Solid State Component Control System (SSCCS) will use solid state logic assemblies to interface with the solid state plant protection system as described in CENPD-172A. The SSCCS performs the system level actuation, test and indication of the engineered safety features, and provides the control and indication for engineered safety features system components.

Interface requirements follow:

7.3.3.12.1 Protection Functions which Are Only Partially Tested during Power Operation

Section 7.3.3.12.1 of SWESSAR-P1 lists those protection functions which are only partially tested during power operation since complete testing is not compatible with continued online unit operation.

A program for safety related system and sensor response time testing of these protection functions will be provided in the application for an operating license.

7.4 SYSTEMS REQUIRED FOR SAFE SHUTDOWN

Refer to Section 7.4 of SWESSAR-P1 as it relates to the NSSS described in CESSAR (for CE Scope refer to CESSAR, not Yellow Creek).

7.5 SAFETY RELATED PLANT INSTRUMENTATION

Refer to Section 7.5 of SWESSAR-P1 as it relates to the NSSS described in CESSAR. (For CE Scope refer to CESSAR, not Yellow Creek).

NYSE&G PSAR

7.6 ALL OTHER INSTRUMENTATION SYSTEMS REQUIRED FOR SAFETY

Refer to Section 7.6 of SWESSAR-P1 as it relates to the NSSS described in CESSAR. (For CE Scope refer to CESSAR, not Yellow Creek).

7.7 CONTROL SYSTEMS NOT REQUIRED FOR SAFETY

Refer to Section 7.7 of SWESSAR-P1 as it relates to the NSSS described in CESSAR.

The Control Systems not required for safety for CE scope are as provided in the Yellow Creek Nuclear Power Plant (Docket Nos. 50-566 and 50-567) Section 7.7.

The NYSE&G design incorporates the following change to CESSAR:

1. A Plant Monitoring System (PMS) provides additional status monitoring and display information for safety systems. The PMS is provided by CE.

7.7.1.1.10 Loose Parts Monitoring System (LPMS)

A Loose Parts Monitoring System (LPMS) will be installed on each of the NYSE&G units. The LPMS is designed to detect and record signals resulting from impacts occurring within the Reactor Coolant System. The capabilities of this system have been demonstrated by a similar system installed on Calvert Cliffs, Unit 1 (Docket 50-317). During initial pump operation, the system detected the presence of a 5-ounce piece of inconel tubing in the number two steam generator of Calvert Cliffs.

Eight transducers will be located in the areas where loose parts are most likely to become entrapped. These are:

1. Two on the reactor vessel lower head, diametrically opposed
2. Two on the reactor vessel upper head, diametrically opposed
3. Two on the lower head of each steam generator, diametrically opposed

Experience has shown that the exact location of these accelerometers is not critical since the acoustic wave that results from an impact propagates throughout the entire head.

The transducers will be special piezoelectric accelerometers, manufactured to specifications for reactor service. These accelerometers will be magnetically attached to the reactor vessel and steam generators using Alinco V magnets. This is the same mounting arrangement that was successfully used on both the Port Calhoun (Docket 50-285) and Maine Yankee (Docket 50-309) Precritical Vibration Monitoring Programs are also installed as an LPMS on Calvert Cliffs (Docket 50-317).

A high temperature cable will connect the accelerometer to a preamplifier box located in containment containing charge amplifiers, and a "No. 1g"

418 233

calibration oscillator. From this preamplifier, the signals are sent via suitable wires such as a twisted shielded pair to the data acquisition panel in the control room.

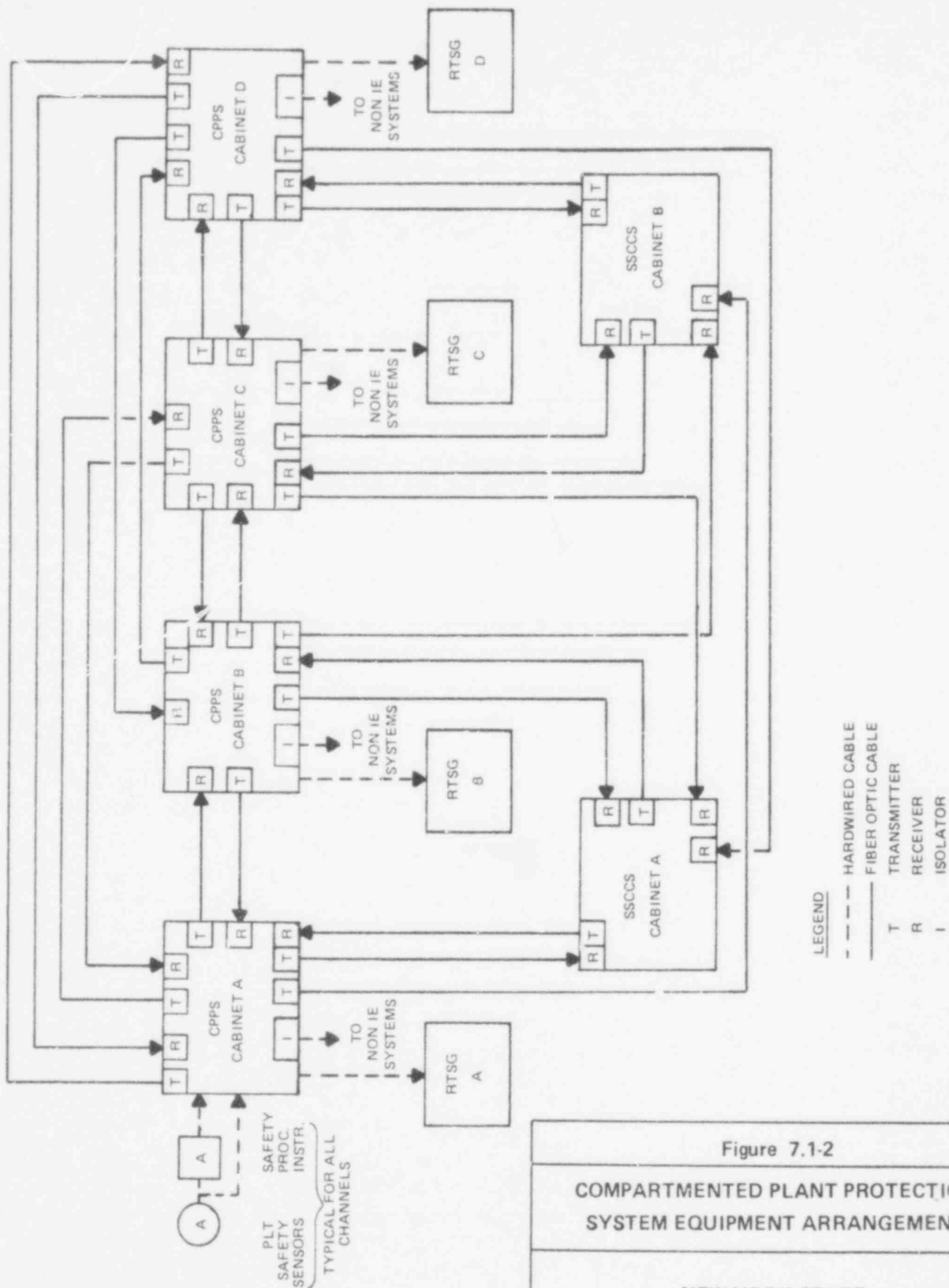
An impact calibration is performed during system installation. This calibration establishes the relationship between the output signal strength and impact energy. It also determines the frequency of the damped ringing signal that is characteristic of all large steel structures when struck. To perform the impact calibration, the LPMS is activated and the reactor vessel and steam generators are then struck with a known impact energy as signal records are being made. The locations for the impacts are selected at the time of impact calibration. Selection is based primarily upon accessibility.

A data acquisition panel, located in the control room, contains alarm modules that continually monitor the incoming signals from the preamplifier for the presence of impacting. The alarm level for each accelerometer is determined by a set point adjustment on the module. The occurrence of a loose part impacting on the inside of the structure causes bursts of signals that exceed the alarm set point and trigger the alarm.

The data acquisition panel includes a recording device which records the impact signals for reference and for comparisons with those taken during the impact calibration. The comparison confirms the identification of an impact event. The particular channel showing the significantly higher signal reveals the location of the loose part. This impacting location is further confirmed by noting on which channel the impact signal occurred first.

7.8 INTERFACE REQUIREMENTS

Sections 7.1.2.20, 7.2.3, and 7.3.3 of CESSAR define the interface requirements applicable to balance of plant equipment and systems interfacing with the NSSS systems. The interface requirements stated in these sections do not change for the CE Instrumentation and Control design scope incorporated in this application by either reference to the Yellow Creek Nuclear Power Plant (Docket Nos 50-566 and 50-567) or changes in Instrumentation and Control design unique to NYSE&G. Methods of satisfying these interface requirements by the BOP are indicated in SWESSAR Section 7.8, Heading 7.1.2.20, 7.2.3, and 7.3.3. There are no changes to these methods of satisfying the interface requirements.



418 265

The fire protection program for each reactor unit will be fully operational prior to initial fuel loading in that reactor unit.

9.5.1.7.7 Structures not Included in SWESSAR

Service Water Pumphouse

The service water pumphouses are of noncombustible construction and are within reach of the yard hydrant loop. The safety related pumps are separated from each other by 3-hr minimum fire barriers. Hose stations and portable extinguishers are provided.

Cooling Towers

All cooling towers are of noncombustible construction and are within reach of the yard hydrant loop.

Remainder of Plant

All other plant structures and areas (normal switchgear building, warehouse, service building, administration building, security building, circulating water pumphouse, machine shop, health physics and chemical laboratories, fire pumphouse, water treatment area) are not essential to safe shutdown and contain no radioactive material. A fire in any one of these areas would not spread to or affect safety related equipment due to detection and suppression systems in each area and physical separation and 3-hr minimum fire barriers.

9.5.1.7.8 Additional Fire Stops and Seals

After review of plant structures not included in SWESSAR-P1, it has been determined that no additional fire stops and seals are required. Fire stops and seals will be provided as identified in SWESSAR-P1 Table 9.5.1-5.

9.5.1.7.9 Special Protection Requirements

Storage of Acetylene-Oxygen Fuel Gases

Gas cylinder storage is out of doors, under cover, in a secured area to prevent adverse effects to safety related equipment or the fire protection systems that serve safety related areas. An administrative permit system regulates the use of this equipment in safety related areas of the plant.

Storage Areas for Ion Exchange Resins

New or spent ion exchange resins are normally stored in the warehouse area to preclude adverse effects to safety related equipment.

Hazardous Chemicals

Hazardous chemicals, such as acids, caustics, or hypochlorites, are stored in the water treatment area to preclude adverse effects to safety related equipment.

Materials Containing Radioactivity

Materials that collect and contain radioactivity, such as spent ion exchange resins, charcoal filters, and HEPA filters, are stored in closed metal tanks or containers located in the solid waste and decontamination building. These materials are protected by appropriate barriers from exposure to fires in adjacent areas. Consideration will be given to requirements for removal of decay heat from entrained radioactive materials.

9.5.2 Communications Systems

Refer to Section 9.5.2 of SWESSAR-P1 as it relates to the NSSS described in CESSAR. Interface requirements follow.

9.5.2.2 System Description

The plant to offsite communication systems consist of;

1. Offsite telephone circuits - local telephone company central office
2. Offsite telephone tie line circuits - NYSE&G General Office building
3. Offsite telephone circuits - NYSE&G's Central Dispatch
4. Radio communications - Normal
5. Radio communications - Emergency

Each of these systems is further discussed below:

Offsite Telephone Circuits - Local Telephone Company

Offsite telephone trunks connect the plant PBX with the local telephone company central office. In addition, unlisted lines connect the control room, station superintendent, and central alarm station with the local telephone company central office. These lines are independent of the plant PBX. Both types of circuits allow access to the nationwide telephone network system for communication with law enforcement agencies, other emergency agencies, as well as the outside community. Circuit entrance to the plant follows two diverse routes so that onsite failure of one route will not affect the other. The PBX design details are covered under Intraplant Communications.

11.2 RADIOACTIVE LIQUID WASTE SYSTEM

Refer to Section 11.2 of SWESSAR-P1 as it relates to the NSSS described in CESSAR. Interface requirements follow.

11.2.2.1 Laundry Waste Provisions

Unit 1 incorporates the laundry waste processing system as described in topical report SWECO 7701A⁽¹⁾.

Figure 11.2-1 identifies the interface points for the laundry waste processing system; Table 11.2-1 lists the interface information for each point. The initial activity, decontamination factor, decay times, and expected release rates for this system are included in Table 11.2-30 of SWESSAR-P1.

11.2.7 Release Points

The radioactive liquid waste system discharges all liquid effluent releases to the blowdown line from the circulating water system cooling tower. Figure 2.1-2 shows the discharge of this blowdown line.

11.2.8 Dilution Factors

Dilution factors for the far field dispersion of liquid discharge were determined as discussed in Section 2.4.12. The dilution factors used in the analysis of the impact of radionuclide releases are presented in Table 11.2-2.

11.2.9 Dose Rate Estimates - Liquid Pathways

For the liquid releases, it was assumed the maximum individual obtains drinking water from the closest downstream public water supply which is Oswego, located 11 mi west or 17.7 km from the facility. The maximum individual was assumed to consume fish, invertebrates, and ducks caught at the edge of the initial mixing zone. This location was also used in calculating doses from swimming and boating. Food products assumed to be irrigated were irrigated with water taken from the closest accessible shoreline. The calculated doses from shoreline recreation also were performed at this location.

The maximum calculated dose to the maximum individual from liquid pathways was 4.0 mrem/yr to an infant thyroid. This dose was primarily a result of the consumption of goats milk. It was assumed the goat grazed on irrigated pasture for 6 months of the year.

Tables 11.2-3 through 11.2-6 present the calculated doses to the maximum individual from liquid pathways. The tables present the calculated total body and organ doses for the four age groups - adult, teen, child, and infant.

Table 11.2-7 presents a comparison of the maximum individual calculated doses from liquid effluents to the design objectives of 10CFR50 Appendix I limits.

Table 11.2-8 gives the calculated annual doses for the population residing within a 50-mi radius of the site. For the liquid effluents, the calculated total body and thyroid doses are $7.3E+00$ and $9.5E+00$ man-rem/year, respectively.

These doses were calculated for a projected population, in the year 2010, of about $1.2E+06$ people within 50 mi of the site.

The doses from liquid pathways were calculated using the equations recommended in Regulatory Guide 1.109, Revision 1; Table 11.2-9 presents the parameters and assumptions used in equations for estimating doses to man.

The generalized equation for calculating radiation doses to humans via liquid pathways is:

$$R_{aipj} = (C_{ip})(U_{ap})(D_{aipj}) \quad (11.2-1)$$

where:

R_{aipj} = the annual dose to organ j of an individual of age group a from nuclide i via pathway p, in mrem/yr

C_{ip} = the concentration of nuclide i in the media of pathway p, in pCi/l, pCi/kg, or pCi/sq m

U_{ap} = the exposure time or intake rate (usage) associated with pathway p for age group a, in hr/yr, l/yr, or kg/yr (as appropriate)

D_{aipj} = the dose factor, specific to age group a, radio-nuclide i, pathway p, and organ j, in mrem/pCi ingested or mrem per hr/pCi per sq m from exposure to deposited activity in sediment or on the ground

1. Potable Water

$$R_{apj} = 1,110 \frac{M_p U_{ap}}{F} \sum_i Q_i D_{aipj} \exp(-\lambda_i t_p) \quad (11.2-2)$$

418 269

TABLE 11.2-1

PROCESSING LAUNDRY WASTE SYSTEM

INTERFACE INFORMATION

| Interface Point | System | Flow Rate or Batch Volume | Operating Pressure (psig) | Operating Temperature (°F) | Purpose |
|-----------------|--|---------------------------|---------------------------|----------------------------|--------------------------------|
| 1 | Primary grade water system | 25 gpm | 100 | Ambient | Flushing lines |
| 2 | Aerated drain system | NA* | 0 | Ambient | Tank overflow |
| 3 | Radioactive liquid waste system | 25 gpm | 50 | Ambient | To Low Level waste drain tanks |
| 4 | Aerated drain system | NA | 0 | Ambient | Tank overflow |
| 5 | Radioactive gaseous waste system | NA | 25 | 212 | Overpressure protection |
| 6 | Auxiliary steam system | 1,167 lb/hr | 150 | 358 | Heating for evaporator |
| 7 | Auxiliary condensate system | 1,167 lb/hr | 150 | 212 | Remove condensed steam |
| 8 | Reactor plant component cooling water system | 160 gpm | 100 | 105 max | Condenser cooling water |
| 9 | Aerated vent system | 5 cfm | Atmospheric | 120 | Condenser vent |
| 10 | Aerated drain system | NA | Atmospheric | 120 | Tank overflow |
| 11 | Radioactive solid waste system | 15 gpm | 50 | 212 | Forwarded for solidification |
| 12 | Radioactive liquid waste system | 20 gpm | 50 | 120 | Forwarded for discharge |

* NA - Not applicable since only used on irregular basis.
1 of 1

TABLE 11.2-2

DILUTION FACTORS, POPULATION SERVED AND TRAVEL TIMES FROM THE NEW HAVEN SITE

| <u>Public Water Systems*</u> | <u>Approximate Distance from Site to Point of Intake (mi)</u> | <u>Dilution Factor</u> | <u>Population Served (people/yr)</u> | <u>Transit Time To Intake (hr)</u> |
|---|---|----------------------------|--|--|
| Oswego City** | 11 W | 258 | 26,000 | 75 |
| Metropolitan Water Board | 11 W(Same intake as Oswego) | 258 | 67,000 | 75 |
| Wolcott Village | 32 WSW | 428 | 2,500 | 213 |
| Sackets Harbor Village | 33 NNE | 290 | 1,200 | 194 |
| Sodus Point Village | 39 WSW | 472 | 2,000;4,000 (Summer) | 260 |
| Chaumont Village | 39 NNE | 3.5 | 550 | 229 |
| Sodus Village | 42 WSW | 490 | 1,800 | 280 |
| Cape Vincent Village | 43 NNE | 330 | 750 | 252 |
| Williamson Water District | 47 WSW | 518 | 5,900 | 313 |
| Kingston Water Intake Plant, Kingston, Ontario | 50 N | 366 | 74,000 | 272 |
| Kingston Township | 50 NNN | 366 | 19,000 | 272 |

NYSE&G PSAR
NEW HAVEN

TABLE 11.2-2 (Cont'd)

| <u>Incremental Regions***</u> | <u>Approximate Distance from Site to Point of Intake (mi)</u> | <u>Dilution Factor</u> | <u>Population Usage (people/yr.)</u> | | <u>Transit Time to Point of Analysis (hr)</u> |
|-----------------------------------|---|----------------------------|--|---------------------------------|---|
| | | | <u>Boating</u> | <u>Shoreline Recreation</u> | |
| 0 to 10 | 5 | 117 | 3.07E+04 | 2.4E+05 | 29 |
| 10 to 20 | 15 | 197 | 3.7E+04 | 2.4E+05 | 88 |
| 20 to 30 | 25 | 253 | 3.7E+04 | 2.4E+05 | 147 |
| 30 to 40 | 35 | 298 | 3.7E+04 | 2.4E+05 | 205 |
| 40 to 50 | 45 | 338 | 3.7E+04 | 2.4E+05 | 264 |

418
272

NYSE&G PSAR
NEW HAVEN

TABLE 11.2-2 (Cont'd)

| <u>Public Beaches****</u> | <u>Approximate Distance from Site to Point of Analysis (mi)</u> | <u>Dilution Factor</u> | <u>Population Usage Annual Attendance</u> | <u>Transit Time to Point of Analysis (hr)</u> |
|------------------------------------|---|----------------------------|---|---|
| Green Point | 11 | 169 | 6,510 | 65 |
| Sandy Pond Beach | 10.5 | 165 | 26,215 | 62 |
| Sand Pond Beach Inc. | 10 | 162 | 7,245 | 59 |
| Dowie Dale Beach | 2 | 78 | 6,510 | 12 |
| Brennan Beach | 7.5 | 141 | 7,455 | 44 |
| Rainbow Shores | 9 | 154 | 7,560 | 53 |
| Chedmarco Farms | 5 | 117 | 8,085 | 29 |
| White Sands Beach | 9 | 154 | 10,675 | 53 |
| Chedmarco Trailer Camp | 5.5 | 122 | 10,675 | 32 |
| Selkirk Shores State Park | 6 | 127 | 10,675 | 35 |
| Fairhaven Beach State Park | 23 | 364 | 21,035 | 153 |
| C. Phil Haven Trailer Park | 24.5 | 375 | 8,575 | 163 |
| Fairhaven Boat House | 25 | 379 | 6,510 | 167 |
| Idlewood on the Lake | 40.5 | 481 | 8,050 | 270 |
| Association Island | 28 | 267 | 3,535 | 164 |
| Wescott Beach St. Park | 34 | 294 | 17,045 | 200 |
| Dels Bayside Marina | 37 | 307 | 4,095 | 217 |
| Shangri-la | 34 | 294 | 3,710 | 200 |
| Isthmus Marina | 34 | 294 | 13,090 | 200 |
| Willow Shores Trailer Park | 46 | 341 | 3,815 | 270 |
| Warrens Cottages | 47.5 | 347 | 3,815 | 279 |
| Sunset Trailer Park | 47 | 345 | 3,535 | 276 |
| Sunny Bank Cottages | 48 | 349 | 3,535 | 282 |
| Slycks Camp | 45.5 | 339 | 3,535 | 267 |
| Ponds Cottages | 37 | 307 | 3,535 | 217 |
| Lazy Acres | 48 | 349 | 5,215 | 282 |
| Harbor Light Cottages | 44 | 334 | 3,535 | 258 |
| Green Cedars | 47.5 | 347 | 3,535 | 279 |
| Edgewater Cottages | 50 | 356 | 3,535 | 293 |
| Gladys Docteur | 45.5 | 339 | 3,815 | 267 |
| Glenn Docteur | 44.5 | 336 | 3,815 | 261 |
| Burkes Chula Vista | 48 | 349 | 3,535 | 282 |
| Cape Vincent Barrachs Club Camp | 37.5 | 309 | 3,535 | 220 |
| Wilson Bay Town Dock | 39.5 | 317 | 3,045 | 232 |
| Cape Vincent Boathouse | 43 | 330 | 4,095 | 252 |
| Cape Vincent Beach | 43 | 330 | 3,535 | 252 |
| Cape Vincent Park | 43 | 330 | 6,335 | 252 |
| Jefferson Park Camp | 19 | 221 | 3,535 | 112 |
| Southwick Beach St. Park | 17.5 | 212 | 19,815 | 103 |

NYSE&G PSAR
NEW HAVEN

TABLE 11.2-2 (Cont'd)

NOTES:

- *Public water supply systems used to calculate 50-mi radius population doses from ingestion of potable water
- **Public water supply system used to calculate the dose to the maximum offsite individual from the ingestion of potable water
- ***The regions used to calculate 50-mile radius population doses from ingestion of fish, boating, and shoreline recreation (assumed 1/5 of fish caught in each region)
- ****Locations used to calculate population doses from swimming

418 274

NYSE&G PSAR
NEW HAVEN

TABLE 11.2-8

CALCULATED ANNUAL DOSES

FOR

POPULATION WITHIN 50-MILE RADIUS

| <u>Liquid Effluents</u> | <u>Population man-rem</u> | |
|----------------------------|---------------------------|----------------|
| | <u>Total Body</u> | <u>Thyroid</u> |
| Ingestion of Potable Water | 1.8E+00 | 7.0E+00 |
| Ingestion of Fish | 5.4E+00 | 2.4E+00 |
| Shoreline Recreation | 1.2E-01 | 1.2E-01 |
| Swimming | 6.2E-05 | 6.2E-05 |
| Boating | 8.6E-04 | 8.6E-04 |
| TOTAL | 7.3E+00 | 9.5E+00 |

13.5 PLANT PROCEDURES

Detailed written procedures will be prepared for the conduct of operations involving nuclear safety. The Station Operating Manual, will be prepared by the station staff, the NYSE&G Project Engineering Staff, CE, and S&W and will be available prior to Unit 1 fuel loading. All procedures will be updated and revised as required to ensure their effectiveness and completeness.

All safety related operations will be conducted in accordance with written and approved procedures.

Procedures will be based on good nuclear power plant practice and will enhance station safety. ANSI N18.7-1976, "Administrative Controls for Nuclear Power Plants" and Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," will be used as a guide for the writing and implementation of these procedures. The procedures will be reviewed periodically and, when necessary, improved and updated.

The FSAR will include a list of titles of procedures, and a description of the review, change, and approval procedures for station operating, maintenance, and testing procedures.

It is anticipated that the approved procedures will be issued in accordance with the following preliminary schedule:

| <u>Procedure</u> | <u>Time Before Fuel Loading</u> |
|--------------------------|---------------------------------|
| Administrative | 12 months |
| Operating | 6 months |
| Maintenance | 6 months |
| Surveillance | 6 months |
| Off-manual and Emergency | 6 months |
| Preoperation Testing | 24 to 6 months |
| Fire Protection | 6 months |

418 276

ACCEPTANCE REVIEW QUESTIONS AND RESPONSES

| <u>Question No.</u> | <u>Subject</u> | <u>Amendment No.</u> |
|-----------------------------------|--|----------------------|
| 010.1 (10.4.5) | Expansion Joint Failure at Main Condenser | 1 |
| 022.1 (9.4.5.2.6) | Containment Purging during Normal Plant Operation | 1 |
| 022.2 (6.2.1, 6.2.5.7.1) | Clarification of Fig. 6.2-1 NYSE&G PSAR and Table 6.2.5-1 SWESSAR-Pl | 1 |
| 032.1 (3.11) | Environmental Qualification | 2 |
| 032.2 (7.1) | NYSE&G Chapter 7 Plant Protection System Design | 2 |
| 032.3 (7.2) | NYSE&G Chapter 7 CPPS and Reactor Trip Switchgear Design | 2 |
| 032.4 (7.2) | CPPS Fiber Optics Communication System | 3 |
| 032.5 (7.3) | Solid State Component Control System vs CPPS | 2 |
| 032.6 (7.7) | Plant Monitoring System | 2 |
| 032.7 (7.8) | Instrumentation and Control Design Interface Requirements | 2 |
| 040.1 (3.11) | Environmental Qualification Program | 1 |
| 040.2 (8.2) (RSP) | Protection from High or Low Grid Voltage | 1 |
| 040.3 (Appendix A) | Regulatory Guides 1.41 and 1.108 | 1 |
| 040.4 (8.3) | Diesel Generator Alarms in Control Room | 1 |
| 040.5 (8.4) | Fire Stops and Seals for Cable Systems | 1 |
| 040.6 (9.5.5, 9.5.6, 9.5.7) (RSP) | Diesel Engine Auxiliaries | 1 |
| 040.7 (9.5.X) | Diesel Generator Combustion Air Intake and Exhaust System | 1 |

| <u>Question No.</u> | <u>Subject</u> | <u>Amendment No.</u> |
|--------------------------|---|----------------------|
| 040.8 (10.2, 10.3, 10.4) | Selection of Turbine Generator | 1 |
| 112.1 (3.9.4.1) | Piping Preoperational Testing Program | 1 |
| 130.1 (3.7.1) | Confirmatory Dynamic Analysis | 1 |
| 130.2 (2.7.1.2) | "Amplified Response Spectra" Methods | 1 |
| 130.3 (3.7.2.6) | Shear Modulus Values Range | 1 |
| 221.1 (4.4) | Loose Parts Monitoring | 1 |
| 231.1 | Fuel and CEA Surveillance Program | 1 |
| 312.1 (2.1) | Acquisition of Site Property | 1 |
| 321.1 (11.3, 9.4) | Regulatory Guide 1.140 | 1 |
| 321.2 (10.4.2) | Main Condenser Evacuation System | 1 |
| 321.3 (11.2, 11.3) | Cost-Benefit Analysis of Liquid and Gaseous Radwaste Management Systems | 1 |
| 321.4 (15.7.3) | Release Potential of Radioactive Liquids to Surface Water | 1 |
| 331.1 (12.1) | Radiation Protection (ALARA) Review | 1 |
| 331.2 (12 1.7.1) | Dose Assessment (Regulatory Guide 8.19) | 1 |
| 331.3 (12.1.7.3) | Health Physics Area | 1 |
| 372.1 (2.3.1) | Probability of Lightning Strike to Safety Related Structures | 1 |
| 372.2 (2.3.1) | Probability of Tornado Occurrence | 1 |
| 372.3 (2.3.1) | Snowpack for Safety Related Structures | 1 |
| 372.4 (2.3.1) | Extreme Snow Loads and 100 year Fastest Mile Wind Speed | 1 |
| 372.5 (2.3.2) | Variable Wind Direction Category | 1 |
| 372.6 (2.3.3) | Justification for Meteorological | |

QUESTION 032.4(7.2)

NRC LETTER FEBRUARY 16, 1979

For the fiber optic inter-cabinet interfaces of the Compartmented Plant Protection System (CPPS), provide the following information:

1. Provide a complete description of the design in conformance with R.G. 1.70.
2. Provide the specific design bases and design criteria and address the "Acceptance Criteria for Controls" of Table 7-1 of the Standard Review Plan.
3. Specify whether this area is in the scope of design of CE or S&W or others.
4. For this area of design, identify any changes to the interface requirements evaluated by the staff during the PDA reviews of CESSAR and/or SWESSAR or the review of CENPD-172.

RESPONSE

- 1 and 2 Refer to Section 7.2.4, Amendment 3, for the response to this question.
3. The CPPS and fiber-optic communication system is in CE's design scope.
4. Interface requirements previously reviewed and evaluated by the NRC during the reviews of CESSAR (PDA-2), SWESSAR (PDA-6), and CE Topical Report (CENPD-172A) do not change and need not be re-reviewed due to design changes introduced by the NYSE&G CPPS.

413 279

QUESTION 442.1(13.5)

NRC LETTER December 27, 1978

Provide a commitment to conduct all safety related operations by detailed written and approved procedures.

RESPONSE

Refer to Section 13.5, Amendment 3, for the response to this question.

418 280

QUESTION 442.2(13.5)

NRC LETTER December 27, 1978

Provide a commitment to provide written and approved fire protection procedures and include them on the preliminary schedule for completion.

RESPONSE

Refer to Section 13.5, Amendment 3, for the response to this question.

418 281