

2.0 Site Characteristics

2.1 Geography and Demography

2.1.1 Site Location and Description

The Lungmen NPS site has a concave shoreline that faces the Pacific Ocean and is located at Jenli village, Kungliao Hsiang, Taipei Hsien at an approximate longitude of 121° 55'E and latitude of 25°03' N on the northeastern coast of the island of Taiwan (Figure 2.1-1). It is about 20 km southeast of Keelung and 40 km east of Taipei. The entire site property area is about 480 hectares. A small river called Shuang Chi passes by about 2 km south of the site and another stream Shihtin Chi flows about 600 m north of the site. The eastern part of the site is the reserved plant area with elevations varying from 8 to 15 m above mean sea level. The western part of the site is a mountainous district with elevations varying from 15 to more than 170 m above mean sea level. Figure 2.1-2 shows the topographic features of the Lungmen NPS site. Keelung is the nearest harbor. Kungliao, located only 4 km from the site, is the nearest railroad station. The freight train from Keelung to Kungliao is scheduled two or three times per day. The provincial No. 2 highway from Keelung to Ilan is a two-lane traffic way, the clearance in height is 4.4 m and the design load is H16-S20.

2.1.2 Exclusion Area Authority and Control

2.1.2.1 Authority

The boundary lines of the restricted area (as defined in 10CFR20) are the same as the site boundary. Figure 2.1-3 shows the site boundary line, EAB and LPZ of the Lungmen NPS site. The restricted area will be surrounded by physical barriers. A central alarm station equipped with personnel monitoring instruments is located at the main gate, and a security guard station is located at the main entrance to control access to the restricted area.

The distance from the center of reactor building to the exclusion area boundary (EAB; Figure 2.1-3) is 300 m. The postulated accident dose at EAB satisfies the requirements of 10CFR100. The land within the exclusion area boundary is under full ownership control of Taiwan Power Company (TPC). There are no waterways, railroad, or public highways that traverse the boundary of the exclusion area. The exclusion area is encompassed by the restricted area and is also under access control.

2.1.2.2 Control of Activities Unrelated to Plant Operation

The following activities unrelated to plant operation are permitted within the exclusion area:

- (1) General public invited or accepted by TPC are allowed to visit the plant. a tour will be arranged under the escort of the TPC plant staff to the viewing room in the reactor building and turbine building.
- (2) Vendor representatives invited by TPC are allowed to visit the plant administration building to discuss solutions to problem. If necessary, a tour will be arranged under the escort of the TPC plant staff for a closer investigation of problems relative to specific equipment.

- (3) Periodically the International Atomic Energy Agency (IAEA) will send one or two inspectors to the site for 1 to 2 days for a plant operation inspection. During the visit they will be taken to the reactor building and containment to check the equipment in those buildings. The inspectors will inform TPC of their visit 1 month in advance through the ROC-AEC.
- (4) Engineers from TPC Taipei office headquarters will visit the plant for the purpose of performing reviews and audit functions, or for technical support. The engineers are allowed in the low radiation area for investigation under the escort of the plant staff.

2.1.2.3 Arrangements for Traffic Control

The exclusion area is not traversed by a railway, waterway, or public highway, and therefore, no arrangements are required for traffic control.

2.1.3 Population Distribution

Population investigation was conducted within a radius of 50 km of the site. Data presented were based on the 1991 census data.

2.1.3.1 Population Within 50 km

According to 1991 census data, the total population within 10 km and 50 km of the site was 36,990 and 6,027,313, respectively. Table 2.1-1 shows the residential population distribution in 1991 by section and radial distance up to 50 km.

The total projected population within 10 km and 50 km is 18,769 and 9,839,816 respectively. Table 2.1-2 shows the projected population distribution in 2034 by section and radial distance up to 50 km.

The population density (number of persons per square kilometer) for 1991 and 2034 is summarized in Table 2.1-3 for radial distance up to 50 km.

2.1.3.2 Low Population Zone

The distance from the center of reactor building to the low population zone (LPZ; Figure 2.1-3) boundary line is 300 m. The postulated accident dose at LPZ boundary satisfies the requirements of 10CFR100. The land within the low population zone boundary is under full ownership control of Taiwan Power Company (TPC). There are no any residential or transient population in the low population zone.

2.1.3.3 Population Center

The Yenliao site is located on the northeastern coast of Taiwan. The nearest population center is Keelung city, located about 20 km northwest of the site, which had a population of 352,919 in 1990. Taipei is 40 km west of the site and had a population of 2,719,659 according to the 1990 census. Both are the major

cities within the 50 km radius. Figure 2.1-4 shows the major cities and population centers within 50 km radius of Lungmen NPS site.

Table 2.1-1 Population per Directional and Radial Sector (1991)

Direction	Radial Interval										
	0.3 km	1 km	2 km	3 km	4 km	5 km	10 km	20 km	30 km	40 km	50 km
N	0	0	1681	688	287	277	4879	0	0	0	0
NNE	0	0	329	481	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	10	0	0	0	0	0	0	0	0	0
E	0	2	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	27	96	1110	0	0	0	0
ES	0	0	374	77	1547	43	48	0	0	0	0
SSE	0	0	261	132	0	22	902	0	0	0	0
S	0	0	107	40	121	10	2069	0	0	0	15387
SSW	0	0	14	447	126	84	1934	0	37823	13834	155184
WS	0	0	0	1078	86	125	368	12476	11771	12279	12649
WSW	0	0	0	98	64	151	316	1896	4238	25340	57057
W	0	0	0	0	80	0	7053	6404	81124	1583336	2986117
WNW	0	0	0	76	86	257	2219	40655	244019	44437	371534
WN	0	0	0	116	221	208	738	65784	51236	18802	8100
NNW	0	0	44	103	0	173	33055	4291	0	0	0
Total	0	12	2810	3336	2645	1446	24941	131506	430211	1822578	3606028

Table 2.1-2 Population per Directional and Radial Sector (2034)

Direction	Radial Interval										
	0.3 km	1 km	2 km	3 km	4 km	5 km	10 km	20 km	30 km	40 km	50 km
N	0	0	1334	339	167	38	2352	0	0	0	0
NNE	0	0	69	9	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	11	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	16	46	553	0	0	0	0
ES	0	0	40	11	8417	64	24	0	0	0	0
SSE	0	0	345	106	18	0	899	0	0	0	0
S	0	0	88	65	126	0	2116	0	0	0	16289
SSW	0	0	18	155	83	0	1975	0	23942	136703	168368
WS	0	0	0	691	7	39	179	12715	3519	11759	9509
WSW	0	0	0	13	79	56	98	815	4273	49281	116146
W	0	0	0	0	0	0	2185	1189	130841	2739950	5317104
WNW	0	0	0	26	29	111	688	29995	247995	65584	616486
WN	0	0	0	93	33	182	319	54864	51569	6533	3558
NNW	0	0	26	107	0	302	1598	2060	0	0	0
Total	0	11	1920	1615	1399	838	12986	101638	462139	3009810	6247460

Table 2.1-3 Population Density (1991 and 2034)

Radial Distance from Reactor (km)	1991		2034	
	Cumulative Population	Density (person/sq km)	Cumulative Population	Density (person/sq km)
0 - 1.0	12	4	11	4
0 - 2.0	2822	225	1931	154
0 - 3.0	6158	218	3546	125
0 - 4.0	8803	175	4945	98
0 - 5.0	10249	130	5783	74
0 - 10.0	36990	118	18769	60
0 - 20.0	168496	134	120407	96
0 - 30.0	589707	209	582546	206
0 - 40.0	2421285	482	3592356	715
0 - 50.0	6027313	767	9838816	1253

Figure 2.1-1 The Site Location of Lungmen NPS

Figure 2.1-2 The Topographic Features of Lungmen NPS Site

Figure 2.1-3 Lungmen EAB and LPZ

Figure 2.1-4 Major Cities and Population Centers Within 50 km Radius