

Enclosure 5 to Long Mott Energy, LLC, Letter No. 2025-PLM-NRC-013

Long Mott Energy, LLC

PSAR Subsection 2.4.10, “Flood Protection Requirements”

**Long Mott Generating Station
Preliminary Safety Analysis Report**

CHAPTER 2

SUBSECTION 2.4.10 FLOODING PROTECTION REQUIREMENTS

LIST OF TABLES

<u>Number</u>	<u>Title</u>
---------------	--------------

None.	
-------	--

**Long Mott Generating Station
Preliminary Safety Analysis Report**

LIST OF FIGURES

<u>Number</u>	<u>Title</u>
---------------	--------------

None.	
-------	--

**Long Mott Generating Station
Preliminary Safety Analysis Report**

ACRONYMS AND ABBREVIATIONS

<u>Acronym/Abbreviation</u>	<u>Definition</u>
cm	centimeter(s)
DBHL	design basis hazard level
FHAB	Fuel Handling Annex Building
ft.	feet
in.	inch(es)
LMGS	Long Mott Generating Station
m	meter
NAVD	North American Vertical Datum
NI	Nuclear Island
PMF	probable maximum flood
PMP	probable maximum precipitation
RSF	required safety function
SSC	structures, systems, and components
SST	Shield Structure

Long Mott Generating Station Preliminary Safety Analysis Report

Chapter 2 Site Characteristics

2.4 HYDROLOGY

2.4.10 FLOODING PROTECTION REQUIREMENTS

The design bases for flood protection, including wave runup, are provided in Section 2.4.2, through Section 2.4.9. This section discusses the need for protection of safety-related structures systems and components (SSCs) from design bases flood events. The natural grade at the site is at an elevation of approximately 27 ft (8.2 m) in North American Vertical Datum of 1988 (NAVD 88). The LMGS site nuclear island arrangement is shown in Figure 2.4.2-6. The nuclear island area is constructed on fill material that elevates the area by approximately 4 ft (1.2 m) from the existing grade (Subsection 2.4.2.3.2). The finished floor grade of all safety-related structures is at elevation 31.5 ft (9.6 m).

A description of local intense precipitation and local PMP in the vicinity of the LMGS site is presented in Section 2.4.2.3. The maximum flood depth in the vicinity of the buildings is about 24 in. (0.61 m) (above the finish grade).

Representative PMP flood depth time series at the site is presented in Figure 2.4.2-8. Because the top of building foundations are 6 in. (0.15 m) above the site grade, flood waters will remain above the top of foundation elevation for a duration of 12 hours.

In Section 2.4.3, the PMF due to PMP in the Lower Guadalupe River and in the West Coloma Creek of LMGS site is described.

The maximum PMF flooding water level at LMGS is postulated to be at elevation ~~38.94~~40.8 ft (~~12.44~~12.72 m) NAVD 88. This is ~~higher~~lower than the left bank elevation at this location, ~~33.91~~41.72 ft (~~10.34~~12.71 m) NAVD 88, by ~~5.03 ft~~11 in (~~1.53 m~~28 cm). Therefore, the left bank of the river ~~is not~~will be overtopped by wind-wave runup effect. The site will not be flooded during Guadalupe River PMF event ~~as the overtopped spillage will be distributed over the low-lying area between the riverbank and the site~~ (See Subsection 2.4.3.2.1.8). ~~Additionally, the site is raised by approximately 4 ft (1.2 m) (including the finished floor grade) (See Section 2.4.3.1.8) from the low-lying areas surrounding the site.~~

The preliminary estimation of the PMF water level on the West Coloma Creek is described in Section 2.4.3.2. The maximum water depth around the site is approximately 31 ft (9.4 m) NAVD 88. The vertical extent of the runup on the embankment was calculated to be 33.56 ft (10.23 m) NAVD 88. This indicates that the total water level will conservatively be 33.56 ft (10.23 m) NAVD 88, which is 2 ft (0.6 m) above finish grade elevation of 31.5 ft (9.6 m). The drainage systems and flood protection features at the plant will be designed to ensure that peak discharge from the local Probable Maximum Precipitation (PMP) does not cause flooding that could adversely impact the capability of ~~SR~~safety-related SSCs inside the Shield Structure (SST) and Fuel Handling Annex Building (FHAB) to fulfill their required safety functions (RSFs).

Dam failures within the Guadalupe River basin and the failure of the on-site basin embankment are evaluated in Section 2.4.4. The maximum dam failure water level at LMGS is at elevation ~~40.7~~38.42 ft (~~11.71~~12.41 m). Therefore, the left bank of the river ~~is~~which is at elevation 41.72 ft (12.72 m), is not overtopped by wind-wave runup effect. The site is not flooded during a Guadalupe River dam failure event ~~as the overtopped spillage is distributed over the low-lying~~

Long Mott Generating Station Preliminary Safety Analysis Report

~~area between the riverbank and the site (See Subsection 2.4.4.3.1). Additionally, the site is raised by approximately 4 ft (1.2 m) (including the finished floor grade) from the areas surrounding the site.~~

The predicted maximum water level at the Nuclear Island (NI) and the LMGS site for the postulated breaching of the northern embankments of on-site Basins #5 and #31 is at elevation 32.5 ft (9.91 m) NAVD 88. This indicates that the base of the safety-related reactor support structure may become submerged by a maximum of 1 ft (0.31 m) during on-site basin failures (See Subsection 2.4.4.3.2). Drainage systems for the plant location will be designed so that the flood waters from the breaching of the embankments is directed away from safety-related SSCs at the site.

Section 2.4.5 describes the probable maximum surge and seiche flooding at the LMGS site. Probable maximum surge and seiche flooding as a result of the probable maximum hurricane in the Gulf of Mexico is presented in Section 2.4.5. Maximum storm surge as defined in Section 2.4.5 represents the design basis external flooding event. Two design basis hazard levels (DBHL) are defined for design and licensing purposes. The maximum still water level at the LMGS site is estimated to be elevation ~~41.47~~36.38 ft (~~12.6~~11.1 m) (NAVD 88). ~~The total water level considering coincident wave runup is 46.49 ft (14.17 m) NAVD88.~~ The predicted still water level ~~preliminary predicted~~ flood elevation is higher than the site grade by ~~10.47~~5.38 ft (1.64~~3.19~~ m). The total water level considering coincident wave runup is 46.49 ft (14.17 m) NAVD88. The water level including wave runup is only applicable to site buildings, that is, vertical or near vertical surfaces.

~~Additional site-specific analyses and associated information that includes ADCIRC results will be provided by the end of 2025. As described in Section 2.4.5, preliminary results demonstrate that SLOSH results are bounding.~~

Plant final design related to elevations, structural features, and protective barriers will use the DBHL described above as appropriate. Detailed flooding mitigation plans will be developed as plant design progresses and will be provided with the plant final design in the Operating License Application. ~~As noted in Section 2.4.2.2, r~~Requirements for SSCs at LMGS ensure that water ingress from the DBHL external flood does not adversely impact the capability of ~~SR~~safety-related SSCs inside the ~~Shield Structure (SST)~~ and ~~Fuel Handling Building (FHAB)~~ to fulfill their RSFs. This is discussed further in Sections 6.4 and 7.3

References

None