



Indianapolis Power & Light Company
Petersburg Generating Station

Safety Factor Assessment of
CCR Surface Impoundments

Prepared by



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Issue Purpose: Use



1 PURPOSE

Pursuant to 40 CFR 257.73(e), this document provides the initial safety factor assessment for the exterior dikes of the existing coal combustion residual (CCR) surface impoundments at Indianapolis Power & Light Company's (IPL) Petersburg Generating Station. Based on the applicability criteria presented in 40 CFR 257.73(b), the following existing CCR surface impoundments are addressed herein:

- Pond A,
- Pond A', and
- Pond C.

2 RESULTS & CONCLUSIONS

Slope stability analyses were performed for critical cross sections of the exterior dikes of each CCR surface impoundment (CCR unit). The lowest factors of safety (FOS) corresponding to the potential failure surfaces that could result in uncontrolled releases of CCR are summarized in Table 1 for each CCR unit.

Table 1: Summary of Safety Factors for Each CCR Unit

FOS Assessment	Pond A/A'	Pond C	Minimum Allowable FOS
40 CFR 257.73(e)(1)(i) Calculated Static FOS for Long-Term, Maximum Storage Pool Loading Condition	≥ 1.84 (Note 1)	≥ 2.15 (Note 1)	1.50
40 CFR 257.73(e)(1)(ii) Calculated Static FOS for Maximum Surcharge Pool Loading Condition	1.84	2.15	1.40
40 CFR 257.73(e)(1)(iii) Calculated Seismic FOS Loading Condition	0.66	0.91	1.00
40 CFR 257.73(e)(1)(iv) Calculated Liquefaction FOS Loading Condition	Note 2	Note 2	1.20
Does CCR Unit Satisfy the Requirements of 40 CFR 257.73(e)?	No	No	—

- Notes:
- 1) The maximum surcharge pool loading condition analysis was used to represent both static analysis conditions in 40 CFR 257.73(e)(1)(i) and (ii). The maximum surcharge pool loading condition analysis represents a lower bound FOS for the long-term, maximum storage pool loading condition.
 - 2) A slope stability analysis taking into account the strength loss of materials susceptible to liquefaction was not performed since the seismic condition analyzed does not satisfy the minimum allowable FOS.

The factors of safety calculated for the seismic load case for each CCR unit do not satisfy the minimum safety factor specified in 40 CFR 257.73(e)(1)(iii) for the critical cross sections of the exterior dikes.



3 CERTIFICATION

This initial safety factor assessment fails to satisfy the safety factor requirements of 40 CFR 257.73(e).

I certify that this document was prepared by me or under my direct supervision and that I am a registered professional engineer under the laws of the State of Indiana.

Certified By: 

Date: 10-14-2016

Seal:

