Enclosure 1 to E-25259

Transnuclear, Inc. Calculation NUH32PTH1-0420, "Air Flow within NUHOMS HSM-H Loaded with 32PTH1 DSC," Revision 0
(Non-proprietary version, without discs)

TRANSNUCLEAR AN AREVA COMPANY	Calculation	Calc. No.:	NUH32PTH1-0420		
		Rev. No.:	0		
Calculation Title:		Page:	1	of	9
Air Flow within NUHOMS HSM-H Loaded with 32PTH1 DSC		Project No.:	NUH32PTH1		
		DCR No.:	N/A		

Project Name: NUHOMS® 32PTH1 Transportable and Storage System

Number of CDs attached: 1

If original issue, is Licensing Review per TIP 3.5 required?

☒ No (explain)	☐ Yes	Licensing Review No_____

This calculation is performed to support amendment application subjected to NRC review

Software utilized: — Version: —

Calculation is complete

Originator's Signature: Davy Qi	Date: 6/27/06

Calculation has been checked for consistency, completeness, and correctness

Checker Signature: Slava Guzeyev	Date: 6/27/06

Calculation is approved for use

Project Engineer Signature: Miguel Manrique	Date: 1/12/07

Revision Summary

REV.	DATE	DESCRIPTION	AFFECTED PAGES	AFFECTED DISCS
0	1/12/07	Initial Issue	All	All

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1.0 Purpose

The purpose is to calculate the airflow rates and air temperatures within the NUHOMS® HSM-H loaded with 32PTH1 DSC with high heat load up to 40.8 kW for normal and off-normal operating conditions.

2.0 Assumptions and Conservatism

The HSM-H/32PTH1 DSC configuration considered in this calculation is similar to the HSM-H/32PTH DSC configuration in HD SAR [1]. [redacted]

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in accordance with 10 CFR 2.390

3.0 Design Input / Data

Total maximum decay heat loads for HSM-H loaded with 32PTH1 DSC are: Q=31.2 kW and 40.8 kW.

The HSM-H airflow calculation is based on the following operating conditions:

The ambient temperatures applied in this calculation are summarized in Table 3-1.

Table 3-1 Summary of Ambient Temperatures Applied [3]

Operating Condition	Ambient Temperature, °F
Normal	0
	106
Off-Normal	-40
	117
Accident-extreme hot ambient	133

Flat stainless steel plates [redacted] are used for both top and side heat shields. [redacted]

[redacted]

[redacted] Table 3-2 lists HSM-H/DSC dimensions used in air flow calculation for HSM-H/32PTH1 DSC design.

[redacted]

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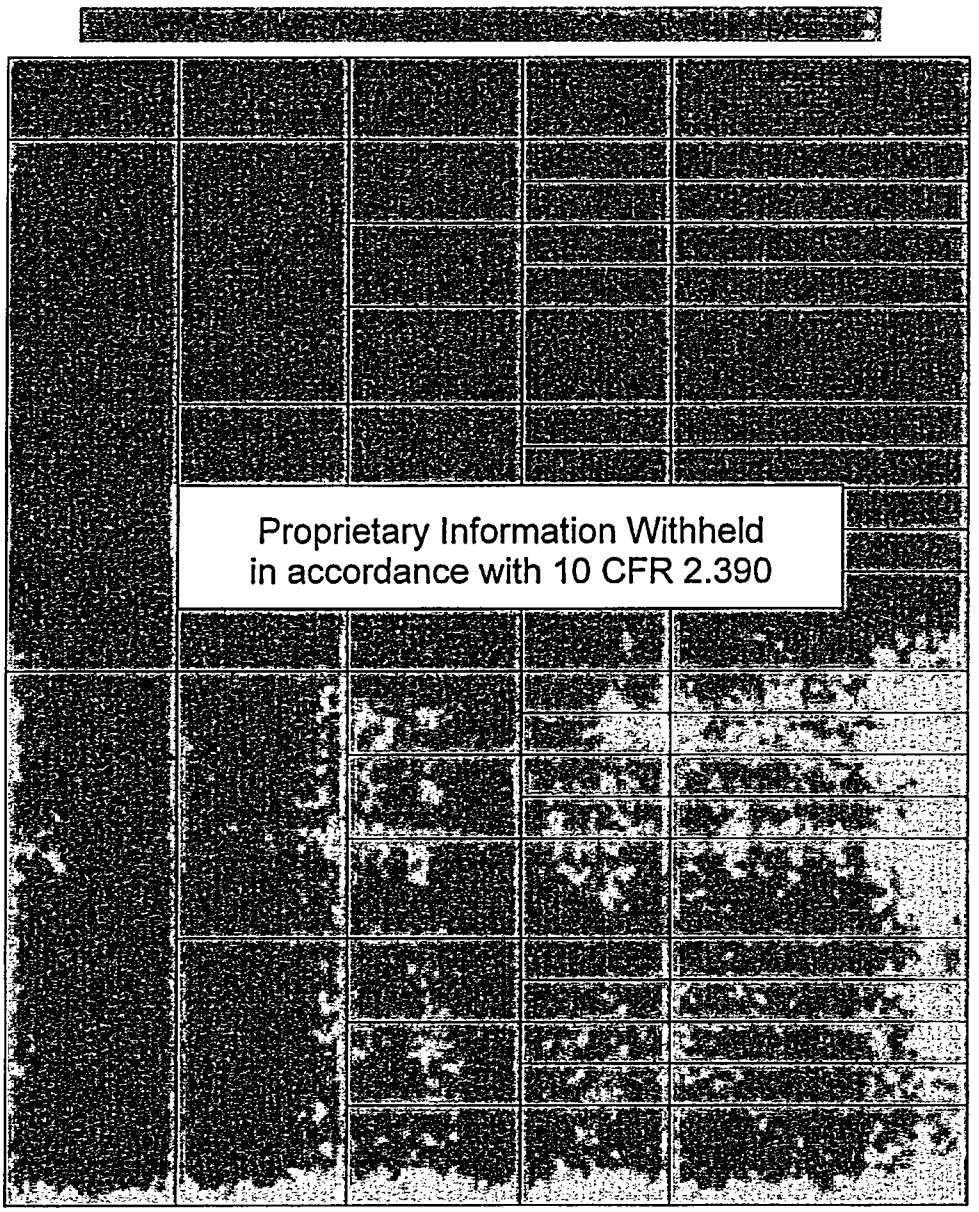
4.0 Methodology

The methodology used in this calculation is similar to one described in [2].



5.0 References

1. SAR, *Safety Analysis Report for the NUHOMS® -HD Horizontal Modular Storage System for Irradiated Nuclear Fuel*, Transnuclear, Inc., NRC Docket No. 72-01030, Rev.4, January 2006.

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6.0 Results

The calculated [redacted] airflow temperatures for normal and off-normal conditions are summarized in Table 6-1 for 31.2 kW and 40.8 kW heat loads. [redacted]

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Table 6-1 Airflow Calculation Results, 31.2 kW and 40.8 kW per 32PTH1 DSC

Operating Conditions		T_{amb}	[redacted]	T_{exit}
		°F		°F
40.8 kW	Off-Normal	-40		30.4
		117		216.3
	Normal	0		78.0
		106		203.4
	Accident-extreme hot ambient	133		235.1
31.2 kW	Off-Normal	-40		18.3
		117		199.2
	Normal	0		64.4
		106		186.6
	Accident-extreme hot ambient	133		217.4

7.0 Conclusion

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