

July 2, 2015

MEMORANDUM TO: Anthony J. Mendiola, Chief
Licensing Processes Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

FROM: Jason J. Drake, Project Manager */RA/*
Licensing Processes Branch
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Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF APRIL 8, 2015, CLOSED PRE-SUBMITTAL MEETING
WITH STUDSVIK SCANDPOWER INC.

On April 8, 2015, U.S. Nuclear Regulatory Commission (NRC) staff met with representatives of Studsvik Scandpower Inc. (SSP) in a closed meeting at NRC headquarters in Rockville, Maryland. The enclosure provides a list of those in attendance. Information presented at the meeting by the SSP representatives is available in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML15083A467.

This was a pre-submittal meeting with SSP where they provided an overview for their Core Management Suite 5 (CMS5) including Lattice Physics (CASMO5/ENDFVII), Cross-Section Functionalization (CMLINK5), and Core Simulator (SIMULATE5).

Opening remarks were made for SSP by Mr. Arthur DiGiovine. As this was the first meeting of SSP with the NRC staff for the intent of submitting a topical report (TR), SSP wished to give an overview of the work by the company and the customers of recent years. Meeting objectives and a discussion overview for the meeting were also presented. The NRC staff questioned the motivation behind the upgrade. SSP responded that the upgrade was driven by customer based requests targeting the ability to utilize explicit inputs.

Mr. Rodolfo Ferrer of SSP presented the high level overview of the lattice physics code CASMO5. The objectives of the presentation were to cover some of the differences between CASMO4 and CASMO5, to detail the data used in CASMO5, to outline the computational methods used in CASMO5. The NRC staff questioned if SSP could accurately quantify and validate the accuracy improvements against CASMO4. The SSP representatives indicated that the quantifying the improvements could be challenging and that the scope of submittal will be targeted at proving CASMO5 performs as well as CASMO4.

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Mr. Tamer Bahadir of SSP presented the code linking the lattice physics code CASMO5 to the core simulator code SIMULATE5 named CMSLINK5. The SSP representatives explained how CMSLINK5 prepares a data library for SIMULATE5 for some dependent data types such as microscopic cross sections and detector constants. The NRC staff had some questions on control rod lifetime, keeping up with the changing compositions of cladding designs, and some of the capabilities of CMSLINK5. After, the SSP representatives presented an overview of the core physics code SIMULATE5. Similar to the CASMO5 overview, the SIMULATE5 overview included the computational models used within the code and the differences between SIMULATE3 and SIMULATE5. The NRC staff had questions on the use of COBRAIIIC in the thermal hydraulics section, the fuel pellet temperature nodes, the nodalization of fuel assemblies, the correction factors from lattice physics to core simulator, the behavior of doppler broadening within SIMULATE5, and resonance upscattering effects.

Mr. Brandon Haugh of SSP presented on the submission of a TR to the NRC staff. A TR process was selected as a generic way for SSP to request NRC staff approval for utility customers. The scope of the TR submission was covered as well as the range of applicability of the code. Dominion Resources is the current utility partner providing data for validation of the code. Two representatives from Dominion Resources attended the meeting. The submission is intended for pressurized water reactors (PWRs) only. The NRC staff had questions pertaining to content of the submittal such as a whether or not there would be a chapter on benchmarking, if there was to be a theory manual, a methodology manual, and a verification and validation chapter. The NRC staff also asked if additional letters of intent from any additional utility customers had been secured. SSP representatives noted the NRC staff requirements and identified that Dominion Resources was the only utility customer who had submitted a letter of intent, with several other current customers expressing verbal interest. The SSP representatives also conveyed concerns on the use of contracting as a means to accelerate the TR review, as some national laboratories are direct competitors to SSP.

Mr. Christopher Wells of Dominion Resources presented on the intentions to gain approval for a generic uncertainty factor method called Nuclear Reliability Factor (NRF) Methodology. The NRF methodology would benchmark certain parameters such as critical boron concentration and startup physics test predictions. The NRC staff had questions about the use of generic uncertainty factors and the ranges of applicability.

The SSP representatives proposed a schedule for NRC staff review to accommodate Dominion Resource's reload design, currently scheduled to begin in spring 2017. The SSP representatives clarified that the TR is intended to demonstrate that the CMS5 codes (CASMO5, CMSLINK5, SIMULATE5) are acceptable for performing all steady-state core physics analysis. The TR will also include the NRF generation methodology and a demonstration to include seven (7) PWR units.

A. Mendiola

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At the conclusion of the meeting, the NRC staff facilitated an overview and closeout for the meeting and extended support to SSP during the development of the TR.

No members of the public were present for this meeting.

Project No. 816

Enclosure:
List of Attendees

At the conclusion of the meeting, the NRC staff facilitated an overview and closeout for the meeting and extended support to SSP during the development of the TR.

No members of the public were present for this meeting.

Project No. 816

Enclosure:
List of Attendees

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NAME	JDrake	DHarrison	JDean	AMendiola	JDrake
DATE	5/21/2015	6/10/2015	6/18/2015	7/2/2015	7/2/2015

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List of Attendees

**Pre-Submittal Meeting with Studsvik Scandpower Inc.
and
U.S. Nuclear Regulatory Commission (NRC) Staff**

April 8, 2015

<u>NAME</u>	<u>Organization</u>
Arthur DiGiovine	Studsvik Scandpower Inc.
Rodolfo Ferrer	Studsvik Scandpower Inc.
Tamer Bahadir	Studsvik Scandpower Inc.
Brandon Haugh	Studsvik Scandpower Inc.
John Guerci	Dominion Resources
Christopher Wells	Dominion Resources
Jason Drake	NRC
Jeremy Dean	NRC
Kevin Heller	NRC
Mathew Panicker	NRC
Yuri Orechwa	NRC
Will MacFee	NRC

ENCLOSURE