GARDEL/CMSOps/CMSTrack
News and Overview

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Studsvik® Scandpower
World Wide Nuclear Fuel Analysis
Software and Services

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Minneapolis, MN - May 2006
Contents

• Projects & news
  - CMSOps
  - CMSTrack
  - GARDEL

• Other related activities
Recent major milestones

- January 06: KK Gundremmingen awards core monitoring contract to consortium NIS Ingenieure / Studsvik Scandpower for units B & C

- March 06: CMSOps system supplied to San Onofre 2 and 3

- April 06: Final GARDEL SAT executed at Ft. Calhoun
Planned milestones

- July 2006: start operation, CMSTrack for TVO 1 & 2 at SSP’s office in Västerås
- August 2006: start operation, CMSTrack for Laguna Verde 1 & 2 at SSP’s office in Boston
- More CMSTrack plants to come…
SSP - internal CMSTrack user

- Västerås office - core follow contract with TVO
  - Agreement with customer for access to plant data
  - SSP to employ CMSTrack as supporting tool
  - Improved service to the customer
  - Manpower savings for SSP
  - Better feedback to the developers
CMSTrack - support to new CMS users

- Laguna Verde 1&2 - CMS user since Jan 2006
  - Customer goes through intensive CMS model development and training process
  - Agreement with SSP to supply plant data
  - Enhanced model “visibility”, fast modeling problems identification
  - Manpower savings for both organizations
CMSTrack - support concept for training simulators

- Fulfillment of Just-In-Time requirement for S3R users without CMS license
  - Customer supplies core loading data at each BOC
  - Plant data regularly transmitted to SSP
- SSP’s ftp server, ready for download
  - Current cycle’s x-section data
  - Restart files at any moment in the cycle
- Customer updates training simulator according to standard procedures
More on training simulators...

- GARDEL extensions for training simulator available
  - Data interface GARDEL ↔ Simulator computer delivered as dll
  - All standard training simulator functions supported (IC load, snapshot store/restore, backtrack, ...)

- First installation planned at Beznau NPP
  - After simulator installation in Switzerland during 2006/2007
GARDEL for Gundremmingen

• Consortium with NIS Ingenieure
  - SSP supplies standard GARDEL-BWR
  - NIS responsible for hardware, site installation, configuration and integration of KGG-specific software with GARDEL-BWR

• Beginning of official operation planned for summer 2007
  - After 3 months’ parallel operation
Challenges at Gundremmingen

• Only BWRs worldwide using MOX fuel
  - “Traditional” LPRM calibrations not possible
  - Extensions necessary to CR and LPRM depletion models

• Integration of external programs
  - SSP supplied HERMES drivers to NIS
  - NIS integrates programs in the drivers
  - SSP extends GUI to present new data

• More details in next presentation
List of CMSOps users

<table>
<thead>
<tr>
<th>Reactor name</th>
<th>Type</th>
<th>Country</th>
<th>Remark</th>
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<tr>
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<td>San Onofre 3</td>
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## List of GARDEL users

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<td>Cooper</td>
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<td>On-line stability</td>
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<td>Fort Calhoun</td>
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<td>Fixed in-core detectors</td>
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<td>Monticello</td>
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*Only BWRs worldwide with MOX fuel*
Related activities

- First “on-line users meeting” held on May 15
- On-line user’s WEB forum in operation
- Course “BWR Core Monitoring with SIMULATE-3”
  - Available for companies performing core monitoring or operational support with SIMULATE-3
  - First session took place at Cofrentes NPP in September 2005
Summary

• Several parallel projects, growing community of core monitoring/operational support users

• SSP also internal user of the codes
  - Manpower savings, efficiency improvements

• On-line user group cooperation encouraged