# Byron/Braidwood GL 83-11 Applicability

April 3rd 2025

# Background

- Byron/Braidwood are transitioning away from Westinghouse's Best Estimate Analyzer for Core Operations Nuclear (BEACON) Power Distribution Monitoring System (PDMS)
  - License Amendments (239 for Braidwood and 238 for Byron) were submitted and approved March 19, 2025 (Reference 1)

- In conjunction with the Westinghouse to Framatome fuel transition, Byron/Braidwood will begin utilizing Studsvik's GARDEL core monitoring system
  - GARDEL utilizes the SIMULATE5 code from the Studsvik Generic PWR Topical (Reference 2)
  - GARDEL will be used in conjunction with Westinghouse's and Framatome's reload methodologies respectively during the fuel transition
  - GARDEL will only be used for core monitoring, operations data, and to surveille COLR parameters such as peaking factors

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# Path Forward

- BEACON PDMS will be removed from Byron/Braidwood's Tech Specs when Braidwood and Byron applicable amendments are implemented

- Studsvik's GARDEL will be used to perform peaking factor surveillances to confirm Byron/Braidwood are within their Safety Analysis limits

- Constellation Nuclear Fuels is performing the analysis to validate the GARDEL measurement uncertainties

- The measurement uncertainties listed in the current COLR revision and assumed in the Westinghouse and Framatome reload methodologies will <u>not</u> be altered, thus <u>not</u> impacting Technical Specification (TS) 5.6.5.b

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# GL 83-11 Applicability

- Given that GARDEL makes use of SIMULATE5, which was approved by Studsvik's Generic CMS5 Topical (Reference 2), and that Constellation is performing SIMULATE5 work to support the transition to GARDEL, a GL 83-11 submittal is being pursued as recommended in the Reference 2 Adoption section

- The GL 83-11 submittal will allow CEG to perform measurement uncertainty work utilizing the codes in Studsvik's Generic CMS5 Topical (Reference 2)
  - The planned submittal will also support showing that Constellation can generate the SIMULATE5 models for input to the GARDEL core monitoring system

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# GL 83-11 Applicability

- The planned GL 83-11 submittal will contain discussions on procedures, processes, and qualifications, as well as benchmarking between SIMULATE5 generated results and measured data

- GL-83-11 Summary says:
  - The revised guidance [of GL 83-11] on *licensee qualification for using safety analysis codes* is intended for licensees who wish to perform their own licensing analyses using methods that have been reviewed and approved by the NRC, or that have otherwise been accepted as part of a plant's licensing basis.

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# GL 83-11 Challenge Question

- The real challenge on the applicability of GL 83-11 is:
  - The underlying code for the GARDEL system is the SIMULATE5 code
  - Using GARDEL inherently uses the SIMULATE5 measurement uncertainties for peaking factor verification
  - The safety analysis measurement uncertainties used are **not** being revised and are defined in the COLR through WCAP-9272-P-A (Reference 3)
  - We are not changing the measurement uncertainties limits used in the safety analysis and defined in the COLR.
  - Because GARDEL is not a Westinghouse code, it does not use the methodology of measurement uncertainty defined in WCAP-9272-P-A but is bounded by it
  - It is unclear if the use of GARDEL and SIMULATE5 for measurement uncertainty determination falls within the scope of GL 83-11 when the safety analysis inputs are not changing

# Open Discussion

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# References

1.  Braidwood Station, Units 1 and 2, and Byron Station, Unit Nos. 1 and 2 – Issuance of Amendments Nos. 239, 239, 238, and 238 Regarding Removal of Power Distribution Monitoring System (PDMS) Details from Technical Specifications (EPID L-2024-LLA-0068) (ADAMS: ML24352A075)

2.  Final Safety Evaluation for Studsvik Scandpower Inc. Topical Report SSP-14-P01/028-TR (ADAMS: ML17236A419)

3.  WCAP-9272-P-A, Westinghouse Reload Safety Evaluation Methodology (ADAMS: ML19269B535)

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