Document Control: Practical Application at NCNR

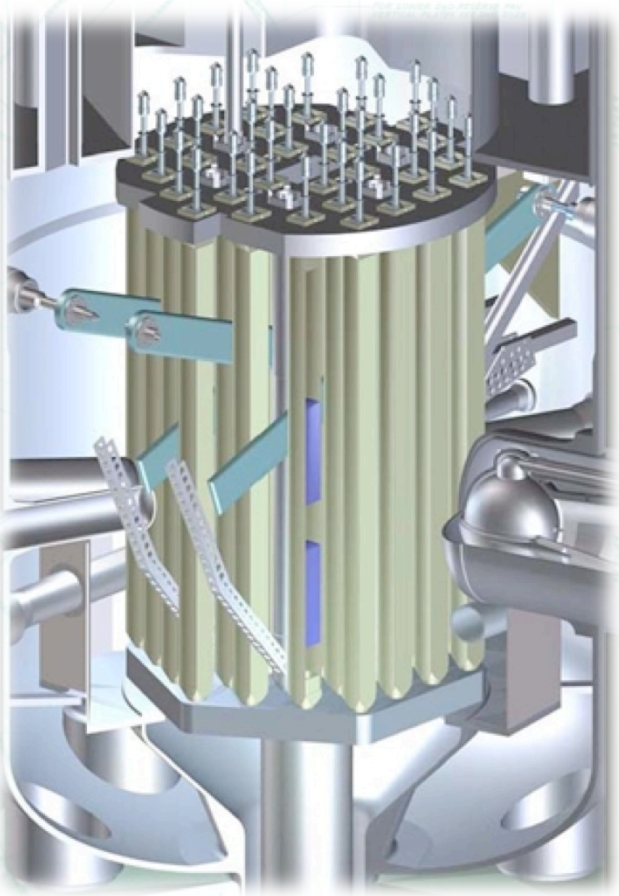
TRTR/IGORR 2010

William Schuster

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

NBSR Overview

- 20 MW D_2O cooled and moderated
- Tank type reactor, MTR type fuel
- 4 semaphore-type shim arms, 1 regulating rod
- Variation on Argonne CP-5 class reactor
  - Power
  - Core configuration
  - Cold Neutron Source



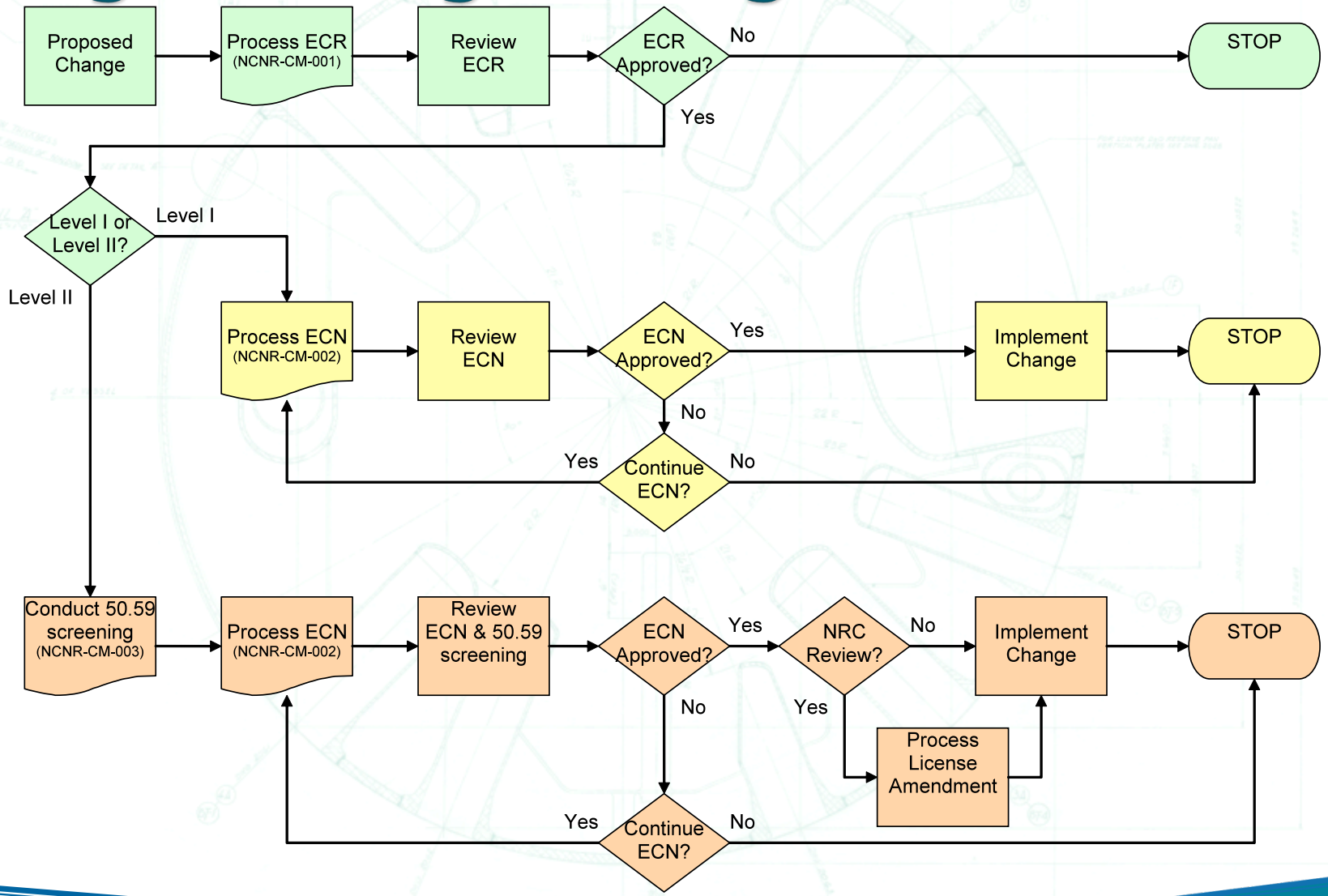
Objectives

- Review application of configuration management (CM) and document control
- Discuss controlled updates to the NBSR Safety Analysis Report (SAR)

NBSR CM processes

- CM serves to ensure that configurations conform to requirements
- NBSR Engineering Manual provides framework
- Consists of plans, procedures, and processes
  - Engineering Change Control
  - Document Control
  - Quality Assurance
  - Reference Guides

Engineering Change Process



Engineering Change Forms

NBSR ENGINEERING CHANGE REQUEST (ECR)	No.:	Date:
Number of pages attached:		

Explanation	
Originator / Responsible Individual(s):	
ECR Title:	
System or Equipment to be changed:	
Purpose:	
Description summary:	
Drawings to be changed:	
Procedures to be changed:	
Required test/measurements:	
SAR Sections to be changed:	

Performance Impro nt:	
Engineering Effort ( ):	
Operations Effort (h):	
Cost (dollars, estima	

evel Determination and Approval		
ECN Level Determination:	☐ Level I ECN (Minor) ☐ Level II ECN (Major)	
	Signature	Date
Chief Reactor Operations		
Chief Reactor Engineering		

Reason if Not Approved

NOTE
Approval of ECR authorizes engineering effort to prepare ECN. An ECN package includes all drawings, work instructions and all other documentation deemed necessary to successfully implement the Engineering Change. No implementation of the change may begin until a fully reviewed and approved ECN is on file.

NCNR-0001-CM-05

1 of 1

NBSR ENGINEERING CHANGE NOTICE (ECN)	Approved ECR No.:	
ECR Title:		
Responsible Individual(s):		
Code:	Revision:	Date:

Level I Review And Approval		
	Signature	Date
Chief Reactor Operations		
Chief Reactor Engineering		

Level II Analysis	
10 CFR 50.59 Screening Criteria Result: (Attach form NCNR-CM-003)	

Level II Review			
	Name	Signature	Date
Reactor Operations:			
Reactor Engineering:			
Reactor Enginee			
Other:			
Health Physics:			
Safety Evaluatio mmittee (SEC):			

	Signature	Date
Chief Reactor O		
Chief Reactor Engineering		
Chief Reactor Operations and Engineering		
NCNR Director		

Implementation And Close-Out								
	Initial	Date		Initial	Date		Initial	Date
Drawings Changed			Procedures Changed			SAR Updated		
Work Completed			Test/Measurements Completed			Closed		

Distribution:	ECN File (Original) Reactor Operations Engineering Originator/Responsible Individual

NCNR-0002-CM-05

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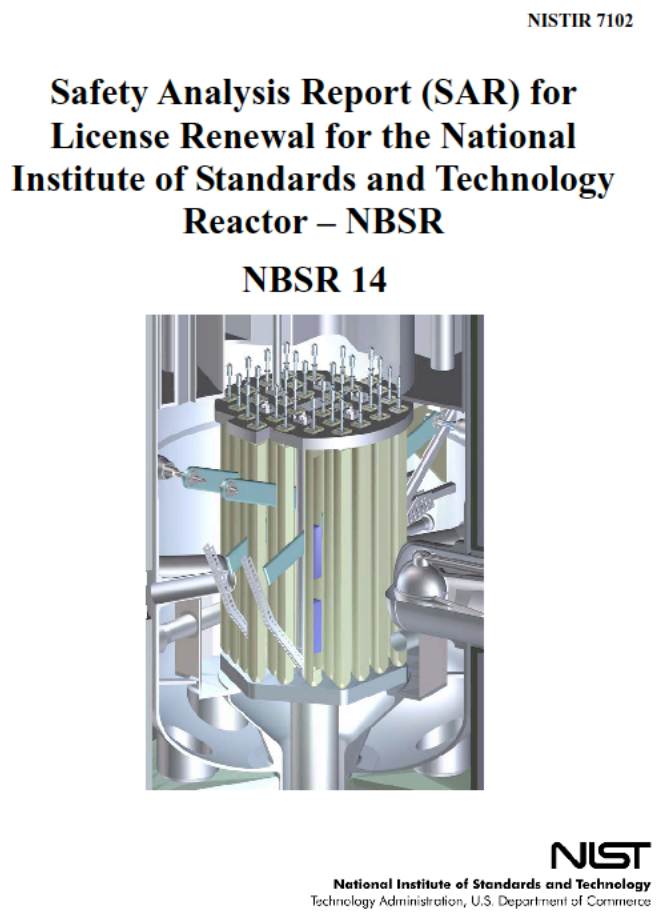
ECR

ECN

Updates to the NBSR SAR

- The original NBSR SAR was written in the 1960's.
- The SAR was revisited in 1980 for a power increase to 20 MW and guide hall construction.
- Preparation of the license renewal SAR required an extensive amount of effort and resources between 2000 and 2004.


NISTIR 7102

Safety Analysis Report (SAR) for License Renewal for the National Institute of Standards and Technology Reactor – NBSR

NBSR 14

NIST
National Institute of Standards and Technology
Technology Administration, U.S. Department of Commerce

Updated SAR – Why Not?

- Since 1967, changes to the facility were made that require updates to the SAR.
- Several well intentioned plans were made to update the SAR after 1980.
- For a multitude of reasons, the SAR was not updated until 2000 and 2010.

SAR Requirements

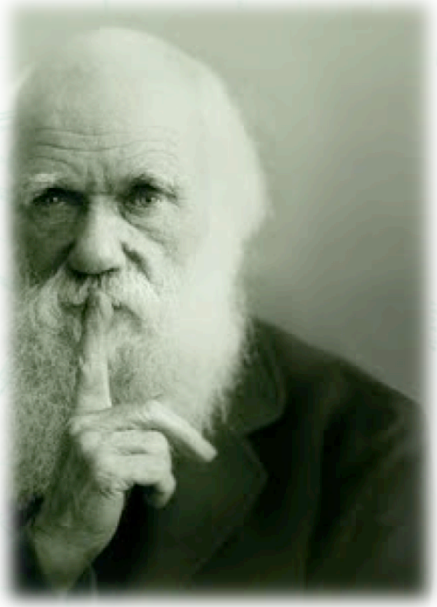
- Currently no regulatory requirements require research reactors to provide regular updates of the SAR to the US NRC.
- There are no requirements in the license for the NBSR to provide regular updates or maintain the SAR.

Updated SAR – Why Now?

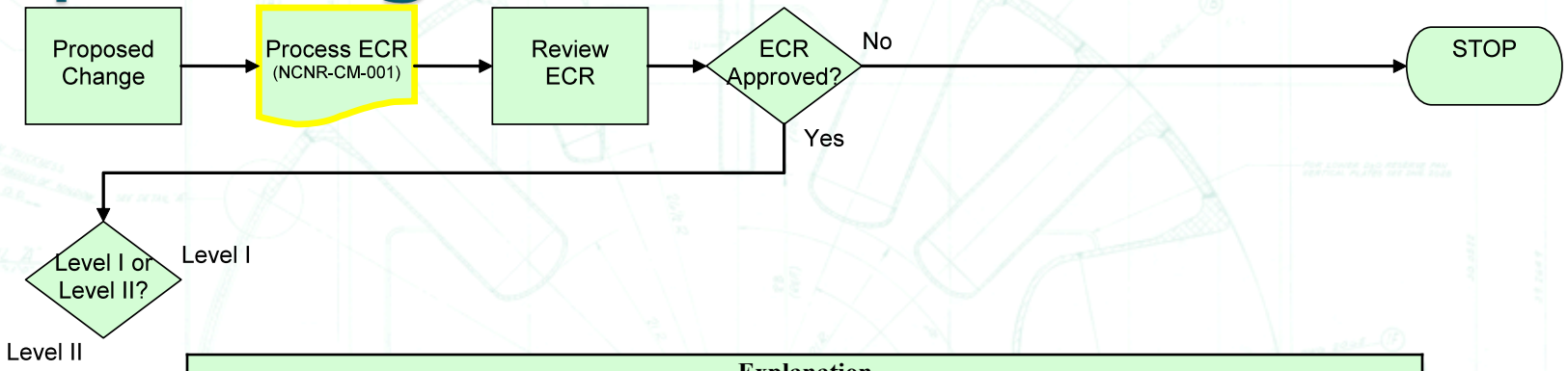
- During the operating license renewal for the NBSR, a number of questions were asked that required further refinement of the safety analyses.
- A verbal commitment was made to the US NRC and ACRS that the SAR would be updated.
- Knowledge management

Updated SAR – How?

- Incorporation of responses reviewed by NRC, ACRS
- NBSR Engineering Change Process



Updating the SAR



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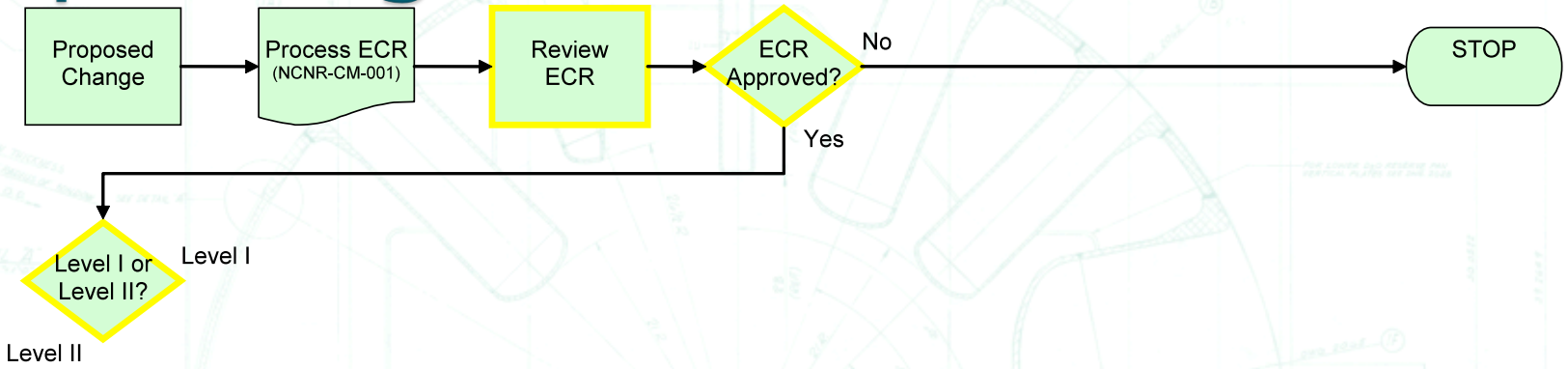
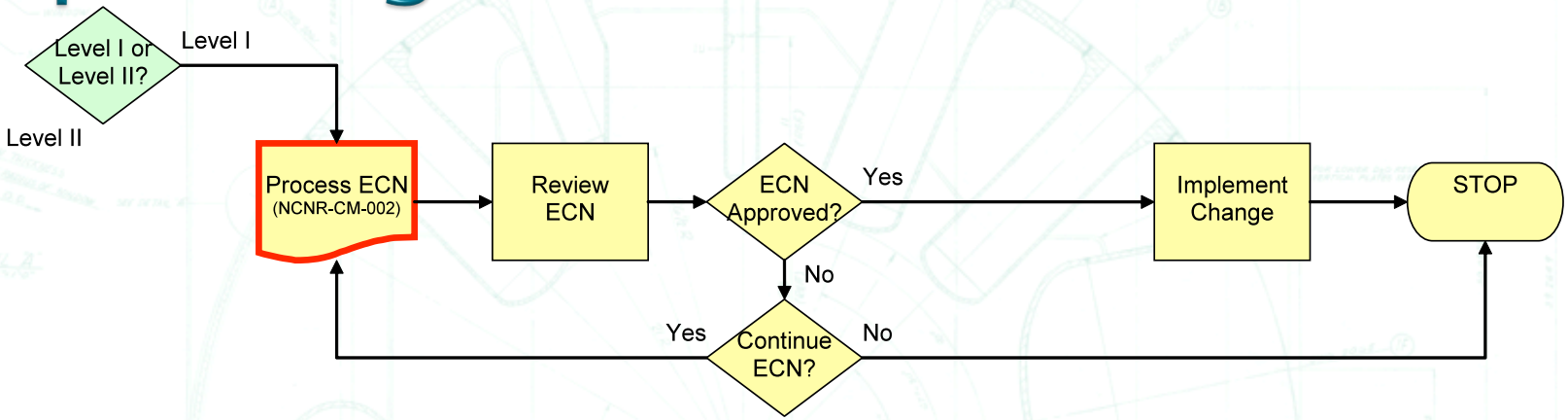
Updating the SAR



Level Determination and Approval		
ECN Level Determination:	☐ **Level I ECN (Minor)** ☐ **Level II ECN (Major)**	
	Signature	**Date**
Chief Reactor Operations		
Chief Reactor Engineering		

Updating the SAR



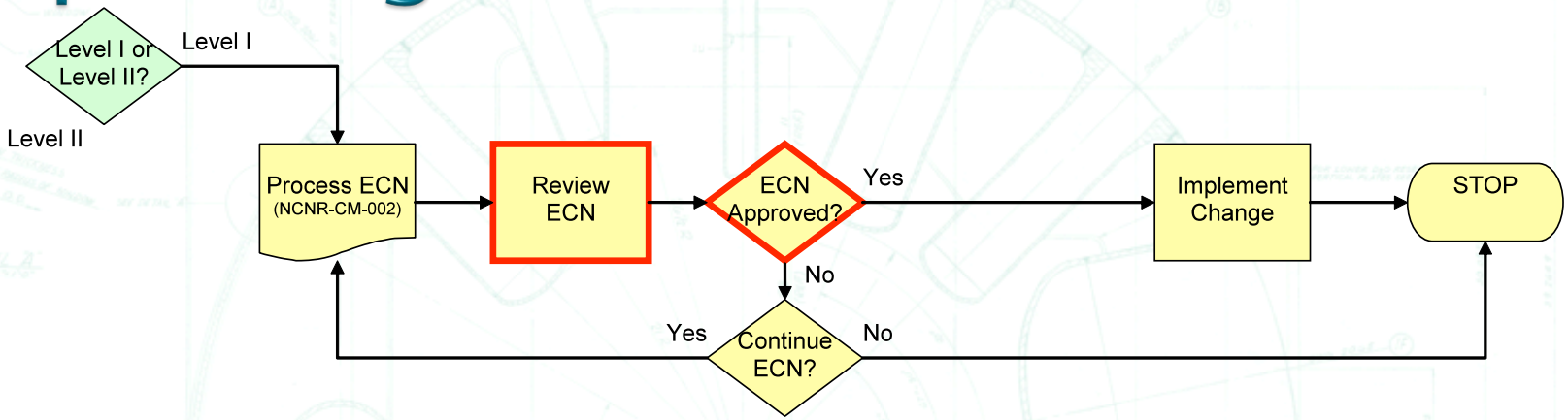
SAFETY ANALYSIS REPORT (SAR) CHANGES

Does this ECN result in a change to the text of the SAR? YES / NO

If "YES," provide the existing text from the SAR below:

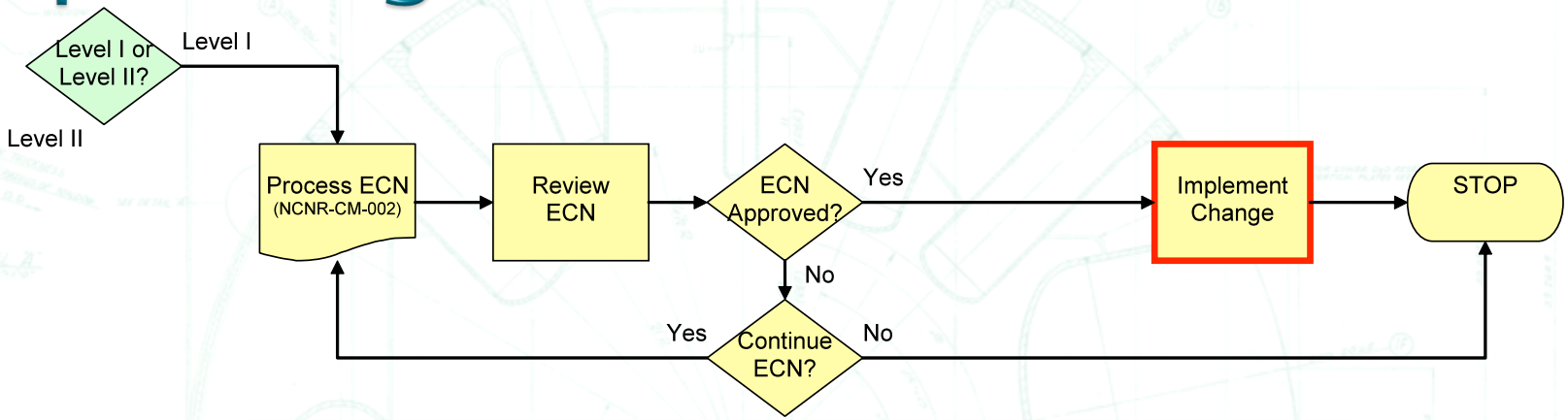
Provide the proposed new text for the SAR below, based on the change(s) from implementing the ECN:

Updating the SAR



Level I Review And Approval		
	Signature	**Date**
Chief Reactor Operations		
Chief Reactor Engineering		

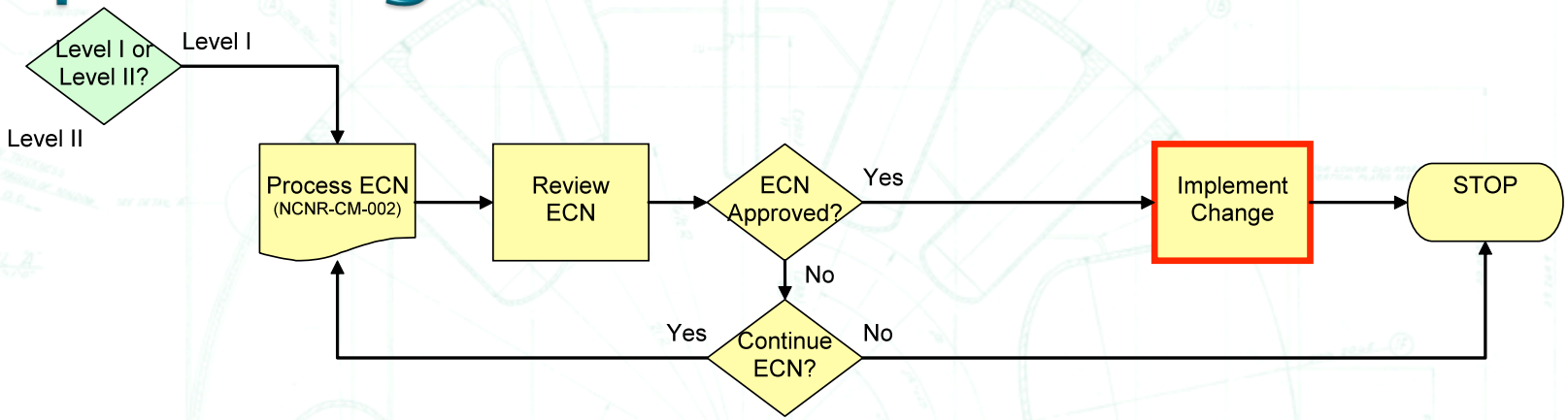
Updating the SAR



RECORD OF REVISIONS
NBSR 14 - Safety Analysis Report

Revision	Date	Chapter	ECN	Description	Changed by	Reviewed by	Approved by
1	01/20/10	4	517	Changed uranium content tolerence in fuel element	S. O'Kelly	W. Schuster	W. Richards
2	05/14/10	13	573	Updated accident analyses consistent with RAIs received during license renewal	M. Rowe	W. Schuster	W. Richards
3	07/08/10	2 4 5 6 7 9 10 11	589 497 570 572 504 558 591 594 593 595 596 598	Changed sections on fuel content and fabrication, blowdown system, and RTDs. Additional changes consistent with RAIs received during license renewal	M. Rowe	W. Schuster	S. O'Kelly

Updating the SAR



Implementation And Close-Out								
	Initial	Date		Initial	Date		Initial	Date
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Next Steps

- Revision to Document Control Plan
- Procedural Controls for Document Release
- More Safety Analysis Report Updates
  - Expansion projects
  - Upcoming outage
  - Future Conversion to Low-Enriched Uranium Fuel

Contact

- William Schuster
  william.schuster@nist.gov
  (301) 975-2380