

How to Qualify “Otherwise Acquired” Software

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Subtask Team

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Contributions, Coordination, and Input

- Paul Nielsen, INL
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Subtask Team Purpose & Scope

- Provide guidance for qualifying “otherwise acquired” software
 - Terminology differs depending on version year of NQA-1 in use
 - Otherwise acquired software evaluation
 - Commercial Grade Dedication (CGD)

Subtask Team Purpose & Scope

- Provide an outline of the process
- Does NOT include development of a generic procedure



Status of Subtask

- April 2022 – Initial draft whitepaper submitted to task team and procurement engineering group
- Review, comment evaluation, and resolution in progress
- Complete subtask by July 2022

NQA-1 “Otherwise Acquired” Software

- Qualification of “otherwise acquired” software under NQA-1-2000 through 2008
 - NQA-1, Subpart 2.7, para. 302
 - Identify capabilities and limitations
 - Identify test plans and test cases to demonstrate the capabilities within the limitations
 - Provide instructions for use within the limits

NQA-1 “Otherwise Acquired” Software

- Qualification of “otherwise acquired” software under NQA-1-2008/2009a through 2019
 - Commercial Grade Dedication (CGD)
 - CGD is an acceptance method which can be used for items, services, and software in a safety-related application
 - Method 1, Testing is generally used for software
 - Methods 2, 3, and 4 can be used depending on circumstances
 - NQA-1, Subpart 2.7, para. 302 along with Subpart 2.14
 - Identification of the capabilities and limitations for intended use as critical characteristics
 - utilization of test plans and test cases as the method of acceptance to demonstrate the capabilities within the limitations

Narrative Outline

- Determine usage
- Plan your work
- Develop acceptance requirements
- Implement the process
- Hardware which contains software



Narrative Outline

- Hardware which contains software
 - Review *Embedded Digital Device Considerations In Commercial Grade Dedication*, John R. Hendricks, PE and Mike Wooldridge, Curtiss-Wright Nuclear
 - EFCOG White Paper, WP-2019-SAF-QA-SQA-001, *Firmware Software Quality Assurance Considerations*, Revision 0, 6/12/2019
- Existing Guidance
 - DOE
 - NRC
- Conclusion

Narrative Outline

- The draft whitepaper will contain four attachments
 - **Attachment 1** – Comparison of the differences in language for NQA-1-2000 to 2019, Subpart 2.7, Section 302 versions related to “otherwise acquired” software
 - **Attachment 2** – Three examples of commercial grade dedication plans for “otherwise acquired” software
 - **Attachment 3** – Example of software qualification plan for “otherwise acquired” software without commercial grade dedication
 - **Attachment 4** – Example test plan for “otherwise acquired” software without commercial grade dedication

Narrative Outline

- **Attachment 1** – Comparison of the differences in language for NQA-1-2000 to 2019, Subpart 2.7, Section 302 versions related to “otherwise acquired” software
 - A Table which highlights changes, additions, and deletions for the 8 versions of NQA-1 released between 2000 and 2019

Narrative Outline

- **Attachment 2** – Examples of commercial grade dedication plans for “otherwise acquired” software
 - 1.1 Safety and Hazard Analysis Software and Design Software, MACCS2 V 2.5
 - 1.2 Design Analysis Software, ANSYS Fluent Version 19
 - 1.3 Safety Management and Administrative Controls Software, Sentinel V 1.11

Narrative Outline

- **Attachment 3** – Software qualification plan for “otherwise acquired” code COMSOL, version 5.5
- **Attachment 4** – Software test plan for “otherwise acquired” code COMSOL, version 5.5

Questions

- Questions

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