



**Department of Energy**  
Washington, DC 20585

MEMORANDUM FOR INGRID KOLB  
DIRECTOR  
OFFICE OF MANAGEMENT

**JM CHRONOLOGY**

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THROUGH: KEVIN T. HAGERTY  
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SUBJECT: Notice of Intent to Develop a Page Change for Department of Energy  
Order 420.1C, *Facility Safety*

**PURPOSE:** This memorandum provides justification to make a page change to Department of Energy (DOE) Order (O) 420.1C, *Facility Safety*, to invoke revised DOE Standard (STD) 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Document*, as a required method. This page change will be strictly limited in scope to changes necessary to invoke DOE-STD-1104.

**JUSTIFICATION:** DOE-STD-1104 contains the Department's method and criteria for reviewing and approving nuclear facility's documented safety analysis (DSA). This review and approval formally document the basis for DOE, concluding that a facility can be operated safely in a manner that adequately protects workers, the public, and the environment. Therefore, it is appropriate to formally require implementation of the review methodology and criteria contained in DOE-STD-1104. In addition, the Department's Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2010-1, *Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers*, approved by the Secretary on September 26, 2011, includes an action to determine whether and how to invoke DOE-STD-1104 within the DOE regulatory framework. The attached regulatory options evaluation describes why a concise, simple page change to DOE O 420.1C is the preferred approach for invoking DOE-STD-1104.

The specific wording for the page change will be developed by a cross-disciplinary team including representatives from the affected program offices; which include the National Nuclear Security Administration and the Offices of Environmental Management, Nuclear Energy, and Science.

DOE-STD-1104 is in the process of being revised within the DOE Technical Standards Program. This revision will be made in parallel with the page change to DOE O 420.1C. As required per the



Technical Standards Program, the Office of Health, Safety and Security evaluated whether external consensus Standards were available for use in place of this DOE standard and given the unique aspects of DOE's safety analysis, and found that none were available.

**IMPACT:** The proposed directive does not duplicate existing laws, regulations, or national standards; and it does not create undue burden on the Department.

This page change will only apply to DOE Federal personnel, not DOE contractors. The Department already exclusively uses DOE-STD-1104 to review and approve safety basis documents. The proposed page change to DOE O 420.1C will formalize the expectation that DOE-STD-1104 shall be used by the Department personnel review and approval of safety basis documents. Therefore, the impact of this page change is minimal and should not result in any additional expenditure or effort.

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Concur:  Nonconcur: \_\_\_\_\_ Date: 6-21-13

Attachments

*The DRB needs to have the opportunity to review the any changes to the Tech. Standard prior to its being involved in the order (and after).*

1. Regulatory Options Paper Best Approach for Invoking Department of Energy Standard 1104
2. Risk Identification and Assessment

The schedule for completing this page change will be affected by the schedule to develop, review, and approve the ongoing revision to DOE-STD-1104, and will aim to meet the nominal directives development schedule shown below. The development, review, and approval for the page change will be in parallel with that for the Technical Standard.

<b><u>Schedule</u></b>	<b><u>Days</u></b>
Draft Development	Up to 60 days
Review and Comment (RevCom)	30
Comment Resolution	30
Final Review	30
Total	150

**Regulatory Options Paper**  
**Best Approach for Invoking Department of Energy Standard 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Document***

**Issue:** Whether and how to invoke Department of Energy's (DOE) Standard (STD) 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Document*, within the DOE regulatory framework.

**Background:** DOE-STD-1104 contains the Department's method and criteria for reviewing and approving a nuclear facility's documented safety analysis (DSA). The Department's review and approval of the DSA formally documents the basis for DOE concluding that a facility can be operated safely in a manner that adequately protects workers, the public, and the environment. Therefore, it is important to clearly identify expectations for use of the review methodology and criteria contained in DOE-STD-1104. In addition, the Department's Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2010-1, *Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers*, approved by the Secretary on September 26, 2011, includes an action to determine whether and how to invoke DOE-STD-1104 within the DOE regulatory framework.

**Decision:** Based on evaluation of the regulatory options described below, the preferred approach is to invoke DOE-STD-1104 via a concise simple Page Change to DOE Order (O) 420.1C, *Facility Safety*.

**Options:** The following options were evaluated:

- Maintaining current status quo of not invoking DOE-STD-1104 in any existing DOE Order or Rule.
- Invoking DOE-STD-1104 via 10 Code of Federal Regulations (CFR) 830, Nuclear Safety Management, Sub Part B, *Safety Basis Requirements*.
- Converting DOE-STD-1104 into a stand-alone DOE Order.
- Developing a new DOE Order with the sole purpose of invoking DOE-STD-1104.
- Revising an existing DOE Order (such as DOE O 420.1C) to invoke the use of DOE-STD-1104.

**Discussion:** The current status quo is not a preferred option because there is no formal DOE requirement to use the methods and criteria described in DOE-STD-1104 in reviewing and approving safety basis documents. While DOE has no formal requirement for using the methods and processes in DOE-STD-1104, there are very strong expectations, and the Standard is broadly applied and used. The current framework of strong expectations without formal requirements leaves ambiguity as to the establishment of framework for ensuring adequate protection. Good regulatory processes would have the expectation formally adopted as a requirement.

DOE contractors are required by 10 CFR 830, Subpart B, to obtain DOE safety basis approval prior to facility operation, but 10 CFR 830 does not contain specific requirements addressing DOE review and approval. To clarify that DOE-STD-1104 is the required method, it must be

invoked by an appropriate means within the DOE system of rules and directives, or its requirements must be translated into formal requirements within the DOE system. As 10 CFR 830 generally addresses DOE review and approval, one option evaluated was to revise 10 CFR 830, Subpart B, to invoke DOE-STD-1104 or to set requirements on methods or approvals for reviewing and approving safety basis documents. However, this option is not preferred because DOE does not typically use rules to establish requirements on DOE Federal personnel. DOE directives (particularly DOE Orders) are the preferred means for establishing DOE requirements on DOE Federal personnel. Further, a revision to 10 CFR 830 would be a substantial undertaking, requiring significant resources and time that are not warranted if preferable alternatives exist.

Another approach considered was conversion of DOE-STD-1104 to a new stand-alone directive. A DOE Order is the preferred method to establish formal process requirements and responsibilities for Federal personnel related to DOE Federal review and approval of contractor documents. However, DOE-STD-1104 has a long history, being established in 1996, it has a specific training program and is already in wide use within the DOE community. Changes anticipated to be made to DOE-STD-1104, in accordance with the Department's 2010-1 Implementation Plan, can be accommodated without significant revisions to the DOE-STD-1104 content. In contrast, conversion of the Standard to a new stand-alone DOE Order would require significant rework of DOE-STD-1104 to meet the Order format requirements (per DOE Order 251.1C) and may have unintended consequences. The detailed technical criteria and review methodology makes it better suited for a Standard rather than an Order. Further, a complete rewrite of the Standard into an Order could result in a protracted rewrite/revision cycle. To ensure continuity of DOE-STD-1104 and its technical focus, and to avoid a significant work-effort that provides minimal or questionable added value, this option is not preferred.

This leaves the option of invoking DOE-STD-1104 as a required method in either a new or existing DOE directive (Order). DOE does not have an Order focused on review and approval of safety basis documents and development of DOE Safety Evaluation Reports. A new Order to invoke the Standard could be developed, however, such an Order would contain a single requirement to implement DOE-STD-1104. This option is not recommended.

In looking at existing DOE Orders, the one that most closely aligns with the development and approval of safety basis documents is DOE O 420.1C. In fact, this Order includes requirements for the use and development of safety basis documents (in accordance with DOE-STD-1189-2008, *Integration of Safety into the Design Process*). Adding a short phrase to invoke DOE-STD-1104 into DOE O 420.1C requirements and responsibilities should be relatively straightforward and efficient; and could be accomplished by a page change to DOE O 420.1C rather than a full revision. It preserves DOE-STD-1104 and its technical nature and it uses the DOE Order as an appropriate means for establishing formal requirements and responsibilities for DOE Federal personnel. It is the most efficient method in achieving the objective of formalizing the DOE-STD-1104 requirements. Also, a well-understood and well-established relief process is established by using the relief mechanism in DOE O 420.1C for exemptions and equivalencies (consistent with DOE O 251.1C, *Departmental Directives Program*), therefore, this is the preferred approach.

# Risk Identification and Assessment

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**Proposed Page Change to DOE Order 420.1C, *Facility Safety*, to invoke Department of Energy Standard 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Document as a required method*.**

<b>Risk</b>	<b>Probability</b>	<b>Impact</b>	<b>Risk Level</b>
<b>People</b>			
1. If DOE-STD-1104 is NOT invoked as a requirement in DOE O 420.1C, what is the risk that a failure will impact the well-being of an employee or the public?	Unlikely	Low to Medium	Minor to Moderate
<b>Mission</b>			
2. If DOE-STD-1104 is NOT invoked as a requirement in DOE O 420.1C, what is the risk that accomplishment of the Department's mission will be hindered?	Unlikely	Low to Medium	Minor to Moderate
<b>Assets</b>			
3. If DOE-STD-1104 is NOT invoked as a requirement in DOE O 420.1C, what is the risk that physical assets will be lost or damaged?	Rare	Low to Medium	Minor
<b>Financial</b>			
4. If DOE-STD-1104 is NOT invoked as a requirement in DOE O 420.1C, what is the risk that Department funds will be lost or become unavailable?	Rare	Low to Medium	Minor
<b>Customer and Public Trust</b>			
5. If DOE-STD-1104 is NOT invoked as a requirement in DOE O 420.1C, what is the risk that the Department will suffer damage to its credibility with the public or other stakeholders?	Unlikely	Low to Medium	Minor to Moderate

## Gap Analysis of Existing Risks and Controls

Laws	<ul style="list-style-type: none"><li>• Atomic Energy Act.</li></ul>
External Regulation	<ul style="list-style-type: none"><li>• Not Applicable.</li></ul>
DOE Regulation	<ul style="list-style-type: none"><li>• 10 CFR 830, <i>Nuclear Safety Management</i>.</li></ul>
DOE Orders	<ul style="list-style-type: none"><li>• DOE O 420.1C, <i>Facility Safety</i>.</li></ul>
Contract Controls	<ul style="list-style-type: none"><li>• Not Applicable (DOE-STD-1104 is for Federal employees only)</li></ul>
External Assessments	<ul style="list-style-type: none"><li>• DNFSB Recommendation 2010-1, <i>Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers</i>.</li></ul>

## Risk Mitigation Techniques

Risk Assessment for DOE O 420.1C, Proposed Page Change					
Risk/Opportunity	Risk Level	Potential Cost/Benefit	External Control(s)	Proposed Mitigation Technique	Internal Control (if needed)
Formalize to requirement for DOE personnel to use DOE-STD-1104 as the required method for reviewing and approving safety basis documents.	Medium	Expected Benefits: (1) Expectations will be clarified; (2) Requirements for DSA review and approval will be followed more consistently and completely; (3) Confidence will be increased that DOE review and approval of DSAs assures adequate protection of the public safety. (4) Public trust will be improved.	10 CFR 830	MITIGATION (via Detailed Performance Requirements), specifically:  Revise DOE-STD-1104; Add invoking requirement and DOE responsibilities	Presently none; a simple invoking requirement in DOE O 420.1C is needed.