UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 07, 2017

MEMORANDUM TO: Anthony T. Gody, Jr., Director
Division of Reactor Safety, Region II

FROM: Brian E. Holian, Acting Director **/RA/**
Office of Nuclear Reactor Regulation

SUBJECT: APPROVAL OF CHARTER FOR IMPROVING THE EFFECTIVENESS AND EFFICIENCY OF ENGINEERING INSPECTIONS

This memorandum approves the charter that describes the review of selected engineering inspections for the purpose of improving the effectiveness and efficiency of these inspections in the Reactor Oversight Process (ROP). All four Regional Administrators have also reviewed and concurred on this charter.

In February 2017, a working group consisting of experienced supervisors and inspectors was formed by the Director of the Office of Nuclear Reactor Regulation to conduct an assessment of the U.S. Nuclear Regulatory Commission (NRC) engineering inspections that verify the adequacy of facility design, operations, and testing and make recommendations on improving both the effectiveness and efficiency of the suite of engineering inspections within the ROP. The working group was tasked with the review of NRC engineering inspection procedures (IPs) to determine if gaps and/or overlaps of inspection areas exist. The working group will conduct a regional survey in CY 2017 to assess the efficiency and effectiveness of the recent changes made to engineering inspection procedures, IP 71111.21M, “Design Bases Assurance Inspection (Team);” IP 71111.21N, “Design Bases Assurance Inspection (Program);” and IP 71111.17T, “Evaluations of Changes, Tests, and Experiments.” The working group will also solicit and assess feedback from external stakeholders (public, industry, etc.) on any proposed changes to the engineering inspections.

You are requested to make periodic updates from the results of this effort to NRC management.

Finally, you are requested to document any planned recommendations for significant changes to the ROP engineering inspections.

Enclosure:
Charter

cc: D. Dorman, RI
C. Haney, RII
C. Pederson, RIII
K. Kennedy, RIV

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Accession Number: ML17172A620 ** Concurrence on the charter obtained by e-mail

OFFICE	Region II**	Region IV**	Region I **	Region III**
NAME	CHaney	KKennedy	DDorman	DRoberts
DATE	06/22/17	06/27/17	06/28/17	06/30/17
OFFICE	NRR/DIRS/IRIB:	NRR/DIRS/IRIB	NRR/DIRS	NRR
NAME	JIsom	SAnderson	CMiller	BHolian
DATE	07/25 /17	07/26 /17	07/27/17	08/07/17

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CHARTER

REVIEW OF NRC INSPECTIONS THAT VERIFY SYSTEMS, STRUCTURES, AND COMPONENTS ARE CAPABLE OF MEETING THE FACILITY DESIGN AND LICENSING BASES

I. BACKGROUND:

The objectives of the staff in developing the various components of the Reactor Oversight Process were to provide tools for inspecting and assessing licensee performance in a manner that was more risk-informed, objective, predictable, and understandable than the previous oversight process. The Reactor Oversight Process (ROP) was developed to meet the four agency performance goals to: 1) maintain safety: 2) increase openness, 3) make NRC activities and decisions more effective, efficient, and realistic, and 4) reduce unnecessary regulatory burden. Where possible, the staff sought to identify performance indicators (PIs) as a means of measuring the performance of key attributes in each of the cornerstone areas. Where a PI could not be identified, or where a PI was identified but was not sufficiently comprehensive, or when a PI provided no insight on potential latent conditions, the staff identified a baseline inspection activity. The areas inspected were derived based on risk insights, operating experience, deterministic analyses, and regulatory requirements. Specifically, the baseline inspections requiring engineering expertise focused on attributes such as design, protection against external events, configuration control, and equipment performance. These inspections are important from the perspective that they are the only inspections that: 1) independently verify the capability of systems to operate consistent with deterministic and PRA models; 2) independently verify that the licensee adequately considered defense in depth for potential common mode failure and external events; and 3) independently verify that barriers remain sufficiently robust. The basis for the inspection program is Inspection Manual Chapter (IMC) 0308 and each specific engineering inspection is discussed in IMC 0308 Attachment 2.

The ROP was constructed with a number of baseline inspection procedures that provide independent verification that structures, systems, and components are operated, modified, and maintained in a condition that ensures their ability to perform their design functions during design basis and external events with reasonable assurance. Since the 90s, the NRC has conducted many different types of inspections focusing on this independent verification. Over time, these inspections have shifted from a verification of original plant design adequacy (a functional system inspection) to an inspection increasingly focused on the maintenance of design and licensing bases function. This shift in focus was due, in part to the fact that some of the same systems, structures, and components had been inspected previously. As nuclear power plants age, as more equipment become obsolete, as the environment in which SSCs are operated change (plant operation beyond 40-years, equipment replacement, electrical power reliability, etc.) the focus of NRC design verification inspections can shift to the latest design challenges and licensing bases functionality. In addition, with enhanced risk assessment tools, this focus can be more risk-informed. For example, NRC engineering inspections conducted during the period of extended operation following a license renewal (focusing on time limiting aging analyses, aging management programs, etc.) will be included in this effort.
The inspections within the scope of this charter are split into two general groups. First, the baseline inspections implemented by region-based engineering inspectors which focus heavily on the adequacy of engineering analysis and compliance with Codes, Standards, and the facility licensing bases. Second, the remaining inspections that involve engineering aspects which are conducted by resident inspectors and focus on verifying that the facility design bases are

adequately translated into plant operations and testing for which it is more suitable to directly inspect activities as they occur at the facility.

Six engineering inspections performed by regional specialists are:

- IP 71111.05T, “Fire Protection (Triennial)” or IP 71111.05XT, “Fire Protection-NFPA 805 (Triennial)”
- IP 71111.07, “Heat Sink Performance”
- IP 71111.08, “Inservice Inspection Activities”
- IP 71111.17T, “Evaluations of Changes, Tests, and Experiments”
- IP 71111.21M, “Design Bases Assurance Inspection (Team)”
- IP 71111.21N, “Design Bases Assurance Inspection (Program)”

In FY 2016, the NRC added Design Bases Assurance (DBA) Inspection (Program), IP 71111.21N, to its baseline inspection program. This change allowed periodic inspection of licensee’s implementation of key engineering programs important to safety. To maintain the overall level of inspection effort in the engineering inspection area, changes in scope were made to DBA inspection (Team), IP 71111.21M, and to IP 71111.17T, “Evaluation of Changes, Tests, and Experiments,” inspection. The NRC continues to receive early and mixed feedback on these inspection procedure changes from NRC inspectors and the industry. Part of the staff effort for this charter will be to conduct a survey to assess more thoroughly the recent changes to these inspections.

In addition to these six inspections, resident inspectors perform inspections in engineering areas associated with IP 71111.12, “Maintenance Effectiveness,” and IP 71111.18, “Plant Modifications.”

II. PURPOSE:

In February 2017, a working group consisting of experienced supervisors and inspectors was formed by the Director of the Office of Nuclear Reactor Regulation to conduct an assessment of the NRC inspections that verify the adequacy of facility design, operations, and testing and make recommendations on improving both the effectiveness and efficiency of the suite of engineering inspections within the ROP. Accordingly, the working group will review NRC IPs and determine if both gaps and overlap exist. Additionally, the working group will conduct a regional survey in CY 2017 based on a request to assess the efficiency and effectiveness of the

recent changes made to engineering Inspection procedures, IP 71111.21M, -.21N and -.17T. Finally, the working group will solicit and assess feedback from external stakeholders (public, industry, etc.).

III. TASKING:

A. Validate and document the bases for performing all the baseline NRC Inspection Procedures (IPs) accomplished by both region based and resident inspectors that provide independent verification that structures, systems, and components can perform their design functions during design basis and external events with reasonable assurance. The following IPs are included in the scope of review:

- IP 71111.05T, “Fire Protection (Triennial)” or IP 71111.05XT, “Fire Protection-NFPA 805 (Triennial)”
- IP 71111.07, “Heat Sink Performance”
- IP 71111.08, “Inservice Inspection Activities”
- IP 71111.12, “Maintenance Effectiveness,”
- IP 71111.17T, “Evaluations of Changes, Tests, and Experiments”
- IP 71111.18, “Plant Modifications,”
- IP 71111.21M, “Design Bases Assurance Inspection (Team)”
- IP 71111.21N, “Design Bases Assurance Inspection (Program)”

B. Assess the IPs identified in Step A for gaps, if any, in inspection coverage based on an assessment of all engineering activities potentially affecting an NRC licensed operating reactor and areas of overlap or redundancy taking into consideration current operating experience and risk insights.

C. Determine if more efficient and effective ways exist to accomplish agency goals. Consider, as a minimum, the following:

1. overlap areas between the IPs
2. gaps in the IPs,
3. inspection structure:
   a. team composition and expertise
   b. team size,
   c. schedule and duration
   d. frequency

D. Develop recommendation for changes to current baseline NRC IPs including overall triennial framework. For each recommendation identify the pros and cons of implementation. Consider the following aspects as applicable:

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1. Mission impact (degree to which the option would deliver confidence that cornerstone objectives are met in support of reasonable assurance of adequate protection)
2. Rigor and independence of NRC inspection conclusions
3. Assess proper NRC expertise and depth of specialists
4. Resident and regional inspector staffing
5. Impact on regional ability to respond to events and emergent issues
6. Evaluation of contracting options/flexibility
7. Whether engineering inspections can be conducted on a “graded approach”

E. Gather feedback from internal and external stakeholders and consider that feedback in the option paper. In addition, conduct a survey of NRC inspectors who have implemented the new 71111.21M, .21N, and 17T inspection procedures and consider their feedback. If any additional options are incorporated, fully document the pros and cons of those options using the criteria in Item D above.

F. Finalize the option paper and conduct stakeholder briefings. The goal of the position paper briefing is to ensure stakeholders are aware of comment resolution, recommendations and the bases.

G. Develop a recommendations paper and attend management meetings.

H. Working Group Guidance:

Process:

1. Come to an agreement on the purpose for performing engineering inspections
2. Identify IPs which directly support the purpose for performing engineering inspections
3. For those IPs which directly support the purpose for performing engineering inspections
   a. Identify areas of overlap between engineering IPs
   b. Identify gaps in the engineering IPs
   c. Recommend inspection structure which includes:

      1) Team composition and expertise
      2) Team size
      3) Inspection schedule and duration
      4) Inspection frequency

4. The working group chairman will develop conclusion and recommendations from the review which includes specific recommendations which will improve the effectiveness or efficiency of the engineering inspections within the scope of this effort.

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5. The plan for collaboration with stakeholders and the timeline for implementation are shown in the schedule below.

IV. CHAIR FUNCTIONS

- Schedule and lead meetings
- Ensure minutes are prepared and action item tracking
- Circulate draft products to members for review
- Notify responsible managers of Charter modifications.
- Provide periodic status brief to the NRR Office Director and the Regional Administrators on the progress and status of this engineering review (e.g., at the Deputy EDO Direct Reports (DEDR) quarterly meetings.)

V. HOLISTIC REVIEW GROUP MEMBERSHIP

Tony Gody, Region II/Director, DRS. .....(404) 997-4600
Jim Isom, NRR/DIRS/IRIB (Chair) .....(301) 415-1109
Mel Gray (Region I/DRS, EB1 Chief) .....(610) 337-5209
Glenn Dentel (Region I/DRS, EB2 Chief).....(610) 337-5233
Jonathan Bartley (Region II/DRS, EB1 Chief).....(404) 997-4607
Shakur Walker (Region II/DRS, EB3 Chief) .....(404) 997-4639
Mark Jeffers (Region III/DRS, EB2 Chief).....(630) 829-9798
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Tom Farnholtz (Region IV/DRS, EB1 Chief) .....(817) 200-1243
Heather Jones, NRR/DLR/RPGB.....(301) 415-4054

VI. DURATION

The charter will remain in place until the SECY paper is completed.

VII. LEVEL OF EFFORT

Periodic meetings (or teleconferences) of the working group will be coordinated approximately monthly by the chair. These meetings may be slightly more frequent during project startup and wrap-up. In addition, one or two public meetings may be scheduled. These meetings may require travel to either Headquarters or to one of the regional offices. Active participation and meeting attendance is expected of members.

VIII. CHARTER MODIFICATIONS

The Holistic Engineering Review Group will obtain approval from Director, NRR and concurrences from all Regional Administrators prior to making substantive change to the charter tasking or desired outcome.

Activity (Within Scope of Charter)	Start Date	Target Date
Issue Charter	**4/3/2017**	**6/5/2017**
Conduct Public Meeting #1 to discuss the NRC Charter, communicate the plan for collaboration, and future meetings	**6/6/2017**	**Complete**
All stakeholder input regarding option recommendations with pros and cons due in writing to Jim Isom		9/29/2017
Conduct Public Meeting #2 to discuss use of industry self-assessments		10/10/2017
Develop draft NRC options paper (eliminate none) incorporating internal and external ideas. Develop public meeting slides to facilitate stepping through NRC options and stakeholder options. Brief Office Director / Regional Administrators on draft options.	8/21/2017	11/1/2017
Conduct Public Meeting #3 to discuss options or groups of options presented by stakeholders	9/26/2017	11/14-15/2017
Develop second draft NRC options paper (choose several options with pros and cons, justify the elimination of others). Develop public meeting slides. Brief Office Director / Regional Administrators on draft option paper and public meeting slides		11/28/2017
Conduct Public Meeting #4 to present the various options or grouping of options and their pros and cons, to facilitate discussion on NRC review of proposed options, to present NRC options that will be discussed in Commission Paper		12/12/2017
Develop draft recommendations paper	12/1/2017	2/15/2018
Brief Office Director / Regional Administrators on recommendations		3/1/2018
DIRS implements SECY approval process		4/1/2018