

Attachment 2
2/21/89

DRAFT TRANSMITTAL

To: P. M. Altomare

From: D. T. Romine, *DR/ARW*

Subject: Trade Studies and Recommended Approach for
Reorientation of PA Process

Attached for your review and comment is our initial submittal of analyses and the recommended solution to the principal Program Architecture concerns raised in the discussions of the past three weeks. The trade studies identify the various options considered in examining four (4) key questions related to the completion of the PA process, and cite the advantages and drawbacks of each. The "Center Preferred Option" is identified for each Key Question. These four preferred options are then consolidated into a comprehensive concept for reorientation of a portion of the PA process. An additional Key Question 2.1 (derived from Key Question 2, Option C) is included since it defines an approach for completing the mainstream PA process in the presence of major potential uncertainties.

An example of the proposed "complete proof of compliance logic structure" (including both the Regulatory Elements of Proof and the Technical Components of Proof) will follow as we discussed.

With your concurrence, we will set about incorporating in the applicable Technical Operating Procedures the attached concept plus inputs from the NRC and Center "Lessons Learned".

KEY QUESTION 1: LOCATION OF TECHNICAL COMPONENTS OF PROOF

OPTION A: IN FIELD 15 WITH REGULATORY ELEMENTS OF PROOF

-ADVANTAGES-

Provides visibility of the regulatory and technical Compliance Demonstration requirements in one field (All "WHAT"s in same field)

Permits display of the complete proof of compliance logic in one integrated structure

Eliminates perception of "no added value" caused by stand-alone Regulatory EPs

Provides consolidated input for the Format and Content Guide

-DRAWBACKS-

None, if the Regulatory Elements of Proof and the Technical Components of Proof (TCP) are clearly distinguishable:

- Regulatory EP in all-caps followed by Regulatory Text citation(s);

- TCP in lower-case followed by "(TECHNICAL COMPONENT OF PROOF)"

CENTER PREFERRED OPTION

NOTE: Options A and B both recognize OGC terminology concerns, and both allow the display of PURL apart from other information.

KEY QUESTION 1: LOCATION OF TECHNICAL COMPONENTS OF PROOF

**OPTION B: SEPARATED FROM REGULATORY ELEMENTS OF PROOF
(IN NEW FIELD OR WITH COMPLIANCE DETERMINATION METHOD)**

-ADVANTAGES-

Regulatory Elements of Proof and Technical Components of Proof are clearly distinguishable (in separate displays)

-DRAWBACKS-

Regulatory and technical Compliance Demonstration requirements are divided ("WHAT"s are split between two fields)

If all-caps and citations are unacceptable in distinguishing between Regulatory Elements of Proof and Technical Components of Proof, the proof of compliance logic structure must be split into two or more parts

Perpetuates perception of "no added value" caused by stand-alone Regulatory EPs

Provides fragmented input for the Format and Content Guide

NOTE: Options A and B both recognize OGC terminology concerns, and both allow the display of FURL apart from other information.

KEY QUESTION 2: CONDITIONS FOR COMPLETION OF 22-STEP PROCESS

OPTION A: REGARDLESS OF NUMBER OR SIGNIFICANCE OF UNCERTAINTIES

-ADVANTAGES-

Judgement of significance or importance of known and potential Uncertainties not required

Permits completion of all PA process steps for all Regulatory Requirements

-DRAWBACKS-

Requires low-confidence prediction of Uncertainty reduction outcomes for:

- significant individual rulemaking changes (e.g., GWTT, Anticipated/unanticipated processes)

AND

- less significant rulemaking changes

AND

- other potential Uncertainty reductions

Substantial risk of work loss due to actual impact(s) of significant or multiple Uncertainty reductions

May lead to expectation that multiple resolution paths/schemes will be developed and displayed

KEY QUESTION 2: CONDITIONS FOR COMPLETION OF 22-STEP PROCESS

OPTION B: NOT MORE THAN ONE KNOWN OR POTENTIAL UNCERTAINTY

-ADVANTAGES-

Judgement of significance or importance of known and potential Uncertainties not required

Permits completion of all PA process steps for most Regulatory Requirements

-DRAWBACKS-

Requires moderate-to-low-confidence prediction of Uncertainty reduction outcome for:

- significant individual rulemaking change (e.g., GWTT, Anticipated/unanticipated processes)
- OR
- individual less-significant rulemaking change
- OR
- other individual potential Uncertainty reduction

PA process interrupted for Regulatory Requirements with multiple (possibly significant) Uncertainties

Moderate risk of work loss due to actual impact of individual Uncertainty

KEY QUESTION 2: CONDITIONS FOR COMPLETION OF 22-STEP PROCESS

**OPTION C: NO KNOWN OR POTENTIAL RULEMAKING UNCERTAINTIES;
NOT MORE THAN ONE LESS-SIGNIFICANT UNCERTAINTY**

-ADVANTAGES-

Requires prediction of outcome
for only one less-than-rule-
making potential Uncertainty
reduction

Permits completion of all
PA process steps for most
Regulatory Requirements

Minimum risk of work loss due
to actual impact of one less-
than-rulemaking Uncertainty
reduction

-DRAWBACKS-

Requires judgement of whether
each potential Uncertainty is
likely to be selected for
rulemaking

PA process interrupted for
Regulatory Requirements with
most significant and/or
multiple Uncertainties

CENTER PREFERRED OPTION

KEY QUESTION 2: CONDITIONS FOR COMPLETION OF 22-STEP PROCESS

OPTION D: NO REGULATORY OR INSTITUTIONAL UNCERTAINTIES

-ADVANTAGES-

Judgement of significance or importance of Uncertainties not required

Prediction of outcome(s) of Uncertainty reduction not required

No risk of work loss due to impact of Uncertainty reduction

-DRAWBACKS-

PA process is interrupted for the majority of Regulatory Requirements

**KEY QUESTION 3: BASIS FOR PA PROCESS COMPLETION WHEN REG/INST
UNCERTAINTY IS PRESENT**

OPTION A: THE EXISTING RULE

-ADVANTAGES-

Planned activities have a
basis in law

-DRAWBACKS-

Basis for planned activities
has high likelihood of being
changed (possibly signifi-
cantly), with (potentially)
substantial work loss

**KEY QUESTION 3: BASIS FOR PA PROCESS COMPLETION WHEN REG/INST
UNCERTAINTY IS PRESENT**

OPTION B: THE POSTULATED UNCERTAINTY REDUCTION LANGUAGE (PURL)

-ADVANTAGES-

Reduces work loss to acceptable
level given a well-founded PURL

-DRAWBACKS-

Planned activities no longer
have a basis in law

**NOTE: This option, in combination with Question 2, Option C,
would minimize overall work loss.**

CENTER PREFERRED OPTION

KEY QUESTION 4: UNCERTAINTY REDUCTION METHOD SELECTION PROCESS

**OPTION A: INTERRUPT PA PROCESS; AWAIT COMPLETION OF
PRIORITIZATION/
RANKING CYCLE BY THE NRC.**

Specifically:

1. Center would define desired NR outcome, identify and evaluate alternate methods, assess attributes
2. Center and/or NRC would rank Uncertainty (given a datum population of Uncertainties)
3. NRC would assign weights (value judgements) to the attributes, determine rank ordering and select reduction method
4. Center would complete activity planning

-ADVANTAGES-

Avoids perception that the Center is making decisions re specific UN Reduction Method (e.g., rulemaking)

Minimum likelihood of change in scope of reduction activities with resulting loss of planning work

-DRAWBACKS-

Maximum delay in completion of UN Reduction planning

KEY QUESTION 4: UNCERTAINTY REDUCTION METHOD SELECTION PROCESS

OPTION B: CONTINUE PA PROCESS ON BASIS OF PRELIMINARY, QUICK-RESPONSE SELECTION BY THE NRC. Specifically:

1. Center would define desired NR outcome, identify and evaluate alternate methods, assess attributes
2. Center would define preliminary Uncertainty rank (given a datum population of Uncertainties)
3. NRC would assign weights (value judgements), or would direct Center to assume equal weights, for the attributes, determine UN rank ordering and select reduction method
4. Center would complete activity planning

-ADVANTAGES-

Avoids perception that the Center is making decisions re specific UN Reduction Method (e.g., rulemaking)

Minimum delay in completion of UN Reduction planning

-DRAWBACKS-

Moderate risk of loss of planning work due to later change in scope of UN reduction activities

CENTER PREFERRED OPTION

KEY QUESTION 4: UNCERTAINTY REDUCTION METHOD SELECTION PROCESS

OPTION C: CENTER MAKE PRELIMINARY SELECTION AND CONTINUE WITH DEVELOPMENT OF UNCERTAINTY REDUCTION PLANNING

-ADVANTAGES-

No delay in completion of UN Reduction planning

-DRAWBACKS-

Allows perception that Center is making decisions re specific UN Reduction Method (e.g., rulemaking)

Maximizes risk of work loss

KEY QUESTION 2.1: COMPLETION OF 22-STEP PROCESS IN PRESENCE OF:

- ONE OR MORE RULEMAKING UNCERTAINTIES
- TWO OR MORE LESS-SIGNIFICANT UNCERTAINTIES

APPROACH: JOINT NRC-CENTER DEVELOPMENT OF --

- PURL(S) FOR RULEMAKING UNCERTAINTIES
- "EXPECTED OUTCOME(S)" OF NR FOR LESS-SIGNIFICANT UNCERTAINTIES

-ADVANTAGES-

Permits completion of 22-step process with minimum delay

Process of jointly developing PURLs and/or multiple "expected outcomes" of NR allows NRC management to assess risks associated with completion of PA process mainstream in presence of major Uncertainties

In general, risk of work loss is expected to be acceptable in comparison with program risks that could be produced by not completing planning

-DRAWBACKS-

Requires judgement of whether each potential Uncertainty is likely to be selected for rulemaking

Requires moderate-to-low-confidence prediction of Uncertainty reduction outcome for:

- significant individual rulemaking change (e.g., GWTT, Anticipated/unanticipated processes) OR
- individual less-significant rulemaking change AND/OR
- multiple less-than-rule-making potential Uncertainty reductions

RECOMMENDED REORIENTATION OF PA PROCESS
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CONCEPT

This approach includes in Field 15 both the Regulatory Elements of Proof and the Technical Components of Proof (i.e., what must be proven to show technical adequacy of the evidence offered in a Compliance Demonstration). These two segments of the overall proof of compliance would be distinguished from one another as follows: Regulatory Elements of Proof would be entered in upper-case (all-caps) followed by their Regulatory Text citation(s); Technical Components of Proof would be entered in lower-case followed by "(TECHNICAL COMPONENT OF PROOF)".

Field 15, including the proof of compliance logic structure, would be completely developed if there are (1) no Uncertainties presently planned for reduction by rulemaking, (2) no potential Uncertainties that have a high likelihood of being selected for rulemaking, and (3) not more than one less-significant potential Regulatory or Institutional Uncertainty. In order to develop the complete proof of compliance logic, it may be necessary for the Center to assume an outcome for the single non-rule-making Uncertainty reduction [permitted by criterion (3)]. If so, that assumed outcome would be fully described in the Notes for Field 15. This includes discussion of the viable alternative assumptions and the rationale for the selection made.

If the above criteria are not met, development beyond Field 15 would be interrupted due to the broad range of possible Uncertainty reduction outcomes for individual Uncertainties that are candidates for rulemaking or for multiple less-significant Uncertainties. One of the following two courses of action would then be chosen:

- (1) In cases where rulemaking is presently planned or is a likely reduction method, the Postulated Uncertainty Reduction Language [for only the affected Regulatory Text(s)] would be jointly developed by the NRC and the Center, and presented in section h of Field 39 (NRC Uncertainty Reduction Methods). The Database would be structured so that the Postulated Uncertainty Reduction Language (PURL) could be displayed apart from other information.
- (2) In cases where Regulatory Requirement analysis identifies two or more potential Uncertainties for which rulemaking is unlikely, the expected outcomes of Uncertainty Reduction would be jointly developed by the NRC and the Center. These expected outcomes and the associated rationales would be discussed in the Notes for Field 15.

Development of the balance of the Database input information (PA process steps 4 through 22) would then proceed on the basis of (1) in the first case, the PURL(s), or (2) in the second case, the existing rule(s) as clarified, interpreted or guided in the "expected outcomes" of Uncertainty Reduction.

Field 39 would be reoriented to emphasize the desired outcome of the Uncertainty Reduction and alternative reduction methods, rather than the application of a specific reduction method (such as rulemaking). The Center would assign the appropriate attributes to (i.e., "rank") the Uncertainty(ies) without value judgements (i.e., with equal weighting). The NRC would then assign weights for the attributes, determine the Uncertainty rank ordering, and select the reduction method. Field 40 (NRC Uncertainty Reduction Method Code) would then be completed.

ADVANTAGES

- o Provides visibility of the regulatory and technical Compliance Demonstration requirements in one field (i.e., all "WHAT"s in the same field)
- o Permits display of the complete proof of compliance logic in one integrated hierarchical structure
- o Eliminates perception of "no added value" caused by stand-alone Regulatory Elements of Proof
- o Recognizes OGC concerns and is consistent with new agreed upon terminology
- o Provides a consolidated input for the Format and Content Guide
- o Allows NRC to retrieve and display the Postulated Uncertainty Reduction Language separately from other information
- o Allows low-risk completion of the 22-step PA process by the Center in the presence of a single potential Regulatory or Institutional Uncertainty that is an unlikely candidate for rulemaking (permits completion of most Regulatory Requirements)
- o Allows somewhat higher-risk completion of the process based on the approved FURL if there is a candidate for rulemaking and/or on the approved "expected outcomes" of Uncertainty reduction if there are two or more other potential Uncertainties.
- o Minimizes delays in the completion of Uncertainty reduction planning while also minimizing the risk of work loss
- o Avoids appearance of assumption or recommendation of a specific Uncertainty Reduction Method by the Center