

## **Options for Enhancing the Fuel Cycle Oversight Process**

The U.S. Nuclear Regulatory Commission (NRC) staff has developed three options for Commission consideration to enhance the fuel cycle oversight process (FCOP). This enclosure provides descriptions of these options.

Option 1 is an FCOP that incorporates the concepts of cornerstones, a fuel cycle significance determination process (FCSDP) and, in the performance assessment process, an action matrix based on the results of the FCSDP. The oversight framework under Option 1 would apply to licensees with an effective corrective actions program (CAP). A conceptual diagram of Option 1 is shown in Figure 1, and the elements of this option are described in pages 2 and 3.

Option 2 is an FCOP without cornerstones or an FCSDP. Traditional enforcement is used to assess the severity level of inspection findings, and the action matrix is based on traditional enforcement results. As with Option 1, the Option 2 oversight framework would apply to licensees with an effective CAP. A conceptual diagram of Option 2 is shown in Figure 2, and elements of this option are described in pages 5 and 6.

Option 3 is the current oversight process with minor or incremental improvements, such as incorporation of an effective CAP and improvements to the licensee performance review process. Because Option 3 is the current process, its elements are not described in this enclosure. A diagram of the current process is shown in Figure 3.

Table 1, in page 9 of this enclosure, provides a summary of the differences among three Options.

## Description of Option 1

### Cornerstones

Under Commission direction (i.e., the staff requirements memorandum to SECY-10-0031, "Revising the Fuel Cycle Oversight Process," dated August 4, 2010), the NRC staff developed cornerstones that could be applied to the FCOP. The cornerstones would inform the NRC staff about the important elements that need to be measured (i.e., objectives) in order to fulfill the NRC's mission. The NRC's mission is to license and regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment. In Enclosure 2, the staff proposes two sets of cornerstones (hazards analysis based and operations based) that could be applied to the FCOP.

### Core Inspection Program

The NRC staff verifies through inspection that the cornerstone objectives are met. The core inspection program contains inspection procedures that inspectors use to verify that licensees or certificate holders are operating safely, securely, and in compliance with NRC regulations and license or certificate conditions. Compliance with NRC regulations and license or certificate conditions normally gives reasonable assurance that the NRC's mission is fulfilled. The core inspection program represents the minimum level of inspection to assess licensee or certificate holder performance. As part of the enhancements to the FCOP, the cornerstones would be used to risk-inform the inspection procedures in the current core inspection program.

### Inspection Results

The NRC would screen inspection results to determine whether any criteria for traditional enforcement apply. Traditional enforcement would be applied to issues associated with (1) actual safety consequences, (2) the potential for impacting the NRC's ability to perform its regulatory function, or (3) willfulness. If the criteria for traditional enforcement do not apply to the inspection result, the NRC would determine whether the result is a performance deficiency<sup>1</sup>. If the inspection result is not a performance deficiency, NRC action would not normally be warranted. If the inspection result is a performance deficiency, then the NRC staff would use a screening process that includes a set of screening questions and examples to determine whether the performance deficiency is greater than minor. If the performance deficiency is not greater than minor, the minor performance deficiency would be handled by the licensee in its CAP and would not normally be documented in the inspection report. If the performance deficiency is greater than minor, then the performance deficiency would become an inspection finding that would be processed through the FCSDP to assess its safety or security significance.

---

<sup>1</sup> Inspector Manual Chapter 0612 defines performance deficiency as, "An issue that is the result of a licensee not meeting a requirement or standard where the cause was reasonably within the licensee's ability to foresee and correct, and therefore should have been prevented. A performance deficiency can exist if a licensee fails to meet a self-imposed standard or standard required by regulation, thus a performance deficiency may exist independently of whether a regulatory requirement was violated." The staff notes that the performance deficiency definition is an ongoing discussion with fuel cycle licensees.

### Fuel Cycle Significance Determination Process

As described in Enclosure 3, the staff considered three conceptual types for an FCSDP (qualitative, case-by-case, and probabilistic risk assessment-based) and recommends developing the qualitative type FCSDP to assess the safety or security significance of inspection findings in a more objective, predictable, and transparent manner than the current oversight process. The results of the FCSDP would be categorized into four levels in accordance with their safety or security significance. The significance levels are very low, low to moderate, substantial, and high. The NRC Enforcement Policy would need to be further revised to incorporate the FCSDP.

### Performance Assessment Process

The FCSDP results would be considered in the performance assessment process. The performance assessment process would include continuous and periodic reviews, a fuel cycle action matrix, and consideration of the cross-cutting areas used in the Reactor Oversight Process (informed by the Safety Culture Policy Statement). The fuel cycle action matrix would contain predetermined NRC actions depending on the significance of inspection findings during an evaluation period. Agency actions would include, but would not be limited to, supplemental inspections. The categorization of the regulatory response from the fuel cycle action matrix would serve as input to the continuous and periodic reviews. This would make the performance assessment process more performance based, transparent, and predictable.

### Supplemental Inspections

Supplemental inspections would be initiated based on past inspection findings that were evaluated to have a low-to-moderate significance or greater using the FCSDP. The supplemental inspections would be predetermined in accordance with the fuel cycle action matrix. These inspections would provide more diagnostic inspections (cause-determining) of identified problems and issues beyond the core inspections. The NRC staff would develop supplemental inspection procedures (IPs) similar to IP 95001, 95002, and 95003.

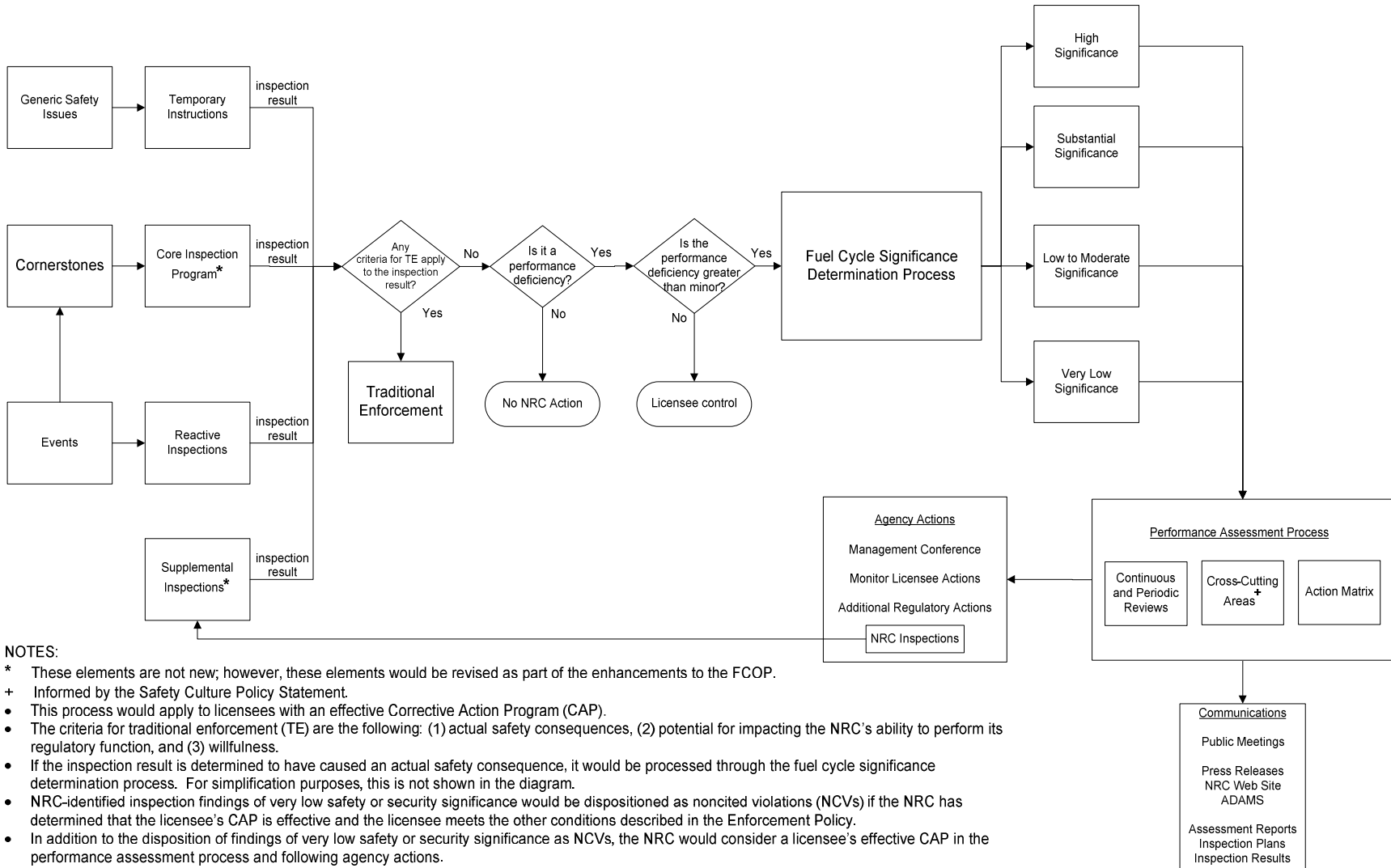
### Events and Reactive Inspections

Reactive inspections are initiated as a result of an event that had actual or potential safety significance. The focus on reactive inspections is how the event affects the objectives of the cornerstones. If there are inspection results, they would follow the same path as inspection results from the core inspection program.

### Generic Safety Issue Inspections

Generic safety issue inspections are initiated when it is determined that a safety issue addressed in a bulletin, generic letter, Nuclear Energy Institute (NEI) initiative, or NEI program requires inspection verification or follow-up. The agency would develop the procedures and guidance for the inspection and issue them in a temporary instruction. If there are inspection results, they would follow the same path as inspection results from the core inspection program.

Figure 1 – Conceptual Diagram of Option 1



NOTES:

- \* These elements are not new; however, these elements would be revised as part of the enhancements to the FCOP.
- + Informed by the Safety Culture Policy Statement.
- This process would apply to licensees with an effective Corrective Action Program (CAP).
- The criteria for traditional enforcement (TE) are the following: (1) actual safety consequences, (2) potential for impacting the NRC’s ability to perform its regulatory function, and (3) willfulness.
- If the inspection result is determined to have caused an actual safety consequence, it would be processed through the fuel cycle significance determination process. For simplification purposes, this is not shown in the diagram.
- NRC-identified inspection findings of very low safety or security significance would be dispositioned as noncited violations (NCVs) if the NRC has determined that the licensee’s CAP is effective and the licensee meets the other conditions described in the Enforcement Policy.
- In addition to the disposition of findings of very low safety or security significance as NCVs, the NRC would consider a licensee’s effective CAP in the performance assessment process and following agency actions.

## Description of Option 2

### Core Inspection Program

The core inspection program contains inspection procedures that inspectors use to verify that licensees or certificate holders are operating safely, securely, and in compliance with NRC regulations and license or certificate conditions. Compliance with NRC regulations and license or certificate conditions normally gives reasonable assurance that the NRC's mission is fulfilled. The core inspection program represents the minimum level of inspection to assess licensee or certificate holder performance. The NRC staff would use what was learned from the cornerstone development effort to inform the core inspection program.

### Inspection Results

The NRC would evaluate an inspection result to determine whether it is a performance deficiency (defined on page 2). If the inspection result is not a performance deficiency, NRC action would not be normally warranted. If the inspection result is a performance deficiency, then the NRC staff would use a screening process that includes a set of screening questions and examples to determine whether the performance deficiency is greater than minor. If the performance deficiency is not greater than minor, the minor performance deficiency would be handled by the licensee in its CAP and would not normally be documented in the inspection report. If the performance deficiency is greater than minor, then the NRC would evaluate the performance deficiency to determine if it is a violation of regulatory, license, or certificate requirements. If the greater than minor performance deficiency is not a violation, then it would be considered in the performance assessment process. If the greater than minor significance is a violation, then it would be assessed for significance using the Enforcement Policy.

### Enforcement

Section 6.2 of the NRC Enforcement Policy provides examples of making severity level determinations of violations in fuel cycle operations for licensees with and without an integrated safety analysis. The staff currently uses the Enforcement Policy to properly reflect the safety or security significance of violations. To improve the predictability of this process, the staff plans to issue an Inspector Manual Chapter. This new chapter would provide guidance to inspectors on how to disposition violations in accordance with their safety significance.

### Performance Assessment Process

The results of the severity level determination would be considered in the performance assessment process. The performance assessment process would include continuous and periodic reviews, a fuel cycle action matrix and consideration of the cross-cutting areas used in the Reactor Oversight Process (informed by the Safety Culture Policy Statement). The fuel cycle action matrix would contain predetermined NRC actions depending on the severity level of violations during an evaluation period. Agency actions would include, but would not be limited to, supplemental inspections. The categorization of the regulatory response from the fuel cycle action matrix would serve as input to the continuous and periodic reviews. This would make the performance assessment process more performance based, transparent, and predictable.

### Supplemental Inspections

Supplemental inspections would be initiated based on past violations that were determined to be above a yet-to-be-determined threshold. The supplemental inspections would be predetermined in accordance with the fuel cycle action matrix. These inspections would provide more diagnostic inspections (cause-determining) of identified problems and issues beyond the core inspections. The NRC staff would develop supplemental IPs similar to IP 95001, 95002, and 95003.

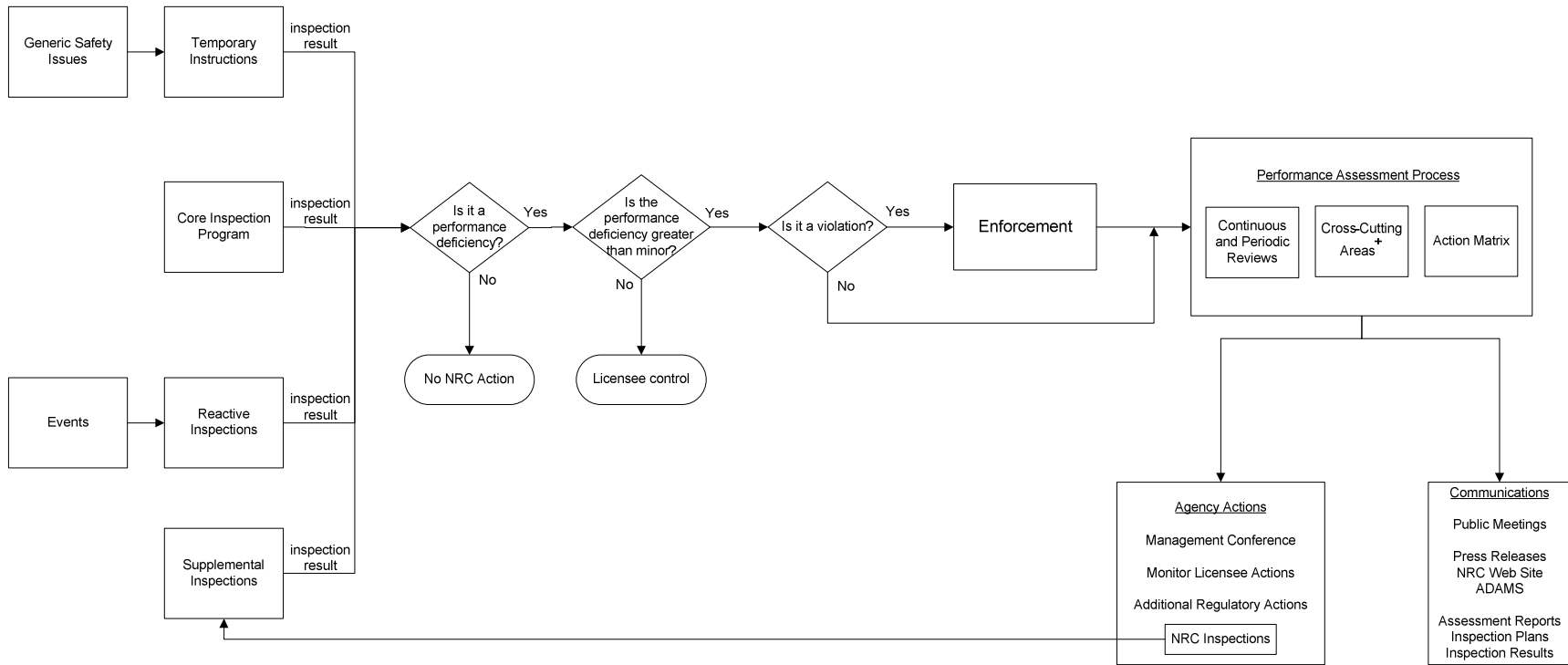
### Events and Reactive Inspections

Reactive inspections are initiated as a result of an event that had actual or potential safety significance. If there are inspection results, they would follow the same path as inspection results from the core inspection program.

### Generic Safety Issue Inspections

Generic safety issue inspections are initiated when it is determined that a safety issue addressed in a bulletin, generic letter, NEI initiative, or NEI program requires inspection verification or follow-up. The agency would develop the procedures and guidance for the inspection and issue them in a temporary instruction. If there are inspection results, they would follow the same path as inspection results from the core inspection program.

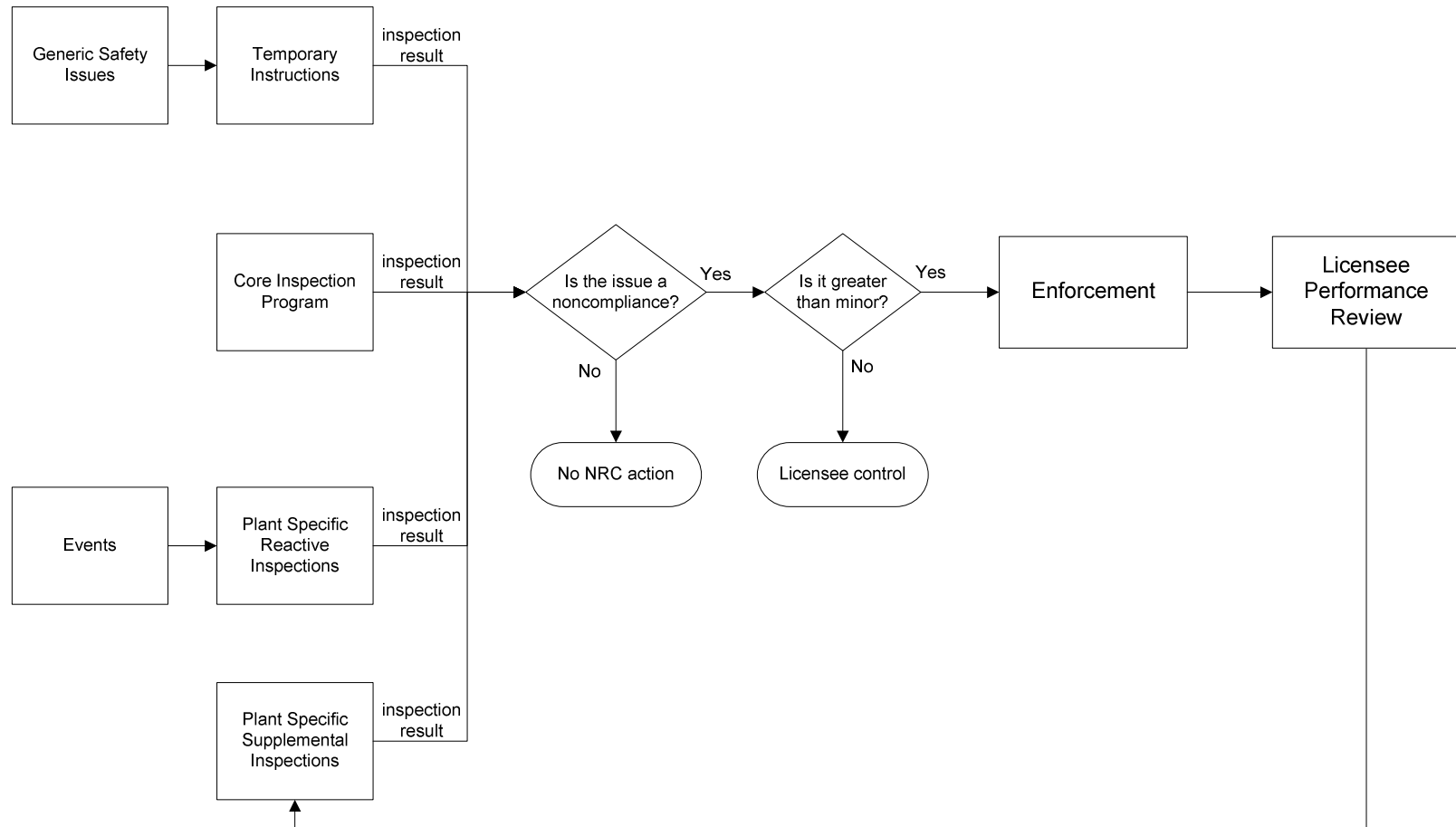
Figure 2 – Conceptual Diagram of Option 2



NOTES:

- + Informed by the Safety Culture Policy Statement.
- This process would apply to licensees with an effective Corrective Action Program (CAP).
- NRC-identified inspection findings of very low safety or security significance would be dispositioned as noncited violations (NCVs) if the NRC has determined that the licensee's CAP is effective and the licensee meets the other conditions described in the Enforcement Policy.
- In addition to the disposition of findings of very low safety or security significance as NCVs, the NRC would consider a licensee's effective CAP in the performance assessment process and following agency actions.

Figure 3 – Diagram of Current FCOP



NOTE:

- NRC-identified inspection findings of very low safety or security significance would be dispositioned as noncited violations if the NRC has determined that the licensee’s corrective action program is effective and the licensee meets the other conditions described in the Enforcement Policy.



Table 1 – Differences among the Three Options for Enhancing the FCOP

	<b>Option 1</b>	<b>Option 2</b>	<b>Option 3</b>
Credit for Effective Corrective Action Programs	Yes	Yes	Yes
Cornerstones	Hazards analysis based	No cornerstones	No cornerstones
Core Inspection Program	Risk-informed IPs (continuous improvement from cornerstones)	Use cornerstone development effort to improve IPs (no cornerstones to inform continuous improvement)	No changes from current program which includes periodic minor updates to IPs
Inspection Results	Screened for traditional enforcement and evaluated for performance deficiency	Evaluated for performance deficiency	Evaluated for noncompliance (no change from current program)
Fuel Cycle Significance Determination Process	Qualitative type	No FCSDP; instead use traditional enforcement with improved guidance	No FCSDP; instead use traditional enforcement with improved guidance
Performance Assessment Process	Action matrix based on FCSDP results and incorporate use of cross-cutting areas	Action matrix based on traditional enforcement results and incorporate use of cross-cutting areas	Current licensee performance review (LPR) with minor improvements
Supplemental Inspections	Based on action matrix; develop supplemental IPs similar to IP 95001, 95002, and 95003	Based on action matrix; develop supplemental IPs similar to IP 95001, 95002, and 95003	Based on LPR (no changes from current program)
Reactive Inspections	Focused on cornerstone objectives	No changes from current program	No changes from current program
Generic Safety Issue Inspections	No changes from current program	No changes from current program	No changes from current program