



FP

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Manual Actions

A Methodology for Assessing Feasibility

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Editors' note: This is a follow up article from the introduction last month. This article should be viewed as one approach to address a current issue.

The following are excerpts from Section 3.0 of, ARS Methodology, a recently completed "Manual Operator Actions Feasibility Review" performed by Appendix R Solutions (ARS). Readers are welcome to use any or all elements of this methodology. Readers are also encouraged to e-mail suggested enhancements to RonOates@appendixR.com.

Part I

3.1 Introduction

IP 71111.05, Enclosure 2 provides inspection criteria used by the NRC for determining the feasibility of manual operator actions. However, no industry guidance is currently available to plants for performing a feasibility review of its manual actions.

This section describes the methodology used by ARS in performing a Manual Operator Actions Feasibility Review. The ARS methodology was developed to address each of the basic criteria from IP71111.05. The methodology includes a "Feasibility Rating System" that establishes feasibility levels, a "Matrix for Assessing Inspection Criteria" used in assigning a feasibility level, and a "Collective Feasibility Rating System" for determining the collective significance of the individual criteria. In addition, a "Color Feasibility Matrix," similar to a performance indicator system, provides a graphical depiction of the manual operator actions feasibility assessment results.

The concepts of "challenges to the operator," "collective feasibility," and "feasibility enhancements" are key attributes of the ARS methodology and are described in detail in the paragraphs that follow.

An Access Database is used as a "tool" for documenting the feasibility review, for facilitating manipulation and analysis of the data, and in publication of the "Manual Operator Actions Feasibility Review" report.

Based on presentations made at the September 2003 NEI Fire Protection Information Forum, it is expected that the NRC will communicate additional clarifications concerning diagnostic instrumentation and time-critical manual actions, by the end of 2003 or early 2004.

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Section 3.0, Methodology concludes with recommendations for strengthening overall feasibility and acceptability of individual manual operator actions.

The following sub-sections describe the NRC inspection criteria and each of the elements of the ARS Methodology.

3.2 NRC Inspection Criteria from IP71111.05, Enclosure 2

[To conserve space, the criteria from IP71111 is not repeated in this article]

3.3 Feasibility Rating System

Feasibility Rating System consists of four levels of assessment ratings. The four levels are described below in Table 3-1:



Table 3-1, ARS Feasibility Rating System

| Feasibility Criteria Rating | Description | Color Rating |
|-----------------------------|--|--------------|
| Good | Meets regulatory requirements, routine activity, few obstacles, etc. | Green |
| Acceptable | Meets requirements, but adds additional burden or stress on the operator, even if minor. Certain programmatic enhancements may strengthen feasibility and assure the action will be successful (see paragraph 3.10). | Light-Green |
| Potentially Not Feasible | Feasibility may be challenged. May require corrective actions. | White |
| Not Feasible | Not Feasible. Requires corrective actions. | Yellow |

Note: See paragraph 3.9 when assessing the “collective feasibility” of multiple inspection criteria.

3.3.1 “Challenges to the Operator”

Challenges exist when an operator must do more, for example, than just walk into an area and operate a breaker. A “challenge to the operator” would not, in and of itself, cause a manual action to NOT be feasible. It should be emphasized that this situation is normal, completely acceptable, and meets regulatory requirements. However, understanding the concept “challenges to the operator” is important in assessing “collective feasibility. The concept of “collective feasibility” is discussed, below, in Section 3.9.

Examples of “challenges to the operator” are provided below to illustrate the concept:

- Special Key is required to access the area or room (Accessibility Criteria):

The potential exists that the keys may not be available at the time they are needed, unless appropriate administrative controls are in place. Faced with the situation of no keys, the operator obviously would improvise and obtain a key. This “challenge to the operator” would have greater significance if the manual action to be performed were “time-critical”. Periodic surveillance could ensure availability of the keys. Feasibility would be rated as Light Green.

This Month’s Events

November 16-19, 2003
NFPA Fall Education Conference
 Reno Hilton, Reno, NV
 Special focus: “Homeland Security - Preparedness and Response”
 See the NFPA Web Site for full details including many education sessions.

November NFPA Online Courses

- Automatic Sprinkler Systems Certificate Program
- Fire Alarm Fundamentals Certificate Program
- Electrical Installations in Hazardous Locations Certificate Program

Building Construction & Safety Code™ Seminar
 Date: November 6&7, 2003
 Phoenix, AZ

NFPA 3-Day National Fire Alarm Code® Seminar
 Date: November 5-7, 2003
 Time: All Day
 Phoenix, AZ

December Article Highlights

New Tech Review –
Examining the Replacement
of Hydrogen Tube Trailers
with Hydrogen Generators

Fire Brigade
Assessment Techniques
Comparing Current Standards

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- Where no special key were required, no “challenge to the operator” would exist. In such cases, feasibility would be rated as Green.
- Other examples of potential areas of challenge include access into high rad or contaminated areas, marginal lighting, activity not frequently performed, and time-critical actions.

3.3.2 Color Ratings

Green – Assigned to any criteria where there is low or no challenge to the operator

Light-Green – Assigned to any criteria for which additional burden is placed on the operator, even though procedures, training, administrative controls, for example, are adequate to ensure the manual action can be performed. A single inspection criterion is unlikely to cause the manual action to be unfeasible.

However, where additional burden is placed on the operator in multiple criteria, collectively, the feasibility of a manual action may be questioned. The “collective feasibility” is discussed in paragraph 3.9.

White – Assigned to any inspection criteria that is not acceptable and potentially may cause the manual action to be not feasible.

Yellow – Assigned to any inspection criteria assessed not to be feasible.

Example: where communications is unavailable to coordinate with the control room for a time-critical action that requires throttling flow.

Table 3-2, ARS Matrix for Assessing Inspection Criteria, provides additional details on assessing the “feasibility rating” for each of the inspection criteria identified in Section 3.2.

The following is a listing of additional sections of the ARS Methodology.

3.4 Manual Operator Actions Feasibility Review – Database

3.5 Plant Walkdowns of Manual Actions of Inspection Criteria

3.6 Procedures and Document Reviews of Inspection Criteria

3.7 Timeline Review

3.8 Assessing the Feasibility of Manual actions

3.9 Collective Feasibility of Inspection Criteria

3.10 Enhancing Feasibility

3.11 Other IP 71111.05 Criteria Inspected by the NRC

3.12 Compliance, Risk and SDP

In addition, the ARS methodology includes seven (7) tables and three (3) figures.

As you can see there is more information than space available in this short article. I plan in the near future to publish additional information on the Community of Practice Web Site. I hope this will start a dialogue in determining a best practice approach for the evaluation of feasibility of manual actions. ☺

About the author:

Ron Oates has been involved in Appendix R issues since promulgation of the regulation, and is the web master for the AppendixR.Com web site.