NRC INSPECTION MANUAL

IPAB

INSPECTION MANUAL CHAPTER 0313

INDUSTRY TRENDS PROGRAM

TABLE OF CONTENTS

0313-01 PURPOSE

The purpose of the Industry Trends Program (ITP) is to provide a means to assess whether the nuclear industry is maintaining the safety performance of operating reactors, and to identify significant trends in safety performance.

0313-02 OBJECTIVES

The specific objectives of the ITP are as follows:

02.01 Collect and monitor industry-wide data that can be used to assess whether the nuclear industry is maintaining the safety performance of operating plants and to provide the NRC feedback to its nuclear reactor safety inspection and licensing programs;

02.02 Assess the safety significance and causes of any statistically significant adverse industry trends, determine if the trends represent an actual degradation in overall industry safety performance, and respond appropriately to any safety issues that may be identified;

02.03 Communicate industry-level information to stakeholders in an effective and timely manner; and

02.04 Support the NRC's strategic goals of ensuring safe and secure use of radioactive materials, while enhancing openness in the agency's regulatory processes.

0313-03 RESPONSIBILITIES AND AUTHORITIES

03.01 Director, Office of Nuclear Reactor Regulation (NRR).

a. Provides overall policy direction for the ITP.

b. Directs the development and implementation of policies, programs, and procedures for the ITP.

c. Provides oversight of program effectiveness and implementation.

03.02 Office of Nuclear Regulatory Research (RES).

a. Updates and maintains the Accident Sequence Precursor (ASP) database, the common-cause failure database, the Licensee Event Report database, and the Integrated Data Collection and Coding System for use by NRR, RES, and the Regions.

b. Provides support and data as requested by the Director, NRR.

03.03 Director, Division of Inspection and Regional Support (DIRS).

a. Manages ITP development and implementation within NRR.

b. Oversees program implementation and effectiveness.

03.04 Chief, Performance Assessment Branch.

a. Develops policy, programs, and procedures for implementation of the ITP.

b. Assesses ITP effectiveness and implementation.

0313-04 BACKGROUND

The NRC provides oversight of plant safety performance on a plant-specific basis using both inspection findings and plant-level performance indicators (PIs) as part of its Reactor Oversight Process (ROP). Individual issues that are identified as having generic safety significance are addressed using a number of NRC processes, including the generic communications process and the generic safety issue process. The NRC staff developed the ITP to complement these processes by monitoring and assessing industry-level trends in safety performance.

In developing the ITP, the staff used the following general concepts for its approach:

- The indicators were developed using information available from current NRC programs.

- Industry trend information is derived from quantitative, industry-wide data.

- Trends are identified on the basis of long-term (i.e., four or more years) data, rather than short-term data. This minimizes the impact of short-term variations in data, which may be attributable to such factors as operating cycle phase, seasonal variations, and random fluctuations.

- Trends and contributing factors are assessed for safety significance. The results of inspections, analyses of significant events and abnormal occurrences, and other analyses may be used to facilitate an evaluation of the trends. The agency's response is commensurate with the safety significance.

- The current ITP indicators are identified in Appendix A. New ITP indicators should be qualified for use and have enough data to perform long-term trending prior to being implemented.

The ITP indicators have been revised since the initial implementation of the ITP to be more risk-informed, to make data collection less burdensome, and to better align with all seven ROP cornerstones. As a further enhancement for the ITP, the staff developed a risk-informed indicator for initiating events. The indicator, the Baseline Risk Index for Initiating Events (BRIIE), was added to the ITP in 2007.

An NRC contractor collects and trends a portion of the ITP data and provides analysis on an as needed basis for the NRC.

0313-05 DISCUSSION

The process for collecting, analyzing, reporting, and responding to the industry trend indicators is discussed below.

05.01 Collect Indicator Data.

Data for the ITP is collected from a variety of sources, including the ROP PI program, Licensee Event Reports, and Event Notifications. Each indicator currently qualified for use in the ITP is described in Appendix A.

05.02 Identify Short-Term Issues.

NRR adopted a statistical approach using “prediction limits” to provide a consistent method to identify potential short-term emergent issues before they manifest themselves as long-term trends. The prediction limits are values established at the beginning of a fiscal year (FY) that set an upper bound on expected performance for that FY for each indicator. Actual indicator values during the FY can then be monitored and compared to the prediction limits. Indicators that cross the prediction limits are investigated to determine the factors contributing to the data. These factors are assessed for their safety significance and used to determine an appropriate agency response. Should obvious adverse trends emerge in the short-term data during the middle of the FY, the staff should initiate a review to determine if agency action is necessary.

A more detailed description of prediction limits is provided in Appendix B.

05.03 Identify Adverse Trends.

For purposes of assessing whether there are any statistically significant adverse industry trends, only long-term data is used. The trending of long-term data minimizes reacting to potential “false positive” indications that may emerge in short-term data. “Long-term” was defined to be greater than or equal to four years to ensure that sufficient data (i.e., data for at least two typical nuclear plant operating cycles) is available and valid trends can be distinguished from operating cycle effects such as refueling outages and from random fluctuations in the data.

The staff applies statistical techniques to the long-term indicator data to identify trends. These techniques have been previously adapted and used extensively by the NRC in reactor operating experience analyses. In general terms, a trendline is fit to each indicator using appropriate regression techniques. Once a statistically significant fit of a trendline is made to each indicator, the slope of the trendline is examined. Improving or flat trendlines are not considered adverse and need not be investigated further. Degrading trendlines are considered adverse. A more detailed discussion of long-term trending and the determination of a statistically significant adverse trend is discussed in Appendix C.

05.04 Analyses of Issues.

Once a statistically significant adverse trend is identified, the staff conducts an initial analysis of information readily available in the databases used to compile the indicator data to determine whether the trend is unduly influenced by a small number of outliers and to identify any contributing factors. If the trend is the result of outliers, then it is not considered a trend requiring generic actions, and the agency will consider any appropriate plant-specific actions using the ROP. For example, the affected plants unduly influencing the adverse trend may have already exceeded plant-level thresholds under the ROP, and the NRC regional offices would conduct supplemental inspections at these plants to ensure the appropriate corrective actions have been taken. If the plants did not exceed any thresholds, the NRC would not take regulatory actions beyond the ROP, however, the NRC may gather additional information regarding the issue within the scope of the ROP using risk-informed baseline inspections. The results of these inspections would be examined to determine if a generic issue existed requiring additional NRC review or generic inspections.

If no outliers are identified, the staff conducts a broader review to assess whether larger groups of facilities are contributing to the decline and to assess any contributing factors and causes. For example, the data review is expanded to include a review of various plant comparison groups, contributing factors such as the operational cycle stage of the facilities (shutdown, at-power, startup from refueling, etc.), and the apparent causes for the data (equipment failures, procedure problems, etc.). Should a group of plants be identified, the staff will examine the results of previously conducted inspections at these plants, including any root causes and the extent of the conditions.

Once this information is reviewed, the staff assesses the safety significance of the underlying issues. The staff is mindful that trends in individual indicators must be considered in the larger context of their overall risk significance. For example, a hypothetical increase in Unplanned Scrams from 0.4 to 0.7 per plant per year over several years may be a statistically significant trend in an adverse direction. However, it may not represent a significant increase in overall risk since the contribution of a small number of scrams is relatively low, and it is possible that overall risk may actually have declined if there were reductions in the frequency of more risk-significant initiating events or the reliability and availability of safety systems had improved. Depending on the issues, the staff may perform an additional evaluation using the most current risk analysis tools or an evaluation by the ASP Program.

05.05 Agency Response.

Should a statistically significant adverse trend in safety performance be identified or an indicator exceed a prediction limit, the staff will determine the appropriate response using the processes described above and the NRC's established processes for addressing and communicating generic issues. The generic issue process is described in Management Directive (MD) 6.4, “Generic Issues Program.”

In general, the issues will be assigned to the appropriate branch of NRR for initial review. The branch will engage NRC senior management and initiate early interaction with the nuclear power industry. Depending on the issue, the process could include requesting industry groups such as the Nuclear Energy Institute (NEI) or various owners groups to provide utility information. As discussed in SECY-00-0116, “Industry Initiatives in the Regulatory Process,” industry initiatives, such as the formation of specialized working groups to address technical issues, may be used instead of, or to complement, regulatory actions. This can benefit both the NRC and the industry by identifying mutually satisfactory resolution approaches and reducing resource burdens.

Depending on the issues, the NRC may consider generic safety inspections at plants. In addition, the issues underlying the statistically significant adverse trend may also be addressed as part of the generic safety issue process by RES. The NRC may consider additional regulatory actions as appropriate, such as issuing generic correspondence to disseminate or gather information, or conducting inspections for generic issues using a Temporary Instruction. The process also includes consideration of whether any actions proposed by the NRC to address the issues constitute a backfit per MD 8.4, “Management of Facility-Specific Backfitting and Information Collection.”

05.06 Senior Management Review.

The ITP results and agency response are reviewed annually during the Agency Action Review Meeting (AARM). In general, the AARM is intended to review the appropriateness and effectiveness of staff actions already taken, rather than to make decisions on agency actions. NRC senior managers review the industry trends information and, if appropriate, recommend any additional actions beyond those implemented by the staff. Additional information concerning the AARM can be found in MD 8.14, “Agency Action Review Meeting.”

05.07 Communications with Stakeholders.

The NRC communicates overall industry performance to stakeholders by publishing the ITP indicators on the Nuclear Reactors portion of the agency’s public Web site at http://www.nrc.gov/reactors/operating/oversight/industry-trends.html. Communication of the industry-level indicators, when added to the information on individual plants from the ROP, should enhance stakeholder confidence in the efficacy of the NRC’s oversight of the nuclear industry.

The staff informs the Commission of the results of the ITP in an annual report prior to the AARM. Some of the indicators are also published annually in the NRC's "Information Digest 20XX" (NUREG-1350 series). In addition, NRC managers have historically presented industry indicators and trends at major conferences with industry and other external stakeholders.

In addition, the Commission has historically used the ITP indicators when presenting the status of industry performance to the NRC's congressional oversight committees.

05.08 Baseline Risk Index for Initiating Events (BRIIE).

The BRIIE provides a short-term trending mechanism for determining the risk significance of changes in performance at the individual initiating event level.

Short-term monitoring is accomplished by monitoring yearly industry performance for 9 risk-significant initiating events for boiling-water reactors (BWRs) and 10 events for pressurized-water reactors (PWRs) (the additional event category is steam generator tube rupture) against performance-based predictions limits. These activities, similar to the process described in Appendix B for the ITP indicators, help the NRC identify degrading industry performance before the emergence of any long-term adverse trends.

The BRIIE is intended to enhance and complement the ITP and not as a replacement. Appendix D to this IMC contains a detailed discussion of the BRIIE and its function within the ITP. Historical results and the technical basis for BRIIE are provided in NUREG/CR-6932 (INLEXT-06-11950), "Baseline Risk Index for Initiating Events (BRIIE)."

END

Appendices:
A. Indicators Qualified for Use in the ITP
B. Prediction Limits
C. Long-Term Trending
D. Baseline Risk Index for Initiating Events (BRIIE)

Attachment:
1. Revision History for IMC 0313

APPENDIX A

INDICATORS QUALIFIED FOR USE IN THE ITP

UNPLANNED SCRAMS

Definition: Total unplanned scrams at all plants each year multiplied by 7000 hrs, and then divided by the total critical hours for all plants each year.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The definition of an unplanned scram is contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

UNPLANNED POWER CHANGES

Definition: Total unplanned power changes at all plants each year multiplied by 7000 hrs, and then divided by the total critical hours for all plants each year.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The definition of an unplanned power change is contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

UNPLANNED SCRAMS WITH COMPLICATIONS

Definition: Sum of unplanned scrams with complications within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The definition of an unplanned scram with complications is contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

SAFETY SYSTEM FUNCTIONAL FAILURES (SSFFs)

Definition: Sum of all SSFFs within each year at all plants, divided by the total number of plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The definition of a SSFF is contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

MITIGATING SYSTEMS PERFORMANCE INDEX (MSPI) FOR EMERGENCY AC POWER SYSTEMS

Definition: Sum of all greater than green MSPI results calculated for emergency AC power systems within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating MSPI are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

MSPI FOR HIGH PRESSURE INJECTION SYSTEMS

Definition: Sum of all greater than green MSPI results calculated for high pressure injection systems within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating MSPI are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

MSPI FOR HEAT REMOVAL SYSTEMS

Definition: Sum of all greater than green MSPI results calculated for heat removal systems within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating MSPI are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

MSPI FOR RESIDUAL HEAT REMOVAL SYSTEMS

Definition: Sum of all greater than green MSPI results calculated for residual heat removal systems within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating MSPI are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

MSPI FOR COOLING WATER SUPPORT SYSTEMS

Definition: Sum of all greater than green MSPI results calculated for cooling water support systems within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating MSPI are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

REACTOR COOLANT SYSTEM (RCS) SPECIFIC ACTIVITY

Definition: Sum of maximum percentage of Technical Specification RCS specific activity within each year at all plants, divided by the total number of plants with data.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating the maximum percentage of RCS specific activity are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

REACTOR COOLANT SYSTEM LEAKAGE

Definition: Sum of maximum percentage of Technical Specification RCS leakage within each year at all plants, divided by the total number of plants with data.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for calculating the maximum percentage of RCS leakage are contained in the latest version of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline."

DRILL/EXERCISE PERFORMANCE

Definition: Total number of classifications at all plants each year multiplied by 100, and then divided by the total number of classification opportunities at all plants each year.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for determining the number of classifications and opportunities are contained in the latest version of NEI 99-02, “Regulatory Assessment Performance Indicator Guideline.”

EMERGENCY RESPONSE ORGANIZATION (ERO) DRILL PARTICIPATION

Definition: Total number of key ERO members participating in drills at all plants each year multiplied by 100, and then divided by the total number of key ERO members at all plants each year.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for determining the number of key ERO members are contained in the latest version of NEI 99-02, “Regulatory Assessment Performance Indicator Guideline.”

ALERT AND NOTIFICATION SYSTEM RELIABILITY

Definition: Total number of successful alert and notification system tests at all plants each year multiplied by 100, and then divided by the total number of tests at all plants each year.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for determining the number of tests are contained in the latest version of NEI 99-02, “Regulatory Assessment Performance Indicator Guideline.”

OCCUPATIONAL EXPOSURE CONTROL EFFECTIVENESS

Definition: Sum of all technical specification high radiation area (>1 rem per hour) occurrences, very high radiation area occurrences, and unintended exposure occurrences within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for occupational exposure control effectiveness are contained in the latest version of NEI 99-02, “Regulatory Assessment Performance Indicator Guideline.”

RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS (RETS)/ OFFSITE DOSE CALCULATIONS MANUAL (ODCM) RADIOLOGICAL EFFLUENT OCCURRENCES

Definition: Sum of all RETS/ODCM radiological effluent occurrences within each year at all plants.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for RETS/ODCM radiological effluent occurrences are contained in the latest version of NEI 99-02, “Regulatory Assessment Performance Indicator Guideline.”

PROTECTED AREA SECURITY EQUIPMENT PERFORMANCE INDEX

Definition: Sum of the protected area security equipment performance index within each year at all plants, divided by the total number of plants with data.

Data Source: ROP PI data submittals from licensees.

Description: This indicator is based on data submitted by licensees to support the ROP. The requirements for the protected area security equipment performance index are contained in the latest version of NEI 99-02, “Regulatory Assessment Performance Indicator Guideline.”

BASELINE RISK INDEX FOR INITIATING EVENTS (BRIIE)

Definition: A performance indicator that provides a mechanism for determining the risk significance of changes in performance at the individual initiating event level.

Data Source: Input for this indicator is derived from LERs and supplemented by 10 CFR 50.72 reports.

Description: Each BRIIE category is calculated as an average events per reactor critical year.

APPENDIX B

PREDICTION LIMITS

To develop prediction limits, two steps are required. The first is to establish a baseline period for each indicator, during which the data can be regarded as fairly constant.

The second step is to select an appropriate constant model for the data in the baseline period. The prediction limit is based on this constant model and corresponds to a selected probability that future data points will not exceed the prediction limit.

Baseline Period and Prediction Limits

For each indicator considered, a baseline period must be established. The baseline period data are then used as input to the predictive limits analysis.

To guide the determination of the baseline period, the following characteristics were identified:

- The baseline period is representative of current industry performance.
- The baseline period is long enough to give a good estimate of the frequency, and is not strongly influenced by random variation.
- The baseline period is limited in length to ensure that the true frequency is approximately constant.

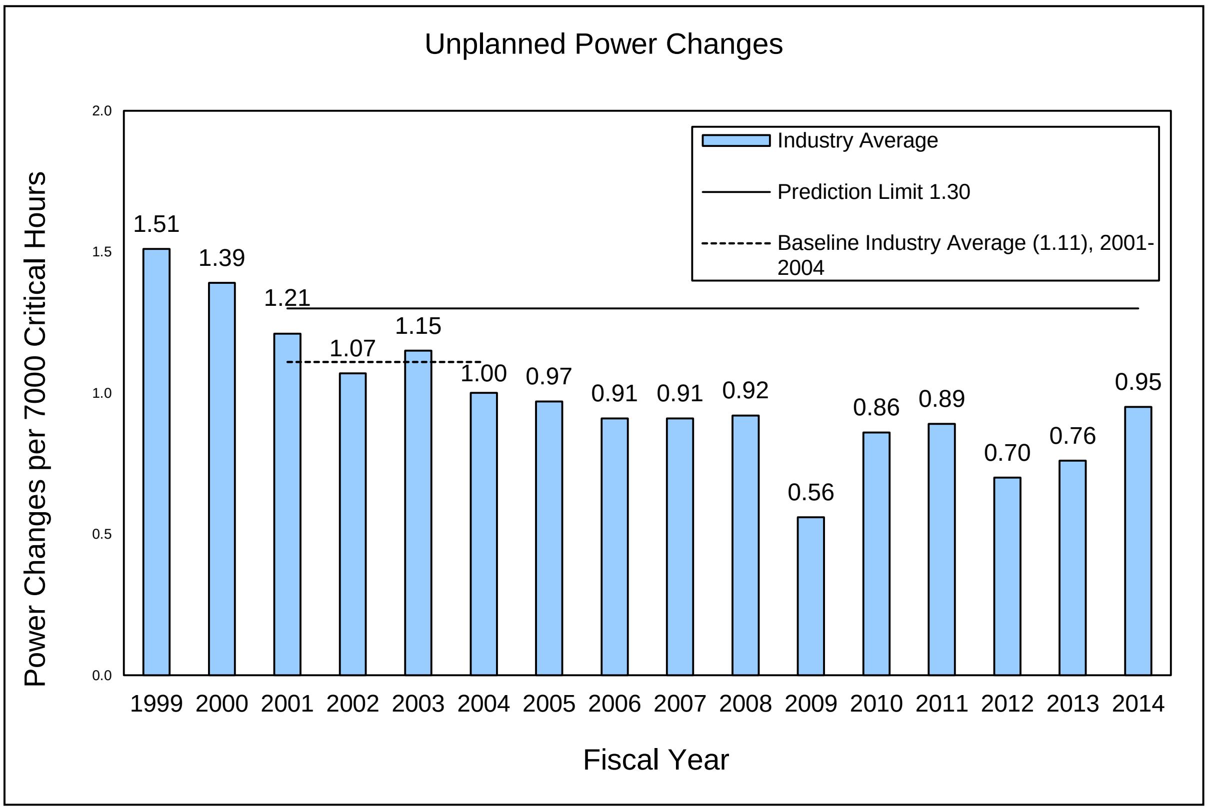
Because a long enough period is needed to give a good estimate, it was decided that every baseline period should contain at least four years. For each indicator, the history is examined back to the earliest year of data. Candidate baseline periods are analyzed for successively shorter time periods down to the minimum of four years. For each candidate baseline period, a trend model is fit to the data. That is, the slope of the trend model is estimated from the data for the corresponding period. A statistical test is then performed to see whether the slope could be equal to zero (a slope equal to zero would reflect a frequency that is constant). The statistical significance of this test is a probability (called a p-value). If the significance of the test is less than 0.05, then the slope is treated as being different from zero.

In this way, a “significance” value is calculated for each candidate baseline period year. The closer the “significance” value is to 1.0, the more assurance one has that the slope is zero. The baseline period with the largest significance value and with reasonable mean value is selected as the baseline period. The baseline period is selected to balance the other competing criteria described above.

Using information from the baseline period (e.g., number of occurrences and reactor operating or calendar years) and an estimate of the reactor operating or calendar time for the next year, a predictive distribution is determined. This distribution is derived on the assumption that it will predict future performance subject only to random fluctuations in the data. The 95% percentile of this distribution is the prediction limit. Random fluctuations should only exceed this value about 5% of the time based on current conditions. However, if those conditions should degrade, then the prediction limit could be exceeded more often. This situation would indicate that further investigation is warranted. An example prediction limit chart is presented in Figure 1.

When such a period and its associated statistical model have been established, the prediction limit threshold does not change from one year to the next unless a clear change has been noted in the performance of an indicator. Such a change would need to be both noticeable and persistent. Thus, data from a single year would not be sufficient to change a model and its prediction limit.

Figure 1. Sample Prediction Limit Chart



APPENDIX C

LONG-TERM TRENDING

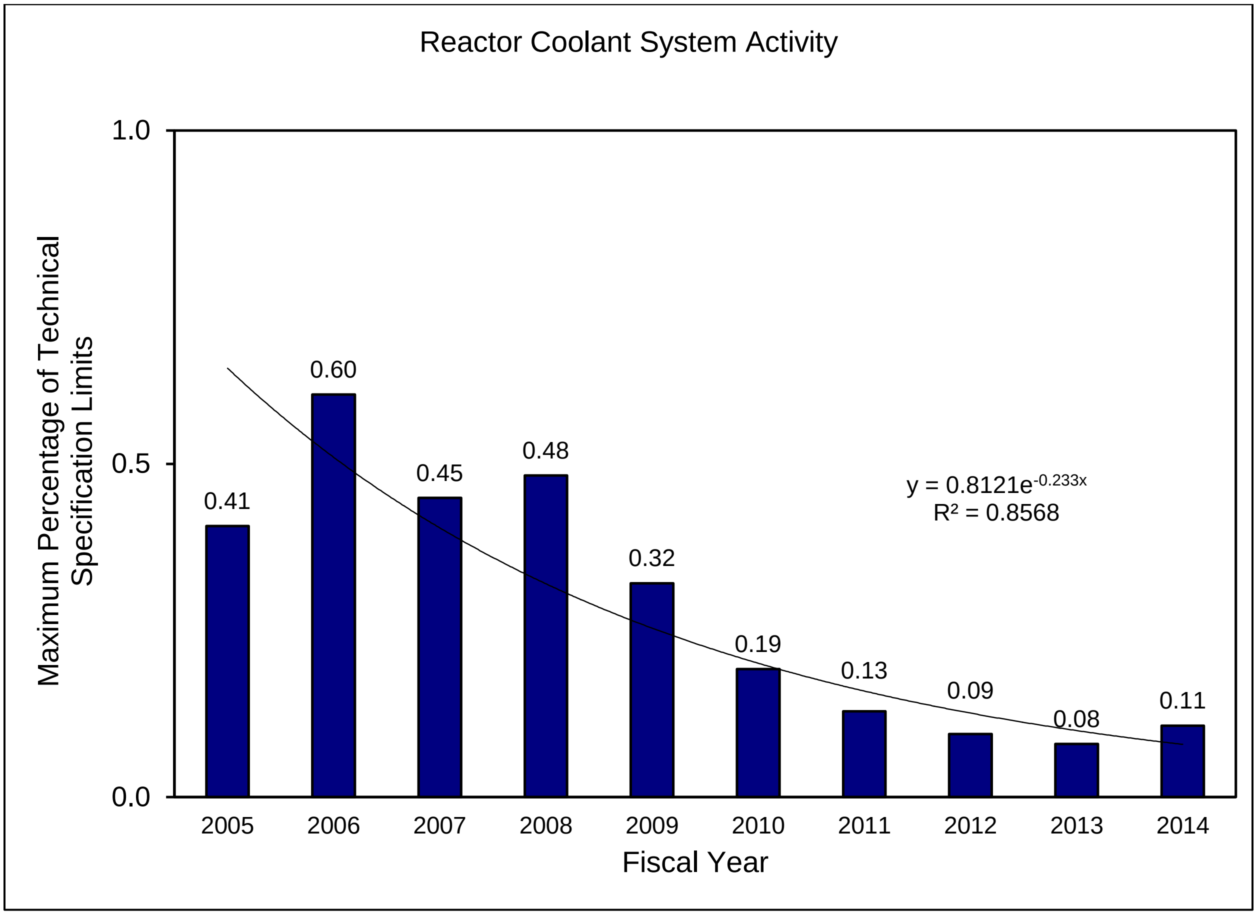
As mentioned in the main body of this Manual Chapter, one objective of the Industry Trends Program (ITP) is to determine the number of statistically significant adverse trends in industry performance. The ITP uses long-term trending of the data to report against this performance measure.

The NRC has been collecting and trending industry level data since at least 1987. The ITP previously established long-term trends based on data back through FY 1988. When most indicators were continuing to show improving performance, trending from 1988 worked well. However, continuing to display trends driven largely by the 1987 to mid-1990s data is no longer valid for representing recent industry performance. In order to ensure current performance trends are not masked by the use of historical data, the NRC has removed some historical data from consideration during the trending analysis. The NRC now uses a 10-year rolling period to establish long term trends. A 10-year period was chosen to ensure enough data was available for meaningful statistical analysis. An example long-term trending chart is presented in Figure 2.

Using a 10-year period through the current year's data, trend lines are developed using statistical regression techniques. Statistical "goodness of fit" tests are then conducted to determine which trend line model best fits the data. Statistical analysis is performed to determine the significance of the trend. Confidence levels are used in a manner very similar to that discussed in Appendix B. If the confidence level in a trend is 95% or greater, there is strong evidence that the trend is not due to random data fluctuation. At this point, the trend is considered "statistically significant."

In order for a trend to be considered a "statistically significant adverse trend," the slope of the trend line model has to be in the adverse direction (performance degrading) and statistical analysis has to determine that the trend is statistically significant.

Figure 2. Sample Long-Term Trending Chart



APPENDIX D

BASELINE RISK INDEX FOR INITIATING EVENTS (BRIIE)

To enhance the ITP, the staff developed the Baseline Risk Index for Initiating Events (BRIIE), a performance indicator that provides a short-term trending mechanism for determining the risk significance of changes in performance at the individual initiating event level.

ENHANCEMENT PROCESS FOR INITIATING EVENTS CORNERSTONE OF SAFETY

A two-step process is used to enhance the ITP coverage of the Initiating Events Cornerstone of Safety:

Step 1 - identify appropriate risk-significant categories of initiating events

Step 2 - trend and establish performance-based prediction limits for these individual event categories

Step 1 - Identification of Risk-Significant Initiating Events

The list of risk-significant initiating event types consists of 10 initiating event categories applicable to pressurized-water reactors (PWRs) and 9 applicable to boiling-water reactors (BWRs) as listed below in Table 1:

Table 1. Risk-significant initiating event categories covered by the BRIIE

Pressurized Water Reactors (PWRs)	Boiling Water Reactors (BWRs)
1. Loss of offsite power (LOOP)	1. Loss of offsite power (LOOP)
2. Loss of vital AC bus (LOAC)	2. Loss of vital AC bus (LOAC)
3. Loss of vital DC bus (LODC)	3. Loss of vital DC bus (LODC)
4. Loss of main feedwater (LOMFW)	4. Loss of main feedwater (LOMFW)
5. Very small loss of coolant accident (VSLOCA)	5. Very small loss of coolant accident (VSLOCA)
6. PWR general transient (TRAN)	6. BWR general transient (TRAN)
7. PWR loss of condenser heat sink (LOCHS)	7. BWR loss of condenser heat sink (LOCHS)
8. PWR stuck open safety/relief valve (SORV)	8. BWR stuck open safety/relief valve (SORV)
9. PWR loss of instrument air (LOIA)	9. BWR loss of instrument air (LOIA)
10. Steam generator tube rupture (SGTR)	

In general, these risk-significant initiating event types, cover approximately 60% of the internal event core damage risk (excluding internal flooding) from the operating commercial nuclear power plants in the United States. Also, these initiating events do not overlap.

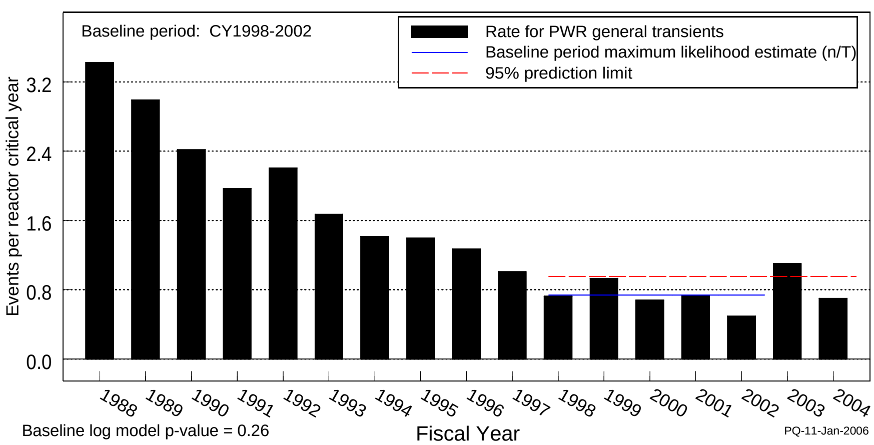
Step 2 - Performance Monitoring of Risk-Significant Initiating Event Categories

Performance monitoring activity consists of trending risk-significant initiating event categories and monitoring yearly industry performance against prediction limits. To accomplish this, the staff established up-to-date baseline frequencies for each of the risk-significant initiating event categories, and then determined performance-based prediction limits using these baseline frequencies and estimated yearly industry-total critical-reactor years of operation. The process is similar to the "prediction limit" process described in Appendix B for the ITP indicators. An example is presented in Figure 3.

These activities are intended to help the NRC identify degrading industry performance as an adjunct to the plant-specific performance assessment performed as part of the ROP. Potential NRC responses if one or more of the prediction limits are reached or exceeded are outlined later in this appendix. BRIIE activities and results are used by the NRC as a diagnostic tool to identify degrading industry performance before the emergence of any long-term adverse trends.

The BRIIE results will be placed on the NRC Web site for access by interested stakeholders.

Figure 3



POTENTIAL REGULATORY RESPONSES TO BRIIE RESULTS

As an example, suppose four events are observed in one year that are classified as very small break LOCAs (VSLOCA), and each event occurred at a different plant. A VSLOCA as an initiating event is rare. The 95% prediction limit is two events. Therefore, the 95% prediction limit has been exceeded. Because the number of actual events exceeds the prediction limit, this initiating event is a candidate for further investigation.

Because VSLOCAs do not occur very often, the NRC would examine and review each event in more detail after it occurred. The ITP would look at these events to see if there were similarities among the events and to provide any lessons learned from this evaluation. These lessons would be communicated to the industry via appropriate generic communication. Further regulatory action would be taken as necessary based on the results of a detailed NRC inspection of each event.

Revision History for IMC 0313

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Training Completed	Comment and Feedback Resolution Accession Number (Pre-Decisional, Non-Public)
NA	05/29/08 CN 08-016	Added Appendix D and description of Baseline Risk Index for Initiating Events (BRIIE) throughout text of Manual Chapter Revised Section 06.01 to describe a process to ensure that revised and updated data (such as data from inspection findings and ASP results) are included in the count of Significant Events	NA	NA	ML081430600
	ML15316A039 01/26/16 CN 16-003	Revised to match the new congressional reporting requirements that came out of the Congressional Budget Justification: Fiscal Year 2016 Revised Appendix A to align the ITP indicators with the ROP PIs	NA	NA	ML15328A037