

# PROGRESS IN OCCURRENCE REPORTING QUALITY

October 1995

Office of Operating  
Experience Analysis and  
Feedback (EH-33)



Office of  
Environment,  
Safety, and Health

Department of  
Energy

## Objectives

The Office of Operating Experience Analysis and Feedback (OEAF), EH-33, has completed a third assessment of the quality and timeliness of event data in the Occurrence Reporting and Processing System (ORPS). This bulletin summarizes the results of that assessment [“A Quality Assessment of DOE’s Occurrence Reporting and Processing System (ORPS) Database (First Quarter Calendar Year 1995),” October 1995]. Similar assessments were performed in 1993 and 1994. The assessment had the following objectives:

1. Evaluate the consistency and completeness of the occurrence report data reported by the line organizations in accordance with Order 5000.3B, *Occurrence Reporting and Processing of Operations Information* (note: Order 5000.3B has been replaced by Order 232.1, same title, issued September 25, 1995),
2. Identify issues that may contribute to incorrect or inconsistent reporting of occurrences at DOE facilities,
3. Provide recommendations for improving the overall quality of the data in ORPS,
4. Measure progress in occurrence reporting quality relative to the initial assessments, and
5. Measure progress in the timeliness of submittal of occurrence report data relative to the initial assessments.

The first four objectives of the project were addressed by conducting an audit of the ORPS database. The fifth objective was addressed by performing an analysis of the occurrence reporting cycle.

## Discussion

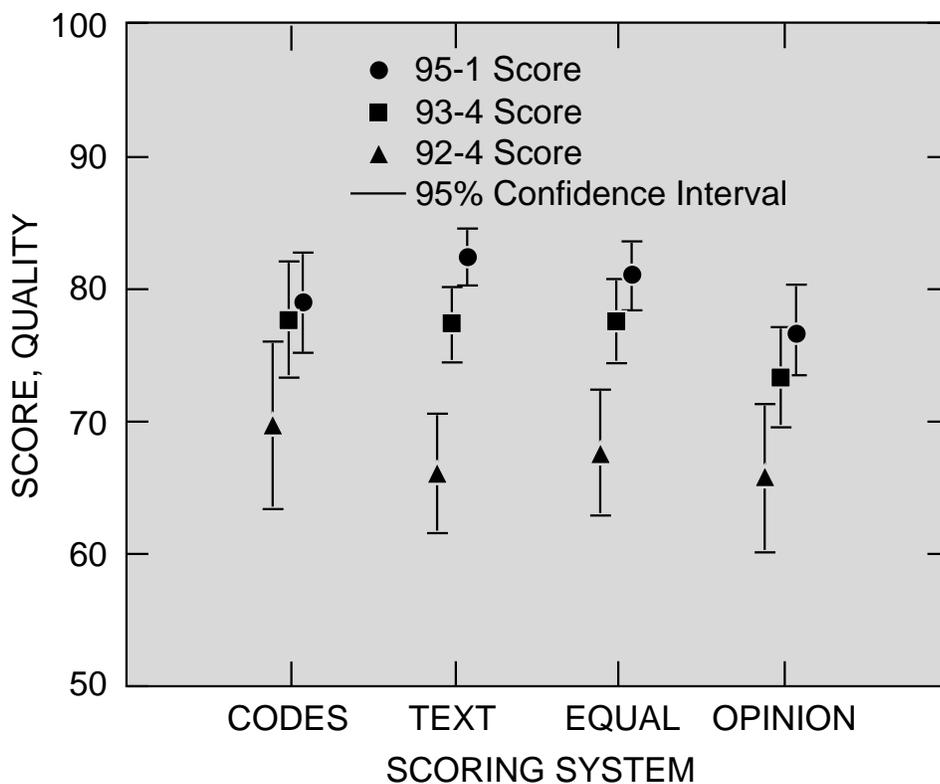
**AUDIT OF THE ORPS DATA**

100 occurrence reports that became final in the first quarter of calendar year 1995 (95-1 period) were randomly selected. [Note: the 1993 assessment selected final reports from the fourth quarter of 1992 (92-4 period); the 1994 assessment selected final reports from the fourth quarter of 1993 (93-4 period).] Although a number of the occurrence reports were initiated before Order 5000.3B was issued (March 1993), the assessment criteria were based on the 5000.3B reporting requirements. In reviewing the sample population of 100 occurrence reports, the coded fields were compared with text descriptions to determine (i) how well the event was reported, (ii) whether the correct codes were selected, (iii) how well the text fields provided narrative description to allow the reader to clearly understand the event and critique the root cause and nature of occurrence codes selected, and (iv) whether the corrective actions were clearly enumerated. The audit focused on those data fields that are frequently used for data searches, event characterization studies, and trend analyses.

The audit results were compiled and statistically analyzed using four separate scoring systems. Each occurrence report reviewed also received an overall score to help in assessing the overall quality of the

database. The scores developed under each scoring system and for the individual assessment questions were normalized to 100 for ease of reporting (for example, a score of 100 indicates that the code/text field or report is fully complete and internally consistent).

The results of this audit (Fig. 1) showed that performance by the line organizations in providing complete and consistent occurrence report data exhibited some incremental improvement since the 1994 assessment. However, a sizable degree of variation continues to exist in the consistency and completeness of the occurrence report population. While no minimum acceptable score was established for the audit, the results indicated the “average” occurrence report continues either to miss needed information or present conflicting information.



*Fig. 1. Comparison of occurrence report composite scores (by scoring system).*

### Issues

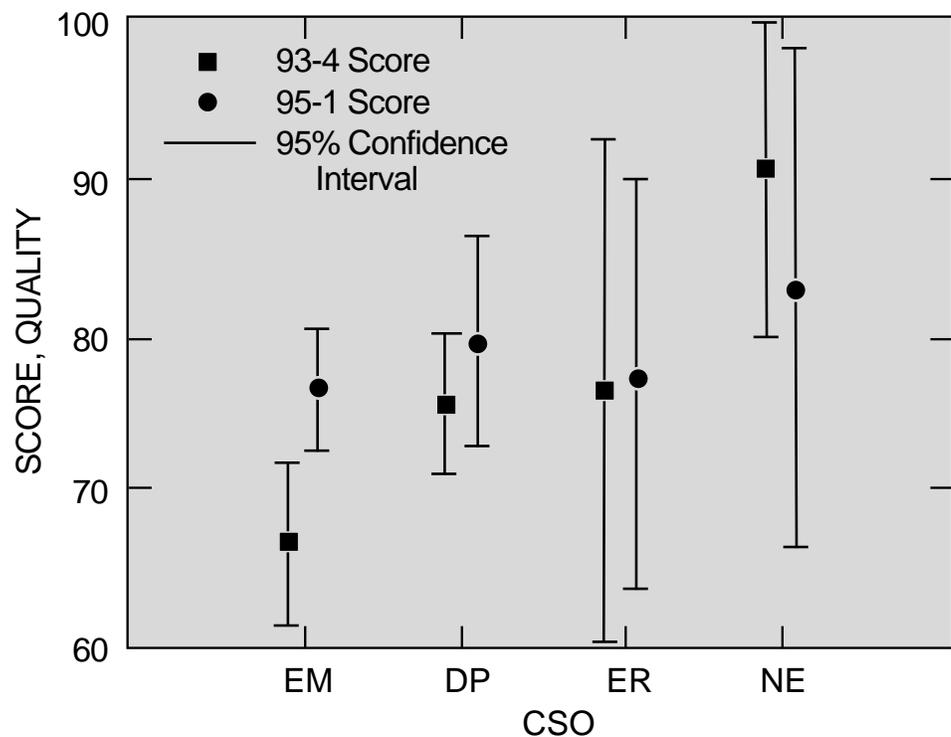
Key issues identified from the audit that continue to impact the completeness and consistency of occurrence reports include:

- Use of undefined site-specific terminology,
- Excessive use of “normal operations” in describing facility operating conditions and activity category, and
- Weak descriptions of the occurrence, its cause (this field most closely correlated with the overall quality of the entire occurrence report), and corrective actions.

Similar weaknesses in the quality of occurrence report information

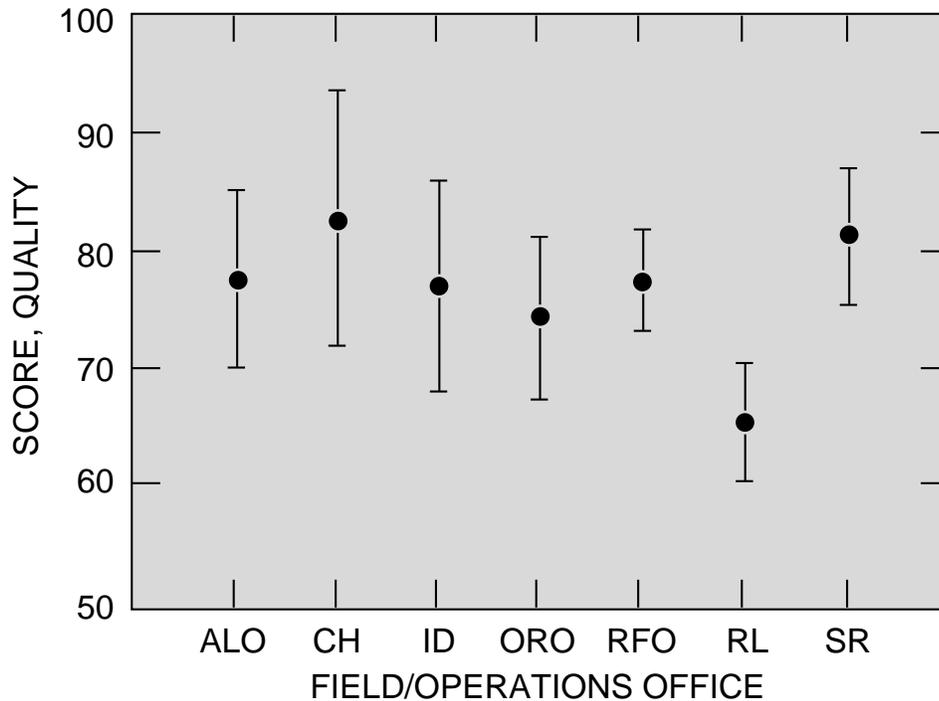
submitted to ORPS were noted in earlier audits performed by the Defense Programs organization.

The differences observed during this assessment in the performance among Cognizant Secretarial Officer organizations were not statistically significant (Fig. 2). However, the Environmental Management (EM) organization exhibited a statistically significant improvement in the quality of their occurrence reports between the 1994 and 1995 assessments. No specific factors influencing the improved EM performance were confirmed; however, possible explanations include (1) the transfer of additional DOE facilities (and personnel with improved occurrence report preparation skills) to EM, and (2) the benefits derived from continued sharing of occurrence reporting “lessons learned” within the DOE complex.



**Fig. 2. Occurrence report average composite scores (opinion scoring system) by DOE Cognizant Secretarial Officer organization.**

Because the assessment criteria were identical, the results of the 1994 and 1995 assessments were combined to provide additional insights on organizational performance related to occurrence report quality. From this effort, it was noted that the performance of the Nuclear Energy (NE) organization continued to be better than the average. While no specific factors influencing NE’s performance were confirmed, one possible explanation may be the typically high quality of root cause analyses performed for events at reactor facilities. In addition, a statistically significant difference in the quality of occurrence reports from the Richland (RL) Operations Office was observed (Fig. 3). No specific factors influencing RL’s performance were confirmed; more analysis is needed. Also, a larger sample size of final occurrence reports is still needed to assess the performance of specific contractors.



*Fig. 3. Occurrence report average composite scores (opinion scoring system) by DOE field/operations office (1994 and 1995 assessment results combined).*

## ANALYSIS OF OCCURRENCE REPORTING CYCLE

The report cycle history of the same random sample of 100 occurrence reports was analyzed. The purpose of this task was to assess the timeliness (i.e., by evaluating the time lag between required actions in the occurrence reporting process) of event categorization, notification reports, 10-day reports, final reports, the Facility Representative's review/approval, and the Program Manager's review/approval.

### Review Results

- Categorization of events and submittal of notification reports is usually done in a timely manner. (Note: "timely" is interpreted as a minimum of 90 percent of the occurrence report submittals meeting the timeliness requirements in Order 5000.3B.)
- Approximately 73 percent of the 10-day reports were submitted on or before the 10 working day (14 calendar day) limit specified in Order 5000.3B. Approximately 28 calendar days were required to achieve a 90 percent submittal rate. (Note: the requirement for submittal of 10-day reports has been eliminated in Order 232.1.)
- Approximately 50 percent of the final reports were submitted by Facility Managers on or before the 45 calendar day limit specified in Order 5000.3B. Approximately 715 calendar days were required to achieve a 90 percent submittal rate.
- Approximately 49 percent of the occurrence reports were approved by a Facility Representative on or before the 7 working day (10 calendar day) limit specified in Order 5000.3B. Approximately 162 calendar days were required to achieve a 90 percent submittal rate.

- Approximately 59 percent of the occurrence reports were approved by a Program Manager on or before the 14 calendar day limit specified in Order 5000.3B. Approximately 165 calendar days were required to achieve a 90 percent submittal rate.
- Approximately 25 percent of the occurrence reports moved from categorization to Program Manager approval within 69 calendar days. The 69 calendar day period is derived from the time limits for occurrence report processing in Order 5000.3B. Approximately 799 calendar days were required to achieve a 90 percent submittal rate.

Information developed by the Defense Programs and Environmental Management organizations on the timeliness of processing occurrence reports during the same time period correlates with the information developed from this assessment.

As noted in the previous assessments, final occurrence report rejections by Facility Representatives or Program Managers are hidden contributors to the time lag for submittal of a final report by a Facility Manager. If a report is rejected at the Facility Representative or Program Manager level, the review time spent prior to rejection plus the time required for resubmittal become a part of the Facility Manager Submittal time lag. Consideration should be given to recording the dates of all Facility Manager Submittals. This would permit tracking of the true Facility Manager Submittal time lag.

The timeliness of submittal of the occurrence reports analyzed in the three assessments was evaluated (Fig. 4). The data confirm that Facility Managers continue to promptly categorize events after discovery

Time Lag	Mean (days)			Reports Submitted by 5000.3B Requirements (%)			Time to 90% Submittal rate (days)		
	92-4	93-4	95-1	92-4	93-4	95-1	92-4	93-4	95-1
Discovery to Categorization	0.7	0.6	1.0	82	90	75	1	0	1
Categorization to Notification Report	1.5	1.3	0.9	95	97	94	2	2	2
Categorization to 10-Day Report	23.7	18.3	19.7	68	74	73	26	27	28
Categorization to Final Report Submittal by Facility Manager	199.4	250.8	199.4	50	25	50	560	800	715
Facility Manager Submittal to Facility Representative Approval	39.3	67.3	60.1	40	44	49	120	200	162
Facility Representative Approval to Program Manager Approval	64.6	68.9	43.6	13	51	59	180	220	165
Categorization to Program Manager Approval	303	387	302.9	13	14	25	620	1030	799

**Fig. 4. Comparison of assessment results on occurrence report timeliness.**

and promptly notify DOE of the occurrences. No significant changes in the average time lags were noted; however, the percentages of occurrence reports being processed by Facility Managers, Facility Representatives, and Program Managers within the Order 5000.3B time limits increased between the 1994 and 1995 assessments. While no conclusions were reached regarding the improved performance, the most likely contributors are judged to be increased sensitivity by DOE personnel and contractors to occurrence report submittal timeliness requirements and increased experience with occurrence report data management. The changes and clarifications in timeliness requirements for handling occurrence reports as reflected in Order 5000.3B (and the new Order 232.1), combined with increased awareness of and sensitivity to submittal timeliness requirements by DOE and contractor personnel, should continue to improve the timeliness of submittal of occurrence report data. However, additional analysis is needed to confirm this assumption.

## CONCLUSION

Based on the information developed from this project, it is concluded that (1) improvements in the completeness, consistency, and timeliness of occurrence reports have been made, (2) some incremental improvement was observed between the 1994 and 1995 assessments, and (3) the need for additional improvements exists and must be pursued. The following general recommendations are provided.

## GENERAL RECOMMENDATIONS

- The three assessments have collected little additional information on the occurrences from several of the ORPS fields, including “Contributing Cause”, “Impact on Environment, Safety, and Health”, “Programmatic Impact”, “Impact Upon Codes and Standards”, “Evaluation by Facility Manager”, “Facility Representative Comments”, and “Program Manager Comments.” Due to their apparent lack of “value added”, deleting the fields will be considered as part of the pending ORPS re-engineering effort. Stakeholder input on this issue is requested from the Occurrence Reporting Special Interest Group and others involved in the occurrence reporting process.
- The need for a “writer’s guide” on the preparation of occurrence reports continues. Action on this recommendation is, however, being pursued through the development of an “Occurrence Reporting Guidance Document” by the Occurrence Reporting Special Interest Group. The guide should include criteria for occurrence report approval and be made available to Report Originators, Facility Managers, Facility Representatives, and Program Managers.
- Consideration should be given to incorporating additional automated data checks [such as relating the “Facility function” code choices to the specific function(s) of the DOE facilities] for the coded fields on the ORPS database to increase the consistency and

Conclusion

Recommendations

completeness of occurrence reports. Implementing these checks for all DOE facilities is a task that could be accomplished in the FoxPro version of PC ORPS. Stakeholder input on this issue is requested from the Occurrence Reporting Special Interest Group and others involved in the occurrence reporting process.

- The current ORPS data checks should be documented by INEL in a formal quality assurance manual for the system. This recommendation was previously provided based on the results of the 1993 assessment.
- The quality of the “Description of Cause” field has a high correlation with the overall quality of an occurrence report. Consequently, line managers should consider requiring DOE contractor personnel that serve as Report Originators or Facility Managers to receive formal training in Root Cause Analysis techniques. In addition, DOE personnel that serve as Facility Representatives and Program Managers should consider receiving training in Root Cause Analysis techniques to enhance their proficiency in evaluating the different types of and proposed dispositions for occurrences at DOE facilities. Also, where line organizations determine that their occurrence reports are consistently of poor quality or need improvement, additional Root Cause Analysis training should be considered for the involved DOE or contractor personnel.
- Each DOE and contractor line organization should consider identifying, on a periodic basis (i.e., monthly or some other time period), its ten (10) oldest occurrence reports and the reasons for the reports being late. EH-33 is willing to assist the line organizations in identifying these “late” reports since the listings could aid EH-33 in identifying system-wide reasons for the delays in processing occurrence reports.
- Other longer term tasks for improving report data quality and timeliness should be pursued, including:
  - Implementation of an ongoing program for assessing occurrence report quality and timeliness (another assessment is planned for FY 1996),
  - Review of the effectiveness of established occurrence report training classes and, where possible, add classes on development of occurrence report information (this is also being addressed by the Occurrence Reporting Special Interest Group), and
  - Identification of further improvements to the current reporting process, as embodied in DOE Order 232.1 and ORPS, for obtaining consistent, complete, and timely information on a reportable occurrence.