

FOREIGN PASSENGER VESSEL EXAM SCORECARD

2023 Annual Report

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Cruise Ship National Center of Expertise 1/31/2024



A. Introduction

The U.S. Coast Guard Cruise Ship National Center of Expertise (CSNCOE) is responsible for building the roadmap for the Foreign Passenger Vessel (FPV) compliance program in the USA. Our people, the Port State Control teams responsible for executing the mission around the nation, are our primary mission resource. The Scorecard is a knowledge management tool that also scores each FPV examination to measure effectiveness of our mission resources.

The CSNCOE strives to enhance FPV compliance program governance by using Key Performance Indicators (KPI) to drive training and mission objectives. The 3 KPIs for FPV compliance program quality are consistency, validity, and impact. Port State Control team exam scores and deficiency component codes are the metrics used for KPI analysis. 2023 marked the second full year of FPV compliance examinations using the Scorecard. While 2022 served as the benchmark year for a national Scorecard dataset, 2023 is the benchmark year for KPI analysis.

Coast Guard Prevention leaders expect continuous program improvement oriented towards mission excellence. Cruise industry stakeholders expect high-quality service when executing our mission. This report answers the following questions for Coast Guard Prevention leaders and cruise industry stakeholders:

1. How do we measure mission excellence and high-quality service?
2. How are our Port State Control teams doing now?
3. How do KPIs drive continuous improvement of the FPV compliance program?

Contents

B. Scorecard Background_____	3
C. 2023 Highlights_____	4
D. Scorecard Data Review_____	5
E. FPV Program Quality KPIs_	6
E.1. Consistency Metric_____	7
E.2. Validity Metric_____	8
E.3. Impact Metric_____	9
F. Summary_____	10

B. Scorecard Background

The Scorecard is a knowledge management technology that ensures our Port State Control teams are executing the mission with a tool that is modernized, organized, and centralized. Automation built into the Scorecard provides a modernized solution to reduce manual research efforts during FPV examinations. The Scorecard entry fields are organized to limit reporting errors such as incorrect convention applicability or deficiency component codes. Since all teams performing Certificate of Compliance (COC) examinations on FPVs utilize the Scorecard for their Port State Control form recording, it provides a centralized solution to ensure all local operational units are using the same tool and procedure to record examination results. While the opportunity to integrate the Scorecard with existing USCG databases does not exist, it is an effective knowledge management tool to guide Port State Control teams in making timely, well-informed decisions.

The Scorecard also creates metrics that inform KPIs for FPV compliance program quality. Three key metrics of the quality KPIs are consistency, validity, and impact. Scorecard impact metrics are also coupled with deficiency metrics to evaluate program quality. The CSNCOE evaluates Scorecard and deficiency metrics on a monthly and annual basis to inform updates to training and mission tools to continuously improve FPV compliance program quality. A quality FPV compliance program is defined by Port State Control teams consistently examining ships to identify valid and impactful noncompliance and documenting exam findings in a consistent manner.

The consistency metric is evaluated by comparing statistical analysis of exam scores among operational units. While 100% consistency is not achievable among all Port State Control teams at all operational units, higher consistency represents better workforce proficiency and mission excellence. The national score represents the average amount of noncompliance found by a Port State Control team. If there are units routinely performing far from the national average, it represents inconsistency. The FPV compliance program exhibits consistency if there is little variation among units.

The validity metric is evaluated by analyzing component codes of deficiencies recorded in the Scorecard. The deficiencies recorded indicate whether findings are valid noncompliance with statutory requirements, and whether they are within the scope of relevant Work Instruction for COC examinations. Additionally, the deficiency codes and cites indicate whether the finding is documented in accordance with relevant Procedures and Recommended Practices.

The impact metric evaluated by analyzing exam scores and Scorecard values of the most commonly cited deficiencies. Each deficiency component is assigned a risk reduction value, so the higher scores indicate teams finding a higher degree of noncompliance, and therefore preventing more hazardous conditions. Port State Control teams cannot evaluate the entire ship, so the relevant Work Instructions direct compliance verification of higher risk systems and arrangements. Zeros or lower scores indicate a lower impact of Port State Control teams on ship and industry safety.

C. 2023 Highlights

U.S. Coast Guard Port State Control teams performed 311 FPV examinations in calendar year 2023. This represents a 19% increase in mission demand for Port State Control examinations on FPVs compared to 262 for calendar year 2022. Figure 1 shows the regional mission demand of FPV compliance examinations in each of the Coast Guard Districts. In addition to the overall increased volume of COC examination activities, 2023 also revealed a regional shift in where compliance activities occurred. In 2022, 47% of COC examinations took place in District 7, with the balance of exams spread evenly among the other districts. In 2023, District 1 and District 17 experienced an influx of cruise ship activity, and subsequently more COC examinations.

Regional Districts

District 1: Northeast

District 5: Mid-Atlantic

District 7: Southeast

District 8: Gulf of Mexico

District 9: Great Lakes

District 11: California

District 13: Northwest

District 14: Pacific Islands

District 17: Alaska

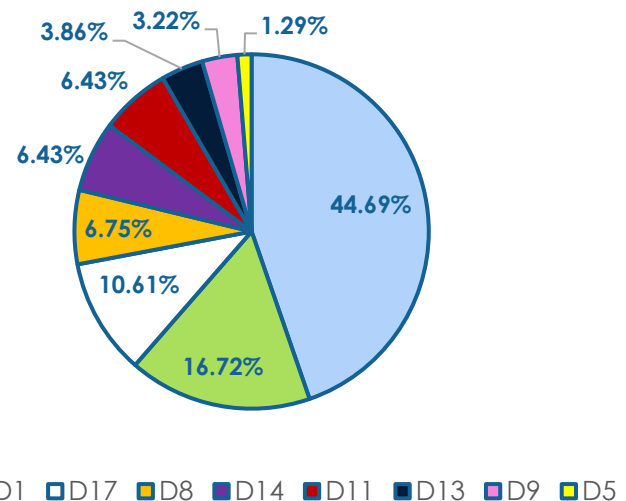


Figure 1. Regional distribution of COC examinations in 2023.

CSNCOE collaboration with FPV operators helped the Coast Guard execute this mission more effectively by scheduling COC examinations in locations where the operational units are more likely to achieve mission excellence and deliver high-quality service. This optimization of geographic mission demand allows the Coast Guard to focus FPV examination proficiency at Tier 1 units, while reducing FPV competency demand at other units so they may flexibly manage personnel to target competency development for the more routine compliance missions in their jurisdiction. In 2023, 74% of the COC examinations were performed by the ten Tier 1 units, while 19% were performed by Tier 2 units, and 7% performed by Tier 3 units. This is an indication of CSNCOE success to drive mission quality by managing the competency demands among all operational units that may receive FPVs in their ports.

Additionally, there is opportunity to enhance mission quality by considering the time dimension of this mission demand. Coast Guard operational units are responsible for executing many missions, and the FPV compliance mission is one that has a significant resource burden due to the size and complexity of modern cruise ships. FPV operations in U.S. waters are predictable with summer vacation seasons in the northern regions, and winter vacation seasons in the Caribbean region. Additionally, cruise ship activities are typically planned out more than one year in advance, so there is great forecast capability. Figure 2 on the next page shows the overall mission demand on Port State Control teams for each month.

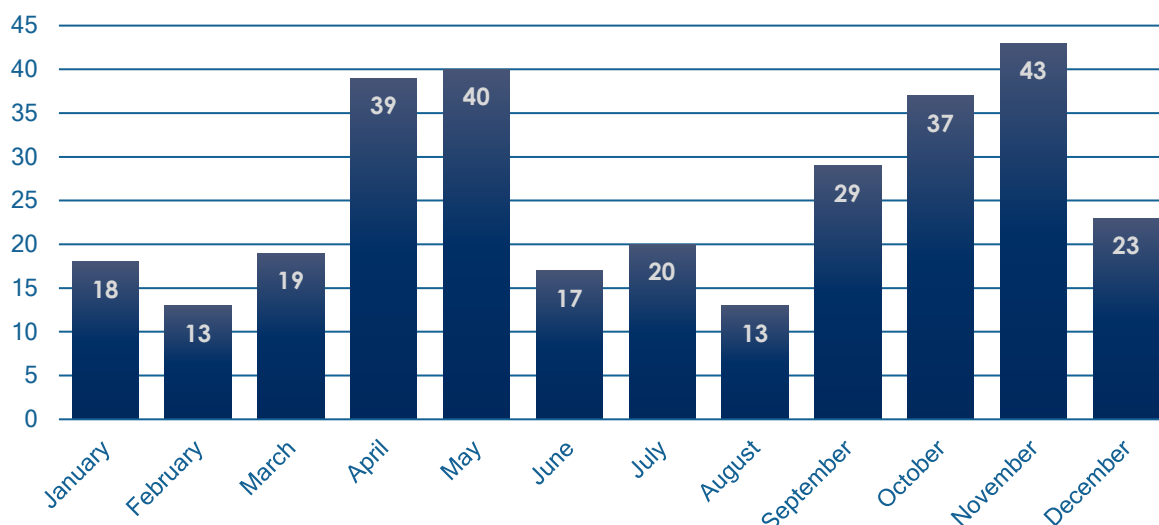


Figure 2. Monthly distribution of COC examinations in 2023.

D. Scorecard Data Review

The average score among the Port State Control teams who performed 311 COC examinations was 12.03 in calendar year 2023. The value 12.03 is a numeric risk reduction value representing the amount of noncompliance identified by the average Port State Control team performing an FPV compliance examination. If a Port State Control team scores a 25, they have identified hazardous conditions that, when rectified by the ship's crew, reduce overall risk on the ship. Port State Control teams are assigned a score value if they identify noncompliance and record the findings as deficiencies. If a Port State Control team scores a zero, it means that they did not identify any noncompliance on the ship, and subsequently, their examination efforts did not reduce any risk on that ship. Due to the extensive amount systems, arrangements, and crew on an FPV, it is typical for a Port State Control team to contribute to the ship's risk reduction efforts through identification of noncompliance.

Figure 3 on the next page shows the distribution of Port State Control team scores for all exams in 2023. The score distribution curve is easily recognizable with the center of the curve residing in the 6-10 range, which represents about 1-2 deficiencies per examination. It is important to note the large number of zero examination scores (about 39% of all exams) in this distribution, which is a known inaccuracy by the CSNCOE. Through our casework review and observations, there were known cases where Port State Control teams identified noncompliance but did not record it in the Scorecard. This is considered an opportunity for improvement for FPV compliance program quality.

The cumulative amount of noncompliance recorded by Port State Control teams for all FPV compliance activities in 2023 is 4,108. This is a 43% increase from the cumulative score of 2,880 recorded in calendar year 2022, which is significant and represents the total impact of U.S. Coast Guard Port State Control teams.

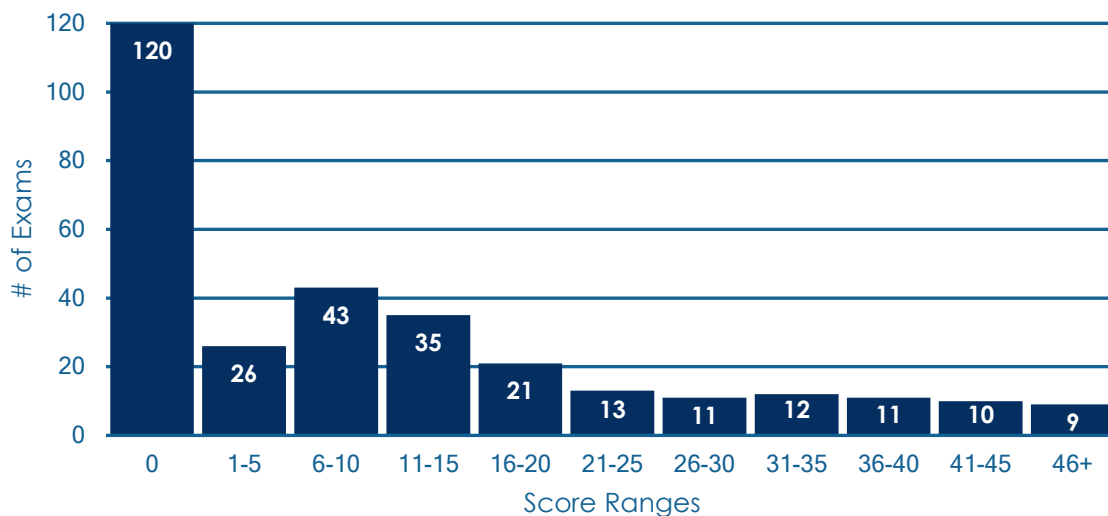


Figure 3. FPV Examination score distribution for 2023.

E. FPVE Program Quality KPIs

Mission excellence can only be achieved if performance is measured, improved, and then remeasured. The CSNCOE cannot be certain of FPV compliance improvement unless there are metrics to compare past, present, and future performance of Port State Control teams. Prevention is one of the most difficult things to measure, because success in prevention means there are no outcomes. When there are no outcomes (i.e., marine casualties), that means there are no data nor metrics. Since the CSNCOE cannot quantify the absence of outcomes, program performance is measured by looking at existing components of the FPV compliance program.

A primary program component is the consistent application of mission tools (i.e., Work Instructions, Process Guides, Recommended Practices, Scorecard). An inherent challenge of measuring program performance is the regional jurisdictional nature of mission execution. Although all teams use the same mission tools, there will always be some degree of inconsistency between districts and units in FPV training and mission execution. Mission excellence can be achieved if inconsistency is minimized. This performance component represents the quality KPI of consistency.

Another component of program performance is adherence to mission requirements. The mission tools are strongly linked to the statutory requirements for FPVs, and Port State Control teams must ensure their control actions are appropriate based on their observations. The validity of deficiency component codes and cites represents the linkage between Port State Control team performance and the mission objective of verifying compliance with the relevant laws and conventions. This performance component represents the quality KPI of validity.

The final program component measured by the CSNCOE is impact. Mission tools guide Port State Control teams to identify impactful noncompliance. There are millions of components on a cruise ship, so

noncompliance is typically identified by Port State Control teams. However, in order to contribute impactful prevention efforts to cruise industry safety, Port State Control teams must be efficient and effective with the limited time onboard during COC examinations, so they should focus on higher risk areas. Examination and subsequent identification of noncompliance in higher risk areas represents Port State Control team impact. This performance component represents the quality KPI of impact.

E.1. Consistency Metric

The 311 COC examinations in 2023 were performed by 30 different operational units. Although each unit may have their own Mission Management System procedures, the Port State Control mission is governed by the Coast Guard Office of Commercial Vessel Compliance in Washington, D.C. If all operational units are following the same national training and mission procedures, the performance of the Port State Control teams should be similar regardless of geographic location. The baseline consistency metric is average exam score of the statistically significant units, primarily Tier 1 units. Table 1 illustrates average Scorecard metrics for the Tier 1 units, and comparison to national, Tier 2, and Tier 3 averages.

Tier 1 Units	No. of Exams	Average Score		No. of Exams	Average Score
Sector Miami	62	4.65	<i>All Units</i>	311	12.03
Sector New York	29	12.22			
Sector San Juan	27	14.37	<i>Tier 1 Units</i>	230	10.42
MSU ¹ Port Canaveral	25	13.65			
Sector Honolulu	18	12.77	<i>Tier 2 Units</i>	58	16.49
Sector Southeast Alaska	17	25.60			
Sector Boston	15	4.30	<i>Tier 3 Units</i>	23	16.83
MSU ¹ Texas City	13	6.76			
Sector Los Angeles/ Long Beach	12	11.67			
Sector Puget Sound	12	5.67			

Table 1. Scorecard averages for 2023.

Initial comparison of exam score averages between unit tiers shows Tier 2 and Tier 3 averages to be about 16, while the Tier 1 average is about 10. This comparison indicates that Port State Control teams at Tier 2 and Tier 3 ports are, on average, finding more noncompliance during FPV examinations. This is an unexpected result since FPV examination proficiency is assumed to be higher at Tier 1 units. It is important to note that the CSNCOE attended 95% of examinations performed by Tier 3 units, and 20%

¹ MSU denotes Marine Safety Unit

of examinations performed by Tier 2 units with an average exam score of about 16. The similar exam score averages between the Tier 2 and Tier 3 unit groups is a positive sign of consistency in a subset of the operational unit population, and can be attributed to CSNCOE attendance. The Tier 1 unit group average of 10 is a warning sign of FPV program inconsistency, due to it being six points away from the other groups. The CSNCOE has run many models of what consistent Port State Control team performance would look like statistically and has determined a benchmark variance of 10 to represent consistency. The calculated variance between the three tier groups is 13, indicating slight inconsistency. However, this is an improvement of program consistency compared to previous years.

Secondary comparison of exam score averages between Tier 1 units also shows a degree of inconsistency. Of the ten Tier 1 units, four units had an average between 4-6, five units had an average between 11-14, and one unit had an average of about 25. The calculated variance between the ten Tier 1 units is 40, indicating notable inconsistency for 2023. Therefore, CSNCOE will use this analysis to consider the causality of inconsistency among Tier 1 units, and continue to improve mission and training tools in 2024.

E.2. Validity Metric

Current mission tools guide Port State Control teams to examine FPVs in accordance with relevant Work Instructions and applicable statutory requirements. While findings outside the scope of the Work Instructions may occur, they should not be commonplace, and therefore should not be significantly present in the deficiencies dashboard. FPV compliance program quality is also evaluated on the validity of recorded noncompliance. Examination deficiencies should conform to U.S. Coast Guard business rules (i.e., Procedures, Work Instructions, Recommended Practices, MISLE User Guide) for documentation onto Port State Control forms and entry into the MISLE database.

The CSNCOE manages a deficiencies dashboard to evaluate validity of all Port State Control team findings. In 2023, Port State Control teams recorded 738 deficiencies among the 311 COC examinations performed. Primary data validation is carried out by reviewing all deficiency component codes that contain “Other”. In accordance with business rules, there are only a couple findings that can be validly recorded under an “Other” component code. However, this component code is commonly used by Port State Control teams when they have a finding that is difficult to cite in accordance with mission tools. Table 2 summarizes the deficiencies recorded in 2023 under “Other” component codes, and conditions of invalid recording, including *incorrect code* and *unsubstantiated finding*. *Incorrect code* indicates that the deficiency should have been recorded under another component code in accordance with mission tools. *Unsubstantiated finding* indicates that the observation did not substantially correspond to an applicable statutory requirement. The validity metric is about 39% (25 out of 64) for the “Other” deficiencies, which is considered an unacceptable value for FPV compliance program quality. It is important to note that this sample does not accurately represent the overall population of 738 deficiencies recorded in 2023.

Component Code	No. Recorded	No. Valid	No. with Incorrect Code	No. with Unsubstantiated Finding
01299 – Other (STCW)	2	0	2	0
02199 – Other (Structural condition)	6	0	2	4
03199 – Other (Load lines)	5	5	0	0
05199 – Other (Radio communication)	1	0	1	0
07199 – Other (Fire safety)	36	16	20	0
08199 – Other (Alarms)	1	0	0	1
09298 – Other (Accident prevention)	2	2	0	0
11199 – Other (Lifesaving)	2	0	2	0
13199 – Other (Machinery)	6	0	2	4
15113 – Other (ISM)	3	2	1	0
<i>Total</i>	<i>64</i>	<i>25</i>	<i>30</i>	<i>9</i>

Table 2. Deficiencies recorded under Other component codes in 2023.

Without doing a complete analysis of all 738 deficiencies, the estimated validity of the overall 2023 population is expected to be much higher. The most common deficiency component code in 2023 was 07105 – Fire doors/openings in fire-resisting divisions, which had 156 deficiencies recorded. The validity metric for this sample was about 99%, which represents a much higher validity and illustrates a different representation of the overall deficiency population in 2023. Overall, this initial consideration of the validity metric shows an encouraging 99% measure for “Fire doors” deficiencies, and a concerning 39% measure for “Other” deficiencies. There is an opportunity for CSNCOE to expand validity metrics in 2024 to include all deficiencies recorded by Port State Control teams.

E.3. Impact Metric

Port State Control teams are guided by mission tools to examine systems, arrangements, and crew in a holistic manner that focuses attention on higher risk areas. Deficiencies identified by Port State Control teams, and their associated risk reduction scores, are not assumed to prevent marine casualties, but they are assumed to mitigate the escalation of accident scenarios. The systems, arrangements, and crew examined during COC examinations are defense mechanisms for cruise ships, and are intended to minimize the consequences of accident scenarios that may occur. The Scorecard risk reduction model represents the impact of Port State Control teams examining FPVs. Of the 311 examinations performed, the highest exam score in 2023 was 72, and there was a total of 120 Port State Control Teams with exam

scores of zero. Referring to Figure 3, one can see the number of exams that resulted in more impactful prevention efforts of Port State Control teams.

The impact of Port State Control teams is analyzed by considering the scores of the most common deficiencies recorded. The FPV compliance program exhibits quality if the teams are finding impactful noncompliance during COC examinations. Table 3 shows the Scorecard values for the top ten deficiencies recorded in 2023. Most of the deficiencies were fire safety related, which often correlate to higher impact values. Impact values for each deficiency can range from a low score of 0.143 to a high score of 10.

Component Code	No. Recorded	Scorecard Value
07105 – Fire doors/openings in fire-resisting divisions	156	7.857
07120 – Means of escape	103	4.714
07199 – Other (Fire safety)	36	1.571
07101 – Fire prevention structural integrity	27	7.857
07109 – Fixed fire extinguishing systems	25	7.857
11101 – Lifeboats	25	5.000
11131 – On board training and instructions	25	3.000
07103 – Division-Decks, bulkheads and penetrations	24	7.857
11129 – Operational readiness of lifesaving appliances	24	5.000
07123 – Operation of fire protection systems	23	7.857

Table 3. Summary of top ten deficiencies recorded in 2023.

The CSNCOE has not established a target metric for impact, but the national average Port State Control team score of 12.03 can be compared to the 2022 score of 10.27. This represents a 17% annual improvement, which indicates that Port State Control teams had more of an impact during COC examinations in 2023.

F. Summary

As the CSNCOE is responsible for training and mission support for operational units executing the FPV compliance mission, we must ensure the program is ready today and prepared for tomorrow. The Scorecard drives mission excellence as a knowledge management tool and provides key metrics that inform FPV program quality KPIs. The three key questions to be answered in determining if our Port State Control teams are achieving mission excellence and high-quality service are as follows:

1. How do we measure mission excellence and high-quality service?
2. How are our Port State Control teams doing now?
3. How do KPIs drive continuous improvement of the FPV compliance program?

The consistency metric revealed a statistical variation of 13 between the unit Tiers, and 40 between the Tier 1 units. This indicates slight inconsistency between Port State Control team averages in the Tier 1, 2, and 3 groups, and substantial inconsistency between the ten Tier 1 units. The target variation between units is 10, and it will be reevaluated for the 2024 Scorecard analysis. The CSNCOE will increase tailored training sessions in 2024 with Tier 1 units to ensure consistent understanding and application of exam tactics and documentation procedures.

The validity metric is not considered fully complete due to the way deficiencies were tracked in 2023, but analysis was performed to two representative samples to provide baseline indicators. The validity of the “Other” deficiency component codes was 39%, while it was more than 99% for the “Fire doors” deficiency component code. The 39% validity metric for “Other” deficiency components is considered unacceptable, and CSNCOE will update mission and training tools to minimize Port State Control teams’ use of “Other” component codes. The CSNCOE will review possible methods to track validity of all FPV deficiencies recorded in MISLE to improve KPI analysis at the end of 2024. Additionally, the CSNCOE will review the current monthly casework review process to consider developing an effective feedback mechanism so units may understand the validity of their recorded deficiencies.

The impact metric of 12.03 was a 17% improvement from the 2022 national performance of Port State Control teams. The top ten deficiencies list illustrates that teams were substantially recording deficiencies with higher risk reduction values, indicating strong FPV compliance program impact. The CSNCOE interprets this KPI metric as reinforcement that current Work Instructions and Process Guides contain the appropriate systems, arrangements, and crew examination procedures that focus Port State Control team efforts on higher risk areas.

The FPV compliance program quality KPIs show that U.S. Coast Guard Port State Control teams are having an impact on cruise ships by identifying noncompliance that mitigate escalation potential in accident scenarios. The 2023 data show that there is room for improvement in consistency of Port State Control team performance during COC examinations. The data also show both acceptable and unacceptable points of validity in the deficiencies recorded, which is considered an opportunity for the CSNCOE to update mission and training tools, as well as quality metric tracking tools.