

INTERNAL AUDIT REPORT

Operational Audit – Aqueous Film Forming Foam (AFFF) Transition

As of August 15, 2024



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Executive Summary

Internal Audit (IA) completed an audit of the Port of Seattle Fire Department (POSFD) through the period ended August 15, 2024. The primary focus was to evaluate the efficacy of measures taken by POSFD in mitigating the risk of exposure to Aqueous Film Forming Foam (AFFF) and their plans for transitioning to Per- and Polyfluoroalkyl Substances (PFAS)-free alternatives. Given the health hazards associated with PFAS chemicals, this audit aimed to provide insights into current practices and recommend improvements to safeguard personnel and the environment.

The POSFD is taking proactive steps to address the risks associated with long-term exposure to AFFF, which contains PFAS chemicals. Exposure to high concentrations of PFAS has been linked to cancer and other related illnesses. As part of efforts to understand and mitigate these risks, some POSFD firefighters participated in the Fire Fighter Cancer Cohort Study. Analysis of their blood samples revealed elevated levels of PFAS compared to the general population, highlighting the potential health hazards associated with AFFF exposure. Tragically, three POSFD firefighters have been diagnosed with pancreatic cancer, with two having passed away.

The POSFD is compliant with RCW Chapter 70A.400, as no foam is discharged during their training sessions. This law, enacted in 2018, prohibits the discharge or use of class B firefighting foam containing intentionally added PFAS chemicals for training purposes. Furthermore, previously, the FAA required the department to conduct tests that required releasing AFFF every six months to determine the appropriate mixtures between AFFF and water. However, instead of this practice, the Port has acquired an Ecologic System Foam Machine. This machine, which is external and connects to the fire truck, simulates the AFFF proportioning (mixing) with water without the need for an actual discharge. This solution not only assures compliance but also provides an efficient means of testing.

Several tenants within the Port of Seattle (Port), including the Alaska Hangar, the Delta Hangar, the PACCAR Hangar, the Fuel Farm (leased to SeaTac Fuel Facilities LLC, operated by FSM Group), and the Consolidated Rental Car Facility (CRCF), currently utilize AFFF within their fire suppression systems. The CRCF is in the early stages of developing plans to switch to water sprinkler systems. Delta Airlines, PACCAR, and the Fuel Farm consortium are also in the process of assessing their transition options. It is evident that transitioning away from AFFF remains a work in progress for these tenants.

In general, Port management's internal controls are aligned with policies and procedures. However, our audit identified opportunities where internal controls could be enhanced or developed. These opportunities are listed below and discussed in more detail beginning on page seven of this report.

- 1. **(Medium)** A lack of AFFF Disposal Planning by the POSFD and AV-Env, posed potential storage challenges after transition to PFAS-free foam.
- 2. (Medium) ARFF vehicle valves were actuated and were found to operate as intended with the new F3 foam, however, the POSFD had not yet decided, if and when, to test the valves on ARFF vehicles on an ongoing basis. Failure to test valves can pose a risk of valves malfunctioning due to prolonged inactivity.
- 3. **(Medium)** Internal Audit identified challenges in the maintenance of AFFF Fire Suppression Systems at tenant locations. Additionally, the audit revealed potential operational safety risks associated with delayed transitions to PFAS-free foam alternatives.
- 4. (Medium) The 1995 E-One 5190 120 was inadvertently omitted during the compilation of AFFF inventory list.
- 5. **(Medium)** Internal Audit identified areas for Improvement in AFFF Management Policies, Compliance, and Training Documentation.

We extend our appreciation to Port Management and staff for their assistance and cooperation during this audit.

Jenn Chesnandes

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Responsible Management Team

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Background

The Navy received a patent for its invention of AFFF in 1966 and by the mid 1960's the 3M Company was manufacturing AFFF for the military. By the late 1960's, the U.S. Navy required all its vessels to carry AFFF. In the 1970's the Department of Defense (DoD) began using AFFF to fight fuel fires at all military installations. In 1988, the FAA followed suit and mandated all commercial passenger servicing airports to use AFFF to combat against Class B flammable fires.

AFFF's effectiveness lies in its ability to cool, separate flames, suppress vapors, and smother fires, making it ideal for areas with flammable liquids. However, its composition, including perfluorooctanesulfonic acid (PFOS) or perfluorooctanoic acid (PFOA), from the PFAS chemical family, poses environmental and health risks. Firefighters, predominantly exposed during training and emergencies, face various health issues linked to PFAS exposure, as noted by the U.S. Department of Veterans Affairs.

Washington State Senate Bill 6413, enacted into law as RCW Chapter 70A.400, prohibits the discharge or use of Class B firefighting foam containing intentionally added PFAS chemicals for training purposes, starting from July 1, 2018. Furthermore, it imposes limitations on the production, sale, and distribution of Class B firefighting foams containing PFAS chemicals, although exemptions are granted for federally mandated uses (until September 2023, use of AFFF was mandated for use at certificated airports by the FAA) and oil refineries. In September 2025, the law eliminates all exceptions for the purchase of AFFF, now that PFAS-free alternatives are authorized for use by the FAA. However, at the time of the audit, there were no explicit regulations governing the use of already acquired AFFF.

As of September 2023, the FAA has approved the use of fluorine-free firefighting foams (F3) that meet the new Military Specification (MIL-SPEC) set by the Department of Defense (DoD). The FAA's acceptance of F3 at airports, marked a significant step, aligned with military standards. This approval allows airports to opt for these environmentally safer alternatives to AFFF that contains PFAS.

The POSFD operates vehicles which were equipped with AFFF. While AFFF usage history includes emergency responses and accidental discharges, the POSFD ceased on-site training with AFFF in 2003. In addition to presence in AFFF, PFAS is also known to be present in the water-resistent inner linings of firefighter turnout gear. The POSFD is exploring PFAS-free turnout gear alternatives.

The POSFD initiated the transition to PFAS-free firefighting foam in June 2024, with the F3 implementation and the ARFF truck decontamination completed on August 6, 2024. Notice letters were sent to tenants with AFFF fire suppression systems in February 2024. In this letter, the Port indicated, waivers to requirements for annual system testing and backup supply requirements from the POSFD, as the Authority Having Jurisdiction (AHJ), would no longer be granted to the tenants following September 2025. Facilities currently receiving waivers may have to upgrade their systems to assure compliance with AHJ standards.

See Appendix C for the history of AFFF discharges both by POSFD and Tenants.

Audit Scope and Methodology

We conducted the engagement in accordance with Generally Accepted Government Auditing Standards and the International Standards for the Professional Practice of Internal Auditing. Those standards require that we plan and conduct an engagement to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our engagement objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our engagement objectives.

We used 100% sampling for all the below-listed tests except benchmarking and procurement tests, where we used judgmental sampling methods to determine the samples selected. In those cases, the results of the work cannot be projected to the population as a whole. The period audited was as of May 15, 2024, and included the following procedures:

Interviews & Process Walkthroughs

Conducted interviews and process walkthroughs at the fire department and with Port tenants using AFFF in their fire extinguishing systems to understand the following:

- Policies and procedures for handling AFFF.
- Storage practices of AFFF POSFD and tenant sites.
- Transition plans for moving to PFAS-free foam.
- Preventive and detective controls in place for discharge/spill incidents.
- Use and storage of bunker gear containing PFAS.
- Training programs related to AFFF and the new PFAS-free foam.
- Opportunities for improvement in these areas.

Document Review

Reviewed key documents related to AFFF handling, including the following:

- Port policies, departmental procedures, and associated training materials.
- State and Federal laws and regulations concerning AFFF procurement.
- 14 CFR Part 139 requirements from the Federal Aviation Administration (FAA).
- Department of Ecology guidelines on AFFF storage and disposal.

Procurement

- Past purchases: Obtained invoices for bunker gear and AFFF foam purchases.
- Exemption: Reviewed a CPO-5 competition waiver allowing the Port to procure Globe firefighter protective equipment from a specific vendor without a bidding process.
- Authorization: Confirmed proper authorization for purchases.

Observations

- POSFD Examined the storage and maintenance of bunker gear, AFFF foam storage, and quantities in ARFF vehicles, external totes, and buckets.
- During site visits, we observed AFFF tank rooms at tenant locations, including the PACCAR Hangar, the Delta Hangar, the Alaska Hangar, the Fuel Farm, and the CRCF.

Benchmarking.

- Reached out to other airport fire departments transitioning to or already using PFAS-free foam.
- Investigated their methods for AFFF foam storage and disposal.

Schedule of Observations and Recommendations

1) Rating: Medium

A lack of AFFF Disposal Planning by the POSFD and AV-Env posed potential storage challenges after transition to PFAS-free foam.

The POSFD is collaborating with the Port's Aviation Environmental Department (AV-Env) to prepare for the transition away from AFFF. During our walkthrough at the fire department and interviews with environment specialists, we learned that the plan was to store the AFFF in intermediate bulk containers (IBC) totes. These totes, designed for handling hazardous materials like AFFF, were to be equipped with spill containment pallets to mitigate any potential spills or leaks. However, a comprehensive plan for AFFF disposal was lacking, raising concerns about potential storage issues after the transition.

Initially, the plan was to store AFFF outside the POSFD building and wait for the Washington State Department of Ecology's takeback program, which would have provided free disposal. However, in our recent discussions with the POSFD and AV-Env, they were considering disposing of AFFF at a hazardous waste facility, which would be a more costly option than the takeback program but would address the storage issues.

While the transition to PFAS-free foam was underway, AV-Env confirmed that AFFF, removed from vehicles, was being temporarily stored outside the POSFD building as an interim measure, pending the development of a proper disposal strategy.

IA also observed that, in addition to the ARFF vehicles, AFFF was stored in two IBC totes and several 5-gallon buckets with secondary spill containment in the apparatus bay at the POSFD. This apparatus bay is used by the firefighters for training.

Furthermore, the Port is tasked with storing and disposing of approximately 1,000 gallons of AFFF at the Consolidated Rental Car Facility (CRCF). This responsibility arises from the Port taking on the project of transitioning from AFFF to a water sprinkler system at the CRCF, necessitated by the project cost exceeding the dollar amount threshold outlined for improvement projects in their lease agreements. IA has identified potential storage issues if a proper plan is not established promptly.

See Appendix B for an estimated inventory amount of AFFF at POSFD.

Recommendations:

- 1. The POSFD, working with AV-Env, should promptly finalize a storage and disposal plan for AFFF.
- 2. Assure all storage containers are clearly labeled and regularly inspected for leaks and damages.
- 3. The Aviation Project Management Group (AVPMG), and Aviation Commercial Management, should work closely with Av-Env to come up with a disposal plan for AFFF from the CRCF project.

Management Response/Action Plan:

As noted above, all AFFF located on-site at the Fire Department is currently stored in appropriate containers, labelled, and located within secondary spill containment, in accordance with all applicable material handling laws, and the Airport's Stormwater Pollution Prevention Plan (SWPPP) and Spill Prevention, Control, and Countermeasure (SPCC) Plan. There are multiple options available for eventual disposal of AFFF, and the Environmental Department and Fire Departments continue to evaluate and consider these options. There is no written comprehensive plan for AFFF disposal, as this type of document is not required by any law or regulation and would be constantly evolving as the teams determine the best path forward for AFFF removal from SEA. We are in the process now of finalizing the ultimate method and process for removal of unused AFFF from SEA and will make a determination before the end of the calendar year. Until that time, AFFF will remain secured in appropriate containers, with required labeling and spill containment, as required by law and the Port's material handling plans.

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Port Environmental will continue to regularly inspect stored AFFF, in accordance with our Hazardous Materials Management protocols.

Disposal of AFFF associated with the CRCF project will be coordinated as suggested and is already included in the scope of the CRCF Fire Suppression System Capital Improvement project currently in design. Project kickoff for the project occurred in early August, and included representatives from PMG, Properties, and Environmental. These parties will continue to coordinate throughout project development. The project scope underway includes determination of proper handling and disposal of generated waste streams, which includes AFFF, as well as AFFF-impacted infrastructure (such as piping). This is standard for all Port projects involving hazardous materials but has been specifically identified in project documents as a scope item for this project.

DUE DATE: 10/31/2024

ARFF vehicle valves were actuated and were found to operate as intended with the new F3 foam, however, the POSFD had not yet decided, if and when, to test the valves on ARFF vehicles on an ongoing basis. Failure to test valves can pose a risk of valves malfunctioning due to prolonged inactivity.

The fire suppression systems within the ARFF vehicles essentially mix AFFF and water to create to required mixture to extinguish fires. Each system stores AFFF in a large tank within the vehicle with only a few entry points. A valve between the AFFF tank and a pump controls the water-to-AFFF mixture. If a firefighter happens to open a valve, AFFF will be introduced within the pump and AFFF will be exposed to all the pump lines within the ARFF fire suppression system. Although the FAA mandates biannual testing of the water-to-AFFF mixture, the FAA does not explicitly mandate testing of the valves. However, the FAA does state that testing the system is an integral part of maintaining ARFF vehicles in optimal condition for an emergency response.

Since RCW Chapter 70A.400 prohibited the use of PFAS-containing firefighting foam for training on July 1, 2018. The POSFD acquired an Ecological Foam Machine in 2020, eliminating the need to open the AFFF valve to meet required FAA testing. This machine mimics blending the AFFF concentrate with water without actually blending or discharging AFFF, eliminating environmental or health risks. During our audit, discussions with the POSFD staff revealed concerns about valve functionality and potential corrosion due to prolonged inactivity.

As part of the AFFF transition to F3 foam work that occurred from June to August, the foam valves in all ARFF vehicles were actuated and reportedly operated as intended. However, the POSFD had not yet decided whether to maintain the same safety protocols used for AFFF after transitioning to the new foam, given the potential risk of a PFAS rebound since the existing ARFF tanks and pipelines were not replaced. They also considered starting to test the valves if their tests indicated low levels of remnant AFFF.

If the valves are not tested for extended periods, there is a potential risk of malfunction due to corrosion. We reached out to fire departments at other airports, including Reno Airport and Jackson Hole Airport, which had either completed or were in the process of transitioning to PFAS-free foam, to benchmark their experiences. These departments emphasized the critical need for valve functionality testing due to the risk of malfunction caused by corrosion. To ensure proper functioning, these departments implemented various measures, such as hiring third parties for testing to reduce exposure risks to internal staff, designating areas for foam discharge with proper cleanup protocols, or acquiring new apparatus with built-in systems for valve functionality testing without foam discharge.

Recommendations:

1. Going forward the POSFD should establish standard operating procedure (in conjunction with the AV-Env) to identify a process for valve functionality testing in ARFF vehicles to mitigate the risk of malfunctioning due to corrosion or prolonged inactivity.

Management Response/Action Plan:

As part of the AFFF transition to F3 foam work that occurred in June-August, the foam valves in all ARFF vehicles were actuated, and found to be fully functional and operational in all vehicles. Testing of valves is recommended by the manufacturer, however it is not possible to test valve functionality without discharge of foam which then carries the potential for firefighter and mechanic exposure, as well as environmental discharge. It is not currently known what degree of PFAS rebounding will occur in the new F3 foam as a result of remnant AFFF presence in the vehicle tanks and piping. Until the concentration of PFAS intrusion into the F3 foam is known, the Fire Department will continue to restrict valve actuation and foam discharge to minimize risk of exposure, and risk of release to the environment.

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Rebound testing of PFAS into the F3 product is planned, and will begin as soon as a Work Plan for this activity is finalized – anticipated in mid-August 2024. Once these data are obtained, this information will be used to inform the process for vehicle maintenance and foam discharge moving forward, including actuation of the foam valves. Once a decision is made by the Fire Department, all associated policies, procedures and practices will be updated to reflect the new condition.

DUE DATE: 03/31/2025

Internal Audit identified challenges in the maintenance of AFFF Fire Suppression Systems at tenant locations. Additionally, the audit revealed potential operational safety risks associated with delayed transitions to PFAS-free foam alternatives.

As part of our audit, we conducted walkthroughs for each of the airport's tenants that use AFFF in their fire suppression systems: the Alaska Hangar, the Delta Hangar, the PACCAR Hangar, the Swissport Fuel Farm, and the Consolidated Rental Car Facility. During our walkthroughs, we toured their facilities, spoke with their employees, and inspected their AFFF system rooms. Some of the observations noted during audit testing were as follows:

1) Tenant Maintenance of their Fire Suppression systems.

- Leaks and Spills: Inspections identified instances of leaks and spills of unidentified substances at two tenant facilities (see Appendix D). These occurrences were observed in indoor areas without direct connections to Port utilities or systems. While such incidents are part of the operational challenges in complex industrial settings, they highlight the importance of ongoing maintenance and prompt remediation to minimize potential health risks to tenant staff. Tenants are responsible for their own system maintenance and internal leaks and spills of this nature are not required to be report to the AV-Env.
- Maintenance Challenges: Despite regular maintenance, some tenants have old systems with recurring faults. The cause for these faults not being identified during maintenance remains unclear. Multiple accidental discharges due to system failures have been reported to AV-Env (see Appendix C). While breakdowns in aged industrial equipment aren't unusual, these incidents highlight the ongoing challenge of maintaining older systems.

2) The Transition from AFFF containing PFAS.

- Regulatory Requirement and Tenant Progress: Washington state legislation, Chapter 70A.400 RCW, prohibits the manufacture, sale, or distribution of class B firefighting foam containing intentionally added PFAS chemicals as of July 1, 2020. This regulation initially exempted airport facilities using AFFF under a federal mandate until viable PFAS-free alternatives became available. The exemption for airport facilities is set to expire on September 18, 2025. The Environmental team has formally notified tenants about recent regulatory developments regarding AFFF usage. The Consolidated Rental Car Facility plans to transition to a water sprinkler system in their initial phases. Delta Airlines is exploring the transition to a water sprinkler system and is currently conducting a Fire Risk Assessment to determine the best approach. There are no set plans for other tenants, who are still evaluating their transition plans.
- **Depleting AFFF supplies and Operational Safety Risk:** Depleting AFFF inventories due to accidental discharges, combined with the state ban on new AFFF purchases, could compromise fire suppression capabilities across the airport, making it essential to switch to alternatives.
- Environmental and Reputational Risk: Continued use of PFAS-containing foam increases the potential for environmental contamination. Delays in transitioning to PFAS-free alternatives may impact the Port's image as an environmentally responsible entity.
- Waivers from POSFD: In February 2024, tenants were notified via letters the Washington State ban on the purchase, sale, and distribution of AFFF. The Port also indicated that fire code waivers for non-compliance items such as annual system testing and backup supply requirements from the POSFD, as the Authority Having Jurisdiction (AHJ), will no longer be granted after September 2025. Facilities currently receiving waivers may need to upgrade their systems to comply with AHJ standards.

Recommendations:

1. Enhance the Port's existing inspection protocols by incorporating AFFF storage areas into

regular facility assessments.

- 2. Establish a definitive deadline for tenants to submit their transition plans to the Port.
- 3. Continue and potentially expand technical assistance to tenants for PFAS-free alternative implementation.

Management Response/Action Plan:

The regulatory exemption to the State of Washington ban on the purchase, sale and distribution of PFAS-containing AFFF for federally mandated uses only applies to use of AFFF in ARFF vehicles operated by the Port Fire Department. Hangar facilities, rental car facilities, and Fuel Farm systems are not federally mandated, and therefore are not exempt from the state ban, which went into effect for these facilities in 2020. It is also critical to recognize that although purchase sale and distribution of AFFF is banned, use of AFFF is not. There is currently no ban or restriction on the <u>use</u> of AFFF in Washington.

We agree that supporting tenant transition to non-PFAS containing systems is of utmost importance to the Port. This is why our staff have been communicating with, supporting, and encouraging transition actions at tenant facilities for the last few years, which we believe is part of the reason multiple facilities are already underway with their transition planning. However, the Port is not a regulatory agency and without a regulatory basis for restriction of AFFF use at the airport, there is no practical mechanism for the Port to require tenants' transition. Further, doing so could expose the Port to certain legal risks. There are currently no laws, regulations, or permits that restrict the use or discharge of PFAS from the airport facility. Should this change in the future, we will re-evaluate our approach.

In response to the Recommendations above, Port-Env will ensure all facilities with AFFF systems within the NPDES boundary will continue to **comply with the Port SWPPP**. Note that some foam rooms and facilities are not currently included as they are not within the Port's NPDES boundary; they do not have discharge drains or flow paths to Port-owned surface water systems (IWS or SDS). Also note that the Consolidated Rental Car Facility is not **included** under the SEA permits for surface water drainage, is not connected to the Port's IWS basin, and has its own separate permits.

As noted above, there are no current regulatory requirements for ceasing use of AFFF. Port-Env will request tenants provide AFFF system transition plans to the Port, including a schedule for any planned transition activities. This request for transition plan status will be done by September 25, 2024.

Port-Env and the Fire Marshall (Port Fire Department) will continue to provide technical support to tenants on transition planning. As we are not responsible for decision-making, risk evaluation, or tenant decisions regarding tenant-owned facilities, our assistance will be limited to activities that are within the Port's authority and do not create additional legal risk. It is important to note that Port-Env already discusses AFFF transition planning and general PFAS conditions with tenants on a frequent basis, more than quarterly with some tenants. We have conducted multiple briefings to Airlines4America, prepared AFFF spill response quick reference guides for all facilities storing AFFF, checks in with tenant environmental departments to discuss AFFF planning and updates, and also meet semi-annually with the Airline Consortium responsible for the Fuel Farm. If there are specific actions recommended to expand the assistance currently provided, please provide specific suggestions.

DUE DATE: 09/25/2024

The 1995 E-One 5190 120 was inadvertently omitted during the compilation of AFFF inventory list.

The POSFD contracted TRS Group, Inc. to clean and decontaminate the ARFF vehicles containing AFFF in preparation for transitioning to PFAS-free foam. During our audit of the POSFD's AFFF inventory and transition plans, we identified an oversight in the AFFF Inventory Compilation. One vehicle, a 1995 E-One 5190 120, containing 30 gallons of AFFF, was not included in the inventory and the TRS Group decontamination contract. This older vehicle requires a different approach for AFFF removal compared to the newer ARFF vehicles covered by the TRS Group decontamination contract. POSFD and AV-Env have acknowledged this oversight, confirming that the vehicle won't be added to the TRS Group contract due to its unique requirements. Currently, a specific plan for managing the AFFF in this vehicle has not been determined.

Recommendations:

The POSFD, in collaboration with AV-Env, update the AFFF inventory to include this vehicle, and develop a documented plan for managing its AFFF that aligns with overall phase-out timelines and safety standards.

Management Response/Action Plan:

Port Fire Department and Port-Env appreciate identification of this inventory oversight. The AFFF has already been removed from the onboard tank of the E-One 120. Port Fire Department mechanics will disconnect the piping and place a blank plate over the foam switches inside the rig. The vehicle can no longer discharge AFFF. The vehicle has been equipped with a stand-alone mobile tank of NovaCool, a PFAS-free firefighting foam, consistent with the other two engine vehicles in the fleet that were drained of AFFF and converted to NovaCool in 2020. Completion of the piping isolation and switch plate cover will be completed before the end of the year.

DUE DATE: 12/31/2024

Internal Audit identified areas for Improvement in AFFF Management Policies, Compliance, and Training Documentation.

During our audit, we examined a wide range of documentation related to AFFF management, including operational policies, handling procedures, safety guidelines, and training records. Our review revealed the following observations:

- 1. Current Policy and Procedure for AFFF
 - Policy and Procedure No. 316 was outdated, mentioning discontinued practices like annual AFFF discharge for FAA compliance.
 - No specific policies have been drafted for the new PFAS-free foam being introduced in June 2024.
- 2. AFFF Management and Regulatory Compliance
 - Currently, Aqueous Film-Forming Foam (AFFF) is not regulated under the Resource Conservation and Recovery Act (RCRA), which governs hazardous waste management. However, AV-Env proactively classifies AFFF as a hazardous substance, even though this classification is not legally mandated.
 - The Spill Prevention, Control, and Countermeasure (SPCC) Plan governs the handling and storage of hazardous substances. Since AFFF is treated as a hazardous material by AV-Env, it falls under the regulations outlined in the SPCC Plan. However, the current SPCC Plan does not explicitly list AFFF as a hazardous substance.
- 3. <u>Training Documentation:</u>
 - Regular AFFF training sessions are conducted, including an annual session every February.
 - Vector Solutions, used to track trainings, is infrequently updated and may not reliably indicate all conducted trainings.
 - Some training sessions are verbal and not documented in Vector Solutions.

Recommendations:

- 1. Update Policy and Procedure No. 316 to reflect current practices and remove references to discontinued practices, such as the annual discharge of AFFF for FAA compliance.
- 2. Develop and implement policies for the new PFAS-free foam introduced in June 2024.
- 3. Update the SPCC plan to explicitly mention AFFF as one of the hazardous substances managed under the plan.
- 4. Improve documentation of safety trainings sessions for both AFFF and PFAS-free foam.

Management Response/Action Plan:

Transition of the Port ARFF fleet to fluorine-free foam was completed Monday August 6th, 2024. Policy #316 has been updated to reflect the transition to F3 foam, and current practices for use and discharge of F3 foam. This policy is undergoing department review, in accordance with policy revision protocol, with the policy review period ending September 4, 2024.

Policies for the new PFAS-free foam is included in the revised Policy #316.

As noted in the audit observations above, PFAS is not yet a federally listed Hazardous Substance under RCRA, and therefore AFFF is not specifically identified in the SPCC Plan as a hazardous substance. Port-Env will review the SPCC Plan and SWPPP and identify areas where language can be revised to reflect and include the Port's handling of AFFF in the same manner as if it were a Aqueous Film Forming Foam (AFFF) Transition

hazardous substance in the absence of a Federal listing. Any updates to the SPCC and/or SWPPP will be made in conjunction with the 5-year updates and as needed the minor annual document revisions. Please note that some of the tenants also have SPCC plans specific to their facilities and operations at SEA. If any updates are made to the Port SPCC it would only be reflective of Port-owned infrastructure that falls under this regulatory requirement.

The fire department is currently compliant with all regulatory and policy-related requirements for firefighter training. Trainings specifically related to use and handling of F3 foam and AFFF have been updated in the training database Vector Solutions to better reflect ALL trainings and safety discussions that have been conducted related to the new F3 foam. Future trainings specific to foam will be documented in Vector Solutions.

DUE DATE: 12/31/2024

Appendix A: Risk Ratings

Findings identified during the audit are assigned a risk rating, as outlined in the table below. Only one of the criteria needs to be met for a finding to be rated High, Medium, or Low. Findings rated Low will be evaluated and may or may not be reflected in the final report.

Rating	Financial/ Operational Impact	Internal Controls	Compliance	Public	Commission/ Management
High	Significant	Missing or partial controls	Non-compliance with Laws, Port Policies, Contracts	High probability for external audit issues and / or negative public perception	Requires immediate attention
Medium	Moderate	Partial controls Not functioning effectively	Partial compliance with Laws, Port Policies Contracts	Moderate probability for external audit issues and / or negative public perception	Requires attention
Low	Minimal	Functioning as intended but could be enhanced	Mostly complies with Laws, Port Policies, Contracts	Low probability for external audit issues and/or negative public perception	Does not require immediate attention

Appendix B: Estimated inventory amount of AFFF at POSFD and Tenants

Organization	Storage Type	Estimated Gallons (gal)
	ARFF 1 - 2021 Rosenbauer Panther 6X6	420
	ARFF 2 - 2009 Oshkosh Striker 3000	420
	ARFF 3 - 2016 Oshkosh Striker 4500 HRET	640
	ARFF 4 - 2005 Oshkosh Striker 3000	420
Port of Seattle - Fire Department	ARFF 5 - 2021 Rosenbauer Panther 6x6	420
	E-303 - 1995 Darley 5190 120	30
	Storage Tanks	395
	5-Gallon Buckets	50
	Estimated Total	2,795
	Tank #1	6,000
	Tank #2	6,000
Swissport - SeaTac's Fuel Farms	55-Gallon Drums	880
	Storage Tanks	275
	Estimated Total	13,155
	Tank #1	2,140
	Tank #2	2,169
Dolto Airlino'o Hongor	Tank #3	2,161
Della Alfinite S Hangai	Tank #4	2,229
	Hanger Tanks	800
	Estimated Total	9,499
	Tank #1	4,400
Alaska Airline's Hangar	Tank #2	4,400
	Estimated Total	8,800
	Tank #1	1,200
PACCAR's Hangar	Tank #2	1,200
	Estimated Total	2,400
	Tank #1	500
Consolidated Rental Car Facility (CRCF)	Tank #2	500
	Estimated Total	1,000
	Consolidated Estimated Total	37,649

Appendix C: History of Discharges

Organization	Date	AFFF Discharge Amount	Nature	
Port of Seattle - Fire Department	5/12/2021	Unknown	Accidental discharge through training	
	2021	Unknown	Two new ARFF vehicle apparatus testing	
	2020	Unknown	Last known report of FAA bi-annual testing before switching to Ecologic Foam Machine	
	2016	Unknown	Brush Fire	
	2021	Unknown	Aviation Fuel Tanker explosion on Interstate 5 at Federal Way	
	1998	Unknown	De Havilland Dash Plane Crash.	
Swissport - SeaTac's Fuel Farm	2020	Unknown	Foam valve failure	
Delta Airline's Hangar	1/12/2024	2,000 gallons	Sensor failure	
	4/27/2022	1,200 gallons	Short circuit in the fire panel	
Alaska Airline's Hangar	N/A - None reported as of 2021			
PACCAR's Hangar	12/27/2021	2,000 gallons of water/foam mixture	Dry sprinkler head failure	
Consolidated	1/17/2024	1,000 gallons of water/foam mixture	The AFFF system ruptured at the drum's low points. This was caused by freezing, which busted the pipes, and then thawed	
Rental Car Facility (CRCF)	11/7/2023	Unknown	Leak within the AFFF system control room	
	1/2/2022	1,800 gallons of water/foam mixture	The AFFF system ruptured at the low point drums. This was caused by freezing, which busted the pipes, and then thawed	

Appendix D:

Alaska Airlines' AFFF Tank Room with Spills and Leaks of Unidentified Fluid (likely hydraulic fluid).



Consolidated Rental Car Facility' AFFF Tank Room with Spills and Leaks of Unidentified Fluid potentially can be AFFF .



Appendix E: Transitional Plans for AFFF.

Organization	Transitional Plans
Port of Seattle - Fire Department	The POSFD has contracted a professional cleaning company to decontaminate the ARFF vehicles of PFAS in June 2024. After the decontamination process, the ARFF vehicles will be refilled with the new F3 foam. The AFFF previously in the ARFF vehicles will be stored in containers on site until the Washington State Department of Ecology AFFF takeback program is restarted.
Swissport - SeaTac's Fuel Farms	The Airline Consortium that operates the Fuel Farm is discussing transitional plans at corporate level but local staff was not aware or could provide definitive answer on their transition plan.
Delta Airline's Hangar	Delta Airline is still in the process of finalizing their transition plans. They are considering implementing a water sprinkler system instead of a foam system. A Fire Risk Assessment is currently underway to evaluate this option.
Alaska Airline's Hangar	Alaska's management was not present during the site visit, so we were unable to obtain the status of their transition plan.
PACCAR's Hanger	PACCAR has reached out to vendors for an estimate to transition to a PFAS-free foam system. However, they are having difficulty getting vendors to visit their facility due to its smaller size. Additionally, with their lease ending in six years, they need to weigh the costs and benefits of making the switch.
Consolidated Rental Car Facility (CRCF)	The Port has taken responsibility for replacing the AFFF system and disposing of the AFFF. Currently, they are in the early design phase of this project. The CRCF is going to be equipped with an all-water sprinkler system as part of this upgrade.