

National Park Service
U.S. Department of the Interior

Glacier Bay National Park and Preserve
Alaska, Region 11



Cruise Ship Environmental Monitoring and Compliance Program

2023 Summary Report





An inspector assisted by a ship crew member discuss a point on a checklist during a compliance audit.
MARINE EXCHANGE OF ALASKA

Cover: Park staff on the M/V Serac go out to meet a cruise ship.
MARINE EXCHANGE OF ALASKA



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Marine Exchange of Alaska inspector Jon Dale travels out to meet a cruise ship.
MARINE EXCHANGE OF ALASKA

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Definitions

Glacier Bay National Park and Preserve (the park) consists of the area designated a national park (first designated a national monument in 1925), that includes its namesake, Glacier Bay, and lands to the west (added in 1980) that comprise the preserve.

The National Park Service requires cruise ship companies to have a concession contract to operate within **Glacier Bay**, the Y-shaped fjord within the park.

In the concession prospectus, cruise lines may propose operational restrictions within a larger area that includes all park waters, referred to as **the Area**. The **Area** is defined as park waters including Glacier Bay, Cross Sound, Icy Strait, and the outer coast. All companies awarded contracts agreed to operational restrictions within the **Area**.

List of Acronyms

ADEC	State of Alaska Department of Environmental Conservation
CCTV	closed-circuit television or video surveillance
EAL	environmentally approved lubricants
ECR	engine control room
EMCP	Environmental Monitoring and Compliance Program
HFO	heavy fuel oil
M/V	marine vessel
MGO	marine gas oil
MXAK	Marine Exchange of Alaska
NCL	Norwegian Cruise Lines
NP&Pres	National Park and Preserve
NPS	National Park Service
OR	State of Alaska's Ocean Ranger program
OWS	oily water separator
PPM	parts per million
USCG	United States Coast Guard

Executive Summary

Cruise ships permitted to enter Glacier Bay operate according to a ten-year concession contract issued by the National Park Service (NPS). Cruise companies awarded contracts compete for these limited entry permits by proposing operating conditions that are typically more restrictive, such as zero discharge of treated or untreated wastewater, than standards for operations in other areas of Alaska. As cruise ships are concessioners operating under contracts, the NPS is required to have a robust oversight program in place to ensure compliance to these contractually obligated operating standards, in addition to applicable laws and statutes, and other park regulations.

Historically, Glacier Bay National Park and Preserve (NP&Pres) managers used reports from the State of Alaska's Ocean Ranger (OR) program to help meet the park's environmental compliance monitoring, in part, because the park does not have the expertise on staff for technical ship inspections. However, the State of Alaska suspended the OR program in 2019, ultimately redesigning the program and significantly reducing inspections of ships while they were underway, including while in Glacier Bay or other park waters. Consequently, in 2022, park managers developed and initiated the Environmental Monitoring and Compliance Program (EMCP). The EMCP ensured cruise ships operating in the park were complying with contractual obligations, park regulations, and applicable laws and statutes.

The summer of 2023 represented the second season of conducting inspections under the EMCP program. Similar to 2022, cruise companies, including Norwegian Cruise Lines (NCL), Cunard, Holland America Lines, Princess Cruise Lines, and Seabourn Cruise Lines contracted with Marine Exchange of Alaska (MXAK) to provide qualified inspectors, conduct the inspections (also called audits), and generate reports. In accordance with the program's design, the NPS reviewed the credentials and experience of each inspector prior to the season to ensure they were intricately familiar with the infrastructure, on-board technology, and operations of large cruise ships. The 2023 inspection team included two inspectors from the 2022 inspection team and a recently retired U.S. Coast Guard (USCG) cruise ship inspector from USCG Sector Southeast Alaska.

Similar to procedures in 2022, audits were unannounced to ship personnel prior to inspectors boarding the vessels. Inspectors used the NPS marine vessel (M/V) Serac to board and disembark each cruise ship. Ship personnel understood that they would be subject to unannounced/random inspections while in park waters. Regardless of when the inspection occurred, cruise line managers directed on-board personnel to facilitate access to all relevant

documents and any shipboard areas necessary to address all audit parameters. There was no communication between the NPS or MXAK and ship personnel prior to boarding to ensure the inspections remained unannounced.

A total of 33 audits occurred in 2023. Inspections began 4 May and ended 5 October. Audits occurred on cruise ships owned by Holland America, Princess, NCL, Seabourn, and Cunard which collectively accounted for over 98% of the 258 ship visits to Glacier Bay in 2023. Nineteen different ships entered the park of which 15 were randomly audited twice. Three ships (7 total entries) were each audited once; Viking Cruise Lines (4 ship visits; 1.5% of total visits) did not contract with MXAK for the EMCP inspections.

Audits of the ships were conducted while they were underway, commencing shortly after the vessels entered park waters and continued until departure, approximately 8-10 hours later. Inspectors initiated efforts immediately after boarding the vessels and focused on six general categories including (1) compliance documentation, (2) wastewater management and discharge, (3) garbage and recycling programs, (4) emissions, (5) marine mammal/wildlife protection programs, and (6) miscellaneous items. Auditors used a checklist, which remained essentially the same from the 2022 season, with slight refinements including assessment and availability of onboard oil spill response equipment (see Appendix). Additionally, inspectors verified that ship personnel were aware of the spatial domain in which restricted operating procedures should occur (i.e., the “Area” waters that include the park’s marine waters, including Glacier Bay, Cross Sound, Icy Strait, and the outer coast).

Upon completion of an inspection, auditors generated a report of their findings and observations, which were sent simultaneously to both the NPS and respective cruise company. If inspectors found an issue during their time on the ships, they communicated the matter directly and immediately with the ship personnel to remedy the issue or clarify any uncertainty. Concerns were also communicated to the NPS following the inspection.

Overall, inspections revealed that ships were operating at a very high level of compliance; no violations were found related to park regulations or applicable laws. In a few instances, operations were found to be in violation of NPS contract requirements. For example, one evaporator and two reverse osmosis units for making freshwater were found to be operating with brine discharge during an on-ship audit. The Chief Engineer explained that the vessel was low on potable water and unable to take on adequate volume at the last port of call. However, the crew did not seem to be aware that the zero-discharge requirement applied to brine, in addition to wastewater and scrubber wash water.

Other issues recorded during audits were generally related to ship maintenance and operating equipment while in the park that is prohibited by the contract to preserve visitor (passenger) experience. Inspectors also found instances when garbage (e.g., cups, napkins, clothing items) could have blown overboard while in the park. In several of these instances, the ships were not in violation of the contract, but inspectors nevertheless communicated these concerns such that ship personnel could address the issue.

While the checklist provided a list of observable metrics of compliance (e.g., treated greywater discharge values are closed/secured while operating in the Area), inspectors noted a number of qualitative metrics that suggested high levels of compliance. For example, the confidence an auditor develops in assessing a vessel's compliance with safety and environmental regulations is largely based on the visual condition of the vessel's systems and the cooperation and support of the crew during an audit. For each boarding, ship personnel provided inspectors access to any areas of the vessel immediately upon request, made all documents and logbooks available, and provided knowledgeable answers to questions. What's more, Environmental Officers were found to be an important part of the ship leadership team and had clear lines of communication with each department and the vessel crew.

While independent compliance monitoring cannot prevent nefarious practices, particularly if environmental stewardship is not prioritized by company leadership, a random inspection program represents a robust way to ensure compliance by keeping the vessels' crews attentive to their actions, aware of contract operating requirements, and focused on environmental awareness. It also allows the crew the opportunity to showcase their duties and responsibilities. The observations made as part of the Glacier Bay NP&Pres auditing/inspection program in 2023 revealed that cruise ships largely exceeded, with few exceptions, environmental compliance standards.



Inspectors board a cruise ship.
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Background and Justification

Large cruise ships have a long history in Glacier Bay . In 1925, the area was set aside for protection by Presidential Proclamation (#1733) for two overarching purposes:

to preserve an area that . . . presents a unique opportunity for the study of glacial behavior and of resulting movements. . . of flora and fauna and of certain valuable relics of ancient interglacial forests. . . and to preserve for access and enjoyment of visitors . . . a number of tidewater glaciers of the first rank in a magnificent setting of lofty peaks and of more accessible to ordinary travel than other similar regions of Alaska. . .

In the late 1800s, ordinary travel was by large steamship, which brought passengers from ports as far as San Francisco specifically to view the tidewater glaciers in the park. Since then, large cruise ships have replaced steamships as the primary means by which visitors access and enjoy the tidewater glaciers, with cruise passengers accounting for over 95% of all visitors to the park since the late 1960s. Given that there are no roads to the tidewater glaciers, large cruise ships currently, and will continue to, serve as an important means by which Glacier Bay meets its founding mandate of access and enjoyment of the tidewater glaciers.



Visitors stand on the bow observation deck of a large cruise ship in front of a tidewater glacier in Glacier Bay.
NPS/SCOTT GENDE

Cruise ships are actively managed in the park to meet the purposes of balancing visitor access to the tidewater glaciers with conserving park resources and values, including visitor experience. The NPS currently defines a cruise ship in the Code of Federal Regulations (36 CFR § 13.1102) as any motor vessel of at least 100 tons gross (U.S. System) or 2,000 tons gross (International Convention System) certificated to carry more than 12 passengers for hire. However, cruise ships that enter Glacier Bay are often much larger, typically exceeding 915 feet (280 m) in length and carrying 2,000 or more passengers.

To minimize impacts and maximize visitor experience, daily quotas for cruise ships entering the park are set at a maximum of two cruise ship transits per day. Park managers currently split tourist season between a 92-day summer season (1 June - 31 August) and a shoulder season (April/May, September/October). Since 2007, the summer seasonal quota has remained at 153 ship entries, and 122 for the shoulder season. Off season is defined as spanning the period 1 October - 30 April.

The operating conditions, travel routes, and length of stay by cruise ships in Glacier Bay are structured and do not vary appreciably from day to day. Cruise ships that enter Glacier Bay typically cross into park waters from Icy Strait between 0600 and 1030 and follow the same route, traveling from the mouth of Glacier Bay up into the West Arm of the Y-shaped fjord, generally arriving to view Margerie Glacier (at the head of Taar Inlet) approximately 3-4 hours after entering (Figure 1). Cruise ships are also required to spend a minimum of four hours north of Queen Inlet in the glacial area to ensure passengers have time to enjoy the glaciers and for on-board interpretation and education programs to occur. To that end, ships typically spend one to several hours sitting in front of Margerie Glacier and often visit Jaw Point to view Johns Hopkins Glacier from afar (cruise ships are not allowed to enter Johns Hopkins Inlet until 1 September).

The ships follow the same route down the bay, typically exiting the park in the late afternoon or early evening between 1500 and 1900. Passengers remain on board during the entire visit; no passenger tenders are launched while ships are in the park and cruise ships do not overnight in the bay.

Access to Glacier Bay

Cruise companies compete to provide cruise ship services in the park. Federal regulations prohibit engaging in or soliciting any business in park areas, including providing visitor services, except in accordance with the provisions of a permit, contract, or other written agreement with the United States. In Glacier Bay, cruise ship companies seeking to provide services must respond to a call for proposals following the NPS issuance of a concessions prospectus

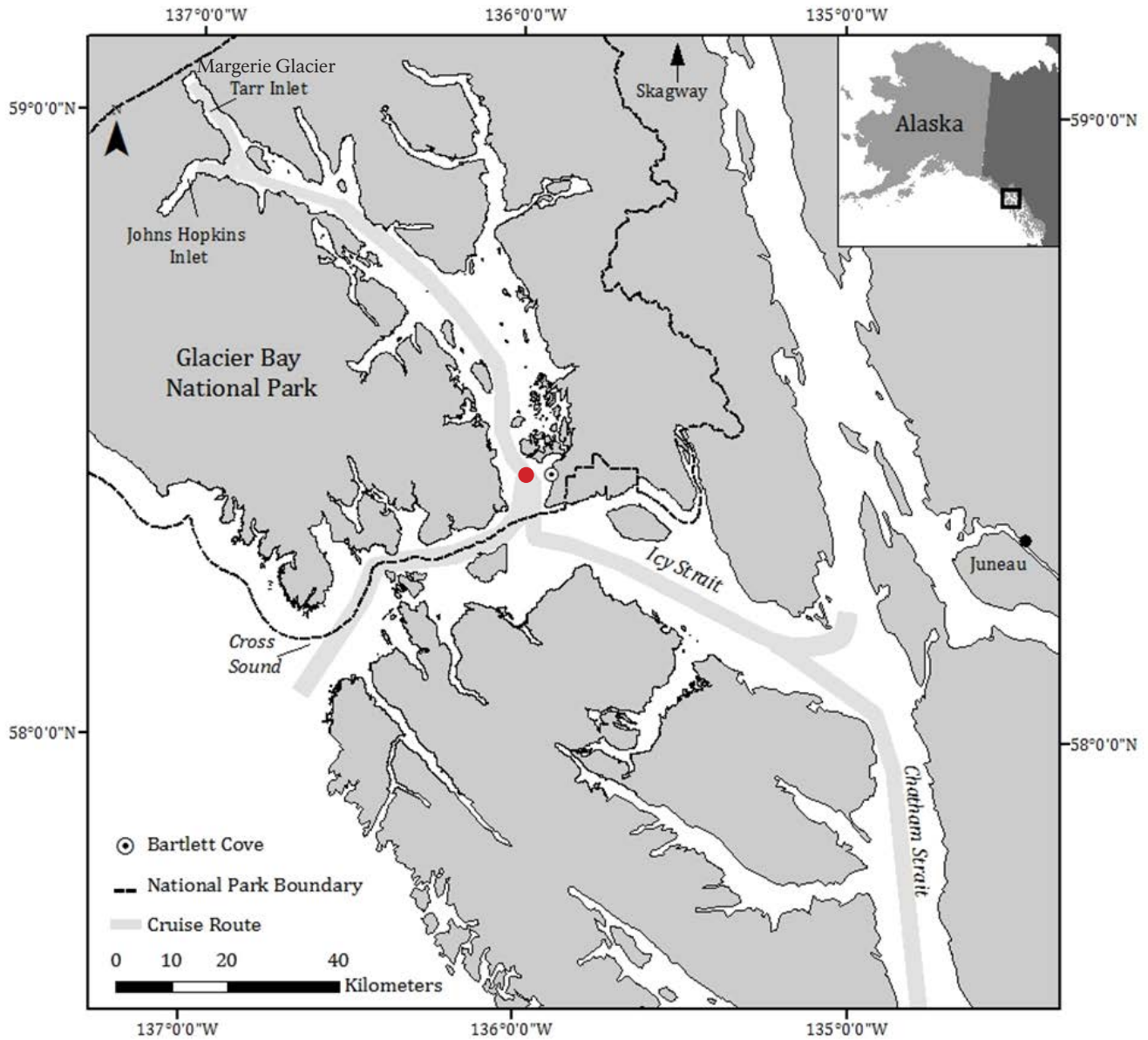


Figure 1. Map of Glacier Bay showing park boundary (dashed line), typical cruise ship route (light shaded grey), and approximate location where inspectors boarded and disembarked cruise ships via an NPS transfer vessel (red dot).

(titled, *Proposal to Operate Cruise Ship Services at Glacier Bay National Park and Preserve*). This prospectus is issued once every ten years with the most recent prospectus issued in 2018 for cruise ship services spanning the ten-year period 2020-2029. Companies submit proposals for the ten-year contracts that include responses to a number of principal and secondary selection factors outlined in the prospectus.

For example, Principal Selection Factor 1 in the 2018 Prospectus focused on protecting, conserving, and preserving park resources including air and water quality. Companies proposed operations that would minimize impacts to air and water quality if they were awarded a contract, such as using higher-quality fuel (such as marine gas oil; MGO) and refraining from discharging any form of wastewater while in the park.

Other selection factors reflecting park objectives and values focused on minimizing impacts to wildlife aggregations, reducing greenhouse gases, maximizing energy efficiency, minimizing solid waste, operating an on-board recycling program, using environmentally preferable products and supplies, reducing the chance of whale strikes, and minimizing underwater noise, among others.

All proposals submitted to the NPS in response to the 2018 Prospectus were reviewed and ranked by an independent panel based on responses most consistent with conserving park resources and values. For the 2020-2029 period (contracts cover October 1, 2019 - September 30, 2029), the top-ranking proposals resulted in six awarded contracts that included an allocated number of summer and shoulder season entries. Companies awarded contracts included Holland America Lines (65 summer entries/26 shoulder season entries), Princess Cruise Lines, Ltd. (58/26), Norwegian Cruise Lines (21/20), Seabourn Cruise Lines Limited (0/4), Cunard (Carnival plc trading as Cunard; 9/2), and Viking Cruises, Ltd. (0/4). Both Princess and Holland America have been granted a number of entries noncompetitively (32 and 39, respectively) based on use levels prior to 1980; 1980 was the first year permits for cruise ships were issued.

As a result of the concession contract process, cruise ships permitted access to Glacier Bay operate at higher environmental standards than those that occur in waters outside of the park. For example, all companies that were awarded contracts for the 2020-2029 period proposed a zero-discharge policy in the Area, defined as the park waters including Glacier Bay, Cross Sound, Icy Strait, and the adjacent outer coast. Thus, the operating plans in all contracts require that ships hold all treated and untreated wastewater during their visit to the Area, even if these ships have been granted continuous wastewater discharge

permits from the USCG and the State of Alaska Department of Environmental Conservation (ADEC) when operating in State of Alaska waters. Likewise, several companies that were awarded contracts agreed to limit or eliminate the use of single use plastics, and are thus obligated to do so while in the Area.

Compliance Monitoring

To monitor contract compliance, as well as applicable laws and regulations, cruise ships are required to immediately self-report any violations that occur while operating in Glacier Bay/Area. Language in the contracts state that

The Concessioner must give the [National Park Service] Director in writing immediate notice of any written threatened or actual notice of violation from other regulatory agencies of any Applicable Law arising out of the activities of the Concessioner, its agents or employees.

What's more, a concessioner that

... does not promptly... correct any environmental self-assessment finding of non-compliance, in full compliance with Applicable Laws, the Director may, in its sole discretion and after notice to the Concessioner, take any such action consistent with Applicable Laws as the Director deems necessary to abate, mitigate, remediate, or otherwise respond to such release or discharge, or take corrective action on the environmental self-assessment finding...

While oversight is necessary, companies have a strong incentive to comply with their concession contract requirements in Glacier Bay as all concessioners undergo periodic compliance inspections and an annual review to determine concessioner contractual "health." Contracts for any cruise company may be terminated if they receive an unsatisfactory annual rating, which could stem from, among other things, noncompliance with operating conditions.

Inception of the Environmental Monitoring and Compliance Program

In the spring of 2022, the Glacier Bay superintendent reached out to the primary contract holders (Holland America, Princess Cruise Lines, and Norwegian Cruise Lines) clarifying that, absent a State of Alaska program sufficiently rigorous to monitor compliance in the park, the NPS would be initiating an inspections program. Language in existing contracts state that

[the] Concessioner will be subject to independent environmental monitoring by the Alaska State Ocean Rangers. In the event this program, or its equivalent, is discontinued by the State of Alaska, the NPS subject to available funding, will develop and implement an alternative to the Ocean Ranger Program, in which the Concessioner must participate.

The scope, activities, and general characteristics of the EMCP were developed during the spring and early summer of 2022 and first implemented July 2022. Ships from Holland America, Princess Cruise Lines, and NCL were subject to the inspection program as they constituted more than 90% of all summer entries. Cunard and Seabourn were added to the program in 2023. Viking had only four total entries and were not subject to inspections in 2023.

Attributes of the Environmental Monitoring and Compliance Program

As the program was being conceived in the early spring of 2022, certain attributes of the EMCP were considered, including the degree to which it would deviate from the OR program. The Superintendent of Glacier Bay sought a program that would maximize rigor while maintaining inspector efficiency. Park managers decided that inspections would be single-day inspections for ships while they operated in the park, rather than having inspectors purchase berth space and travel with the ships during multi-day voyages. Under this condition, inspections would:

1. be unannounced and randomized, such that ships would not know if or when inspections would occur;
2. occur twice for every ship that regularly enters Glacier Bay;
3. carried out by an independent third-party contractor whose qualifications and individual inspectors would be approved by the NPS prior to implementation;
4. structured following a checklist finalized by the NPS; and
5. conducted such that reports were sent directly to the NPS, including immediate communications with the contractor should any violations or concerns be identified.

Unannounced/Random Inspections

The State of Alaska's OR program was funded by a \$4 fee for every passenger that visited Alaska aboard a large cruise ship. To implement the program, the ADEC contracted with an outside vendor, that hired certified marine engineers to conduct inspections. The Ocean Rangers (inspectors) embarked in ports such as Seattle, Victoria, and Vancouver and would conduct their audits once the ship passed into State of Alaska waters, during the approximately 4.5 days the ship operated in Alaska. They traveled with the ship during the entire voyage and back to Seattle or home port. The program was expensive; owing to the amount of time marine engineers were working while on the ship and included extensive travel costs and significant logistics coordination. Additionally, due to berthing considerations, cruise ships knew of their inspection periods to accommodate the inspector.

For the EMCP, one-day inspections—an audit spanning almost the entire transit within Glacier Bay, eliminated logistical considerations for housing an inspector and travel among ports. What’s more, the park already has a program in place whereby an NPS vessel (M/V Serac) travels each day from Bartlett Cove (park headquarters) out to each ship just after it crosses the park boundary so that NPS interpretation rangers can board the cruise ship and spend the day conducting education and outreach programs. This transfer typically occurs approximately 4 miles (7 km) inside the park boundary to each ship as it slowly proceeds past Bartlett Cove. Focusing inspections on the period the ship was in Glacier Bay, and using the already existing park vessel, allowed inspections to occur randomly and unannounced. This had the added benefit of minimizing expenses as well as logistics coordination.

Frequency of Inspections

While putting inspectors on every ship would maximize coverage, the costs associated with 100% inspection coverage was deemed an undue financial burden on the companies with concession contracts. To achieve similar results with reduced inspection frequency, the NPS communicated to cruise lines that every ship that regularly entered the park would be subject to unannounced, random inspections at least twice during each season.

Qualifications of Inspectors

In the spring of 2022, the NPS, Holland America, and Princess agreed that MXAK was sufficiently staffed with qualified personnel, namely retired USCG Marine Inspectors, who had decades of experience inspecting large ships, including cruise ships in Alaska. All parties agreed that the EMCP would be carried out by top-quality professional inspectors. For the 2023 season, two of the inspectors from 2022 continued and the inspection staff was augmented by an additional, recently retired USCG Officer with extensive experience inspecting cruise ships.



The M/V Serac approaches a cruise ship so an inspector can board.

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Inspections Checklist

The coordinated EMCP audit checklist remained essentially the same from the 2022 season. The 2023 audit checklist included verification that the concessioner was aware of all Glacier Bay Area waters that include the marine waters of Glacier Bay, Icy Strait, Cross Sound, and the outer coast of Glacier Bay (Figure 2). The final checklist focused on six general categories including:

1. compliance documentation,
2. wastewater management and discharge,
3. garbage/recycling programs,
4. emissions,
5. marine mammal/wildlife protection programs, and
6. miscellaneous.

The checklist can be found in the Appendix.

Reporting

A key attribute of the EMCP is the establishment of a direct line of communication between the inspectors and park managers. While it was agreed that any correspondence could also include representatives from the cruise companies, the information from the inspectors, including their general observations and any findings of non-compliance, was not to be reviewed by the cruise companies before sending it to the NPS. The companies agreed that the audits/inspection reports, including completed checklists, would be sent directly to the NPS. What's more, the NPS would have the ability to communicate verbally with the inspectors throughout the summer in order to be responsive to any needed changes or observed violations.

Throughout the summer and upon inspection completion, auditors sent each inspection report simultaneously to the NPS and respective cruise company. MXAK also communicated periodically with NPS personnel with regard to how well the inspections were proceeding, if the cruise lines were providing adequate access to necessary areas, and if any violations were discovered.



Figure 2. Map of “the Area” highlighting the park’s waters including Glacier Bay, Cross Sound, Icy Strait, and the outer coast (shaded blue) and the park boundary (green line).

Findings for 2023

A total of 33 unannounced inspections occurred in 2023, with the first inspection on 4 May and the last on 5 October. Fifteen vessels were audited twice and three vessels audited once (Table 1).

Table 1. The total number of entries into Glacier Bay during the 2023 tourist season by cruise ship including their length (overall) and the dates they were audited.

Ship	Number of Voyages	Length (m)	Date(s) Audited
Crown Princess	1	288	9 Jul
Eurodam	22	285	16 May, 11 Jul
Grand Princess	20	287	15 May, 10 Jul
Koningsdam	22	300	17 May, 27 Sep
Majestic Princess	19	330	29 Jun, 14 Aug
Nieuw Amsterdam	21	285	4 May, 1 Sep
Noordam	19	293	30 Jun, 15 Aug
Norwegian Bliss	7	326	3 May, 4 Oct
Norwegian Encore	25	333	8 Jun, 31 Aug
Norwegian Jewel	11	294	17 Jun, 29 Jul
Norwegian Sun	8	259	16 Sep, 5 Oct
Norwegian Spirit	2	268	5 May
Royal Princess	20	330	7 Jun, 30 Aug
Ruby Princess	7	290	1 Jul, 11 Aug
Sapphire Princess	20	290	14 May, 24 Sep
Seabourn Odyssey	4	200	23 Sep
Queen Elizabeth	6	294	14 Jul, 30 Jul
Viking Orion	4	227	----
Volendam	20	238	18 Jun, 17 Sep

For each audit, inspectors used the checklist to address a suite of operational practices. Each of these are described briefly below.

Compliance Documentation and General Information

Inspectors reviewed all permits issued by regulatory agencies (e.g., U.S. Coast Guard, State of Alaska), hazardous waste plans, use of approved lubricants, anti-fouling certificates, and oil spill response equipment carried on board.

Wastewater Discharges

Inspectors audited the valves, sensors, and records related to securing various wastewater flows (gray and black water) and other discharges from the ships, such as brine from freshwater makers, management of wastewater from exhaust emission scrubbers, oily waste, and food waste effluent.

Garbage Management and Discharges

Inspections viewed the recycling and food-waste processes on the vessel and reviewed records to validate that there were no discharges in the park and garbage was transferred to approved facilities and waste handlers. Food waste handling procedures were also inspected and records of discharge in authorized locations reviewed and validated with records and logs. Additionally, they evaluated measures undertaken by ships to minimize the potential of plastic and paper products being dropped into park waters by passengers or by being left on deck and blown over the side of the ship.

Air Emissions

Inspectors reviewed emission sensor displays and logs to validate compliance with emission reduction regulations. They audited fuel records, certificates, and logs to validate low-emission fuels used while the vessels are underway in the park. Additionally, they reviewed sensor records/gauges to validate the securing of exhaust emission scrubbers, when used by a ship, prior to entry into Glacier Bay as well as the transition from burning Heavy Fuel Oil (HFO) to lower-emission Marine Gas Oil (MGO) prior to entering Glacier Bay Area waters.

Marine Mammal Protection Program

As practical, MXAK inspectors assessed speed, wake size, and distance restrictions required when ships were underway in designated areas of the park intended to minimize disturbance or harm to marine mammals. Additionally, they assessed whether ships informed passengers of the importance of not discharging items over the side as well as minimizing noise produced by the ship to avoid disturbing marine wildlife.

Miscellaneous Items

These included observations of outside deck work/maintenance, to the extent possible, to minimize impacts to visitor experience and avoid unnecessary products/items going over the side.

The day-long inspections required auditors to visit interior spaces and deck areas covering the entire vessel, bow to stern, and from the bottom of the ship's hull in the engineering spaces to the bridge, often some 19 decks above.

The sequence for conducting the audits generally entailed first meeting with the ship's environmental officer and a few other personnel, as available, upon boarding (e.g., the captain and chief engineer). After the initial meeting, the auditors typically proceeded to the Engine Control Room (ECR) where they were able to view the gauges and displays indicating the operation of valves and systems and to determine the level compliance with Glacier Bay Area's operating requirements related to overboard discharges via the numerous discharge pipes and valves, as well as air emissions. After determining the position of valves and the operation of systems indicated by the digital displays, the auditors entered the engineering spaces to cross check and validate that the sensors accurately displayed the status of valves and systems.

In entering all engineering spaces, the auditors were able to assess cleanliness and validate that no work was in progress that could compromise the integrity of the environmental protection measures. After the physical inspection of the engineering spaces, auditors returned to the ECR to review various logs, including but not limited to the Oil Record Book, fuel oil documents providing assessment of the sulfur content of MGO (Marine Gas Oil), HFO (Heavy Fuel Oil), EAL (Environmentally Approved Lubricants), oil-to-sea interface log, and air emission records.

Technologies and Procedures Employed to Enhance Compliance

The auditors also took note of policies, checks, validations, and procedural two-person integrity measures for accessing various keys and valves. These measures are effective ways to prevent one or two people from making an error or succeed in a deliberate attempt to release unauthorized discharges without detection. Additionally, technology includes recorded closed-circuit television (CCTV or video surveillance) of all key engineering spaces, voice data recorders, and electronic logs capturing who requested access or were authorized to operate overboard valves. Logs of alarms activated when valves are opened without authorization are effective in deterring and detecting non-conformities with approved operating procedures implemented to prevent environmental harm. Except for Glacier Bay and some other areas of Alaska, most cruise ships are permitted to discharge gray water (galley and shower water) and black water (sewage) when treated to a specific standard. No treated gray or black water may be discharged overboard at any time in the Area. Auditors confirmed such discharges are not made.

Ships using fuel oils generate oily waste from their engineering plants that drain into the bilges. In most areas, this oily water can be treated via an oily water separator (OWS) to a level of less than 15 PPM of oil after which the bilge water may be legally discharged at sea. Accurate logs, sensors, and procedures are used to prevent accidental or deliberate discharges of oil. The oily water separating system is one of the most closely regulated and monitored systems on vessels. The discharge of processed bilge water from the oily water separator is prohibited in the Area.

The various digital displays in the ECR show the status of valves and systems. Some cruise ships burn HFO that requires employing exhaust gas scrubbers to meet air emission regulations. The scrubbers use water spray and subsequent buffering using large volumes of water pumped onboard (for open loop type scrubbers) to remove/dilute most contaminants of the engine exhaust gases to a permitted level. The use



MXAK Inspector verifying valve closure at physical location.

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of HFO fuel and exhaust scrubbers is not authorized in the Area if wash water is to be discharged, because the scrubber operation and water it uses contains contaminants including oil. The auditor's sighting of ECR sensors and displays, as well as visual inspection of the scrubber pumps, validate scrubbers are not operated while the ships are in the park and that low-sulfur MGO is used as fuel to minimize emissions.

Freshwater-making systems (evaporators and reverse osmosis systems) remove salt from sea water and discharge the brine overboard. These systems are also prohibited for use in the Area and securing these systems is confirmed during the audits.

Voyage Planning

MXAK auditors met with many members of the crew, normally including the ship's navigation officer. The navigation officer plays a pivotal role in voyage planning by ensuring the ship's crew is aware of dynamic environmental regulations and subsequent operating restrictions in the Area waters. The information in the voyage plan aids adherence to the relevant regulations and the company's standards of care. In several areas of operation, the cruise line often adopts standards that are higher than required by regulations. An example of this is a voyage plan that shows a location to commence the discharge of processed food slurry further offshore than is required by international law.

The navigation officer keeps abreast of the most current safety and environmental notices and ensures they are addressed in the voyage plan as appropriate. The voyage plan is prepared in consultation with the navigator, chief engineer, and the environmental officer, and approved by the captain. It is then briefed to all key personnel and incorporated into navigation systems and daily schedules, which helps ensure ship personnel know where and when operations, such as discharges, can occur.

Solid Waste Handling

The ship's waste-handling systems and processes were reviewed and inspected by the auditors to ensure comprehensive recycling measures were undertaken, non-recyclables were transferred to an appropriate facility, and the processing and disposal of food waste was done in accordance with regulations and standards of care. Most ships have installed food digesters to pre-digest food waste into a liquid slurry for disposal at sea to minimize eutrophication and the associated environmental impacts. Cruise ships are also starting to use high-capacity dehydrators to remove most liquid content from food waste to reduce the volume of waste. The sorting, processing, and handling of waste products generated on cruise ships is complex and is monitored by CCTV to ensure it is done properly by the crew.



The vessel's oily water separator is monitored by video surveillance in the engine control room.
MARINE EXCHANGE OF ALASKA



Cruise ships closely manage recyclables, non-recyclables, food waste, and other components of waste management in the waste sorting and handling room.
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Most ships have food digesters on board that create a slurry, remove water, and process food waste for less environmental impact when the waste is discharged at sea (outside of the Area).

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Marine Mammal Protection

The auditors took notice of the signage displayed while the vessels were in Glacier Bay to ensure passengers are mindful of the wildlife in the bay and not disturb them or discard items over the side (e.g., cups, napkins, food, clothing). The auditors noted ships also refrained from making announcements on the outside public address systems to avoid disturbing wildlife and minimize impacts to visitors from anthropogenic noise.

Culture of Compliance

The auditors noted the degree to which crews exhibited a culture of genuine professional interest and exhibited pride in their paying close attention to environmental impacts and concerns about their ship's reputation. The notices on the digital boards and signs in the crews' work areas also highlighted the importance of ensuring environmentally sound operations and urged reporting non-conformities.

Observed Best Practices

The following are a few exemplary practices inspectors observed aboard several ships:

1. Most ships had crew members on the outer decks to ensure that discarded items did not blow overboard. However, one vessel, the M/V Koningsdam, was noted to have a dedicated crewmember conducting environmental patrols with a container labeled “Glacier Bay Environmental Patrol.” This sets an example for the passengers and reinforces the notion to be extra vigilant with rubbish disposal.
2. On all ships, the vessel oily water monitor (also called the whitebox) has a two-person requirement to open. Typically, the two authorized personnel are the environmental officer and the chief engineer. The staff engineer on one vessel was filling in as the environmental officer due to staffing issues. Since the chief engineer and staff engineer are in the same chain of command, the second key was entrusted with the ship’s captain during the environmental officer’s absence. This is a best practice as it prevents circumvention.
3. Some of the ships did not offer or use paper cups and straws on the outer decks, including on the forward observation deck, minimizing the chance that strong winds could result in garbage blowing overboard. However, guests were allowed to take paper cups and straws on the forward observation deck on a number of other ships. In one instance, a coffee station was set-up on the bow and was providing disposable cups. On another ship, drinks were served in plastic cups at the outdoor buffet and bar on deck 11, which had open railings on the sides and passengers were observed leaving their used paper items laying outside unattended. While crew members were observed being diligent in collecting these items, clean-up is not a fail-safe solution and disposable items presented a garbage risk. These issues were discussed on several occasions with environmental officers, food and beverage managers, and, in one instance, with a captain, who agreed that changes to beverage service could help prevent future occurrences. One ship planned to make changes prior to the next park voyage. We note that during the course of the audits, no items were observed going overboard; however, reminding ship personnel of this best practice prior to the start of the 2024 season could help prevent this issue.

Summary of Discrepancy Findings

1. One evaporator and two reverse osmosis units were found to be running with brine discharge during an audit which is not allowed in the Area per concession contracts. The chief engineer explained that the ship was low on potable water and unable to take on adequate volume at the last port of call. The crew was not aware that the zero-discharge requirement also applied to the use of onboard water makers. The environmental officer was made aware that this is not an acceptable practice while in the Area.
2. A passenger was observed feeding a potato chip to marine waterfowl. This occurred one deck above the inspector and environmental officer. The inspector noted hearing the announcement to avoid feeding wildlife during the voyage.
3. Crewmembers were observed sanding and painting on open decks during all three deck walks during one audit. This was discussed with the environmental officer and the ships' bosun. There appeared to be a communication issue with the person assigning these tasks not understanding the requirements while in park waters. The environmental officer planned to review the deck maintenance procedures and clarify where necessary.
4. During one of the audits, it was immediately reported to the environmental officer when a passenger's ballcap flew off a balcony (unintentionally) and into the water. The environmental officer alerted the captain, and an email notification of the incident was sent to park personnel. There is virtually no way for the ship to respond to situations like this and retrieve the item from the water. No additional instances were noted.
5. On one ship, it was discovered that the azimuth thrusters did not contain an EAL as the manufacturer does not have a compatible EAL for use. After extensive review, the environmental officer was advised that the ship was missing a letter from the manufacturer stating an EAL is not compatible with the current system and planned to correct.
6. While walking the main deck with the environmental officer, a noise was heard coming from the forward mooring deck. Upon investigation, both doors were observed propped open with rope across to restrict access. Four crew members were found grinding metal with pneumatic and electric grinders. The crew had also removed the covers from a mooring line access port (presumably to allow ventilation as all crew were wearing dust masks). The environmental officer discussed the matter with the bosun who stated that the work was authorized although the doors to the space and the mooring line covers were not discussed as part of the work. The deck outside the main doors was accessible

to curious passengers. Following discussion and consultation, it was agreed that the mooring deck was an indoor space, but that the workers should not have had the doors open and the port cover removed. Open doors and mooring line covers removed was deemed to be a noise and dust issue and work was immediately stopped.

7. During one inspection, while walking the port side main deck with the environmental officer, paint buckets and drop cloths were discovered. The staff captain was called to confirm that no outside work was scheduled. Five crew members with 1-gallon paint buckets emerged stating they were painting the bulkhead and other areas adjacent to lifeboats on the deck above. After being informed that work was not allowed, they began to clean up and put away the gear. On the same vessel, a deck worker was observed using a bucket of green liquid, a long painter's pole, and a paint brush. The liquid was identified as "Surface Clean" used for rust removal and degreasing. While the technical bulletin lists it as non-toxic and biodegradable, its use as an acid cleaner should not take place on outside decks while in the Area. The use of this product requires gloves, goggles, and protective clothing. An error was discovered in the deck maintenance approval process and the crew members were able to access the Surface Clean because it was used the day before and the unused liquid was not properly returned to the locker. This was also discussed as a potential safety hazard to guests walking below the work area.

Due to these multiple incidents on the vessel, the environmental officer planned to file a "near miss" in the company's reporting system. The environmental officer and staff captain planned to fully investigate the incidents and make changes to the work approval process as well as communications between the bosun and staff.



Environmental patrol on the outer decks help prevent infractions.

MARINE EXCHANGE OF ALASKA

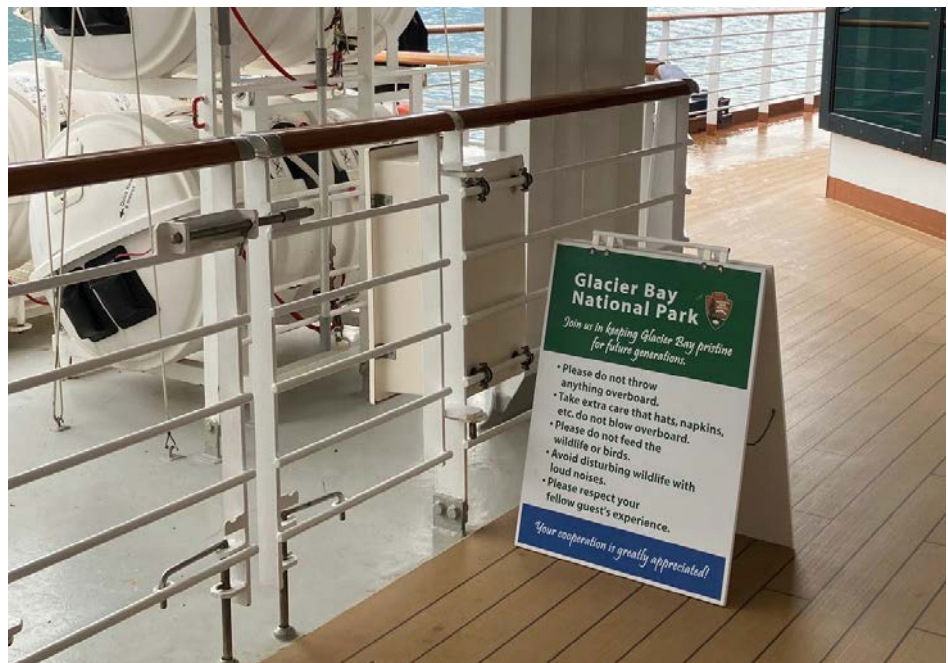
Recommendations

Based on the findings and upon review, the following are recommendations for the 2024 season:

1. Currently, each ship is subject to inspection in Glacier Bay twice during the season. After the second inspection, there is the possibility that the vessel crew will relax knowing they will not be inspected in the park for the remainder of the season. We thus recommend that the EMCP move from an inspection program of two required audits per ship to a program that would be from 1-3 audits during the summer. Incorporating the possibility of a third random and unannounced inspection could increase the rigor of the program and allow inspectors to possibly target vessels that may have had discrepancy findings on the previous audit.
2. There was a slight misunderstanding on two occasions regarding brine discharges. Officers on one ship did not realize they were prohibited from discharging brine (making fresh water) in the park. On another ship, the environmental officer wanted to know the written regulation prohibiting brine discharge in the park and was provided with the contractual language that prohibits all discharges. Even though the contracts state no discharges, confusion may be eliminated through clear direction from cruise line management to vessel crews.
3. While Viking was initially contacted (in 2020) regarding the requirement to participate in the EMCP, a lack of follow up on the part of the NPS resulted in Viking not participating in 2023. We thus recommend adding Viking to the EMCP beginning in 2024.

Signage promotes a strong culture of compliance. Park rules are posted and respected by cruise lines and their guests.

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Concluding Summary

The cruise line companies communicated to ship personnel that they were to be subject to unannounced, random inspections, and directed personnel to allow inspector access to all relevant documents and engineering spaces necessary to address all items on the checklist. No communications occurred between MXAK/NPS and ship personnel prior to auditors boarding the vessel. Throughout the summer and upon completion, auditors sent each inspection report simultaneously to the NPS and respective cruise company. MXAK inspectors also communicated periodically with NPS personnel with regard to how well the inspections were proceeding, if the cruise lines were providing adequate access to necessary areas, and if any significant violations were discovered.

The confidence an auditor develops in assessing a ship's compliance with safety and environmental regulations is largely based on the visual condition of the vessel and its systems, and the cooperation and support of the crew in the conduct of the audit. MXAK inspectors continue to be impressed with the conditions of the ships, the crews' professionalism, and the fleet-wide cooperation in facilitating comprehensive audits by readily providing access to any areas of the vessel requested to be seen and providing answers to all questions. Auditors also noted the critical role that the environmental officer played on the ships, including the degree of communication and relationships with each department within the ship and the entire vessel crew. Environmental officers are clearly recognized as a part of the ship's leadership team, performing an essential function on board the vessels. While some discrepancies were found, this can be expected in the process of bringing over 670,000 visitors to the park.

We highlight that random audits for environmental compliance while in Glacier Bay serves multiple purposes including, but not limited to (1) keeping the vessel crews attentive to their actions and focused on environmental awareness; (2) allowing the crew the ability to showcase and take pride in their duties and environmental responsibilities; and (3) serving as a means for clarification of prohibited actions and best practices while operating in the Area. This is particularly important since turnover in ship personnel can happen mid-season and there can be significant variation in operational practices depending upon where the ship is operating in Alaska. Overall, audited vessels were found to be in high compliance while operating in Glacier Bay.



The procedures and systems needed for environmental compliance range from high-tech to low-tech, each important and often working together. The use of a checklist makes auditing compliance consistent and reliable.

MARINE EXCHANGE OF ALASKA

Appendix. Checklists

General information, cover sheet.

Name of Vessel	
Vessel's IMO Number	
Date of Visit	
Boarding Time	
Boarding Position	
Disembarkation Position	
Name of Inspector	
Records collected or reviewed during visit	
Additional general remarks for the visit	
Were you able to access the engine control room?	

Notes

- * To verify compliance with discharges, the inspector may review records such as garbage record book, oil-to-sea interface log, oil record book, sewage and gray water book, ballast record book, fuel changeover records, or their electronic equivalent available on board. If necessary, the inspector may request certain records to be sent electronically after the visit.
- * All companies have agreed to certain operations (e.g., zero discharge) while in "the Area" defined falling within Glacier Bay National Park and Preserve, which includes Glacier Bay and the waters within park boundaries in Cross Sound, Icy Strait, and outer coast.

Compliance, Part 1: Compliance documentation and general questions.

Number	Description	YES	NO	N/A	Remarks
1.1	Is the vessel authorized as a discharge ship for this AK season?				
1.2	If the vessel is authorized to discharge in AK waters, does the vessel have an ADEC approved authorization to discharge?				
1.3	If the vessel is authorized to discharge in AK waters, does the vessel have an USCG approved authorization to discharge?				
1.4	If the vessel is authorized to discharge in AK waters, does the vessel have an ADEC approved Vessel Specific Sampling Plan?				
1.5	Does the vessel have a Non-Hazardous Waste Offloading Plan for the State of Alaska?				
1.6	Does the vessel have a Hazardous Waste Offloading Plan for the State of Alaska?				
1.7	Does the vessel minimize potential oil leakage from around propeller shaft/azimuth thrusters/bow and stern thrusters under the vessel by using seawater lubricants or environmentally acceptable lubricants (EALs)?				
1.8	Does the vessel have a current TBT-free International Antifouling Certificate?				
1.9	Does the vessel have a garbage and hazardous material handling and management plan?				
1.10	Is the oil spill response equipment available to crew in accord with emergency plan?				

Compliance, Part 2: Wastewater discharges.

Number	Description	YES	NO	N/A	Remarks
2.1	Are treated sewage discharge overboard valves closed/secured during the visit in Glacier Bay? (For this and each of the following 5 questions, describe the valve locking system that is in place to prevent accidental overboard discharge; photos helpful for each.)				
2.2	Are untreated sewage discharge overboard valves closed/secured during the visit to Glacier Bay?				
2.3	Are treated gray water discharge overboard valves closed/secured during the visit to Glacier Bay?				
2.4	Are untreated gray water discharge overboard valves closed/secured during the visit to Glacier Bay?				
2.5	Are ballast water discharge overboard valves closed/secured during the visit to Glacier Bay?				
2.6	Are bilge water discharge overboard valves closed/secured during the visit to Glacier Bay?				
2.7	When bilge water was last discharged, was it done at a distance greater than 12 nautical miles from shore (approximate location)?				
2.8	Is the vessel equipped with a Whitebox or equivalent technology to monitor and prevent accidental discharges including bilge water overboard? Key System? Interlocks? Describe (photos helpful).				
2.9	If equipped with Exhaust Gas Cleaning System technology (EGCS or scrubber), are all EGCS discharges (not just wash water) stopped during the visit in Glacier Bay? Planned use (location, time) of EGCS after exiting Glacier Bay (Lat/Long) as indicated in the environmental voyage plan?				
2.10	Are brine discharges stopped during the visit in Glacier Bay? Are reverse osmosis/evaporators systems secured while in Glacier Bay?				
2.11	Are Recreational Water Facilities overboard valves closed/secured during the visit to Glacier Bay?				
2.12	Volume of black water generated per day (average per day in Alaska or in the past 24 hours)?				
2.13	Volume of gray water generated per day (average per day in Alaska or in the past 24 hours)?				
2.14	Volume of black water currently stored in tanks?				
2.15	Volume of gray water currently stored in tanks?				
2.16	All companies have committed to zero discharge while in "the Area" defined as park waters including Glacier Bay, Cross Sound, Icy Strait, and the outer coast. Does the voyage plan reflect zero discharge in the Area?				

Compliance, Part 3: Garbage management and discharges.

Number	Description	YES	NO	N/A	Remarks
3.1	Are overboard garbage discharge valves closed/secured during the visit in Glacier Bay?				
3.2	How are the vessels protected from accidental valve opening/discharge? Key system? Interlocks?				
3.3	Is solid waste properly separated in the garbage handling area?				
3.4	Are environmental deck patrols or signage available during the visit in Glacier Bay?				
3.5	Any instances of garbage discarded from passengers or crew in Glacier Bay waters during the visit? How is the ship ensuring weather does not cause trash and other objects to be discarded from the ship? Describe.				
3.6	Are single use plastics being used (straws, forks/spoons/knives)? Are these present on the outer decks?				
3.7	Is there an active recycling program of:				
3.71	NCL ships: aluminum, cardboard, paper, scrap metal, plastics, wood pallets, and glass?				
3.72	HA Group ships: steel, aluminum, glass, cooking oil, plastics, paper, cardboard, lamps, bulbs, batteries, printer cartridges, and used electronics.				

Compliance, Part 4: Air emissions.

Number	Description	YES	NO	N/A	Remarks
4.1	Is the vessel using Marine Gas Oil (MGO) while operating in the Area (park waters including Glacier Bay, Cross Sound, Icy Strait, and the outer coast)?				
4.2	Long/Lat coordinates and time in which transition to MGO began and completed?				
4.3	Planned time and location of outbound fuel changeover? Reference the Environmental Voyage Plan (Lat. Long). Is this within the Area? (see definition of the Area in General)				
4.4	Are incinerators in use during the visit in Glacier Bay?				
4.5	Is the ship actively monitoring emissions? If yes, what are the early opacity warnings/limit settings in the monitoring system?				
4.6	Volume of MGO currently on board (and %S)?				
4.7	Volume of HFO currently on board (and %S)?				

Compliance, Part 5: Marine mammals and wildlife.

Number	Description	YES	NO	N/A	Remarks
5.1	Is the ship taking proactive measures to prevent passengers and crew from feeding wildlife, including ensuring garbage and food are not accessible to wildlife during the visit in Glacier Bay?				
5.2	Is the ship only sounding ship's whistles, horns, and bells for safety purposes?				
5.3	Is music heard on the outside decks?				
5.4	What was the closest point of approach (CPA) of the ship to S. Marble Island?				
5.5	Any opportunistic disturbances observed to marine life (e.g., seals flushed from icebergs)?				
5.6	Are there two trained lookouts (HAL ships) on the bridge during the trip through Glacier Bay (HAL)?				

Compliance, Part 6: Miscellaneous.

Number	Description	YES	NO	N/A	Remarks
6.1	Is the linen re-use program to reduce water consumption operational? (HAL ships only)				
6.2	Any observances of non-emergency deck cleaning maintenance or other maintenance projects during the visit to Glacier Bay? Any observations of outside/deck maintenance work including use of auxiliary engines, pumps, power equipment, or movements of heavy equipment?				
6.3	Any opportunistic observations of drone use by passengers?				
6.4	Were any ship launches or tenders used?				



National Park Service
U.S. Department of the Interior

Glacier Bay National Park and Preserve
Alaska, Region 11

