ROYAL CARIBBEAN CRUISES LTD.

ENVIRONMENTAL COMPLIANCE AUDIT REPORT

M/V NORDIC EMPRESS

Prepared for

Royal Caribbean Cruises, Ltd.
Miami, Florida

Prepared by

Haley & Aldrich, Inc.
Brea, California

File No. 86168-410
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UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
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17 July 2002
File No. 86168-410

Captain William Wright
Senior Vice President
Safety & Environment
Royal Caribbean Cruises Ltd.
1050 Caribbean Way
Miami, FL 33132-2096

Subject: Nordic Empress
Environmental Audit Report

Dear Captain Wright:

Enclosed please find three copies of the Environmental Audit Report for the Nordic Empress.

If you have any questions regarding the report, please feel free to contact either of us.

Sincerely yours,
HALEY & ALDRICH, INC.

Judit Kovacs, CIH, CPEA
Vice President
Project Manager

Robert J. Kloepfer, CPEA
Vice President
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cc: Jennifer Hernandez, Beveridge & Diamond (1 copy)
Karl Bourdeau, Beveridge & Diamond (1 copy)
Robert Ojala, ABS Consulting (1 copy)

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EXECUTIVE SUMMARY

At the request of Royal Caribbean Cruises, Ltd. (RCCL), Haley & Aldrich, Inc. completed an environmental compliance audit on the M/V Nordic Empress. The audit was completed pursuant to the plea agreement between RCCL and the United States District Courts for the District of Puerto Rico and the Southern District of Florida in June of 1998, and the Environmental Compliance Plan (ECP) for Royal Caribbean Cruises, Ltd. approved by the courts on 4 January 1999, and amended on 26 March 1999, 5 March 2000, and 31 October 2000. The on-board audit took place between 28 and 30 April 2002.

OVERVIEW OF FINDINGS

Overall, compliance with the ECP and applicable U.S. and New York, Pennsylvania, and Puerto Rico laws and regulations aboard the Nordic Empress was found to be outstanding. Officer and crew cooperation aboard the vessel during the conduct of on-board audit activities was uniformly outstanding. Auditors were provided access to all areas of the ship requested and interviews with all necessary individuals were arranged upon request.

All of the elements evaluated during the environmental compliance audit were found to be in conformance with the audit criteria.

REPORT ORGANIZATION

This report is divided into three sections. Section 1.0 serves as a general introductory section, including the objectives and criteria of the audit program and identification of the Haley & Aldrich audit team. Section 1.0 also includes other logistical information related to the audit, such as the dates of the on-board audit activities and the tasks undertaken to accomplish the stated objectives. Section 2.0 presents background information on the Nordic Empress, including the date the keel was laid, weight of the vessel, passenger capacity, a description of the environmental management organization, and a discussion of the waste stream handling practices of the vessel. Section 3.0 identifies non-conformances with audit criteria.

1.0 SCOPE OF WORK

1.1 Environmental Audit Objective

The objective of the Nordic Empress audit was to determine compliance with the approved ECP and related U.S. federal environmental laws and regulations. Specific audit criteria and methods that were employed by the auditors to evaluate the Nordic Empress are included in the Environmental Compliance Plan Audit Protocol for Royal Caribbean International and New York and Puerto Rico Regulatory Addenda, which are part of Haley & Aldrich's audit Workplan.

The Nordic Empress was evaluated for compliance with the following audit criteria:

- The RCCL ECP approved by the U.S. District Court for the Southern District of Florida; and
- U.S. federal and port state (New York, Pennsylvania, and Puerto Rico) laws and regulations applicable to waste management practices aboard foreign vessels.

The period of review for the audit extended from the date of the last audit, 6 June 2001, to the dates on which this audit's activities were completed, 28-30 April 2002.

1.2 Audit Logistics

The environmental compliance audit of the Nordic Empress was conducted beginning on Sunday, 28 April 2002 and concluding on Tuesday, 30 April 2002, for a total of three days on-board. The Haley & Aldrich audit team consisted of three members. Mr. Joseph Cotier, CPEA, Senior Engineer, served as the Audit Team Leader. Mr. George "Mike" Williams, Senior Marine Consultant, participated as an Audit Team member. Mr. Robert Ojala, Marine Surveyor, of ABS Consulting, participated as an Audit Team Member and performed audit activities related to mechanical aspects of shipboard pollution control systems.

The ship's itinerary during the audit included ports in San Juan, Puerto Rico; St. Croix, U.S. Virgin Islands; Philipsburg, St. Maarten; King's Wharf and Hamilton, Bermuda; and New York, New York. The audit team boarded in Philipsburg on Sunday, 28 April 2002 and disembarked on Wednesday, 1 May 2002 in King's Wharf.

1.3 Audit Methodology

On 28 April 2002, the audit was initiated with an Opening Conference, attended by the Nordic Empress' senior officers and Royal Caribbean International Management personnel, to discuss the scope of work and the plan for accomplishing necessary tasks while on-board. A comprehensive inspection tour of the ship was subsequently

completed. Following the inspection, the Haley & Aldrich auditors began a review of pertinent environmental records and logs, conducted interviews with ship's officers and crew, and performed "spot-checks" of areas and activities to verify audit conclusions. Document review was limited to the period from the last audit up until the date of this audit. Upon completion of the initial inspection tour, ABS Consulting conducted a marine engineering inspection of the ship's oily bilge water separator systems, marine sanitation devices, and piping arrangements associated with the bilge, gray water/miscellaneous wastewater, and black water systems. On the final day of the audit, the audit team conducted a Closing Conference, including a discussion of the audit findings with the Nordic Empress' senior officers and Royal Caribbean International Management personnel.

1.4 Audit Criteria Reviewed

The audit criteria reviewed included elements of the ECP pertinent to Royal Caribbean International vessels and applicable federal and New York, Pennsylvania, and Puerto Rico laws and regulatory requirements relevant to the ship's circumstances during the audit.

Audit Topic	**ECP/Regulatory Section**
Environmental Management Systems	Environmental Compliance Plan (ECP)
Waste Management Procedures	ECP Appendix II Waste Management Plan ECP Appendix III Inspections, Assessments, and Internal Environmental Meetings/Reports
Water Discharges	Clean Water Act and MARPOL Annex I and V, implemented at 33 CFR Parts 151, 153, 159 and 40 CFR § 140.3 and .4 (marine sanitation devices), and 40 CFR Part 110. CERCLA, 40 CFR § 302.4. New York - 6 NYCRR Part 700 to 705 water discharges, 6 NYCRR Part 654, 656 and 657 (sewage and marine sanitation devices). Pennsylvania – 25 Pa Code Chapter 92.3 (Permit Requirements), 25 Pa Code Chapter 92.4 (Exclusions from Permit Requirements), 25 Pa Code Chapter 93 (Water Quality Standards). Puerto Rico Hazardous Solid Waste – Rule 302; Regulation for the Management of Non-Hazardous Solid Waste Rule 603(b)(1)(f) and Rule 603(b)(2); 33 U.S.C. 1321(b)(5) and 2704(c)(2)(A).

Audit Topic	ECP/Regulatory Section
Wastes Incinerated On-board or Off-Loaded Ashore	MARPOL Annex I and V, implemented at 33 CFR Part 151. Resource Conservation and Recovery Act (RCRA), Subtitle C; 40 CFR Parts 261, 262, 268 and 279 (used oil). New York - 6 NYCRR Part 360 (solid waste management); 6 NYCRR Parts 371 and 372 (hazardous waste); 6 NYCRR Part 364 and 19 NYCRR Part 70 (medical waste). Pennsylvania – 25 Pa Code Chapters 260a, 261a, 262a, and 268a (Hazardous Waste Management), 25 Pa Code Chapter 266b (Universal Waste Management), 25 Pa Code Chapter 284 (Infectious and Chemotherapeutic Waste), 25 Pa Code Chapter 287 (Residual Waste Management-General Provisions), and 25 Pa Code Chapter 298 (Management of Waste Oil). Puerto Rico Regulation for the Management of Non-Hazardous Solid Waste – Rule 580, et seq. (biomedical waste); Rule 600 et seq.(used oil); Rule 535 (PCB waste). Regulation of the Management of Hazardous Solid Waste-Parts VI, VII (parallels RCRA). Regulation for the Management of Hazardous Solid Waste – Rule 302; Rule 604(I) (EQB wastes); Rule 605 (EQB wastes); Rule 703 (manifesting); and Rule 1107 (reclaimed lead-acid batteries).

1.5 Audit Report Limitations

This report provides an opinion of compliance with regulatory and other audit criteria and is not intended to render any opinion relative to existing vessel conditions, except as outlined in the described scope of work.

In the conduct of this audit, Haley & Aldrich has attempted to independently evaluate information obtained within the limits of the established scope of work as described in our Workplan. As with any evaluation of this type, there is a certain degree of dependence upon oral or written information provided by vessel or other Company representatives which is not always readily verifiable through visual inspection or review of collaborating documentation. Haley & Aldrich is not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed by Company or vessel representatives at the time this audit was performed.

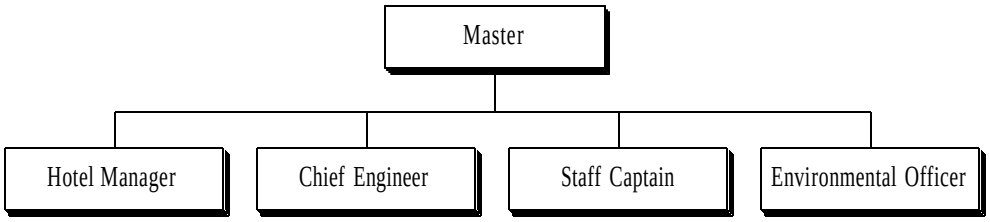
2.0 VESSEL BACKGROUND

2.1 Vessel Environmental Management Organization

The Master of the Nordic Empress reports to the Royal Caribbean International Senior Vice President for Marine Operations. The primary officer responsible for environmental compliance aboard the Nordic Empress is the Environmental Officer (EO). The Environmental Officer reports directly to the Master.

Figure ES-1, presents an overview of the organization in place to address environmental program issues aboard the Nordic Empress.

Figure ES-1
NORDIC EMPRESS
ENVIRONMENTAL MANAGEMENT
ORGANIZATION



2.2 Description of the Nordic Empress

The Nordic Empress is an all welded steel, passenger cruise vessel of modern streamlined design, having 10 decks above the main deck level. The Port of Registry is Nassau, Bahamas. The ship was built by Chantiers de L'Atlantique in Alsthom, France; her keel was laid on 30 November 1988 and she was delivered in 1990. The ship reportedly carries approximately 1,800 passengers and 685 crew. The Nordic Empress' registered gross tonnage is 48,563; it has an overall length of 210.92 m, breadth of 30.48 m., and a design draft of 7.01 m. The ship's propulsion system consists of twin screws, controllable pitch propellers through reduction gears, with two (2) diesel engines per reduction gear. Two (2) bow thrusters and one (1) stern thruster are installed.

2.3 Waste Management Practices

The following is a description of the waste management practices aboard the Nordic Empress with regard to each waste stream identified in the Royal Caribbean International Waste Management Plan.

Gray Water/Miscellaneous Wastewaters

The gray water piping system on board this vessel leads to ten gray water collection tanks, two dedicated laundry water tanks, and three tanks for food wastes, plus an additional grease trap from the galley. Each of the gray water collecting tanks can be pumped overboard or to dedicated ballast tanks Nos. 3, 4, 5 or 8, which are used to store gray water when within 12 nautical miles (nm) of land.

The gray water and black water piping systems were generally examined for possible interconnections and, because of the vacuum characteristic of the black water collection system, it is virtually impossible to interconnect the system to the gray water piping without losing vacuum on the black water system. The gray water and black water from the ship's hospital are both collected in the black water system and vacuum is maintained in this area by use of check valves between the two piping systems.

Observations during the audit, interviews and logbook entries since 6 June 2001, confirmed that gray water/miscellaneous wastewater was discharged only outside 12 nm of land at Sea Condition, outside U.S. waters.

Black Water

The ship's Marine Sanitation Device is filled from the four black water collecting tanks in the "EVAC" Vacuum Collection System and the treated effluent is discharged into a dedicated holding tank, No. 6, and No. 7 ballast tank.

The scum and solid debris is separated during treatment by a Roto-Sieve unit that was originally installed in the piping system of the Marine Sanitation Device. Debris is flushed down the vacuum toilets from the various restrooms. The Roto-Sieve, which is intended as a primary device prior to the treatment system, is able to trap the debris, which is currently burned in the incinerator. In addition, two baskets are installed in the treated black water line prior to overboard discharge to further trap debris. As the vessel reportedly has sufficient black water storage capacity, thus eliminating the need to pump untreated sewage overboard, outside of 12 nm. In the event that the unit is not operational, the piping has been modified to trap debris prior to any overboard discharge of raw sewage.

The Marine Sanitation device and related maintenance records were examined, and all were found in compliance with the Manufacturer's recommendations and the vessel owner's maintenance schedule.

Observations during the audit, interviews and logbook entries since 6 June 2001, confirmed that black water was discharged only outside 12 nm of land at Sea Condition, outside U.S. waters.

Bilge Water

Two oily bilge pumps discharge into the dirty bilge water holding tank which is then directed to the bilge oily water separators. The vessel currently has two Marinfloc oily bilge water separators, each provided with a 15 ppm oily bilge water discharge monitor/alarm (calibrated to 5 ppm), through which the oily water separators discharge into a clean bilge water holding tank. A third 15 ppm meter, also calibrated to 5 ppm oil, is installed in the overboard discharge line from the clean bilge water holding tank with an automatic 3-way valve which stops discharge if the monitor reaches 5 ppm of oil or greater.

The piping system for suction and discharge of bilge water, as well as the pollution prevention equipment associated with bilge water treatment and discharge, were visually examined and found to be in compliance with U.S. laws and regulations implementing MARPOL (hereinafter, "MARPOL"). Based on a review of the Oil Record Book, all discharges of clean separated bilge water and the operation of the oily bilge water separators were found to be logged as required.

Based on observations during the audit, interviews and Oil Record Book entries since 6 June 2001, treated bilge water was discharged only outside 12 nm of land at Sea Condition, outside U.S. waters.

Oily Sludge

Separated bilge oil is discharged from the oily water separators to a dedicated sludge oil tank. The sludge oil residue tanks are listed in paragraphs 3.1, 3.2 and 3.3 of the attachment A to the IOPP Certificate. Oily sludge is approved for disposal at a shore facility or for burning in an on-board incinerator per the IOPP certificate attachment Form-A. The oily sludge burning incinerator, Teamtec Golar, model GS500C, was installed and has been in operation since 5 June 2000. Based on interviews and Oil Record Book entries since 6 June 2001, oily sludge has been landed to shoreside facilities or incinerated on-board.

Solid Waste

The following is a description of the Nordic Empress' solid waste management practices for each waste stream identified on the vessel. Haley & Aldrich auditors based this information on observations of the waste handling practices, document and record reviews, and interviews with the Environmental Officer.

Waste Stream	Ship's Waste Management Practices
▪ Aerosol Cans, including carbon filters from the puncturing device	Aerosol cans are depressurized at Sea Condition. The empty cans are landed for disposal as non-hazardous waste. Liquids drained from the aerosol cans during the depressurization process are captured in a drum and are landed for disposal as hazardous waste.
▪ Batteries – lead acid	Expired lead-acid batteries are collected in a container on-board and landed for recycling.
▪ Batteries – lithium or mercury	Expired lithium or mercury batteries are collected in a container on-board and landed for recycling.
▪ Batteries – nickel cadmium, alkaline, carbon-zinc and other "Universal Waste" batteries	Expired batteries are collected in a container on-board and landed for recycling.
▪ Biomedical wastes	Biomedical waste is bagged in red bags labeled as "Bio-Hazard", collected within the hospital and incinerated. "Sharps" containers from the hospital and those collected from cabins are landed for disposal as biomedical waste.
▪ Butane lighters	Butane lighters are collected on-board and are landed as hazardous waste.
▪ Cidex medical disinfectant	Cidex solution is not used aboard the ship.
▪ Cleaning solutions (acids)	Cleaning solutions are landed for disposal as hazardous waste if the pH is less than 2. If greater than 2, they are landed as non-hazardous waste.
▪ Collected residuals from tank cleaning	Residuals from tank cleaning are disposed of as hazardous or non-hazardous waste.
▪ Cooking oil	Cooking oil is collected in designated containers and landed for recycling.
▪ Expired chemical products (i.e., expired shelf-life) and discarded chemical products	Expired products are landed for disposal as hazardous waste.
▪ Expired pharmaceuticals	Expired pharmaceuticals are incinerated on-board.
▪ Food waste	Food wastes are processed through the pulpers and discharged to sea at Sea Condition. Bones are collected and landed as non-hazardous waste.
▪ Glass	Glass is collected and landed for recycling.
▪ Incinerator ash	Incinerator ash is collected on-board and landed for disposal as non-hazardous waste.
▪ Dry cleaning wastes	Dry cleaning wastes are collected on-board and landed for disposal as hazardous waste.
▪ PCB-containing light ballasts	No PCB-containing light ballast waste stream was observed aboard the ship during the audit.
▪ Medical facility X-ray silver-bearing waste	X-ray silver-bearing waste is collected on-board and landed for disposal as hazardous waste.
▪ Oil filters	Oil filters are drained, collected on-board, and landed for recycling.

Waste Stream	Ship's Waste Management Practices
▪ Oily rags	Oily rags are collected on-board and incinerated, or landed as non-hazardous waste.
▪ Packing materials (dunnage)	Packing materials are landed as nonhazardous waste.
▪ Paint rags/debris	Paint rags and debris are collected on-board and incinerated, or landed as hazardous waste.
▪ Paper, cardboard, trash	Paper and cardboard wastes and trash are collected on-board and incinerated, or landed as dry garbage.
▪ Photo shop paper filters	Paper filters from the photo shop processing equipment are collected and landed as hazardous waste.
▪ Photo shop silver recovery cartridges	Photo shop silver recovery cartridges are landed for recycling.
▪ Photo shop wastewaters	Photo shop wastewaters are collected, treated and landed for disposal as non-hazardous waste.
▪ Plastics	Light plastics such as plastic bags are incinerated on-board; empty hard plastic containers are landed for disposal as non-hazardous waste.
▪ Potable water filter cartridges	Potable water filter cartridges are landed as non-hazardous waste.
▪ Print shop waste, rags, and debris	Print shop waste rags and debris are collected on-board and incinerated.
▪ Printer cartridges	Spent printer cartridges are landed for recycling or landed as non-hazardous waste.
▪ Recyclable cans/metals	Aluminum and tin cans are collected on-board and landed as non-hazardous waste.
▪ Sand from sandblast units	There is no sandblast equipment on-board this ship.
▪ Sand (spent filtration media) from freshwater treatment system, pools, jacuzzis	Pool filtration sand is landed as non-hazardous waste.
▪ Smoke detectors	No smoke detectors had been landed during the period of review. The type of detectors used aboard the ship do not contain radioactive elements.
▪ Spent and expired flares and signaling devices	Expired flares and signaling devices are landed for return to the vendor.
▪ Spent Marinfloc filtration media	No spent Marinfloc filtration media had been landed for disposal during the audit review period.
▪ Sterno cans with fluid	No Sterno cans are used on-board.
▪ Used paints and thinners	Paints and thinners are landed for disposal as hazardous waste. Empty (dry) paint and thinner containers are dried and landed as non-hazardous waste.

2.4 Additional Waste Streams Identified During The Audit

No additional waste streams were identified during the audit.

3.0 AUDIT FINDINGS

All of the elements evaluated during the environmental compliance audit were found to be in conformance with the audit criteria.