ROYAL CARIBBEAN CRUISES LTD
ENVIRONMENTAL COMPLIANCE
AUDIT REPORT

M/V ZENITH

Prepared for

Royal Caribbean Cruises, Ltd.
Miami, Florida

Prepared by

Haley & Aldrich, Inc.
Brea, California

File No. 86168-416
June 2002

UNDERGROUND
ENGINEERING &
ENVIRONMENTAL
SOLUTIONS

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HALEY & ALDRICH

24 July 2002
File No. 86168-416

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

Subject: Zenith
Environmental Audit Report

Dear Captain Wright,

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

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
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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 Zenith (the Zenith). 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 1 June and 4 June 2002.

OVERVIEW OF FINDINGS

Overall, compliance with the ECP and applicable U.S., Florida, New York, Maryland and Puerto Rico state laws and regulations aboard the Zenith was found to be good. 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.

The audit findings were both operational and administrative in nature. The operational finding involved landing of a hazardous waste on a non-hazardous manifest on one occasion. The administrative findings involved failing to note aerosol can depressurization, and documentation errors in the Oil Record Book.

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 tasks undertaken to accomplish the stated objectives. Section 2.0 presents background information on the Zenith, 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 Zenith 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 Zenith are included in the Environmental Compliance Plan Audit Protocol, and the Port State Regulatory Addenda for Celebrity Cruises, which are a part of Haley & Aldrich's audit workplan.

The Zenith 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 (Florida, New York, Maryland 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, 12 April 2001, to the dates on which this audit's activities were completed (1 to 4 June 2002).

1.2 Audit Logistics

The environmental compliance audit of the Zenith was conducted beginning on Saturday, 1 June 2002 and concluding on Tuesday, 4 June 2002, for a total of three days on-board. The Haley & Aldrich audit team consisted of three members. Mr. George "Mike" Williams, Senior Marine Consultant, served as the Audit Team Leader. Mr. Joseph Cotier, CPEA, Senior Engineer, 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 Zenith's itinerary during the audit included ports in New York, New York and Hamilton, Bermuda. The audit team boarded in New York on 1 June 2002, and disembarked on 4 June 2002 in Bermuda.

1.3 Audit Methodology

On 1 June 2002, the audit was initiated with an Opening Conference attended by the Zenith's senior officers, and the Celebrity Cruises' Director, Safety & Environment. During the Opening Conference, the scope of work and the plan for accomplishing necessary tasks while on-board were discussed. A comprehensive inspection tour of the ship was subsequently completed. Following the inspection, Haley & Aldrich auditors reviewed 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 3 June 2002, the audit team conducted a Closing Conference including a discussion of the audit findings with the Zenith's senior officers and the Celebrity Cruises' Director, Safety & Environment.

1.4 Audit Criteria Reviewed

The audit criteria reviewed included elements of the ECP pertinent to Celebrity Cruises vessels and applicable federal, Florida, New York, Maryland and Puerto Rico State 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 I Celebrity Waste Management Plan
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 Florida Statutes §§ 372.85 (fresh water prohibited discharges); 376.071 (vessel emergency plan); 376.041 (coastal waters prohibited discharge); 376.12(11) (notifications of discharge); 403.161; and 403.088 (permit requirements for discharge). New York - 6 NYCRR Part 700 to 705 water discharges, 6 NYCRR Part 654, 656 and 657 (sewage and marine sanitation devices). Maryland - Title 26, Code of Maryland Regulations (COMAR) – §§ 26.08.02 (water quality); 26.08.04 (permits); 26.10.01 (oil pollution). 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). Florida Administrative Codes §§ 64E-16.001 to 64E-16.006 and 64E-16.011(biomedical waste); 62-703.030; 62-703.160 (hazardous waste); 62-701.300 and 62-701.520 (special waste) 62-730.185 (universal waste); 2-710.210 (used oil); 62-710.850 (used oil filters); 62-737.150 and 62-737.400 (spent mercury-containing lamps); 62-740.020 to 62-740.040 (PCW management). 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). Maryland - Title 26, Code of Maryland Regulations (COMAR) §§ 26.13.01 to .03, .06, and .10 (hazardous waste); 26.13.11 and .12 (medical waste); 26.10.15 (used 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 investigation, 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 investigation was performed.

2.0 VESSEL BACKGROUND

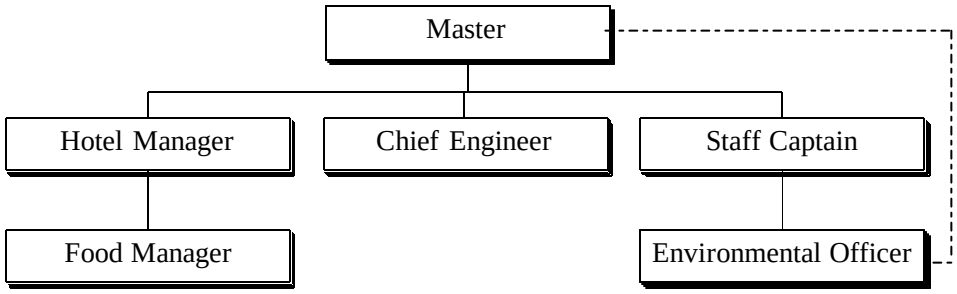
2.1 Vessel Environmental Management Organization

The Master of the Zenith reports to Celebrity Cruises Senior Vice President for Fleet Operations. The primary officer responsible for environmental compliance aboard the Zenith is the Environmental Officer (EO). The Environmental Officer reports to the Staff Captain, with a dotted line responsibility to the Master.

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

Figure ES-1

ZENITH
ENVIRONMENTAL MANAGEMENT
ORGANIZATION



2.2 Description of The Zenith

The Zenith is an all welded steel, passenger cruise vessel of modern streamlined design, having twelve (12) decks, nine (9) of which are above the main deck level. The Port of Registry is Monrovia, Liberia. The ship was built by Meyer Werft, Hull S620, Germany; her keel was laid in 1990 and she was delivered in 1992. The Zenith's registered gross tonnage is 47255. The ship has an overall length of 682.4 ft, and a breadth of 95.14 ft. The vessel reportedly carries approximately 1781 passengers and 658 crew. Propulsion is twin screw, controllable pitch propellers through reduction gears, with two (2) diesel engines per reduction gear.

2.3 Waste Management Practices

The following is a description of the waste management practices aboard the Zenith with regard to each waste stream identified in the Celebrity Waste Management Plan.

Gray Water/Miscellaneous Wastewaters

The gray water piping system onboard this vessel is lead to eight (8) gray water collection tanks plus one (1) dedicated laundry water tank in the machinery and tank spaces. Each of the gray water collecting tanks can be pumped overboard or to dedicated holding tanks No. 8 port and starboard, used to store gray water when within 12 miles of the shore line. Overflow from No. 8 is to No. 13 port and starboard, then No. 14 center in an emergency.

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 12 April 2001, confirmed that gray water/miscellaneous wastewater was discharged only outside 12 nm of land at Sea Condition, outside U.S. waters.

Black Water

Three (3) biological marine sanitation device units are installed onboard this vessel which take suction from the black water holding tanks and treat all sewage prior to being discharged into the gray water holding tanks. The effluent from these three (3) stage units is a clear liquid. No solid waste or debris is discharged overboard due to the construction of the holding tanks and new filters installed between the holding tanks and treatment systems. Any debris would be retained within the holding tanks and could be removed during a shipyard period or would be trapped by the new filter units, which are cleaned weekly. The No. 8 port and starboard and No. 13 port and starboard (and No. 14 center in emergency) double bottom ballast tanks are designated as gray water and treated black water holding tanks and these are discharged beyond 12 miles from shore.

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 12 April 2001, confirmed that black water was discharged only outside 12 nm of land at Sea Condition, outside U.S. waters.

Bilge Water

The oily bilge water separating system takes suction from an oily bilge water holding tank, which receives discharge from the dirty bilge pumps. The Blohm & Voss oily bilge water separator takes suction from the holding tank and processed bilge water is discharged into a clean water holding tank. A 15 ppm monitor/ alarm is installed in the discharge side of the Blohm and Voss unit. A three–way valve is installed at the

discharge of the Blohm & Voss unit and directs the effluent back to the dirty bilge water holding tank when the water concentration exceeds 15 ppm oil.

A Marinfloc oily bilge water separator is then used to further process and discharge the treated bilge water to the sea. A 15 ppm monitor/alarm (calibrated to 5 ppm) is installed in the discharge line from the Marinfloc separator and recirculates the bilge water if 5 PPM of oil is exceeded.

Sludge from the separators is discharged directly into the oily sludge holding tank and is then landed ashore. The boiler and the incinerator have been relisted on the IOPP Certificate as an approved means of incinerating sludge, although the vessel's crew stated they do not intend to burn sludge.

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 were found to be logged as required. Except for two findings described in Section 3.0 of this report, the operation of the oily bilge water separators and the records within the Oil Record Book were examined and found to meet the MARPOL requirements.

Based on observations during the audit, interviews and logbook entries since 12 April 2001, treated bilge water was discharged only outside 12 nm land at Sea Condition, outside U.S. waters.

Oily Sludge

Separated oily bilge sludge oil is approved for shore facility discharge per the IOPP certificate, attachment Form-A. The vessel's present practice is to discharge all sludge to shoreside facilities. All such discharges are made through shore connections at the bunkering stations. Except for one finding described in Section 3.0 of this report, the records contained within the Oil Record Book, Manifests and receipts for discharged sludge since 12 April 2001 were examined and found to meet MARPOL requirements.

Solid Waste

The following is a description of the Zenith's 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.
Hazardous and non-hazardous manifests and receipts were examined and found to meet US requirements except for one finding described in Section 3.0 of this report.

Waste Stream	Ship's Waste Management Practices
▪ Aerosol Cans, including carbon filters from the puncturing device	Aerosol cans are depressurized. The empty cans are landed for disposal as nonhazardous waste. Liquids drained from the aerosol cans during the depressurization process are captured in a drum. No liquid wastes had been landed during the audit review period.
▪ Batteries – lead acid	No lead-acid batteries had been landed during the audit review period.
▪ Batteries – Lithium or mercury	No lithium or mercury batteries had been landed during the audit review period.
▪ 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 incinerated.
▪ Butane lighters	No butane lighters had been landed during the audit review period.
▪ Cidex Medical disinfectant	Cidex solution is not used aboard the ship.
▪ Cleaning Solutions (acids)	No cleaning solutions were landed during the period of audit review. Cleaning solutions are landed as hazardous waste.
▪ Collected residuals from tank cleaning	Residuals from tank cleaning are landed as nonhazardous waste.
▪ Cooking Oil	Cooking oil is emptied into the oily sludge tank.
▪ Expired chemical products (i.e., expired shelf-life) and discarded chemical products	No expired chemical products had been landed during the audit review period.
▪ Expired pharmaceuticals	Expired non-narcotic pharmaceuticals have been landed for return to the Vendor/Manufacturer. Expired Narcotics are incinerated onboard the ship.
▪ Food waste	Food wastes are processed through the pulpers, dewatered, and discharged to sea at Sea Condition or landed as wet garbage. Large food items that cannot be pulped are landed as wet garbage.
▪ Glass	Glass is crushed and landed for recycling.
▪ Incinerator ash	Incinerator ash is collected on-board and landed for disposal as nonhazardous 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 during the audit.
▪ Medical facility X-ray silver- bearing waste	X-ray silver-bearing waste is collected on-board and processed in the photo shop silver recovery unit to below 5 mg/l of silver. The treated effluent is emptied into the oily sludge tank.

Waste Stream	Ship's Waste Management Practices
▪ Oil Filters	Oil filters are drained and landed as a nonhazardous waste.
▪ Oily rags	Oily rags are collected on-board and landed for disposal as nonhazardous waste.
▪ Packing Materials (dunnage)	Packing materials are incinerated on-board or landed with dry garbage.
▪ Paint rags/debris	Paint rags and debris are collected on-board and incinerated at Sea Condition.
▪ 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 on-board and incinerated at Sea Condition.
▪ Photo shop silver recovery cartridges	No photo shop silver recovery cartridges were landed during the period of audit review. Photo shop silver recovery cartridges are landed for recycling.
▪ Photo shop wastewaters	Photo shop silver-bearing waste is collected on-board and processed in the silver recovery unit to below 5 mg/l of silver. The treated effluent wastewater is landed with oily sludge. If above 5 mg/l of silver, the waste is landed as hazardous waste.
▪ Plastics	Light plastics such as plastic bags are incinerated on-board; empty hard plastic containers are landed for disposal as nonhazardous waste.
▪ Potable water filter cartridges	Potable water filter cartridges are incinerated onboard at Sea Condition.
▪ Print shop waste, rags, and debris	Print shop waste rags and debris are collected on-board and incinerated. Liquid waste is collected and landed as a hazardous waste.
▪ Printer cartridges	Spent printer cartridges are landed for recycling.
▪ Recyclable cans/metals	Aluminum and tin cans are crushed on-board and landed for recycling.
▪ Sand from sandblast units	No sandblast units were present on the ship at the time of the audit.
▪ Sand (spent filtration media) from freshwater systems, pools, and jacuzzis	Spent filtration media from pools and jacuzzis is landed as nonhazardous waste.
▪ Smoke detectors	Smoke detectors are landed and returned to the vendor. The type of detectors used aboard the ship do not contain radioactive elements.
▪ Spent and expired flares and signaling devices	Unused pyrotechnics are landed and returned to the vendor.
▪ Spent fluorescent lamps and bulbs	Spent fluorescent lamps or bulbs are collected onboard, crushed and landed for recycling.
▪ Spent Marinfloc filtration	Spent Marinfloc filtration media is landed as nonhazardous (petroleum contaminated) waste.

Waste Stream	Ship's Waste Management Practices
▪ Sterno cans with fluid	Sterno cans are not used aboard the ship.
▪ Used Paints and Thinners	Paints and thinners are landed for disposal as hazardous waste. Empty paint and thinner containers are landed for disposal as nonhazardous waste.

2.4 Additional Waste Streams Identified During The Audit

No new waste streams were identified during the audit.

3.0 AUDIT FINDINGS

3.1 Recordkeeping

A. Log Book Entries

1. Oil Record Book Entries

Regulatory Citation: 33 CFR § 151.25(h) – Oil Record Book

Requirement: Each operation required to be entered into the Oil Record Book shall be fully recorded without delay so that all the entries in the book appropriate to that operation are completed.

Finding:

- Incomplete Tank to Tank Transfer entries were made, not showing the quantity remaining on board for tanks transferred into the main sludge collecting tank (tank number 11).
- Two stop times were not entered, one each on 28 September and 14 December 2001, for discharge of clean bilge water overboard.
- Improper log corrections were made to data and positions including 2 uses of WhiteOut in the Oil Record Book.
- One incorrect position was logged for treated bilge water discharge on 12 February 2002.

2. Oil Record Book Entries

Regulatory Citation: 33 CFR § 151.25(h) – Oil Record Book

Requirement: Each operation required to be entered into the Oil Record Book shall be fully recorded without delay so that all the entries in the book appropriate to that operation are completed.

Finding: A recorder strip for the Oily Bilge Separator for clean water discharges from the Marinfloc showed alarms over 15 ppm on numerous occasions. No explanations were made in the Oil Record as required.

3. Oil Record Book Entries

Regulatory Citation: 33 CFR § 151.25(h) – Oil Record Book

Requirement: Each operation required to be entered into the Oil Record Book shall be fully recorded without delay so that all the entries in the book appropriate to that operation are completed.

Finding: On three (3) occasions, 11,18 and 25 May 2002, plastic bags of rags and debris from cleaning sludge tanks no. 8 and 10, were discharged to shore and entries were not made in the Oil Record Book.

B. Documents and Certificates

1. Environmental Compliance Plan

Regulatory Citation: Environmental Compliance Plan, Appendix I, Table 1 – Solid and Hazardous Wastes

Requirement: Aerosol Cans, including carbon filters from the puncturing device, must be depressurized beyond three (3) miles and landed as a non-hazardous waste.

Finding: The position of the ship from 21 September 2001 to 24 May 2002, could not be verified by document review or crew interview to verify procedures.

3.2 Waste Management

1. Hazardous Waste Manifests

Regulatory Citation: 40 CFR 262.20(a) – General Requirements

Requirement: A generator who offers hazardous waste for off site treatment, storage or disposal, must prepare a hazardous waste manifest.

Finding: On 2 December 2001, one 55-gallon drum of hazardous waste, generated by the Print Shop and carrying the waste code D011, was landed in Tampa as non-hazardous waste as shown on the non-hazardous waste manifest for that date.