



2013 Ocean Ranger Guidebook Revision 2-1-2013



CROWLEY



Table of Contents

		Page Number
Tab 1	Section 1 Wastewater	4
	Subsection 1 Wastewater Records Daily	9
	Subsection 2 General Wastewater	17
	Subsection 3 Discharge Vessels, General	26
	Subsection 4 Discharge Vessels, In Port or Stationary.....	31
	Subsection 5 Non-Discharge Vessels at Sea	31
	Subsection 6 Non-Discharge Vessels In Port and Discharge Vessels in Non-Discharge Areas	32
	Subsection 7 AWTS Wastewater Operations, General.....	33
	Wastewater Examples	35
Tab 2	Section 2 Non-Hazardous Wastes	40
	Subsection 1 Non-Hazardous Wastes, Daily.....	42
	Subsection 2 General Non-Hazardous Wastes.....	45
Tab 3	Section 3 Hazardous Waste	54
	Subsection 1 Hazardous Materials and Wastes.....	58
	Subsection 2 General Hazardous Materials and Wastes.....	59
Tab 4	Section 4 Visible Emissions and Air Quality	64
	Subsection 1 Opacity, Air Quality.....	66
Tab 5	Section 5 Safety	78
	Subsection 1 Safety	78
Tab 6	Section 6 Health Sanitation	82
	Subsection 1 Potable Water.....	82
	Subsection 2 Swimming Pools Sanitation, Spa Sanitation....	85
Tab 7	Section 7 Oil Pollution88
	Subsection 1 Oil Pollution, Fuel Daily.....	99
	Subsection 2 Oil Pollution Fuel OWS.....	101

	Subsection 3 Bilges	104
	Subsection 4 Oil Sludge Handling.....	106
	Subsection 5 Lifeboats, Security Vessels, Tender, Deck.....	107
	Subsection 6 Oil to Sea Interface.....	108
	Subsection 7 Miscellaneous.....	110
Tab 8	Vessel Seasonal Checklists.....	112
	Section 1 Wastewater.....	113
	Section 2 Sampling and Wastewater.....	117
	Section 3 Hazardous Materials and Solid Waste.....	120
	Section 4 Oil and Fuel.....	124
	Section 5 OWS.....	127
	Section 6 Safety Health and Sanitation.....	129
	Examples Vessel Seasonal Checklist.....	133
Tab 9	References	
	Documentation	142
	Terms, Abbreviations and Acronyms	144
	Tables and Conversions.....	152
	AWTS System General Descriptions and Schematics.....	156

Cruise Ships in Alaska 2013

Cruise Line	Ship Name	Cruise Line	Ship	Code
Disney	Wonder	D	WO	DWO
Carnival	Miracle	C	MI	CMI
Celebrity	Solstice	X	SO	XSO
	Millennium	X	MN	XMN
	Century	X	CE	XCE
Holland	Oosterdam	H	OO	HOO
	Statendam	H	SD	HSD
	Zuiderdam	H	ZD	HZD
	Westerdam	H	WE	HWE
	Zaandam	H	ZA	HZA
	Amsterdam	H	AM	HAM
	Volendam	H	VO	HVO
Norwegian	Pearl	N	PE	NPE
	Sun	N	SU	NSU
	Jewel	N	JE	NJE
Princess	Golden	P	GL	PGL
	Grand	P	GR	PGR
	Diamond	P	DI	PDI
	Coral	P	CR	PCR
	Sapphire	P	SA	PSA
	Island	P	IS	PIS
	Star	P	ST	PST
Regent/Oceania	7 Seas Navigator	G	SN	GSN
	Regatta	G	RE	GRE
Royal Caribbean	Radiance	R	RA	RRA
	Rhapsody	R	RH	RRH
Silver Seas	Silver Shadow	S	SH	SSH

Alaska Ports

ADK	ADAK	Aleutians
ATT	ATTU	Aleutians
CLD	COLD BAY	Aleutians
DH	DUTCH HARBOR	Aleutians
BRW	POINT BARROW	North Alaska
GAM	GAMBELL	North Alaska
NOM	NOME	North Alaska
STM	ST. MATHEW	North Alaska
STP	ST. PAUL	North Alaska
END	ENDICOTT ARM	Southeast Alaska
GB	GLACIER BAY	Southeast Alaska
HNS	HAINES	Southeast Alaska
JNU	JUNEAU	Southeast Alaska
KTN	KETCHIKAN	Southeast Alaska
MFJ	MISTY FJORD	Southeast Alaska
PTS	POINT SOPHIA	Southeast Alaska
SIT	SITKA	Southeast Alaska
SKG	SKAGWAY	Southeast Alaska
TA	TRACY ARM	Southeast Alaska
WRG	WRANGELL	Southeast Alaska
ANC	ANCHORAGE	Southwest Alaska
CFJ	COLLEGE FJORD	Southwest Alaska
CG	COLUMBIA GLACIER	Southwest Alaska
HOM	HOMER	Southwest Alaska
HUB	HUBBARD GLACIER	Southwest Alaska
ICB	ICY BAY	Southwest Alaska
KDK	KODIAK	Southwest Alaska
SEW	SEWARD	Southwest Alaska
VDZ	VALDEZ	Southwest Alaska
WHT	WHITTIER	Southwest Alaska

Ports outside Alaska

CMR	CAMPBELL RIVER	British Columbia
NAN	NANAIMO	British Columbia
PR	PRINCE RUPERT	British Columbia
VAN	VANCOUVER	British Columbia
VIC	VICTORIA	British Columbia
LAX	LOS ANGELES	California
SFO	SAN FRANCISCO	California
AST	ASTORIA	Oregon
SEA	SEATTLE	Washington

Section 1: Wastewater

Background:

Large cruise ships generate significant amounts of wastewater compared with most other vessels because of the high number of crew and passengers. This wastewater can be highly concentrated due to water conservation efforts onboard. If this wastewater were released untreated near shore it would be a human health concern and could cause economic and environmental damage.

Cruise ship wastewater effluent quality an issue concern in Alaska since the 1990s. After public request for information, sampling was performed indicating that cruise ship marine sanitation devices (MSD II) were not working well. Federal and state laws were passed in 2000 and 2001 regulating effluent limits for treated sewage and graywater.

Cruise ships that discharge wastewater into marine waters of the state began to install Advanced Wastewater Treatment Systems (AWTS) in 2001 to meet federal and state wastewater requirements. Several types of AWTS were installed. By the end of the 2004 cruise ship season, sample results indicated substantial improvements in effluent quality for fecal coliform, biochemical oxygen demand, suspended solids, and chlorine. An exceedance of one of these parameters may be an indicator of improperly working equipment.

Not all cruise ships currently discharge in Alaskan waters. About half of all large cruise ships are permitted to discharge with the rest discharging outside of state or federal waters. Some vessels are permitted but only discharge under specific conditions, such as while underway, or only discharge limited volumes.

Wastewater is one of the primary reasons for the creation of the Ocean Ranger program passed by Alaska voters. You will be monitoring for items such as unpermitted or illegal discharges, exceedances of federal and state effluent limits, sampling that is representative of typical discharges, and gathering information that is of use to current and future ADEC wastewater permitting.

Regulatory background:

Federal legislation (Title XIV--Certain Alaskan Cruise Ship Operations) regulating large cruise ship wastewater in Alaska (also known as the "Murkowski Law") was passed in 2000, with federal regulations effective in 2001. Title XIV prohibited discharge of untreated sewage in Alaskan waters; including areas within the Alexander Archipelago in Southeast Alaska more than 3 miles from shore (donut holes). Treated sewage and graywater had to meet minimum requirements if discharged while within 1 nautical mile or at speeds of less than 6 knots. Title XIV allowed the EPA to create minimum effluent quality regulations that would be consistent with State of Alaska water quality standards and allowed the State of Alaska to impose additional requirements and permitting.

The ADEC Commercial Passenger Vessel Environmental Compliance (CPVEC) Program was established in July 2001 by Alaska Statute (AS) 46.03.460 - AS 46.03.490. State law set effluent limits and sampling requirements for the discharge of blackwater and graywater from large commercial passenger vessels ("cruise ships"). Cruise ships that discharged treated sewage in Alaska are required to take samples of discharged wastewater. Effluent limits were established for Fecal Coliform (a type of bacteria) and solids.

In August 2006, Alaskan voters approved a ballot measure that added new requirements to the CPVEC Program. Among several other new provisions (such as Ocean Rangers), the statute required owners/operators of large commercial passenger vessels to obtain a wastewater discharge permit from ADEC for the discharge of any treated sewage, treated graywater, or other treated wastewater into marine waters of the state. The new law required that cruise ship wastewater effluent meet Alaska Water Quality Standards (WQS) at the point of discharge.

The 2008 ADEC Large Commercial Passenger Vessel Wastewater Discharge General Permit No. 2007DB0002 was developed to satisfy the requirements contained in the Ballot Measure. In addition to the 2001 state statutory requirements, the 2008 General Permit required additional reporting and sampling requirements, and contained new limits for several wastewater parameters. The permit established long term effluent limits for ammonia, copper, nickel, and zinc that applied Alaska Water Quality Standards (WQS) at the point of discharge beginning in 2010.

House Bill (HB) 134 was passed by the Legislature in 2009. This bill allowed ADEC to issue a three year General Permit to cruise ships that contains effluent limits or standards that are less stringent than the WQS at the point of discharge if the Department finds that a permittee is using economically feasible methods of pollution prevention, control, and treatment that the Department considers to be the most technologically effective in controlling all wastewater and other substances at the point of discharge but the permittee is unable to achieve compliance with WQS at the point of discharge. This was the basis for the 2010 General Permit.

ADEC is currently writing a new 2013 discharge permit. Copies of the new permit will be provided to operators and Ocean Rangers when available.

In 2008, the United States Environmental Protection Agency (EPA) issued a vessel general discharge permit (VGP). The VGP covers a range of discharge types (e.g. graywater, deck washdown, ballast, boiler blow down, etc.) and management practices for a variety of vessels.

Some Differences between ADEC and USCG requirements for wastewater:

- State has a permit, USCG approves for continuous discharge
- USCG continuous- less than 6 knots and within 1nm, ADEC less than 6 knots only.
- USCG- 500 passengers plus, ADEC 50 passengers plus (250 for large)
- ADEC – sampling must be in Alaska and while discharging

General regulations:

AS 46.03.462 (a&b). Terms and conditions of discharge permits.

(a) An owner or operator may not discharge any treated sewage, graywater, or other wastewater from a commercial passenger vessel into the marine waters of the state unless the owner or operator

- (1) obtains a permit under [AS 46.03.100](#), which shall comply with the terms and conditions of vessel discharge requirements specified in (b) of this section; or
- (2) has a plan approved by the department under (c) of this section.

(b) The minimum standard terms and conditions for all discharge permits authorized under this section require that the owner or operator

- (1) may not discharge untreated sewage, treated sewage, graywater, or other wastewaters in a manner that violates any applicable effluent limits or standards under state or federal law, including Alaska Water Quality Standards governing pollution at the point of discharge, except as provided in (e) of this section;
- (2) shall maintain records and provide the reports required under AS 46.03.465(a);

- (3) shall collect and test samples as required under [AS 46.03.465](#) (b) and (d) and provide the reports with respect to those samples required by [AS 46.03.475](#) (c);
- (4) shall report discharges in accordance with [AS 46.03.475](#) (a);
- (5) shall allow the department access to the vessel at the time samples are taken under [AS 46.03.465](#) for purposes of taking the samples or for purposes of verifying the integrity of the sampling process; and
- (6) shall submit records, notices, and reports to the department in accordance with [AS 46.03.475](#) (b), (d), and (e).

AS. 46.03.463. Prohibited discharges; limitations on discharges.

- (a) Except as provided in (h) of this section, a person may not discharge untreated sewage from a commercial passenger vessel into the marine waters of the state.
- (b) Except as provided in (h) of this section or under AS 46.03.462(c), a person may not discharge sewage from a commercial passenger vessel into the marine waters of the state that has suspended solids greater than 150 milligrams per liter or a fecal coliform count greater than 200 colonies per 100 milliliters except that the department may by regulation adopt a protocol for retesting for fecal coliform, if this discharge limit for fecal coliform is exceeded, under which a discharger will be considered to be in compliance with the fecal coliform limit if the geometric mean of fecal coliform count in the samples considered under the protocol does not exceed 200 colonies per 100 milliliters.
- (c) Except as provided in (h) of this section or under AS 46.03.462(c), a person may not discharge graywater or other wastewater from a commercial passenger vessel into the marine waters of the state that has suspended solids greater than 150 milligrams per liter or a fecal coliform count greater than 200 colonies per 100 milliliters except that the department may by regulation adopt a protocol for retesting for fecal coliform, if this discharge limit for fecal coliform is exceeded, under which a discharger will be considered to be in compliance with the fecal coliform limit if the geometric mean of fecal coliform count in the samples considered under the protocol does not exceed 200 colonies per 100 milliliters.
- (d) *[Repealed, Sec. 5, 2006 Primary Election Ballot Measure No. 2].*
- (e) An owner or operator may not discharge any treated sewage, graywater, or other wastewater from a large commercial passenger vessel into the marine waters of the state unless the owner or operator obtains a permit under [AS 46.03.100](#) and 46.03.462, and provided that the vessel is not in an area where the discharge of treated sewage, graywater, or other wastewaters is otherwise prohibited.
- (f) Except as provided in (h) of this section, a person may not discharge sewage from a small commercial passenger vessel unless the sewage has been processed through a properly operated and properly maintained marine sanitation device.
- (g) *[Repealed, Sec. 5, 2006 Primary Election Ballot Measure No. 2].*
- (h) The provisions of (a) - (f) of this section do not apply to discharges made for the purpose of securing the safety of the commercial passenger vessel or saving life at sea if all reasonable precautions have been taken for the purpose of preventing or minimizing the discharge.

AS 46.03.465. Information-gathering requirements.

- (a) The owner or operator of a commercial passenger vessel shall maintain daily records related to the period of operation while in the state, detailing the dates, times, and locations, and the volumes and flow rates of any discharges of sewage, graywater, or other wastewaters into the marine waters of the state, and provide electronic copies of those records on a monthly basis to the department not later than five days after each calendar month of operation in state waters.
- (b) While a commercial passenger vessel is present in the marine waters of the state, the owner or operator of the vessel shall provide an hourly report of the vessel's location based on Global Positioning System technology and collect routine samples of the vessel's treated sewage, graywater, and other wastewaters being discharged into marine waters of the state with a sampling technique approved by the department.

(c) While a commercial passenger vessel is present in the marine waters of the state, the department, or an independent contractor retained by the department, may collect additional samples of the vessel's treated sewage, graywater, and other wastewaters being discharged into the marine waters of the state.

(d) The owner or operator of a vessel required to collect samples under (b) of this section shall ensure that all sampling techniques and frequency of sampling events are approved by the department in a manner sufficient to ensure demonstration of compliance with all discharge requirements under [AS 46.03.462](#).

(e) The owner or operator of a commercial passenger vessel shall pay for all reporting, sampling, and testing of samples under this section.

(f) If the owner or operator of a commercial passenger vessel has, when complying with another state or federal law that requires substantially equivalent information gathering, gathered the information required under (a), (b), or (d) of this section, the owner or operator shall be considered to be in compliance with that subsection so long as the information is also provided to the department.

AS 46.03.490. Definitions. (abridged)

(3) "discharge" means any release, however caused, from a commercial passenger vessel, and includes any escape, disposal, spilling, leaking, pumping, emitting, or emptying;

(6) "graywater" means galley, dishwasher, bath, and laundry waste water;

(8) "marine waters of the state" means all waters within the boundaries of the state together with all of the waters of the Alexander Archipelago even if not within the boundaries of the state;

(10) "other wastewater" means graywater or sewage that is stored in or transferred to a ballast tank or other holding area on the vessel that may not be customarily used for storing graywater or sewage;

(12) "sewage" means human body wastes and the wastes from toilets and other receptacles intended to receive or retain human body waste;

(14) "treated sewage" means sewage that meets all applicable effluent limitation standards and processing requirements of 33 U.S.C. 1251 - 1376 (Federal Water Pollution Control Act), as amended, the federal cruise ship legislation, and regulations adopted under 33 U.S.C. 1251 - 1376 or under the federal cruise ship legislation;

(15) "untreated sewage" means sewage that is not treated sewage;

Federal Regulations (33 CFR 159)

33 CFR 159.307 Untreated sewage.

No person shall discharge any untreated sewage from a cruise vessel into the applicable waters of Alaska.

33 CFR 159.309 Limitations on discharge of treated sewage or graywater.

(a) No person shall discharge treated sewage or graywater from a cruise vessel into the applicable waters of Alaska unless:

(1) The cruise vessel is underway and proceeding at a speed of not less than six knots;

(2) The cruise vessel is not less than one nautical mile from the nearest shore, except in areas designated by the Coast Guard in consultation with the State of Alaska;

(3) The discharge complies with all applicable cruise vessel effluent standards established pursuant to Pub. L. 106-554 and any other applicable law, and

(4) The cruise vessel is not in an area where the discharge of treated sewage or graywater is prohibited.

(b) Until such time as the Administrator promulgates regulations addressing effluent quality standards for cruise vessels operating in the applicable waters of Alaska, treated sewage and graywater may be discharged from vessels in circumstances otherwise prohibited under paragraph (a)(1) and (2) of this section provided that:

- (1) Notification to the Captain of the Port (COTP) is made not less than 30 days prior to the planned discharge, and such notice includes results of tests showing compliance with this section;
- (2) The discharge satisfies the minimum level of effluent quality specified in 40 CFR 133.102;
- (3) The geometric mean of the samples from the discharge during any 30-day period does not exceed 20 fecal coliform/100 milliliters (ml) and not more than 10 percent of the samples exceed 40 fecal coliform/100 ml;
- (4) Concentrations of total residual chlorine do not exceed 10.0 micrograms per liter ($\mu\text{gm/l}$);
- (5) Prior to any such discharge occurring, the owner, operator or master, or other person in charge of a cruise vessel, can demonstrate to the COTP that test results from at least five samples taken from the vessel representative of the effluent to be discharged, on different days over a 30-day period, conducted in accordance with the guidelines promulgated by the Administrator in 40 CFR part 136, which confirm that the water quality of the effluents proposed for discharge is in compliance with paragraphs (b)(2), (3) and (4) of this section; and
- (6) To the extent not otherwise being done by the owner, operator, master or other person in charge of a cruise vessel, pursuant to §159.317 of this subpart, the owner, operator, master or other person in charge of a cruise vessel shall demonstrate continued compliance through sampling and testing for conventional pollutants and residual chlorine of all treated sewage and graywater effluents periodically as determined by the COTP.

33 CFR 159.315 Sewage and graywater discharge record book.
(See Item 1.1.a)

33 CFR 159.317 Sampling and reporting.

- (a) The owner, operator, master or other person in charge of a cruise vessel that discharges treated sewage and/or graywater in the applicable waters of Alaska shall;
 - (1) Not less than 90 days prior to each vessel's initial entry into the applicable waters of Alaska during any calendar year, provide to the COTP certification of participation under a Quality Assurance/Quality Control Plan (QA/QCP) accepted by the COTP for sampling and analysis of treated sewage and/or graywater for the current operating season;
 - (2) Not less than 30 days nor more than 120 days prior to each vessel's initial entry into the applicable waters of Alaska during any calendar year, provide a certification to the COTP that the vessel's treated sewage and graywater effluents meet the minimum standards established by the Administrator, or in the absence of such standards, meet the minimum established in §159.319 of this subpart;
 - (3) Within 30 days of each vessel's initial entry into the applicable waters of Alaska during any calendar year, provide to the COTP a Vessel Specific Sampling Plan (VSSP) for review and acceptance, and undergo sampling and testing for conventional pollutants of all treated sewage and graywater effluents as directed by the COTP;
 - (4) While operating in the applicable waters of Alaska be subject to unannounced sampling of treated sewage and graywater discharge effluents, or combined treated sewage/graywater discharge effluents for the purpose of testing for a limited suite, as determined by the Coast Guard, of priority pollutants;
 - (5) While operating in the applicable waters of Alaska be subject to additional random sampling events, in addition to all other required sampling, of some or all treated sewage and graywater discharge effluents for conventional and/or priority pollutant testing as directed by the COTP;
 - (6) Ensure all samples, as required by this section, are collected and tested by a laboratory accepted by the Coast Guard for the testing of conventional and priority pollutants, as defined by this subpart, and in accordance with the cruise vessel's Coast Guard accepted QA/QCP and VSSP;
 - (7) Pay all costs associated with development of an acceptable QA/QCP and VSSP, sampling and testing of effluents, reporting of results, and any additional environmental record keeping as required by this subpart, not to include cost of federal regulatory oversight.
- (b) A QA/QCP must, at a minimum include:
 - (1) Sampling techniques and equipment, sampling preservation methods and holding times, and transportation protocols, including chain of custody;

- (2) Laboratory analytical information including methods used, calibration, detection limits, and the laboratory's internal QA/QC procedures;
- (3) Quality assurance audits used to determine the effectiveness of the QA program; and
- (4) Procedures and deliverables for data validation used to assess data precision and accuracy, the representative nature of the samples drawn, comparability, and completeness of measure parameters.

(c) A VSSP is a working document used during the sampling events required under this section and must, at a minimum, include:

- (1) Vessel name;
- (2) Passenger and crew capacity of the vessel;
- (3) Daily water use of the vessel;
- (4) Holding tank capacities for treated sewage and graywater;
- (5) Vessel schematic of discharge ports and corresponding sampling ports;
- (6) Description of discharges; and
- (7) A table documenting the type of discharge, type of sample drawn (grab or composite), parameters to test for (conventional or priority pollutants), vessel location when sample drawn, date and time of the sampling event.

(d) Test results for conventional pollutants shall be submitted within 15 calendar days of the date the sample was collected, and for priority pollutants within 30 calendar days of the date the sample was collected, to the COTP directly by the laboratory conducting the testing and in accordance with the Coast Guard accepted QA/QCP.

(e) Samples collected for analysis under this subpart shall be held by the laboratory contracted to do the analysis for not less than six months, or as directed by the COTP.

(f) Reports required under this section may be written or electronic. If electronic, the reports must be in a format readable by Coast Guard and Alaska Department of Environmental Conservation data systems.

33 CFR159.319 Fecal coliform and total suspended solids standards.

(a) *Treated sewage effluent discharges.* Until such time as the Administrator promulgates effluent discharge standards for treated sewage, treated sewage effluent discharges in the applicable waters of Alaska shall not have a fecal coliform bacterial count of greater than 200 per 100 ml nor total suspended solids greater than 150 mg/l.

(b) *Graywater effluent discharges.* [Reserved]

State Regulations and General Permit:

See the individual Job Aid Item number and the Electronic Copy of the General Permit.

Subsection 1: Wastewater Records- Daily Observations (if applicable)

Job Aid Item: 1.1.a

Text: Daily waste water and related discharge logs are current, monitored and recorded IAW (18 AAC 69.050 / 33 CFR 159.315)

Background: Cruise Ships in Alaska are required to maintain a Sewage and Graywater Discharge Record book (discharge log) onboard that documents when, where, how much, at what speed, and what type of wastewater was discharged in Alaskan waters and waters of the Alexander Archipelago (Southeast Alaska). State regulations only require a book for vessels discharging in Alaskan waters, but federal regulations require all vessels to carry a record book (only over 500 passengers).

AS 46.03.465 (a): *The owner or operator of a commercial passenger vessel shall maintain daily records related to the period of operation while in the state, detailing the dates, times, and locations, and the volumes and flow rates of any discharges of sewage, graywater, or other wastewaters into the marine waters of the state, and provide electronic copies of those records on a monthly basis to the department not later than five days after each calendar month of operation in state waters.*

Wastewater discharge logs are critical in determining what is being discharged and where. They could be used for compliance checks and future permitting decisions. These logs must be accurate, complete, and filled out in a timely manner. Although the logs are also checked by ADEC staff and the USCG, being onboard allows time sensitive checks and verification while a vessel is underway.

Errors have been discovered in discharge logs. Locations, times, and dates have been transcribed incorrectly. Discharge ports and effluent types have been incorrectly listed. Volumes are often estimated and sometimes do not match what would be expected for a normal volume. Discharge logs have also documented discharges of wastewater in unpermitted areas.

It is highly recommended that the Ocean Ranger is familiar with the discharge logs and any discharge record book instructions onboard each cruise ship. There is a wide variety of discharge logs used. A good discharge log will include a detailed instruction sheet, clear entries, and page numbering, although these items are not required. Figure 1 is an example of an instruction sheet often included in or with the record book. Figures 2 and 3 are examples of discharge record book pages with signatures are ship names removed. The completed seasonal checklist will have information on who is responsible for the discharge logs, and where and how the records are kept.

What to check for:

Check	Requirement	Citations
All Entries	All discharges of treated or untreated wastewater are recorded.	18 AAC 69.050(a)
All Entries	Entries are accurate (check location, type, times, dates)	18 AAC 69.050(b)
All Entries	Entries are legible and complete.	33 CFR 159.315(a)
All Entries	Discharge logs are recorded “without delay”	33 CFR 159.315(e)
All Entries	Volumes and flow rates are accurate	33 CFR 159.315(c)
All Entries	Discharge ports match VSSP	18 AAC 69.030(b)
All Entries	Signed daily by master or designated person	33 CFR 159.315 (e)
Logbook	Kept onboard and available (all cruise ships over 500 passengers, discharging over 250 passengers)	33 CFR 159.315(a), 18 AAC 69.050(a)
Logbook	Emergency or accidental discharge is recorded and reported.	33 CFR 159.315(d) & GP 1.8 & GP 2.4
Logbook	Vessel Name and Official Number on each page	33 CFR 159.315(a)
Logbook	Pages are not filled in in advance or pre-signed	33 CFR 159.315(b)

Note- there may be multiple citations for each requirement. The most relevant is listed above.

Please note there are other job aid items that are related to discharge logs for discharging vessels. In particular 1.1.d- checks for unpermitted discharge should include reviewing all discharge entries.

Citations: 33 CFR 159.315 Sewage and graywater discharge record book.

(a) While operating in the applicable waters of Alaska each cruise vessel shall maintain, in English, a legible Sewage and Graywater Discharge Record Book with the vessel's name and official number listed on the front cover and at the top of each page.

(b) Entries shall be made in the Sewage and Graywater Discharge Record Book whenever any of the following is released into the applicable waters of Alaska:

- (1) Treated or untreated sewage;
- (2) Graywater; or
- (3) Sewage and graywater mixture.

(c) Each entry in the Sewage and Graywater Discharge Record Book shall, at a minimum, contain the following information:

- (1) Name and location of each discharge port within the ship;
- (2) Date the start of discharge occurred;
- (3) Whether the effluent is treated or untreated sewage, graywater, or a sewage and graywater mixture and type of treatment used;

- (4) Time discharge port is opened;
- (5) Vessel's latitude and longitude at the time the discharge port is opened;
- (6) Volume discharged in cubic meters;
- (7) Flow rate of discharge in liters per minute;
- (8) Time discharge port is secured;
- (9) Vessel's latitude and longitude at the time the discharge port is secured; and
- (10) Vessel's minimum speed during discharge.

(d) In the event of an emergency, accidental or other exceptional discharge of sewage or graywater, a statement shall be made in the Sewage and Graywater Discharge Record Book of the circumstances and reasons for the discharge and an immediate notification of the discharge shall be made to the COTP.

(e) Each entry of a discharge shall be recorded without delay and signed and dated by the person or persons in charge of the discharge concerned and each completed page shall be signed and dated by the master or other person having charge of the ship.

(f) The Sewage and Graywater Discharge Record Book shall be kept in such a place as to be readily available for inspection at all reasonable times and shall be kept on board the ship.

(g) The master or other person having charge of a ship required to keep a Sewage and Graywater Discharge Record Book shall be responsible for the maintenance of such record.

(h) The Sewage and Graywater Discharge Record Book shall be maintained on board for not less than three years.

18 AAC 69.050. Treated sewage, graywater, and other wastewater discharge records and report.

(a) An owner or operator shall maintain records required by AS 46.03.465(a) on board the vessel for 12 months, detailing each discharge of treated sewage, graywater, or other wastewater into the marine waters of the state.

(b) For an intermittent discharge of treated sewage, graywater, or other wastewater into the marine waters of the state, the records required by AS 46.03.465(a) must include the

- (1) date, time, latitude, and longitude when and where the discharge started and ended;
- (2) overboard discharge port through which the discharge occurred;
- (3) type of discharge;
- (4) volume and average discharge rate for each overboard discharge port;
- (5) minimum vessel speed during discharge; and
- (6) signature of the individual in charge of discharge operations and the date when that individual signed the discharge record.

(c) For an automatic or continuous discharge, in port, at anchorage, or underway, of treated sewage, graywater, or other wastewater into the marine waters of the state, the records required by AS 46.03.465(a) must describe for each voyage

- (1) the daily estimated volume of discharge by type;
- (2) a description of how the daily volume by discharge type was estimated;
- (3) for each stay that a vessel makes at an anchorage or dock, the
 - (A) date of the stay;
 - (B) time expressed in a 24-hour clock format at the beginning and end of each docking or anchorage;
 - (C) latitude and longitude of the stay; and
 - (D) estimated average flow rate of discharge by type of discharge; and
- (4) for each vessel route while the vessel is underway between each stay identified in (3) of this subsection, the
 - (A) dates while en route;
 - (B) time expressed in a 24-hour clock format at the beginning and end of each vessel route;
 - (C) vessel's average speed; and
 - (D) estimated average flow rate of discharge by type of discharge.

(d) Within 21 days after receipt of a written or electronic request from the department, an owner or operator shall submit copies of the requested treated sewage, graywater, or other

One way to delay the spread of invasive species is to wash off sediment that could harbor organisms from one port to another. The anchor and anchor chain are potential vectors for the spread of invasive species. Anchorages in Alaska occur in Sitka, Hoonah (Pt Icy Strait), Juneau, Ketchikan, and could occur at other ports. Please note that anchorwash operations are not logged on several vessels as there is no requirement, so it is best to observe as this operation is done.



Figure 1: Anchor winch

What to check for: Anchors and anchor chains are rinsed when retrieved. (33 CFR 151.2035(a(5))) The anchor chain must be “carefully and thoroughly washed down” (EPA VGP 2.2.8).

Citations: 33 CFR 151.2050 (e) Additional Requirements- nonindigenous species reduction practices (e) Rinse anchors and anchor chains when you retrieve the anchor to remove organisms and sediments at their place of origin.

EPA VGP 2.2.8 (Chain Locker effluent)

The anchor chain must be carefully and thoroughly washed down (i.e., more than a cursory rinse) as it is being hauled out of the water to remove sediment and marine organisms. In addition, chain lockers must be cleaned thoroughly during dry docking to eliminate accumulated sediments and any potential accompanying pollutants. For vessels that regularly sail outside waters subject to this permit, if technically feasible, periodically clean, rinse, and/or pump out the space beneath the chain locker prior to entering waters subject to this permit (preferably mid ocean) if the anchor has been lowered into any nearshore waters. Furthermore, for vessels that leave waters subject to this permit at least once per month, chain lockers may not be rinsed or pumped out in waters subject to this permit, unless not emptying them would compromise safety. Such a safety claim must be documented in the vessel’s recordkeeping documentation consistent with Part 4.2.

Job Aid Item: 1.1.c

Text: Waste water to shore (such as a sewer system or trucks) discharges are not released into regulated water body (unpermitted discharges into water 46.03.462 /463)

Background: Some cruise ships discharge treated or untreated wastewater to shore for disposal. Most of this occurs at the Franklin Dock in Juneau where graywater is offloaded to the Juneau sewer system. It is also possible that wastewater could be offloaded into trucks or to other municipal wastewater treatment systems.

What to check for: Wastewater must be offloaded without

spills or direct discharge to water bodies. Hoses must not leak, docks or shore must not have pools of wastewater, check for unusual foam or smell in seawater near the offload operations.



Figure 2- GW offload hose in Juneau



Figure 3- GW offload hose in Juneau



Figure 4- Sewage offload by tank vacuum truck

Citations: AS 46.03.462 (obtaining and complying with a permit), AS 46.03.463 (no untreated discharge).

Job Aid Item: 1.1.d

Text: Check for unpermitted discharges of untreated wastewater, treated wastewater by unpermitted vessels, discharge in areas closed to discharge, or discharge of sludge or biosolids in Alaska waters. (AS 46.03.462, AS 46.03.463, GP, 18 AAC 72.055).

Background: Cruise ships in Alaska are required to only discharge treated wastewater in Alaskan waters and the Alexander Archipelago (AS 46.03.462&463, 33CFR 159.307&309). Discharge of untreated wastewater in these areas is prohibited. Wastewater that is discharged must meet all federal and state requirements for treatment and can only be discharged where permitted. Wastewater discharge in Alaskan waters requires a state permit (2010 Large Commercial Passenger Vessel Wastewater Discharge General Permit).

Title XIV (the “Murkowski law”) allowed the state of Alaska to regulate wastewater discharge for large cruise ships within Alaskan waters and also within some areas in the Alexander Archipelago that are outside of 3 nautical miles (nm) but within US territorial waters. This closed the “doughnut holes” located in the Inside passage in Southeast Alaska. The boundaries are included in the General Permit and the reference GP Map in this Guidebook.

Please check the latest version of the general permit for information on discharge limitations. The General Permit also prohibits discharge to impaired or water quality limited waters.

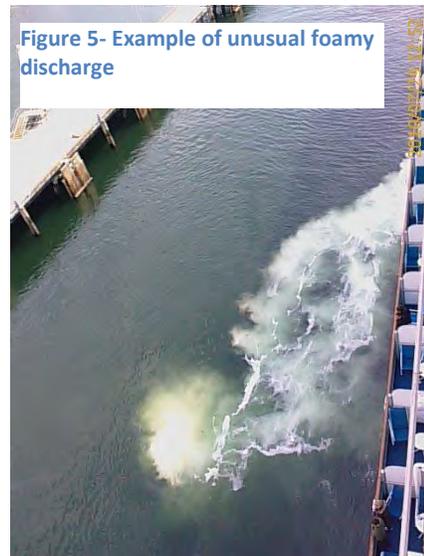
The General Permit also has limitations on the type of discharges. Discharges must be from an Advanced Wastewater Treatment System and cannot contain oily sheens, large amounts of foam, floating solids, garbage, grease, or sediments and sludge that does not meet the standards required for wastewater discharge (GP1.3).

A frequent question is discharge in the waters of Tracy Arm. Discharge restrictions for Tracy Arm are by a voluntary agreement only. There is no regulatory prohibition on discharge of treated wastewater in Tracy Arm. Discharges may violate the voluntary agreement, company policies, or public statements- but these are not violations of federal or state law.

About 5-10 percent of the treated WW volume is “bio sludge” / “biosolids” these solids are kept in holding tanks, although some vessels dry this sludge and incinerate. The sludge could also be discharged outside 12 nm. Tank storage determination of the volumes should be documented and understood by the OR. Some vessels appear to clean out the biosludge manually from the AWTS system tanks and system. The sludge and solids can be stored in drums or large garbage cans for later disposal. Such operations should be reported and documented.

What to check: Check discharge logs for any entries documenting accidental or emergency discharges. Check discharge log entries for locations of discharge that show unpermitted WW discharge. Check that listed discharge amounts did not exceed the design capacity of the treatment plant. Check overboard ports are closed on non-discharging vessels in Alaskan waters, and on discharging vessels in those areas they cannot discharge. Monitor for unusual activities. Watch for foam, solids, oily sheens, unusual smells in the waters around the cruise ship.

Citations: AS 46.03.462 (a-c) Terms and conditions of discharge permits.



AS 462.463 (a&c) Prohibited discharges; limitations on discharges.

General Permit: See 2013 GP for applicable limitations

33 CFR 159.307

No person shall discharge any untreated sewage from a cruise vessel into the applicable waters of Alaska.

33 CFR 159.309 (a)

(a) No person shall discharge treated sewage or graywater from a cruise vessel into the applicable waters of Alaska unless:

- (1) The cruise vessel is underway and proceeding at a speed of not less than six knots;
- (2) The cruise vessel is not less than one nautical mile from the nearest shore, except in areas designated by the Coast Guard in consultation with the State of Alaska;
- (3) The discharge complies with all applicable cruise vessel effluent standards established pursuant to Pub. L. 106-554 and any other applicable law, and
- (4) The cruise vessel is not in an area where the discharge of treated sewage or graywater is prohibited.

Figure 7- BW stored in garbage cans from overflow



Maps/References:



Figure 4. 2010 General Permit No Discharge Areas in Southeast Alaska.

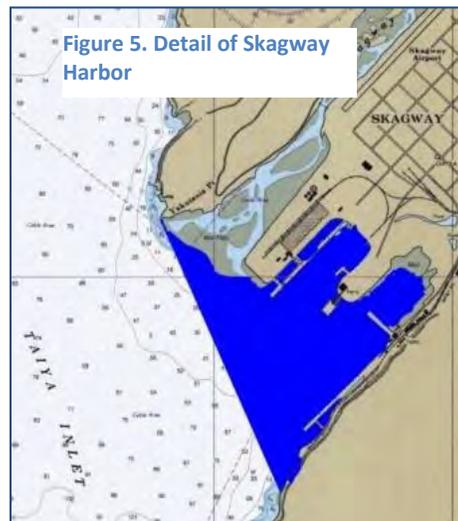


Figure 5. Detail of Skagway Harbor

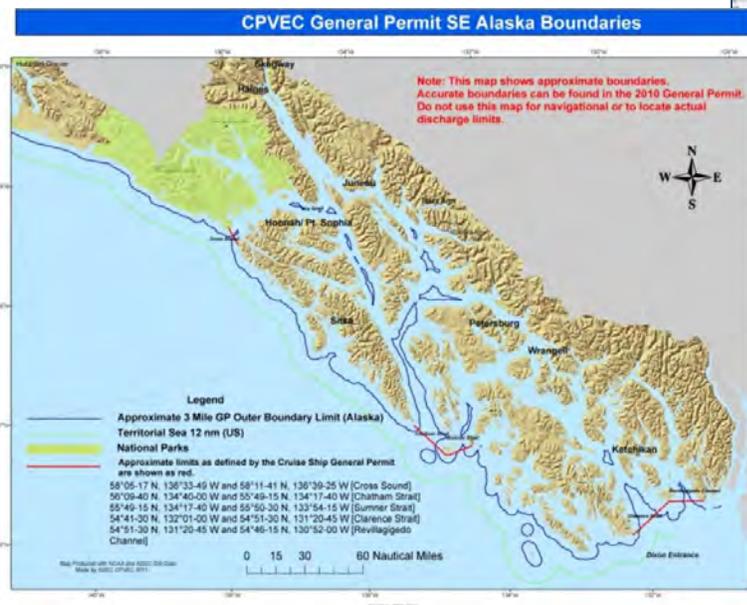


Figure 6. Southeast Alaska General Permit Boundaries- full map at end of this section

Figure 6 outlines where the Alaska Large Commercial Passenger Vessel Wastewater General Permit applies in Southeast Alaska. All areas inside of the blue 3 nautical mile boundaries and all areas inside of the red boundaries are covered by the General Permit. The 3nm boundaries in blue inside of the red lines are known as “doughnut holes” and were closed to discharge of untreated sewage by Title XIV. The blue boundaries still apply for all items other than wastewater as the boundaries of state territorial waters.

There can be a large difference between what can be discharged and what actually is. For many cruise ship operators, company policy is more stringent than what is required by federal and state regulations. For example, some ships treat all sewage even outside of 12 nautical miles. Some operators voluntarily hold treated wastewater in areas such as Tracy Arm.

Table 1: Sewage and Graywater Discharges (Large Cruise Ships)

What?	Stationary ¹	Continuous ²	Title XIV AK Waters ³	Outside 12 nm ⁴
Treated Wastewater	AK GP	USCG Approval	AK GP	Yes
Untreated Wastewater	No	No	No	Yes ⁵
Sludge/Biosolids	No	No	No	Yes

Table 2: Other Wastewaters (Large Cruise Ships)

(note wastewater could be comingled)

What?	Within 3 nm	Outside 3 nm	Outside 12 nm ⁶
Pool/spa water	De-chlorinate, de-brominate	Yes	Yes
Boiler water	No ⁷	Yes	Yes
Ballast water ⁸	Varies	Varies	Varies
Hazardous Waste	No	No	No
Oily water ⁹	No	No	No

Table 3: Solid Wastes

What?	Within 3 nm	Outside 3 nm ¹⁰	Outside 12 nm ¹¹
Food wastes	No	Yes if ground	Yes
Paper, glass, metal, rags, refuse	No	Yes if ground or communitated	Yes
Packing Materials that float (not plastics)	No	No	Yes outside 25 nm
Plastics	No	No	No

¹ Stationary in the Alaska 2010 Wastewater General Permit is defined as less than 6 knots speed.

² Continuous discharge is within 1 nautical mile from nearest shore or less than 6 knots speed.

³ For wastewater from large cruise ships, includes the whole of the Alexander Archipelago in Alaska and within 3 nm from shore as defined in 33 CFR 159.305

⁴ Outside United States Territorial Seas

⁵ Needs to be discharged underway and at a moderate rate of discharge if stored in holding tanks.

⁶ Outside United States Territorial Seas

⁷ Unless conditions in the EPA VGP are met.

⁸ Requirements of EPA VGP must be met, see EPA VGP for details on where discharge is allowed

⁹ More than 15 ppm of oil.

¹⁰ 3 nautical miles from shore. Alaskan waters for most definitions.

¹¹ Outside United States Territorial Seas

Subsection 2: General Wastewater

General note- for EPA VGP items the definition of minimize is “reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best marine practice.

Job Aid Item: 1.2.a

Text: Boiler blow down water is handled IAW VGP 2.2.6

What to check for: Boiler/economizer blowdown may not be discharged in EPA VGP waters (3nm) unless the conditions stated in the VGP are met.

Information: Boiler blowdown discharge can contain high levels of metals or other priority pollutants. The EPA determined that this discharge should be minimized near shore and in port. Boilers on board of modern large cruise ships are not for the generation of steam for main



Figure 9- Boiler soot trap

propulsion. The generated steam is used for heating purposes. Most vessels have dedicated tanks where the “boiler blow downs” are stored. The boilers have “top and bottom” blown downs. Some vessels do periodical blow downs (top bottom), other vessels have these blown downs automated (with a timer) others do



Figure 8- Boiler drain line

continuous blown downs. It has been noticed in previous seasons that some vessels directed their blow down water into bilge spaces and treated this water through the OWS system. From there the treated water was comingled with the influent of the AWTS. The OR needs to understand these operations in detail and to document this, including the estimated volumes. In general the blow down volumes should correlate closely to the boiler system makeup water.

Citation: EPA VGP 2.2.6 Boiler/Economizer Blowdown

Minimize the discharge of boiler/economizer blowdown in port if chemicals or other additives are used to reduce impurities or prevent scale formation. For vessels greater than 400 gross tons which leave the territorial sea at least once per week, boiler/economizer blowdown may not be discharged in waters subject to this permit, unless:

- The vessel remains within waters subject to this permit for a longer period than the necessary duration between blowdown cycles,
- The vessel needs to conduct blowdown immediately before entering drydock, or
- For safety purposes.

For all vessels, boiler/economizer blowdown may not be discharged in waters referenced in Part 12.1 except for safety purposes. Furthermore, boiler/economizer blowdown should be discharged as far from shore as practical.

Job Aid Item: 1.2.b

Text: Food wastes processed IAW VGP 2.2.15

Note: Most ships separate galley graywater from their AWTS. If the ship is a nondischarger, or segregates galley GW and only discharges it outside permitted waters there is no need to check this.

What to check for: As much food as practicable is removed from dishes before rinsing.

Background: This is to reduce grease/cooking oils and nutrients from nearshore discharges. Food waste can increase effluent parameters with limits such as BOD, TSS, and ammonia. Food waste is on most ships separately collected and transported to dedicated holding tanks as a slurry. This may be done with dedicated recycled waste water flow. Food waste is normally not processed in the AWTS system. OR needs to understand this operation in detail and document the findings. The volumes collected and the discharges of the food waste / slurries need to be checked.



Citation: EPA VGP 2.2.15 Graywater

Excerpt: "If graywater will be discharged in waters subject to this permit, the introduction of kitchen oils must be minimized to the graywater system. When cleaning dishes, you must remove as much food and oil residue as practicable before rinsing dishes."

Job Aid Item: 1.2.c

Text: Oils in Galley Waste Water stream (GW) are handled IAW VGP 2.2.15

Note: Most ships separate galley graywater from their AWTS. If the ship is a nondischarger, or segregates galley GW and only discharges it outside permitted waters there is no need to check this.

What to check: Cooking oils not directly added to graywater system.

Background: This is to reduce grease/cooking oils that could foul the WW treatment system or leave an oily sheen. Galleys and other areas of the vessels where food is processed or handled may have installed grease separators / grease trap. Ocean Rangers should be familiar with these items. Some vessels collect the spent oils from the galleys to use to "blend" (very small volumes of oils are available for this) in their HFO for the main engines. Also some vessels have cooking oils collection plans, the spent oils get off loaded for shore use, e.g. Boiler fuel / bio diesel. This has occurred in the last few years in Juneau.

Citation: EPA VGP 2.2.15 Graywater

Excerpt: "If graywater will be discharged in waters subject to this permit, the introduction of kitchen oils must be minimized to the graywater system. When cleaning dishes, you must remove as much food and oil residue as practicable before rinsing dishes. Oils used in cooking shall not be added to the graywater system. Oil from the galley and scullery shall not be discharged in quantities that may be harmful as defined in 40 CFR Part 110."

Job Aid Item: 1.2.d

Text: Chemically treated cooling water handling (e.g. anti freeze etc.) IAW VGP 2.2.2

Background: Most vessels have conditioned spaces for their equipment so anti freeze may not be used in all the engines or in equipment cooling water systems. However, emergency diesels, life boat engines may have antifreeze in systems. These systems are regularly changed and most vessels have collection plans / recycling methods in place.

What to check: Toxic or hazardous substances added to or removed from cooling water are not allowed to enter a water body. For example, to the bilgewater or wastewater systems for discharge overboard.

Citation: EPA VGP (1.2.3.8&2.2.2)

1.2.3.8 Discharges of Noxious Liquid Substance Residues

Discharges of noxious liquid substance residues subject to 33 CFR Part 151, Subpart A are not eligible for coverage under this permit.

2.2.2 (excerpt)

Except in the case of flocculants or other required additives (excluding any dispersants or surfactants) used to enhance oil/water separation during processing (after bilgewater has been removed from the bilge), vessel operators may not add substances that drain to the bilgewater that are not produced in the normal operation of a vessel.

AS 46.03.745. Hazardous substance release.

Except for a controlled release, the reporting of which is the subject of an agreement with the commissioner under AS 46.09.010 (b), a person may not cause or permit the release of a hazardous substance as defined in AS 46.09.900.

AS 46.09.900. Definitions.

(4) "hazardous substance" means (A) an element or compound that, when it enters into or on the surface or subsurface land or water of the state, presents an imminent and substantial danger to the public health or welfare, or to fish, animals, vegetation, or any part of the natural habitat in which fish, animals, or wildlife may be found; or (B) a substance defined as a hazardous substance under 42 U.S.C. 9601 - 9657 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980); "hazardous substance" does not include uncontaminated crude oil or uncontaminated refined oil;

Job Aid Item: 1.2.e

Text: Seawater piping bio-fouling chemicals and chlorine minimized, and if used, are used IAW VGP 2.2.20

What to check: Biofouling chemicals used according to their FIFRA label if a registered pesticide. A FIFRA label will include information on application amounts and how to apply the chemical treatment.

Background: The EPA included this item in the VGP in an attempt to minimize the use of pesticides near shore. Effective pesticides/herbicides may have unintentional environmental impacts because of the fact they are used to kill biofouling organisms. Some vessels use antibiofouling chemicals to keep the "sea water side" clean. Some vessels reduce the dosing rate of the chemicals while in Alaskan waters or in port. Some vessels may have multiple systems installed on their primary water (raw / seas water) system. Ocean Rangers need to understand the use and workings of the system, including the chemical dosage and chemical type used.

Citation: EPA VGP 2.2.0 Seawater Piping Biofouling Prevention

Seawater piping biofouling chemicals subject to FIFRA registration (see 40 CFR 152.15) must be used in accordance with their FIFRA label. No pesticides or chemicals banned for use in the United States may be discharged into waters subject to this permit.

Vessel owner/operators must use the minimum amount of biofouling chemicals needed to keep fouling under control. Discharges containing active agents must contain as little chlorine as possible.

Vessel owner/operators must remove fouling organisms from seawater piping on a regular basis and dispose of removed substances in accordance with local, State, and federal regulations. Removed fouling organisms shall not be discharged into waters subject to this permit and EPA recommends that if discharged into waters, should be discharged more than 50 nm from shore. Vessel owner/operators should remove any organisms while at sea to reduce the risk of invasive species introduction in ports.

Job Aid Item: 1.2.f

Text: Cathodic Hull protection used IAW VGP 2.2.7

What to check: Sacrificial anodes must not be used more than necessary to adequately prevent corrosion of the vessel's hull, sea chest, rudder, and other exposed areas of the vessel.

Background: The EPA included this item in the VGP because of a concern of discharge of potentially toxic levels of metals such as copper, zinc, and aluminum. Most vessels have installed a copper anode system (such as the Cathelco system). These are sacrificial copper anodes. These anodes are in most

cases installed in the seawater intakes in the sea chest. The control “effectiveness” for each system is controlled by the Cathelco output parameter. Most vessels reduce the output to minimize the anode wear, while maintaining sufficient protection. For all installed systems Ocean Rangers need to understand the use and working of the system and how they are operated.

Citation: EPA VGP 2.2.7 Cathodic Protection

Cathodic protection must be maintained to prevent the corrosion of the ship’s hull. The discharge of zinc, magnesium, and aluminum are expected from properly functioning cathodic protection sacrificial electrodes. However, vessel operators must minimize the flaking of large, corroded portions of these anodes. Sacrificial anodes must not be used more than necessary to adequately prevent corrosion of the vessel’s hull, sea chest, rudder, and other exposed areas of the vessel. Vessel operators must appropriately clean and/or replace these anodes in periods of maintenance (such as drydocking), so that release of these metals to waters is minimized.

Vessel operators should be cognizant that magnesium is less toxic than aluminum, which is less toxic than zinc. If vessel operators use sacrificial electrodes, they must use the metals that are less toxic to the extent technologically feasible and economically practicable and achievable.

EPA recommends the use of Impressed Current Cathodic Protection (ICCP) in place of or to reduce the use of sacrificial electrodes when technologically feasible (e.g. adequate power sources, appropriate for vessel hull size and design), safe, and adequate to protect against corrosion, particularly for new vessels. If vessel operators use ICCP, they must maintain dielectric shields to prevent flaking.



Figure 11- Cathodic Protection Power Supply

Job Aid Item: 1.2.g

Text: Potable water / water desalination systems (Reverse Osmosis / Evaporator) (water makers) the brine / reject water shall not contain hazardous waste IAW VGP 2.2.10

What to check: Hazardous waste is not added to water makers.

Background: The EPA found some vessels used anti-foaming and anti-scaling treatments that caused discharges to exceed water quality standards. There is concern that some chemicals prohibited from discharge could be mixed with the brine. RO systems and evaporators will be cleaned on a regular basis, and in most cases there are cleaning chemicals used. The Ocean Ranger needs to observe these operations and which chemicals are used and how it is handled (back flushed etc.).

Citation: EPA VGP 2.2.10 Distillation and Reverse Osmosis Brine

Brine from the distillation system and reverse osmosis reject water shall not contain or come in contact with machinery or industrial equipment (other than that necessary for the production of potable water), toxic or hazardous materials, or wastes.

Job Aid Item: 1.2.h

Text: Prohibited sources, e.g. hazardous materials, photo shop / print shops, hospital, laboratories, carpentry paint shops, and upholstery shops etc waste do not enter the GW, BW or bilge systems (VGP 2.1.2; 5.1.1.1.4 / AS 46.03.745)

What to check: Monitor for hazardous or toxic substances being discharged into either wastewater streams or bilgewater. This will most likely occur during other checks. Note that there are several questions in the Hazardous Waste section that relate to this item, in particular looking at handling of these wastes.

Background: The addition of hazardous waste to a water body is prohibited. Current AWTs and OWS technology does not treat many of these substances well or at all. Adding toxic wastes has and will cause damage to a wastewater treatment system, particularly those with biological processes. Under the EPA VGP vessel operators may not add substances that drain to the bilgewater that are not produced in the normal operation of a vessel. During overhauls and cleaning operations, noxious liquid substances may enter the bilge system. Possible operations that use chemicals are the EVAP cleaners, plate cooler cleaners, air cooler cleaners etc. Most vessels do take precautions that during the maintenance operations so that these substances are not entering the bilge areas. OR should observe and document all maintenance activities and related actions.

Citations: EPA VGP for vessels over 500 passengers: 5.1.1.1.4 Other Materials

Waste from mercury containing products, dry cleaners or dry cleaner condensate, photo processing labs, medical sinks or floor drains, chemical storage areas, and print shops using traditional or non-soy based inks and chlorinated solvents must be prevented from entering the ship's graywater, blackwater, or bilgewater systems if water from these systems will ever be discharged into waters subject to this permit. Preventing these wastes from entering these systems can be accomplished by plugging all drains that flow to the graywater, blackwater, or bilge systems in areas where these wastes are produced and creating alternate waste receptacles or replumbing drains to appropriate holding tanks.

Vessel owner/operators must not discharge any toxic or hazardous materials, including products containing acetone, benzene, or formaldehyde into salon and day spa sinks or floor drains if those sinks or floor drains lead to any system which will ever be discharged into waters subject to this permit. This includes using these materials on passengers (or crew) and rinsing residuals into these sinks. Alternate waste receptacles or holding tanks must be used for these materials. Additions of these materials to any systems which will discharge into waters subject to this permit is a permit violation.

AS 46.03.710. Pollution prohibited.

A person may not pollute or add to the pollution of the air, land, subsurface land, or water of the state.

AS 46.03.745. Hazardous substance release.

Except for a controlled release, the reporting of which is the subject of an agreement with the commissioner under AS 46.09.010 (b), a person may not cause or permit the release of a hazardous substance as defined in AS 46.09.900.

AS 46.09.900. Definitions.

(4) "hazardous substance" means (A) an element or compound that, when it enters into or on the surface or subsurface land or water of the state, presents an imminent and substantial danger to the public health or welfare, or to fish, animals, vegetation, or any part of the natural habitat in which fish, animals, or wildlife may be found; or (B) a substance defined as a hazardous substance under 42 U.S.C. 9601 - 9657 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980); "hazardous substance" does not include uncontaminated crude oil or uncontaminated refined oil;

EPA VGP 1.2.3 Limitations on Coverage:

1.2.3.3 Used or Spent Oil

Discharges of used or spent oil no longer being used for their intended purposes are not eligible for coverage under this permit.

1.2.3.5 Photo processing effluent

Discharges from photo-processing operations are not eligible for coverage under this permit.

1.2.3.6 Effluent from Dry Cleaning Operations

Discharges of spent or unused effluent from dry cleaning operations are not eligible for coverage. This includes any spent or unused tetrachloroethylene from these operations.

1.2.3.7 Discharges of Medical Waste and Related Materials

Discharges of medical waste as defined in 33 U.S.C. 1362(20) are not eligible for coverage under this permit. Discharges of spent or unused pharmaceuticals, formaldehyde or other biohazards no longer being used for their intended purposes are not eligible for coverage under this permit.

For purposes of the VGP, the liquid produced by dialysis treatment of humans is not deemed to be "medical waste," and, like other human body waste, is subject to regulation under CWA § 312 if introduced into marine sanitation devices, or under VGP Part 2.2.25 if added to a blackwater system combined with a graywater system. The direct overboard discharge of such liquid without treatment is not authorized by the VGP.

1.2.3.8 Discharges of Noxious Liquid Substance Residues
Discharges of noxious liquid substance residues subject to 33 CFR Part 151, Subpart A are not eligible for coverage under this permit.

1.2.3.9 Tetrachloroethylene (Perchloroethylene) Degreasers
Discharges of tetrachloroethylene degreasers or other products containing tetrachloroethylene are not eligible for coverage under this permit.

2.2.2 Bilgewater (excerpt)

All bilgewater discharges must be in compliance with the regulations in 40 CFR Parts 110 (Discharge of Oil), 116 (Designation of Hazardous Substances), and 117 (Determination of Reportable Quantities for Hazardous Substances) and 33 CFR §151.10 (Control of Oil Discharges). In addition: Vessel operators may not use dispersants, detergents, emulsifiers, chemicals or other substances to remove the appearance of a visible sheen in their bilgewater discharges. Except in the case of flocculants or other required additives (excluding any dispersants or surfactants) used to enhance oil/water separation during processing (after bilgewater has been removed from the bilge), vessel operators may not add substances that drain to the bilgewater that are not produced in the normal operation of a vessel. The use of oil solidifiers, flocculants, or other required additives are allowed only as part of an oil water separation system provided they do not alter the chemical make-up of the oils being discharged and they are not discharged into waters subject to this permit. Routine cleaning and maintenance activities associated with vessel equipment and structures are considered to be normal operation of a vessel if those practices fall within normal marine practice.



Job Aid Item: 1.2.i

Text: Drains from spaces containing machinery (e.g. Fan rooms, elevator pits, effluent/condensate etc. etc.) are oil free before entering wastewater system(s) or is sent to bilges / oil water separation system. (VGP 2.2.11 / 2.2.17)

What to check for: Potential connections from areas with oily waste into the wastewater system or draining directly overboard. Also the oil tank vents, crackcase vents (oil demisters) are in some cases located in the stack or outside deck areas. Check these vent / pipe openings for oil collections into drain pans etc.

Background: EPA is concerned about oily discharge from lubricants entering water bodies.

Citations:

AS 46.03.740. Oil pollution.

A person may not discharge, cause to be discharged, or permit the discharge of petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or a residuary product of petroleum, into, or upon the waters or land of the state except in quantities, and at times and locations or under circumstances and conditions as the department may by regulation permit or where permitted under art. IV of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended.

EPA VGP 2.2.11 Elevator Pit Effluent

Discharges of untreated elevator pit effluent are not authorized within waters subject to this permit except in cases of emergency. Elevator pit effluent may be discharged into waters subject to this permit if it is managed with the vessel's bilgewater and meets all the requirements of Part 2.2.2 of this permit or it must otherwise be treated with an oily-water separator and discharged with an oil content below 15 ppm as measured by EPA Method 1664 or other appropriate method for determination of oil content as accepted by the International Maritime Organization (IMO) (e.g. ISO Method 9377) or U.S. Coast Guard. Emergency discharges must be documented in the ship's log or other vessel recordkeeping documentation consistent with Part 4.2.

2.2.17 Non-Oily Machinery Wastewater

If discharged directly overboard, non-oily machinery wastewater must be free from oils (in quantities that may be harmful pursuant to 40 CFR Part 110) and any additives that are toxic or bioaccumulative in nature. Non-oily machinery wastewater may also be drained to the bilge.

2.2.18 Refrigeration and Air Condensate Discharge

You must not allow refrigeration and air condensate discharge to come into contact with oily or toxic materials if it is discharged directly overboard. Refrigeration and air conditioning condensate that is collected and plumbed for internal recycling (e.g. recycled as "technical water") is allowed to commingle with oily water; however, the commingled discharge must meet all requirements of Part 2.1.4 of this permit and Part 2.2.2 of this permit if applicable.

2.2.24 Welldeck Discharges

Welldeck discharges that contain graywater from smaller vessels should not be discharged within waters subject to this permit except in cases of emergency. Welldeck discharges from washdown of gas turbine engines may not be discharged within waters subject to this permit. Welldeck discharges from equipment and vehicle washdowns must be free from garbage and must not contain oil in quantities that may be harmful as defined in 40 CFR Part 110.

Job Aid Item: 1.2.j

Text: GT turbine wash water discharged < 3 nm (Does not include Turbo blowers / Turbo chargers on diesel engines) IAW (VGP 2. 2. 14 / 40 CFR 110).

What to check for: Gas turbine washwater not directly discharged within 3nm of shore.

Background: EPA found that turbine washwater could contain solvents, high levels of metals, and oily residues. There is concern these solvents if mixed with bilge water could allow for discharge of oily wastes. At this time the VGP only addresses gas turbines, it does not include turboblowers or turbochargers. Note that there are other check items referring to solvents, surfactants, and hazardous wastes entering bilgewater- these could apply if the turboblowers are taken apart and washed on the deck of engine spaces.

Citation: EPA VGP 2.2.14 Gas Turbine Wash Water

Gas turbine wash water must not be directly discharged within waters subject to this permit. Where feasible, such washwater must be prevented from commingling with bilgewater that will be discharged in waters subject to this permit, for example by collecting it separately and properly disposing of it onshore. Under no circumstances may oils, including oily mixtures, from gas turbine wash water be discharged in waters subject to this permit in quantities that may be harmful as determined in accordance with 40 CFR Part 110.

Job Aid Item: 1.2.k

Text: Fire main discharge only in emergencies, deck wash down or secondary uses IAW (VGP 2.2.12)

What to check for: Fire mains only discharged for emergency training, certification, emergencies, or if the intake comes from seawater or potable water.

Background: The EPA was concerned about high levels of metals found in firemain waters being discharged and wanted to minimize use of fire mains near shore.

Citation: EPA VGP 2.2.12 Firemain Systems

Discharges from firemain systems are authorized for emergency purposes when needed to ensure the safety and security of the vessel and her crew, other emergency situations, and for testing and inspection purposes as may be required to assure its operability in an emergency. Firemain systems may be discharged in port for certification, maintenance, and training requirements if the intake comes directly from the surrounding waters or potable water supplies and there are no additions to the discharge. Furthermore, firemain discharges may be discharged for deck washdown or other secondary uses if the intake comes directly from the surrounding waters or potable water supplies and the discharge meets all relevant effluent limitation associated with that activity. When feasible, maintenance and training should be conducted outside port and/or outside waters subject to this permit. Do not discharge firemain systems in waters listed in Part 12.1 except in emergency situations or when washing down the anchor chain to comply with anchor wash down requirements in Part 2.2.8.

Job Aid Item: 1.2.1

Text: Pool /Spa water discharges in Alaska waters performed IAW (VGP 5.1.1.2 and 5.1.2.3)

What to check for: Discharges meet the terms of the EPA VGP within 3 nm of Alaska, including dechlorination and/or debromination. Chlorine limits are the same as the 2010 Alaska WW GP. Monitoring (testing) must be done if discharges occur within 3nm of Alaska. Pool and Spa discharges are prohibited in Glacier Bay National Park, inside wilderness areas, and inside National Wildlife Refuges. A complete list is found in the EPA VGP Section 12.

Background: Cruise ships have large volumes of spa and pool water. While these waters can be relatively clean, they can include high concentrations of chlorine or bromine compounds which are by their nature toxic to marine life. In the case of fecal or vomit incidents high levels of these compounds are used to sanitize the water, often at levels unsafe for humans as well.

Accidental discharges of pool and spa water also occur due to valve malfunctions or crew error. Another item of concern is if this water is introduced to the wastewater system it could damage membranes or impact biological processes.

Most vessels have dedicated tanks to hold the pool, spa, and Jacuzzi waters. These tanks could be also tanks already used for other ww types and could be mixed. Some vessels neutralize the pool and spa water before discharging overboard or into tanks. Ocean Rangers need to understand these operations and how the neutralization is done, how the volume is determined and all other pertinent information. It is useful to determine if these discharges are included in the discharge logbook.

Citations:

EPA VGP 5.1.1.2 Pool and Spa Discharges

Discharges of pool or spa water are not authorized into waters listed in Part 12.1 of this permit. Discharges from pools and spas are authorized into other waters subject to this permit, provided they are dechlorinated and/or debrominated, and discharged while the vessel is underway. To be considered dechlorinated, the total residual chlorine in the pool or spa effluent must be less than 100µg/l if the pool or spa water is discharged without treatment through an advanced wastewater treatment system. To be considered debrominated, the total residual oxidant in the pool or spa effluent must be below 25µg/l if the pool or spa water is discharged without going through an advanced wastewater treatment system. Pool and spa water may be added to the graywater treatment systems, however any resultant discharge must meet all standards and requirements found in Part 5.1.1.1 and must be debrominated.

5.1.2.3 Treated Pool and Spa Discharges

Vessel owner/operators must monitor chlorine or bromine concentrations (as applicable) in pool or spa water before every discharge event using Part 136 methods if they will discharge these streams directly into waters subject to this permit to assure that the dechlorination process is complete. If vessel owner/operators are monitoring bromine concentrations, they may use a field test kit which uses the colorimetric method in lieu of Part 136 methods to assure waters have been debrominated, provided that test kit has method detection limit no higher than 50 µg/L. You must record the location of the discharge, the estimated volume of the discharge, and the concentration of chlorine or bromine (as applicable). Records of this monitoring must be kept with other graywater monitoring records. For chlorine, analytical results below the method detection limit shall be deemed compliant with the effluent limits, provided the permittee uses a testing method with a detection limit no higher than 10.0 µg/L under ideal conditions. EPA recommends method SM4500-CL G (DPD Colorimetric Method) for these purposes as it is able to reach 10 µg/L

under ideal conditions and so meets these requirements. SM4500-CI G is typically the method that ADEC/USCG uses for compliance monitoring. For bromine, analytical results below the method detection limit shall be deemed compliant with the effluent limits, provided the permittee uses a testing method with a detection limit no higher than 50.0 µg/L.

Job Aid Item: 1.2.m

Text: Deck wash down / hull cleaning (above Waterline) IAW VGP 2.2.1; Minimize debris and residues/ minimize paint, rust and materials entering water during maintenance and use non toxic cleaners if water is discharged overboard.

What to check for: Monitor exterior cleaning and maintenance operations when feasible. Check for safeguards to prevent oily wastes, paints, and debris from entering waters. These must be minimized, but the EPA defines as “reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best marine practice.”

Check for foamy discharge, sheens, and floating waste from runoff or deck wash. Check for large pieces of rust, paint, metal, etc. being washed or dropped over the side. Check for tarp covers, paint can controls, debris collection, rust capture controls.



Figure 13-Example of painting with drop cloth

Non-toxic and “phosphate free” (below 0.5% phosphates) cleaners are to be used if water is discharged within 3nm of shore. Unused paint cannot be discharged into water. Check on products used.

Background: Maintenance and cleaning activities could introduce oils, grease, paints, toxic chemicals, or solid wastes into the water. Sheens have been observed from painting activities in the past. There is also a long term concern about paint chips and other wastes accumulating in large quantities and leaching out toxins. Most operators have been careful about hull maintenance, deck maintenance, and painting operations. For example, using tarps under painting activities should reduce dripped paint entering seawater.

The methods and products used for deck cleaning vary. In particular the teak decks and wood composite decks are cleaned with special cleaners. It would be useful to check these products.

Most vessels do not perform painting operations in SE Alaska. Most is this related to the weather conditions (rain). However, it appears that some operators do touch up painting on vessels, in particular the outside hull scantlings which are in direct sight. Mostly these operations are performed in Skagway and Juneau. Good indicators are the cherry pickers on the docks.

Citation: EPA VGP 2.2.1 Deck Washdown and Runoff and Above Water Line Hull Cleaning

Vessel owner/operators must minimize the introduction of on-deck debris, garbage, residue and spill into deck washdown and runoff discharges. When required by their class societies (e.g., oil tankers), their flag Administrations, or the U.S. Coast Guard, vessels must be fitted with and use perimeter spill rails and scuppers to collect the runoff for treatment. Where feasible, machinery on deck must have coamings or drip pans to collect any oily water from machinery and prevent spills. The drip pans must be drained to a waste container for proper disposal and/or periodically wiped and cleaned. The presence of floating solids, visible foam, halogenated phenol compounds, and dispersants, or surfactants in deck washdowns must be minimized. Vessel operators must minimize deck washdowns while in port.

Vessel operators must maintain their topside surface and other above water line portions of the vessel to minimize the discharge of rust (and other corrosion by-products), cleaning compounds, paint chips, non-skid material fragments, and other materials associated with exterior topside surface preservation. Furthermore, vessel

owner/operators must minimize residual paint droplets from entering waters subject to this permit whenever they are conducting maintenance painting. Possible minimization techniques include, but are not limited to, avoiding paint spraying in windy conditions or avoiding overapplication of paint. This permit does not authorize the disposal of unused paint into waters subject to this permit.

If deck washdowns or above water line hull cleaning will result in a discharge, they must be conducted with non-toxic and phosphate free cleaners and detergents. Furthermore, cleaners and detergents should not be caustic or only minimally caustic and should be biodegradable.

Section 1: Subsection 3: Discharge Vessels, General (all vessels that discharge in Alaska waters, even if only discharging while underway)

Job Aid Item: 1.3.a

Text: Approved Vessel Specific Sampling Plan is up-to-date and available onboard (AS 18AAC 69.025(f) / 33 CFR 157.317(b))

What to check for: The VSSP is carried onboard and is available. The VSSP should be checked in the seasonal report. For regular checks, check the VSSP if changes have been made- for example to tanks used, or types of WW treated.

Background: The purpose of the VSSP is to explain how samples are taken so they are representative of typical wastewater treatment process. Inaccuracies have been found in VSSPs, often when changes are made onboard. The VSSP needs to be available as a reference. A copy of a sample VSSP is included as wastewater example 2.

Citations: 18 AAC 69.025 Plan of sampling techniques and analytical testing methods.

(f) The owner or operator shall maintain a copy of the valid, approved plan of sampling techniques and analytical testing methods on board each vessel that the owner or operator causes or allows to be operated in the marine waters of the state. (Eff. 11/15/2002, Register 164)

Job Aid Item: 1.3.b

Text: Sampling events

- i. follow the approved VSSP and Quality Assurance Project Plan sampling procedures (AS 18 AAC 69.030 / 33 CFR 151.317)
- ii. Sample results (if available) meet permit limits for Fecal Coliform and Total Suspended Solids in effluent if results are made available on the same day (18 AAC 69.070 / AS 46.03.463)
- iii. Field test results for pH and chlorine (if sampling event is witnessed) meet permit limits (AS 46.03.465(c)).

What to check for: Check only if a sample is taken. The QAPP is a complex document, and it is not possible to check in the field that all elements of the QAPP are followed. The main concern is that the sample is representative and taken correctly. If there is a question please submit it as a question report, photos can be helpful along with a full description and the sample number.

The following items need to be checked. Please note there is a related safety question on sampling.

- Does the sample valve match the location and name in the VSSP?
- Was the vessel discharging at time of sample (for Alaska GP samples only)?
- Does the effluent match what is discharged (same line and not mixed)?
- Is the sample port within 50 feet of the overboard port?
- Were field tests taken within 15 minutes of the sample (chlorine, pH, temperature)?

- Were field tests taken with approved QAPP equipment (no test strips)?
- Was the sample promptly cooled with icewater?
- Any signs of potential contamination- such as solids or liquids entering the bottle from other sources?
- Was sample valve disinfected and flushed prior to sampling?
- Reasonable number of sample bottles/sample volume. The smallest sample should be about at least a liter of water and four or more bottles.
- Was chlorine below 0.1 mg/liter (GP and USCG compliance limit based on the method detection limit)
- Was pH between 6.5 and 8.5 if sampling while discharging (AK limit), or 6.0 and 9.0 for USCG compliance sampling while recirculating?
- If fecal or TSS results are known the same day, are these results above the permit limits (43 FCU or 150 mg/L for TSS)?

There is a sample/field checklist included in the QAPP. This is useful for checking for QAPP compliance.

Background: It is extremely important that samples are taken correctly and are representative of typical discharges. The sample results are often used for compliance actions, for writing future permits, and other actions taken by ADEC and the USCG. ADEC invests a lot of time and resources in sampling, the QAPP, and VSSPs. Ocean Rangers have an important position in being able to observe samples being taken, particularly underway. If a sample is taken incorrectly it could skew sample results, require a resampling, or result in compliance actions. For example, a sample port that is not flushed could have test results that show much higher bacteria levels than what might exist in the discharge line.



There is a sample/field checklist included in the QAPP. This would be very useful for checking for QAPP compliance.

Citations: [The Quality Assurance Project Plan will be included in reference files. A sample VSSP is available at the end of this section.](#)

AS 46.03.465 Information Gathering Requirements

- (b) While a commercial passenger vessel is present in the marine waters of the state, the owner or operator of the vessel shall provide an hourly report of the vessel's location based on Global Positioning System technology and collect routine samples of the vessel's treated sewage, graywater, and other wastewaters being discharged into marine waters of the state with a sampling technique approved by the department.

33 CFR 159.317(a) Sampling and Reporting

- (6) Ensure all samples, as required by this section, are collected and tested by a laboratory accepted by the Coast Guard for the testing of conventional and priority pollutants, as defined by this subpart, and in accordance with the cruise vessel's Coast Guard accepted QA/QCP and VSSP;

18 AAC 69.025 (a&b&f). Plan of sampling techniques and analytical testing methods

- (a) On or before March 1 of each calendar year, except in a calendar year in which a plan is valid for the calendar year under (c) of this section, an owner or operator who intends to cause or allow sewage, graywater, or other wastewater to be discharged into the marine waters of the state shall submit a plan of sampling techniques and analytical testing methods to be used for purposes of AS 46.03.465. The plan must include

- (1) the quality assurance and quality control measures to be used during sample collection, analysis, and reporting undertaken to comply with AS 46.03.465;
- (2) a detailed description of sampling techniques, analytical testing methods, and equipment, including information about sampling preservation methods, sample holding times, transportation protocols, and the chain of custody;
- (3) laboratory analytical information, including methods used, calibration, detection limits, and the laboratory's quality assurance and quality control measures;
- (4) procedures for quality assurance and quality control audits used to determine the effectiveness of the plan; and
- (5) procedures for data validation used to assess precision, accuracy, representativeness, comparability, and completeness of the measured parameters in the data obtained from the samples.

(b) Sampling under AS 46.03.465 may not occur before the department approves a plan of sampling techniques and analytical testing methods.

(f) The owner or operator shall maintain a copy of the valid, approved plan of sampling techniques and analytical testing methods on board each vessel that the owner or operator causes or allows to be operated in the marine waters of the state.



Figure 14: Example Overboard Valve and Sample Point

Job Aid Item: 1.3.c

Text: Discharge log identifies daily estimated volume, date, location, and length of each stay while anchored or docked. While underway between each port estimates average flow rate, dates while en route, and average speed. Flow rate recorded by type. Time / date is in 24 hrs clock format at the start (beginning) and end (stop) of each discharge. (18 AAC 69.050 (c) (only for continuous or automatic discharge).

What to check for: Check discharge logs, if a vessel has continuous or automatic discharges in Alaska then the times are shown in 24 hour format, and that the time and date of each stay at a port of call is identified. Flow rates, discharge types, and locations must also be entered. For each stay at port, a log needs to include the date, flow rate while in port, and time of arrival and departure. For underway only continuous discharges the dates en route must be identified, along with average speed and flow rate.

Flow estimates and tank soundings and the estimation of discharge volumes should be assessed and identified. The seasonal report will list the methods used. “Combined” or “tandem” discharges (two tanks discharging from one pump) need to be carefully assessed. Some vessels recirculate and have intermediate “mini tanks” between the AWTIS system and the overboard port. Trace these systems and report what exactly happens in the seasonal report.

Background: For vessels with continuous (or automatic) discharges the regulations were written to divide up the voyage with each port of call. Otherwise the discharge log would be one entry potentially. For continuous dischargers the 24 clock was required to differentiate between AM and PM on the logs.

These regulations only apply to continuous or automatic dischargers, either stationary or underway. Underway only dischargers only need to be checked for the regulations that apply to underway vessels (18 AAC 69 (c) 1,2,4). Continuous or automatic discharges are those where the systems is pumping continuously (continuous), or where the system pumps without an operator's direct input, such as from an AWTs tank where discharges are pumped every time the tank reaches a particular level.

Citation: 18 AAC 69.050. Treated sewage, graywater, and other wastewater discharge records and report.

(c) For an automatic or continuous discharge, in port, at anchorage, or underway, of treated sewage, graywater, or other wastewater into the marine waters of the state, the records required by AS 46.03.465(a) must describe for each voyage

- (1) the daily estimated volume of discharge by type;
- (2) a description of how the daily volume by discharge type was estimated;
- (3) for each stay that a vessel makes at an anchorage or dock, the
 - (A) date of the stay;
 - (B) time expressed in a 24-hour clock format at the beginning and end of each docking or anchorage;
 - (C) latitude and longitude of the stay; and
 - (D) estimated average flow rate of discharge by type of discharge; and
- (4) for each vessel route while the vessel is underway between each stay identified in (3) of this subsection, the
 - (A) dates while en route;
 - (B) time expressed in a 24-hour clock format at the beginning and end of each vessel route;
 - (C) vessel's average speed; and
 - (D) estimated average flow rate of discharge by type of discharge.

Job Aid Item: 1.3.d

Text: Onboard records describe how the daily volumes of how discharge are calculated/estimated/or metered IAW 18 AAC 69.050(c)(2)(only for continuous or automatic discharge).

What to check for: Check discharge logs, if a vessel has continuous or automatic discharges in Alaska then the discharges must be calculated by type. The method of calculation or metering must be described. This would likely be in the discharge log instructions either in the logbook or separately. The methods must be listed in the seasonal report.

Background: Operators need to identify how wastewater effluent volumes were measured.

Citation: 18 AAC 69.050 (c)

- (2) a description of how the daily volume by discharge type was estimated;

Job Aid Item: 1.3.e

Text: The daily estimated volumes of waste water discharged are recorded by type (AS 46.03.465(a) / 18 AAC 69.050, 33 CFR 159.315(b)

What to check for: Check discharge logs, if a vessel has continuous or automatic discharges in Alaska then the volume of discharges must be calculated. Each type of effluent discharged must be calculated.

Background: Operators must identify volumes discharged by type. When the regulations were adopted it was more common for multiple types of effluent to be discharged in Alaska waters- for example graywater and blackwater separately. Today it is much more common for treated discharge to be from one source (the

AWTS). Discharge logs must include volume discharged. The seasonal report must list the methods used to calculate volumes. Some vessels meter, but some had at one point disconnected meters. It is important to know the systems and how volumes are calculated or estimated.

Citation: 18 AAC 69.050. Treated sewage, graywater, and other wastewater discharge records and report.

(c) For an automatic or continuous discharge, in port, at anchorage, or underway, of treated sewage, graywater, or other wastewater into the marine waters of the state, the records required by AS 46.03.465(a) must describe for each voyage.

(1) the daily estimated volume of discharge by type;

Job Aid Item: 1.3.f

Text: WW discharge performed IAW GP Authorization Letter. (AS 46.03.462 (a)).

What to check for: Check discharge logs, what valves are open or closed, tank levels to see if a vessel is following the GP authorization letter.

Background: The authorization letter will include what types of discharges the vessel is allowed in Alaskan waters, and will identify any limitations on that discharge. For example, some vessels are only allowed to discharge underway. These ships should be checked if there are any stationary discharges. Some vessels can only discharge specific types of wastewater, for example blackwater and accommodations graywater. In this example other graywater sources entering the waste stream such as galley water must be checked. An example of a GP authorization is included as wastewater example 1.

See the WW table provided by ADEC for a list of what ships are authorized to discharge.

Citation: ADEC WW GP- Section on authorized discharges. See end of section for example letter.

Job Aid Item: 1.3.h

Text: Daily volumes were calculated / estimated /or metered in IAW GP

What to check for: Total flow in cubic meters a day must be measured as a parameter in table 1 of the VGP. If the ship has a meter for effluent volume, this result must be used for the total flow measurement.

Background: ADEC requires a total flow measurement from all wastewater treatment plants (not just ships). This is used to see if plant capacity was exceeded, and for information on total volumes of treated wastewater discharged. The 2010 permit included language that a meter must be used if installed after it was discovered some ships were estimating volume even when a meter was present. In fact, meters were disconnected. This made it more difficult to quantify actual volumes.



Figure 15- WW flow meter

Citation: ADEC WW GP- See section on sampling and monitoring in final 2013 GP.

Job Aid Item: 1.3.i

Text: Waste water outflow quantity monitoring is functioning properly (if installed) IAW AK GP

What to check for: If daily total flow is measured with a meter, the meter must be functioning.

Background: Flow meters if installed must be functioning, connected, and reliable. This is to obtain the most accurate flow and volume data possible.

Citation: See 1.3.h



Sub-section 4: Discharge Vessels, in-port or stationary

Job Aid Item: 1.4.a

Text: Estimated average flow for the GW BW, Mixed Water (m³/hr) while in port is logged (18 AAC 69.050(c)(3) & (d))

What to check for: Stationary dischargers (while docked or anchored) must record average flow rate for each stay in port. Check discharge logbook for entries.

Background: Flow rate information is critical to determine future permit dilution (mixing zone). It can be used to determine potential environmental impacts when combined with sample information. Some vessels have different operation regimes for their AWTS while in port and or underway. OR to check these operation regimes and which sections of the AWTS are dedicated to discharge under certain vessel conditions. A good question to check on is how volumes are calculated. It may be useful to trace discharge lines and valve settings used for each operation.

Citation: 18 AAC 69.050(c)

(3) for each stay that a vessel makes at an anchorage or dock, the

- (A) date of the stay;
- (B) time expressed in a 24-hour clock format at the beginning and end of each docking or anchorage;
- (C) latitude and longitude of the stay; and
- (D) estimated average flow rate of discharge by type of discharge;

Sub-section 5: Non-Discharge Vessels, at sea;

Job Aid Item: 1.5.a

Text: Vessel had no WW discharge conducted in waters subject to GP requirements? AS 46.03.462 (a). If discharge occurred, then fill out Incident Report.

What to check for: Check discharge logs for any entries documenting accidental or emergency discharges. Check discharge log entries for locations of discharge that show unpermitted WW discharge. Watch for foam, solids, or unusual smells in the waters around the cruise ship.

Background: Wastewater discharges in Alaskan waters require a permit (ADEC WW GP).

Citation: Sec. 46.03.462. Terms and conditions of discharge permits.(See general citations)

AS 46.03.463 a & e. Prohibited discharges; limitations on discharges.

- (a) Except as provided in (h) of this section, a person may not discharge untreated sewage from a commercial passenger vessel into the marine waters of the state.

(e) An owner or operator may not discharge any treated sewage, graywater, or other wastewater from a large commercial passenger vessel into the marine waters of the state unless the owner or operator obtains a permit under AS 46.03.100 and 46.03.462, and provided that the vessel is not in an area where the discharge of treated sewage, graywater, or other wastewaters is otherwise prohibited.

Job Aid Item: 1.5.b

Text: Overboard wastewater valves are closed / sealed in Alaska waters (AS 46.03.463)

What to check for: Check for open valves on any valves that could discharge wastewater in Alaskan waters.

Background: Wastewater discharge is prohibited without a permit. Most operators go beyond closing valves to lock valves while in Alaskan waters if the vessel typically does not discharge.

Citation: AS 46.03.463. Prohibited discharges; limitations on discharges.



Figure 16- Closed overboard valve

Sub-section 6: Non-Discharge Vessels, in-port and Discharge Vessels in no-discharge areas (SKG, GB)

Job Aid Item: 1.6.a

Text: Was WW discharge conducted in waters subject to GP requirements? If yes, then fill out Incident Report. AS 46.03.462(a).

What to check for: Check discharge logs for any entries documenting accidental or emergency discharges. Check discharge log entries for locations of discharge that show unpermitted WW discharge. Watch for foam, solids, or unusual smells in the waters around the cruise ship.

Background: Wastewater discharges in Alaskan waters require a permit (ADEC WW GP). All vessels (including permitted vessels) are not allowed to discharge in Glacier Bay or in Skagway under the 2010 General Permit.

Most vessels have a valve locking regime in place. This would be useful information for the seasonal report. There should be procedures and policies in place to avoid a valve opening in prohibited areas.

Note that for entry into Glacier Bay National Park an operator needs approval, one of the criteria for approval is that there will be no wastewater discharges in the bay.

Citation: AS 46.03.463 (see general citations)
AS 46.03.463. Prohibited discharges; limitations on discharges.
Alaska WW GP: -See discharge limitations section

Job Aid Item: 1.6.b

Text: Verify that overboard valves are closed / sealed in Alaska waters (AS 46.03.463(e))

What to check for: Check for open valves on any valves that could discharge wastewater in Alaskan waters. Check valve opening regimes and other indicators of valve operations.

Background: Wastewater discharge is prohibited without a permit. Most operators go beyond closing valves and lock valves while in Alaskan waters if the vessel typically does not discharge. One area to check is arrival and departure from Skagway, where valves could be closed or opened.

Citation: AS 46.03.463. Prohibited discharges; limitations on discharges. (See general citations)

Job Aid Item: 1.6.c

Text: BW GW handling capacity is sufficient for the crew and passengers on board and the time in port (non discharge)(AS 46.03.463(e) / 33CFR159.309)

What to check for: Check that wastewater holding tanks have sufficient capacity for time in port.

Background: If a vessel is not allowed to discharge in a particular area they need a way to keep such wastewater from being discharged. Some operators have in the past not had enough capacity and have taken actions such as shutting laundry facilities or even holding waste in garbage and recycling cans. While these are acceptable, checks should be made that in these situations that waste is handled properly.

Citations: AS 46.03.463. Prohibited discharges; limitations on discharges. (see general citations)

Sub-section 7: AWTs Wastewater Operations, General;

Job Aid Item: 1.7.a

Text: Sample valve related piping is operable and IAW (Approved VSSP / 33CFR 159.317)

What to check for: Check that sample valve used for samples matches the valve location, name and description in the VSSP. Check that sample valve is connected to the treated wastewater discharge line, and that it is less than 50 feet from the discharge port. Check for pipe looping and pipe arrangements that would lead to unrepresentative sample.

Background: The general permit requires that samples are representative of actual discharge, and that the sample port used must match the approved VSSP. Samples have been taken in the past from the wrong sample valve, or from a sample valve that would not represent a typical discharge.

The VSSP has the sample valve location and description, and in most cases a picture of the valve. The Ocean Ranger needs to check and document, any deviation or question with regards to the sample valve needs to be immediately reported and addressed. Do not rely on tag or name plates of the sample valve. The VSSP description (SB / PS and Frame location) will establish the correctness of the valve.



Figure 17: Example sample port with label

Citations: 18 AAC 69.030. Vessel specific sampling plan. (applicable parts)

- (a) An owner or operator who intends to cause or allow the discharge of sewage, graywater, or other wastewater into the marine waters of the state shall submit a vessel specific sampling plan no later than 21 days before sampling required under AS 46.03.465 is to occur.
- (b) A vessel specific sampling plan must include
 - (7) a vessel schematic of discharge ports and corresponding sampling ports;
 - (10) a table documenting

- (A) the discharge type;
- (B) whether the type of sample to be collected is grab or composite;
- (C) parameters to be tested for each sample;
- (D) the location on the vessel where each sample is to be collected;

Job Aid Item: 1.7.b

Text: Hydraulic capacity of MSD system (BW / GW) is of sufficient capacity (VSSP / GP).

What to check for: Check the calculation of total flow against the capacity information given in the VSSP or Notice of Intent. Check that flow did not exceed capacity.

Background: Flow that exceeds capacity of a treatment system could lead to overflow into the bilge, system damage, or a system not being able to meet the effluent quality it was designed to meet. ADEC has seen cases in the past of wastewater dumped into bilges or overboard because an MSD was not of sufficient capacity.

Of particular concern here are split systems, either with inflow or outflow split. This may be more difficult to check than a simple single system.

Citation: ADEC WW GP- See applicable sections.

Job Aid Item: 1.7.c

Text: GW and BW system connections to the Ballast Water system (tanks piping manifolds) and common connections IAW (VSSP/GP)

What to check for: Check connections between ballast water and wastewater systems. Check that tanks used are included in the VSSP. Check that procedures are in place to prevent discharge of wastewater through the ballast water system or from holding tanks without a specific sampling program. Check that the vessel has ways to clean or flush out tanks and pipes that have been used for wastewater prior to use for ballast water.

Background: Many vessels use ballast water tanks at times to hold wastewater. This is acceptable under the general permit and current regulations. By using ballast water tanks there is the potential for discharge of wastewater through the ballast water system. If wastewater was discharged from ballast holding tanks or pipes it would need to be treated, and it would have to be part of a sampling regime (sampling held wastewater). Some vessels pipe systems to and from WW holding tanks are complex and not easy to understand. OR needs to check this by visually tracking the major piping parts of the system. Ballast water tanks used for WW or waste solids need to be cleaned when used for ballast water operations in Alaska. A helpful check is on the operations and how treated stored WW and other WW is handled and discharged.

Citations: 18 AAC 69.030

(b) A vessel specific sampling plan must include

- (4) the capacity and location of each holding tank for treated sewage;
- (5) the capacity and location of each holding tank for graywater;
- (6) the capacity and location of each holding tank for combined treated sewage and graywater;

Job Aid Item: 1.7.d

Text: AWTS system is capable of performing IAW the vessels approved VSSP and General Permit

What to check for: AWTS is operating and has no major issues that would seriously degrade the unit's ability to meet General Permit (and federal) wastewater limits.

Background: ADEC has observed that an AWTS must be operational to meet permit and federal limits. These units are often made of individual components; the failure of one could lead to inadequately treated wastewater. For example, a failure of the UV system could allow high levels of bacteria to be discharged. If a

membrane is ruptured and is continued to be used, this would allow solids and bacteria to pass through in high levels. Checks should be made if the system is operated as it regularly is during sample events.

Citation: AK WW GP – see GP for specific requirements.

Job Aid Item: 1.7.e

Text: Observe repairs, maintenance, cleaning and other operations that may affect the wastewater treatment plant effluent quality.(Example - back flush cleaning with chemicals). (GP)

What to check for: Observe repairs and maintenance of the AWT'S as opportunities come up. Watch for items that would degrade the performance of the system. Watch that cleaning chemicals (which can be very caustic) are handled properly and not directly discharged in Alaskan waters. Report equipment breakdowns if discharge continues.

Background: Repairs, maintenance, breakdown, and cleaning are necessary to keep wastewater treatment systems functioning as designed. Failure to perform these or to incorrectly perform could lead to a failure of the treatment systems and exceedances of state and federal limits. It would be difficult to check everything, but obvious failures should be noted. These regular operations are also a good opportunity to check on wastewater related questions such as VSSP checks. Checks should be made if the system is operated or maintained as it regularly is during sample events.

Citation: AK WW- AWT'S must be operable

Wastewater Examples:

Example 1: General Permit Authorization Letter (may change in 2013)

Sample Ship Authorization 2009DB0026-00xx



Alaska Department of Environmental Conservation
 Division of Water
 Cruise Ship Program
 AUTHORIZATION TO DISCHARGE

AUTHORIZATION TO DISCHARGE UNDER THE LARGE COMMERCIAL PASSENGER VESSEL WASTEWATER DISCHARGE GENERAL PERMIT NO. 2009DB0026

FACILITY ASSIGNED AUTHORIZATION NUMBER: 2009DB0026-00xx

GENERAL PERMIT NUMBER: 2009DB0026
 See this General Permit for all permit requirements.

The following facility is authorized to discharge in accordance with the terms of the State of Alaska General Permit 2009DB0026 and any specific requirements listed in this authorization.

The authorization effective date is **March 15, 2010**.

The authorization to discharge shall expire at midnight, **April 22, 2013**.

The permittee must reapply for an authorization on or before **March 22, 2013** if the permittee intends to continue operations and discharges from the facility.

SECTION 1 – RESPONSIBLE PARTY INFORMATION

Issued to: Sample Cruise Company

SECTION 2 – FACILITY INFORMATION

ADEC File Number 920.45.xxx

Facility Name: Sample Ship

Type of Wastewater Treated Wastewater

Authorized for Discharge:

Type of Wastewater Treatment System and Disinfection: Hamworthy

Type of Authorization: Authorized for underway discharge of wastewater treated through a Hamworthy wastewater treatment system configuration as approved by the Department in the Vessel Specific Sampling Plan.

Sample Ship Authorization 2009DB0026-00xx

SECTION 3 – REGULATED DISCHARGE INFORMATION – EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Effluent Compliance Point: Wastewater effluent sampling port(s) identified in the Department approved Vessel Specific Sampling Plan.

Special Conditions: The Sample Ship has been authorized to discharge treated wastewater into Alaska marine waters while underway at speeds above 6 knots.

Discharge Monitoring Report (DMR) The Sample Ship must submit a DMR with effluent limits for the Hamworthy wastewater treatment system that is found at the back of the GP or available on the Department's website (http://www.dec.state.ak.us/water/cruise_ships/sp/10sp.html) or on a similar form approved by the Department.

SECTION 4 – RECEIVING AREA INFORMATION-RECEIVING WATER

Receiving Area Name: Marine waters of the state of Alaska as defined in the general permit, 2009DB0026.

If you have any technical questions regarding this authorization or the requirements of the general permit, please contact Someone at someone@alaska.gov or (907) 465-5138.

SECTION 5 – CERTIFICATION/SIGNATURE

 Xx, 2010

 Signature:

 Date

 Cruise Ship Program Manager

 Printed Name

 Title

Example 2: Sample Vessel Specific Sampling Plan

Vessel Specific Sampling Plan (VSSP) m.v. Example Rev1 2013 Season

Vessel Specific Sampling Plan

Example Ship

The sampler will use the VSSP as a guide to identify the specific onboard locations to be sampled. To satisfy the VSSP requirement, you may fill in the blanks in this form starting on page 2 or you may submit an existing updated VSSP if it contains the components listed in 18 AAC 69.030(b).

Please note that ADEC will not approve sampling locations that are more than 50 feet from the overboard discharge port. Samples taken in 2003 indicate that samples taken directly after the ultraviolet disinfection unit were not of the same quality as samples taken at the overboard discharge pipe.

The two wastewater samples that are taken to satisfy the state requirements must reflect the quality of the effluent that is being discharged into Alaska waters during standard operating procedures. Only ships that discharge continuously may take the two samples for the state program. In port, vessels that have obtained continuous discharge certification from the U.S. Coast Guard but choose not to discharge in port as part of their standard operating procedures, must sample while the vessel is underway.

If you have questions concerning the components of the VSSP, please contact Albert Faure (907)-465-5279, or Ed White (907)-465-5138 or by email albert.faure@alaska.gov, edward.white@alaska.gov

Table on this page is for ADEC use only.

<input checked="" type="checkbox"/>	ADEC approved as written on	1/31/2013
<input type="checkbox"/>	ADEC approved with the redlined changes on	2013
<input type="checkbox"/>	ADEC does not approve, please resubmit	2013
The plan is missing or insufficient in the following areas: N/A		
2013 Revision 1: Updated water consumption estimates.		

Vessel Specific Sampling Plan (VSSP) m.v. Example Rev1 2013 Season

Gray water treatment (type & capacity)	Zenon Environmental Inc. Advanced Black and Gray Water Treatment System consisting of the ZenoGem and ZeeWeed processes. The system includes a final stage UV sterilization filter. Total system capacity 710 m ³ /day effluent from combined black and gray water influent.		
Gray water collection tank capacity & location	Tank	Cap. (m ³)	Location (Fr. No.)
	86P	21.9m ³	218-222
	78P	7.2m ³	168-172
	75S	14.7m ³	130-134
	64P	85.0m ³	40-48
	65C	80.8m ³	34-40
	88P	31.9m ³	44-48
	74P	12.5m ³	20-24
	67S	13.6m ³	99-102
	14P	90.1m ³	68-80
Gray water holding tanks capacity & location	Tank	Cap. (m ³)	Location (Fr. No.)
	3C	246 m ³	168-166
	3S	179 m ³	168-168
	5S	262 m ³	68-102
	6P	96 m ³	48-88
	6S	96 m ³	48-88
Mixed gray water/treated black water holding tank capacity & location	Tank	Cap. (m ³)	Location (Fr. No.)
	Zenon Raw water tank	10m ³	156-160
Maximum discharge flow rate per discharge port ¹ and discharge pump type	Permeate overboard pumps: 2x 22 m ³ /hr Ballast overboard pump (Gray, Biomass, Permeate): 270m ³ /hr Centrifugal Pumps		
Average discharge flow rate per discharge port ¹ and discharge pump type	Permeate pumps: 22m ³ /hr Ballast pump: 270m ³ /hr Type: Centrifugal Pumps		
List of overboard discharge ports and location on vessel (Starboard/Port) & discharge line diameter and distance below/above waterline	Overboard 'E': Permeate overboard: PS, 10 cm, 3m below the waterline Overboard 'A': Stored Permeate/Gray Water/Biomass overboard: PS, 20 cm, 3m below the waterline		
Black water generation per day	Average 40 m ³ /day		
Gray water generation per day	Accommodations	Average 315 m ³ /day	
	Galley	Average 80 m ³ /day	
	Laundry	Average 100 m ³ /day	
Daily water use/individual	83 gallons/person/day		
Seawater usage per day	0 m ³ /day		
Peak water use per hour	Approx. 55 m ³ /hr		
Hours of peak water use	0700 – 0900 & 1130 – 1330 1630 – 2130		

¹ The pump(s) rate and discharge line diameter must be given to check the flow rate.

Page 3 of 8

Page 1 of 8

Vessel Specific Sampling Plan (VSSP) m.v. Example Rev1 2013 Season

Vessel Name: Example Ship

Facility Contact: Someone

(Note: Remember to include all units. Example cubic meters, gallons, cubic meters per second.)

Year ship joined fleet	2005
Gross tonnage	68,924
Passenger capacity(#)/voyage	1640
Crew capacity(#)/voyage	657
MSD system (USCG type)	Type II MSD Zenon installation. The Zenon system is an amalgamation of the ZenoGem and ZeeWeed technologies. The ZenoGem system consists of a suspended growth biological reactor. The ZeeWeed system is an ultrafiltration membrane system implemented using 120 ZeeWeed ZW-500C modules arranged in 12 cassettes. The system includes a final stage UV sterilization filter.
Number of MSD units	One Zenon installation consisting of two identical parallel processes. These processes are designated Train 2 and Train 4
Other water treatment units (type & capacity)	N/A
Black water treatment (type & capacity)	Zenon Environmental Inc. Advanced Black and Gray Water Treatment System consisting of the ZenoGem and ZeeWeed processes. The system includes a final stage UV sterilization filter. Total system capacity 710 m ³ /day effluent from combined black and gray water influent.
Treated black water holding tank capacity & location (holding capacity includes double bottom tanks)	Tank Cap. (m ³) Location (Fr. No.) 3 P(Biomass) 180 m ³ 168-198 1 C(Permeate) 383 m ³ 260-276 2P (Permeate) 133.2m ³ 200-218 6P (Permeate) 96 m ³ 48-66 6S (Permeate) 96 m ³ 48-68 7C (Permeate) 305 m ³ 8-33 13P (Permeate) 189.9m ³ 232-248 13S (Permeate) 189.9m ³ 232-248 17S (Permeate) 155.9m ³ 200-222 16P (Permeate) 174.3m ³ 100 – 134 45B (Permeate) 180 m ³ 100 – 130

Vessel Specific Sampling Plan (VSSP) m.v. Example Rev1 2013 Season

Wastewater Treatment

Waste Streams Into the Zenon System

All gray water goes into holding tanks and from there on it is transported to the gray water collecting tanks 3 CN and 3 SB from there on the grey water pumps pump it to the Masko-Zoll filters and just before the filters gray and black water is mixed. Black Water is pumped from the Evac units towards the Masko-Zoll filters.

1st Process – Solid Filters

This mixed stream of black & gray water is filtered in the Masko-Zoll screens and the screened water runs into tank-70. The plastics & other solids filtered from the black & gray water, produces a waste stream called *solid waste* that is stored in tank-72. This solid waste is landed ashore approximately every 4 weeks.

2nd Process – Biological

The biological process happens mainly in the bioreactor & partly in the membrane tank. This screened black & gray water (called screened raw water) is pumped out of tank-70 by the raw water pumps into the bioreactor, (previously tank 51P). The water in the bioreactor is now known as biomass. In the bioreactor the bacteria (bugs) eat the waste products and convert these into CO₂, H₂O and some other products plus heat. Therefore the biological process partly cleans up the biomass preparing it for the next process i.e. ultra filtration. It is necessary to waste biomass to keep the bacteria at the correct level. Biomass waste is transferred to 3 PS DB. It is legally regarded as untreated black water and therefore may only be pumped directly overboard when >12 NM from shore & not in a special area. Biomass wasting is a daily routine.

3rd Process – Ultra filtration

The biomass is pumped out from the bioreactor using the recirculation pumps and into the membrane tank, (previously tank 51P). It then overflows back into the bioreactor where it is subject to further biological process. Ultra filtration occurs in the membrane tank. Here permeate is drawn out of the biomass through the millions of microscopic pores in the membrane fibers (looks rather like hollow spaghetti) by means of the process/permeate pumps. These pumps create a very low vacuum inside the fibers of the membranes. The permeate is first used for filling up the back-pulse tanks. At 10 minute intervals this process reverses and permeate is taken out of the back-pulse tanks & is pumped back through the membranes. This is done to clean the pores in the membrane fibers.

4th Process – UV filter

Permeate that is not used in the back-pulse tanks then passes through a UV filter. The UV-unit is used as a final disinfection unit before the water is discharged overboard where allowed. Permeate used for other purposes e.g. technical water or black water dilution is directed from the permeate pump (pre-UV treatment) to a booster pump, then on to the technical water system or sewage collection tanks.

The Zenon system can process up to 600 tons of black/gray water every day.

Discharges

Prior to a vessel being certified for 24/7 discharge, permeate is held in vessel tanks for discharge outside of Alaska waters. Once a vessel is certified by the US Coast Guard and Alaska a vessel may discharge 24/7 of permeate, as long as its monthly samples continue to meet the Alaska effluent discharge standards. Permeate will not be discharged in Glacier Bay or Skagway, but held for discharge outside Alaska waters. If sample results are received that exceed the Alaska standards the permeate will be held in vessel tanks and discharged outside of Alaska waters and re-sampled at the next earliest location. Once sample results are received that are within the Alaska standards, the vessel will resume discharging permeate in Alaska waters. ADEC and U.S. Coast Guard will be advised of all sample results that do not meet the Alaska standards.

Wastewater Samples To Be Analyzed For Conventional Pollutants At Least Twice Per Season

The sampling port is located on C-deck, port side between frames 59 & 60, in the line between the ultraviolet irradiation unit and the hull penetration. The distance from the sample point to the overboard hull penetration is 3.5 meters (11.48 feet).

There is one other line connected to the discharge line that allows for the discharge of permeate while the ship is in dry-dock. This line runs to both the port and starboard side bunker breaks for discharge ashore. Except as noted above, the vessel will discharge wastewater continuously and not hold any wastewater. There is no pump on the discharge line. The pumps are upstream of the UV unit.

Wastewater Samples To Be Analyzed For Priority Pollutants Once Per Season

See description for conventional pollutants above.

Description of the standards the owner or operator will use to determine a deviation from the plan.

An Engineer dedicated to the maintenance and monitoring of the Zenon Advanced Waste Water Purification System conducts regular analysis of chemical oxygen demand, pH, total dissolved solids, total suspended solids, ammonia, phosphorus, turbidity of the permeate. These onboard tests along with the twice monthly sampling are used to evaluate the condition of the treatment system. If the treatment system indicates unacceptable variances in the operating parameters or is rendered not operational for any reason, permeate will be diverted to vessel tanks and held for discharge outside of Alaskan waters.

Regulated Conventional Pollutants					
Wastewater	Sample Type	Parameters ²	Bottles (preserved with)	Sample Location	Time & Dates Of ALL Appropriate Sample
Gray Water (GW) & Black Water (BW)	Grab	BOD, TSS, pH*, EC Alkalinity	1 liter HDPE	C-Deck, Port Side, between frames 59-60 3.5 meters from the hull penetration	Samples can be taken anywhere anytime after USCG continuous discharge approval. Without USCG approval samples may be taken while the ship is traveling a least 8 knots and 1 nm from shore, which occurs when the vessel is traveling between Seattle & Seattle.
		Chlorine Residual*	From BOD, ASAP in field		
		COD, NH3, N2NO3	250 ml HDPE (H2SO4)		
		Total Phosphorus	500 ml HDPE (H2SO4)		
		TKN	2 40-ml VOC vials (H2SO4)		
		Total Organic Carbon	1 liter HDPE		
		Oil and grease	1 liter glass (H2SO4)		
Fecal Coliforms	100 ml sterile plastic (Sodium Thiosulfate)				

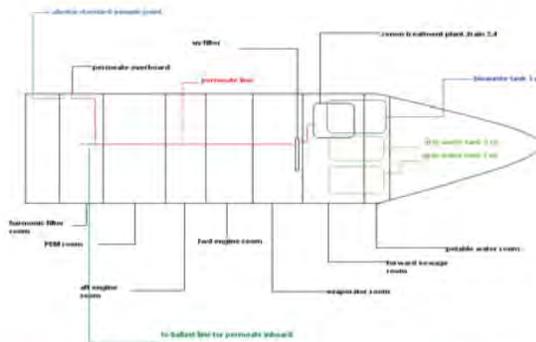
*pH, free and total chlorine residuals will be field tested by the sampler while on the ship

² Parameters will be finalized in the Quality Assurance/Quality Control Plan.

Priority Pollutants					
Wastewater	Sample Type	Parameters ¹	Bottles (preserved with)	Sample Location	Time & Dates Of ALL Appropriate Sample
Gray Water (GW) & Black Water (BW)	Grab	BNA	1 L amber (unpreserved)	C-Deck, Port Side, between frames 59-60 3.5 meters from the hull penetration	Samples can be taken anywhere anytime after USCG continuous discharge approval. Without USCG approval samples may be taken while the ship is traveling a least 8 knots and 1 nm from shore, which occurs when the vessel is traveling between Seattle & Seattle.
		VOCs	40 mL VOA x2 (HCl)		
		Total Rec: Metals	500 mL poly (HNO3)		
		Dissolved Metals	500 mL poly (unpreserved)		

Attach sketch of vessel with treatment system, tanks, discharge pumps, discharge lines, sampling locations, and overboard ports.

A diagram of Example's Zenon system and tanks w/ tank capacities is included as an attachment to this plan.



Example Zenon Permeate Sample Point



Example Zenon Permeate Sample Point (close-up)

Locations to compare against discharge log entries:

Dock Locations:

Port	Dock	Dock Location	Lat (N)	Long (=W)
JNU	AIF	Anchor- Intermediate Float	58.28975	-134.39792
JNU	AJD	AJ Dock	58.28933	-134.39798
JNU	AMP	Anchor- Marine Park	58.2945	-134.40836
JNU	AS	Alaska Stream Dock	58.29867	-134.40564
JNU	CT	Cruise ship terminal	58.29545	-134.40068
JNU	FKL	South Franklin St Dock	58.29162	-134.39547
KTN	1	Dock 1 (salmon Landing)	55.3378	-131.64328
KTN	2	Dock 2 (Visitors Bureau)	55.34173	-131.64878
KTN	3	Dock 3 (City Float)	55.34202	-131.6498
KTN	AN3	Anchor (tender to berth 3)	55.342	-131.666
SIT	2BR	Anchor	57.01575	-135.35803
SIT	2CR	Anchor	57.03589	-135.30375
SIT	3CR	Anchor	57.98605	-136.96533
SKG	BRD	Broadway dock	59.44987	-135.32582
SKG	ORE	Ore Dock	59.45012	-135.3273
SKG	RRA	Railroad Dock Aft	59.44377	-135.32875
SKG	RRF	Railroad Dock Fore	59.44733	-135.32243
GB	N/A	Bartlett Cove Dock	58.4587	-135.8857
WHT		Whittier Cruise Dock	60.7783	-148.6942
SEW		Seward Cruise Dock	60.1180	-149.4281
KDK		Kodiak Ferry Dock	57.7868	-152.4029

Outer General Permit Boundaries (common entrances to SE Alaska):

58°05-17 N, 136°33-49 W and 58°11-41 N, 136°39-25 W [Cross Sound]
 56°09-40 N, 134°40-00 W and 55°49-15 N, 134°17-40 W [Chatham Strait]
 55°49-15 N, 134°17-40 W and 55°50-30 N, 133°54-15 W [Sumner Strait]
 54°41-30 N, 132°01-00 W and 54°51-30 N, 131°20-45 W [Clarence Strait]
 54°51-30 N, 131°20-45 W and 54°46-15 N, 130°52-00 W [Revillagigedo Channel]

Approximate- Glacier Bay “box”:

North of 58.38° N and between 135.5° W and 137° W

Official Glacier Bay : *Glacier Bay* means all waters inside a line drawn between Point Gustavus at 135°54.927' W longitude; 58°22.748' N latitude and Point Carolus at 136°2.535' W longitude; 58°22.694' N latitude.

Other Locations:

Hinchinbrook Entrance (main entrance to Prince William Sound) 60.22 N, 146.82 W

Yakutat Bay entrance 59.58 N, 140.08 W

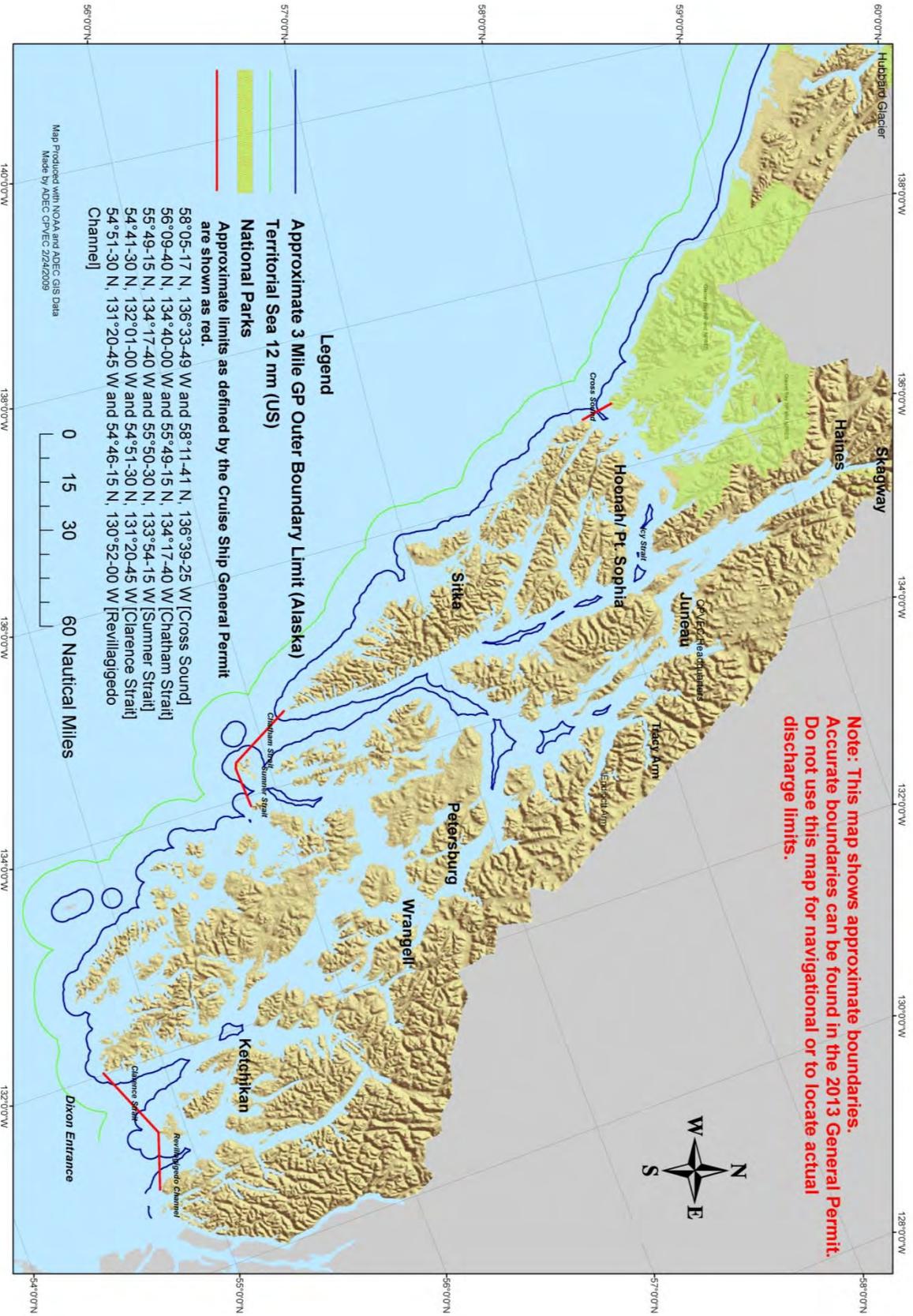
Tracy Arm entrance 57.75 N, 133.64 W

Forester Island (offshore of Prince of Wales Island) 54.8 N, 133.53W

Canadian Border (Canadian claim, not US approved) 54°40' N or 54.67 N

Made famous in the “Fifty-Four Forty or Fight!” slogan in 1844.

CPVEC General Permit SE Alaska Boundaries



Section 2: Non-Hazardous Wastes

General background:

Solid waste offloads have been part of the ADEC Cruiseship Program since the start of the program. Pollution by disposing of plastics and other prohibited wastes into Alaskan waters has been prohibited for years. Since 2001 ship operators have been required to submit waste offloading plans to ADEC. This initial concern was a reaction to past activities by a few cruiseship operators. Today almost all documented cases of waste dumping overboard have been accidental or from passenger activities and has been limited in size. Cruise ships have implemented extensive waste minimizing (such as recycling), sorting, and storage procedures.

Common practices often include:

- Presorting (by the passengers or crew) of garbage in dedicated collecting bins. For example glass, food, metals (tin), plastics bottles.
- Collection of the garbage to sorting rooms
- Handling / storage of the garbage waste stream with a focus on reduction and re-use (on shore recycling) and removal of non-recyclable items and plastics/synthetics.
- Processing of the waste streams for storage, offload, or incineration of the waste.
- Waste is sorted and checked by dedicated crew members. Food waste is pulped and discharged outside Alaska or dewatered and incinerated. Paper, cardboard (that is not recycled), cartons, and other waste is incinerated by the onboard incinerator. Most case the options used onboard are vessel specific and depend on itinerary, company policies, and equipment available.
- Most garbage and hazardous waste is offloaded in Canada or Seattle. The offloading plans may include information on this.

All cruise ships must have a Nonhazardous Solid Waste Offloading Plan as required in 18 AAC 69.035. The NSWOP must describe:

1. an estimate of the volume of each waste type that the owner or operator anticipates offloading in this state or disposing into the marine waters of the state;
2. the proposed offloading or disposal method;
3. the name and address of each contractor to be used for offloading in this state or disposing into marine waters of the state; and
4. the harbors, landfills, or other offloading or disposal facilities in the state proposed to be used by the owner or operator or agent.

Ships can deviate from this plan, but must report deviations by November 15th. It is recommended to become familiar with the garbage logs, and waste offload plan if onboard for a voyage. These plans vary by company and sometimes by ship.



Figure 1- Waste Sorting Area

Table 1- Bureau of Transportation Statistics 2002 Estimates of Cruise Ship Waste Streams

Table 1 Summary of Cruise Ship Waste Streams			
Type of waste	Estimated amount generated (typical one-week voyage)	Content/type	Notes
Sewage (blackwater)	210,000 gallons	Wastewater and solids from toilets.	Can introduce disease-causing microorganisms and excessive nutrients to waterways.
Graywater	1 million gallons*	Wastewater from sinks, showers, galleys, laundries. Contains detergents, cleaners, oil and grease, metals, pesticides, medical and dental wastes.	Has potential to cause adverse effects due concentration of nutrients and oxygen-demanding substances in waste stream.
Hazardous wastes	110 gallons	Photo chemicals.	Can contain silver, a toxic metal
	5 gallons	Drycleaning waste (perchloroethylene and other chlorinated solvents).	Perchloroethylene is a chemical that can cause neurotoxicity and kidney effects in humans.
	10 gallons	Used paint.	
	5 gallons	Expired chemicals, including pharmaceuticals.	
	Unknown	Other wastes, such as print shop wastes.	Can contain hydrocarbons, chlorinated hydrocarbons, and heavy metals that can be harmful to humans and aquatic species.
		Used fluorescent and light bulbs.	Contain small amounts of mercury, a toxic metal.
Solid waste	8 tons	Used batteries.	Contain heavy metals and acids.
		Plastic*, paper, wood, cardboard, food, cans, glass. *Under international regulations, the discharge of plastics is prohibited.	May be incinerated with ash discharged at sea; some solid wastes disposed or recycled on shore. Ash can contain hazardous wastes.
Oily bilge water	25,000 gallons	Liquid collected in the lowest point in the boat when the boat is in its static floating position.	Under international and U.S. regulations, ships are only allowed to discharge bilge waters containing less than 15 ppm of oil.

*NOTE: The interim Alaska report states that average cruise ship discharge is 200,000 gallons per day and that a large cruise ship may discharge as much as 350,000 gallons per day of treated blackwater and graywater.
 SOURCES: Bluewater Network, Petition to U.S. EPA, Mar. 17, 2000; International Council of Cruise Lines, *Cruise Industry Waste Management Practices and Procedures*, May 14, 2001; U.S. Environmental Protection Agency, *Cruise Ship White Paper*, August 22, 2000

Carnival

May 2, 2011

Mr. Ed White
 Environmental Program Specialist II
 Commercial Passenger Vessel Environmental Compliance Program
 Alaska Department of Environmental Conservation
 410 Willoughby Ave. Ste. 303
 P.O. Box 111800
 Juneau, AK 99801

Dear Mr. White:

Please find herewith Carnival Cruise Line's (CCL) Non-hazardous Solid Waste Offloading Plan (NSWOP) and Hazardous Waste and Substance Offloading Plan (HWSOP). CCL will have the M/S Carnival Spirit operating in Alaska state waters this season. The Carnival Spirit is fitted with a Rochem Advanced Water Treatment system for the treatment of gray water.

NSWOP: CCL does not discharge non-hazardous or hazardous solid waste into Alaska state waters. Non-hazardous solid waste is offloaded in the states of Alaska, Washington and in Vancouver, Canada to locally licensed and approved waste vendors. The procedure for offloading non-hazardous solid waste is to confirm in advance with local port agents and vendors that the pre-approved vendor is ready to take the waste in question and able to transport the waste to a pre-approved waste facility. Non-hazardous waste is labeled per CCL policy and recorded in an electronic database. The vendor then supplies the appropriate receipt/shipping paper for transport. Copies of the receipt/shipping paper are stored onboard.

It is estimated that the Carnival Spirit will offload 100,000 pounds of Dry Solid Waste (such as plastic, paper, wood, mattresses, and incinerator ash) in Juneau, AK (20 port calls). The contractor who arranges disposal of this waste is Cruise Line Agencies of Alaska, 1330 Eastaugh Way #4, Juneau, AK, 99802. This waste will be landfilled at Capitol Disposal, 5600 Tonsgard Ct., Juneau, AK 99801.

HWSOP: Hazardous waste is not offloaded in the state of Alaska, but instead will be landed in Seattle, Washington in accordance with RCRA and CCL policy. The procedure for offloading hazardous waste is to submit request to the ship's Environmental Superintendent, who then confirms with the local port agents and pre-approved vendors that the vendor is ready to take the waste in question and able to transport the waste to a pre-approved waste facility. Hazardous waste is labeled per CCL policy and recorded in an electronic database. The vendor then supplies the appropriate shipping papers for transport. Copies of the shipping paper are stored onboard, in the office, and electronically. Copies of the shipping papers are sent to ADEC at the end of the season.

Figure 2: Example Alaska Waste Offload Plan (NWSOP)

Carnival Place • 11118 Juneau • Miami, FL • 33178-9608 • 1-800-548-3427 • carnival.com



Subsection 1: Non-Hazardous Waste (Garbage) Daily;

Job Aid Item: 2.1.a

Text: Garbage logs are up to date. Include in information section if garbage operations (off loads / discharges) in Alaska were conducted (monitoring recording reporting) (18AAC 69.035 / 33 CFR 151.55(b-d).

Background: Annex V of MARPOL contains recordkeeping requirements. These recordkeeping requirements are listed under 33 CFR 151.55. An example log is included as Example 1 in this section after the list of checked items.



Figure 3- Waste Storage Cool Room

What to check for: Check that a garbage log is maintained and up-to-date. Check for any records of discharge of plastics overboard. Check for disposal of materials in areas prohibited, such as glass within 12nm. Also check the methodologies used to calculate or estimate the waste volume or weight.

Check the log entries against the solid waste offload plan to see if there are deviations. Deviations are allowed from the Alaska waste offload plan, but these deviations need to be submitted to ADEC by November 15th in a deviation report. Record offloads information in the information section of the daily report. This will allow ADEC to check if the volumes and facilities used match the waste plans and final deviation reports.



Figure 4- USCG Diagram of disposal restrictions

Citations: 33 CFR Sec. 151.55 Recordkeeping requirements.

(a) This section applies to the following:

- (1) Every manned oceangoing ship (other than a fixed or floating platform) of 400 gross tons and above that is engaged in commerce and that is documented under the laws of the United States or numbered by a State.

- (2) Every manned fixed or floating platform subject to the jurisdiction of the United States.
- (3) Every manned ship that is certified to carry 15 passengers or more engaged in international voyages.
- (b) The master or person in charge of each ship under paragraph (a)(1), (a)(2), or (a)(3) of this section shall ensure that a written record is maintained on the ship of each of the following garbage discharge or disposal operations:
 - (1) Discharge overboard.
 - (2) Discharge to another ship.
 - (3) Discharge to a reception facility.
 - (4) Incineration on the ship.
- (c) The record under paragraph (b) of this section must contain the following information on each discharge or disposal operation:
 - (1) The type of operation as described under paragraphs (b)(1) through (b)(4) of this section.
 - (2) The date and time of the operation.
 - (3) If the operation was conducted at a port, the name of the port.
 - (4) If the operation was not conducted at a port, the latitude and longitude of the location where the operation was conducted and the estimated distance of that location from shore. If the operation involved off-loading to another ship, the identity of the receiving ship by name and official number.
 - (5) The amount of garbage involved, described by volume in cubic meters.
 - (6) For discharges into the sea, a description of the contents of the garbage, described by the following categories:
 - (i) Plastic material.
 - (ii) Floating dunnage, lining, or packing material.
 - (iii) Ground paper products, rags, glass, metal, bottles, crockery, or other similar garbage.
 - (iv) Unground paper products, rags, glass, metal, bottles, crockery, or other similar garbage.
 - (v) Victual wastes.
 - (vi) Incinerated ash.
 - (vii) Incinerated plastic residue.
- (d) The record under paragraph (b) of this section must be prepared at the time of the operation, certified as correct by the master or person in charge of the ship, maintained on the ship for two years following the operation, and made available for inspection by the Coast Guard.

Job Aid Item: 2.1.b

Text: If garbage was offloaded, was it according with the submitted Solid Waste Plan? (18 AAC 69.035).

Background: All cruise ships (over 50 passengers) are required to file a Nonhazardous Solid Waste Offloading and Disposal Plan (NSWOP). These plans must include offload estimates, methods used, names of ports used, and names of contractors. Although these plans can change, and operators can update information on a deviation report, it is important for ADEC to document deviations during the season.

What to check for: Check if Name and address of each contractor used for offloading matches waste offload plans. Adequate condition of the off load pallets and other carriers that would prevent loss of waste or spills. Review manifests and pickup arrangements. Check that offloads followed the NSWOP. Record offload information in the information section of the daily report. Check that there were no spills or dumping during offloads. Note deviations from the plan on the daily report.

Deviations are allowed from the Alaska waste offload plans, but these deviations need to be submitted to ADEC by November 15th in a deviation report. Record offloads information in the information section of the daily report. This will allow ADEC to check if the volumes and facilities used match the waste plans and final deviation reports. Occasionally vessels offload recyclables or donations in Alaska. Please include these in your daily report; these items could be disposed of if in poor condition.

Citation: 18 AAC 69.035. Nonhazardous solid waste offloading and disposal plan.

- (a) As part of the plan required under AS 46.03.475(e)(1), that describes a vessel's policies and procedures for offloading in this state or disposing into the marine waters of the state of nonhazardous solid waste other than sewage, the owner or operator shall include, for each vessel that the owner or operator intends to operate, or cause or allow to operate,

- (1) an estimate of the volume of each waste type that the owner or operator anticipates offloading in this state or disposing into the marine waters of the state;
- (2) the proposed offloading or disposal method;
- (3) the name and address of each contractor to be used for offloading in this state or disposing into marine waters of the state; and
- (4) the harbors, landfills, or other offloading or disposal facilities in the state proposed to be used by the owner or operator or an agent of the owner or operator.

(b) A plan required under AS 46.03.475(e)(1) must be submitted on or before March 1 of each calendar year. (Eff. 11/15/2002, Register 164)

Job Aid Item: 2.1.c

Text: Offload records are certified by the Master or person in charge of the vessel and are completed IAW 33 CFR 151.55 (d)

What to check for: Check that offload was properly recorded.

Citation: 33 CFR 155.55 (d)

(d) The record under paragraph (b) of this section must be prepared at the time of the operation, certified as correct by the master or person in charge of the ship, maintained on the ship for two years following the operation, and made available for inspection by the Coast Guard.

Job Aid Item: 2.1.d

Text: Check vessel machinery logs reports for maintenance, repairs, cleaning operations of the garbage handling equipment (33 CFR 151.63 (b))

Background: This item is a check of garbage related equipment to see if it is operable. While having inoperable equipment would not be a violation, it would raise questions if combined with other factors such as limitations of storage space for example. There have been ships in Alaska that have had equipment failures. These failures have necessitated increased waste offload volumes, changes in shipboard procedures, and increase in crew handling of waste.

Ocean Rangers noted in previous seasons that “lots of garbage” was stored in non waste storage designated areas. It appeared in some cases that the vessel incinerator was inoperable and the vessel off loaded the solid waste in volumes more that it previously reported in the offload plan. This needs to be documented.

What to check for: Check that equipment to treat garbage such as incinerators, grinders, and comminuters are operable. One way to check this includes looking at logs. Vessel equipment maintenance logs (AMOS) may include information of last performance maintenance and operability of the equipment.

Citation: 33 CFR 151.63 Shipboard control of garbage.

(a) The master, operator, or person who is in charge of a ship shall ensure that all garbage is discharged ashore or in accordance with §§151.66–151.73.

(b) The following factors, among others, may be considered by enforcement personnel in evaluating compliance with §§151.51 through 151.77:

- (1) Records, including receipts, of garbage discharges at port reception facilities.
- (2) Records under §151.55 or log entries of garbage discharges.
- (3) The presence and operability of equipment to treat ship-generated garbage, including, but not limited to, incinerators, grinders, or comminuters.
- (4) The presence of and adherence to a written shipboard waste management plan.
- (5) The absence of plastics in ship stores.
- (6) Ongoing educational programs to train shipboard personnel of garbage handling procedures and the need for these.
- (7) The presence of shipboard spaces used for collecting, processing, storing and discharging ship-generated garbage.

(c) The master, operator, or person who is in charge of a ship shall ensure that if garbage is transported from a ship by shipboard personnel, it is properly deposited into a port or terminal's reception facility.

Job Aid Item: 2.1.e

Text: Shipboard garbage is handled in accordance with Garbage (Waste) Management Plans. Review manifests and pick up arrangements plan (33 CFR 151.57 (c))

Background: Garbage waste management plans must be in place to demonstrate that the vessel has a regime / procedures to handle the waste in large volumes. These plans are shared with the responsible persons for the waste handling on board. In the vessels plans itself are often include the planned off load ports (location) identified and the arrangements (contacts) to off load (dispose) the waste.

What to check for: Check that garbage handling is in accordance with the vessels waste management plans including the collection and storage of waste. Check how are certain waste streams handled? Simple checks may be performed; for example, how is collection and storage done? Are off loads well wrapped packages? Is there a risk that the waste can fall off from pallets or blown away? How is the waste stream checked for “anomalies”? How is recycling performed (if included in the management plans)? Check for the “general shipping status of the waste”. Documents such as shipping documents, manifests, and invoices are should include the location, volume, and type of waste. Content of waste in drums or closed containers should be checked.

Citations: 33 CFR 151.57 (c)

- (c) Each waste management plan under paragraph (b) of this section must be in writing and —
 - (1) Provide for the discharge of garbage by means that meet Annex V of MARPOL 73/78, the Act, and §§151.51 through 151.77;
 - (2) Describe procedures for collecting, processing, storing, and discharging garbage; and
 - (3) Designate the person who is in charge of carrying out the plan.

Subsection 2: General Non-Hazardous Waste (Garbage)

Job Aid Item: 2.2.a

Text: Foreign food wastes handled IAW APHIS regulations. (9 CFR 94.5)

Background: APHIS regulations are meant to help slow or stop the spread of diseases and invasive species. APHIS is the Animal and Plant Health Inspection Service of the Department of Agriculture. APHIS allows cruise ships to dispose of food wastes in Alaska as long as it is coming from US or Canadian ports and the ship does not carry prohibited or restricted products. If APHIS items are offloaded they must be separated from the regular waste offloads.

Note- not many ships offload food products in Alaska. They do not use foreign foods or incinerate these wastes. If it is done report in the daily report waste information section.

What to check for: Check for comingling of food preparation or food wastes with garbage. Check that offloads are leak-proof and covered. Check for labeling and documentation of the food wastes.

Citations: 9 CFR 94.5 Regulation of certain garbage. (*Aircraft and Hawaii requirements removed*)

(a) *General restrictions* —(1) *Interstate movements of garbage from Hawaii and U.S. territories and possessions to the continental United States.* Hawaii, Puerto Rico, American Samoa, the Commonwealth of the Northern Mariana Islands, the Federated States of Micronesia, Guam, the U.S. Virgin Islands, Republic of the Marshall Islands, and the Republic of Palau are hereby quarantined, and the movement of garbage therefrom to any other State is hereby prohibited except as provided in this section in order to prevent the introduction and spread of exotic plant pests and diseases.

(2) *Imports of garbage.* In order to protect against the introduction of exotic animal and plant pests, the importation of garbage from all foreign countries except Canada is prohibited except as provided in paragraph (c)(2) of this section.

(b) *Definitions — Agricultural waste.* Byproducts generated by the rearing of animals and the production and harvest of crops or trees. Animal waste, a large component of agricultural waste, includes waste (e.g., feed waste, bedding and litter, and feedlot and paddock runoff) from livestock, dairy, and other animal-related agricultural and farming practices.

Approved facility. A facility approved by the Administrator, Animal and Plant Health Inspection Service, upon his determination that it has equipment and uses procedures that are adequate to prevent the dissemination of plant pests and livestock or poultry diseases, and that it is certified by an appropriate Government official as currently complying with the applicable laws for environmental protection.

Approved sewage system. A sewage system approved by the Administrator, Animal and Plant Health Inspection Service, upon his determination that the system is designed and operated in such a way as to preclude the discharge of sewage effluents onto land surfaces or into lagoons or other stationary waters, and otherwise is adequate to prevent the dissemination of plant pests and livestock or poultry diseases, and that is certified by an appropriate Government official as currently complying with the applicable laws for environmental protection.

Carrier. The principal operator of a means of conveyance.

Continental United States. The 49 States located on the continent of North America and the District of Columbia.

Garbage. All waste material that is derived in whole or in part from fruits, vegetables, meats, or other plant or animal (including poultry) material, and other refuse of any character whatsoever that has been associated with any such material.

Incineration. To reduce garbage to ash by burning.

Inspector. A properly identified employee of the U.S. Department of Agriculture or other person authorized by the Department to enforce the provisions of applicable statutes, quarantines, and regulations.

Interstate. From one State into or through any other State.

Person. Any individual, corporation, company, association, firm, partnership, society, or joint stock company.

Shelf-stable. The condition achieved in a product, by application of heat, alone or in combination with other ingredients and/or other treatments, of being rendered free of microorganisms capable of growing in the product under nonrefrigerated conditions (over 50 °F or 10 °C).

Sterilization. Cooking garbage at an internal temperature of 212 °F for 30 minutes.

Stores. The food, supplies, and other provisions carried for the day-to-day operation of a conveyance and the care and feeding of its operators.

Yard waste. Solid waste composed predominantly of grass clippings, leaves, twigs, branches, and other garden refuse.

(c) *Garbage generated onboard a conveyance* —(1) *Applicability.* This section applies to garbage generated onboard any means of conveyance during international or interstate movements as provided in this section and includes food scraps, table refuse, galley refuse, food wrappers or packaging materials, and other waste material from stores, food preparation areas, passengers' or crews' quarters, dining rooms, or any other areas on the means of conveyance. This section also applies to meals and other food that were available for consumption by passengers and crew on an aircraft but were not consumed.

(i) Not all garbage generated onboard a means of conveyance is regulated for the purposes of this section. Garbage regulated for the purposes of this section is defined as "regulated garbage" in paragraphs (c)(2) and (c)(3) of this section.

(ii) Garbage that is commingled with regulated garbage is also regulated garbage.

(2) *Garbage regulated because of movements outside the United States or Canada.* For purposes of this section, garbage on or removed from a means of conveyance is regulated garbage, if, when the garbage is on or removed from the means of conveyance, the means of conveyance has been in any port outside the United States and Canada within the previous 2-year period. There are, however, two exceptions to this provision. These exceptions are as follows:

(ii) *Exception 2: Other conveyances.* Garbage on or removed in the United States from a means of conveyance other than an aircraft is exempt from requirements under paragraph (c)(4) of this section if the following conditions are met when the garbage is on or removed from the means of conveyance:

(A) The means of conveyance is accompanied by a certificate from an inspector stating the following:

(1) That the means of conveyance had previously been cleared of all garbage and of all meats and meat products, whatever the country of origin, except meats that are shelf-stable; all fresh and condensed milk and cream from countries designated in §94.1 as those in which foot-and-mouth disease exists; all fresh fruits and vegetables; and all eggs; and the items previously cleared from the means of conveyance as prescribed by this paragraph have been disposed of according to the procedures for disposing of regulated garbage, as specified in paragraphs (c)(4)(ii) and (c)(4)(iii) of this section.

(2) That the means of conveyance had then been cleaned and disinfected in the presence of the inspector; and

(B) Since being cleaned and disinfected, the means of conveyance has not been in a non-Canadian foreign port.

(4) *Restrictions on regulated garbage.* (i) Regulated garbage may not be disposed of, placed on, or removed from a means of conveyance except in accordance with this section.

(ii) Regulated garbage is subject to general surveillance for compliance with this section by inspectors and to disposal measures authorized by the Plant Protection Act and the Animal Health Protection Act to prevent the introduction and dissemination of pests and diseases of plants and livestock.

(iii) All regulated garbage must be contained in tight, covered, leak-proof receptacles during storage on board a means of conveyance while in the territorial waters, or while otherwise within the territory of the United States. All such receptacles shall be contained inside the guard rail if on a watercraft. Such regulated garbage shall not be unloaded from such means of conveyance in the United States unless such regulated garbage is removed in tight, covered, leak-proof receptacles under the direction of an inspector to an approved facility for incineration, sterilization, or grinding into an approved sewage system, under direct supervision by such an inspector, or such regulated garbage is removed for other handling in such manner and under such supervision as may, upon request in specific cases, be approved by the Administrator as adequate to prevent the introduction and dissemination of plant pests and animal diseases and sufficient to ensure compliance with applicable laws for environmental protection. **Provided that, a cruise ship may dispose of regulated garbage in landfills at Alaskan ports only, if and only if the cruise ship does not have prohibited or restricted meat or animal products on board at the time it enters Alaskan waters for the cruise season, and only if the cruise ship, except for incidental travel through international waters necessary to navigate safely between ports, remains in**

Canadian and U.S. waters off the west coast of North America, and calls only at continental U.S. and Canadian ports during the entire cruise season.

(A) Application for approval of a facility or sewage system may be made in writing by the authorized representative of any carrier or by the official having jurisdiction over the port or place of arrival of the means of conveyance to the Administrator, Animal and Plant Health Inspection Service, U.S. Department of Agriculture, Washington, DC 20250. The application must be endorsed by the operator of the facility or sewage system.

(B) Approval will be granted if the Administrator determines that the requirements set forth in this section are met. Approval may be denied or withdrawn at any time, if the Administrator determines that such requirements are not met, after notice of the proposed denial or withdrawal of the approval and the reasons therefor, and an opportunity to demonstrate or achieve compliance with such requirements, has been afforded to the operator of the facility or sewage system and to the applicant for approval. However, approval may also be withdrawn without such prior procedure in any case in which the public health, interest, or safety requires immediate action, and in such case, the operator of the facility or sewage system and the applicant for approval shall promptly thereafter be given notice of the withdrawal and the reasons therefore and an opportunity to show cause why the approval should be reinstated.

(iv) The Plant Protection and Quarantine Programs and Veterinary Services, Animal, and Plant Health Inspection Service, will cooperate with other Federal, State, and local agencies responsible for enforcing other statutes and regulations governing disposal of the regulated garbage to the end that such disposal shall be adequate to prevent the dissemination of plant pests and livestock or poultry diseases and comply with applicable laws for environmental protection. The inspectors, in maintaining surveillance over regulated garbage movements and disposal, shall coordinate their activities with the activities of representatives of the U.S. Environmental Protection Agency and other Federal, State, and local agencies also having jurisdiction over such regulated garbage.

(d) *Garbage generated in Hawaii* —(1) *Applicability.* This section applies to garbage generated in households, commercial establishments, institutions, and businesses prior to interstate movement from Hawaii, and includes used paper, discarded cans and bottles, and food scraps. Such garbage includes, and is commonly known as, municipal solid waste.

(i) Industrial process wastes, mining wastes, sewage sludge, incinerator ash, or other wastes from Hawaii that the Administrator determines do not pose risks of introducing animal or plant pests or diseases into the continental United States are not regulated under this section.

(ii) The interstate movement from Hawaii to the continental United States of agricultural wastes and yard waste (other than incidental amounts (less than 3 percent) that may be present in municipal solid waste despite reasonable efforts to maintain source separation) is prohibited.

(iii) Garbage generated onboard any means of conveyance during interstate movement from Hawaii is regulated under paragraph (c) of this section.

(2) *Restrictions on interstate movement of garbage.* The interstate movement of garbage generated in Hawaii to the continental United States is regulated as provided in this section.

(i) The garbage must be processed, packaged, safeguarded, and disposed of using a methodology that the Administrator has determined is adequate to prevent the introduction and dissemination of plant pests into noninfested areas of the United States.

(ii) The garbage must be moved under a compliance agreement in accordance with paragraph (e) of this section. APHIS will only enter into a compliance agreement when the Administrator is satisfied that the Agency has first satisfied all its obligations under the National Environmental Policy Act and all applicable Federal and State statutes to fully assess the impacts associated with the movement of garbage under the compliance agreement.

(iii) All such garbage moved interstate from Hawaii to any of the continental United States must be moved in compliance with all applicable laws for environmental protection.

(e) *Compliance agreement and cancellation* —(1) Any person engaged in the business of handling or disposing of garbage in accordance with this section must first enter into a compliance agreement with the Animal and Plant Health Inspection Service (APHIS). Compliance agreement forms (PPQ Form 519) are available without charge from local USDA/APHIS/Plant Protection and Quarantine offices, which are listed in telephone directories.

(2) A person who enters into a compliance agreement, and employees or agents of that person, must comply with the following conditions and any supplemental conditions which are listed in the compliance agreement, as deemed by the Administrator to be necessary to prevent the introduction and dissemination into or within the United States of plant pests and livestock or poultry diseases:

(i) Comply with all applicable provisions of this section;

(ii) Allow inspectors access to all records maintained by the person regarding handling or disposal of garbage, and to all areas where handling or disposal of garbage occurs;

(iii)(A) If the garbage is regulated under paragraph (c) of this section, remove garbage from a means of conveyance only in tight, covered, leak-proof receptacles;

(B) If the garbage is regulated under paragraph (d) of this section, transport garbage interstate in sealed, leak-proof packaging approved by the Administrator;

(iv) Move the garbage only to a facility approved by the Administrator; and

(v) At the approved facility, dispose of the garbage in a manner approved by the Administrator and described in the compliance agreement.

(3) Approval for a compliance agreement may be denied at any time if the Administrator determines that the applicant has not met or is unable to meet the requirements set forth in this section. Prior to denying any application for a compliance agreement, APHIS will provide notice to the applicant thereof, and will provide the applicant with an opportunity to demonstrate or achieve compliance with requirements.

(4) Any compliance agreement may be canceled, either orally or in writing, by an inspector whenever the inspector finds that the person who has entered into the compliance agreement has failed to comply with this section. If the cancellation is oral, the cancellation and the reasons for the cancellation will be confirmed in writing as promptly as circumstances allow. Any person whose compliance agreement has been canceled may appeal the decision, in writing, within 10 days after receiving written notification of the cancellation. The appeal must state all of the facts and reasons upon which the person relies to show that the compliance agreement was wrongfully canceled. As promptly as circumstances allow, the Administrator will grant or deny the appeal, in writing, stating the reasons for the decision. A hearing will be held to resolve any conflict as to any material fact. Rules of practice concerning a hearing will be adopted by the Administrator. This administrative remedy must be exhausted before a person can file suit in court challenging the cancellation of a compliance agreement.

(5) Where a compliance agreement is denied or canceled, the person who entered into or applied for the compliance agreement may be prohibited, at the discretion of the Administrator, from handling or disposing of regulated garbage.

Job Aid Item: 2.2.b

Text: Grinders in compliance with 33 CFR 151.75

Background: This item is to check for the potential to discharge large items when the requirements are for small pieces. This should reduce the chance of items like food waste floating back to shore. Check if this item applies on the vessel, many do not discharge these items between 3 and 12 nm, but wait until outside 12nm.

This item may be hard to check unless equipment is open for cleaning or maintenance.



What to check for: For ships that discharge food wastes, ground glass, or other materials inside of 12nm check that screen openings are less than 1 inch.

Citation: 33 CFR 151.75 Grinders or comminuters.

Each grinder or comminuter used to discharge garbage in accordance with §151.69(a)(2) or §151.73(b)(1), must be capable of processing garbage so that it passes through a screen with openings no greater than 25 millimeters (one inch).

Job Aid Item: 2.2.c

Text: Valves and flappers on chutes in compliance with AS 46.03.710

Background: Most cruise ships have discharge chutes or “tunnels”. These chutes are often close to the solid waste processing area. Some ships have multiple chutes. The chutes can have valves or flappers. Most ships have procedures for locking valves or chutes. Some ships have welded these shut to avoid use.

What to check for: Check that valves or flappers on waste chutes are closed in Alaska waters. Check waste records for any documentation of use in Alaska waters.

Citation: AS 46.03.710. Pollution prohibited.

A person may not pollute or add to the pollution of the air, land, subsurface land, or water of the state.

Job Aid Item: 2.2.d

Text: Checked Human Factors (crew familiar with procedures, sanitation maintained, protective equipment available if needed, warning signs posted) (33CFR151.63(b))

Background: This is another check for signs that garbage is not handled correctly. Most ships try to use clear procedures, such as color coding of wastes. In general waste sorters are dedicated crew and should be aware of the waste handling processes.

What to check for: Check that the waste management plan(s) are available, and that crew are familiar with these plans. Familiarity could include training programs, such as how to identify plastic waste.

Citations: 33 CFR 151.63 Shipboard control of garbage.

(b) The following factors, among others, may be considered by enforcement personnel in evaluating compliance with §§151.51 through 151.77:

- (1) Records, including receipts, of garbage discharges at port reception facilities.
- (2) Records under §151.55 or log entries of garbage discharges.
- (3) The presence and operability of equipment to treat ship-generated garbage, including, but not limited to, incinerators, grinders, or comminuters.
- (4) The presence of and adherence to a written shipboard waste management plan.
- (5) The absence of plastics in ship stores.
- (6) Ongoing educational programs to train shipboard personnel of garbage handling procedures and the need for these.
- (7) The presence of shipboard spaces used for collecting, processing, storing and discharging ship-generated garbage.

Job Aid Item: 2.2.e

Text: Maintenance and repair conducted on equipment IAW 33 CFR 151.63 (b(3))

Background: This is another check for signs that garbage is not handled correctly or equipment failure is will not make is possible to handle the garbage according the plans or regulations.

What to check for: Check that garbage handling equipment such as incinerators, grinders, etc. are operable. If equipment is not functioning check for extra stored wastes, and how these wastes are handled.

Citation: 33 CFR 151.63 (b)3

(3) The presence and operability of equipment to treat ship-generated garbage, including, but not limited to, incinerators, grinders, or comminuters.

Job Aid Item: 2.2.f

Text: Check there are no plastics or synthetics discharged overboard. 33 CFR 151.67

Background: Discharge of plastics is not allowed in any waters. Plastic items are often difficult to break down naturally and can impact wildlife. Garbage sorting crews often check the garbage for disposal of plastics. This includes plastic bottles, caps, wrappings, blister cards, and other plastics. Most vessels separate the garbage from plastics by using dedicated garbage cans; however plastic still may end up in the garbage stream.

Most garbage is sorted in dedicated spaces. Engine room or construction wastes can be handled separately. These wastes are also subject to the plastic prohibition. This includes ropes with synthetic materials, carpets, packaging, and canisters.

What to check for: Check that wastes are sorted and plastics are removed if wastes are disposed of overboard.

Citations: 33 CFR 151.67 Operating requirements: Discharge of plastic prohibited.

No person on board any ship may discharge into the sea, or into the navigable waters of the United States, plastic or garbage mixed with plastic, including, but not limited to, synthetic ropes, synthetic fishing nets, and plastic garbage bags. All garbage containing plastics requiring disposal must be discharged ashore or incinerated.

Definition of Plastics from 33 CFR 151: *Plastic* means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers, and that is formed or shaped either during the

manufacture of the polymer or polymers or during fabrication into a finished product by heat or pressure or both. “Degradable” plastics, which are composed of combinations of degradable starches and are either (a) synthetically produced or (b) naturally produced but harvested and adapted for use, are plastics under this part. Naturally produced plastics such as crabshells and other types of shells, which appear normally in the marine environment, are not plastics under this part.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: food wrappings, products for personal hygiene, packaging (vaporproof barriers, bottles, containers, and liners), ship construction (fiberglass and laminated structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, and electrical and electronic components), disposable eating-utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, and synthetic ropes and lines.

Job Aid Item: 2.2.g

Text: Incinerator ashes, if discharged overboard, are free of plastic residue (clinkers) or free of unburned food wastes if landed ashore IAW 33 CFR 151.67

Background: Incinerator ash could include unburned items. Plastics can melt into larger pieces rather than combusting. Food waste can also be present due to the high water content. Not all vessels incinerate plastics, some choose to offload or recycle these.

Operators should have procedures for dealing with incinerator ash. Useful items to know is how it is removed from the incinerator, how volumes (or weight) are obtained, how incinerator ash is categorized as waste, and what waste streams are incinerated.

Caution: Dust can be unhealthy, use caution. Avoid exposure to ash.

What to check for: Check that incinerator ash is checked for plastics and food.

Citations: See last item (2.2.f).



Figure 5 Incinerator Ash automatic collection bin

Job Aid Item: 2.2.h

Text: Trash chutes are clean and free from oil residue that could be lost overboard (No oil stains on decks, side of hull adjacent to trash chutes) IAW 40 CFR 110.3

Background: Discharge of oil is prohibited. This includes oils unintentionally or intentionally discarded through a trash chute.

What to check for: Check overboard trash chutes for oil stains. Look for oil stains on side of ship when this is possible. Visually check for oil materials in the trash chutes for items such as oil filters, oil bottles, and gasket materials.

Citations: 40 CFR 110.3 Discharge of oil in such quantities as “may be harmful” pursuant to section 311(b)(4) of the Act.

For purposes of section 311(b)(4) of the Act, discharges of oil in such quantities that the Administrator has determined may be harmful to the public health or welfare or the environment of the United States include discharges of oil that:

- (a) Violate applicable water quality standards; or



(b) Cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

AS 46.03.740. Oil pollution.

A person may not discharge, cause to be discharged, or permit the discharge of petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or a residuary product of petroleum, into, or upon the waters or land of the state except in quantities, and at times and locations or under circumstances and conditions as the department may by regulation permit or where permitted under art. IV of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended.



Job Aid Item: 2.2.i

Text: Medical Wastes-are incinerated or manifested as Bio-Hazardous Waste. AS 46.03.296 and 46.03.745

Background: Medical wastes could contain harmful substances such as infectious diseases or toxics. They cannot be discharged into Alaskan waters.

Note that many items such as expired vaccines can be sent directly back to the supplier for proper disposal.

What to check for: Medical wastes are either properly offloaded or incinerated. The packaging should be leak free and labeled.

Citations: AS 46.03.296. Disposal of hazardous wastes.

(a) It is unlawful to dispose of hazardous wastes in the state unless

(1) the waste has been treated and disposed of in a manner that uses the maximum degree of reduction of the harmful qualities of a hazardous waste that is subject to this chapter and that the department, on a case-by-case basis, determines is achievable for the hazardous waste by application of production processes and available methods, systems, and techniques, taking into account energy, environmental, and economic impacts and other costs; and

(2) the waste is disposed of in a manner that will ensure the protection of human health, livestock, wildlife, property, and the environment.

(b) The department shall adopt regulations in accordance with AS 44.62 (Administrative Procedure Act) for the treatment, storage, and disposal of hazardous wastes to ensure the protection of human health, livestock, wildlife, property, and the environment.

46.03.745. Hazardous substance release.

Except for a controlled release, the reporting of which is the subject of an agreement with the commissioner under AS 46.09.010_(b), a person may not cause or permit the release of a hazardous substance as defined in AS 46.09.900.

Definition from AS 46.09.900: Hazardous substance" means (A) an element or compound that, when it enters into or on the surface or subsurface land or water of the state, presents an imminent and substantial danger to the public health or welfare, or to fish, animals, vegetation, or any part of the natural habitat in which fish, animals, or wildlife may be found; or (B) a substance defined as a hazardous substance under 42 U.S.C. 9601 - 9657 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980); "hazardous substance" does not include uncontaminated crude oil or uncontaminated refined oil;

Solid waste References:

Example 1: Garbage Record Book Example



COMMONWEALTH OF DOMINICA
MARITIME ADMINISTRATION

GARBAGE RECORD BOOK

NAME OF VESSEL: _____

IMO NUMBER: _____

DISTINCTIVE NUMBERS OR LETTERS: _____

PORT OF REGISTRY: _____

TYPE: _____
(SPECIFY)

COVERING THE PERIOD: FROM _____ TO _____

NOTE: Every ship of 400 tons gross tonnage and above and every ship which is certified to carry 15 persons or more engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention and every fixed and floating platform engaged in exploration and exploitation of the sea-bed, shall be provided with a Garbage Record Book.

THIS ENTRY LOG MUST BE PRESERVED FOR THREE (3) YEARS FROM DATE OF LAST ENTRY

CDP-603 (11.07)

1. INTRODUCTION

In accordance with Regulation 9 of Annex V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78), a record is to be kept of each discharge operation or completed incineration. This includes discharges at sea, to reception facilities, or to other ships.

2. GARBAGE AND GARBAGE MANAGEMENT

Garbage includes all kinds of food, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the vessel and liable to be disposed of continuously or periodically except those substances which are defined or listed in other annexes to MARPOL 73/78 (such as oil, sewage or noxious liquid substances).

The Guidelines for the Implementation of Annex V of MARPOL 73/78 should also be referred to for relevant information.

3. DESCRIPTION OF THE GARBAGE

The garbage is to be grouped into categories for the purposes of this record book as follows:

1. Plastics
2. Floating dunnage, lining, or packing material
3. Ground-down paper products, rags, glass, metal, bottles, crockery, etc.
4. Cargo residues, paper products, rags, glass, metal, bottles, crockery, etc.
5. Food waste
6. Incinerator ash

4. ENTRIES IN THE GARBAGE RECORD BOOK

1. Entries in the Garbage Record Book shall be made on each of the following occasions:

- (a) When garbage is discharged into the sea:
 - (i) Date and time of discharge
 - (ii) Position of the ship (latitude and longitude). Note: for cargo residue discharges, include discharge start and stop positions
 - (iii) Category of garbage discharged
 - (iv) Estimated amount discharged for each category in m³
 - (v) Signature of the officer in charge of the operation.
- (b) When garbage is discharged to reception facilities ashore or to other ships:
 - (i) Date and time of discharge
 - (ii) Port or facility, or name of ship
 - (iii) Category of garbage discharged
 - (iv) Estimated amount discharged for each category in m³
 - (v) Signature of officer in charge of the operation.
- (c) When garbage is incinerated:
 - (i) Date and time of start and stop of incineration
 - (ii) Position of the ship (latitude and longitude)

CDP-603 (11.07)

- (ii) Estimated amount incinerated in m³
- (iv) Signature of the officer in charge of the operation
- (d) Accidental or other exceptional discharges of garbage
 - (i) Time of occurrence
 - (ii) Port or position of the ship at time of occurrence
 - (iii) Estimated amount and category of garbage
 - (iv) Circumstances of disposal, escape or loss, the reason therefore and general remarks.

2. Receipts

The master should obtain from the operator of port reception facilities, or from the master of the ship receiving the garbage, a receipt or certificate specifying the estimated amount of garbage transferred. The receipts or certificates must be kept on board the ship with the Garbage Record Book for two years.

3. Amount of garbage

The amount of garbage onboard should be estimated in m³, if possible separately according to category. The Garbage Record Book contains many references to estimated amount of garbage. It is recognized that the accuracy of estimating amounts of garbage is left to interpretation. Volume estimates will differ before and after processing. Some processing procedures may not allow for a usable estimate of volume, e.g. the continuous processing of food waste. Such factors should be taken into consideration when making and interpreting entries made in a record.

Section 3: Hazardous Materials and Wastes

General background:

As defined in state law "hazardous waste" means a waste or combination of wastes that because of quantity, concentration, or physical, chemical, or infectious characteristics may

(A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or

(B) pose a substantial present or potential hazard to human health or the environment when improperly managed, treated, stored, transported, or disposed of.

Hazardous materials are substances or materials that could pose a safety risk or environmental damage risk unless properly stored and handled.

The hazardous materials and wastes section contains checks both for environmental hazards as well as safety hazards caused by hazardous materials.

Note: be aware that some wastes are only considered hazardous if stored or disposed of in large quantities.

2009 Hazardous Waste and Substance Offloading Plan (HWSOP)

1. Estimate of waste volumes to be discharged ashore in Alaska: NONE.
2. Offloading Method: Not applicable as there will be no offloading in Alaska. For information, liquid/sludge wastes are offloaded in sealed plastic containers or cans typically 1 to 6 gallons capacity with appropriate labeling. Dry wastes such as batteries are packaged in an appropriate container or handled individually for larger lead-acid type. The vessel's side ports, port & starboard aft, are utilized along with a hydraulically operated platform that can lift and extend over the pier to transfer goods from ship to shore where they can be accessed by forklift or by hand.
3. Material Safety Data sheets: Not applicable as no hazardous wastes will be landed. MSDS's are maintained onboard the ship for all hazardous products used.
4. Contractors: Not applicable. For the 2009 Alaska season, contractors in Vancouver and Victoria B.C. will be used.
5. Disposal Facility: Not applicable. Facilities in Canada will be used.
6. Staff Training in Offloading procedures: Not applicable. No offloading in Alaska. For information, waste handling personnel have received training onboard the ship in the following handling procedures: All hazardous wastes generated within the ship must be collected in an appropriate container and labeled at the source. It is then listed on an internal waste transfer manifest before being transferred to the Garbage Room where they are segregated in separate lockers under control of the Marine Stores Manager who confirms that a proper container and labeling have been used. A waste manifest is prepared before the port call and sent to the ship's port agent to arrange for appropriate contractors and to confirm the wastes can be handled. The contractor receiving the waste is required to sign for the wastes on the ship's manifest in addition to any other that may be required for the state/country where it being landed.
6. For additional information regarding hazardous waste policy and procedures please see attached document

Figure 1- Comprehensive Haz Waste Plan example submitted to ADEC

General Citations:

AS 46.03.296. Disposal of hazardous wastes.

(a) It is unlawful to dispose of hazardous wastes in the state unless

(1) the waste has been treated and disposed of in a manner that uses the maximum degree of reduction of the harmful qualities of a hazardous waste that is subject to this

chapter and that the department, on a case-by-case basis, determines is achievable for the hazardous waste by application of production processes and available methods, systems, and techniques, taking into account energy, environmental, and economic impacts and other costs; and

(2) the waste is disposed of in a manner that will ensure the protection of human health, livestock, wildlife, property, and the environment.

(b) The department shall adopt regulations in accordance with AS 44.62 (Administrative Procedure Act) for the treatment, storage, and disposal of hazardous wastes to ensure the protection of human health, livestock, wildlife, property, and the environment.

AS 46.03.710. Pollution prohibited.

A person may not pollute or add to the pollution of the air, land, subsurface land, or water of the state.

AS 46.03.745. Hazardous substance release.

Except for a controlled release, the reporting of which is the subject of an agreement with the commissioner under AS 46.09.010(b), a person may not cause or permit the release of a hazardous substance as defined in AS 46.09.900.

Statute Definitions (46.03.900):

(9) "hazardous waste" means a waste or combination of wastes that because of quantity, concentration, or physical, chemical, or infectious characteristics may

(A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or

(B) pose a substantial present or potential hazard to human health or the environment when improperly managed, treated, stored, transported, or disposed of;

(20) "pollution" means the contamination or altering of waters, land, or subsurface land of the state in a manner which creates a nuisance or makes waters, land, or subsurface land unclean, or noxious, or impure, or unfit so that they are actually or potentially harmful or detrimental or injurious to public health, safety, or welfare, to domestic, commercial, industrial, or recreational use, or to livestock, wild animals, bird, fish, or other aquatic life;

18 AAC 69.040. Hazardous waste and hazardous substance offloading plan.

(a) As part of the plan required under AS 46.03.475(e)(2), that describes a vessel's policies and procedures for offloading of hazardous waste or a hazardous substance from a vessel while that vessel is operating in the marine waters of the state, and to the extent that the offloading is not covered by a report or notice submitted under AS 46.03.475(d), the owner or operator shall include, for each vessel that the owner or operator intends to operate, or cause or allow to operate, and for each hazardous waste or hazardous substance anticipated to be offloaded,

(1) an estimate of the volume and type of each waste or substance;

(2) the proposed offloading method;

(3) material safety information provided by the manufacturer, if applicable;

(4) the name and address of each contractor to be used for offloading;

(5) the controlled storage, processing, or disposal facilities or treatment works proposed to be used; and

(6) a description of vessel crew training in offloading procedures.

(b) A plan required under AS 46.03.475(e)(2) must be submitted on or before March 1 of each calendar year. (Eff. 11/15/2002, Register 164)

AS 46.03.475 Reporting Requirements

(d) If the owner or operator of a commercial passenger vessel operating in the marine waters of the state is required by the laws of the United States or by the laws of Canada or of a province or territory of Canada to file a report or provide notice of a discharge or offloading of a hazardous waste, as defined in [AS 46.03.900](#), or of a hazardous substance, as defined in [AS 46.03.826](#), that was generated, discharged, or offloaded while the vessel was operating in the marine waters of the state, the owner or operator shall submit to the department a copy of the report or notice within 21 days after having provided the report or notice to an agency of the government of the United States or to an agency of the government of Canada or of a province or territory of Canada.

33 CFR 151.55 Recordkeeping requirements.

(a) This section applies to the following:

- (1) Every manned oceangoing ship (other than a fixed or floating platform) of 400 gross tons and above that is engaged in commerce and that is documented under the laws of the United States or numbered by a State.
- (2) Every manned fixed or floating platform subject to the jurisdiction of the United States.
- (3) Every manned ship that is certified to carry 15 passengers or more engaged in international voyages.

(b) The master or person in charge of each ship under paragraph (a)(1), (a)(2), or (a)(3) of this section shall ensure that a written record is maintained on the ship of each of the following garbage discharge or disposal operations:

- (1) Discharge overboard.
- (2) Discharge to another ship.
- (3) Discharge to a reception facility.
- (4) Incineration on the ship.

(c) The record under paragraph (b) of this section must contain the following information on each discharge or disposal operation:

- (1) The type of operation as described under paragraphs (b)(1) through (b)(4) of this section.
- (2) The date and time of the operation.
- (3) If the operation was conducted at a port, the name of the port.
- (4) If the operation was not conducted at a port, the latitude and longitude of the location where the operation was conducted and the estimated distance of that location from shore. If the operation involved off-loading to another ship, the identity of the receiving ship by name and official number.
- (5) The amount of garbage involved, described by volume in cubic meters.
- (6) For discharges into the sea, a description of the contents of the garbage, described by the following categories:
 - (i) Plastic material.
 - (ii) Floating dunnage, lining, or packing material.
 - (iii) Ground paper products, rags, glass, metal, bottles, crockery, or other similar garbage.
 - (iv) Unground paper products, rags, glass, metal, bottles, crockery, or other similar garbage.
 - (v) Victual wastes.

- (vi) Incinerated ash.
- (vii) Incinerated plastic residue.

(d) The record under paragraph (b) of this section must be prepared at the time of the operation, certified as correct by the master or person in charge of the ship, maintained on the ship for two years following the operation, and made available for inspection by the Coast Guard.

33 CFR 151.57 Waste management plans.

(a) This section applies to the following:

(1) Each manned oceangoing ship (other than a fixed or floating platform) of 40 feet or more in length that is documented under the laws of the United States or numbered by a state and that either is engaged in commerce or is equipped with a galley and berthing.

(2) Each manned fixed or floating platform that is—

- (i) Documented under the laws of the United States; or
- (ii) Operating under the authority of the United States, including, but not limited to, a lease or permit issued by an agency of the United States.

(b) The master or person in charge of a ship under paragraphs (a)(1) and (a)(2) of this section shall ensure that the ship is not operated unless a waste management plan meeting paragraph (c) of this section is on the ship and that each person handling garbage follows the plan.

(c) Each waste management plan under paragraph (b) of this section must be in writing and—

- (1) Provide for the discharge of garbage by means that meet Annex V of MARPOL 73/78, the Act, and §§151.51 through 151.77;
- (2) Describe procedures for collecting, processing, storing, and discharging garbage; and
- (3) Designate the person who is in charge of carrying out the plan.

33 CFR 151.63 Shipboard control of garbage.

(a) The master, operator, or person who is in charge of a ship shall ensure that all garbage is discharged ashore or in accordance with §§151.66–151.73.

(b) The following factors, among others, may be considered by enforcement personnel in evaluating compliance with §§151.51 through 151.77:

- (1) Records, including receipts, of garbage discharges at port reception facilities.
- (2) Records under §151.55 or log entries of garbage discharges.
- (3) The presence and operability of equipment to treat ship-generated garbage, including, but not limited to, incinerators, grinders, or comminuters.
- (4) The presence of and adherence to a written shipboard waste management plan.
- (5) The absence of plastics in ship stores.
- (6) Ongoing educational programs to train shipboard personnel of garbage handling procedures and the need for these.
- (7) The presence of shipboard spaces used for collecting, processing, storing and discharging ship-generated garbage.

(c) The master, operator, or person who is in charge of a ship shall ensure that if garbage is transported from a ship by shipboard personnel, it is properly deposited into a port or terminal's reception facility.

33 CFR 151.67 Operating requirements: Discharge of plastic prohibited.

No person on board any ship may discharge into the sea, or into the navigable waters of the United States, plastic or garbage mixed with plastic, including, but not limited to, synthetic ropes, synthetic fishing nets, and plastic garbage bags. All garbage containing plastics requiring disposal must be discharged ashore or incinerated.

40 CFR 262.34 Accumulation time.

(a) Except as provided in paragraphs (d), (e), and (f) of this section, a generator may accumulate hazardous waste on-site for 90 days or less without a permit or without having interim status, provided that:

(1) The waste is placed:

(i) In containers and the generator complies with the applicable requirements of subparts I, AA, BB, and CC of 40 CFR part 265; and/or

(ii) In tanks and the generator complies with the applicable requirements of subparts J, AA, BB, and CC of 40 CFR part 265 except

Sec. Sec. 265.197(c) and 265.200; and/or

(iii) On drip pads and the generator complies with subpart W of 40 CFR part 265 and maintains the following records at the facility:

(A) A description of procedures that will be followed to ensure that all wastes are removed from the drip pad and associated collection system at least once every 90 days; and

(B) Documentation of each waste removal, including the quantity of waste removed from the drip pad and the sump or collection system and the date and time of removal; and/or

(iv) The waste is placed in containment buildings and the generator complies with subpart DD of 40 CFR part 265, has placed its professional engineer certification that the building complies with the design standards specified in 40 CFR 265.1101 in the facility's operating record no later than 60 days after the date of initial operation of the unit. After February 18, 1993, PE certification will be required prior to operation of the unit. The owner or operator shall maintain the following records at the facility:

(A) A written description of procedures to ensure that each waste volume remains in the unit for no more than 90 days, a written description of the waste generation and management practices for the facility showing that they are consistent with respecting the 90 day limit, and documentation that the procedures are complied with; or

(B) Documentation that the unit is emptied at least once every 90 days.

Sub-section 1: Hazardous Materials and Wastes Daily

Job Aid Item: 3.1.a

Text: Vessel hazardous waste logs are up to date. Include in information section if operations (off-loads / discharges) were conducted (monitoring recording reporting) (18AAC 69.040 / 33 CFR 151.55(b)(d)).

- i. If hazardous waste was offloaded was this according the Alaska Hazardous Waste Offloading Plan? (18 AAC 69.040)
- ii. Volume and type of waste that is off loaded is recorded IAW (18 AAC 69.040);

Background: Offloads of hazardous waste must be recorded. This can be done in a garbage record book or a log of hazardous waste offloads. Often manifests are available to confirm from the recovered what was offloaded and the amount. Offloads of hazardous waste in Alaska are rare. Please note that some vessels do off load mattresses or other useful items for the communities in Alaska (donations). This is not hazardous waste, but often reported by the vessels to avoid confusion. Include these off loads in the information section of the daily report.

What to check for: Check that waste offloads are logged in either a garbage record book or a hazardous waste log. Check that entries are complete and entered in a timely manner. If offloads occur, volumes need to be entered in information section of daily report so they can be checked by ADEC against the final deviation report.

Citations: See General Citations for this section.

Job Aid Item: 3.1.b

Text: Records reflect reasonable accumulations of waste with respect to the capacity of the vessel, its age, technologies onboard, and amounts of repair / maintenance (AS46.03.296 / AS 46.03.745)

Background: For most potential hazardous waste streams cruise ships do not generate large industrial scale quantities, so it is common that waste is allowed to accumulate until a reasonable quantity exists to offload. For example it could be stored until a drum ("Unit") is filled. If there is a waste stream there should be either an accumulation onboard or a record of it being properly disposed of. One way to check this is to look at what an average voyage would generate, and then compare that with accumulation or offloads. For example, a stream of 100 liters a week should have about a 55 gallon drum every two weeks. [Approximately 1 US gallon is 3.74 liters]

What to check for: Check offload records to see entries that show offload of waste, or that waste is accumulated onboard for eventual disposal. For example, if traditional photo processing is done onboard during a voyage there should be some photo waste from the voyage or previous voyages onboard. In general do the off load records volumes / weights "sense"? Note sometimes vessel do have "one time" large volume offload, for example used lube oil / hydraulic oil. This is especially the case when major repairs / overhauls are performed.



Figure 2: Container of hazardous

Citation: See General Citations for this section.

Sub-section 2: General Hazardous Materials and Wastes

Job Aid Item: 3.2.a

Text: Records are maintained and manifests completed for potential hazardous material and waste streams (18 AAC 69.040).

Background: Most cruise ship do not offload hazardous waste in Alaska. If they do they need to document the offloads either in their waste offload plans submitted to ADEC, or in deviation reports submitted at the end of each cruise season.

What to check for: If cruise ships offload hazardous waste in Alaska, check that manifest and records are completed for each offload. Record the offload data in the information sections so that ADEC can check against final deviation report.

Citation: See General Citations for this section.

Job Aid Item: 3.2.b

Text: Waste is sorted to prevent hazardous materials or wastes entering garbage waste stream. Separate defined storage areas for hazardous materials or wastes/ non hazardous materials – no commingled waste (40 CFR 265.17).

Background: Cruise ships generally have effective ways to sort waste streams to separate recycling and any potential hazardous wastes from general garbage.

What to check for: Check that waste is sorted and hazardous waste is kept separate to avoid accidental re-introduction to the garbage or recycling materials.



Figure 3- Separated waste



Figure 4- Waste stored

Citation: 40 CFR 265.17 General requirements for ignitable, reactive, or incompatible wastes.

(a) The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must be separated and protected from sources of ignition or reaction including but not limited to: Open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable or reactive waste is being handled, the owner or operator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) Where specifically required by other sections of this part, the treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, must be conducted so that it does not:

- (1) Generate extreme heat or pressure, fire or explosion, or violent reaction;
- (2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;
- (3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

Job Aid Item: 3.2.c

Text: The controlled storage processing or disposal facilities or treatment used is IAW (18 AAC 69.040) Crew training in off loading procedures is IAW (18 AAC 69.040).

Background: Cruise ships are required (if offloading hazardous waste in Alaska) to document planned methods, training, and facilities used in their hazardous waste offload plans. Most ships do not offload hazardous waste in Alaska.

What to check for: If the ship offloads hazardous waste in Alaska, check that offloads and crew training match those in the current hazardous waste offload plan. Check also the packaging of the offloaded materials.

Citations: See General Citations for this section.

Job Aid Item: 3.2.d

Text: There is a designated person-in charge; each entry is signed by Officer-in-Charge and each page by Master. 33 CFR 151.55 (d)

Background: Someone must sign the garbage record book and any hazardous offload logs.

What to check for: Check that garbage waste logs and any logs of hazardous wastes are signed by a designated person or the master, and check that there is a designated person, including the recording keeping / reporting system.

Citations: See General Citations for this section.

Job Aid Item: 3.2.e

Text: Shipboard garbage is properly handled all in accordance with Hazardous Material Management Review manifests and pick up arrangements plan. (33 CFR 151.57)

Background: Garbage and hazardous wastes and materials should be handled properly and hazardous substances should not enter the garbage waste stream.

What to check for: Check that procedures in onboard waste plans are followed, and that the agreed upon handling including loading (pick up) is according to the plans.

Citations: See General Citations for this section.



Job Aid Item: 3.2.f

Text: Manufacturer provided material safety data sheet (MSDS) (if applicable) are included on the Hazardous waste and hazardous substances offloading plan IAW 18 AAC 69.040

Background: Material safety data sheets or products safety datasheets should be supplied with all potentially hazardous or toxic chemicals. These sheets are intended to inform the end user of hazards, physical data, and how to safely handle and use the product. They should also identify the use and need of personal protection gear.

What to check for: If hazardous waste is offloaded in Alaska, the MSDS is applicable must be in either the offload plan or will be submitted in the end of season deviation report.

Figure 5- MSDS Sheet in prominent position

Citations: See General Citations for this section.



Job Aid Item: 3.2.g

Text: Check if there is any evidence of hazardous material being discharged overboard (AS46.03.296 & 46.03.745)

Background: It is illegal to dispose of hazardous waste to water without proper treatment.

What to check for: Hoses, unusual connections, materials that disappear. Check for unusual activities, recent fish kills, or sheens near the ship. Unusual activities could include fish and other wildlife leaving area or leaping out of water (although this is a common activity for salmon). Hazmat materials / containers in the neighborhood of the overboard chutes (if present / used).



Figure 7- Hose was checked, no connection to stored wastes
Note: the open floor plate (safety item)



Figure 8- Chemical properly stored in a containment basin hoses or drains, etc.

Figure 9- Check for leaking storage units, unusual

Citations: See General Citations for this section.

Job Aid Item: 3.2.h

Text: Storage Handling of Hazardous Material is IAW AS 46.03.296 / 46.03.745 / 40 CFR 262.34

Background: Disposal of hazardous waste is not allowed. This includes accidental disposal caused by negligent storage.

What to check for: Check that stored products could not easily be blown, washed, or drain away. Clear labeling of the packaging to avoid accidental “mix ups”.

Citations: See General Citations for this section.



Figure 10- waste collection

Job Aid Item: 3.2.i

Text: The following (if applicable) hazardous materials and waste streams are properly handled and disposed of IAW AS 46.03.745, AS 46.03.296, & 40 CFR 273):

- i. Silver bearing Photo processing waste developers, wash water, silver recovery units)
- ii. X ray equipment waste
- iii. Print shop waste (inks, etchers, developers etc.)
- iv. Waste from paints, solvents, thinners;
- v. Waste from fluorescent / mercury vapor bulbs;
- vi. Waste from dry cleaners (e.g. PERC, Tri etc.) (lint condensate Water) (if applicable)
- vii. Waste from batteries (universal wastes). Ni-cad, Lead Acid, Lithium, Alkaline. etc. Used batteries are not mixed with other wastes and should be kept dry
- viii. Waste from pharmaceuticals / narcotics
- ix. Waste from chemicals for cleaning (including evaporator cleaning, electro cleaner)
- x. Waste from (expired) pyrotechnics (theatre, safety equipment)
- xi. Waste from oily and or chemically contaminated rags, filters etc.
- xii. Waste from incinerator (ashes)
- xiii. Waste from pesticides / rodent control
- xiv. Waste from AWT'S chemicals such as de-scalers
- xv. Waste from barbercide



Figure 11-Silver recovery from photo wastes



Figure 12 X-ray development wastes

Background: Cruise ships have procedures and methods for sorting and handling waste. It is useful to become familiar with these procedures. For several of these items a small amount of waste into the wastewater system is acceptable. For example a small amount of barbercide when diluted with water. Information on disposal can often be found in the labeling of the product, the MSDS, or other documentation onboard. ADEC will be providing some electronic lists of hazardous constituents from the EPA.

What to check for: Check that the waste streams listed are not disposed of in the wastewater system (including accidentally drained), into the garbage stream, the bilge, or potentially overboard.

Citations: See General Citations for this section.

Job Aid Item: 3.2.j

Text: Human Factors. Master and crew were familiar with essential shipboard Hazardous Material handling procedures. Personal protective equipment available, functioning and in place (ILO 134). Sanitation, from a health standpoint, being maintained (ILO 147). 33 CFR 151.63 (b)

Background: In addition to having plans and procedures for handling waste, cruise ship crews that handle waste must be familiar with those plans and with the safety measures contained in those plans.

What to check for: Check that crew understand procedures, and know where they are and who to contact if they have questions. Check for presence of safety equipment like eye protection, gloves, eye wash stations, etc. And general handling of the Hazmat materials.

Citations: See General Citations for this section.



Figure 13Eyewash station near corrosive chemical storage

Job Aid Item: 3.2.k

Text: Maintenance and repair conducted on equipment involved in Hazardous Materials handling IAW 33 CFR 151.63 (b(3))

Background: Equipment needs regular maintenance and repairs. Equipment not functioning well should not be used when handling potentially hazardous materials.

What to check for: Check that equipment being used to store, transport, or process wastes are in working order.

Citations: See General Citations for this section.



Figure 14: Chemical storage reference chart onboard

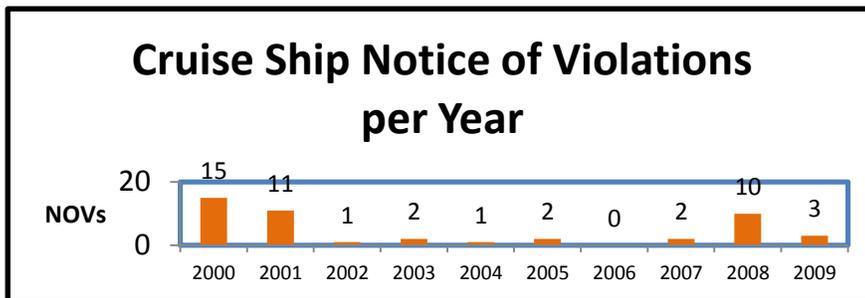
Section 4: Visible Emissions, Air Quality

General background:

All marine vessels must comply with the air emission standard found at 18 ACC 50.070 while they operate in Alaska waters. Alaska is one of the few states that has regulations that include opacity (visible emissions from marine vessels). These regulations apply to all vessels regardless of size or type. The standard requires that visible emissions (opacity) from vessel smoke stacks be no greater than 20% opacity for three minutes while docked or anchored. There are exemptions on the “three minutes rule” while the vessel is maneuvering to/from anchor or port anchorage and for startup prior to departure.



ADEC has been monitoring emissions from marine vessels since at least 1994. The Cruise Ship Program (CPVEC) took over monitoring of cruise ships under 46.03.488, while ADEC Division of Air monitors and enforces on violations for other marine vessels.



ADEC uses opacity as a limit for marine vessel emissions¹ (and emissions from many shoreside emitters). EPA method 9 is used to determine opacity by visual means. CPVEC staff and an opacity contractor take Method 9 readings in all major Alaskan cruise ports, as well as some of the other Alaskan ports. In addition the US Forest Service monitors opacity in Tracy Arm and the National Park Service monitors opacity in Glacier Bay and other National Parks. In Glacier Bay National Park there is also a federal opacity regulation (36 CFR 13.65 (b) (4)) which is similar to the Alaska regulations.

In 2011 ADEC and its opacity contractor took 235 Method 9 readings of large and small cruise ships and ferries. CPVEC also receives public complaints regarding cruise ships and ferries. Eleven complaints were received in 2011. CPVEC also received 33 self-reports of excess emissions (under 18 AAC 50.240) from cruise ships.

Ocean Rangers are not trained to perform opacity readings but have contributed significantly to the cruise programs opacity monitoring by reporting cases of heavy smoke, soot, and equipment

¹ Emissions from combustion source may include NO_x, Sox, PM, VOC etc. emissions in the context of opacity is visible emissions.

failures. They have also documented many operators effectively and successfully minimizing emissions to meet the opacity limits.

Opacity is a surrogate for air pollution. There are many types of air pollution, such as oxides of nitrogen, sulfur, and carbon, particulates, volatile organic components, and carcinogens. While it would be more difficult to measure all of these parameters, visible opacity is commonly used for compliance measurements as an indicator and type of air pollution.

General opacity background information:

Opacity is the reduction of transmitted light caused by particles, mists, or gases. It can be caused by partially burned fuel or ash from the combustion processes. Opacity was originally measured using the Ringelmann scale which used grids to compare to the opacity of the smoke. It only worked well with black smoke, and was replaced with EPA Method 9. The Ringelmann method did introduce the 20% limit, which was based on increasing the efficiency of combustion. The idea was that over 20% would show incomplete combustion.

Method 9 is a visual method that requires training and certification. The method contains requirements that are designed to reduce potential bias. Because of the requirements for angles and distances from the stack it would be difficult to have Ocean Rangers perform opacity readings onboard. More information on opacity readings can be found in the reference part of this section.

Subsection 1: Opacity (Visible Emissions); Air Quality

Job Aid Item: 4.1.a

Text: Stack emissions are minimized and monitored. Operational (combustion) procedures in place. (18 AAC 50.070)

Background: Cruise Ships in Alaska often monitor air emissions using opacity meters (Continuous Opacity Monitoring System (COMS)) and with visual checks by video camera located on the stack or in person. Most ships have procedures on keeping emissions below the regulatory limit.



equipment error, and levels alarms are set at.

What to check for: Check that procedures are in place to monitor opacity emissions and limit visible emissions over the state regulatory limit.

Please note that opacity meters can be useful onboard, but may not match the visible opacity as there are many factors including calibration,



Figure 3: High opacity apparently cause by fuel issues

ADEC marine vessel opacity regulations apply to all stacks from all combustion sources installed on board of the vessel. This includes boilers, incinerators, dryers, diesel engines, gas turbines etc. Often factors or combinations of factors with regard to operational practices, poor fuel treatment, poor fuel quality and not well maintained equipment are possible elements for opacity exceedances.

Short summary of allowances above the opacity limit:

- 1) Over 20% for more than 3 minutes in any hour in any operating mode
- 2) Over 20% for any 6 minutes in an hour during startup while preparing to depart
- 3) For the hour after casting off or weighing anchor either
 - a. 40% limit for that hour or
 - b. Up to 9 minutes over 20%
- 4) For the hour prior to casting off or weighing anchor either
 - a. 40% limit for that hour or
 - b. Up to 9 minutes over 20%

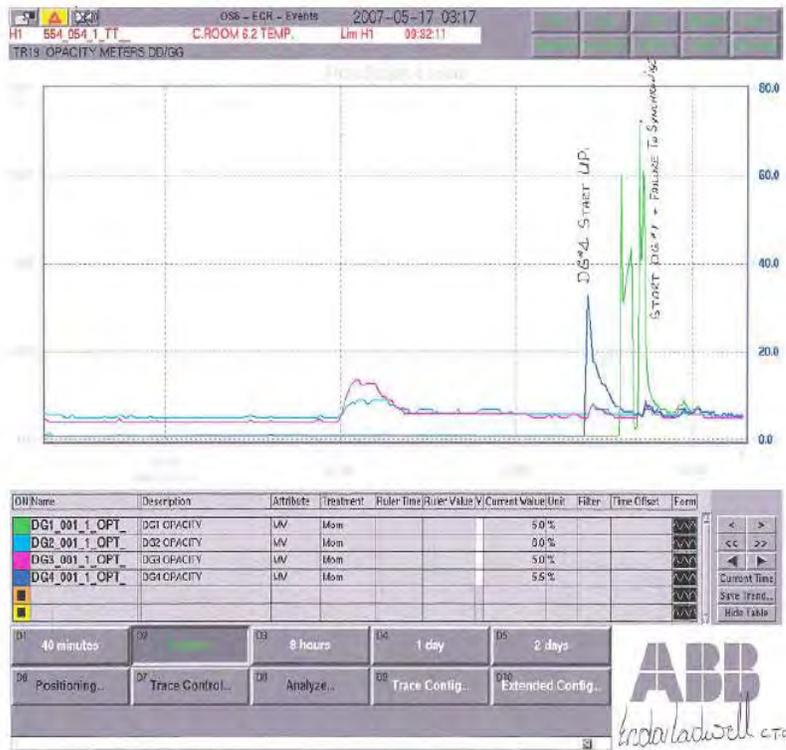


Figure 4 Sample opacity graph

Citations: 18 AAC 50.070. Marine vessel visible emission standards.

Within three miles of the Alaska coastline, visible emissions, excluding condensed water vapor, may not reduce visibility through the exhaust effluent of a marine vessel by more than 20 percent except as follows:

- (1) while at berth or at anchor, visibility may be reduced by up to 100 percent for periods aggregating no more than
 - (A) three minutes in any one hour; and
 - (B) an additional three minutes during initial startup of a vessel; for purposes of this subparagraph, "initial startup" includes the period during which a vessel is testing equipment in preparation to casting off or weighing anchor;
- (2) during the hour immediately after weighing anchor or casting off, visibility may be reduced under one, but not both, of the following options:
 - (A) visibility may be reduced by up to 40 percent for that entire hour; or
 - (B) visibility may be reduced by up to 100 percent for periods aggregating no more than nine minutes during that hour;
- (3) during the hour immediately before the completion of all maneuvers to anchor or make fast to the shore, visibility may be reduced under one, but not both, of the following options:
 - (A) visibility may be reduced by up to 40 percent for that entire hour; or

(B) visibility may be reduced by up to 100 percent for periods aggregating no more than nine minutes during that hour; and

(4) at any time not covered by (1) - (3) of this section, visibility may be reduced by up to 100 percent for periods aggregating no more than three minutes in any one hour. (Eff. 1/18/97, Register 141; am 6/21/98, Register 146)

Authority: AS 46.03.020 AS 46.14.030 Sec. 30, ch. 74, SLA 1993AS 46.14.010

Job Aid Item: 4.1.b

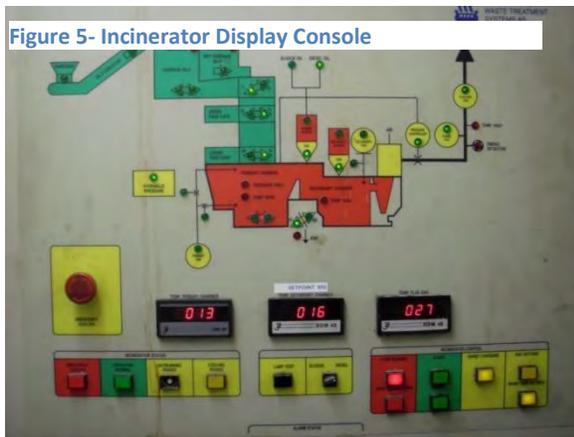
Text: Incinerator operation and procedures (observed if in operation) are IAW 18 AAC 50.050 and 50.070

Background: Cruise ships use incinerators to burn paper and other materials to reduce offloads to shore.

Please note: incinerator use in port is not restricted by Alaskan law or regulations, as long as opacity limits are met. Many ships voluntarily limit incinerator use in port, but this is not a requirement.

What to check for: Incinerators need to be operated below 20% opacity. Although Ocean Rangers are not trained in Method 9, it is possible to observe for thick smoke, soot dropping from plume, that opacity meters are not in alarm, or that items are burned that create toxic smoke. Some of the items incinerated can cause higher opacity if not handled well, these include oily rags, oil filters, rubber materials, etc. Oily sludge or spent fuels have also been seen to increase opacity if not properly monitored.

Some incinerators have emissions controls, these controls can affect the opacity performance, if they are installed check how they are used. Is the incinerator co-fired?



Job Aid Item: 4.1.c

Text: Emissions IAW 18 AAC 50.110. No emissions which would immediately threaten health, property, or animal life.

Background: This is a broader nuisance regulation compared with the marine vessel emissions regulation. It is also able to capture items like burning toxic substances, soot blows that create sheens or hazardous conditions, and thick smoke that creates a hazard to others. This regulation is not limited to stack emissions, but covers open burning of wastes and other potential air pollution sources.



Figure 6: Zig-zagging ship was hazarded to other vessels

What to check: Check for large volumes of black or white smoke from the stacks. Check for soot raining down from exhaust onto the ship or docks or into the water. Check for sheens caused by soot.



Figure 7- Thick black smoke



Figure 8- Floating soot on kelp



Figure 9: Source of soot in figure 7 (city fire department was called to the scene)

Citations: 18 AAC 50.110. Air pollution prohibited.

No person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

Job Aid Item: 4.1.d

Text: Fuel used IAW 40 CFR 1043.60

Background: The North America SECA is a newer IMO Annex VI and EPA requirement that was ratified in 2010. This was adopted by MARPOL in 2010. This is a requirement for all large ships operating from Cook Inlet west to Greenland. The EPA determined ships were a significant emissions source of sulfur oxides, which caused respiratory symptoms in ports and further inland. The lower limits apply to SECA areas which include SE Alaska, Prince William Sound and Cook Inlet. Kodiak, Dutch Harbor, and Nome are cruise ports outside of the SECA.

Sulfur levels in fuel used are related to the particle load of the exhaust and correlate to opacity levels depending on operations and maintenance.

What to check for: Check fuel records to see if they match requirements of 40 CFR 1043.60 except while in Kodiak or points west of Kodiak. Check the fuel used and the sulfur content of the fuel used.

Note that some operators have been granted exemption because of items such as fuel averaging. This should be documented in the seasonal report.

The seasonal report will contain information on the procedures for recording the fuel use and how it is stored and switched including:

- How are the records kept?
- Does the vessel have an exemption from EPA for things such as fuel averaging (gas turbines)?
- If there are “high sulfur” fuels on board, how are they separated (physically) from the “low Sulfur” fuels.

- How is ensured that the low sulfur fuel is used in the areas where it is mandatory o use? (timely switch / fuel flushing)?
- Are there dedicate low sulfur combustion sources and high sulfur fuel switch sources?
- Describe / understand the fuel switch / fuel area regimes and how this is accomplished and monitored recorded.

Citations: 40 CFR 1043.30 General obligations.

(e) The following requirements apply to Party vessels, including U.S.-flagged vessels:

- (1) The requirements specified in Annex VI apply for vessels subject to this part for operation in U.S. navigable waters or the U.S. EEZ. (See §1043.60 for a summary of the standards included in these requirements.)
- (2) Vessels operating in an ECA must also comply with the requirements of Annex VI applicable to operation in an ECA.
- (3) Vessels operating in waters of an ECA associated area must also comply with the requirements in §1043.60.

(f) The following requirements apply to non-Party vessels:

- (1) Non-Party vessels operating in U.S. navigable waters or the U.S. EEZ must comply with the operating and recordkeeping requirements of the 2008 Annex VI (incorporated by reference in §1043.100) related to Regulations 13, 14 and 18 of the 2008 Annex VI. This paragraph (f)(1) does not address requirements of other portions of Annex VI.
- (2) Non-Party vessels operating in an ECA or ECA associated area must also comply with the requirements in §1043.60.

§ 1043.60 Operating requirements for engines and vessels subject to this part.

This section specifies the operating requirements of this part. Note that it does not limit the operating requirements of APPS or Annex VI that are applicable to U.S.-flagged vessels outside of U.S. domestic waters.

(b) Except as specified otherwise in this part, fuel sulfur limits apply to all vessels

Table 2 to §1043.60 Annex VI Fuel Sulfur Limits [wt %]

Calendar years	Sulfur limit in all U.S. navigable waters and EEZ (percent)	Sulfur limit in ECA and ECA associated areas (percent)
2010–2011	4.50	1.00
2012–2015	3.50	1.00
2016–2019	3.50	0.10
2020 and later	0.50	0.10

(c) Operators of non-Party vessels must comply with the requirements of paragraphs (a) and (b) of this section as well as other operating requirements and restrictions specified in 2008 Annex VI (incorporated by reference in §1043.100) related to Regulations 13, 14, and 18.

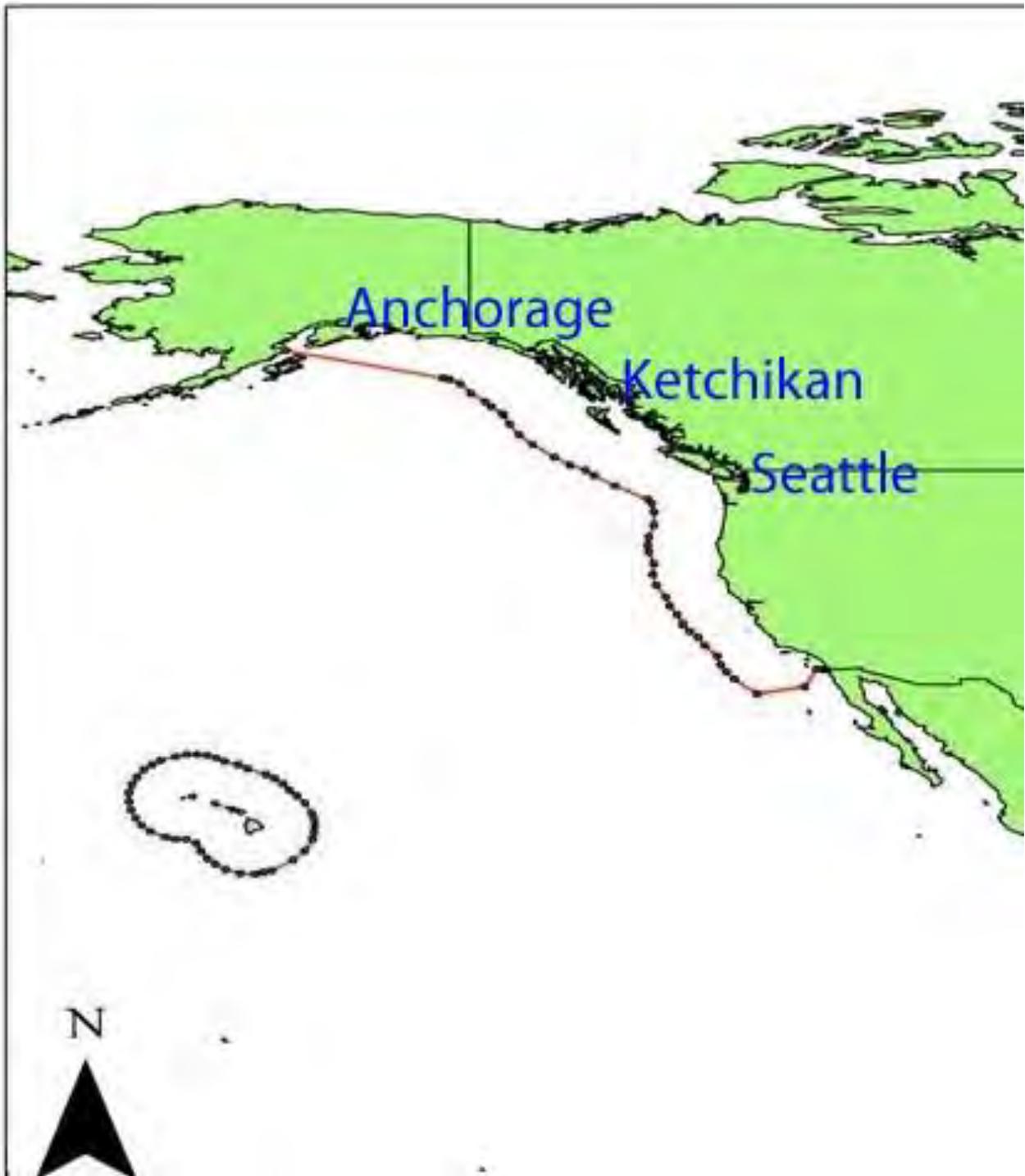
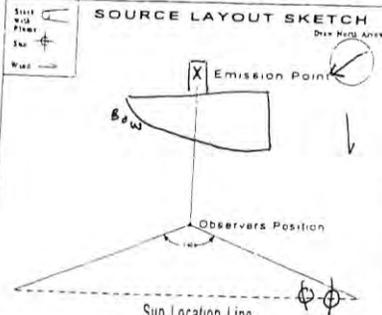


Figure 10- Map of N.A. SECA Boundaries (from EPA)

Opacity References:

Example 1: Visible Emissions Form (Method 9)

Cruise Ship Visible Emission Observation Form

Company Cruise West		Observation Date 9-3-08	Start time 16:29 16:29	End time 16:44		
Cruise Ship Spirit of Columbia		Visibility reduction every 15 Seconds				
Location Juneau		Comments				
Process Equipment -	Operating Mode DOCKED	Min	0	15	30	45
Control Equipment -	Operating Mode DOCKED	1	5	5	5	5
Describe Emission Point STACK		2	5	5	5	5
Height Above Sea Level (feet) 40	Height Relative to Observer (feet) 25	3	5	5	5	5
Distance From Observer (feet) Start 285 End 275	Direction From Observer (degrees MNC) Start 105 End <input checked="" type="checkbox"/>	4	5	5	5	5
Describe Emissions rising smoke		5	5	5	5	5
Start plume-coned End <input checked="" type="checkbox"/>		6	5	5	5	5
Emission Color Start grey End <input checked="" type="checkbox"/>	Steam Plume Start N/A End N/A	7	5	5	5	5
Point at which the opacity was determined (feet above exit) Start 10 End <input checked="" type="checkbox"/>		8	5	5	5	5
Describe Plume Background		9	5	5	5	5
Start mountain End <input checked="" type="checkbox"/>	Sky conditions Start light rain End <input checked="" type="checkbox"/>	10	5	5	5	5
Background Color Start green End <input checked="" type="checkbox"/>	Wind Speed (knots) Start 0-2 End <input checked="" type="checkbox"/>	11	5	5	5	5
Wind Direction Start NW End <input checked="" type="checkbox"/>	Ambient Temperature (°F) Start 50 End <input checked="" type="checkbox"/>	12	5	5	5	5
Relative Humidity (%) Start 93 End <input checked="" type="checkbox"/>		13	5	5	5	5
SOURCE LAYOUT SKETCH		14	5	5	5	5
		15	5	5	5	5
The North Arrow in the drawing above is from a Magnetic Compass Reading, MNC (not corrected to true North)		16	5	5	5	5
A ✓ in an "End" Field means the same conditions existed at the start and end of reading		17				
Company Abbreviations		18				
NCL = Norwegian Cruise Lines	RSS = Radisson Seven Seas	19				
PCL = Princess Cruises	RCI = Royal Caribbean International (RCI)	20				
CCI = Celebrity Cruises Inc	HAL = Holland America Cruise Lines	21				
CF = Carnival Cruise Lines	CRY = Crystal Cruise Lines	22				
WEC = World Explorer Cruises		23				
Juneau Ship Location Abbreviations	ANC = Ancher Marine Park AS = Alaska Steam Dock	24				
CT = Cruiseship Terminal	FKL = S. Franklin Duck A/D = A.J. Det	25				
Observer's Name (Print)	Observer's Signature	26				
Observer's Signature	Date 9-3-08	27				
Certified By HMH	Date 6-24-08	28				
VEO Form Number		29				
		30				

Example 2: Excess Emission self-report form

ADEC Cruise Ship Excess Emission Notification Form

___/___/2013

It is the responsibility of the vessel operator to prove that an emission was avoidable according to the requirements and procedures in 18 AAC 50.240. In addition, at times the vessel operator must prove that they took immediate corrective action to minimize the emission. All excess emission reports must include an EPA Method 9 reading or monitoring equipment reports.

Send this form to someone.

Operator Name:

Vessel Name:

State when the Excess Emission or deviation occurred.

Date: ___/___/___ Time: __:___

State when you discovered the Excess Emissions or Other Deviation:

Date: ___/___/___ Time: __:___

Are you claiming the event as unavoidable under 18 AAC 240(d)-(f). You must include the information required by 18 AAC 240 to support that the incident was unavoidable.

Yes This form is **due** within two days of the incident.

No This form is **due** 30 days passed the end of the month the incident occurred. For example if an excess emission occurred May 5 or May 31, both excess emission reports would be due June 30.

If this is reported more than the required timeframe as described above, please state the reason(s) for the delay in reporting?

Event Information (Use 24-hour clock):

Must attach a Method 9 reading or ship opacity monitor readings

	START Time		END Time		Duration Time		
	HRS	MINS	HRS	MINS	HRS	MINS	
Date: _____	_____	: _____	_____	: _____	_____	: _____	
Date: _____	_____	_____	_____	_____	_____	_____	
	Total:					_____	_____

Cause of Excess Emission (Check all that apply):

- START UP** **UPSET CONDITION**
 SHUT DOWN **SCHEDULED MAINTENAN** **OTHER**

Please attach copies of ship deck logs, opacity monitoring reports, visible emission observation forms, and any other visible emission readings or pertinent information in your possession for the date of the violation with this report. If docking or maneuvering from port, you must include ship logs that state the times for securing all lines including spring lines.

Reference 1: California Air Board Visible Emissions Handbook example pages

What are "Visible Emissions?" AIR POLLUTION !

Visible Emissions (VE) are just that - something visible emitted (coming out) from an air pollution source into the ambient (outdoor) air. Visible emissions are airborne plumes of solid and/or liquid **particles**, also known as **particulate matter (PM)**. Except for water vapor ("steam") plumes, the darker and/or denser a plume, the more PM air pollution it may contain.

Visible emissions are usually emitted from source equipment by means of an exhaust stack or duct, but they can also be **fugitive emissions** generated by materials handling, transfer, or other activities. The plume of smoke you see coming from a smokestack is a VE, as is the plume of dust behind a vehicle on an unpaved road.



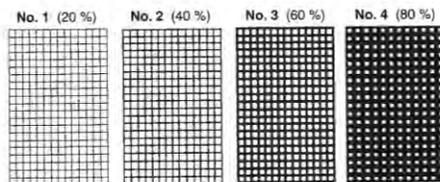
Human Activities Which Produce Visible Emissions:

1. **Combustion, or Burning.** A major PM source, combustion occurs in vehicle engines, in household and industrial furnaces, incinerators, and stoves, and in the open, wherever burning occurs. **Smoke** and **exhaust** are familiar names for combustion air pollution.
2. **Attrition: wearing, or grinding down by friction.** The everyday "wearing out" of tires, shoes, clothes, etc. leaves PM everywhere. Industrial attrition processes which may emit PM into the air include milling, sanding, grinding, drilling, demolishing, spraying, and abrasive blasting.
3. **Condensation: changing from a gas to a solid or liquid.** Air pollution vapors and fumes form two ways: **evaporation** of volatile liquids at normal temperatures, and **forced vaporization** of solids or liquids using heat or pressure. Visible PM forms by the **condensation** of vapors and fumes.

The Ringelmann Chart

In the late 1800's in Paris, France, Professor Maximilian Ringelmann developed the **Ringelmann Chart** to measure the combustion efficiency of coal-fired boilers. The shade of the smoke plume shows how well a boiler is operating - the poorer its combustion efficiency, the more unburned carbon particles in the smoke and the darker the plume.

Professor Ringelmann's chart established four measured shades of gray between white, valued at zero, and black, at five. These specific shades of gray, Ringelmann No. 1 to Ringelmann No. 4, can be accurately reproduced by placing a grid of black lines of a given width and spacing on a white background. Viewed from a distance, the grid lines and background merge into the shades of gray, to be compared to the shade of the smoke plume.



Ringelmann Chart (not to scale)

Regulating Visible Emissions

The Ringelmann Chart became one of the first tools used to measure visible emissions. Introduced into the United States in 1897, it was soon accepted as the standard measure of smoke density and was used by engineers for power plant testing and smokeless combustion studies. In 1910, the Chart was officially adopted as part of the Smoke Ordinance for Boston, Mass.

Many city, state, and federal regulations now set smoke density limits based on the Ringelmann Smoke Chart. Although not originally designed as a regulatory tool to control air pollution, it gives good practical results when used by well-trained observers.

Smoke & Dust - The Most Common Visible Emissions

Smoke, the product of incomplete combustion, contains particulate matter **and** the major air pollution gases carbon monoxide (CO), oxides of nitrogen (NOX), and volatile organic compounds (VOCs).

Dust emissions are usually a result of attrition, but can also be windborne soil minerals, sea salt, pollen, etc.

Particles Are Visibility Reducers - the smaller the PM, the more it reflects light and obscures the view, causing visibility problems ranging from unsightly to dangerous. And the smallest PM, **aerosols**, can remain airborne for weeks.



Inhaled Particles Can Be Hazardous to Your Health...

Smoke and dust aerosols are also **Inhalable Particulate Matter (PM10)**, microscopic solid or liquid particles that are 10 microns in diameter or smaller (the average human hair is 70 microns across). **Most smoke particles are VERY small (less than a micron) droplets of condensed organic vapors (tars and gases) which escaped burning.** Other smoke PM includes **soot** (unburned carbon) and **ash** (unburnable minerals). When inhaled, PM10 particles easily travel deep into the lungs, causing irritation and coughing. **PM10 particles may be trapped in your lungs for years**, contributing to lung changes, chronic lung diseases, and cancer.

Smoke also contains VOCs which have been **changed by partial burning into toxic, irritating, and/or cancer-causing substances like benzene, formaldehyde, and benzo-a-pyrene**, a polycyclic aromatic hydrocarbon (PAH). VOCs adhere to soot particles which may be inhaled into the lungs.



What is EPA Reference Method 9?

It is very important that the training and certification of VE observers is standardized, as evaluating the density of visible emissions is an activity which requires training. To ensure that reliable and repeatable VE observations can be conducted anywhere in the US, in 1974 the federal Environmental Protection Agency (EPA) adopted Reference Method 9.

The protocol for Method 9, "Visual Determination of the Opacity of Emissions From Stationary Sources," is in the Code of Federal Regulations: 40CFR Ch. I, Part 60, Appendix A, Method 9. It gives the requirements for the training and testing of VE observers, the steps to follow and the data to record while documenting a VE observation. Method 9 also gives the calibration and design specifications for the equipment used to train and certify observers.

Method 9 requires recording readings in percent opacity for both black and white plumes. VE readings are taken every 15 seconds. The VE source is in violation if the **average of any group of 24 consecutive readings** (6 minutes) taken in a 1-hour period exceeds the standard.



The VE Observation Form

The VE Observation Form (see facing page) contains the information required by Method 9 when documenting a VE in the field. It also includes additional information which may be necessary. The information on the form is organized into ten sections, numbered on the form opposite. The sections include:

1. **Company Identification** - the complete name and address of the facility where the VE observation is taken, the phone number, and the district source ID number.
2. **Process and Control Device** - list the types of equipment used in the process and the air pollution control equipment, and their operating status during observation.
3. **Emission Point Identification** - record the distance to and height of plume origin, relationship to observer's position; describe enough to distinguish from other sources.
4. **Emissions Description** - shape, color, presence of water vapor, point where read.
5. **Background, Weather Conditions** - description, color background, percent of cloud cover, temperature, humidity, wind speed and direction.
6. **Observer Position, Source Layout** - see description on page 9.
7. **Additional Information** - facts about the source that are not addressed elsewhere.
8. **Data Set** - the date, start time, end time, and the readings in 15 second intervals for the observation period, with any necessary comments.
9. **Observer Identification** - reader's name, signature, date of this VE reading, reader's employer, certification agency and date most recently certified.
10. **Forms Interrelation** - record the number of the next form used when the readings from an observation continue on another form.



Remember, this is the official record of your VE observation, so make it complete!

Reference 2: EPA SECA Information

Regulatory Announcement

Designation of North American Emission Control Area to Reduce Emissions from Ships

The International Maritime Organization has officially designated waters off North American coasts as an area in which stringent international emission standards will apply for ships. These standards will dramatically reduce air pollution from ships and deliver substantial air quality and public health benefits that extend hundreds of miles inland. This fact sheet contains an overview of this new geographic emissions control program.

Overview

On March 26, 2010, the International Maritime Organization (IMO) amended the International Convention for the Prevention of Pollution from Ships (MARPOL), designating specific portions of U.S., Canadian and French waters as an Emission Control Area (ECA). The proposal for ECA designation was introduced by the U.S. and Canada, reflecting common interests, shared geography and interrelated economies. In July 2009, France joined as a co-proposer on behalf of its island territories of Saint-Pierre and Miquelon, which form an archipelago off the coast of Newfoundland. Allowing for the lead time associated with the IMO process, the North American ECA will become enforceable in August 2012.

Ships are significant contributors to the U.S. and Canadian mobile-source emission inventories, though most are flagged or registered elsewhere. Ships complying with ECA standards will reduce their emissions of nitrogen oxides (NOx), sulfur oxides (SOx), and fine particulate matter (PM2.5). In 2020, emissions from these ships operating in the ECA are expected to be reduced annually by 320,000 tons for NOx, 90,000 tons for PM2.5, and 920,000 tons for SOx, which is 23 percent, 74 percent, and 86 percent, respectively, below predicted levels in 2020 absent the ECA. The overall cost of the North American ECA is estimated at \$3.2 billion in 2020, while

Office of Transportation and Air Quality
EPA-420-F-10-015
March 2010

United States Environmental Protection Agency

Regulatory Announcement

Hawaiian Islands, and Western Alaska. If further information supports the need for an ECA designation in any of these areas, a separate proposal would be submitted to the IMO, following the criteria contained in the international treaty known as MARPOL Annex VI.

The Need to Reduce Emissions from Ships

The diesel engines that power ships are significant mobile source emitters. The largest ship propulsion engines being produced today must meet relatively modest emission requirements.¹ In addition, both the main propulsion and the smaller auxiliary engines installed on these ships operate on fuel that can have extremely high sulfur content. As a result, these ships generate significant emissions of fine particulate matter (PM2.5), NOx, and SOx that contribute to nonattainment of the National Ambient Air Quality Standards for PM2.5 and ozone. Emissions from these engines also cause harm to public health, contributing to visibility impairment and other detrimental environmental impacts across the United States.

Many of our nation's most serious ozone and PM2.5 nonattainment areas are affected by emissions from ships. Currently more than 30 major U.S. ports along our Atlantic, Gulf of Mexico, and Pacific coasts are located in nonattainment areas for ozone and/or PM2.5.²

EPA has been advancing a coordinated strategy for many years to control air pollution from large ships. In addition to our Clean Air Act program,³ designation of U.S. waters as an ECA is a key component of EPA's strategy. Also, the ECA and other requirements of Annex VI are implemented in the United States through regulations adopted under the Act to Prevent Pollution from Ships (APPS). Finally, EPA's Clean Ports USA Program, as part of our broader National Clean Diesel Campaign, fosters innovation to achieve additional emission reductions from existing diesel engines and related equipment at ports.

Air pollution from ships is expected to grow over the next two decades. Without EPA's coordinated strategy, by 2030, NOx emissions from ships would be projected to more than double, growing to 2.1 million tons a year while annual PM2.5 emissions would be expected to almost triple to 170,000 tons. The North American ECA ensures that emissions from ships that operate in our waters and ports will be reduced significantly, delivering substantial benefits to large segments of our population, as well as to marine and terrestrial ecosystems.

Emission Control Area Standards

In October 2009, the member states of IMO agreed to amend MARPOL Annex VI, adopting new tiers of NOx and fuel sulfur controls. The most stringent of these new emission standards

¹ The most recent Tier I engine NOx standards continue through 2010, but originally lower Tier II standards apply from 2011 through 2015.

² U.S. Army Corps of Engineers, National Port Ranking for 2008.

³ EPA's CAA program for large ships is at 40 CFR parts 94, 104, 105, and 106. See www.epa.gov/airquality/shipemissions.html for more information.

its benefits are expected to include preventing as many as 14,000 premature deaths and relieving respiratory symptoms for nearly five million people each year in the U.S. and Canada. The monetized health-related benefits are estimated to be as much as \$110 billion in the U.S. in 2020.

The area of the North American ECA includes waters adjacent to the Pacific coast, the Atlantic/Gulf coast and the eastern Hawaiian Islands.⁴ It extends up to 200 nautical miles from coasts of the United States, Canada and the French territories, except that it does not extend into marine areas subject to the sovereignty or jurisdiction of other States.



Figure 1: Area of the North American ECA

EPA is continuing to investigate whether other areas of the United States and its territories may benefit from ECA designation. We are currently performing analyses to examine whether ECA designation would be appropriate for the U.S. territories of Puerto Rico and the U.S. Virgin Islands. Some other areas for future consideration include the Pacific U.S. territories, smaller

⁴ As used here, the term Hawaiian Islands includes the islands of Hawaii, Maui, Oahu, Molokai, Nihoa, Kauai, Lanai, and Niihau. These islands are the main populated islands of the Hawaiian Islands chain, with the exception of Kahoolawe, which is an uninhabited subsistence

apply to ships operating in designated ECAs, including the newly-designated North American ECA. The table below summarizes the Annex VI standards that apply globally and within ECAs.

Table 1: International Ship Engine and Fuel Standards (MARPOL Annex VI)

Emission Control Area	Year	Fuel Sulfur	NO _x
	Today to July 2010	15,000 ppm	
Global	2010	10,000 ppm	
	2015	1,000 ppm	
	2016		Tier III (Aftertreatment-forcing)
	2011		Tier I (Engine-based controls)
	Today to January 2011		Tier II (Engine-based controls)
	2011		
	Today to January 2012	45,000 ppm	
	2012	35,000 ppm	
2020*	5,000 ppm		

Note:

* Subject to a fuel availability study in 2018, may be extended to 2025.

The 2015 fuel sulfur standard of 0.1 percent fuel sulfur (1,000 ppm) is expected to reduce PM and SOx emissions by more than 85 percent from today's levels. This most stringent ECA fuel standard is expected to be met through fuel switching. In most cases, ships already have the capability to store two or more fuels. However, to meet the 1,000 ppm fuel sulfur requirement, some vessels may need to be modified for additional distillate fuel storage capacity. As an alternative to using lower sulfur fuel, ship operators may choose to equip their vessels with exhaust gas cleaning devices ("scrubbers"). In this case, the scrubber extracts sulfur from the exhaust.

The current Tier I NOx standards range from 9.8 to 17 g/kWh, depending on engine speed. The Tier II standards represent a 20 percent NOx reduction below Tier I, and the Tier III standards represent an 80 percent NOx reduction below Tier I. We expect ships to meet the Tier III standard through the use of high-efficiency aftertreatment technology.

Costs

The costs of implementing and complying with the ECA are expected to be small in comparison to the health and welfare benefits and on par with the costs of achieving similar emissions reductions through additional controls on land-based sources. We estimate the total costs of improving the emissions of ships operating in the ECA from current performance to ECA standards will be approximately \$3.2 billion in 2020. The cost to reduce a ton of NOx, SOx and PM is estimated at \$2,400, \$1,100 and \$10,000, respectively, which makes this program a very cost-effective method to improve air quality in the U.S. and Canada.

The economic impacts of complying with the program on ships engaged in international trade are expected to be modest. For example, operating costs for a ship in a route that includes about 1,700 nautical miles of operation in the ECA may increase by about 3 percent. This operating cost increase would raise the cost of transport of a 20 foot container by about \$18.

Benefits

The U.S. coastline and much of the interior of the country will experience significant improvements in air quality due to reduced PM and ozone from ships complying with ECA standards. Coastal areas will experience the largest improvements; however, significant improvements will extend hundreds of miles inland to reach nonattainment areas in states such as Nevada, Tennessee and Pennsylvania. National treasures such as the Grand Canyon National Park and the Great Smoky Mountains will also see air quality improvements.

The North American ECA is expected to yield significant health and welfare benefits. ECA standards will begin to reduce ship-related adverse health impacts for the U.S. and Canada in 2012. EPA estimates that the annual benefits in 2020 will include preventing between 5,500 and 14,000 premature deaths, 3,800 emergency room visits, and 4,900,000 cases of acute respiratory symptoms in 2020. These benefits will increase beyond 2020, as normal fleet turnover occurs and more vessels complying with the 2016 NOx standards set sail.

The monetized health benefits in 2020 in the U.S. are projected to range from \$47 to \$110 billion in 2006 U.S. dollars, assuming a 3 percent discount rate.

For More Information

You can access the ECA standards, the proposal to the IMO and related documents on EPA's Office of Transportation and Air Quality web site at: www.epa.gov/otaq/oceanvessels.htm

For additional information, please contact the Assessment and Standards Division at

assinfo@epa.gov, 734-214-4636, or:
Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency
2000 Traverwood Dr.
Ann Arbor, MI 48105



Office of Transportation and Air Quality
EPA-420-F-12-040
June 2012

EPA Guidance on Use of Distillate Fuel for North American ECA Compliance

Question: Does EPA require the use of 15ppm ULSD or other low viscosity marine fuel oils for compliance with the 1.00% fuel sulfur ECA standard?

Answer: While distillate fuels meet the definition of a fuel oil, and therefore using distillate fuel can clearly be an option to meet the 1.00% fuel sulfur ECA standard, EPA believes it is clear that the MEPC did not intend vessels to use straight distillate fuels (fuels with a viscosity below 11 Centistokes) to meet the 1.00% sulfur ECA standard. The technical analyses relied upon by MEPC consistently assumed that a fuel sulfur standard of 0.5% would define the split between residual fuels and distillate fuels and the MEPC consistently assumed that above 0.5% would be a residual fuel or residual fuel blend, while below 0.5% would be primarily made up of distillate fuels. In addition, distillate fuels below 1.00% sulfur are widely available in ports throughout the world and have been and are used regularly by vessels for a variety of purposes. Given this wide availability and use, there would have been no need for the Regulation 18 fuel availability provisions in Annex VI if the MEPC intended vessels to use a widely available fuel to meet the 1.00% sulfur ECA standard. Finally, requiring vessels to use widely available distillate fuel would simply advance the distillate standard set to begin in 2015.

Section 5: Safety

Note: This safety background only includes items listed in the 2012 Job Aid. For personal and on-the job safety, please refer to the information provided by your employer and by the vessel. If you have any questions regarding personal safety please contact your employer immediately.

Remember to check you personal safety gear that you were provided. This includes head, eye, and ear protection, gloves, and flashlight.



General background:

Safety is the most important item an Ocean Ranger can check. For all other checks safety should be considered, as well as during activities such as boarding a ship. Always be vigilant for personal safety, and watch for safety concerns for passengers and crew. All safety concerns observed should be immediately reported to the vessel's crew and your primary onboard contacts.

Check safety items daily or as they apply. A complete check of the vessel will not be possible for all safety items, but while checking other Job Aid sections checks for safety can be performed.

Many of the other section items that you will be checking are because of safety or sanitation. For example with wastewater some of the standards are to protect recreational users or shellfish consumers in Alaska.

Subsection 1: Safety

Job Aid Item: 5.1.a

Text: Observe repairs, cleaning and other operations that may affect safety of passengers / crew and vessel.

Background: There are many hazards on a ship, and these can affect the crew, passengers and the environment. Safety items on board can more or less divided in three areas:

- Safety items related affecting directly to the passengers in areas designated for passengers in normal operations. Examples include the hotel areas, cabins, stairwells the areas where the passengers are allowed to enter.
- Safety items related affecting directly to the crew in areas designated for crew only in normal operations. Examples include galleys, winch deck, engine room, storage areas etc.
- Safety items related affecting crew / passengers in areas for combined designation in normal operations. Examples are gangways, stairwells etc.

Safety can be related to sanitation items; however, safety items are in most cases stand alone items. In previous seasons we found that most safety items were “common sense” items and could be easily fixed. A

few examples included fried electric cords on grill units, deck trip hazard (anchor bolt protrusion) of temporarily removed deck light post. All these items were safety items and should be reported.

What to check for: During daily rounds watch for unsafe conditions for either passengers or crews. Although the list is not exhaustive, below are listed a few items:

- Passenger related directly (hotel): Burnt or un-insulated electric extension cords; electric cords on deck (trip hazard); other trip hazards on deck (anchor bolts light post); safety signs missing swimming pools; overflow of water on decks (slippery); protruding electric wiring in elevators etc.; gangway securing, etc.
- Crew related
 - Hotel: trip hazards; stack storage of garbage or other materials; sanitation cleaning with chemicals using no personal protection gear; storage of reactive chemicals together; ladders step stools used while not secured; etc.
 - Deck: Paint operations with no safety (fall protection); ropes storage on deck; winch handle position / operational instructions missing or not clear; open electric sockets or connectors; winch/capstan safety emergency stop not labeled or identified; lifeboat maintenance operations ladder (not secure) / greasing cables etc.
 - Engine Room / Deck / Operations: Working with chemicals with no personal protection gear or ventilation; deck floor plating removed with no warnings or signs; open manholes with no signs; water tight doors open under all vessel conditions; welding cutting or grinding with no protection for avoidance of fire; non tagged out switch gear / controls during maintenance repair operations; leaking water on electric control boxes; etc.
- Crew & Passengers: In fact all these above listed items could sooner or later affect the crew, however here a few examples of “combined” items:
 - Hotel / Deck: Overhead maintenance / repair operations with no tool and or parts fall protection or precautions; no working areas fenced off or identified; air hoses and electric cables trip hazards; gangway not securely attached to the vessel; ramp plates flush with deck and not moving / flipping when loaded; propped open fire doors when the job is completed; protruding electric wiring; general deck trip hazards; etc.

Citations: Multiple citations under federal law.

Job Aid Item: 5.1.b

Text: Marine casualty (such as loss of propulsion, steering, or associated control system that reduced maneuverability of vessel, grounding, significant harm to the environment, loss of life of serious injury, or fire) reported IAW (46 CFR 4.05 (a3)).

Background: Although these items are relatively rare, there have been cases of power loss and small fires observed by Ocean Rangers. These events as required in 46 CFR4.05 must be reported to the US Coast Guard.

What to check for: Ask if the casualty was reported. Note any marine casualty (as defined in 46 CFR 4.05) in the daily report so it can be checked by the USCG to verify it was reported. Details such as time, location, number of events, and duration need to be recorded. Also report on the root cause (if known).

Citation: 46 CFR 4.05-1: Notice of marine casualty.

- (a) Immediately after the addressing of resultant safety concerns, the owner, agent, master, operator, or person in charge, shall notify the nearest Marine Safety Office, Marine Inspection Office or Coast Guard Group Office whenever a vessel is involved in a marine casualty consisting in--
 - (1) An unintended grounding, or an unintended strike of (allison with) a bridge;

- (2) An intended grounding, or an intended strike of a bridge, that creates a hazard to navigation, the environment, or the safety of a vessel, or that meets any criterion of paragraphs (a) (3) through (8);
 - (3) A loss of main propulsion, primary steering, or any associated component or control system that reduces the maneuverability of the vessel;
 - (4) An occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, including but not limited to fire, flooding, or failure of or damage to fixed fire-extinguishing systems, lifesaving equipment, auxiliary power-generating equipment, or bilge-pumping systems;
 - (5) A loss of life;
 - (6) An injury that requires professional medical treatment (treatment beyond first aid) and, if the person is engaged or employed on board a vessel in commercial service, that renders the individual unfit to perform his or her routine duties; or
 - (7) An occurrence causing property-damage in excess of \$25,000, this damage including the cost of labor and material to restore the property to its condition before the occurrence, but not including the cost of salvage, cleaning, gas-freeing, drydocking, or demurrage.
 - (8) An occurrence involving significant harm to the environment as defined in Sec. 4.03-65.
- (b) Notice given as required by 33 CFR 160.215 satisfies the requirement of this section if the marine casualty involves a hazardous condition as defined by 33 CFR 160.203.
- (c) Except as otherwise required under this subpart, if the marine casualty exclusively involves an occurrence or occurrences described by paragraph (a)(8) of this section, a report made pursuant to 33 CFR 153.203, 40 CFR 117.21, or 40 CFR 302.6 satisfies the immediate notification requirement of this section.

Definition of significant harm from 46 CFR 4.03-65

Significant harm to the environment means—

- (a) In the navigable waters of the United States, a discharge of oil as set forth in 40 CFR 110.3 or a discharge of hazardous substances in quantities equal to or exceeding, in any 24-hour period, the reportable quantity determined in 40 CFR part 117;
- (b) In other waters subject to the jurisdiction of the United States, including the EEZ—
 - (1) A discharge of oil in excess of the quantities or instantaneous rate permitted in 33 CFR 151.10 or 151.13 during operation of the ship; or
 - (2) A discharge of noxious liquid substances in bulk in violation of §§153.1126 or 153.1128 of this chapter during the operation of the ship; and
- (c) In waters subject to the jurisdiction of the United States, including the EEZ, a probable discharge of oil, hazardous substances, marine pollutants, or noxious liquid substances. The factors you must consider to determine whether a discharge is probable include, but are not limited to— (1) Ship location and proximity to land or other navigational hazards; (2) Weather; (3) Tide current; (4) Sea state; (5) Traffic density; (6) The nature of damage to the vessel; and (7) Failure or breakdown aboard the vessel, its machinery, or equipment.

Job Aid Item: 5.1.c

Text: Safety protection procedures of cleaning chemicals are conducted IAW Material Safety Data Sheet (MSDS).

Background: Material safety data sheets or products safety datasheets should be supplied with all potentially hazardous or toxic chemicals. These sheets are intended to inform the end user of hazards, physical data, and how to safely handle and use the product. They should also identify the use and need of personal protection gear.

What to check for: Check that MSDS (if available) recommendations are being followed with regard to safety, storage, and disposal requirements to protect passengers and crew. There can be flag state differences in the name and style of safety information. The Safety Management System (SMS) should include information on what is required and how to find the safety information.

MSDS or similar sheets can be a useful way to determine if a substance is toxic and/or hazardous when checking items in Section 3 and must be included (if available) in waste offload plans if hazardous waste is offloaded in Alaska.

Citation: 18 AAC 69.040. Hazardous waste and hazardous substance offloading plan. (Excerpt)

(a) As part of the plan required under AS 46.03.475(e)(2), that describes a vessel's policies and procedures for offloading of hazardous waste or a hazardous substance from a vessel while that vessel is operating in the marine waters of the state, and to the extent that the offloading is not covered by a report or notice submitted under AS 46.03.475(d), the owner or operator shall include, for each vessel that the owner or operator intends to operate, or cause or allow to operate, and for each hazardous waste or hazardous substance anticipated to be offloaded,

(3) material safety information provided by the manufacturer, if applicable;

33 CFR 96.230 What objectives must a safety management system meet?

The safety management system must:(a) Provide for safe practices in vessel operation and a safe work environment onboard the type of vessel the system is developed for;(b) Establish and implement safeguards against all identified risks;(c) Establish and implement actions to continuously improve safety management skills of personnel ashore and aboard vessels, including preparation for emergencies related to both safety and environmental protection; and(d) Ensure compliance with mandatory rules and regulations, taking into account relevant national and international regulations, standards, codes and maritime industry guidelines, when developing procedures and policies for the safety management system.

33 CFR 96.310 Who does this subpart apply to?

This subpart applies:(a) If you are a responsible person who owns a vessel(s) registered in the U.S. and engaged on a foreign voyage(s), or holds certificates or endorsement of such voyages;(b) If you are a responsible person who owns a vessel(s) registered in the U.S. and volunteer to meet the standards of this part and Chapter IX of SOLAS;(c) To all foreign vessels engaged on a foreign voyage, bound for ports or places under the jurisdiction of the U.S., and subject to Chapter IX of SOLAS; or(d) If you are a recognized organization authorized by the U.S. to complete safety management audits and certification required by this part.

33 CFR 96.370 What are the requirements for vessels of countries not party to Chapter IX of SOLAS?

(a) Each foreign vessel which carries more than 12 passengers, or is a tanker, bulk freight vessel, freight vessel, or self-propelled mobile offshore drilling unit of 500 gross tons or more, operated in U.S. waters, under the authority of a country not a party to Chapter IX of SOLAS must—(1) Have on board valid documentation showing that the vessel's company has a safety management system which was audited and assessed, consistent with the International Safety Management Code of IMO Resolution A.741(18);(2) Have on board valid documentation from a vessel's Flag Administration showing that the vessel's safety management system was audited and assessed to be consistent with the International Safety Management Code of IMO Resolution A.741(18); or(3) Show that evidence of compliance was issued by either a government that is party to SOLAS or an organization recognized to act on behalf of the vessel's Flag Administration.(b) Evidence of compliance must contain all of the information in, and have substantially the same format as a—(1) Document of Compliance certificate; and(2) Safety Management Certificate.(c) Failure to comply with this section will subject the vessel to the compliance and enforcement procedures of § 96.380 of this part.

Section 6: Health, Sanitation

General background:

Sanitation is a concern on cruise ships because of the high density of people concentrated in a small area. A problem with food preparation, drinking water, or a swimming pool could impact hundreds of passengers or crew. Operators take this issue very seriously, and have a voluntary agreement with CDC to check for potential problems. Results of the US Center for Diseases Control and Prevention (CDC) inspection scores and identified deficiencies are posted online to give travelers an idea of the sanitation conditions present at the time of the inspection.

From 2008 to 2010 Ocean Rangers checked on many CDC sanitation items. Because the CDC Vessel Sanitation Guidebook is a voluntary agreement, these standards are not translated into direct regulatory requirements. Ocean rangers are now only checking on those items with state or federal authority. Please note there are differences between the federal regulatory requirements for some remaining items and the state of federal regulations. An example of this is the pH and chlorine levels in pools.



Figure 1- Potable water sampling



Figure 2- galley food prep

Subsection 1: Potable Water



Figure 4 Example potable water source



Figure 3- Cap on ground

Job Aid Item: 6.1.a

Text: Production / handling of potable water is IAW 21 CFR 1250.80 and 18 AAC 80.

Background: Potable water is one of the most basic human needs, and properly treated and clean water is necessary to avoid disease. Improperly handled water could contaminate the water supply aboard the vessel and potentially allow disease to enter a community water supply system.

What to check for: Check that potable water tanks are dedicated for potable water and tanks and pipes are clearly marked. Check for potential sources of contamination of these tanks such as sanitary drains through the tanks (unless a pipe within a pipe). Check that water is disinfected in some way. Check that ice used in drinks or food preparation is only from potable water.

Citations: 21 CFR 1240.80 General requirements for water for drinking and culinary purposes.

Only potable water shall be provided for drinking and culinary purposes by any operator of a conveyance engaged in interstate traffic, except as provided in § 1250.84(b) of this chapter. Such water shall either have been obtained from watering points approved by the Commissioner of Food and Drugs, or, if treated aboard a conveyance, shall have been subjected to treatment approved by the Commissioner of Food and Drugs.

21 CFR 1250.80 Applicability.

The sanitation facilities and the sanitary conditions on vessels engaged in interstate traffic shall comply with the requirements prescribed in this subpart, provided that no major structural change will be required on existing vessels.

Sec. 1250.81 Inspection.

The Commissioner of Food and Drugs may inspect such vessels to determine compliance with the requirements of this subpart.

Sec. 1250.82 Potable water systems.

The following conditions must be met by vessel water systems used for the storage and distribution of water which has met the requirements of Sec. 1240.80 of this chapter.

(a) The potable water system, including filling hose and lines, pumps, tanks, and distributing pipes, shall be separate and distinct from other water systems and shall be used for no other purposes.

(b) All potable water tanks shall be independent of any tanks holding nonpotable water or other liquid. All potable water tanks shall be independent of the shell of the ship unless (1) the bottom of the tank is at least 2 feet above the maximum load water line, (2) the seams in the shell are continuously welded, and (3) there are no rivets in that part of the shell which forms a side of a tank. A deck may be used as the top of a tank provided there are no access or inspection openings or rivets therein, and the seams are continuously welded. No toilet or urinal shall be installed immediately above that part of the deck which forms the top of a tank. All potable water tanks shall be located at a sufficient height above the bilge to allow for draining and to prevent submergence in bilge water.

(c) Each potable water tank shall be provided with a means of drainage and, if it is equipped with a manhole, overflow, vent, or a device for measuring depth of water, provision shall be made to prevent entrance into the tank of any contaminating substance. No deck or sanitary drain or pipe carrying any nonpotable water or liquid shall be permitted to pass through the tank.

(d) Tanks and piping shall bear clear marks of identification.

(e) There shall be no backflow or cross connection between potable water systems and any other systems. Pipes and fittings conveying potable water to any fixture, apparatus, or equipment shall be installed in such way that backflow will be prevented. Waste pipes from any part of the potable water system, including treatment devices, discharging to a drain, shall be suitably protected against backflow.

(f) Water systems shall be cleaned, disinfected, and flushed whenever the Commissioner of Food and Drugs shall find such treatment necessary to prevent the introduction, transmission, or spread of communicable diseases.

Sec. 1250.83 Storage of water prior to treatment.

The following requirements with respect to the storage of water on vessels prior to treatment must be met in order to obtain approval of treatment facilities under Sec. 1240.90 of this chapter.

(a) The tank, whether independent or formed by the skin of the ship, deck, tank top, or partitions common with other tanks, shall be free of apparent leakage.

(b) No sanitary drain shall pass through the tank.

(c) The tank shall be adequately protected against both the backflow and discharge into it of bilge or highly contaminated water.

Sec. 1250.84 Water in galleys and medical care spaces.

(a) Potable water, hot and cold, shall be available in the galley and pantry except that, when potable water storage is inadequate, nonpotable water may be piped to the galley for deck washing and in connection with garbage disposal. Any tap discharging nonpotable water which is installed for deck washing purposes shall not be more than 18 inches above the deck and shall be distinctly marked "For deck washing only".

(b) In the case of existing vessels on which heat treated wash water has been used for the washing of utensils prior to the effective date of the regulations in this part, such water may continue to be so used provided controls are employed to insure the heating of all water to at least 170 deg.F before discharge from the heater.

(c) Potable water, hot and cold, shall be available in medical care spaces for hand-washing and for medical care purposes excluding hydrotherapy.

Sec. 1250.85 Drinking fountains and coolers; ice; constant temperature bottles.

(a) Drinking fountains and coolers shall be constructed of impervious, nonoxidizing material, and shall be so designed and constructed as to be easily cleaned. The jet of a drinking fountain shall be slanting and the orifice of the jet shall be protected by a guard in such a manner as to prevent contamination thereof by droppings from the mouth. The orifice of such a jet shall be located a sufficient distance above the rim of the basin to prevent backflow.

(b) Ice shall not be permitted to come in contact with water in coolers or constant temperature bottles.

(c) Constant temperature bottles and other containers used for storing or dispensing potable water shall be kept clean at all times and shall be subjected to effective bactericidal treatment after each occupancy of the space served and at intervals not exceeding one week.

Sec. 1250.86 Water for making ice.

Only potable water shall be piped into a freezer for making ice for drinking and culinary purposes.

Job Aid Item: 6.1.b

Text: Potable Water hook ups, in accordance with supplier (municipality or port)/ vessel procedures. 21 CFR 1240.86; 21 CFR 1250.82

Background: Any connection to a municipal water system is a potential source of contamination. Suppliers and vessels have procedures to minimize this risk.

What to check for: Check that connection procedures are followed.

Citations: 21 CFR 1240.86 Protection of pier water system.

No vessel engaged in interstate traffic shall make a connection between its nonpotable water system and any pier potable water system unless provisions are made to prevent backflow from the vessel to the pier.

See item 6.1.a for other applicable citations.

Job Aid Item: 6.1.c

Text: Potable hose is dedicated for potable water and connections are sanitized / capped before use (18 AAC 80.015)

Background: Contamination of potable water could occur from hoses or caps used on those hoses. If connected to a municipal system, this could contaminate that system as well. CDC recommends connections sanitized with 100 mg/L chlorine and flushing hoses.

What to check for: Check that potable water hoses are dedicated- these could be labeled, properly stored away from other hoses, etc. Check that connections are sanitized and capped. Check that hoses are flushed prior to connection and drained after use. Hoses should be stored so that dirt and liquids cannot collect inside.

Citation: 18 AAC 80.015. Well protection, source water protection, and well decommissioning.

(a) A person may not

(1) cause pollution or contamination to enter a public water system; or

(2) create or maintain a condition that has a

significant potential to cause or allow the pollution or contamination of a public water system.



Figure 5- Hose elevated above ground.



Job Aid Item: 6.1.d

Text: Potable hose properly stored and used 'free of the ground'? (18 AAC 80.015)

Background: Hoses on the ground could pick up contamination, particularly if there are leaks on the hose.

What to check for: Check that hoses are elevated to minimize contact with the ground.

Citation: See 6.1.c.

Job Aid Item: 6.1.e

Text: Potable water system free of cross connections or has backflow prevention IAW 18 AAC 80.025.

Background: When a ship connects to a municipal water system there is a potential for contamination to enter if there are cross-connections on the ship and there is no backflow protection. This is a health concern for any source connected to a municipal system. A backflow preventer is commonly attached to the connection on the docks utility or metering system. Some vessels have their own backflow preventer as well. Some systems have flow direction indication, flow indicators may identify possible back flow. Back flow may occur when the pressure of the vessels potable system (tanks) is greater than the supply (shore) system pressure.



What to check for: Check that backflow protection is used either at the source of the potable water or onboard before the distribution system. If no backflow connector, search for potential sources of cross-contamination.

Citations:

18 AAC 80.025. Cross-connections prohibited and backflow protection

(a) A person may not construct, install, or use of a cross-connection in a public water system, or allow a water system that contains a cross-connection to connect to a public water system.

(b) If the department determines that a facility has the potential to contaminate a public water system through backflow, the owner of the public water system shall install, maintain, and test on the water service line to and at other locations in that facility, a backflow prevention device that conforms to ANSI/AWWA Standards C510-97, *Double Check Valve Backflow Prevention Assembly*, or C511-97, *Reduced-Pressure Principle Backflow Prevention Assembly*, adopted by reference in 18 AAC 80.010(b). The owner of the public water system may delegate the installation, maintenance, and testing of the backflow prevention device to the operator of the facility that poses the risk. This delegation does not relieve the owner of the public water system of the responsibility to install, maintain, and test the backflow prevention device.

21 CFR 1240.86 Protection of pier water system.

No vessel engaged in interstate traffic shall make a connection between its nonpotable water system and any pier potable water system unless provisions are made to prevent backflow from the vessel to the pier.

Subsection 2: Swimming Pools Sanitation; Spa Sanitation; Safety

Job Aid Item: 6.2.a

Text: Water is filtered in re-circulated swimming pool IAW 21 CFR 1250.89

Background: Pools need to be filtered to regularly clean the water to reduce sanitation issues. Recirculation also assists in helping mix water so that halogens can lower bacteria levels.

What to check for: Check that swimming pools are filtered and recirculated, unless they are of the saltwater flow-through type. Recirculation needs to occur at least every six hours. Check for evidence of inadequate filtration, such as sand on the bottom of the pool from failed filtration units.

Citation: 21 CFR 1250.89 Swimming pools.

(a) Fill and draw swimming pools shall not be installed or used.

(b) Swimming pools of the recirculation type shall be equipped so as to provide complete circulation, replacement, and filtration of the water in the pool every six hours or less. Suitable means of chlorination and, if necessary, other treatment of the water shall be provided to maintain the residual chlorine in the pool water at not less than 0.4 part per million and the pH (a measure of the hydrogen ion concentration) not less than 7.0.

(c) Flowing-through types of salt water pools shall be so operated that complete circulation and replacement of the water in the pool will be effected every 6 hours or less. The water delivery pipe to the pool shall be independent of all other pipes and shall originate at a point where maximum flushing of the pump and pipe line is effected after leaving polluted waters.

Job Aid Item: 6.2.b

Text: Free residual halogen of > 0.4 mg/ L (ppm) and pH not less than 7.0 is maintained in re-circulated swimming pools. (21 CFR 1250.89 (b))

Background: Pools must have a level of halogens to disinfect to reduce the likelihood of spread of diseases. pH must be maintained because low pH can interfere with the effectiveness of the halogen, and cause irritation for swimmers. pH should be in 7.0 to 7.6 range. Halogens should be in a range of 1 to 3 mg/L, but the regulation is only for at least 0.4 mg/L. A cruise ship should be recording these levels for the CDC.

What to check for: Check that halogen and pH are measured and are greater than 0.4 mg/L of halogen (chlorine or bromine) and pH is at least 7.0.

Citation: See item 6.2.a

Job Aid Item: 6.2.c

Text: Halogen test is provided and used. (21 CFR 1250.89 (b))

Background: If they are maintaining residual halogen levels then they must be testing for them.

What to check for: If halogen levels are maintained as in item 6.3.b check that a halogen test is provided. This could be a chlorine test kit, bromine test kit, or meters.

Citations: See 6.2.a

Job Aid Item: 6.2.d

Text: Pool / spa water is handled / sampled IAW (VGP 5.1.1.2 and 5.1.2.3)

Background: Pool and spa water must be dechlorinated and debrominated inside 3nm if discharged. Substances like chlorine used to disinfect pools will have a negative impact on marine life. This is particularly true if a fecal or vomit incident has been properly treated with high levels of halogens. This “superchlorinated” water would be well over water quality standards. Another reason to check this item is that ADEC has observed pool and spa water with high chlorine levels have damaged wastewater treatment equipment and upset biological treatment of wastewater.



Figure 6- Water metering

Although this citation is for ships over 500 passengers, there are identical VGP citations for ships with 100 to 500 passengers.

What to check for: Check for discharges of pool and spa water overboard within 3nm. If discharges occur check that they were dechlorinated and debrominated, and if these levels were measured as required. If pool or spa water was discharged into the wastewater system, check that chlorine is monitored and below ADEC GP levels.

Note: Discharges of pool and spa water are prohibited in national parks, federal wilderness areas, national wildlife refuges, marine sanctuaries, and national wild and scenic rivers. The largest prohibited area of interest would likely be Glacier Bay National Park. Because many of these areas have boundaries that are difficult to determine, please note the position on your report so that ADEC can determine if the location is in a prohibited area. Many National Parks and wilderness areas only include lands above the high tide line, although some do include state waters.

Citations:

EPA VGP 5.1.1.2 Pool and Spa Discharges

Discharges of pool or spa water are not authorized into waters listed in Part 12.1 of this permit.

Discharges from pools and spas are authorized into other waters subject to this permit, provided they are dechlorinated and/or debrominated, and discharged while the vessel is underway. To be considered dechlorinated, the total residual chlorine in the pool or spa effluent must be less than 100µg/l if the pool or spa water is discharged without treatment through an advanced wastewater treatment system. To be considered debrominated, the total residual oxidant in the pool or spa effluent must be below 25µg/l if the pool or spa water is discharged without going through an advanced wastewater treatment system. Pool and spa water may be added to the graywater treatment systems, however any resultant discharge must meet all standards and requirements found in Part 5.1.1.1 and must be debrominated.

EPA VGP 5.1.2.3 Treated Pool and Spa Discharges

Vessel owner/operators must monitor chlorine or bromine concentrations (as applicable) in pool or spa water before every discharge event using Part 136 methods if they will discharge these streams directly into waters subject to this permit to assure that the dechlorination process is complete. If vessel owner/operators are monitoring bromine concentrations, they may use a field test kit which uses the colorimetric method in lieu of Part 136 methods to assure waters have been debrominated, provided that test kit has method detection limit no higher than 50 µg/L. You must record the location of the discharge, the estimated volume of the discharge, and the concentration of chlorine or bromine (as applicable). Records of this monitoring must be kept with other graywater monitoring records.

For chlorine, analytical results below the method detection limit shall be deemed compliant with the effluent limits, provided the permittee uses a testing method with a detection limit no higher than 10.0 µg/L under ideal conditions. EPA recommends method SM4500-CL G (DPD Colorimetric Method) for these purposes as it is able to reach 10 µg/L under ideal conditions and so meets these requirements. SM4500-CL G is typically the method that ADEC/USCG uses for compliance monitoring. For bromine, analytical results below the method detection limit shall be deemed compliant with the effluent limits, provided the permittee uses a testing method with a detection limit no higher than 50.0 µg/L.

Note- EPA VGP 5.2.2.3 is identical, except that it applies to large cruise ships under 500 passengers.

Section 7: Oil Pollution

General background:

Oil pollution is covered by MARPOL Annex I along with a collection of federal and state laws regarding the discharge of oil and oily wastes. In the United States the most general oil regulation is 40 CFR 110.3 which prohibits discharge of oil in amounts which would cause a sheen, film, or discoloration of water.

In the late 1990's and early 2000's oil pollution was in the news as several cruise operators paid fines totaling several millions of dollars for discharges of oil or oily waters. More recent cases in the general shipping community involved bypasses ("magic pipes") of oily water separators (OWS) and false reporting of Oil Record Books (ORB).

Any sheens noted in the water need to be immediately reported to the vessel that you are reporting on. The oil reporting form must also be filled out and submitted to your employer and ADEC. Many observed sheens have not been caused by a cruise ship, but either by cruise ship related activities or other harbor activities. All spills and sheens must be reported as quickly as possible, so that a source can be determined and clean up (if possible) can begin.



Figure 1- Oil droplets from azipod seal failure

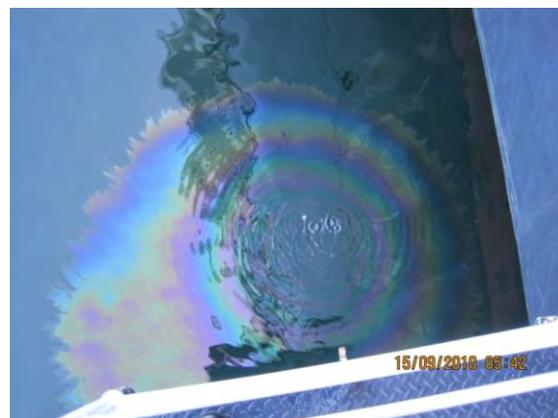


Figure 2- Small spill from ruptured hydraulic line

REPORT ALL

**OIL AND HAZARDOUS
SUBSTANCE SPILLS**

ALASKA LAW REQUIRES REPORTING OF ALL SPILLS

During normal business hours
contact the nearest DEC Area Response Team office:

Central Alaska	Anchorage	phone: (907) 269-3063
		fax: (907) 269-7648
Northern Alaska	Fairbanks	phone: (907) 451-2121
		fax: (907) 451-2362
Southeast Alaska	Juneau	phone: (907) 465-5340
		fax: (907) 465-2237

Outside normal business hours, call:
1-800-478-9300 (International 1-907-428-7200)

Northern
Alaska
Central
Alaska
Southeast
Alaska

 **Alaska Department of Environmental Conservation**
Division of Spill Prevention and Response

rev. June/2010

Figure 3- Alaska Oil Pollution Placard

Alaska Department of Environmental Conservation

Discharge Notification and Reporting Requirements

AS 46.03.755 and 18 AAC 75 Article 3

Notification of a discharge must be made to the nearest Area Response Team during working hours:

Anchorage (907) 269-3063 (907) 269-7648 (FAX)	Fairbanks (907) 451-2121 (907) 451-2362 (FAX)	Juneau (907) 465-5340 (907) 465-2237 (FAX)
--	--	---

OR

to the 24-Hour Emergency Reporting Number during non-working hours:
1-800-478-9300 (International 1-907-428-7200)

Notification Requirements

Hazardous Substance Discharges

Any release of a hazardous substance must be reported as soon as the person has knowledge of the discharge.

Oil Discharges

- **TO WATER**
 - Any release of oil to water must be reported as soon as the person has knowledge of the discharge.
- **TO LAND**
 - Any release of oil in **excess of 55 gallons** must be reported as soon as the person has knowledge of the discharge.
 - Any release of oil in **excess of 10 gallons, but 55 gallons or less**, must be reported within 48 hours after the person has knowledge of the discharge.
 - A person in charge of a facility or operation shall maintain, and provide to the Department on a monthly basis, a written record of any discharge of oil **from 1 to 10 gallons**.
- **TO IMPERMEABLE SECONDARY CONTAINMENT AREAS**
 - Any release of oil **in excess of 55 gallons** must be reported within 48 hours after the person has knowledge of the discharge.

Figure 4- Alaska Reporting requirements.

General Citations:

State of Alaska:

AS 46.03.740. OIL POLLUTION.

A person may not discharge, cause to be discharged, or permit the discharge of petroleum, acid, coal or oil tar, lampblack, aniline, asphalt, bitumen, or a residuary product of petroleum, into, or upon the waters or land of the state except in quantities, and at times and locations or under circumstances and conditions as the department may by regulation permit or where permitted under art. IV of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended.

AS 46.03.745. HAZARDOUS SUBSTANCE RELEASE.

Except for a controlled release, the reporting of which is the subject of an agreement with the commissioner under AS 46.09.010(b), a person may not cause or permit the release of a hazardous substance as defined in AS 46.09.900.

18 AAC 75.300. Discharge or release notification; reporting requirements.

(a) Subject to (b), (c), and (g) of this section, a person in charge of a facility or operation shall notify the department by telephone, and immediately afterwards send the department a written notice by facsimile, hand delivery, or first class mail, informing the department about a discharge or release of a hazardous substance at or from the facility or operation as follows:

- (1) as soon as the person has knowledge of a
 - (A) discharge or release of a hazardous substance other than oil;
 - (B) discharge or release of oil to water; or
 - (C) discharge or release, including a cumulative discharge or release, of oil in excess of 55 gallons solely to land outside an impermeable secondary containment area or structure; and

Definitions in AS 46.03.826

"oil" means a derivative of a liquid hydrocarbon and includes crude oil, lubricating oil, sludge, oil refuse or another petroleum-related product or by-product;

"hazardous substance" means

(A) an element or compound which, when it enters into the atmosphere or in or upon the water or surface or subsurface land of the state, presents an imminent and substantial danger to the public health or welfare, including but not limited to fish, animals, vegetation, or any part of the natural habitat in which they are found;

(B) oil; or

(C) a substance defined as a hazardous substance under 42 U.S.C. 9601(14);

in AS 46.09.900

(4) "hazardous substance" means

(A) an element or compound that, when it enters into or on the surface or subsurface land or water of the state, presents an imminent and substantial danger to the public health or welfare, or to fish, animals, vegetation, or any part of the natural habitat in which fish, animals, or wildlife may be found; or (B) a substance defined as a hazardous substance under 42 U.S.C. 9601 - 9657 (Comprehensive Environmental Response, Compensation, and Liability Act of 1980); "hazardous substance" does not include uncontaminated crude oil or uncontaminated refined oil;

(6) "release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, except that "release" does not include a permitted release or an act of nature;

Federal Citations:

40 CFR 110.3 Discharge of oil in such quantities as “may be harmful” pursuant to section 311(b)(4) of the Act.

For purposes of section 311(b)(4) of the Act, discharges of oil in such quantities that the Administrator has determined may be harmful to the public health or welfare or the environment of the United States include discharges of oil that:

(a) Violate applicable water quality standards; or

(b) Cause a film or sheen upon or dis-coloration of the surface of the water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

40 CFR 110.4 Dispersants.

Addition of dispersants or emulsifiers to oil to be discharged that would circumvent the provisions of this part is prohibited.

40 CFR 110.5 Discharges of oil not determined “as may be harmful” pursuant to Section 311(b)(3) of the Act.

Notwithstanding any other provisions of this part, the Administrator has not determined the following discharges of oil “as may be harmful” for purposes of section 311(b) of the Act:

(a) Discharges of oil from a properly functioning vessel engine (including an engine on a public vessel) and any discharges of such oil accumulated in the bilges of a vessel discharged in compliance with MARPOL 73/78, Annex I, as provided in 33 CFR part 151, subpart A;

(b) Other discharges of oil permitted under MARPOL 73/78, Annex I, as provided in 33 CFR part 151, subpart A; and

(c) Any discharge of oil explicitly permitted by the Administrator in connection with research, demonstration projects, or studies relating to the prevention, control, or abatement of oil pollution.

33 CFR 151.10 (b) Control of oil discharges.

(b) When within 12 nautical miles of the nearest land, any discharge of oil or oily mixtures into the sea from a ship other than an oil tanker or from machinery space bilges of an oil tanker is prohibited except when all of the following conditions are satisfied—

- (1) The oil or oily mixture does not originate from cargo pump room bilges;
- (2) The oil or oily mixture is not mixed with oil cargo residues;
- (3) The oil content of the effluent without dilution does not exceed 15 ppm;
- (4) The ship has in operation oily-water separating equipment, a bilge monitor, bilge alarm, or combination thereof as required by part 155 subpart B of this chapter; and
- (5) The oily-water separating equipment is equipped with a 15 ppm bilge alarm; for U.S. inspected ships, approved under 46 CFR 162.050 and for U.S. uninspected ships and foreign ships, either approved under 46 CFR 162.050 or listed in the current International Maritime Organization (IMO) Marine Environment Protection Committee (MEPC) Circular summary of MARPOL 73/78 approved equipment.

Note: In the navigable waters of the United States, the Federal Water Pollution Control Act (FWPCA), section 311(b)(3) and 40 CFR Part 110 govern all discharges of oil or oily-mixtures.

(c) The overboard discharge of any oil cargo residues and oily mixtures that include oil cargo residues from an oil tanker is prohibited, unless discharged in compliance with part 157 of this chapter.

33 CFR 151.10 (f) Control of oil discharges.

(f) The person in charge of an oceangoing ship that cannot discharge oily mixtures into the sea in compliance with paragraphs (a), (b), (c), or (d) of this section must ensure that those oily mixtures are—

- (1) Retained on board; or
- (2) Discharged to a reception facility. If the reception facility is in a port or terminal in the United States, each person who is in charge of each oceangoing tanker or any other oceangoing ship of 400 gross tons or more shall notify the port or terminal, at least 24 hours before entering the port or terminal, of—
 - (i) The estimated time of day the ship will discharge oily mixtures;
 - (ii) The type of oily mixtures to be discharged; and
 - (iii) The volume of oily mixtures to be discharged.

Note: There are Federal, state, or local laws or regulations that could require a written description of the oil residues and oily mixtures to be discharged. For example, a residue or mixture containing oil might have a flashpoint less than 60 °C (140 °F) and thus have the characteristic of ignitability under 40 CFR 261.21, which might require a description of the waste for a manifest under 40 CFR Part 262, subpart B. Occupational safety and health concerns may be covered, as well as environmental ones. The notice required in this section is in addition to those required by other Federal, state, and local laws and regulations. Affected persons should contact the appropriate Federal, state, or local agency to determine whether other notice and information requirements, including 40 CFR Parts 262 and 263, apply to them.

(g) No discharge into the sea shall contain chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in this regulation.

Definitions (federal- 33CFR 151.05):

Oil means petroleum whether in solid, semi-solid, emulsified, or liquid form, including but not limited to, crude oil, fuel oil, sludge, oil refuse, oil residue, and refined products, and, without limiting the generality of the foregoing, includes the substances listed in Appendix I of Annex I of MARPOL 73/78. “Oil” does not include animal and vegetable based oil or noxious liquid substances (NLS) designated under Annex II of MARPOL 73/78.

Oily mixture means a mixture, in any form, with any oil content. “Oily mixture” includes, but is not limited to—

- (1) Slops from bilges;
- (2) Slops from oil cargoes (such as cargo tank washings, oily waste, and oily refuse);
- (3) Oil residue; and
- (4) Oily ballast water from cargo or fuel oil tanks.

Discharge means any release, however caused, from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying. It does not include—

- (1) Dumping within the meaning of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, done at London on 13 November 1972; or
- (2) Release of oil or oily mixtures directly arising from the exploration, exploitation and associated off-shore processing of sea-bed mineral resources.

Oil Record Book: ORB

See included “Example of ORB pages large cruise vessel” “Example of typical Bunker Receipt”.

- Vessels offload sludge oil. In most cases the offloads are in Victoria or Vancouver BC (Canada).
- Vessels generally do not use the OWS system to discharge in Alaska waters.
- Oil Record Book (ORB) shall be kept updated on board of the vessel. This record should provide a clear set out of the oil handling, sludge handling and all oil discharges.
- The ORB is in most cases kept in the Engine Control Room (ECR) and should be updated as operations are completed. In the ORB are letter codes and item numbers. These letter code / item numbers “explain” which operations took place. These codes are required by the IMO regulations.
- FORM A (as it is on board) should include or reference “Means for retention and disposal of oil residues (sludge) regulation 17 and bilge water holding tanks”. This is very helpful information because it tells the OR what tanks / systems are available.
- Cruise ships generally have relatively complex oily / bilge water process systems. Varying from sludge concentrators (separators) to advanced filtration processes. Take the time to check / trace these operations. (seasonal checklist item)
- Abbreviations & symbols. Some vessels appear to use “cryptic” or unreadable entries in the ORB. Check and ask what the abbreviations (if any used) mean and where the “key” / conventions for these abbreviations are kept. (seasonal checklist item)
- Fuel bunkering actions including the bunkering of diesel oils and other lub oil products in bulk are kept in the ORB. Asked where the bunker receipts are located. (seasonal checklist item)
- Note: Current IMO Annex VI requirements include fuel sulfur content limitations. Often a second Bunker sample/analysis is provided to determine fuel quality / sulfur content (Fobas etc.) See Air Section.

EXAMPLE ORB PAGES LARGE CRUISE V.
OIL RECORD BOOK

ENTRIES 7

ADEC N BDEC N

Name of ship: _____

Distinctive number or letters: _____

Date	Code (letter)	Item Number	Records of operations/signature of officer in charge
20.02.10	C	A1.1	1.0 m ³ From intermediate tank to separator (1.0 m ³ ↓ 1.0 m ³) disposal to the bilge to sea (0.2 m ³ ↑ 1.0 m ³)
25.02.10	C	A1.2	1.6 m ³ From the bilge to sea (1.6 m ³ ↓ 1.0 m ³) PP to settling sludge to sea (0.2 m ³ ↑ 1.6 m ³)
25.02.10	C	A1.2	1.6 m ³ From intermediate tank to separator (1.6 m ³ ↓ 1.0 m ³) disposal to the bilge to sea (0.2 m ³ ↑ 1.6 m ³)
26.02.10	C	A1.2	1.6 m ³ From the bilge to sea (1.6 m ³ ↓ 1.0 m ³) PP to settling sludge to sea (0.2 m ³ ↑ 1.6 m ³)
26.02.10	C	A1.1	0.2 m ³ From settling sludge to sea (0.2 m ³ ↓ 0.2 m ³) disposal to sludge to sea (0.2 m ³ ↑ 0.2 m ³)
26.02.10	C	A1.1	1.4 m ³ From intermediate tank to sea (1.4 m ³ ↓ 1.0 m ³) disposal to sludge to sea (0.2 m ³ ↑ 1.4 m ³)
26.02.10	O	A1.0	1.0 m ³ From engine room bilge 1.0 m ³ From oil to oil 1.0 m ³ PP to sludge to sea (1.0 m ³ ↓ 1.5 m ³)

Figure 5- Oil Record Book Example

Citations: 33 CFR 151.25 Oil Record Book.

- (a) Each oil tanker of 150 gross tons and above, ship of 400 gross tons and above other than an oil tanker, and manned fixed or floating drilling rig or other platform shall maintain an Oil Record Book Part I (Machinery Space Operations). An oil tanker of 150 gross tons and above or a non oil tanker that carries 200 cubic meters or more of oil in bulk, shall also maintain an Oil Record Book Part II (Cargo/Ballast Operations).
- (b) An Oil Record Book printed by the U.S. Government is available to the masters or operators of all U.S. ships subject to this section, from any Coast Guard Sector Office, Marine Inspection Office, or Captain of the Port Office.
- (c) The ownership of the Oil Record Book of all U.S. ships remains with the U.S. Government.

(d) Entries shall be made in the Oil Record Book on each occasion, on a tank to tank basis if appropriate, whenever any of the following machinery space operations take place on any ship to which this section applies—

- (1) Ballasting or cleaning of fuel oil tanks;
- (2) Discharge of ballast containing an oily mixture or cleaning water from fuel oil tanks;
- (3) Disposal of oil residue; and
- (4) Discharge overboard or disposal otherwise of bilge water that has accumulated in machinery spaces.

(e) Entries shall be made in the Oil Record Book on each occasion, on a tank to tank basis if appropriate, whenever any of the following cargo/ballast operations take place on any oil tanker to which this section applies—

- (1) Loading of oil cargo;
- (2) Internal transfer of oil cargo during voyage;
- (3) Unloading of oil cargo;
- (4) Ballasting of cargo tanks and dedicated clean ballast tanks;
- (5) Cleaning of cargo tanks including crude oil washing;
- (6) Discharge of ballast except from segregated ballast tanks;
- (7) Discharge of water from slop tanks;
- (8) Closing of all applicable valves or similar devices after slop tank discharge operations;
- (9) Closing of valves necessary for isolation of dedicated clean ballast tanks from cargo and stripping lines after slop tank discharge operations; and
- (10) Disposal of oil residue.

(f) Entries shall be made in the Oil Record Book on each occasion, on a tank-to tank basis if appropriate, whenever any of the following operations take place on a fixed or floating drilling rig or other platform to which this section applies—

- (1) Discharge of ballast or cleaning water from fuel oil tanks; and
- (2) Discharge overboard of platform machinery space bilge water.

(g) In the event of an emergency, accidental or other exceptional discharge of oil or oily mixture, a statement shall be made in the Oil Record Book of the circumstances of, and the reasons for, the discharge.

(h) Each operation described in paragraphs (d), (e) and (f) of this section shall be fully recorded without delay in the

Oil Record Book so that all the entries in the book appropriate to that operation are completed. Each completed operation shall be signed by the person or persons in charge of the operations concerned and each completed page shall be signed by the master or other person having charge of the ship.

(i) The Oil Record Book shall be kept in such a place as to be readily available for inspection at all reasonable times and shall be kept on board the ship.

(j) The master or other person having charge of a ship required to keep an Oil Record Book shall be responsible for the maintenance of such record.

(k) The Oil Record Book for a U.S. ship shall be maintained on board for not less than three years.

(l) This section does not apply to a barge or a fixed or floating drilling rig or other platform that is not equipped to discharge overboard any oil or oily mixture.

(m) This section does not apply to a fixed or floating drilling rig or other platform that is operating in compliance with a valid National Pollutant Discharge Elimination System (NPDES) permit.

MARINE FUEL OILS - BUNKER RECEIPT				
RECEIVING VESSEL MV		DOCK / PORT		DATE
VESSEL IMO NUMBER		ACCOUNT		Barge PB 12 Barge PB 20 Barge PB 32 Barge PB 34
LOCAL AGENTS				
ISO 8217		MDO (DMB)	MGO (DMA)	BARGE
DENSITY @ 15 C.	0.7742		0.8613	ARRIVED DATE
GROSS MEASURED QUANTITY	1,252,200		81,245	TIME 11:20
AVERAGE TEMPERATURE	46 °C	°C	30 °C	MADE FAST DATE
TEMP. ADJ. COEFFICIENT	0.9795		9552	TIME 12:45
NET LITRES @ 15 C.	1,225,000		81,275	BEGAN PUMPING DATE
DELIVERED QUANTITY IN METRIC TONS	1,200 1/2		70 1/2	TIME 12:55
FUEL PROPERTIES				
VISCOSITY (Cst) @ 50 °C	358		30	FINISHED PUMPING DATE
SULPHUR (% by wt.)	1.90%		0.21%	TIME 16:00
B.S. or W. (% by vol)	0.1%		0.1%	TOTAL PUMPING TIME
FLASH POINT (FMCC)	70 L °C	°C	70 °C	HRB.
POUR POINT	-21 °C	°C	-11 °C	MIN.
API GRAVITY @ 60 °F	13.2		32.7	
REMARKS We certify that the bunker fuel oil delivered meets the requirements of regulations 14 and 18 of Annex V1 of MARPOL 73/78.				
SAMPLE SEAL NUMBERS: ABC 11-350		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO SHIPS ENGINEER INVITED TO WITNESS SOUNDINGS <input type="checkbox"/> YES <input type="checkbox"/> NO SHIPS ENGINEER WITNESSED SOUNDINGS <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO REPRESENTATIVE SAMPLE(S) OF THIS DELIVERY PASSED TO SHIPS ENGINEER.		
THE QUANTITIES DELIVERED WERE CALCULATED ON THE BASIS OF THE MEASUREMENTS OF THE SUPPLIER'S TANKS OR METERS, TAKEN BEFORE AND AFTER THE DELIVERY AND WILL BE CONTROLLING. THEY WILL NOT BE ADJUSTED BASED ON ULLAGES OF THE VESSEL'S TANK.				
I CERTIFY THAT THE QUANTITY AND QUALITY OF THE MARINE FUELS AS SPECIFIED ABOVE HAVE BEEN DELIVERED TO THE VESSEL IN GOOD CONDITION.				
BY _____		TITLE _____		
BY _____		DATE _____		

Figure 6-Bunker Receipt Example

Oily Water Separator (OWS) General information:

Large cruise ships have installation(s) to treat oily water / oily bilge water / sludges and other waters that may contain oil. These vessels have dedicated “oily water” installations on board. These installations separate the oily substances from the water.

Applying simple logic to these systems- “what goes in goes out” will greatly assist in assessing operation of these installations.

The guidebook, daily report and OR job aid list includes check items for this subject. A bullet list is included below with “attention points” that may be helpful to understand the installations better and to assist in the compliance verification.

Please note many of the OWS checks have been moved to the Seasonal Report. This is to allow a more-in depth look at the OWS items that should not change regularly. These seasonal checks need to be re-done if there is major maintenance or piping changes to the oily water separation system. The OWS system can be a dynamic process, and it is possible that there will be changes during the Alaska cruise season.

Oil Water Separation systems on board Alaska Trade Cruise vessels:

General:

All Alaska trade vessels have Oil Water Separation Systems on board. In general these systems can be divided in the following main components:

- Pre-treatment system: Collection tanks that are laid out for the settling process and/or combination of centrifuges for separation of oily water.

Attention Points:

- Pre-treatment systems are multiple tanks dedicated pre-treatment tanks? How are they arranged? Including the transfer system to OWS system.
- Pre-treatment storage system, check tanks connections and plumbing to the OWS treatment. Check for locked valves / blind flanges and other piping arrangements.
- Are oil skimming arrangements used / installed in the pre-treatment system? How is the skimmed oil handled?
- Are portable pumps / hose arrangement used? If so identify from which area (source) to which tank the flow goes.
- OWS system is in all cases equipped with recirculation / by pass (non discharge line) system, where is the re-circulation / reject medium stored?
- Overflow provisions of the pre-treatment (settling tanks etc) where are the overflows going to?
- Are chemicals additives used in the pre-treatment process?
- Medium transfer records (volume change data time) of the pre treatment system available.

Oil Water Separation process components:

- OWS Dynamic process (centrifuges) can be standalone with OCM or combination of other components.
- OWS static process (filter)
 - Components in the White Box System (WBS)(see Picture):
 - Discharge monitoring Oil Content Monitoring (OCM) system / controls.
 - Three way valve system activated by discharge monitoring (open (overboard); close (recirculation) and flow and other controls monitoring
 - The WBS unit is in “locked cage” with key / tagging locking regime.
 - Calibration records

Note that on all vessels the monitoring system on the OWS units is sealed and protected. On some vessels there are video cameras installed to monitor anybody that is working close to the White Box system. The layout of the WBS with the recirculation valve and controls of the OCM system are on most vessels protected by a cage.

- Inside the WBS system you see the data recorder, this recorder has local read –out and data storage. On most vessels is the WBS data recorder interfaced with the ABB / Siemens / Valmarine automation systems and data recorders / data storage is made as well.



Figure 7: An example of MarinFloc® WBS (White Box System)



Figure 8: Example Large Vessel OWS / White Box System

OWS / OCM system:

- Familiarize yourself with the system main components.
- From which tanks is the OWS system processing?
- OCM system is locked /dedicated responsible person?
- Is the OCM system automated?
- The OCM system included alarm and three way valve “open / close” functions.
- Sample line from main discharge line to the OCM system. This is a small diameter line from the “inlet side “of the three way valve to the analyzer. This sample line is relatively short and has no valves / cocks.
- To discharge, oil ppm level are recorded this can be done:
 - Check “Writer card” / “strip charts”. From previous years feedback it appears that not much large vessels use the “writer / strip card option”.
 - Electronically / stored in the White box / relayed to the engine control room repeater system.
 - OCM data Read outs? Memory read out how is this done?
 - Recent alarms? Check alarm information time date equipment line item complete / in printed-out format?
 - OCM system data can be read out local; however this requires to open the “white box cage”. In order to do so the responsible officer and C/E have to witness the opening and the reason for the opening. Some vessels do this for routine operations. This is the opportunity for the OR to witness.
 - Is memory storage history of “open box” Close box available? Ask for demonstration?
 - Are cards hard discs / repeater printing outs made of the OCM system?

- Some vessel had a defective (under repair) closed “sealed” OWS unit. Check the paperwork and the reporting to the USCG (when in USA waters).
- General condition of the three way valve, activator lines (pneumatic / electronic) attached? Electric cabling.
- Piping from the last stage OWS / OCM is relatively small diameter are bypassed or blind flanges installed? Some vessels made modifications Describe / check.
- In 2012 it was found that some seals made of tape came loose. Please bring this to the vessels attention and report.

OWS Citations:

33 CFR 155.370 Oily mixture (bilge slops)/fuel oil tank ballast water discharges on oceangoing ships of 10,000 gross tons and above and oceangoing ships of 400 gross tons and above that carry ballast water in their fuel oil tanks.

(a) No person may operate an oceangoing ship of 10,000 gross tons and above, or any oceangoing ship of 400 gross tons and above, that carries ballast water in its fuel oil tanks, unless it has—

(1) Approved 15 ppm oily-water separating equipment for the processing of oily mixtures from bilges or fuel oil tank ballast;

(2) A bilge alarm; and

(3) A means for automatically stopping any discharge of oily mixture when the oil content in the effluent exceeds 15 ppm.

(4) For equipment installed after 2004 to be approved under paragraph (a) of this section, it must meet current standards in 46 CFR part 162, subpart 162.050 by the date set forth in paragraphs (a)(4)(i) and (a)(4)(ii) of this section, unless the equipment is installed on a ship constructed before 2005 and it would be unreasonable or impracticable to meet those current standards.

(i) A ship entering international service for the first time since 2004, must comply with the requirements of paragraph (a)(4) of this section by the date of its initial survey prior to receiving its International Oil Pollution Prevention (IOPP) certificate.

(ii) Any ship, other than a ship described in paragraph (a)(4)(i) of this section, must comply with the requirements of paragraph (4) of this section by the date of the ship's first drydock after October 13, 2009.

(b) No person may operate a ship under this section unless it is fitted with a tank or tanks of adequate capacity to receive the oil residue that cannot be dealt with otherwise.

(1) In new ships such tanks shall be designed and constructed to facilitate cleaning and the discharge of the oil residue to reception facilities. Existing ships shall comply with this requirement as far as reasonable and practicable.

(2) Tanks used for oily mixtures on ships certificated under 46 CFR Chapter I shall meet the requirements of 46 CFR 56.50-50(h) for isolation between oil and bilge systems.

(c) No person may operate a ship under this section unless it is equipped with a pipeline to discharge oily mixtures to a reception facility.

(d) This section does not apply to a barge that is not equipped with an installed bilge pumping system for discharge into the sea.

(e) This section does not apply to a fixed or floating drilling rig or other platform, except as specified in § 155.400(a)(2).

33 CFR 155.380 Oily water separating equipment and bilge alarm approval standards.

(a) On U.S. inspected ships, oily water separating equipment and bilge alarms must be approved under 46 CFR 162.050.

(b) On U.S. uninspected ships and foreign ships, oily water separating equipment and bilge alarms must be approved under either 46 CFR 162.050 or MARPOL 73/78 Annex I.



Figure 9: Example of pre-treatment system component "Sludge" concentration trunk tank



Figure 10: OWS separator (dynamic)



Figure 11: OWS separator / sludge treatment (dynamic) "concentrator"



Figure 12: Example OWS



Figure 13: OWS Piping Example

Verification Certificate

Issued To: MTV ETHAN

Oil Content Meter

This is to verify that the oil content meter specified below, has been tested using known solutions and adjusted in accordance with the manufacturer's instructions and has been found to be within the approved calibration limits.

Equipment	Manufacturer	Model #	Serial #	Alarm Set Point ppm	Time Delays seconds	Install On/At
Oil Content Meter	Dickma	OMD-21	212329	A1 15 ppm A2 15 ppm	T1 10 sec T2 1 sec	White box

Total Marine Solutions Inc. is an authorized service representative for the manufacturer. This authorization covers servicing, verification and repair work, including alarm point adjustment.

Recorder

This is to verify that the recorder referenced below has been checked and the values produced match, within acceptable limits, those of the oil content meter(s) to which it is attached.

Equipment	Manufacturer	Model #	Serial / Instrument #
Recorder	Eurotherm	5100V	24832

Service Engineer Name:

Service Engineer Signature:

Figure 14- OWS Verification Example

Service Report



Vessel: _____
 IMO No: _____
 Owner: _____
 Date: _____
 Port: _____
 Type of Service: Preventative Maintenance
 SOW: _____
 Engineer: _____

White Box System Performance Checks:	Serial #:	S/N:	Found:	Locked:	Flow Meter Reading:
Initial discussion with vessel delegate any recent challenges	No Challenges			Working	05305M3
Flow Switch sealed:	Yes		Test Technical Water Line for proper operation	Working	3-way valve pos. switch: Working
Door switch device:	Working		Test Technical Water Line for proper operation	Working	Push button for flow: Working
Function of diff. pressure valve:	Working		Type of diff. pressure valve:	Spring loaded (non-return)	Type of spring: Not Checked
Port abate inspection valve '107(49)':	Yes		Air Filter Installed:	Yes	Flow Switch Setting: .5 LPM
Check flow switch electrical contact and ensure it is sealed:	New type N/A		Flow switch type:	Marinloc	If Marinloc flow switch: Relay installed
Check flow switch for operation, cleanliness & operational light:	OK		Is the strainer installed over the flow switch:	Yes	OCM Desiccator: Replaced
			Whitebox vibrations (supports / Bracing):		Supported to satisfaction

Recorder:

Manufacturer:	EUROTHERM	Model #:	6100A	GPS Feed into the recorder?	No
Serial #		GPS Brand/model, if present:			Not applicable
Instrument#	57438	Check GMT Time:	Yes		
Recorder Location:	E C R				
Retained copy of data for review:	Yes				
Note Software Version, DRAM and Board Version:	4.2.3/64Mb/3				
General Appearance of White Box on Arrival:	Unit was free of leaks, however corrosion was found on the chemical injection port, same was changed out.				

System Performance Check:	Serial #:	Flow Meter Reading:	Discharge Rate (ppm)	Discharge Rate M3/hour	
Serial #:	0082	Flow Meter Reading:	09306M3	Discharge Rate (ppm): 16	Discharge Rate M3/hour: 0.96
Fuel pump:	Checked	Oil detection:	Not Checked	Dump pump:	Checked
Discharge inject nozzle:	Checked	Low level switch:	Checked	High level switch:	Checked
Overfilling:	See comment	Flooding & sump:	Checked	Pre-drain:	Not applicable
Discharge pump:	Checked	Condition of anodes (%):	75 40 20	Level of filter material (%):	100 100 90
Ballers valves:	See comment	Back flush pressure switch:	Working	Sludge valves:	Checked
Back flush temp.:	OK	Back flush flow:	Checked	Flow switch condition:	Checked
Flow switch flow:	Checked	Rock Test:	Clear	Flocculant chemical:	Checked

Operating pressure parameters:

Oil deceler:	2.5	Filter No. 1:	2.4	Filter No. 2:	2.2	Filter No. 3:	1.8
--------------	-----	---------------	-----	---------------	-----	---------------	-----

Settings:

Temp. High water (if adjustable):	40-50C	Filling time:	1.2H	Back flush pressure switch:	4.0
-----------------------------------	--------	---------------	------	-----------------------------	-----

Type of PAC:	UNITOR BWT	PAC dosing pump:	Stroke length (%): 75	Strokes /min:	70
--------------	------------	------------------	-----------------------	---------------	----

PPM motor settings:	To overboard last time: 5	Time delay overboard to return: 0	PPM shut down and alarm to ECR:	Greater than: 5	Time delay: 10
---------------------	---------------------------	-----------------------------------	---------------------------------	-----------------	----------------

Timer settings:

Overfill Roc tank:	T1: 12	Floc time:	T2: 3H	Drain Roc tank:	T3: 7M	Back flush Filter 1:	T4: 8M	Back flush Filter 2:	T5: 8M
Back flush Filter 1:	T6: 8M	Pressure switch delay:	T7: 10S	Low level delay:	T8: MIN	Oil detector delay:	T9: 4S	Pre-drain floc tanks:	T10: -



Service Report

Marinloc TD

Date: June 27, 2010

Oil Content Meters:	Any Spare Meters?	Yes	Recorder:	Model #:	6100a	Instrument #:	57418
Notes:	When using a Dickma OMD 21 or OMD 2005 oil content meter, it is Alarm 2 which controls the position of the 3 Way Valve.						
Serial #:	0082	Certificate Number:	12-14249	Serial #:	-	Check GMT Time:	Yes
Key Code:	F6DD-WDUF						
Board Rate, DRAM, Software Version:	4.2.3/64Mb/3						
Recorder Comments:	Recorder found in working properly						

Maintenance Related Comments:

Pressure Differential:	pressure drop between filters is normal
Media Level Filter #1:	Filter #1 is filled to appropriate level.
Media Level Filter #2:	Filter #2 is filled to appropriate level.
Media Level Filter #3:	Filter #3 is filled to appropriate level.
Anodes:	Sacrificial anodes may require replacement prior to next scheduled service date.
Temperature:	Influent should be no more than 60C while backflushing water should not exceed 70C
Filter Pressures:	Filter Step Pressures should not exceed 4.0 bar under normal operating conditions.

General comments:

The OCM attached to MAB#1 was found to not have a manufacturer's S/N Tag, same should be applied. The unit had calibration and alarms verified and a certificate was issued. During operation of the unit it was found that the Floc Tanks were not overfilling, therefore the overfill time was increased to 12 minutes for same to be obtained. Valves 14 and 27 were both found to be leaking. In order for them not to leak the discharge rate cannot be greater than 19M/hr. Recommendation for the Ballers Valves to be changed out, same to enable a higher discharge rate. MAB #1 was successfully run to the Clean Bige Tank, producing and effluent of "0 Ppm". Unit was left in fully operational condition.

Spares Used:

Quantity	Part # / Description	Quantity	Part # / Description

Chief Engineer: _____
 Service Engineer Signature: _____
 Vessel Representative Signature: _____

Subsection 1: Oil Pollution; Fuel, Daily (40 CFR 110.3 and AS 46.03.740)

Note: Citations can be found under the general citations in this section, unless specific to that item then they are listed with the item.

Job Aid Item: 7.1.a

Text: Spills and sheens are absent (AS 46.03.740/ 40 CFR 110.3).

Background: Sheens and oil spills are prohibited under state and federal law.

What to check for: Check for sheens and spills while boarding vessel, at the dock, or when outside. Oil sheens, oil fill ups and leakage of oil in the vessel self (interior) and at the exterior. Vessel use of bow thrusters, and maneuvering appear to be operational conditions where oil sheens from leaky seals are manifested first. Check for the exterior parts of oil systems (tanks, tubes etc.) that no oil is lost or leaking. For seals under the water line (prop shafts, stabilizers) only leakage may be noticed under certain operation conditions and under the “water line”. Most oil leakages from seals with traditional oils (not included the “no sheen oils” (Vickers B series, CITGO No sheen etc.) will manifest visible sheens. However the oil loss from leaking seals can be very small and hard to detect. Also operational condition shaft speed and thrust fluctuations can affect the leaking profile as well. As shaft seals may not leak at all at zero shaft speed, but leaking at certain shaft speeds. In the vessel self, leaking “inner shaft seals” are indicators that something is wrong with the seals and may also the case with the outer seals. Although it is possible visible outside sheens have not manifested yet.

Job Aid Item: 7.1.b

Text: Vessel daily oil discharge record book logs are up to date. If OWS discharge operations were conducted (monitoring, recording reporting) check that these are included (33 CFR 151.25)

Background: See Oil Record Book description under general information.

What to check for: Check that Oil Record Book is up to date and filled in as operations are conducted.

Job Aid Item: 7.1.c

Text: The oil discharge record book contains an entry for each oily water separator (OWS) discharge event. (33 CFR 151.25)

Background: See ORB and OWS description under general information.

What to check for: Check alarm logs and automated logs for OWS items or other discharges not listed in ORB or WW log.

Job Aid Item: 7.1.d

Text: The Oil Discharge Record Book contains entries for each OWS alarm (33 CFR 151.25)

Background: See ORB description under general information.

What to check for: Check alarm logs for OWS items or other discharges not listed in ORB or WW log.

Job Aid Item: 7.1.e

Text: Oil Record Book contains entries for each internal transfer for cleaning or ballasting of fuel tanks. (33 CFR 151.25(d)).

Background: See ORB general info.

What to check for: Check that the ORB includes internal transfers.

- Do the entries add up?
- Off loads of oil / used lubrication oil must also reported in the offload reporting.
- Bunkers actions up to date filled in? Volume? Type / Quality of the fuels? Bunker receipt? Fuel sample analysis?
- Check how are volumes calculated and determined. Are procedures in place?

Job Aid Item: 7.1.f

Text: Head tanks levels for “oil to sea interface” indicate no oil loss into the sea (e.g. shaft seals, stabilizer systems, thrusters etc.) (AS 46.03.740/ 40 CFR 110.3)



Figure 15: Oil to sea seal/gravity tanks

Background: Familiarize yourself with the “oil to sea” system. Some vessels have rather complicated oil to sea seal systems. Small volumetric changes happen based on temperature changes. Loss of oil are often noticed when tank levels dropped below the sight glass or sight glass mark. Often a tank level alarm is installed and activated when low levels are encountered. These alarms are recorded. In such cases oil is added. Often crew “estimate” the oil added by using hand oil can volumes or using dipsticks or measure (often in millimeters / centimeters) on the sight glass the new level or level increase after the “fill up”. Some vessels have had water ingress, or leaking internal seals. These could be precursors or are already indicators of “sea water” side shaft seal troubles. Some operators are going to separate this oil and recycle the oil. In such case there will be in still oil added for the removed water volume initially, and the separators water removal process. Monitoring the added oil and “oily water sludge” volumes are good indicators of how much oil is added. Also the internal leak volume should be accounted for.

What to check for: Check levels under several operation conditions, seas, port, maneuvering etc. Are the tank valves open during the vessel operation? Are the tank valves intermittently closed or opened? Check how are the tanks filled up and kept on level. How is it established when the oil fill up in the tanks? Is overflow piping connected to the tanks? How is filling up performed? Check for presence of air pumps / hoses / oil drums in the vicinity of the tank system. Are level (low / Low Low / high) oil tank levels recorded / in alarm log? Engine room log? What is the history of the item?

Log books / recording where are the oil changes / fill ups recorded? What type of oil is used? Is an oil switch made compared to the previously used oil? How is the “consumed” oil volume determined? Some vessels had water intrusion in their shaft lubrication system, the system gets drained / adding oil. Describe how the system is working and how the drained and added oil volumes are calculated. What happens with the water / sludge?

Job Aid Item: 7.1.g

Text: Special actions (such as bunkering of tenders) prevent spills and tank overflows, etc. (40 CFR 110.3, AS 46.03.740)

Background: Procedures / operations should be laid out in such way the spill overflows are prevented. Most of the elements are already integrated in the vessel oil storage handling designs.

What to check for: Check if special actions are taken, for example during bunkering fuel oils. In Alaska there are normally no fuel bunkering activities. However, some vessels that used their passenger tender boats frequently in Alaska may fuel up these in Alaska. Check on spill prevention measures, containments, tank level monitoring and how the fuel “bunkering” is done for the lifeboats / tender vessels. Fuel transfers need to be done very carefully. How are tank volumes calculated / measured? Are systems and procedures in place? Are tanks equipped with fuel overflow (captive) systems? Are tank level monitoring alarms in place and operable? Does the overflow tank have level alarms that are operable? Are overflow tank alarms recorded? Is telephone / communication system from deck (bunker station) to other parts of the system (manifold) in place? Are general operation procedures in place?

Subsection 2: Oil Pollution; Fuel; Oily Water Separators (OWS), General (33 CFR 155.360/370, 33 CFR 151.10)

Note: Citations can be found under the general citations in this section, unless specific to that item then they are listed with the item.

Job Aid Item: 7.2.a

Text: Changes to the OWS or OWS piping, make sense. (33 CFR 151.10)

Background: Historically some vessels bypassed the OWS systems and conducted “direct discharges”. Changes or alterations of piping are possible indicators that “magic piping” is done and the OWS was not used for oily water discharges. There are more in-depth checks on this in the seasonal report. This item is meant as an update to the seasonal in-depth checks, to see if any changes have been made since then. The seasonal report could be a useful reference for this.

What to check for: OWS status in general. Scraped nuts bolts head, missing washers and fresh fixed piping are suspect. Also blind flanges, connectors and hoses are possible indicators of non original (as built) OWS discharge piping lay out. Compare the system with as built drawing and trace the piping. Ask questions, communicate. New pipe sections, flexible sections and blind flanges / spectacles (combined blind flange / open flange pieces) can be suspect. New paint can be present, but check if other changes were made that could be hidden by paint.

Job Aid Item: 7.2.b

Text: OWS unit is processing from a contaminated source, if OWS is in use.. (33 CFR 151.10)

Background: The OWS is used to process “oily water” and bilge water. Vessels that burn oil will have oily sludges, and produce sludge. In order to make sure that the oily wastes are discharged correctly an OWS system must be used and operable.

What to check for: Operable OWS system including associated systems, tanks etc. Familiarize the entire system and how the system is operated. Checks for OWS piping, storage tanks and how the “influent” is processed and where it originated from.

Job Aid Item: 7.2.c

Text: Oil content meters have similar or same readings (units with multiple oil content meters) (33 CFR 151.10)

Background: OWS oil content metering should be functional with the set parameters (calibrations).

What to check for: If multiple oil content meters installed the meter should give similar reading over the same sample flow. Calibration records should include the oil content meter checks and findings including the calibration actions and ranges. Recordings monitoring results of the readings?

Job Aid Item: 7.2.d

Text: Sample analyzed by OWS meter is from OWS discharge (trace sample line for presence of unacceptable clean water connection) (33 CFR 155.370(a)) (33 CFR 151.10)

Background: OWS treated flow should be the flow which is used for “compliance” measured oil content.

What to check for: The treated flow outlet from OWS to the discharge is sampled (representative) by the OWS oil content meter. Ensure sample analyzed by OWS meter is OWS output (trace sample line for presence of unacceptable clean water connection) Piping in place to the meter. Alarm monitor readings during operation of the OWS?

Job Aid Item: 7.2.e

Text: Oil dispersants are not used in oil tanks or lubrication systems IAW (40 CFR 110.4 & EPA VGP 2.2.9)

Background: Oil dispersants could remove a sheen, when oil is still being discharged to waters. Some emulsifiers could be used to cause oil or grease to sink instead of float, which reduces the likelihood of an oil loss being detected. It also creates more difficult conditions for clean-up.

What to check for: Check for dispersants added to oil tanks or lubrication systems such as shaft seals. Check when tanks are filled. Check for possible “chemical” dosing systems. Not to be confused with the cleaning system of the OWS itself.

Citations:

40 CFR 110.4 Dispersants.

Addition of dispersants or emulsifiers to oil to be discharged that would circumvent the provisions of this part is prohibited.

EPA VGP 2.2.9 Controllable Pitch Propeller and Thruster Hydraulic Fluid and other Oil to Sea Interfaces including Lubrication Discharges from Paddle Wheel Propulsion, Stern Tubes, Thruster Bearings, Stabilizers, Rudder Bearings, Azimuth Thrusters, Propulsion Pod Lubrication, and Wire Rope and Mechanical Equipment Subject to Immersion.

The protective seals on controllable pitch propellers, azimuth thrusters, propulsion pods, rudder bearings, or any other oil to sea interfaces must be maintained in good operating order to minimize the leaking of hydraulic oil or other oils. The vessel owner/operator must not discharge oil in quantities that may be harmful as defined in 40 CFR Part 110 from any oil to sea interface. If possible, maintenance activities on controllable pitch propellers, thrusters and other oil-to-sea interfaces should be conducted when a vessel is in drydock.

Minimize maintenance activities on stern tube seals when a vessel is outside of drydock. If maintenance or emergency repair must occur on stern tubes or other oil-to sea interfaces which have a potential to release oil in quantities that may be harmful as defined in 40 CFR Part 110, appropriate spill response resources (e.g. oil booms) must be used to contain any oil leakage. Operators of the vessel must have ready access to any spill response resources to clean any potential oil spills.

After applying lubrication to wire rope and mechanical equipment subject to immersion, wire ropes and other equipment must be thoroughly wiped down to remove excess lubricant.

Owner/operators should use an environmentally preferable lubricant, including vegetable oil, synthetic ester, or polyalkylene glycol as a base for these applications when feasible. Use of an environmentally preferable lubricant does not authorize the discharge of any lubricant in a quantity that may be harmful as defined in 40 CFR Part 110.

Job Aid Item: 7.2.f

Text: OWS system and OWS meters are free of obvious electrical bypasses, jumpers, extra switches on unit or meter control panel. (33 CFR 155.370(a)) (33 CFR 151.10)

What to check for: Check for any unusual connections on or around the meter control panel that could bypass the system or provide false or inaccurate readings. Observe if there are obvious electrical bypasses, jumpers, extra switches on unit or meter control panel.

Citations: 33 CFR 155.370 Oily mixture (bilge slops)/fuel oil tank ballast water discharges on oceangoing ships of 10,000 gross tons and above and oceangoing ships of 400 gross tons and above that carry ballast water in their fuel oil tanks.

(a) No person may operate an oceangoing ship of 10,000 gross tons and above, or any oceangoing ship of 400 gross tons and above, that carries ballast water in its fuel oil tanks, unless it has—

(1) Approved 15 ppm oily-water separating equipment for the processing of oily mixtures from bilges or fuel oil tank ballast;

(2) A bilge alarm; and

(3) A means for automatically stopping any discharge of oily mixture when the oil content in the effluent exceeds 15 ppm.

(4) For equipment installed after 2004 to be approved under paragraph (a) of this section, it must meet current standards in 46 CFR part 162, subpart 162.050 by the date set forth in paragraphs (a)(4)(i) and (a)(4)(ii) of this section, unless the equipment is installed on a ship constructed before 2005 and it would be unreasonable or impracticable to meet those current standards.

(i) A ship entering international service for the first time since 2004, must comply with the requirements of paragraph (a)(4) of this section by the date of its initial survey prior to receiving its International Oil Pollution Prevention (IOPP) certificate.

(ii) Any ship, other than a ship described in paragraph (a)(4)(i) of this section, must comply with the requirements of paragraph (4) of this section by the date of the ship's first drydock after October 13, 2009.

Job Aid Item: 7.2.g

Text: OWS has automatic re-circulate (3 way valve) or it shuts down when > 15 ppm. Valve is operated properly. (33 CFR 155.370 a(3))

What to check for: Understand the three way valve pipe connections and re-circulation system / tank system. How is the three way valve activation done? How is the valve operated? Are safeties in place when air pressure / electric failure occurs to the valve (Normally closed?). Are valve activation controls bypassed or feed by outside (non OWS) source? Visually observe that there is an automatic re-circulate (3 way valve) or shuts down when > 15 ppm. Observe proper operation of valve in use.

Citations: See 7.2.f above.

Job Aid Item: 7.2.h

Text: System back flush or oil purge cycle (if used) properly operates. (40 CFR 110.3)

Background: OWS functional check. In order to make sure that the oily wastes are discharged correctly an OWS system must be used and operable. These items are most likely to be witnessed when the OWS is operated.

What to check for: Observe for proper operation of system back flush or oil purge cycle if in use. When back flush is performed, monitor check system parameters controls. Where is the back flush routed too? Are the operational mode displayed? Is the purge cycle working?

Citations: See general OWS information.

Job Aid Item: 7.2.i

Text: Processed water is free of gross contamination (sheen or visible oil) (40 CFR 110.3)

Background: Gross contamination is infact malfunctioning OWS. The OWS discharge is on most large vessels under the water line and may be hard to witness sheens (if any).

What to check for: Visually observe processed water for gross contamination (sheen or visible oil) during operation of OWS. The oil content meter should provide alarms if there is a sheen.

Job Aid Item: 7.2.j

Text: Vessel OWS related vessel machinery logs, reports for maintenance, repairs, cleaning operations (e.g. back flush) onboard and available.(33 CFR 151.10 b). Ship's operational maintenance routine matches preventative maintenance conducted. OWS repairs recorded. (33 CFR 151.10)

Background: OWS logs in general tells what the equipment status is with regard the maintenance, repairs and general technical status of the equipment.

What to check for: Is the OWS operable? OWS if used must be operable. When was the last calibration done? Check that system has been maintained and repaired if necessary. What is the last regular maintenance action? By whom were these maintenance actions performed? Are maintenance repair calibration reports available? Checked comparison of ship's operational maintenance routine with actual preventative maintenance conducted. Check records pertaining to OWS system repairs.

Job Aid Item: 7.2.k

Text: Meter calibration is recorded. (33 CFR 151.10)

What to check for: Check records for evidence of meter calibration. Calibration and check of equipment should be done periodically or done when there is a failure. Meter calibration should be recorded or logged.

Subsection 3: Bilges (33CFR155.770)

General background: Oil or hazardous materials in a bilge are a potential source of pollution if not properly treated. Even if properly treated, too much waste could reduce the effectiveness of treatment. Some materials could be put into the bilge that equipment is not designed to handle- such as from the wastewater system. Large amounts of oil or hazardous waste has been identified by Ocean Rangers as a possible safety hazard when fumes or vapors accumulate.

General Citation: 33 CFR 155.770 Draining into bilges.

No person may intentionally drain oil or hazardous material from any source into the bilge of a vessel.

Job Aid Item: 7.3.a

Text: Bilge water management manual describes procedures, and lists equipment required to limit the amount of oil allowed into bilges. (33CFR155.770)

What to check for: Check for procedures, systems in place to minimize the introduction of oil and hazardous materials into the bilges.

Job Aid Item: 7.3.b

Text: Machinery bilge spaces free from excess contamination of oil or hazardous materials. (33CFR155.770)

What to check for: Check machinery bilge spaces for contamination with oil or hazardous materials. Check for sheens, sludge, odd odors, or unusual stains.

Job Aid Item: 7.3.c

Text: Bulkheads, piping, structures, within rose boxes free from excess contamination/oil residues. (33CFR155.770)

What to check for: Check for sheens, sludge, odd odors, or unusual stains.

Job Aid Item: 7.3.d

Text: Machinery free of excess oil leakage (e.g. boiler water blow down / wash waters) (33 CFR155.770)

What to check for: Check for leakage from systems and engines into machinery spaces (e.g boiler Water blow down / wash waters?) Check for sheens, sludge, odd odors, or unusual stains.

Job Aid Item: 7.3.e

Text: Bilges are free from direct discharge into the bilges of oil or hazardous materials. (33 CFR155.770)

What to check for: Check on oil usage, quantities, where lost, consumed or in bilges. Check for direct discharge of oil or wastes into bilges. Check oil record book and other sources for information for amounts of oil lost into bilge and recovered sludge/oily water.

Job Aid Item: 7.3.f

Text: Oily water separator and related equipment free from detergent used to remove appearance of sheen. (40 CFR 110.4 / VGP 2.2.2)

Background: Dispersants used in the bilge or oily water separator could interfere with the effectiveness of equipment removing oil. This could allow oily water to be discharged.

What to check for: Check for evidence of detergent use in or near bilges and OWS equipment. Like chemicals / dosing equipment and other suspect liquids and chemicals / additives.

Citations: **40 CFR 110.4 Dispersants.**

Addition of dispersants or emulsifiers to oil to be discharged that would circumvent the provisions of this part is prohibited.

EPA VGP 2.2.2 Bilgewater

All bilgewater discharges must be in compliance with the regulations in 40 CFR Parts 110 (Discharge of Oil), 116 (Designation of Hazardous Substances), and 117 (Determination of Reportable Quantities for Hazardous Substances) and 33 CFR §151.10 (Control of Oil Discharges). In addition:

- Vessel operators may not use dispersants, detergents, emulsifiers, chemicals or other substances to remove the appearance of a visible sheen in their bilgewater discharges.
- Except in the case of flocculants or other required additives (excluding any dispersants or surfactants) used to enhance oil/water separation during processing (after bilgewater has been removed from the bilge), vessel operators may not add substances that drain to the bilgewater that are not produced in the normal operation of a vessel. The use of oil solidifiers, flocculants, or other required additives are allowed only as part of an oil water separation system provided they do not alter the chemical make-up of the oils being discharged and they are not discharged into waters subject to this permit. Routine cleaning and maintenance activities associated with vessel equipment and structures are considered to be normal operation of a vessel if those practices fall within normal marine practice.
- All vessels must minimize the discharge of bilgewater into waters subject to this permit. This can be done by minimizing the production of bilgewater, disposing of bilgewater on shore where adequate facilities exist, or discharging into waters not subject to this permit (i.e., more than 3 nautical miles (nm) from shore) for vessels that regularly travel into such waters. Though not regulated under this permit, EPA notes that discharges of bilgewater outside waters subject to this permit (i.e. more than 3 nm from shore) are regulated under Annex I of the International Convention for the Prevention of Pollution from Ships as implemented by the Act to Prevent Pollution from Ships and U.S. Coast Guard regulations found in 33 CFR 151.09.
- Vessels greater than 400 gross tons shall not discharge untreated oily bilgewater into waters subject to this permit.
- Vessels greater than 400 gross tons that regularly sail outside the territorial sea (at least once per month) shall not discharge treated bilgewater within 1 nm of shore if technologically feasible (e.g. holding would not impact safety and stability, would not contaminate other holds or cargo, would not interfere with essential operations of the vessel). Any discharge which is not technologically feasible to avoid must be documented as part of the requirements in Part 4.2.

Job Aid Item: 7.3.g

Text: Overboard valves on bilge, bilge ballast salt-water service are locked/controlled. (40 CFR 110.3)

Background: Discharge valves / overboard valves are important for the discharge operations and operating of these valves will possible trigger overboard discharge or not.



Figure 16: O/B Valve

What to check for: Check for unlocked / uncontrolled overboard valves on bilge, bilge ballast salt water service. Identification of the valve (tag) should be of lasting character. Are locking devices in place? Who is responsible for these opening / locking regimes? For manual operated valves how is locking / closing performed and tracked / verified? For remote operated valve how is locking performed and tracked? Example of valves with description (pictures) is recommended.

Citations: See general section.

Job Aid Item: 7.3.h

Text: The ship uses a system to manage overboard valves; using seals, to control overboard discharges. (40 CFR 110.3)

Background: Discharges pending on opening closing of valves. Valve operating management regime is synchronized in to control overboard discharges.

What to check for: Seal regime specifics, numbering, recording, conventions, and how the “seals” are issued and managed. Who is responsible? Which valves are subject to this regime? Is a list overview status of the valves kept? How is the management system executed? The VSSP include overboard valve identifications are the same identifications used in the valve management? When is the valve management applied? Where is the status of the management kept?

Subsection 4: Oil Sludge Handling (33CFR155.370 b)

Job Aid Item: 7.4.a

Text: Sludge and spent lube oils are offloaded or properly disposed of onboard. 33 CFR 151.25

Background: Fuel burning ships will produce sludge. A deminimus is used to verify that sludge is produce and should be counted for or demonstrated.

What to check for: Check the oil record book and manifests for accepted sludge materials onshore. : Check the sludge handling / record keeping for sludge / spent lube oils send shore based facilities (off load). Sludge handling accounted for the volumes reasonably produced. Sludge produced should be accounted for by burning, in tanks, or burned. No offloads of sludge could indicate an issue. Check that estimated quantities of sludge produced- normal or excessive (fuel sludge production can exceed 2% total fuel use).

Citations: See general section. Oil record book. Avoiding oil in water.

Job Aid Item: 7.4.b

Text: Check the sludge handling / sludge waste incineration process if incinerated (40 CFR 110.3) (33 CFR 151.25)

Background: Sludge should be accounted for. If combusted the volume accounted for should a reasonable amount. Check that records are properly kept. Some vessels have burned sludge in their boilers, sometimes resulting in poor opacity performance. From a technical viewpoint most engine manufacturers are not allowing to burn sludge in the engine.

What to check for: Is the incinerator suitable to combust sludge? If so co-firing diesel needed? (Diesel fuel consumption log). Are records included up to date for this use? Is the sludge transfer system tank to incinerator system in working order? Check furnace evidence in use for oil sludge. Records of inspections and tests are up to date. If sludge is incinerated, check how metering of the sludge is performed.

Citations: See general section- oil record book.

Job Aid Item: 7.4.c

Text: Sludge handling when sludge is blended with fuels IAW 40 CFR 1043.60. Sludge blended with fuels is recorded. (33 CFR 151.25)

Background: Sludge should be accounted for to show no improper discharge overboard. Burning of sludge must be consistent with federal air regulations regarding NOx and SOx rules.

What to check for: Check oil record book and fuel consumption logs. Check record keeping and metering estimates of sludge blends. Check equipment that the fuel /sludge blends (mix) is used.

Citation- see air section.

Subsection 5: Lifeboats; Security Vessels; Tender Boats; Deck (40 CFR 110.3)

Note: Citations found in general citations in this section unless otherwise noted.



Job Aid Item: 7.5.a

Text: Vessel(s) mechanical systems are free of oil, grease that could enter the water (40 CFR 110.3)

Background: Small vessels used by the cruise ship in regular or emergency operations are potential sources of oil to water.

What to check for: water Check lifeboat / security / tender vessel engineering systems are oil or grease leak / drip free. Visually check decks under stowed tenders and boats for signs of oil spills or oil stains. Include a visual inspection for greased gobs / drops on decks / equipment. Winch equipment containment should be oil free. Some vessels have “outrigger davits” they are hydraulically operated. Check hose connector oil sweating / leaks and containment areas. Also steel rope should be checked for grease gobs and for overfilled rope lubricators.

Job Aid Item: 7.5.b

Text: Vessel(s) bilges free of oil that could be discharged. (40 CFR 110.3)

Background: Small vessels used by the cruise ship in regular or emergency operations are potential sources of oil.

What to check for: Check lifeboat / security / tender vessel bilges are clean of excess oil. Visually check when available the bilges of vessels operated by the cruise ship. Should be clean of large amounts of oil and well maintained. No direct discharge from bilges to overboard if oil present.

Job Aid Item: 7.5.c

Text: Oil and grease from topside equipment follows IAW EPA VGP 2.2.1.

Background: Equipment such as winches and motors used to lower and raise lifeboats and tenders are a potential source of oil or grease into water, either directly running off or during cleaning activities.

What to check for: Check oil and grease from topside equipment (winches motors etc.). Visually check for oil spills on decks near machinery. If drip pans are available, check that there are procedures for draining and cleaning the pans.

Citation: EVP VGP 2.2.1 Deck Wash down and Runoff and Above Water Line Hull Cleaning

Vessel owner/operators must minimize the introduction of on-deck debris, garbage, residue and spill into deck washdown and runoff discharges. When required by their class societies (e.g., oil tankers), their flag Administrations, or the U.S. Coast Guard, vessels must be fitted with and use perimeter spill rails and scuppers to collect the runoff for treatment. Where feasible, machinery on deck must have coamings or drip pans to collect any oily water from machinery and prevent spills. The drip pans must be drained to a waste container for proper disposal and/or periodically wiped and cleaned. The presence of floating solids, visible foam, halogenated phenol compounds, and dispersants, or surfactants in deck washdowns must be minimized. Vessel operators must minimize deck washdowns while in port.

Subsection 6: Oil to Sea Interface (40 CFR 110.3 & AS 46.03.740)

Job Aid Item: 7.6.a

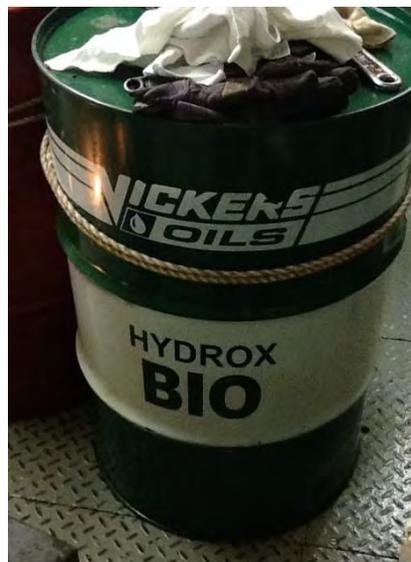
Text: Oil lubricated stern tubes, bow and stern thruster seals, fin-stabilizers, steering gear, Azipods etc. IAW EPA VGP 2.2.9.

Background: Any oil to sea interface is a potential source of oil leaking to seawater. Ocean rangers have reported a number of seal and azipod leaks. These leaks can start out at a small volume and increase over time.

What to check for: Check oil lubricated stern tubes, bow and stern thruster seals, fin-stabilizers, steering gear, Azipods etc. Check header tank levels under several operation conditions, seas, port, maneuvering etc. Check records of fill up volumes and frequency. Check for evidence of seawater intrusion into these oil to sea interfaces, such as draining of seawater from systems. The spent oil is counted for and should show up somewhere in the ORB. When the oil is incinerated or off loaded this is also recorded in the ORB.

Citation: EPA VGP 2.2.9 Controllable Pitch Propeller and Thruster Hydraulic Fluid and other Oil to Sea Interfaces including Lubrication Discharges from Paddle Wheel Propulsion, Stern Tubes, Thruster Bearings, Stabilizers, Rudder Bearings, Azimuth Thrusters, Propulsion Pod Lubrication, and Wire Rope and Mechanical Equipment Subject to Immersion.

The protective seals on controllable pitch propellers, azimuth thrusters, propulsion pods, rudder bearings, or any other oil to sea interfaces must be maintained in good operating order to minimize the leaking of hydraulic oil or other oils. The vessel owner/operator must not discharge oil in quantities that may be harmful as defined in 40 CFR



Part 110 from any oil to sea interface. If possible, maintenance activities on controllable pitch propellers, thrusters and other oil-to-sea interfaces should be conducted when a vessel is in drydock.

Minimize maintenance activities on stern tube seals when a vessel is outside of drydock. If maintenance or emergency repair must occur on stern tubes or other oil-to sea interfaces which have a potential to release oil in quantities that may be harmful as defined in 40 CFR Part 110, appropriate spill response resources (e.g. oil booms) must be used to contain any oil leakage. Operators of the vessel must have ready access to any spill response resources to clean any potential oil spills.

After applying lubrication to wire rope and mechanical equipment subject to immersion, wire ropes and other equipment must be thoroughly wiped down to remove excess lubricant.

Owner/operators should use an environmentally preferable lubricant, including vegetable oil, synthetic ester, or polyalkylene glycol as a base for these applications when feasible. Use of an environmentally preferable lubricant does not authorize the discharge of any lubricant in a quantity that may be harmful as defined in 40 CFR Part 110.

Job Aid Item: 7.6.b

Text: Lube oil consumption, oil records and type of oil used are recorded. (33 CFR 151.25)

What to check for: Check lube oil consumption oil records / type of oil used. Record of lube oil consumption and the type of lube oil used. In order to detect “consumption trends” check the records back to early in the season. Sudden increase of lub oil in for example stern tube may indicate an oil leak. Some vessels keep also records of the oil drum stores, such records are extremely helpful to find out which oils are used on board. Some lubricants are combusted in the diesel engines. A good example is the engines with dedicated cylinder lubrication systems. The vessel keeps track on this kind lubrication consumption. Another point of attention is the “small engine lube oil changes”. Emergency diesels, diesels on the tenders and lifeboats do sometimes during the Alaska cruise season a lube oil exchange. Monitor how these oil volumes is counted for, recorded, and the handling of the spent oil.

Citation: See general section under Oil Record Book.

Job Aid Item: 7.6.c

Text: Mechanical systems with oil to sea interface are free from unusual loss of lubricant. (40 CFR 110.3)

Background: Non “first supplied” piping conveyance systems (as built) are suspicious. However a change of operations may necessitate the use of hoses and temporarily made piping systems. If such system is found document and ask. Portable pumps connected to nipples / re-routing liquids to other tanks should be investigated and found out why. In any case document (pictures) and described the system. In a particular case you may found oil drums (storage) and fill apparatus o keep the oil gravity tanks at level. In case systems should function without regular / periodical refilling the designers most likely did not design in the as built concepts a permanent fill option. If in these cases temporarily or homemade permanent fill options are made there is a change of operation. Further check is warranted.

What to check for: Check for presence of portable pumps, hoses, drums and other equipment / supplies / arrangements necessary to refill systems equipment. Portable pumps, hoses, non shipyard valves welded on connectors and flanges. Hose and connecting parts stored or in place adjacent the system to refill. Different



pipe material quality flanging as remainder of the system (yard standard deviation). Poorly routed homemade bends or mediocre welding work on piping. Not properly bracketed piping sections. Drums empty, or filled? How are full drums temporarily tanks drums removed after filled up? What medium is transferred? From which system to which other system? Who operates the systems and when is the system operated? Are records kept? If so what include the records? How are transferred volumes estimated?

Subsection 7: Miscellaneous Oil Pollution (40 CFR 110.3)

General background: This subsection includes additional checks for actual or potential leaks or spills overboard.

Job Aid Item: 7.7.a

Text: Fore peak tank or compartments and tanks forward of the collision bulkhead are free from Oil, hazardous materials, or hazardous waste IAW 33 CFR155.470

Background: Oil or hazardous waste stored before a collision bulkhead could create an environmental and safety hazard if a collision occurred. This is often an item that was established during the initial design / as built approval of the vessel self. On most vessels the “collision bulkhead” referred to the “first water tight bulkhead from keel to upper deck” for that tank. Some vessels have identified this bulkhead in their general safety plan schematics / plans.

What to check for: Check for oil or hazardous waste stored forward of collision bulkhead.

Citation: 33 CFR 155.470 Prohibited spaces.

(a) In a ship of 400 gross tons and above, for which the building contract is placed after January 1, 1982 or, in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after July 1, 1982, oil or hazardous material must not be carried in a forepeak tank or a tank forward of the collision bulkhead.

(b) A self-propelled ship of 300 gross tons and above, to which paragraph (a) of this section does not apply, may not carry bulk oil or hazardous material in any space forward of a collision bulkhead except:(1) For a ship constructed after June 30, 1974, fuel oil for use on the ship may be carried in tanks forward of a collision bulkhead, if such tanks are at least 24 inches inboard of the hull structure; or(2) For a ship constructed before July 1, 1974, fuel oil for use on the ship may be carried in tanks forward of a collision bulkhead, if such tanks were designated, installed, or constructed for fuel oil carriage before July 1, 1974.

Job Aid Item: 7.7.b

Text: Vessel has no indications of OWS bypasses or direct discharges of oil. (40 CFR 110.3)

Background: This is a general check of connections that could bypass the OWS and/or directly discharge oily water overboard. Pumps and hoses could also be an indication the OWS is not properly operating, and additional tanks are being used to store poly water.

What to check for: Check for out of place hoses, portable pumps, open man holes, fittings and connections in areas with stored oil or oily wastes that were not included in the design of the vessel. Check for hoses between tanks, unusual connections, portable pumps, etc of unknown use and origin. Check for connections to bilge or overboard.

Citations: See general oil background section.





OIL & HAZARDOUS SUBSTANCE SPILL NOTIFICATION FORM INSTRUCTIONS

PERSON REPORTING

Name of the person reporting the spill to ADEC.

PHONE NUMBER

Contact number of the person reporting the spill.

REPORTED HOW?

Phone – If you reported a spill during normal business hours. **Fax** – If you reported a spill by faxing in the spill report form. **Troopers** – If you reported a spill after hours to 1-800-478-9300.

DATE/TIME OF SPILL

Date and time of when the spill incident occurred.

DATE/TIME DISCOVERED

Date and time of when the spill was discovered.

DATE/TIME REPORTED

Date and time of when the spill incident was notified to ADEC.

LOCATION/ADDRESS

Spill incident location.

SUBSTANCE TYPE SPILLED

CR – Crude (Crude Oil)

EHS – Extremely Hazardous Substance (Aldrin, Ammonia<Chlorine, Formaldehyde, etc.)

HS – Hazardous Substance (Acid, Arsenic, Bases, Corrosion Inhibitor, Dioxin, Glycol, etc.)

NC – Non Crude Oil (Aviation Fuel, Bilge Oil, Diesel, Lube Oil, Hydraulic Oil, etc.)

PW – Process Water

UNK – Unknown

PRODUCT SPILLED

Name of the spilled product.

QUANTITY SPILLED

Amount released to the environment.

QUANTITY CONTAINED

Product contained that is recoverable. If 50 gallons of 100 gallon spilled was in a secondary containment (non permeable containment), you would write 50 gallons in this field. If 2 gallons of 5 gallons spill was contained using a boom, you would write 2 gallons in this field.

QUANTITY RECOVERED

Amount of free product that was recovered.

QUANTITY DISPOSED

Amount of free product that was recovered for disposal.

POTENTIAL RESPONSIBLE PARTY

Name/Business – Name of individual or business responsible for the spill incident.

Mailing Address – Mailing address for correspondence.

Contact Name/Number – Name and number of the person who will be the main point of contact for the spill incident.

PRP (POTENTIAL RESPONSIBLE PARTY) TYPE

Select from the list.

FACILITY TYPE Select from the list.

SOURCE OF SPILL

Indicate where the spilled product came from.

SOURCE CLASSIFICATION

Select from the list.

CAUSE OF SPILL

Indicate what caused the spill incident.

CAUSE CLASSIFICATION Select from the list.

CLEANUP ACTIONS

Describe action taken to cleanup the spill.

DISPOSAL METHOD AND LOCATION

State how the waste will be handled. If the contaminated items are shipped or taken to another facility, a copy of the waste manifest must be submitted to ADEC.

SURFACE AREA AFFECTED

Indicate the size of affected area (e.g. 20 x 20 ft).

SURFACE TYPE

Describe the surface that was impacted by the discharge (e.g. Wide Bay, asphalt, gravel, snow, etc.).

Vessel Seasonal Checklist

General background:

This checklist includes items that Ocean Rangers must monitor once per cruise season. Once verified these items should not change significantly during the cruise season. The department has determined that monitoring and recording the items on this checklist one per season should provide sufficient oversight to confirm environmental compliance for the cruise season. It should reduce the time required by vessel crews and Ocean Rangers to monitor, and make the time available for Ocean Rangers to monitor more dynamic items. In-season changes that the vessel makes that affect items on this checklist may make a re-check of those items necessary. A good example is when a vessel changes to a different discharge recording system, then the new system should be documented as well. This checklist also includes informational elements that will be helpful to other Ocean Rangers in performing their work, as well as providing an overview of environmental processes for ADEC.

Ocean Rangers. The first Ocean Ranger assigned to a voyage on a vessel shall complete the seasonal checklist. The once per season checklist is relatively a long list with many elements. The elements are clustered per group. Recordkeeping on some ships is generally centralized, so this should make the effort taken on the seasonal checklist somewhat easier. This report should also help familiarization of the environmental systems onboard. If there are questions regarding the once a season report, please forward these to your manager to submit to ADEC.

The Ocean Ranger may split the seasonal report into sections; for example, documentation and VSSP could be completed on the first day. Upon completion, the Ocean Ranger will submit the completed checklist to the Crowley Program Manager. While completing the seasonal report, the Ocean Ranger shall also provide a daily report with minimal information each day, including: daily checks for each section, information section, and any compliance items noted.

Crowley Program Manager. The Crowley Program Manager shall require one once per season checklist per each vessel operating on more than one Alaskan voyage. Do not conduct a seasonal report on vessels making only one Alaskan voyage. The Crowley Program Manager shall ensure that all seasonal reports are received in a timely manner. The Crowley Program Manager will conduct quality assurance/quality control on the checklist and then submit the completed and QA/QC verified checklist to ADEC. Upon ADEC approval of the checklist, the Crowley Program Manager shall make the information contained on the checklist available for each Ocean Ranger that rides the ship during the cruise season.

ADEC Cruise Ship Program. The ADEC Cruise Ship Program will ensure that all checklists are received from the Crowley Program Manager. The Cruise Ship Program will review the checklist. If the program requires more information, we will request that the Crowley Program Manager arrange for an Ocean Ranger to collect and provide the information to the Crowley Program Manager.

Section 1: Wastewater (33 CFR 159, 18 AAC 69.050, Alaska General Permit, EPA VGP):(Including ballast water and other EPA VGP listed discharges)

Subsection 1: Information

Seasonal Item: 1.1.a

Text: Wastewater primary contact:

What to enter: Title of the person who will be the primary contact for wastewater (BW/GW).

Seasonal Item: 1.1.b

Text: Ballast water primary contact:

What to enter: Title of the person who will be the primary contact ballast water.

Seasonal Item: 1.1.c

Text: Name of Sewage and Graywater Discharge Record Book (discharge logs) used onboard:

Background: This is information for ADEC and other Ocean Rangers. The official name should be the Sewage and Graywater Discharge Record Book. Vessel crews can use different informal names. The general permit requires copies of the discharge record books be submitted to ADEC monthly. Some vessels now utilize an electronic recordkeeping system.

What to check for: Enter the name the crew uses for the discharge log. Enter the printed name on the log if it is different.

Seasonal Item: 1.1.d

Text: Name of instructions or guide to completing (making entries) discharge record book and location:

Background: This is information to assist ADEC and other Ocean Rangers in reading the discharge logs. These instructions often tell how to fill in- for example to use local time or GMT. An example can be found in the wastewater section of the guidebook with examples of discharge logs.

What to check for: If there are discharge log instructions, record the name of the instructions. Information here will be useful in the recordkeeping section. Check that discharge ports names match those in the VSSP.

Seasonal Item: 1.1.e

Text: 2013 USCG discharge authorization letter? (for those that applied to USCG for continuous or stationary discharges):

Background: The US Coast Guard has been asked to provide letters documenting that the vessel has participated in and met the requirements of the continuous compliance program. The letter is not required to be produced by the US Coast Guard under federal regulations, but should be onboard as a reference for those vessels that are authorized. ADEC will notify Ocean Rangers if this letter program is discontinued.

What to check for: Check if the authorization letter is present.

Subsection 2: Documentation

Seasonal Item: 1.2.a

Text: MSD International Sewage Pollution Prevention Certificate (ISPPC) or Non-U.S. flag "Certificate of Type Test MARPOL Annex IV". (MARPOL IV / 33 CFR159.7)

Background: Cruise ships that have MSD systems must have some type of documentation that these units were certified. The certification could be from the US Coast Guard or from a classification society such as DNV.

What to check for: Check for a placard or documentation that shows the MSD is certified or vessel has a sewage pollution certificate.

Seasonal Item: 1.2.b

Text: Explain how wastewater logs (sewage and greywater discharge record book) are recorded and the process to ensure they are current and accurate:

Background: ADEC has found errors in logbooks, sometimes these errors are easily explained or just a misinterpretation of what was written. Understanding the process will help ADEC review and other Ocean rangers who check logbook entries.

What to enter: Explain the process that discharge logs are completed. Use titles, not names if identify who does each step. How is information collected? When are entries made? How is it entered? How are deviations or mistakes identified?

Seasonal Item: 1.2.c

Text: What time is used in the discharge logs (GMT, local, etc.)?

What to enter: There is no requirement for what time to record in the discharge logs, however there must be consistency. For example- if “local” time is used, is it Alaska or Pacific, and do they change when crossing time zones. Please record what time zone is used, and if there are any deviations.

Seasonal Item: 1.2.d

The next two items include information for onboard record keeping. These checks will allow other Ocean Rangers to quickly find documents needed for reporting. Identify the name and location of the record keeping document for each item with the word “records”, “recordkeeping”, or “recorded”.

Include the ship’s name for each logbook, record book, and other related documentation. If the logs are electronic, identify the name and location. If item is not recorded in a dedicated logbook but in another log book, state where it is recorded. (e.g. pulper water in Sewage and Graywater record book). If item is not recorded mark as “No”. For tables mark if SAT (satisfactory) or UNSAT (unsatisfactory), or NA with a checkmark or X. Some vessels use electronic logs. For these use the same approach as traditional logs. Include information on how these systems are kept up to date and accurate.

Note: Many of these items do not have citations. They are regarding information that is helpful for other Ocean rangers in gathering information, and for ADEC as a reference. Full citations regarding discharge logs and other reporting requirements can be found in the wastewater section of the guidebook.

Text: Are Wastewater waste-stream discharges recorded and where:

- i. Graywater
- ii. Sewage (blackwater or mixed)
- iii. Permeate (treated wastewater)
- iv. Bio Sludge
- v. Bio solids
- vi. Pool, spa and Jacuzzi
- vii. Pulper water
- viii. Pulper convey water
- ix. Dewatering water
- x. Boiler/economizer blowdown and washdown (EPA VGP)
- xi. Ballast water (33CFR151.070)
- xii. Other water sources that could become wastewater

What to enter: For each item, mark if it is recorded, and enter the name or description of the log it is recorded in and location on where to find the records.

Pool and spa background

Text: Pool Spa Jacuzzi waste water tank levels/soundings and discharge records

What to check for: Enter the name of the log or recordkeeping where this information is recorded. If not recorded, please enter that it is not recorded. How does the vessel determine they are in an area where the EPA VGP permits discharge?

Boilerwater background

Text: Steam Boilers blown down water tank levels / soundings and discharges records

What to check for: Not required, but could be done. Enter the name of the recordkeeping of boiler blow down or washdown discharges and tank levels. If not recorded, please enter “not recorded”. How does the vessel determine they are in an area where the EPA VGP permits discharge?

Ballast Water Citations: 151.2060 Reporting requirements.

(a) Ballast water reporting requirements exist for each vessel subject to this subpart bound for ports or places of the United States regardless of whether a vessel operated outside of the Exclusive Economic Zone (EEZ), unless exempted in § 151.2015 of this subpart.

(b) The master, owner, operator, agent, or person in charge of a vessel subject to this subpart and this section must provide the information required by § 151.2070 of this subpart in electronic or written form to the Commandant, U.S. Coast Guard or the appropriate Captain of the Port (COTP). The Ballast Water Reporting Form (Office of Management and Budget form Control No. 1625-0069) and the instructions for completing it are available on the National Ballast Information Clearinghouse's Web site at <http://invasions.si.edu/nbic/submit.html>. Information must be submitted as follows:

(3) For any vessel that is equipped with ballast water tanks and bound for ports or places in the United States and not addressed in paragraphs (b)(1) and (b)(2) of this section: If a vessel's voyage is less than 24 hours, report the required information before departing the port or place of departure. If a voyage exceeds 24 hours, report the required information at least 24 hours before arrival at the port or place of destination. The information must be sent to the National Ballast Information Clearinghouse using only one of the following means:

(i) Via the Internet at <http://invasions.si.edu/nbic/submit.html>.

(ii) Email to NBIC@BallastReport.org.

(iii) Fax to 301-261-4319.

(iv) Mail to U.S. Coast Guard, c/o Smithsonian Environmental Research Center, P.O. Box 28, Edgewater, MD 21037-0028.

(c) If the information submitted in accordance with this section changes, the master, owner, operator, agent, or person in charge of the vessel must submit an amended report before the vessel departs the waters of the United States.

151.2070 Recordkeeping requirements.

(a) The master, owner, operator, agent, or person in charge of a vessel bound for a port or place in the United States, unless specifically exempted by § 151.2015 of this subpart, must ensure the maintenance of written records that include the following information:

(1) Vessel information. This includes the name, International Maritime Organization (IMO) number (official number if IMO number is not issued), vessel type, owner or operator, gross tonnage, call sign, and State of registry (flag).

(2) Voyage information. This includes the date and port of arrival, vessel agent, last port and country of call, and next port and country of call.

(3) Total ballast water information. This includes the total ballast water capacity, total volume of ballast water onboard, total number of ballast water tanks, and total number of ballast water tanks in ballast. Use units of measurements such as metric tons (MT), cubic meters (m³), long tons (LT), and short tons (ST).

(4) Ballast water management (BWM). This includes the total number of ballast tanks/holds that are to be discharged into the waters of the United States or to a reception facility.

(i) If the vessel uses an alternative BWM method, note the number of tanks that are managed using an alternative method, as well as the type of method used.

(ii) Indicate whether the vessel has a BWM plan and IMO ballast water management guidelines onboard, and whether the BWM plan is used.

(5) Information on ballast water tanks that are to be discharged into the waters of the United States or to a reception facility. Include the following:

(i) The origin of ballast water. This includes date(s), location(s), volume(s) and temperature(s). If a tank has undergone ballast water exchange (BWE), list the loading port of the ballast water that was discharged during the exchange.

(ii) The date(s), location(s), volume(s), method, thoroughness (percentage exchanged, if BWE conducted), and sea height at time of exchange of any ballast water exchanged or otherwise managed.

(iii) The expected date, location, volume, and salinity of any ballast water to be discharged into the waters of the United States or to a reception facility.

(6) Discharge of sediment. Include the name and location of the facility where sediment disposal will take place, if sediment is to be discharged within the jurisdiction of the United States.

(7) Certification of accurate information. Include the master, owner, operator, agent, person in charge, or responsible officer's printed name, title, and signature attesting to the accuracy of the information provided and certifying compliance with the requirements of this subpart.

(b) The master, owner, operator, agent, or person in charge of a vessel subject to this section must retain a signed copy of this information onboard the vessel for 2 years.

(c) Two alternative ways to meet the requirements of this section are—

(1) Completing and retaining the Ballast Water Reporting Form contained in the IMO ballast water management guidelines; or

(2) Completing the ballast water information section of the form required by the St. Lawrence Seaway Pre-entry Information from Foreign Flagged Vessels.

(d) The master, owner, operator, agent, or person in charge of a vessel subject to this section must retain the monitoring records required in 46 CFR 162.060-20(b) for 2 years. These records may be stored on digital media but must be viewable for Coast Guard inspection.

(e) The information required by this subpart may be used to satisfy the ballast water recordkeeping requirements for vessels subject to § 151.2025(c) of this subpart and 33 CFR part 151 subpart C.

Seasonal Item: 1.2.e

Text: Waste Water tanks levels / soundings recorded / tracked (mark all that are recorded):

- i. Graywater
- ii. Sewage (blackwater or mixed)
- iii. Permeate (treated wastewater)
- iv. Segregated GW BW
- v. Other tanks (WW)
- vi. Bio Sludge
- vii. Bio solids
- viii. Pool, spa, and Jacuzzi
- ix. Pulper water
- x. Pulper convey water
- xi. Pulper dewater
- xii. Boiler/Economizer blowdown and washdown
- xiii. Ballast water (33CFR151.2070)
- xiv. Other tanks that could become wastewater

What to enter: Record if the levels are recorded, and which log or recordkeeping is used.

Seasonal Item: 1.2.f

Text: Records on ballast transfers (33 CFR 151.2060)

What to enter: Are internal transfers or changes recorded? Is the ballast water discharged through the wastewater system? Any offloading to shore of ballast water? Is sampling of the ballast water performed?

Subsection 3: Material Conditions

Seasonal Item: 1.3.a

Text: MSD unit(s). List with manufacturer name, model number, capacity, number of units.

Background: Marine sanitation devices should have a placard or certification with capacities and other information. Some ships may have replaced MSDs with AWTs, and some may still have MSDs installed.

What to enter: List all MSD devices installed with name, model number, year built (if available), number of units, and maximum capacity (with the units used).

Seasonal Item: 1.3.b

Text: Are there interfaces between the ballast and WW system?

There is always a potential for wastewater to enter the ballast water system if equipment or tanks are shared.

What to enter: Yes or No. If permitted ship list connections (this may be in the VSSP). If there are connections complete item 1.4.b.

Subsection 4: Operations and procedures

Seasonal Item: 1.4.a

Text: Ballast Management Plans/ procedures onboard (Y/N)?

What to enter: Are there plans and procedures? If there are, what are they called?

Seasonal Item: 1.4.b

Text: Procedures for changing wastewater tanks to ballast water tanks (if applicable- see item 1.3.b). What is done to prevent contamination of treated WW? Please list major procedures such as if pipes are drained or tanks cleaned.

Background: This information could be in the VSSP. Some ships use the same tanks and piping to collect or distribute wastewater and ballast water. There is always a potential for wastewater to enter the ballast water system if equipment or tanks are shared. Cruise ships have procedures to prevent the introduction of wastewater into ballast water discharges. Any offloading to shore of ballast water?

What to enter: Enter N/A if non permitted non-discharging in Alaska ship. List procedures that would prevent wastewater from entering the ballast water system or effluent. What is done to prevent contamination of ballast water or treated WW?

Section 2: Sampling and Wastewater General Permit

Note: This section is only to be completed if the vessel has an approved Vessel Specific Sampling Plan (VSSP) for this year. For unpermitted vessels with a VSSP do not check items with a “GP” as a citation such as authorization letter.

Seasonal Item: 2.2.a

Text: General Permit Authorization letter on board (GP)? (Y/N or NA)

Background: ADEC issues an authorization letter to discharge under the General Permit. An example is found in the wastewater section of the guidebook. This letter contains the vessel specific terms of discharge under the GP, such as what treatment system is used.

What to check for: Check that there is an authorization letter carried onboard if the vessel is authorized to discharge in Alaska.

Citation: See most recent General Permit

Seasonal Item: 2.2.b

Text: State of Alaska General Permit copy on board (GP)? (Y/N or NA)

What to check for: Permitted vessels need to carry a copy of the General Permit as a reference.

Citation: See most recent General Permit.

Seasonal Item: 2.2.c

Text: VSSP document carried onboard and readily available (GP)? (Y/N or N/A)

Background: See the wastewater section of the guidebook for a description of the VSSP (1.3.a).

What to check for: Check that the VSSP is onboard and available.

Citation: See most recent General Permit.

Seasonal Item: 2.2.d

Text: NWCCA Quality Assurance Project Plan carried onboard IAW 18 AAC 69.025? (Y/N or N/A)

Background: The Quality Assurance Project Plan (QAPP) is a plan that documents sampling techniques and quality control and is approved by ADEC and the US Coast Guard. In order for the vessel and sampler to determine if the requirements of the QAPP are met, they need to have a copy onboard. See wastewater section under item 1.3.b for additional details.

What to check for: The most recent approved QAPP must be onboard and available if sampling.

Citation: 18 AAC 69.025 (f)

(f) The owner or operator shall maintain a copy of the valid, approved plan of sampling techniques and analytical testing methods on board each vessel that the owner or operator causes or allows to be operated in the marine waters of the state.

Seasonal Item: 2.2.e Wastewater recordkeeping (for dischargers)

Seasonal Item: 2.2.e.i

Text: AWTS Operations

What to check for: Are AWTS operations logged? If they are, explain where. This item will be useful for other Ocean Rangers checking on the operability of the AWTS.

Seasonal Item: 2.2.e.ii

Text: AWTS maintenance and repairs recorded

What to check for: Are AWTS maintenance and repairs logged? If they are, explain where. This item will be useful for other Ocean Rangers checking on the operability of the AWTS.

Seasonal Item: 2.2.e.iii

Text: AWTS system chemicals (process) record

What to enter: Enter if there is a log that records what or when process chemicals were added to the AWTS. If not, mark either “none used” or “not recorded”. No requirement for recording, but it is useful for determining if an AWTS is functioning according to manufactures specifications.

Seasonal Item: 2.2.e.iv

Text: GW BW maintenance / chemical treatment records (e.g. de-scaling etc.)

What to enter: Where this is logged. Again this is not required, but useful information on the functioning of the AWTS and/or MSD.

Subsection 3: Material Conditions and Equipment

Seasonal Item: 2.3.a

Text: AWTS Units (if installed). List with manufacturer name, model number, capacity, number of units.

Background: See guidebook wastewater section for information on AWTS units. For future permit development ADEC needs information regarding capacity of ships that could be permitted in the future, even if they are not discharging at this time.

What to enter: List all AWTS devices installed with name, model number, year built (if available), number of units, and maximum capacity (with the units used). If devices are the same as listed as MSDs, enter same as above. If no AWTS enter N/A.

Seasonal Item: 2.3.b

Text: Does wastewater treatment equipment and capacities match the information provided in the ADEC GP Notice of Intent (permitted ships only)?

Background: This information should be available after completing question 3.1.b above and reviewing the VSSP for accuracy. A copy of the NOI will be in the DEC Ocean Ranger electronic files. The NOI is the basis for awarding an authorization for discharge in Alaska, and contains information necessary for permit development.

What to enter: Enter N/A if non permitted ship. If permitted enter Yes if information in the NOI is correct. If information is not correct enter No and submit an Incident or General Report with information on what is not correct.

Seasonal Item: 2.3.c

Text: Are flow discharge meters installed?

What to enter: Record if flow meters are installed. (Y/N)

Seasonal Item: 2.3.d

Text: If flow meters are installed are they used?

What to enter: The GP has requirements for reporting. Record if they are used and if they are functional. (Y/N)

Subsection 4: Operations and procedures

Seasonal Item: 2.4a

Text: Explain process for estimating or metering WW discharged (both treated and untreated).

What to enter: The GP has requirements for reporting. Please note the process used to record volumes and times in the discharge record book (logs). Please note the process used for estimating or metering.

Seasonal Item: 2.4.b

Text: Procedures for changing wastewater tanks to ballast water tanks (if applicable). Are there interfaces between ballast and WW system? Are pipes drained? Are tanks cleaned? Please list major procedures. What is done to prevent contamination of treated WW?

Background: This information could be in the VSSP. Some ships use the same tanks and piping to collect or distribute wastewater and ballast water. There is always a potential for wastewater to enter the ballast water system if equipment or tanks are shared. Cruise ships have procedures to prevent the introduction of wastewater into ballast water discharges.

What to enter: Enter N/A if non permitted non-discharging in Alaska ship. If permitted list if there are connections (this may be in the VSSP). List major procedures that would prevent wastewater from entering the ballast water system or effluent.

Subsection 5: Vessel Specific Sampling Plan (VSSP) (18 AAC 69.030 and 33 CFR 159.37 (c))

VSSP and OWS checks are more detailed than those listed in the job aid for these subjects. They shall be done again if there are major changes to systems during the cruise season, or if there are compliance checks requested by ADEC that relate to use of the equipment. Background information can be found in the Job Aid sections of the guidebook.

Detailed Piping and Compliance Checks. These items are more “in the details” look at plans, such as pipe arrangements, tracing of valves flanges / blind flanges, and checks of equipment used. This may include looking at pipe tank connections and other systems inter tied with the piping system. Correlations are made on how systems are interwoven. An example is wastewater storage in double bottom tanks. How is this done? How are these systems “interfaced” (pipe lay out system) with the Ballast water system?

Although the piping system on board of large cruise vessels are relatively straight forward, the possible integration of the piping systems with other systems (e.g. wastewater holding tanks / ballast water) can make this job more “demanding”.

Check all items that apply. List any deviations noted and report deviations in the VSSP on your daily report as well (under 1.3.a). Note this section only applies to ships that are sampling for ADEC or USCG and have an approved VSSP.

a. Check and confirm sample valve related piping & sample valve location is as documented in VSSP.
b. Check that WW sources match VSSP description and volumes
c. Treatment systems and processes listed in VSSP match those onboard.
d. Check VSSP capacities against treatment system posted or documented values.
e. Check that discharge ports (names and locations and type of effluent) match VSSP and wastewater logs.
f. Check discharge port diameter.
g. VSSP estimates of production are reasonable estimates and match production amounts
h. Tank lists in VSSP match locations, names, capacities, and what is stored
i. Discharge pumps and flow rates match VSSP
j. Procedures for discharges match those provided in VSSP.
k. Do the standards for determining deviations listed in the VSSP match what are used

Section 3: Hazardous materials and solid waste

For background please refer to the waste sections of the guidebook. Note- for full citations see the waste sections of the guidebook.

Citation: 33 CFR 151.55: Recordkeeping requirements.

- (a) This section applies to the following:
 - (1) Every manned oceangoing ship (other than a fixed or floating platform) of 400 gross tons and above that is engaged in commerce and that is documented under the laws of the United States or numbered by a State.
 - (2) Every manned fixed or floating platform subject to the jurisdiction of the United States.
 - (3) Every manned ship that is certified to carry 15 passengers or more engaged in international voyages.
- (b) The master or person in charge of each ship under paragraph (a)(1), (a)(2), or (a)(3) of this section shall ensure that a written record is maintained on the ship of each of the following garbage discharge or disposal operations:
 - (1) Discharge overboard.
 - (2) Discharge to another ship.
 - (3) Discharge to a reception facility.
 - (4) Incineration on the ship.
- (c) The record under paragraph (b) of this section must contain the following information on each discharge or disposal operation:
 - (1) The type of operation as described under paragraphs (b)(1) through (b)(4) of this section.
 - (2) The date and time of the operation.
 - (3) If the operation was conducted at a port, the name of the port.
 - (4) If the operation was not conducted at a port, the latitude and longitude of the location where the operation was conducted and the estimated distance of that location from shore. If the operation involved off-loading to another ship, the identity of the receiving ship by name and official number.
 - (5) The amount of garbage involved, described by volume in cubic meters.
 - (6) For discharges into the sea, a description of the contents of the garbage, described by the following categories:
 - (i) Plastic material.
 - (ii) Floating dunnage, lining, or packing material.
 - (iii) Ground paper products, rags, glass, metal, bottles, crockery, or other similar garbage.
 - (iv) Unground paper products, rags, glass, metal, bottles, crockery, or other similar garbage.
 - (v) Victual wastes.
 - (vi) Incinerated ash.
 - (vii) Incinerated plastic residue.
- (d) The record under paragraph (b) of this section must be prepared at the time of the operation, certified as correct by the master or person in charge of the ship, maintained on the ship for two years following the operation, and made available for inspection by the Coast Guard.

Subsection 1: Information

Seasonal Item: 3.1.a

Text: Title of Responsible Person on board (33 CFR 151.55(d) for reporting) (33 CFR 151.63 for responsible party):

What to enter: Title (not name) of the person responsible for waste handling.

Citation: 33 CFR 151.63 (a) a) The master, operator, or person who is in charge of a ship shall ensure that all garbage is discharged ashore or in accordance with §§ 151.66-151.73.

Subsection 2: Documentation

Seasonal Item: 3.2.a

Text: Certification of TBT free paint coating on hull (AS 46.03.715)? (Y/N)

Background: TBT paint use and sale was banned in Alaska under state law based on concern regarding the toxicity and long term effects of the antifouling paints being used.

What to check for: Most ships will have a TBT certificate available.

Citation: AS. 46.03.715(d). Sale and use of TBT-based antifouling paint.

(d) If a vessel of the United States government, a foreign vessel in state water fewer than 90 consecutive days, or a vessel of 4,000 gross tons or more was painted or treated with a TBT-based marine antifouling paint or coating before January 1, 2001, the paint or coating need not be removed, but the vessel may not be repainted or retreated with a TBT-based marine antifouling paint or coating.

(e) In this section

(1) "slow-leaching TBT-based marine antifouling paint" means a TBT-based marine antifouling paint, but not a coating or other treatment, that has a measured release rate equal to or less than the maximum release rate established for qualified antifouling paints containing organotin by the U.S. Environmental Protection Agency under 33 U.S.C. 2401 - 2410 (the Organotin Antifouling Paint Control Act of 1988);

(2) "TBT-based marine antifouling paint or coating" means a paint, coating, or treatment that contains tributyltin, or a triorganotin compound used as a substitute for tributyltin, and that is intended to control fouling organisms in a fresh water or marine environment;

(3) "vessel" means watercraft used or capable of being used as a means of transportation on water, including (A) aircraft equipped to land on water; and (B) barges.

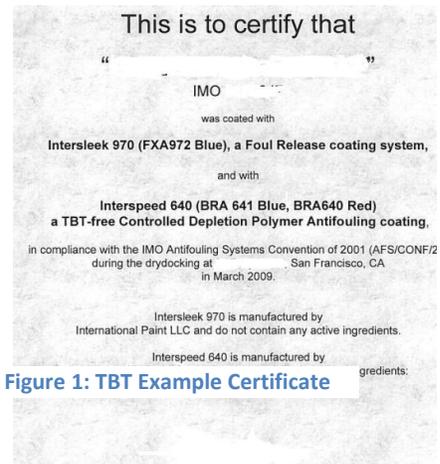


Figure 1: TBT Example Certificate

Seasonal Item: 3.2.b

Text: Waste / Hazardous wastes offloading plan(s) carried onboard (18 AAC 69.035 / 69.040)? (Y/N)

Background: See waste sections. This is a check if they are onboard. The daily report includes check if they are being followed. A vessel can deviate from a waste plan, but need to submit a deviation report in November documenting changes. Citation: See Waste sections of the guidebook.

What to check for: Check that the waste plans are available onboard.

Seasonal Item: 3.2.c

Text: Vessel garbage management plan IAW (18AAC 69.035 / 33 CFR 151.55(b)(d)).

Background: Cruise ships must submit waste offload plans to ADEC. See guidebook waste sections for more details.

What to enter: Check if the garbage management plan conflicts at all with the submitted Alaska waste offload plan. Enter satisfactory (SAT) if there are no conflicts.

Seasonal Item: 3.2.d

Text: Reports of alleged inadequacy of port reception facilities for garbage on file for both hazardous and non-hazardous waste (if applicable)? (33 CFR 158.400) (Y/N)

Background: Vessels need to log if they determine that there are inadequate port facilities for offload of waste. Please note- ADEC is not aware of any reports of inadequacy in Alaska, so there will most likely be no reports logged of inadequacy.

What to enter: Check if the offload records document any inadequacies. There will likely be no reports. If there are none, just enter N/A. If there are reports regarding Alaska on file, please enter information regarding the determined inadequacy.

Seasonal Item: 3.2.e Recordkeeping

Seasonal Item: 3.2.e.i

Text: Garbage logs, hazardous materials offloads recorded / tracked ?

What to enter: What are the names of the logs or records? How are offloads recorded?

Seasonal Item: 3.2.e.ii

Text: Overboard waste chute use recorded

Background: Waste chutes onboard cruise ships in Alaska are generally sealed or locked.
What to enter: If waste chutes are used, how are entries recorded. How are discharges tracked?

Seasonal Item: 3.2.e.iii

Text: Recording of incinerator ash disposal

Background: Incinerator ash could contain plastics, metals, or other non-combustibles such as glass.
Incinerator ash needs to be properly disposed of.

What to enter: How are records kept of incinerator ash disposal? Where is this recorded?

Seasonal Item: 3.2.e.iv

Text: Medical waste offload records

Background: Medical wastes are often treated as hazardous materials.

What to enter: How are records kept? Where is this recorded?

Seasonal Item: 3.2.e.v

Text: Photo waste and Hospital x-ray waste

Background: Photo wastes and chemicals can contain silver and toxic materials. Hospital wastes can contain x-ray developing materials. Not all ships may have these waste streams.

What to enter: How are records kept? Where is this recorded?

Seasonal Item: 3.2.e.vi

Text: Oily rags & filters records

Background: Oily rags and filters can be offloaded or incinerated.

What to enter: How are records kept? Where is this recorded?

Seasonal Item: 3.2.e.vii

Text: Other wastes records

Background: Biosolids and sewage sludge cannot be discharged in Alaska waters.

What to enter: Where are these materials stored? Is there sufficient holding capacity? How are records kept? Where is this recorded?

Subsection 3: Material Conditions and Equipment

Seasonal Item: 3.3.a

Text: Describe the controlled storage / processing or disposal facilities or treatment used.

Background: Vessels must discharge waste properly. Cruises ship have processes and procedures for this. Information on this will be a benefit to other Ocean Rangers on the vessel.

What to enter: Explain the process the vessel uses for the storage and disposal of wastes.

Subsection 4: Operations and Procedures

Seasonal Item: 3.4.a

Text: Vessel machinery logs, reports for maintenance, repairs, cleaning operations of the hazardous mat handling equipment are onboard and available (33 CFR 151.63 (b(3))).

Background: One of the factors when evaluating compliance with waste handling requirements is if the equipment is operable. One sign of operable equipment is regular maintenance and recording of operations.

What to enter: If compliant then enter SAT.

Citation: 151.63 Shipboard control of garbage.

(a) The master, operator, or person who is in charge of a ship shall ensure that all garbage is discharged ashore or in accordance with §§ 151.66-151.73.

(b) The following factors, among others, may be considered by enforcement personnel in evaluating compliance with §§ 151.51 through 151.77:

- (1) Records, including receipts, of garbage discharges at port reception facilities.
- (2) Records under § 151.55 or log entries of garbage discharges.
- (3) The presence and operability of equipment to treat ship-generated garbage, including, but not limited to, incinerators, grinders, or comminuters.
- (4) The presence of and adherence to a written shipboard waste management plan.
- (5) The absence of plastics in ship stores.
- (6) Ongoing educational programs to train shipboard personnel of garbage handling procedures and the need for these.
- (7) The presence of shipboard spaces used for collecting, processing, storing and discharging ship-generated garbage.

(c) The master, operator, or person who is in charge of a ship shall ensure that if garbage is transported from a ship by shipboard personnel, it is properly deposited into a port or terminal's reception facility.

Seasonal Item: 3.4.b

Text: Garbage Pollution Placards posted IAW (33CFR151.59)?

Background: Pollution placards are used to help educate crew and passengers in what can and cannot be discharged and where discharges are allowed of solid wastes.

What to enter: Enter Satisfactory (SAT) if they are present, are accessible, and prominent.

Citations: 33 CF 151.59(b) The master or person in charge of each ship under paragraph (a)(1) or (a)(2) of this section shall ensure that one or more placards meeting the requirements of this section are displayed in prominent locations and in sufficient numbers so that they can be read by the crew and passengers. These locations must be readily accessible to the intended reader and may include embarkation points, food service facilities, garbage handling spaces, and common spaces on deck. If the Captain of the Port determines that the number or location of the placards is insufficient to adequately inform crew and passengers, the Captain of the Port may require additional placards and may specify their locations. R 151.59 (b)

Seasonal Item: 3.4.c

Text: Procedures to minimize amount of potential waste IAW (40 CFR 262.27)?

Background: Generators of hazardous waste must certify they either a small generator and will minimize waste generation, or they are a large generator who will have a program in place to reduce the volume. This will commonly be seen as efforts to stop the introduction of hazardous materials or wastes into the garbage waste stream by proper handling and storage. Segregation of wastes will minimize volumes, because mixed waste would need to be handled as hazardous.

What to enter: Enter SAT if the vessel has procedures to minimize hazardous wastes, to segregate hazardous wastes, or has implemented measures to replace hazardous substances with less toxic materials.

Seasonal Item: 3.4.d

Text: Non-hazardous waste is discharged outside of special areas only (when special area restrictions are in effect). (33 CFR 151.69-71)?

Background: Non-hazardous waste needs to meet MARPOL requirements in special areas. At the time of the guidebook writing there are no special areas in Alaska. ADEC will inform Ocean Rangers if this changes.

What to enter: Enter satisfactory (SAT) if no special areas. If one is added for Alaska, check the restriction against the procedures and records onboard.

Seasonal Item: 3.4.e

Text: Describe the crew training in off loading process / procedures.

Background: Crew must be trained in proper procedures.

What to enter: Explain briefly the crew training in garbage offloading.

Section 4: Oil and Fuel

Note: General background and most citations are found in the oil section of the guidebook.

Subsection 1: Information

Text: Title of Designated Person in Charge (PIC) (33 CFR 155.700):

What to enter: Title (not name) of the person responsible for oil and fuel.

Subsection2: Documentation

Seasonal Item: 4.2.a

i. Oil water separator discharges
ii. Oily water separator repair & calibration
iii. Bilge water/ oily water sludges transfers
iv. Fuel / Lubrication Oils / sludges
v. Fuel tanks Lubrication oil tank levels
vi. Fuel bunker & consumption
vii. Fuel sulfur content (40 CFR 1043)
viii. Lubrication Oil bunker & consumption
ix. Drumstore Oil storage & consumption
x. Other oil wastes records
xi. Propulsion system lubrication use (records of fill ups and changes)
xii. Shaft seal to sea surfaces / tank levels
xiii. Stabilizer systems
xiv. Thruster systems tank levels
xv. Hydraulic system oil use (fill ups or changes)
xvi. Power rams
xvii. Steering gear
xviii. Deck equipment including lifeboat systems
xix. Grease consumption
xx. Oil spill reporting

What to enter: For each item answer if records are kept? Where is this recorded?

Subsection 3: Material Conditions

Seasonal Item: 4.3.a

Text: Oil pollution Placard is Posted (18 AAC 75.305)?

Background: State regulations require the posting of oil reporting information while in Alaska.

What to enter: SAT if placard is posted and conspicuous.

Citation: 18 AAC 75.305. Posting of information required. (a) The owner or operator shall display a discharge or release notification placard, provided by the department, that includes telephone numbers of department offices in conspicuous locations on a

(2) tugboat, tank vessel, oil barge, tow boat, or other vessel transporting a hazardous substance as cargo in state waters;

Seasonal Item: 3.3.b

Text: Checked standard discharge connection / bunker station (33CFR155.370(c))



Background: Most cruise ships reduce the risk of oil spills by using international connections from ship to shore / bunker ship. Most cruise ships do not bunker in Alaska or on very rare occasions bunker on limited scale (emergency lub oils / hydraulic oils). However, it should be noted that in most cases the heavy fuel, distilled fuels and lube oils, hydraulic oils etc. are bunkered in non Alaskan Ports. On very rare occasions bunkering on limited scale could happen in Alaska. General background included in oil section, under OWS of the guidebook.

What to enter: Check bunkering stations for oil spills and leaks / procedures. Enter SAT if the vessel has a pipeline/way to discharge oil mixtures properly.

Citation: (c) No person may operate a ship under this section unless it is equipped with a pipeline to discharge oily mixtures to a reception facility.

Seasonal Item: 3.3.c

Text: Checked fuel / lube sludge fill vent and overflow discharge containment IAW (33 CFR 155.320).

Background: Tanks are equipped with vents and containment system / overflow to overflow tanks.

Depending on the vessel, the overflows of the larger tanks are overflowing in a monitored (alarm equipped) fuel overflow tank. Some operators call this tank or tank system “fuel protection tank”. There may be more than one of these fuel overflow tanks in the system. Smaller tanks, or tanks that are not connected to the “oil overflow tank system” may direct overflow for the tanks to a dedicated vent pipe. This is in particular the case of smaller tanks (e.g. lube oil tanks. Note: Some vessels have their engine crankcase breather systems terminating in the funnel / top deck area. The breather contain oily (lube oil) air mixture. Around these breather terminals there is a containment area. Check this areas for oil and if the oil (condensate) is removed.

What to enter: Enter SAT if tanks are vented and overflow discharge containment meets federal requirements..

Citation: 155.320 Fuel oil and bulk lubricating oil discharge containment.

(a) A ship of 300 gross tons or more constructed after June 30, 1974 must have a fixed container or enclosed deck area under or around each fuel oil or bulk lubricating oil tank vent, overflow, and fill pipe, that:(2) For a ship of 1600 or more gross tons has a capacity of one barrel.

Seasonal Item: 3.3.d

Text: Checked containment / drains / scupper closures IAW (33 CFR 155.320).

Background: If scuppers and drains are closed during oil transfer operations. This is more related to bunkering; vessels generally do not bunker in AK. However the bunker oil spill prevention plan includes these items. Oil containment- are the plugs inserted / drains open? If procedures are implemented that when oil transfers operations are conducted, drains and scupper closures are done (same as above). However, it should be noted that in most cases the heavy fuel, distilled fuels and lube oils, hydraulic oils etc. are bunkered in non Alaskan Ports. On very rare occasions bunkering on limited scale could happen in Alaska.

With regard with fuel transfer for example on the vessel itself with dispensers / hoses etc. which may used to “fuel up” the life boats and tenders, this rule applies. In such occasion include this item in your report.

What to enter: Check for compliance with 33 CFR 370- citation is in item above.

Subsection 4: Operations and Procedures

Seasonal Item: 4.4.a

Text: Oil transfer procedures are posted and available in crew’s language? (18 AAC 75.025 / 33 CFR 154.300 a(3))

Background: Oil transfers from or to large cruise ships in Alaska is not common. Fueling of tenders is covered in the daily report Job Aid.

What to enter: SAT if yes or N/A.

Citation: 18 AAC 75.025. Transfer requirements. (a) The owner or operator of an oil terminal facility, railroad, tank vessel, or oil barge shall take all appropriate measures to prevent spills or overfilling during a transfer of oil, including reduced loading rates at the beginning and end of a transfer.

(d) The owner or operator shall ensure that each person involved in a transfer is capable of clearly communicating orders to stop a transfer at any time during the transfer.

33 CFR 154.300 a(3): Includes translations into a language or languages understood by all designated persons in charge of transfer operations employed by the facility.

Seasonal Item: 4.4.b

Text: Number of persons required on duty is as identified in the operations manual? (33 CFR 154.310 a(6))

Background: See 3.3.c. Citation: a(6) The minimum number of persons on duty during transfer operations and their duties;

What to enter: SAT if yes or N/A.

Seasonal Item: 4.4.c

Text: Means of communication identified in operations manual (33 CFR 154.310 a(9))

Background: See 3.3.c. Citation: a (9) A description of each communication system required by this part;

What to enter: SAT or UNSAT.

Seasonal Item: 4.4.d

Text: Procedures on oil spills listed in operations manual (33 CFR 154.310a(5(f))

Background: The procedures to be followed if the cargo spills or leaks, or if a person is exposed to the cargo should be in the operations manual.

What to enter: SAT or UNSAT

Subsection 5: Oily Water Separator (OWS) :Oil Water Separation/Oil systems (33 CFR 155.360-380)

Check all items that apply. List any deviations noted and report these on your daily report as well (under 7.2). Insert an X or check mark on the report for each item checked.

1: Documentation and Administrative

- a. Bilge system piping matches approved diagram (direct to OWS, holding tank etc.)
- b. Check if strip charts are fitted.
- c. General housekeeping and cleanliness, maintenance looks acceptable
- d. OWS system if in operation, evaluate operator competency.
- e. System operating in published ranges.

2: Mechanical- Is the OWS free from:

- a. Electrical bypasses, jumpers, extra switches on the OWS unit or meter control panel.
- b. Blanked flanges, pipe caps, dead-ended valves, or tees on inlet or outlet piping.
- c. Unusual connections to other machinery space overboard piping
- e. Recent paint on pipe segments
- f. Indications of bolting / unbolting of associated, piping segments valves.

3: Ensure:

- a. Observe has automatic recirculate (3 way valve) or shuts down when > 15 ppm
- b. In use valves operate properly
- c. Samples analyzed by OWS meter is from the OWS effluent (trace sample-line to ensure no clean-water connection)

Section 5: Air Pollution and Opacity (18 AAC 50.40 CFR 1043)

Note: General background and most citations are found in the air section of the guidebook. Self-reporting of known violations is required under 18 AAC 50.240.

Subsection 1: Information

Seasonal Item: 5.1.a

Text: Title of primary contact on board

What to enter: Title (not name) of the person responsible for air emissions.

Seasonal Item: 5.1.b

Text: Is emission monitoring equipment installed and used onboard? (Y/N)

Background: Most cruise ships monitor emissions. This information is helpful when evaluating self-reports.

What to enter: If Y then list how and the name of the records.

Seasonal Item: 5.1.c

Text: Emission monitoring equipment functioning properly? (Y/N/NA)

What to enter: If Y if equipment is functioning. NA if equipment is not installed onboard.

Seasonal Item: 5.1.d

Text: Opacity monitoring records kept onboard? (Y/N).

Background: Many cruise ships monitor opacity for self-monitoring and self-reporting of opacity exceedances. When ADEC evaluates these self-reports it is useful to know how the vessel keeps records.

What to enter: If Y then list how and the name of the records.

Seasonal Item: 5.1.e

Text: Self reporting records kept onboard? (Y/N).

Background: Many cruise ships monitor opacity for self-monitoring and self-reporting of opacity exceedances. When ADEC evaluates these self-reports it is useful to know how the vessel keeps records.

What to enter: If Y then list how and the name of the records.

Seasonal Item: 5.1.f

Text: Does the vessel have self reporting procedures in place? (Y/N)(18 AAC 50.240) Briefly explain those procedures if Y.

What to enter: If Y then list how and the name of the records.

Seasonal Item: 5.1.g

Text: Does the vessel have an approved alternative equivalent method for complying with fuel requirements in 40 CFR 1043 (40 CFR 1043.55)?

Citation: 40 CFR 1043.55 Applying equivalent controls instead of complying with fuel requirements.

Regulation 4 of Annex VI allows Administrations to approve the use of fuels not meeting the requirements of Regulation 14 of the Annex, provided the vessel applies a method that results in equivalent emission reductions. This section describes provisions related to applying this allowance.

(a) Any person may request approval of such equivalent methods for controlling emissions on U.S.-flagged vessels by submitting an application for certification of an equivalent control method to the Designated Certification Officer. If we determine that your control method achieves emission levels equivalent to those achieved by the use of fuels meeting the requirements of Regulation 14 of Annex VI, we will issue a certificate and notify IMO that your method has been certified.

(b) The provisions of this paragraph (b) apply for vessels equipped with controls certified by the Administration of a foreign flag vessel to achieve emission levels equivalent to those achieved by the use of fuels meeting the applicable fuel sulfur limits of Regulation 14 of Annex VI. Fuels not meeting the applicable fuel sulfur limits of Regulation 14 of Annex VI may be used on such vessels consistent with the provisions of the IAPP certificate, APPS and Annex VI.

(c) Compliance with the requirements of this section does not affect the applicability of requirements or prohibitions specified by other statutes or regulations with respect to water pollution.
 Background: See the air section of the guidebook for information from the EPA on the North America ECA and for the regulations on this item. Operators can apply for an exemption based on equivalent controls. This could include scrubbers or other methods to reduce sulfur emissions.

What to enter: Do they have a documented and approved exemption to the fuel requirements?

Subsection 2: Documentation

Seasonal Item: 5.2.a

40 CFR 1043.60

Text: NOx Emissions certification (IMO Annex VI) (Y/N)

Background: NOx is oxides of nitrogen, which is of concern due to the health effects. IMO Annex VI regulation 13 addresses tiered control requirements for NOx that apply to marine diesel engines over 130 kW other than emergency only engines or generators.

What to check for: Check that certification is present and covers all sources.

Seasonal Item: 5.2.b

40 CFR 1043.30-70

Text: Does the vessels have a valid International Air Pollution Prevention (IAPP) or Engine International Air Pollution Prevention (EIAPP) certificate (>130kW)? (Y/N)

Background: All foreign flagged vessels over 400 gross tons need to have IAPP certificate that meets the requirements of MARPOL Annex VI regulation 6.

What to check for: Check that the IAPP certificate is valid. Check the expiration date. Note- not needed for emergency only engines or for engines not installed after 2000 that have not been modified.

Seasonal Item: 5.2.c

Text: Freon / refrigerants use IAW MARPOL Annex VI Regulation 12 (6-7)

- i. Records are kept and updated of refrigerant use? (Y/N)
- ii. Check the entries and used consumed volumes of refrigerants

What to enter: How are records kept? Where is this recorded? Are volumes excessive?

Seasonal Item: 5.2.d

Text: Does the vessel monitor and record the total Sulfur content (% by weight) of each bunkered party of fuel used in Alaska Waters (including the MDO MGO IFO HFO fuel types)? (IMO Annex VI)(40 CFR 1043)Which record or logbook is used? Is low-sulfur used? Records IAW with 40 CFR 1043?

Background: See the air section of the guidebook for information from the EPA on the North America ECA and for the regulations on this item.

What to enter: How are records kept? Where is this recorded? Is low sulfur fuel used, or do they have a documented exemption? Are records IAW with 40 CFR 1043.



Subsection 3: Material Conditions and Equipment

Seasonal Item: 5.3.a

Text: If there are “high sulfur” fuels onboard, are they separated (physically) from the other fuels? (40 CFR 1043.60)

What to enter: If Y then list how they are separated physically

Subsection 4: Operations and Procedures (40 CFR 1043.60)

Please note 4.1.g if alternative methods are in place.

Seasonal Item: 5.4.a

Text: Describe the fuel switch and how this is accomplished and monitored recorded. (40 CFR 1043.60)

Background: See the air section of the guidebook for the full citation and background. (Job aid 4.1.d)

What to enter: Explain how fuel switches are accomplished if they are done. Provide information if the vessel has an exemption from the NA ECA in 5.1.g.

Seasonal Item: 5.4.b

Text: How is it ensured that the low sulfur fuel is used in the areas where it is mandatory for use? (timely switch / fuel flushing)? (40 CFR 1043.60) What procedures are in place to switchover fuels?

What to enter: Explain process for ensuring low sulfur fuel is used where required.

Seasonal Item: 5.4.c

Text: Are there dedicated low sulfur combustion sources and high sulfur fuel switch sources?

Background: Are there are “high sulfur” fuels on board, how are they separated (physically) from the “low Sulfur” fuels. (40 CFR 1043)

What to enter: If Y then list how they are separated physically.

Seasonal Item: 5.4.d

Text: Adequate capacity for using required fuels or alternative method in Alaska waters?

What to enter: Does the vessel had a reasonable amount of fuel that will meet requirements while operating in the ECA.

Section 6: Safety, Health, and Sanitation

For background please see the associated sections of the guidebook.

Subsection 1: Information

Seasonal Item: 6.1.a

Text: Title of potable water contact:

What to enter: Title (not name) of the person responsible for potable water.

Seasonal Item 6.1.b

Text: Production of potable water per source (estimate percentages)

What to enter: How much water on average is produced? What is the rough estimate of production by source? This is useful to ADEC when permitting to compare production with treatment capacity to determine adequate capacity for treatment (water balance).

Subsection 2: Documentation

Seasonal Item: 6.2.a

Text: Records of onboard treatment

What to enter: Records should be kept, please provide name used for the records.

Seasonal Item: 6.2.b

Text: Bunker water bunkering / loading recordkeeping

What to enter: Name of records of bunkering events.

Subsection 3: Material Conditions

Seasonal Item: 6.3.a

Text: Ship rails not less than 42 inches above cabin deck IAW 46 USC 3507 (a (1))?

Background: The Cruise Vessel Security and Safety Act of 2010 applies to large cruise ships (over 250 passengers) and include several items relating to passenger and crew safety. Some of these requirements have not been implemented, such as training for crime scene preservation. This federal law applies to US and foreign passenger vessels. A policy letter from the USCG mentions a date of January 27, 2012 as the start for examinations of compliance. Note- you do not need to check every railing. This is an opportunity check to do while performing other duties.

What to enter: Enter SAT if satisfactory.

Citation: 46 USC Sec. 3507 Passenger vessel security and safety requirements

(a) Vessel Design, Equipment, Construction, and Retrofitting Requirements. -

(1) In general. - Each vessel to which this subsection applies shall comply with the following design and construction standards:

(A) The vessel shall be equipped with ship rails that are located not less than 42 inches above the cabin deck.

(B) Each passenger stateroom and crew cabin shall be equipped with entry doors that include peep holes or other means of visual identification.

(C) For any vessel the keel of which is laid after the date of enactment of the Cruise Vessel Security and Safety Act of 2010, each passenger stateroom and crew cabin shall be equipped with -

(i) security latches; and

(ii) time-sensitive key technology.

(D) The vessel shall integrate technology that can be used for capturing images of passengers or detecting passengers who have fallen overboard, to the extent that such technology is available.

(E) The vessel shall be equipped with a sufficient number of operable acoustic hailing or other such warning devices to provide communication capability around the entire vessel when operating in high risk areas (as defined by the United States Coast Guard).

46 CFR 72.40-5 Where rails required.

(a) All passenger vessels shall have efficient guard rails or bulwarks on decks and bridges as follows: The height of rails or bulwarks shall be at least 39 1/2 inches from the deck. At the peripheries of the freeboard and superstructure decks and at the peripheries of all decks accessible to passengers, rails shall be in at least three courses including the top. The opening below the lowest course shall not be more than 9 inches. The courses shall not be more than 15 inches apart. In the case of ships with rounded gunwales the guard rail supports shall be placed on the flat of the deck. On other decks and bridges the rails shall be in at least two courses, including the top, approximately evenly spaced.

(b) Where the height of the rails interferes with the business of the vessel, as in the case of a sport fishing vessel, other arrangements may be specifically approved by the Commandant. However, in general, the effective rail or bulwark height above the deck on which the passengers stand shall be at least 30 inches.

(c) On the passenger decks of ferryboats, excursion vessels, and vessels of a similar type, the space below the top of the rail shall be fitted with suitable wire mesh or the equivalent. Depending upon the type of construction, the lower rail courses may not be required.

Seasonal Item: 6.3.b

Text: Visual identification means in passenger and crew cabin doors IAW 46 USC 3507 a(1)). (Y/N)

Background: The Cruise Vessel Security and Safety Act of 2010 applies to large cruise ships (over 250 passengers) and include several items relating to passenger and crew safety. This new federal law applies to US and foreign passenger vessels.

Cabins door must have some way to identify who is at the door; it could be a peep hole device, a video system, or other device. Although not written into the citation, the idea was that this should be a one-way view out of the cabin, not a way for crew or passengers to look into a cabin. Note- you do not need to check every door. This is an opportunity check to do while performing other duties. Check when possible that cabin

doors to public areas have some means of viewing outside. It may be that the only check for the functionality of these devices can be made from your cabin. For citation see item above.

What to enter: Enter SAT if satisfactory.

Seasonal Item: 6.3.c

Text: Facilities are convenient, accessible, cleaned and stocked.

Background: This regulation applies to commercial passenger vessels selling tickets in the United States.

What to enter: Enter SAT if toilet facilities are accessible, sanitary, and cleaned and stocked regularly.

Citation: 21 CFR 1250.90 Toilets and lavatories.

Toilet and lavatory equipment and spaces shall be maintained in a clean condition.

Seasonal Item: 6.3.d

Text: Toilet rooms are ventilated with self closing door.

Background: See item above, this is a check if facilities are sanitary.

What to enter: Enter SAT if ventilated and self-closing doors.

Seasonal Item: 6.3.e

Text: There is complete separation of food and food equipment / utensils from living quarters, laundry.

Background: Basic sanitation check of food preparation. This is a very old inspection item from the 1930's and seems to relate to concern of people living and sleeping in same space where food is prepared. Cruise ships have modern sanitation practices so this has not been an issue.

What to enter: Enter SAT if galley is separated from living quarters and laundry.

Citation: 21 CFR 1250.22 General requirements.

All food and drink served on conveyances shall be clean, wholesome, and free from spoilage, and shall be prepared, stored, handled, and served in accordance with the requirements prescribed in this subpart and § 1240.20 of this chapter

Seasonal Item: 6.3.f

Text: Floor, walls, and ceilings are clean (food preparation area).

Background: Basic check of the food preparation area for sanitation. Like 3.6.f this should not be an issue, as cruise ships are regularly cleaned and inspected.

What to enter: Enter SAT if walls, ceiling, and floors are relatively clean.

Citation: 21 CFR 1250.22 General requirements.

All food and drink served on conveyances shall be clean, wholesome, and free from spoilage, and shall be prepared, stored, handled, and served in accordance with the requirements prescribed in this subpart and § 1240.20 of this chapter

Seasonal Item: 6.3.g

Text: Shellfish tags are maintained for non-frozen shellfish. (21 CFR 1240.60)? (Y/N/NA)

Background: Many molluscan shellfish such as clams, oysters, and scallops are filter feeders, they gather food by filtering water to eat small plankton. While feeding in this manner it is possible that they could ingest communicable diseases from human sewage or animal wastes. Even small amounts of bacteria could multiply if not handled properly, such as inadequately cooling. Note- this does not apply to frozen or canned shellfish, only fresh. It also does not apply to crustacean shellfish such as crabs or shrimp. Check that fresh molluscan shellfish such as oysters are tagged or labeled and handled and stored in a sanitary manner.

What to enter: SAT, UNSAT, or N/A if not carrying fresh shellfish.

Citations: 21 CFR 1240.60 Molluscan shellfish.

(a) A person shall not offer for transportation, or transport, in interstate traffic any molluscan shellfish handled or stored in such an insanitary manner, or grown in an area so contaminated, as to render such molluscan shellfish likely to become agents in, and their transportation likely to contribute to the spread of communicable disease from one State or possession to another.

(b) All shellstock shall bear a tag that discloses the date and place they were harvested (by State and site), type and quantity of shellfish, and by whom they were harvested (i.e., the identification number assigned to the harvester by the shellfish control authority, where applicable or, if such identification numbers are not assigned, the name of the harvester or the name or registration number of the harvester's vessel). In place of the tag, bulk shellstock shipments may be accompanied by a bill of lading or similar shipping document that contains the same information.

(c) All containers of shucked molluscan shellfish shall bear a label that identifies the name, address, and certification number of the packer or repacker of the molluscan shellfish.

Seasonal Item: 6.3.h

Text: Phosphate free detergents and non toxic degreasers are used in sculleries and galleys (EPA defines free less than 0.5% phosphates) (EPA VGP 5.1.1.1.3& 5.2.1.1.3)? (Y/N)

Background: This is an EPA VGP item, more info is in the wastewater section. It is placed here with other galley items for convince. The purpose for this requirement is to reduce the input of phosphate into waters. Phosphate is a nutrient that is often limited. Adding phosphate to an aquatic system can increase biological activities, which could deplete oxygen available in the water. The check for “non-toxic” is to reduce the input of toxic materials into the water. Check that cleaners used have less than 0.5% phosphates listed as an ingredient. This can be on the bottle or MSDS or product sheet. Check that degreasers are non-toxic.

Note- from the list that is referenced for non-toxic in the VGP please check if any of the following applies:

- Is it labeled “Extremely flammable?”
- Does it contain carbon tetrachloride?
- Does it contain 10 percent or more by weight of sodium and/or potassium hydroxide?
- Does it contain cyanide salts?
- Does it contain lead paints?

What to enter: Enter SAT if low-phosphate detergents are used.

Citation: EPA VGP 5.1.1.1.3 Sculleries and Galleys

Cruise ship owner/operators must use detergents that are phosphate free. Degreasers must be non-toxic if they will be discharged as part of any waste stream.(Note- 5.2.1.1.3 is identical but for under 500 passengers)

“Non-toxic” soaps, cleaners, and detergents means these materials which do not exhibit potentially harmful characteristics as defined by the Consumer Product Safety Commission regulations found at 16 CFR Chapter II, Subchapter C, Part 1500.

“Phosphate Free” soaps, cleaners, and detergents means these materials which contain, by weight, 0.5% or less of phosphates or derivatives of phosphates.

“Toxic and hazardous materials” means, for purposes of the VGP: any substance identified in 40 CFR 116.4; any toxic pollutant identified in 40 CFR 401.15; and any hazardous material as defined in 49 CFR 171.8”

Subsection 4: Operations and Procedures

Seasonal Item: 6.4.a

Text: Safety procedures for hazardous materials handling / chemicals are onboard and available. (40 CFR 262.34)

Background: See safety section in the guidebook.

What to enter: Enter SAT (satisfactory) if procedures are available.

Seasonal Item: 6.4.b

Text: Check that Safety plans / procedures are in place and person in charge of these plans is designated.

What to enter: Enter SAT if safety plans are in place with a designated person.

Vessel Seasonal Checklist:

Ship Name	
Ocean Ranger Name	
Date Completed	
Is this a revision of previous report (Y/N)?	

Purpose

This checklist includes items that Ocean Rangers must monitor once per cruise season. Once verified these items should not change significantly during the cruise season. The department finds that monitoring and recording these items one time per cruise season provides sufficient oversight to indicate compliance.

In cases where a vessel makes in-season changes that affect one or more items on this checklist an updated observation of the item(s) may be necessary, but will not require completion of the full checklist.

Action

Ocean Rangers. The first Ocean Ranger deployed on a vessel during the cruise season shall complete this checklist. The Ocean Ranger may complete the seasonal report by monitoring and reporting different sections each day, and completing the entire checklist during the voyage. While completing the seasonal report, the Ocean Ranger shall also submit daily reports with minimal information each day, including daily checks for each section, information section, and compliance items noted. The Ocean Ranger shall submit the completed checklist to the Crowley Program Manager.

Crowley Program Manager. The Crowley Program Manager shall require one checklist per each vessel operating on more than one Alaskan voyage. The Crowley Program Manager shall ensure that Ocean Rangers submit all seasonal reports a timely manner. The Crowley Program manager shall conduct quality assurance/quality control on the reports, and then submit the completed report to the Cruise Ship Program. Upon Cruise Ship Program approval, the Crowley Program manager shall provide the report information contained available for each Ocean Ranger that deploys on the ship during the cruise season.

ADEC Cruise Ship Program. The Cruise Ship Program will review the checklist. If the program requires more information, we will request that the Crowley Program Manager arrange for an Ocean Ranger to provide the information.

Monitoring Sections

1. Wastewater
2. Sampling and Permit
3. Hazardous materials and solid waste
4. Oil and Fuel
5. Air Pollution
6. Safety, Health, Sanitation

Section 1: Wastewater (33 CFR 159, 18 AAC 69.050, Alaska General Permit, EPA VGP):

(Including ballast water and other EPA VGP listed discharges)

Subsection 1: Information

- a) Wastewater primary contact:
- b) Ballast water primary contact:
- c) Shipboard name of Sewage and Graywater Discharge Record Book (discharge logs) used onboard:
- d) Name of instructions or guide to completing (making entries) discharge record book and location:
- e) 2013 USCG discharge authorization letter? (for those that applied to USCG for continuous or stationary discharges)Y/N or N/A:

Subsection 2: Documentation

- a) MSD International Sewage Pollution Prevention Certificate (ISPPC) or Non-U.S. flag "Certificate of Type Test MARPOL Annex IV". (33 CFR159.7):
- b) Explain how wastewater logs (sewage and greywater discharge record book) are recorded and the process to ensure they are current and accurate:
- c) What time format is used in the discharge logs (GMT, local, etc.):
- d) Are Wastewater waste-stream discharges recorded and where:

	Item	Yes	No	Where? (Name of log and location)
i.	Graywater			
ii.	Sewage			
iii.	Permeate			
iv.	Bio sludge			
v.	Bio solids			
vi.	Pool, spa, and Jacuzzi			
vii.	Pulper water			
viii.	Pulper convey water			
ix.	Pulper dewatering water			
x.	Boiler/Economizer blowdown and washdown			
xi.	Ballast water(33CFR151.2070)			
xii.	Other water that could become wastewater (list names)			

e) Wastewater tanks levels and soundings recorded and tracked:

	Item	Yes	No	Where? (Name of log and location)
i.	Graywater			
ii.	Sewage			
iii.	Permeate			
iv.	Segregated GW BW			
v.	Other tanks (WW)			
vi.	Bio Sludge			
vii.	Bio solids			
viii.	Pool, spa, and Jacuzzi			
ix.	Pulper water			
x.	Pulper convey water			
xi.	Pulper dewater			
xii.	Boiler/Economizer blowdown and washdown			
xiii.	Ballast water (33CFR151.2070)			
xiv.	Other tanks that could become wastewater			

f) Other wastewater recordkeeping:

	Item	Yes	No	Where? (Name of log and location)
	Ballast water transfers(33CFR151.2060)			

Subsection 3: Material conditions

a) MSD unit(s). List with manufacturer name, model number, capacity, number of units.

	Yes	No
b) Are there interfaces between ballast and wastewater system?		

Subsection 4: Operations and Procedures

- a) Ballast Management Plans/ procedures onboard (Y/N)(33 CFR 151.2050)?
- b) Procedures for changing wastewater tanks to ballast water tanks (if applicable). What is done to prevent contamination of treated WW or ballast water? Please list major procedures such as if pipes are drained or tanks cleaned.

Section 2: Sampling and WW Permit (33 CFR 159, 18 AAC 69.050, Alaska General Permit):

Note: This section is only to be completed if the vessel has an approved Vessel Specific Sampling Plan (VSSP) for this year. For unpermitted vessels with a VSSP do not check items with a "GP" as a citation.

Subsection1: Information- see Section 1.

Subsection 2: Documentation:

	Yes	No	NA
a) 2013 Alaska WW General Permit Authorization letter (copy) on board (GP)?			
b) 2013 Alaska WW General Permit onboard (GP)?			
c) Approved 2013 VSSP onboard and readily available (GP)?			
d) Latest NWCCA Quality Assurance Project Plan onboard IAW 18 AAC 69.025?			

e) WW recordkeeping:

Item	Yes	No	Where? (Name of log and location)
i. AWTS Operations			
ii. Maintenance and repairs			
iii. AWTS system chemicals recorded			
iv. GW BW maintenance & chemical treatment records (e.g. de-scaling etc.)			

Subsection 3: Equipment and Material Condition:

- a) AWTS Units (if installed). List with manufacturer name, model number, capacity, number of units.

	Yes	No
b) Does wastewater treatment equipment and capacities match the information provided in the ADEC GP Notice of Intent (GP)?		
c) Are flow discharge meters installed? (GP)		
d) If flow meters are installed, are they used? (GP)- leave blank if no flow meters		

Subsection 4: Operations and Procedures

- a) Explain the method for estimating or metering discharged wastewater:

- b) Procedures for changing wastewater tanks to ballast water tanks (if applicable). What is done to prevent contamination of ballast water? Please list major procedures such as if pipes are drained or tanks cleaned.

Subsection 5: Vessel Specific Sampling Plan (VSSP) (Only ships with a 2013 VSSP)

Check all items that apply. List any deviations noted and report deviations in the VSSP on your daily report (under 1.3.a). (18 AAC 69.030 and 33 CFR 159.37 (c))

Item	Checked?
a. Check and confirm sample valve related piping & sample valve location is as documented in VSSP.	
b. Check that WW sources match VSSP description and volumes	
c. Treatment systems and processes listed in VSSP match those onboard.	
d. Check VSSP capacities against treatment system posted or documented values.	
e. Check that discharge ports (names and locations and type of effluent) match VSSP and wastewater logs.	
f. Check discharge port diameter.	
g. VSSP estimates of production are reasonable estimates and match production amounts	
h. Tank lists in VSSP match locations, names, capacities, and what is stored	
i. Discharge pumps and flow rates match VSSP	
j. Procedures for discharges match those provided in VSSP.	
k. Do the standards for determining deviations listed in the VSSP match what are used onboard?	

Section 3: Hazardous materials and solid waste

Subsection 1: Information

- a) Title of Responsible Person (33 CFR 151.55(d)):

Subsection 2: Documentation

Compliant?	SAT	UNSAT
a) Certification of TBT free paint coating on hull (AS 46.03.715)		
b) Waste / Hazardous waste offloading plan(s) carried onboard (18 AAC 69.035 & 69.040)		
c) Vessel garbage management plan IAW (18AAC 69.035 / 33 CFR 151.55(b)(d)).		
d) Reports of alleged inadequacy of port reception facilities for garbage on file for both hazardous and non-hazardous waste (if applicable)? (33 CFR 158.400)		

- e) Recordkeeping:

Item	Yes	No	Where?
i. Garbage logs, hazardous materials offloads			
ii. Overboard waste chute use recorded			
iii. Recording of incinerator ash disposal			
iv. Medical waste offload records			
v. Photo and X-ray waste			
vi. Oily rags & filters records			
vii. Other waste records			

Subsection 3: Material conditions

- a) Describe the controlled storage & processing or disposal facilities or treatment used. (18 AAC 69.040(5))

Subsection 4: Operations and Procedures

Compliant?	SAT	UNSAT
a) Vessel machinery logs, reports for maintenance, repairs, cleaning operations of the hazardous mat handling equipment are onboard and available (33 CFR 151.63 (b(3))).		
b) Garbage Pollution Placards posted IAW (33CFR151.59)?		
c) Procedures to minimize amount of potential hazardous waste IAW (40 CFR 262.27)?		
d) Non- hazardous waste is discharged outside of special areas only (when special area restrictions are in effect). (33 CFR 151.69-71)?		

- e) Describe the crew training in offloading process & procedures.(18 AAC 69.040(6))

Section 4: Oil and Fuel

Subsection 1: Information

- a) Title of Designated person in charge (PIC) (33CFR 155.700):

Subsection 2: Documentation

- a) Recordkeeping:

Item	Yes	No	Where?
i. Oil water separator discharges			
ii. Oily water separator repair & calibration			
iii. Bilge water/ oily water sludges transfers			
iv. Fuel / Lubrication Oils / sludges			
v. Fuel tanks Lubrication oil tank levels			
vi. Fuel bunker & consumption			
vii. Fuel sulfur content (40 CFR 1043)			
viii. Lubrication Oil bunker & consumption			
ix. Drumstore Oil storage & consumption			
x. Other oil wastes records			
xi. Propulsion system lubrication use (records of fill ups and changes)			
xii. Shaft seal to sea surfaces / tank levels			
xiii. Stabilizer systems			
xiv. Thruster systems tank levels			
xv. Hydraulic system oil use (fill ups or changes)			
xvi. Power rams			
xvii. Steering gear			
xviii. Deck equipment including lifeboat systems			
xix. Grease consumption			
xx. Oil spill reporting			

Subsection 3: Material conditions

Compliant?	SAT	UNSAT
a. Oil pollution Placard is posted (18 AAC 75.305)?		
b. Standard discharge connection/bunker station IAW 33 CFR 155.370(c).		
c. Fuel/lube sludge fill vent and overflow discharge containment IAW 33 CFR 155.320.		
d. Containment/drains/scupper closures IAW 33 CFR 155.320.		

Subsection 4: Operations and Procedures

Compliant?	SAT	UNSAT
a) Oil transfer procedures are posted and available in crew's language? (18 AAC 75.025 / 33 CFR 154.300 a(3))		
b) Number of persons required on duty is as identified in the operations manual? (33 CFR 154.310 g(6))		
c) Means of communication identified in operations manual (33 CFR 154.310 a(9))		
d) Procedures on oil spills listed in operations manual (33 CFR 154.310(f))		

Subsection 5: Oil Water Separation/Oil systems (33 CFR 155.360-380)

Check all items that apply and were checked. List any deviations and report these on your daily report as well (under section 7.2).

1. Documentation and Administrative:

Checked

a. Bilge system piping matches approved diagram (direct to OWS, holding tank etc.)	
b. Check if strip charts are fitted	
c. General housekeeping and cleanliness, maintenance looks acceptable	
d. OWS system if in operation, evaluate operator competency.	
e. System operating in published ranges.	

2. Mechanical – Is the OWS free from:

Checked

a. Electrical bypasses, jumpers, extra switches on the OWS unit or meter control panel.	
b. Blanked flanges, pipe caps, dead-ended valves, or tees on inlet or outlet piping.	
c. Unusual connections to other machinery space overboard piping	
d. Recent paint on pipe segments	
e. Indications of bolting / unbolting of associated, piping segments valves.	

3. Ensure:

Checked

a. Observe has automatic recirculate (3 way valve) or shuts down when > 15 ppm	
b. In use valves operate properly	
c. Samples analyzed by OWS meter is from the OWS effluent (trace sample-line to ensure no clean-water connection)	

Section 5: Air pollution and Opacity (18 AAC 50 and 40 CFR 1043)

Subsection 1: Information

- a) Primary contact:
- b) Is emission monitoring equipment installed and used onboard? (Y/N)
- c) Emission monitoring equipment functioning properly? (Y/N/NA)
- d) Opacity monitoring records kept onboard? (Y/N). If Y then list the name of the record.
- e) Self reporting records kept onboard? (Y/N). If Y then list the name of the record.
- f) List self-reporting procedures (opacity) (18 AAC 50.240)
- g) Does the vessel have an approved alternative equivalent method for complying with fuel requirements in 40 CFR 1043 (40 CFR 1043.55)?

Subsection 2: Documentation

- a) NOx Emissions certification (IMO Annex VI/ 40 CFR 1043.60)
- b) Valid International Air Pollution Prevention (IAPP) or; Engine International Air Pollution Prevention (EIAPP) certificate (>130kW) (40 CFR 1043.30&40)
- c) Freon / refrigerants recorded IAW 40 CFR 1043.30/MARPOL Annex VI Regulation 12 (6-7)
 - i. Records are kept and updated of refrigerant use? (Y/N)
 - ii. Check the entries and used consumed volumes of refrigerants
- d) Fuel use records IAW with 40 CFR 1043.70?

Subsection 3: Material conditions

- a) If there are "high sulfur" fuels onboard, are they separated (physically) from the other fuels? (40 CFR 1043.60)

Subsection 4: Operations and Procedures (40 CFR 1043.60)

Please note 4.1.g if alternative methods are in place.

- a) Describe the fuel switch procedure. (40 CFR 1043.60)
- b) How is it ensured that the low sulfur fuel is used in the areas where it is mandatory for use? (timely switch / fuel flushing)? (40 CFR 1043.60)
- c) Are there dedicated low sulfur combustion sources and high sulfur fuel switch sources?
- d) Adequate capacity for using required fuels or alternative method in Alaska waters?

Section 6: Safety, health, and sanitation

Subsection 1: Information

- a) Name of potable water primary contact:
- b) Production of potable water per source (estimate percentages)

Subsection 2: Documentation

- a) Records of onboard potable water treatment (name and location):
- b) Bunker water recordkeeping (name and location):

Subsection 3: Material conditions

Safety

Compliant?	SAT	UNSAT
a) Ship rails not less than 42 inches above cabin deck IAW 46 USC 3507 (a (1))?		
b) Visual identification means in passenger and crew cabin doors IAW 46 USC 3507 a (1))?		

Galley

Toilet and Hand Washing Facilities (21 CFR 1250.90):	SAT	UNSAT	
c) Facilities are convenient, accessible, cleaned and stocked.			
d) Toilet rooms are ventilated with self closing door.			
Facility and structure (21 CFR 1250):			
e) There is complete separation of food and food equipment & utensils from living quarters, laundry.			
f) Floor, walls, and ceilings are clean (food preparation area).			
	SAT	UNSAT	N/A
g) Shellfish tags are maintained for non-frozen shellfish. (21 CFR 1240.60)?			
h) Phosphate free detergents and non toxic degreasers are used in sculleries and galleys (EPA defines free less than 0.5% phosphates) (EPA VGP 5.1.1.1.3& 5.2.1.1.3)?			

Subsection 4: Operations and Procedures

Compliant?	SAT	UNSAT
a) Safety procedures for handling hazardous materials & chemicals are onboard and available. (40 CFR 262.34 d(iii))		
b) Person in charge of these plans is designated.		

Documentation:

All the large passenger vessels in Alaska have documentation regarding the Cruise Ship Program. This list sets out the documentation descriptions. Some vessels have these documents stored electronically; others may also have copies in readily accessible places.

In the Daily and Once a Season Reports there are verification items related to these documents. It is not necessary to verify the “presence” of this documentation frequently, in general once per season verification / confirmation in the daily report will suffice.

Registration Vessel paper 2013:

This paper is signed by owners or operators, and is certified. This paper includes also the discharge status and passenger capacity (for fees purposes). The original is on file at ADEC.

Status: This paper is not always found on board, but is on file at ADEC.

General Permit Authorization to discharge (ADEC):

Vessels that opt to discharge in Alaska waters, under the State of Alaska requirements, need to obtain a General Permit discharge authorization letter.

Please note that some vessels may obtain the authorization to discharge from DEC but opt not to discharge. An example of the Authorization Letter issued by DEC is included in the guidebook.

Note: The USCG may issue in 2013 an “authorization to discharge letter” for vessels that opt to discharge continuously in Alaska waters (discharge in port and while underway).

Status: This documentation must be on board discharging cruise ships.

Vessel Specific Sampling Plan:

This plan (VSSP) must be approved by ADEC and includes an approval date. For discharging vessels an approved version needs to be onboard. The VSSP provides important information regarding the location of the sampling valve and the technical description how the vessel handles their waste water flows.

Attention should be paid to the tank description and tank volumes and which tanks are used.

The tanks that are listed in the approved VSSP should include all the tanks on boards that could or are used for waste water purposes. The location of the sampling valve (location distances) should be initially verified and recorded (confirmed). An example of VSSP outline is included in the guidebook.

Status: This plan is required to be on board for vessels that discharge in Alaska waters.

Samplers and onboard responsible officials must be familiar with the approved VSSP.

Special: Questions, comments regarding the VSSP documents need to be included in the Daily Report.

Vessel Specific WW Holding Management:

This plan has been submitted by operators on a voluntary basis. The plan sets out how the vessels hold their wastewater volumes while in Alaska.

Status: Is a voluntary plan, and is not required.

Northwest Cruise Ship Association Quality Assurance Project Plan (QAPP):

For vessels that discharge, this Quality Assurance Project Plan (QAPP) must be available for the samplers and operators. The QAPP is a large document; therefore a printed copy is not included.

For the Ocean Ranger the most interesting part of the QAPP is the Alaska Cruise Ship Sampling Checklist. This checklist gives a good summary of the sampling actions / requirements.

Status: The QAPP (also called Sampling QA /QC Plan) must be onboard ships that sample for USCG and ADEC. Responsible official and samplers must be familiar with the plan.

Special: Check for the presence of the QAPP onboard in the seasonal report.

Solid Waste Plans [Non Hazardous Materials / Hazardous Materials]:

All vessels, regardless they discharge or not must provide and adhere to their Solid Waste Plans.

These plans are required by law and include reporting requirements for wastes that are generated in Alaska. These plans are sometimes called “waste plans” / “off load plans”.

Vessels are required to submit for approval these plans to DEC.

Status: Mandatory plans to be provided. Waste off-loads are recorded and manifests kept. The off load manifest are reported to ADEC.

Certificate for Proof of Financial Responsibility [non tank vessels > 400 GT] / Vessel

Certificate of Financial Responsibility (water pollution):

All vessels, regardless whether they discharge or not must have the “COFAR” certificate for Alaska. The certificate should be valid and not expired.

Status: Mandatory to have onboard, valid document must be present.

Special: This is now checked by ADEC SPAR inspectors.

TBT Free Paint System Anti -Fouling:

Vessels operated in Alaskan waters are not allowed to have hull paint / coating that is based or contains T.B.T. The paint / coating must be T.B.T Free. Note that this certification documentation format depends on the paint / coating supplier; sometimes it is issued by the Classification Society. It include the party that applied the coating / paint, the location of the application (ship yard) and the paint coating manufacture (e.g. Jotun, Sigma Coatings, AKZO Nobel etc.)

An Example of the TBT Free hull coating / paint is included.

Status: Certificate must be on board.

NOx emissions limitation IMO Annex VI / Engine International Air Pollution Prevention certificate (EIAPP):

Ships constructed after 1st of January 2000 (keel laying) will be required to comply (also retroactively if Annex VI enters into force after this date)

An EIAPP certificate will be issued for each engine showing that the engine complies with the regulation. A Technical File is made for each compliant engine and contains information about the components affecting NOx emissions, and each critical component is marked with special IMO number. Such components are injection nozzle, injection pump, camshaft, cylinder head, piston, connecting rod, charge air cooler and turbo charger. The allowable setting values and parameters for running the engine are also specified in the Technical File. This documentation is issued by the Classification Societies. The certification includes a listing of all engines on board (this may on one certificate), name of engine, type, model and vessel.

An example of the IMO Annex VI certification is included.

Status: Certification for each engine must be on board.

Terms, Abbreviations, and Acronyms for Ocean Ranger Program

15 PPM Alarm: An alarm that activates when the effluent passing through oil-filtering equipment exceeds 15 parts per million (ppm) of oil.

Agent: Vessel representative hired by the ship's owners. Ship's agent may be tasked with various jobs such as: ensuring proper vessel documentation and compliance.

Alaska Waters: For wastewater from large cruise ships means all waters within the boundaries of the state together with all of the waters of the Alexander Archipelago even if not within the boundaries of the state.

Alexander Archipelago Waters: These are the “inside waters” of Southeast Alaska, even when more than 3 nm from land. Please see the list in the General Permit or statutes for a complete description of boundaries.

Automatic Stopping Device: Is a control mechanism that ensures discharge of an oily water separator is stopped when the oil content of the effluent exceeds 15 parts per million (PPM). The automatic stopping device may be initiated by the operation of the oil content meter.

AWTS: Advanced Wastewater Treatment System. A wastewater treatment system designed to treat wastewater to both MSD and secondary treatment standards. The secondary treatment standards require a higher removal of solids and nutrients (as measured by BOD) than a basic MSD. Most AWTS systems contain mechanical separation of solids by filtering or settling, a biological process to digest organic wastes, and a UV or ozone system to kill bacteria without using chlorine.

Bacteria: (Singular: bacterium) Microscopic living organisms that can aid in pollution control by metabolizing organic matter in sewage, oil spills or other pollutants. However, bacteria in soil, water or air can also cause human, animal and plant health problems.

Ballast: Used to improve the stability and control the draft of a ship.

BAT: Best Available Technology. The best available economically achievable performance for control of pollutants. This can include changes to process operations and internal controls.

Black Oil: A viscous and black or very dark brown colored oil. Depending on the quantity spilled, oil tends to quickly spread out over the water surface to a thickness of about one-millimeter.

Black Water (sewage) Examples - possible sources toilets, urinals and drainage from medical facilities (U.S. restriction).

Bilge Water: Water that collects in the lowest inner part of a ship's hull. Bilge water is frequently contaminated with oil and other lubricants from the engine room. Under various

national and international standards, discharged bilge water must not exceed a certain maximum oil concentration (for example, 15 parts per million).

Biological Oxygen Demand (BOD): An indirect measure of the concentration of biologically degradable material present in organic wastes. It usually reflects the amount of oxygen consumed in five days by biological processes breaking down organic waste.

Black Water: Water contaminated with human waste, collected from shipboard toilets. Under various national and international standards, black water must be treated before being discharged from a vessel. **Discharge:** In this context, any solid or liquid material that emanates from a vessel to a body of water, including anything spilled, leaked, poured, pumped, emitted or dumped from the vessel.

Black Water System: includes marine sanitation devices (MSDs) and other systems to treat, store, and discharge sewage. MSD approvals by USCG, IMO, or Administration Approved to MARPOL Annex IV.

Chemical Oxygen Demand (COD): A measure of the oxygen required to oxidize all compounds, both organic and inorganic, in water.

Conductivity: A measure of the ability of a solution to carry an electrical current.

Conventional Parameters: Pollutants typical of municipal sewage. BOD, TSS, bacteria, oil and grease, and pH are defined as conventional by EPA. ADEC and USCG added suspended solids, ammonia, conductivity, chlorine, ammonia, phosphorus, total organic carbon, and chemical oxygen demand to the list of conventional parameters.

CVE: Control Verification Examination is the examination of vessel for compliance with SOLAS requirements and applicable U. S. regulations. More properly referred to as the Passenger Vessel Certificate of Compliance Examination.

Discharge: means any release, however caused, from a commercial passenger vessel, and includes any escape, disposal, spilling, leaking, pumping, emitting, or emptying.

Dispersion: The breaking up of an oil slick into small droplets which are mixed into the water column as a result of breaking waves and other sea surface turbulence.

DMR: Discharge Monitoring Report, a report submitted to ADEC listing wastewater sample results and any violations of the General Permit, VSSP, or QAPP.

Effluent: To flow out. (Waste material, refuse, and sewage)

Emulsification: The formation of a water - in - oil mixture. In the environment, the tendency for emulsification to occur varies with different oils and is much more likely to occur under high-energy conditions (wind and waves). Emulsions may also be formed by surfactants, including detergents, which cause the oil and water to mix, or by mechanical means such as pressure washing or pump action.

EPA VGP: The Environmental Protection Agencies Vessel General Permit.

Equipment having and oil to sea interface: Equipment that uses a seal to prevent leakage of oil into the sea. Examples, oil-lubricated stern tube seals, hydraulically-driven stabilizer fin seals, bow and stern thruster seals. An indicator that system seals are leaking to the sea may be evidence of frequent filling of system reservoirs, presence of barrels, drums, hoses, pumps, and other equipment/supplies/arrangements necessary to refill systems. Some ships' SMS or environmental compliance programs may require that records of refilling such systems are kept. If so, these records should be checked.

Fecal Coliform Bacteria: Bacteria found in the intestinal tracts of mammals. Their presence in water or sludge is an indicator of pollution and possible contamination by pathogens.

Free Cl₂: Free Chlorine test method

Garbage (from 33 CFR 151): *Garbage* means all kinds of victual, domestic, and operational waste, excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically, except dishwater, graywater, and those substances that are defined or listed in other Annexes to MARPOL 73/78.

General Permit: The State of Alaska General Permit for the Marine Discharge of Treated Sewage and Treated Graywater from Commercial Passenger Vessels Operating in Alaska. This permit only applies to overnight vessels carrying more than 250 passengers.

Geometric mean: The n th root of the product of a series of n numbers computed by taking the logarithm of each number, computing the arithmetic mean of the logarithms, and raising the base used to take the logarithms to the arithmetic mean.

Glacier Bay: For purposes of the general permit, means all waters inside a line drawn between Point Gustavus at 135°54.927' W longitude; 58°22.748' N latitude and Point Carolus at 136°2.535' W longitude; 58°22.694' N latitude.

Gray Water: Includes discharges from galley, sinks, washbasins, drains, showers and baths. These may be held in large tanks prior to being discharged overboard (State, Fed, regulation permitting).

Gray water system: includes discharges from galley, sinks, washbasin drains, showers, and baths, excluding drains and sinks from medical spaces. These may be held in large tanks before being pumped overboard. The handling and discharge of gray water will vary from ship to ship.

ICCL: International Council of Cruise Lines, a cruise ship industry association which participates in industry standards and policy development process to promote all measures that foster a safe, secure, healthy cruise ship environment.

ICLL: International Convention for Load Lines.

IMO: International Maritime Organization; a specialized agency of the United Nations concerned solely with maritime affairs. IMO is responsible for international treaties, conventions, resolutions and codes to improve maritime safety.

ISM Code: International Safety Management Code. (Chapter IX of SOLAS)

Harmful substance (from 33 CFR 151): *Harmful substance* means any substance which, if introduced into the sea, is liable to create hazards to human health, harm living resources and marine life, damage amenities, or interfere with other legitimate uses of the sea, and includes any substance subject to control by MARPOL 73/78.

Hazardous waste: includes dry cleaning (containing Perchloroethylene, or commonly-called “PERC”) waste, used paints and thinners that contain hazardous substances, silver-bearing photo-processing waste, cleaning solutions and other items that contain hazardous substances. Each vessel may vary in both the type and volumes of hazardous waste generated depending on the technology and processes used aboard.

Marine sanitation device: Equipment that is installed on board a vessel, and that is designed to receive, retain, or discharge sewage; and any process to treat sewage on board a vessel.

MARPOL: Name given to the standards and requirements adopted by the International Convention for the Prevention of Pollution from Ships governing the discharge of oil and other hazardous substances, sewage, and garbage.

MARPOL: The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978.

Mg/L: Milligrams per liter. The concentration at which one thousandth of a gram (10⁻³ g) is found in a volume of one liter; it is approximately equal to the unit “parts per million (ppm),” formerly of common use.

µg/L: Micrograms per liter: The concentration at which one millionth of a gram (10⁻⁶ g) is found in a volume of one liter; it is approximately equal to the unit “parts per billion (ppb),” formerly of common use.

MSC: Maritime Safety Committee. One of five technical committees of the IMO which deals with issues such as aids to navigation, vessel equipment and construction, manning requirements, handling dangerous cargoes, hydrostatic and marine casualty information.

MSD: Marine Sanitation Device.

Non-hazardous waste: includes shipboard garbage including plastics and synthetic material, medical waste, food wastes and recyclables such as glass, cardboard, aluminum and metal cans. Items to be checked should include: disposal and incineration records; waste sorted to prevent hazardous waste from entering the non-hazardous waste stream; no plastics or synthetics discharge overboard; separate and proper disposal of hazardous and non-hazardous incinerator ash; and proper disposal of cooking grease from grease traps.

Offloading: means the removal of a hazardous substance, hazardous waste, or nonhazardous solid waste from a commercial passenger vessel onto or into a controlled storage, processing, or disposal facility or treatment works

Oil (from 33 CFR 151): *Oil* means petroleum whether in solid, semi-solid, emulsified, or liquid form, including but not limited to, crude oil, fuel oil, sludge, oil refuse, oil residue, and refined products, and, without limiting the generality of the foregoing, includes the substances listed in Appendix I of Annex I of MARPOL 73/78. “Oil” does not include animal and vegetable based oil or noxious liquid substances (NLS) designated under Annex II of MARPOL 73/78.

Oil Content Meter: An instrument used to measure continuously the oil content of the effluent in the OWS output line, in parts per million, to ensure that the operation does not contravene the convention.

Oil Filtering Equipment: Equipment that uses any combination of a separator, filter or coalescer, and also a single unit designed to produce an effluent with oil content less than 15 parts per million (ppm). (MARPOL Annex I, Reg 16)

Oil pollution prevention systems: include the oily water separator, the fuel/lubricating oil transfer, and sludge containment system.

Oily Water Separator (OWS): The basic principle of oil / water separation is their difference in specific gravity. The specific gravity of most oils is less than water; therefore, it will naturally float to the top of an oil and water solution. Small droplets of oil float to the top much slower than large droplets. This is due to the large surface area to mass ratio. To speed up the process of separation, OWS units form larger oil droplets out of smaller ones, thus decreasing the surface area to mass ratio. The increased mass of the oil droplet increases its buoyancy, thus causing it to rise more quickly. Gravitational-based systems are not effective processors of oil-water emulsions formed by detergents or mixtures containing high specific gravity oils.

pH: An expression of the intensity of the basic or acid condition of a liquid; may range from 0 to 14, where 0 is the most acid and 7 is neutral. Natural waters usually have a pH between 6.5 and 8.5.

Plastic (from 33 CFR 151): *Plastic* means any garbage that is solid material that contains as an essential ingredient one or more synthetic organic high polymers, and that is formed or shaped either during the manufacture of the polymer or polymers or during fabrication into a finished product by heat or pressure or both. “Degradable” plastics, which are composed of combinations of degradable starches and are either (a) synthetically produced or (b) naturally produced but harvested and adapted for use, are plastics under this part. Naturally produced plastics such as crabshells and other types of shells, which appear normally in the marine environment, are not plastics under this part.

Note: Plastics possess material properties ranging from hard and brittle to soft and elastic. Plastics are used for a variety of marine applications including, but not limited to: food wrappings, products for personal hygiene, packaging (vaporproof barriers, bottles, containers, and liners), ship construction (fiberglass and laminated

structures, siding, piping insulation, flooring, carpets, fabrics, adhesives, and electrical and electronic components), disposable eating-utensils and cups (including styrene products), bags, sheeting, floats, synthetic fishing nets, monofilament fishing line, strapping bands, hardhats, and synthetic ropes and lines.

Pollutant: Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems..

PMS: Preventative Maintenance System

Primary Waste Treatment: First steps in wastewater treatment; screens and sedimentation tanks are used to remove most materials that float or will settle. Primary treatment removes about 30 percent of carbonaceous biochemical oxygen demand from domestic sewage.

QAPP: Quality Assurance Project Plan. An approved plan documenting how samples are taken and the quality control measures taken to ensure samples are accurate and representative.

Qualified Individual (QI): The person authorized by the responsible party to act on their behalf, authorize expenditures and obligate organization's resources.

RCRA: Resource Conservation and Recovery Act (RCRA), was enacted by the U.S. in 1976 to address the issue of how to safely manage and dispose of the huge volumes of municipal and industrial hazardous waste generated nationwide.

Recoverable Oil: Oil that is in a thick enough layer on the water to be recovered by conventional techniques and equipment. Only black or dark brown oil, mousse, and heavy sheens (dull brown) are generally considered thick enough to be effectively recovered by skimmers.

Separation Equipment: A device designed to remove enough oil from an oil-water mixture to provide a resulting mixture with an oil content of less than 100ppm, or 15ppm, such as an Oily Water Separator (OWS).

Sewage: Human body wastes and the wastes from toilets and other receptacles intended to receive or retain human body wastes.

Sheen: A sheen is a very thin layer of oil (less than 0.0001 inches or 0.003mm) floating on the water surface and is the most common form of oil seen in the later stages of a spill. According to their thickness, sheens vary in color ranging from dull brown for the thicker layers to rainbows, grays silvers and almost transparent for the thinnest layers.

Slick: Oil spilled on the water, which absorbs energy and dampens out the surface waves making the oil appear smoother or slicker than the surrounding water.

Sludge Tanks: Tanks used to contain sludge formed by fuel and lube oil purifiers and from other sources or cleaning activities. Sludge is not readily processed by many oily water separators and frequently requires treatment ashore or incineration. Every ship of 400 GT or more must be provided with a tank or tanks of adequate capacity, in regard to type of

machinery and length of voyage, to receive the oil residues (sludge) that cannot be dealt with otherwise in accordance with MARPOL Annex I.

SMS: Safety Management System (sometimes referred to as an SQM). Required by the ISM Code and Chapter IX of SOLAS.

SOLAS: Safety of Life at Sea. The International Convention for the Safety of Life at Sea.

SOPEP: Shipboard Oil Pollution Emergency Plan. (MARPOL Annex I, Reg. 26)

STCW: The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

Suspended Solids: Small particles of solid pollutants that float on the surface of, or are suspended in, sewage or other liquids. They resist removal by conventional means.

Total Cl₂ Total Chlorine test method

Total Suspended Solids (TSS): A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended non-filterable solids."

Transfer: Any movement of oil or hazardous material to, from or within a vessel by means of pumping, gravitation, or displacement.

Tributyltin Paints: TBT-based marine antifouling paint or coating means a paint, coating, or treatment that contains tributyltin, or a triorganotin compound used as a substitute for tributyltin, and that is intended to control fouling organisms in a fresh water or marine environment.

Vessel Specific Sampling Plan (VSSP): This is an approved plan specific to each cruise ship that documents how wastewater is treated, stored, and sampled to ensure samples are representative of discharged wastewater.

Acronyms/Abbreviations Used

ADEC	Alaska Department of Environmental Conservation
BNA	Base/Neutrals, Acids
BOD	Biochemical Oxygen Demand – 5-day test
CFR	Code of Federal Regulations
COC	Chain of Custody
COC	Certificate of Compliance, CG Form 3585.
COTP	Captain of the Port.
COD	Chemical Oxygen Demand
CWA	Clean Water Act.
DQO	Data Quality Objective
EPA	Environmental Protection Agency
HDPE	High Density Polyethylene
HCl	Hydrochloric Acid
H2SO4	Sulfuric Acid
HNO3	Nitric Acid
MDL	Method Detection Limit
MSD	Marine Sanitation Device
HSSC	International Convention to Harmonized System of Survey and Certification.
NaOH	Sodium Hydroxide
%R	Percent Recovery
PQL	Practical Quantitation Limit (Minimum Reporting Level)
QA	Quality Assurance
QA/QCP	Quality Assurance/Quality Control Plan- see QAPP
QMP	Quality Management Plan
QC	Quality Control
RPD	Relative Percent Difference
RQ	Reportable Quantity per 40 CFR part 302
SM	Standard Methods
SW-846	Solid Waste Methods
SOP	Standard Operating Procedures
TSS	Total Suspended Solids
VOCs	Volatile Organic Chemicals
VGP	EPA Vessel General Permit
VSSP	Vessel Specific Sampling Plan

BEST AVAILABLE TECHNOLOGY¹ Federal Discharge parameters:

Waste Water	pH	Fecal Coliform	TSS Mg/L	Chlorine Total mg/L	Chlorine Free Mg/L	BOD Mg/L	COD Mg/L
Blackwater	6-9	<20	<30	0	0	<30	<30
Graywater	6-9	<20	<30	0	0	<30	<30

- Schedule for compliance with the 200 fecal coliform standard/150 mg/L TSS while underway or 20 fecal coliform/30 mg/L TSS in port or at anchor.

Applicable standards for wastewater discharges per Title XIV, 33 CFR 159, 40 CFR 140, and AS 46.03.463:

Vessels >1 mi from shore, traveling >6kts

Total Suspended Solids < 150 mg/l
 Fecal Coliform < 200/100 ml
 Hazardous Waste < RQ

Vessels <1mi from shore, traveling <6kts

Applicable federal standards for wastewater discharges (black and gray water) within three miles of coast:

Total Suspended Solids	<30 mg/L	Total Residual Chlorine	< 10 ug/L
BOD	<30 mg/L	Fecal Coliform	< 20 FC, mean of 5 samples/30 days; 10% not to exceed 40 FC
PH	6.5 to 9.0		

Note- The ADEC General Permit limits apply to all large cruise ships (see GP).

Intermittent Dischargers

Total Suspended Solids < 150 mg/l
 Fecal Coliform < 200/100 ml
 Hazardous Waste < RQ

Continuous Dischargers

Total Suspended Solids < 150 mg/l
 Fecal Coliform < 20/100 ml
 Hazardous Waste < RQ

¹ Best Available technology is defined in 18 AAC 69.990. BAT means the most effective technology a vessel can use without considering cost. ADEC considers the discharge parameters that can currently be met by reverse osmosis and ultrafiltration wastewater systems as the best available vessel wastewater technology.

AWTS system general descriptions and schematics

MSD (Marine Sanitation Device) is a USCG and MARPOL regulatory description. MSD systems are systems that treat wastewater to a regulatory discharge level of a pollutant. Most engineers have worked with MSD II systems on board of cargo and other vessels. These MSD systems are relatively simple and often laid out for small capacities. MSD II systems are required to meet limits of 200 fecal bacteria units and 150 mg/L of total suspended solids during certification. ADEC and the USCG determined that MSD IIs on cruise ships often didn't meet the regulatory limit as used onboard, which led to the creation of Advanced Water Treatment Systems (AWTS). Another type of MSD is the MSD III which is a system designed for no discharge to water, either holding, reusing the water, or incinerating the waste and boiling off the water.

Cruise vessels in Alaska that discharge wastewater have “special” MSD II systems, treatment systems that are designed for treating for biochemical oxygen demand, removing most solids, and discharging at low levels of chlorine. Graywater is also treated with these systems. These systems use UV or ozone to kill any remaining bacteria growth after treatment. These MSD II systems have the potential to reduce other pollutants as well. Because these systems newer designs compared to most MSD II systems they are called “Advanced Wastewater Treatment Systems”. Some systems utilize parts of the earlier MSD II systems, and can be regarded as upgraded with additional equipment. The AWTS processes is often a microbiological process, where the “bugs” do the work, with the needed environment and atmosphere to do their work, like food, temperature and oxygen. These elements play a big role in the AWTS biological process.

The systems can look impressive and complex. However, when looking at the WW treatment elements it is often easier to understand the system by looking at specific parts which may be familiar to a marine engineer. A quick and sound understanding of the AWTS system can be obtained by asking questions, by reading the Vessel Specific Sampling Plan (VSSP) and onboard AWTS documentation, and witnessing AWTS operations and maintenance.

In general we can split the WW treatment processes on board into the following:

- Pre screening: Removal of solids and other “large items” that are not allowed to get into the treatment system.
- Biological and further mechanical treatment. First stage / second stage bioreactor including membranes, flotation, or other filtration methods; and
- Polishing after the treatment process (UV or ozone and sometimes ion exchange).

Note that some process components are integrated in the ship systems, like process tanks.

There are several types (manufactured by different vendors) of AWTS system and each has its own particulars, for example the Zenon and Hamworthy systems rely on membranes but those membranes are different. The Rochem graywater system relies reverse osmosis technology. By checking the process elements bit by bit a quick feel of the AWTS installation and how it is operated can be obtained. This will make effective compliance verification and reporting much easier.

Tips for quick familiarization of the AWTS process:

- Follow the influent flow and steps the influent takes, making brief notes / sketches will help. Ask yourself the question what is processes? What goes in out?
- What is added besides the influent to the waste water to process? Are other WW flows missed? Are WW process chemicals added?
- Skip(in first instance) the “recirculation” processes and piping, the other processes that are important, but are confusing at this stage, just try to work to the system by “assuming” that the entire flow is processed in a one way direction.
- After this is done and an idea is obtained of the AWTS system, piece the parts together that play a role in the process as well as the circulation flows. Ask why that is done and how it works in the process?
- Always ask why process parts / elements are used? Are there process conditions that trigger for example additional process chemicals?
- Vessels sometimes use other names for AWTS process components than what they actually are, for example a screen press is sometimes called “the wormer” or “the weir”. Often brand names of the equipment are referred to rather than the functionality. In communications make sure that both parties mean the same equipment.
- Check the AWTS system with the VSSP description. Some VSSP’s are really detailed; some provide the “main components” of the AWTS installation.
- Some Vendor descriptions are general, or ship installation specific. If you notice differences compared to the VSSP or other AWTS installation descriptions ask and document the results.

Reporting putting the AWTS system in context:

- AWTS performance is heavily dependent on the system status (maintenance) and operations (how it is operated and what processes are).
- Document AWTS operations, include (if applicable) maintenance operations and why it was done, that way a feel is obtained of what the status of the AWTS system is.
- Check on what is now really processed in the AWTS systems; tank arrangements, daily operations should reflect the process of the AWTS.
- Sampling- provide if possible the background of the sampling event (regulatory, process etc.)- why was it performed?
- Always reports AWTS observations in context with the where, when, and why. That way a context is provided.
- Do not hesitate to ask questions about the operations and how they are performed. If these operations are changed or altered, document the changes.
- If discrepancies or errors are indentified in the VSSP, report these immediately and provide the corrected or revised information.

Hamworthy AWT System

Disney Wonder
Coral Princess
Dawn Princess

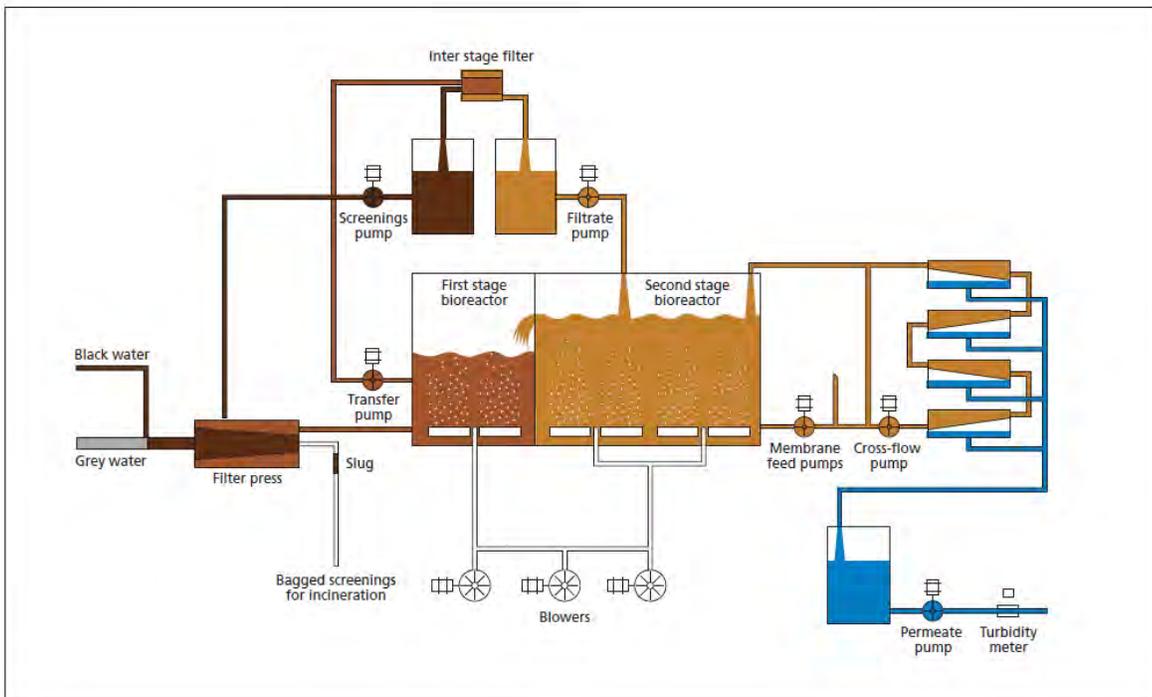
Diamond Princess
 Golden Princess (split system with modifications)
 Island Princess
 Sapphire Princess (split system)
 Sea Princess
 Star Princess
 Sun Princess

(Note- some systems are configured differently such as the Golden Princess, and some systems have 3 MBRs)

Blackwater is delivered directly from the collecting EVAC tanks to the MBR's. Greywater from accommodations is delivered from the dedicated greywater collection tanks and then to one of two MBR buffer tanks where the greywater is provided with some aerobic aeration through the usage of blowers. The greywater and blackwater are then mixed into a common line before entering the MBRs. Greywater from the galleys and laundry are not treated by the MBRs and is held into double bottom tanks.

The Hamworthy system has an MBR 1st Stage Screen Press Waterlink which filters paper and other solids called "screenings" out of the feed. The screenings are collected from the dry waste outlet and into a bagging unit. The bagging is manually removed periodically throughout the day and delivered to the incinerator for incineration while at sea. The feed then flows into the 1st Stage of the Bioreactor which operates as an aerobic biological treatment system.

Incoming feed enters into a high strength biomass within which there is a diverse microbial ecology that breaks down and consumes the raw sewage and grey water mix. The by-products of consumption are water and carbon dioxide; the water passes through the membrane and is discharged, the carbon dioxide is vented to atmosphere (outside the Engine Room) along with the air that is used for the aeration of the biomass. This air supply to the biomass via fine-bubble diffusers also lowers the chemical oxygen demand (COD) of the waste. From the 1st Stage of the Bioreactor further filtering is completed in each of the two Russel Type Bag Filters. Any further solids are then redirected back to Screen Press Waterlink, and remaining filtrate is pumped to the 2nd Stage of the Bioreactor where further aeration is completed. The 2nd Stage of the Bioreactor is then pumped down via cross-flow pumps which deliver feed to the membrane modules. The final effluent is then pumped from the membranes into a permeate tank where it is then circulated thru an Ultraviolet (UV) System for further disinfection before it is finally pumped overboard to further eliminate any potential presence of Fecal Coliform.



Zenon AWT system

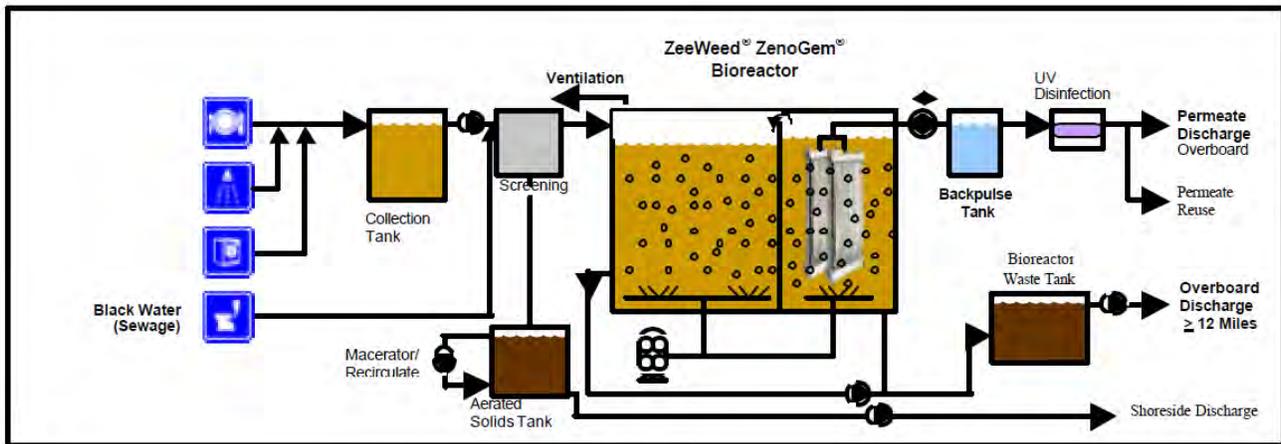
Infinity (Not discharging in AK)

Statendam

Veendam

Volendam

Zaandam



Waste Streams into the Zenon System

All gray water from the accommodation plus all wastewater, i.e. laundry & Somat is collected in the equalization (holding) tanks. This wastewater is then pumped with the gray water pumps to the Masko-Zoll filters. Black Water is pumped from the Evac units towards the Masko-Zoll filters. Just prior to entering the Masko-Zoll filters the black & gray water is mixed.

1st Process – Solid Filters

This mixed stream of black and gray water is filtered in the Masko-Zoll screens and the screened water runs into a tank. The plastics & other solids are filtered from the black & gray water, produces a waste stream called solid waste that is stored in a tank. This solid waste is landed ashore approximately every 4 weeks.

2nd Process – Biological

The biological process happens mainly in the bioreactor & partly in the membrane tank. This screened black and gray water (called screened raw water) is pumped out of tank by the raw water pumps into the bioreactor. The water in the bioreactor is now known as biomass. In the bioreactor the bacteria eat the waste products and convert these into CO_2 , H_2O and other products plus heat. The biological process partly cleans up the biomass preparing it for the next process i.e. ultra filtration. It is necessary to waste biomass to keep the bacteria at the correct level. Biomass waste is transferred to DB tank. It is legally regarded as untreated black water and therefore may only be pumped directly overboard when $>12\text{nm}$ from shore and not in a special area. Biomass wasting is a daily routine.

3rd Process -Ultra filtration

The biomass is pumped out from the bioreactor using the recirculation pumps and into the membrane tank. It then overflows back into the bioreactor where it is subject to further biological process. Ultra filtration occurs in the membrane tank. Here permeate is drawn out of the biomass through the millions of microscopic pores in the membrane fibers (looks rather like hollow spaghetti) by means of the process/permeate pumps. These pumps create a very low vacuum inside the fibers of the membranes. The permeate is first used for filling up the back-pulse tanks.

At 10 minute intervals this process reverses and permeate is taken out of the back-pulse tanks & is pumped back through the membranes. This is done to clean the pores in the membrane fibres.
4th Process – UV filter

Permeate that is not used in the back-pulse tanks then passes through a UV filter. The UV-unit is used as a final disinfection unit before the water is used for other purposes e.g. technical water, or into the main ballast or simply system discharged overboard where allowed.

Rochem AWT System

Carnival Spirit (GW only)

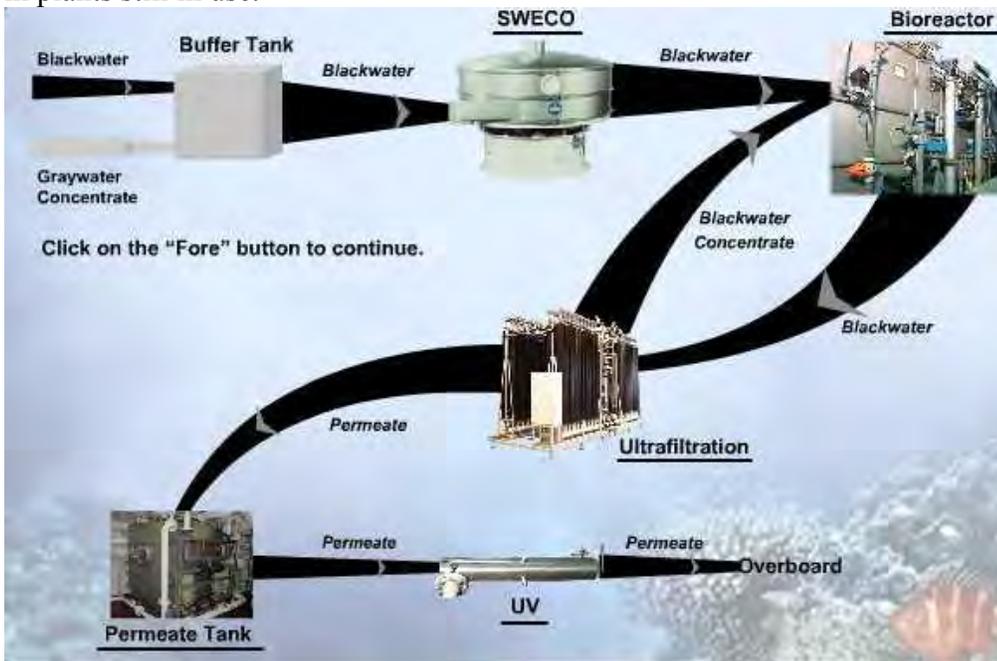
Oosterdam (not discharging in Alaska)

Westerdam (not discharging in Alaska- has replaced parts of the GW system)

Wastewater Treatment

The ROCHEM AWTS BW Plant treats black water and some graywater (for dilution purposes) in a bioreactor system, using membrane ultra-filtration, and an ultraviolet irradiation system.

The Rochem Low Pressure Reversed Osmosis (ROCHEM LPRO 120-10) plant treats graywater in plants still in use.



[Rochem wastewater system \(Science Panel report\)](#)

Note: the Westerdam has replaced the GW system (in part) with another vendor's system- Veolia.

Scanship AWT System

Norwegian Jewel
 Norwegian Pearl
 Norwegian Sun
 Seven Seas Navigator

Five step process:

1. Screening 2. Biological 3. Floatation 4. Polishing 5. Disinfection.

Galley Water, Gray Water, and Laundry Water are collected in GW Collection Tanks; Black Water is held in the vacuum units. All GW and BW is pumped to Drum Screens, which removes and sends sludge and particles to Sludge Holding Tank (Bio-sludge). From the Drum Screens, the water is led to a small Buffer Tank and is then pumped to MIXING TANK.

From here the water is pumped to Bio Tank 1 then to Bio Tank 2. After the Bio Tanks, Polymer and Coagulant is added into the water and pumped into the Floatation Module, where more sludge is separated from the water and pumped to a tank. The water goes from the Flotation Module and into the Polishing Screen where it is finely filtered before passing through the UV units. If the treated water after the UV Units is within the limits of the Turbidity meter/ TSS (<30 mg/l limit setting) it is allowed to go overboard or to holding tanks if overboard discharge is not permitted at that time. If it is not within the limits (TSS >30 mg/l or high or low pH), the water is re-circulated back to the Mixing Tank for re-treatment.

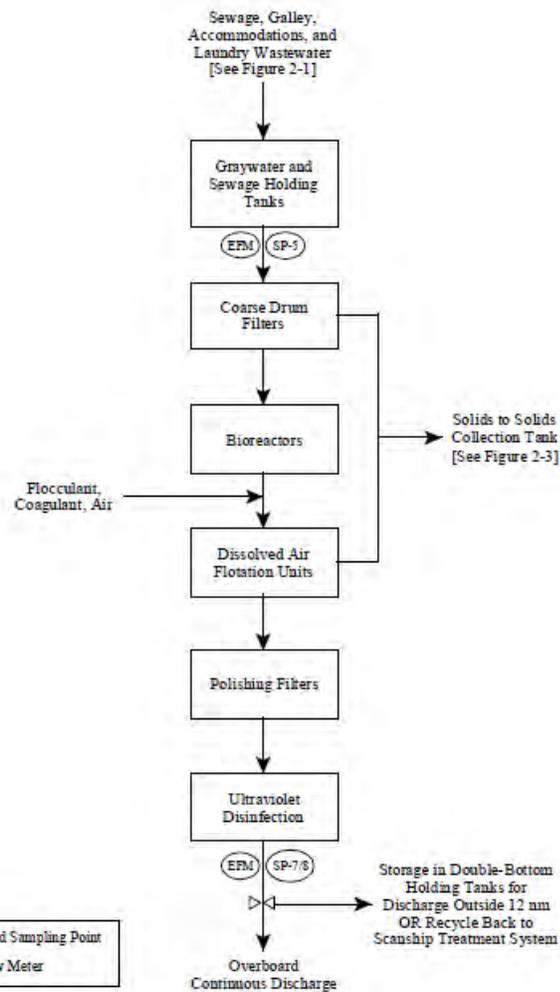


Figure 2-2. Scanship Treatment System, Norwegian Star

Simplified diagram of the Norwegian Star Scanship treatment system. See Table 2-1 for a list of wastewater streams in each wastewater source, and Figure 2-1 for their collection and conveyance to the treatment system. Note that Figure 2-2 has been modified to prevent disclosure of material for which a claim of CBI has been made.

Scanship Diagram (From EPA 2004 report)

Hydroxyl System

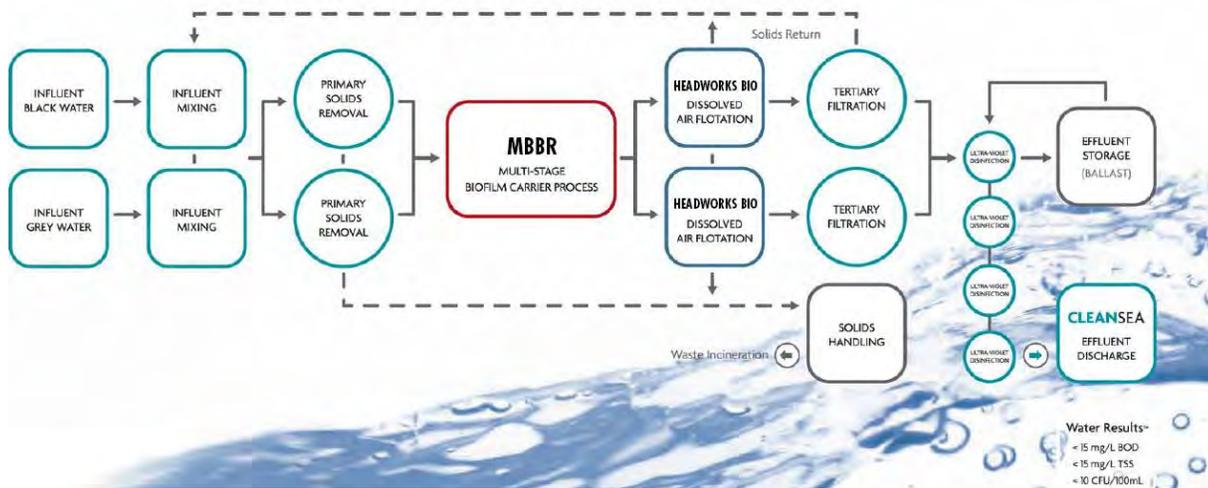
Millennium (not discharging in AK)

Radiance of the Seas (not discharging in AK)

The vessels mix gray and black water from mixing TK are filtered by two screen filters; the filtered wastewater is introduced into the Bioreactors. The solids, which are collected by the primary screen filters are transferred, by the solids transfer pump into the bio-residue TK. The solids that are collected into the bio-residue TK transferred by the sludge transfer pump into the two dewatering units (SOMAT) and with the help of the chemical polymer the separation of solids and water is achieved.. The solids are then collected into the solids collecting TK of the SOMAT system and then transferred into the incinerator for burning. The water that remains from the separation, which the dewatering system achieves, is transferred by gravity into the mixing TK. The wastewater that is introduced into the bioreactors is treated and the treated permeate water is stored into treated gray water holding tanks. The treated permeate water passes through UV units before it is discharged into the sea.

HEADWORKS BIO CLEANSEA®

PROCESS FLOW DIAGRAM

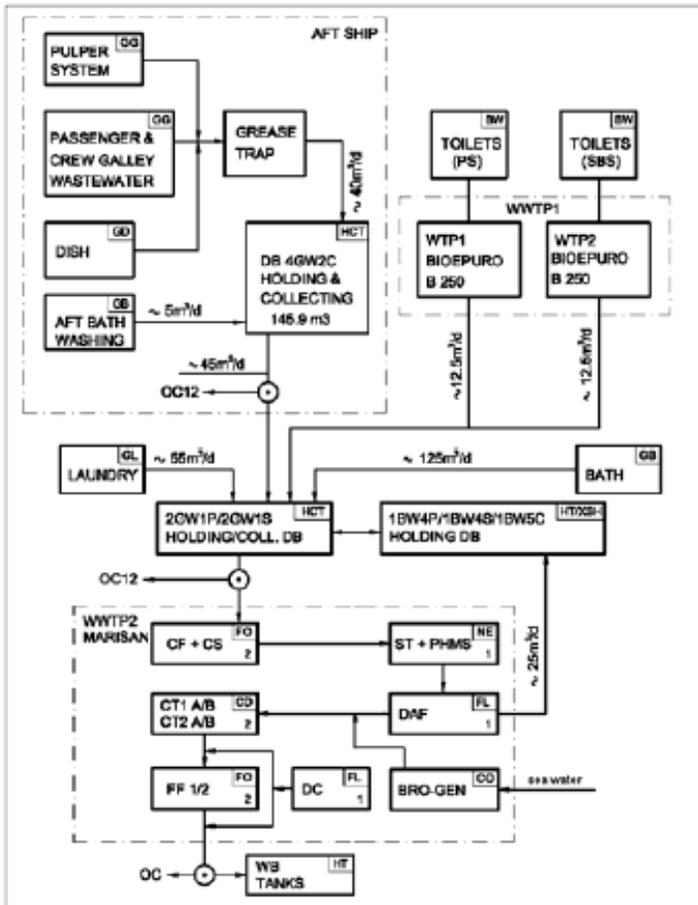


Hydroxyl waste water system diagram

Marisan AWT System

Silver Shadow (permitted but not currently discharging)

Black water are treated by two Sewage Treatment Unit BIOEPURO B250, its effluent is mixed with grey waters (coming from accommodations, galleys and laundry) and treated by No. 1 AWWTP MariSanTM 250, which handles 250 m³ per day.



Silver Shadow VSSP diagram

Triton AWT System (Regatta)

The Regatta installed a new AWT system in 2011. This system was unique in the inclusion of an ion-exchange system to reduce metals and improved configuration and processes to help reduce ammonia.



Regatta Ion Exchange tanks (ADEC photo)

Navalis System (Rhapsody of the Seas)

This was a pilot system designed as part of the 2008 permit source reduction. The status of this system is unknown. Previous seasonal reporting documented numerous modifications and continuing fabrication and installation of AWT parts and components.