

Management of waste streams from the Pacific Jewel during SIDS Conference 2014

Background

The *Pacific Jewel* is a cruise ship operated by P&O Cruises, a brand owned by Carnival Australia. The 70310 GT ship was built in 1991 and is 245m in length, 32m in width and has a draft of 8m. It has diesel/electric propulsion, and has a maximum capacity of 1950 passengers and 734 crew.

The *Pacific Jewel* has been chartered by the New Zealand (NZ) government to provide accommodation for delegations participating in the United Nations Small Island Developing States Conference to be held in Apia in September 2014 (SIDS Conference 2014).

In conjunction with the gap analysis of port waste reception facilities for normal shipping conducted for the port of Apia in November 2013, the gap analysis team was requested to consider the adequacy of waste reception facilities to handle waste streams from the *Pacific Jewel* and to make recommendations in this regard.

The gap analysis was carried out by Lisa Crowle (Australian Maritime Safety Authority - AMSA), Anthony Talouli (Secretariat of the Pacific Regional Environment Programme – SPREP), Scott Willson (SPREP) and Tapaga Collins (Samoa Ministry of Works, Transport and Infrastructure - MWTI).

Considerations

The gap analysis team understands that relevant work was conducted prior to the gap analysis:

1. A consultant to the Samoan Ministry of Foreign Affairs and Trade (John Nell) conducted some preliminary work which resulted in a table of issues surrounding the *Pacific Jewel's* stay in Apia. Mr. Nell had extensive experience in the cruise industry, and liaised with SPA and Carnival. However, the consultant's contract expired and there were a number of issues identified by Samoa Ports Authority (SPA) that would need further clarification or data from the *Pacific Jewel*.
2. SPA therefore provided a questionnaire to the ship's agent seeking relevant clarifications, which was forwarded to Carnival Australia. A copy of this questionnaire was provided to the gap analysis team prior to the port visit.

During the gap analysis port visit, the following meetings took place:

1. Brainstorming session, 26 November 2013

The gap analysis team participated in a brainstorming session convened by the Chief Executive Officer and General Manager of SPA on the *Pacific Jewel*, in particular the issues of waste management and fresh water supply. Other participants included SPA (harbour master, finance, engineering, security), Customs & Quarantine Service, Samoa Water Authority (SWA), Ministry of Natural Resources and Environment (MNRE), and a consultant to the Samoan Government working on the SIDS Conference 2014.

2. Teleconference with Carnival Australia 26 November 2013

Participants included the gap analysis team, SPA CEO/GM, Carnival Australia's Director Port Operations and Director Marine Operations. This teleconference covered a number of technical aspects for the disposal of waste and other concerns including ships equipment.

The brainstorming session had generated a number of questions which the gap analysis team and SPA then put to Carnival Australia in the teleconference.

3. Follow-up correspondence from Carnival Australia by email 28 Nov 2013 which provided:

- a. a copy of the permit issued by the State of Alaska Department of Conservation which allows cruise vessels to operate their advanced wastewater treatment (AWWT) plants in Alaskan waters. The permit provides for conditions on effluent quality and testing. The permit is a general one and allows for various types of wastewater treatment systems – each ship must submit its intention to be covered by the permit (Attachment 1);
- b. Test results from 2013 for the *Pacific Jewel's* AWWT effluent (Attachments 2);
- c. A copy of the *Pacific Jewel's* international sewage pollution prevention certificate issued under MARPOL Annex IV. This certificate provides details of the ship's wastewater treatment plant (Attachment 3); and,
- d. Answers to the SPA questionnaire based on the agreement made during the teleconference to use 1400 passengers as an assumption (Attachment 4).

The information gathered through these efforts has enabled a narrowing of viable options for handling waste generated by the *Pacific Jewel* during the SIDS Conference 2014, as identified in the recommendations below. Several additional recommendations are made related to the planning and implementation of the waste handling options.

Recommendations

Waste treatment options

1. Waste from the *Pacific Jewel* should be handled according to the Preferred Options and Contingency Options as follows:

Preferred options for handling waste streams

- a) Food waste – landing in Apia with clearance and disposal, according to quarantine laws.
- b) Plastics – storage aboard for discharge in Sydney where adequate reception facilities are available.
- c) Recyclable garbage – segregation and storage aboard for discharge in Sydney where adequate reception facilities are available.
- d) Oil sludge – storage aboard for discharge in Sydney where adequate reception facilities are available.

- e) Sewage (blackwater) – use of the *Pacific Jewel's* Hamworthy MBR12 Membrane Bio Reactor Advanced Wastewater Treatment System (AWWT) while in port is recommended.
 - i. Discharge of liquid effluent from AWWT into Apia harbour subject to reaching an agreement with the relevant Samoan authorities, similar to the permit concept used in Alaska.
 - ii. Storage aboard of sewage sludge for discharge in Sydney where adequate reception facilities are available.
- f) Greywater - Laundry and galley greywater should be stored on board if possible for discharge en route back to Sydney. The *Pacific Jewel* has a 989.1m³ greywater holding tank, and should also be able to utilise ballast tanks for additional storage. The maximum capacity for storage in ballast tanks is uncertain because this depends to some extent on the number of passengers and their movements during the week. Ballast tanks must be available first and foremost to protect the stability of the ship.

Other greywater including shower water should be processed through shipboard AWWT system along with blackwater. Liquid effluent should be discharged into harbour subject to agreement with Samoan authorities, and sludge shall be stored aboard for disposal in Sydney.

Contingency arrangements e.g. shore tanks or barges are required due to uncertainty regarding ability to store in ballast tanks.

Contingency options for handling waste streams

- a) Use of barges to ferry wastewater out to sea. Three barges owned by the Samoa Shipping Corporation are currently being investigated as potentially suitable vessels. Other barges may be investigated if SSC vessels are unsuitable.
- b) Temporary storage of wastewater on land, with ultimate disposal at MNRE landfill site. Options to be investigated include:
 - i. decommissioned PPS tank subject to suitable pre-cleaning to prevent contamination of waste by oil;
 - ii. Purchased or hired portable bladder-type tanks to be deployed in vicinity of wharf; and,
 - iii. Pre-fabricated tanks purchased and installed in vicinity of wharf (note this option also being investigated as a solution for freshwater supply).
- c) Sailing option – the *Pacific Jewel* would sail up to 3 times during the conference out beyond 12nm to discharge wastewater. This requires the ship (and consequently conference delegates' accommodation) to be out of port at least 6 to 7hrs so suitable logistics and security arrangements would need to be made.
- d) Use of land based laundry and/or catering facilities to allow that waste water generated from these sources can be directed into the sewer mains.
- e) Landing of recyclable garbage and plastics. While the preferred option is that these waste streams can be stored on board the *Pacific Jewel*, should excess quantities be generated during the conference it is desirable for the Samoan authorities to be prepared to accept these waste streams. Recycling is available in Samoa (although

quarantine considerations may require this waste to be deep buried), and plastics are able to be disposed of at the MNRE landfill site.

Rejected options for handling waste streams

Shipboard incineration of any sludges or other wastes - Carnival Australia will not consider the use of the ship's incinerator in port to dispose of any waste as the use of incinerators in port is against company policy.

Timing: During SIDS Conference 2014. **Responsibility:** SPA, Carnival Australia, Pacific Jewel crew, SWA, MNRE, Customs and Quarantine.

Focal point

2. Samoa Ports Authority should be designated as the focal point regarding the *Pacific Jewel's* visit to Samoa for the SIDS Conference 2014 in order to streamline communication between Carnival Australia, Samoan government authorities, conference organisers and other stakeholders (e.g. NZ government). **Timing:** Immediate; **Responsibility:** CEO/GM Samoa Ports Authority.
3. All those with responsibilities for implementing recommendations should ensure SPA is kept informed of status and included in communications. **Timing:** Immediate; **Responsibility:** various according to work being undertaken.

Quarantine clearance and disposal plan

4. Quarantine, MNRE and the Samoa Ports Authority should develop a plan to deal with expected quantities of:
 - Provisions arriving for storage prior to the conference;
 - Provisions to arrive on *Pacific Jewel*; and
 - Waste being landed during the ship's stay in Apia. Plans should include food waste, plastics and recyclable garbage as well as any excess waste water discharged under contingency options.

This plan may include for example appropriate numbers of trained staff to clear provisions and waste, and arrangements for sufficient containers and appropriate temporary storage, transport and disposal. **Timing:** Plan to be developed by March 2014 to allow time for any required training and procurement. **Responsibility:** Customs and Quarantine Service, MNRE, Samoa Port Authority.

Sewage and greywater agreement

5. Relevant Samoan authorities should make a formal agreement with Carnival Australia permitting the use of the *Pacific Jewel's* AWWT system while the ship is in Apia harbour. The agreement should:
 - Set effluent quality standards;
 - Specify the required monitoring protocol during operation;
 - Specify procedures for handling any non-compliance;
 - Require that sewage sludge be stored onboard and disposed of in Sydney after the conference;

- Specify that greywater except for laundry and galley will be processed through the AWWT;
- Provide that laundry and galley greywater will be stored onboard to the extent possible for discharge in Sydney or while en route to Sydney after the conference; and,
- Provide that the Samoan government will implement appropriate contingency storage and procedures for excess sewage or waste that cannot be processed as intended.

Timing: April 2014. Responsibility: Ministry of Natural Resources and Environment, Samoa Water Authority, NZ government.

Laundry and galley greywater storage

6. Recognising that there is uncertainty in both the expected quantities of laundry and galley greywater and the maximum capacity for onboard storage of this waste stream, SPA and relevant Samoan government authorities should ensure contingency options are available.

Timing: April 2014; Responsibility: SPA, SWA, MNRE, Customs and Quarantine.

Port State control/flag State control

7. AMSA and MWTI should ensure that those responsible for the *Pacific Jewel's* port State control inspections and flag State control surveys during 2014 are aware of the ship's visit to Samoa for the SIDS Conference 2014 and the likely international public scrutiny. Timing: December 2013; Responsibility: AMSA and MWTI.

Financial arrangements

8. Relevant authorities should consult the New Zealand Government in relation to financial responsibilities for handling various waste streams in the context of the NZ Government's charter agreement with Carnival Australia. Timing: Ongoing; Responsibility: Relevant authorities, using SPA as focal point.

Communication strategy

9. SPA should work with Carnival Australia to prepare a strategy and information material to ensure conference delegates and media are aware that adequate arrangements are in place to handle waste streams from the *Pacific Jewel* during the conference. Timing: May 2014. Responsibility: SPA CEO/GM and Marketing area, Ministry of Foreign Affairs and Trade.

Information to finalise arrangements

10. Further information from Samoan authorities is required by Carnival Australia to allow arrangements to be finalised:
 - Barge tonnage and fitting arrangements;
 - Expected turnaround for barge discharge; and,
 - Passenger numbers (refined estimate).

Timing: December 2013 for barge information, July 2014 for passenger numbers.
Responsibility: SPA.