Carnival Spirit, Source Reduction Evaluation 2008 Alaska Season, Revised August 18, 2008).

The Carnival Spirit will **only** discharge a limited volume of treated accommodation GW trough an approved Rochem RO plant into Alaska State waters when needed.

On this particular 14 day schedule the Carnival Spirit only discharges treated accommodation GW in Juneau North bound. Which would be August 2, 08.

7/30/2008	Wednesday	Spirit	Vancouver (Canada Place)
7/31/2008	Thursday	Spirit	Cruise the Inside Passage
8/1/2008	Friday	Spirit	Ketchikan
8/2/2008	Saturday	Spirit	Juneau
8/3/2008	Sunday	Spirit	Skagway
8/4/2008	Monday	Spirit	Sitka
8/5/2008	Tuesday	Spirit	Cruise Prince William Sound
8/6/2008	Wednesday	Spirit	Whittier (Anchorage) , AK
8/7/2008	Thursday	Spirit	Cruise Prince William Sound
8/8/2008	Friday	Spirit	Sitka
8/9/2008	Saturday	Spirit	Juneau
8/10/2008	Sunday	Spirit	Skagway
8/11/2008	Monday	Spirit	Ketchikan
8/12/2008	Tuesday	Spirit	Cruise the Inside Passage
8/13/2008	Wednesday	Spirit	Vancouver (Canada Place)

The source of this water comes from shore side bunker water (75 %) from Alaska ports and Vancouver and the remaining (25 %) from the Atlas fresh water generators which can produce 2 X 600 M3/day on board and which can be operated when the vessel is outside the 12 NM at speed < 6 NM.
Both water sources are being treated and pre paired for use as per standard approved and inspected USPH regulations.
Enclosed is a monthly water bunker, production and consumption list of the Carnival Spirit with head count on board.

July - Water Log 2008 - Form.xls

The cleaning materials used that can wind up in this particular waste stream are closely monitored on board by the Engine and House keeping department.

No additional chemical/cleaner is introduced to the accommodation piping system.

The 2008 effluent test results for metals and ammonia have shown that the discharged effluent from the treated accommodation GW is with in the requirements at the moment.

In the event that we will notice that the bunker water from the various ports in Alaska, (Juneau, Ketchikan, Skagway and Whittier) and the one Canadian port (Vancouver) that we bunker in have metal contents above the standards we have the following options:
1. Discontinue bunkering FW in Alaska ports with high metal readings.
2. Ask the port to install additional equipment to bring the metal readings down to acceptable levels.
3. Ask the port to install a waste water connection, so that we can discharge waste water shore side for treatment.
4. Change the cruise schedule, so that the ships stays outside the 12 NM for a longer period of time to discharge waste water and or eliminate certain Alaska ports.
Please note that the Carnival Spirit has enough waste water holding capacity to maintain present schedule, discharging waste water outside the 12 NM.
5. Install bunker water treatment systems on board the ship if Alaska ports bunker water that does not meet the drinking water standards.
6. Install additional waste water treatment equipment (different membrane) on the discharge side of the wastewater treatment system if it is proven that the bunker water quality metal values are below requirements.
High ammonia levels in accommodation GW can be controlled with chemical balancing if needed

So far no portable water samples of bunker water of Alaska ports have been send to a lab to check for metals levels.
If this would be needed we will do so in the future

Gerald Zyderveld.
Ships Manager Carnival Spirit.