14th January 2009

Annual Source Reduction Evaluation (SRE) Progress Report

(for SRE (Cu & Ni) rev.1 of m/v Silver Shadow as per ADEC's LCPVWDP #2007DB0002, authorization 0025)

Following ADECs SRE Completeness Review Letter of m/v Silver Shadow's SRE (Cu & Ni) rev.0, dated 01st August 2008, and as per the Large Commercial Passenger Vessel Wastewater Discharge General Permit (ADEC No.2007DB0002), item 1.9.12 the following is required:

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- *LCPV WDGP 2008, 1.9.12:*

  "*A permittee that is approved to discharge in compliance with the interim effluent limits for 2008 or 2009 must submit an annual progress report for that calendar year. Progress reports must be submitted within two weeks of the end of the calendar year. Progress reports must describe actions to develop and implement Source Reduction Evaluations and must include:*

  (a)the results and dates of the sampling analysis required under this section and any equipment or process changes made to achieve compliance with the Water Quality Standards based effluent limits found in Table 1; and

  *(b) an explanation of why any completion date was not or cannot be met and a description of any corrective measures***"**

- *Each interim evaluation report, as well as the annual progress report, should discuss the methodology used to obtain the information.*

- *The annual progress report should summarize the success or failure of actions that were implemented to meet the long-term effluent limits. The progress report will be an update to DEC on all Source Reduction Evaluation activities. This report should include and summarize: all reports and applicable sample results, description of any actions taken to achieve compliance with the long-term effluent limits, the quantification of the level of reduction of the pollutants of concern, and whether or not the deadlines established in your SRE were met. If the deadlines were not met, the progress report needs to include an adequate explanation of why a deadline was not met. (See also 18 AAC 70.910(b)*)*

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- * *18 AAC 70.910:*
  (b) A compliance schedule issued under this section must
  (1) contain a narrative description of how the facility will achieve compliance;
  (2) include remedial measures specified as a sequence of actions enforceable by the department, and with completion dates leading to compliance for each requirement;
  (3) require compliance in as brief a time as feasible;

  (4) if compliance is not achievable in one year, include a schedule for the permittee to submit regular progress reports to the department; a progress report submitted as required under that schedule must include
  (A) the activities and completion dates required in the compliance schedule and the dates when those activities were achieved; and
  (B) an explanation of why a completion date was not or cannot be met and a description of corrective measures taken;
  (5) include requirements comparable to and at least as stringent as any compliance plan requirement contained in a judicial consent decree or administrative order that applies to the facility; and
  (6) include a statement that the compliance schedule does not prevent the department from pursuing an enforcement action for noncompliance with a permit condition not covered by the compliance schedule.

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Annual SRE Progress Report

(Summary available at end)

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	**Findings on Effluent Quality**	**Interim Operations or Systems Contributors**	**Sampling Results**
1.	**Influent Source Reduction Evaluation**						
i	**Use of Chemicals**						
i a)	collect technical sheets and identify all cleaning products and maintenance products used on board. Evaluation and estimation of potential contributions from cleaning products to copper, nickel in the effluent.	01 Jan 09 Outcome report, completed	Env. Off., Mar. Suptd. (Env.)	Analysis of data (chemical composition) in (technical and safety) data sheets. Enquiry with the manufacturers of the chemicals Engine department chemicals list and MSDS received. Five chemicals identified that enter the wastewater stream (black water) for discharge. (of these information from manufacturers received for four products (2x Hepburn and 2x MC, Andrea Gallo Genoa did not respond for Sodium Hydroxide) Hotel Department list of Chemicals received along with MSDS sheets. All manufactured by Ecolab. Particular attention paid to identifying laundry detergents that enter the waste stream (grey water) for discharge	Upon review of the data sheets and/or MSDS of the chemicals, no Copper or Nickel components identified. Enquiry with manufacturers however produced the following results: • Hepburn (toilet cleaner and de-scaler– Bio WC and Bio Scale Zapper GLA – technical maintenance chemicals) confirmed no Copper and Nickel in their chemicals composition. • Ecolab (all Hotel chemicals) confirmed no Copper and Nickel in their chemicals composition except for: Solid Power contains Zinc Chloride 62.5% at <0.25% and Balanced Fusion contains Zinc Chloride Anhydrous at <0.25% • Meitler Consulting Inc.(wastewater treatment system chemicals) - MC -	No change in the inventory of the engine and hotel departments chemicals have been identified (ie no interim conditions)	Unable to relate to use of these chemicals

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	**Findings on Effluent Quality**	**Interim Operations or Systems Contributors**	**Sampling Results**
1.	**Influent Source Reduction Evaluation**						
					730 may contain up to 1.5 ppm nickel and 0.85 ppm copper and MC-335 -may contain trace amounts (up to 6.5 ppm) of copper		
i b)	Based on the outcome of the above review, adoption of operational practices to reduce pollutants sources such as use of alternative cleaning products to take place	01 Mar 09 **report not due yet**	Tech. Suptd, Purch. Agent				
i c)	produce and analyze the technical sheets of the paints used on board for the potable water tanks, water purifier, double bottoms of tanks used for grey water collection	15 Oct 08 Outcome report, completed	Env. Off., Mar. Suptd. (Env.)	Analysis of data (chemical composition) in data sheets (technical and safety). Enquiry with the manufacturers of the coatings Two epoxy based coatings of the water tanks have been identified (Sigmaguard CSF 85 (blue-gloss colour) by Sigma - two component epoxy water tank coating and Epicon T-800, Marine - epoxy phenolic primer coating by Chukogu Samhwa Paints).	Upon review of the information in the data sheets of the two coatings, no copper or nickel have been identified listed as components. Enquiry with manufacturers however produced the following results: • Sigmaguard CSF 85 (blue-gloss colour) - the blue formula contains copper phthalocyanine blue pigment which is a bound form of copper • Epicon T-800 – does not contain copper or nickel	No change in the type of tanks coatings during dry docks or other maintenance reasons have been identified since the ship was built	Unable to relate to use of these chemicals

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	Findings on Effluent Quality	Interim Operations or Systems Contributors	Sampling Results
1.	**Influent Source Reduction Evaluation**						
i d)	Based on the outcome of the above review, consideration to be given on changing some of the paint coatings with others with lesser amount of copper or nickel if feasible	01 Mar 09 **report not due yet**	Tech. Suptd., St. Capt.				
ii.	**Water Source Evaluation**						
ii a)	Additional sampling of potable water to be carried in different points of the distribution and production plant in order to locate anomalies, if any	10 Sep 08 Outcome report, completed **More sampling to be carried out when the kit is delivered, target day 01 Mar 09**	Env. Off., St. Capt., Mar. Mgr., Mar. Suptd. (Env.)	Lab analysis (EPA relevant test methods) by Admiralty Environmental Samples of water from various locations within the Silver Shadow were collected on June 6, Sep 8, 2008, Sep 9, 2008 and Nov 15, 2008	In general, levels of dissolved copper and dissolved nickel at the various sampling points within the vessel seem to be mainly generated by sources within the ship. There appears to be a substantial source of dissolved copper originating within the graywater system, and the most recent sampling (Nov 15, 2008) has located very high Copper concentrations in the AC condensate and in the Laundry Washing Machines discharge tank.	Occasional failure of the water system pressure controller device leading to pressure hammering effect on piping is considered also as a contributor to causing accelerated erosion effect of the cupronickel piping. (Planned maintenance inspection implemented on the pressure controlling device)	As per Attachment 1

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	Findings on Effluent Quality	Interim Operations or Systems Contributors	Sampling Results
1.	**Influent Source Reduction Evaluation**						
ii aa)	**New Action:** a sampling test kit Hach DR 890(with reagents for Cu and Ni) ordered onboard for crew to do self testing for metals	01 Apr 09	Fleet Manager, Fleet Suptd and Purchasing Manager; Chief Engineer	Test kit analysis with reagent			
ii bb)	**New Action:** Modify piping so that all laundry water and AC condensate is retained onboard for subsequent discharge outside Alaska waters. Assessment and approval by Class to be done before commencing the modification.	15 May 09 (for completion of the piping modification)	Fleet Manager, Fleet Suptd and Chief Engineer	Onboard system modification	As per the findings of item ref. 1.ii.a): **Proposed Action Plan:** laundry water to be deviated from overboard discharge into retention tanks 4P, 4S, 5C, total capacity 378m3 (currently used for storage of wastewater with high ph as controlled by the 3-way-valve of the AWWTP). The capacity of these tanks is deemed sufficient to accommodate all the laundry waste water (approx daily generation ~10 m3). The AC condensate system has two branches: forward and aft. The forward one (approx daily generation ~1.7 m3) goes into the laundry technical water, which as per the above proposed modification will be retained onboard. The aft branch of the AC condensate system goes to the galley grey water which is also retained onboard and not discharged in Alaska waters	Laundry and AC system have been determined to be a contributor of Copper	As per Attachment 1

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	**Findings on Effluent Quality**	**Interim Operations or Systems Contributors**	**Sampling Results**
1.	**Influent Source Reduction Evaluation**						
ii b)	plan water sampling analysis of the shore water supply bunkered in Alaska and determine also the volumes bunkered there	10 Sep 08 Outcome report, completed	Env. Off., St. Capt., Mar. Mgr., Flt. Mgr.	Lab analysis (EPA relevant test methods) by Admiralty Environmental Samples were taken from potable water bunker connections at various ports visited by the ship in Alaska (Juneau 08/30/08, Wrangell 09/07/08, Skagway 09/08/08, Ketchikan 09/10/08)	In general, levels of dissolved copper and dissolved nickel do not appear to be a direct result of high levels of dissolved metals taken on board from bunkered water Preferred water bunker ports should be: 1. Ketchikan and 2. Skagway. Potable water should be avoided to be bunkered if possible in: 1. Juneau 2. Wrangell The quantity of water bunkered and used in Alaska in the ports with low level of dissolved metals is greater (Skagway 35.5%, Ketchikan 26.0%)	1. Low level of chlorination of bunkered water at some ports, requiring halogenation to 2ppm Chlorine (USPH) 2. 2. The lower temperature towards the end of the season requiring increased heating . As a result of the combination of 1. and 2.: higher temperature combined with increased chlorination is considered to be a contributor to greater corrosion effect on the cupronickel water distribution piping onboard	As per Attachment 2

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	**Findings on Effluent Quality**	**Interim Operations or Systems Contributors**	**Sampling Results**
1.	**Influent Source Reduction Evaluation**						
ii c)	plan water sampling analysis of the shore water supply bunkered outside Alaska and determine also the volumes bunkered there	15 Oct 08 Outcome report, completed	Env. Off., St. Capt., Mar. Mgr., Flt. Mgr.	Lab analysis (EPA relevant test methods) by Admiralty Environmental Samples were taken from potable water bunker connections at two ports visited by the ship outside Alaska, but in Canada from which the water is used in Alaska (Victoria 09/04/08, Vancouver 09/05/08)	In general, levels of dissolved copper and dissolved nickel do not appear to be a direct result of high levels of dissolved metals taken on board from bunker water Preferred water bunker ports in Canada should be: 1. Vancouver. Potable water should be avoided to be bunkered if possible in: 1. Victoria The quantity of water bunkered and used in Alaska in the ports with low level of dissolved metals is greater (Vancouver 73.9% versus Victoria 26.1%) Comparison between the amounts of bunkered water used in Alaska bunkered from outside (Canada) versus from bunkered in ports of Alaska is 26.4% vs 73.6%. Out of the **total** quantity of bunkered water from shore (from both Alaskan and non Alaskan ports), the greater amount is bunkered from ports with low sampling levels of dissolved metals (Skagway 26.1%, Vancouver 19.4%, Ketchikan 19.1%)	1. Low level of chlorination of bunkered water at some ports, requiring halogenation to 2ppm Chlorine (USPH) 2. 2. The lower temperature towards the end of the season requiring increased heating – the higher temperature combined with the increased Chlorination could lead to greater corrosion effect on the cupronickel water distribution piping onboard	As per Attachment 3

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	Findings on Effluent Quality	Interim Operations or Systems Contributors	Sampling Results
1.	**Influent Source Reduction Evaluation**						
ii d)	based on the outcome of the above sampling analysis to determine if it would be feasible to either bunker more water from shore and from where - in or outside Alaska, or produce own water onboard. This to take also in consideration other impacts from producing more water onboard (energy consumption, public health requirements)	01 Mar 09 **report not due yet**	Env. Off., St. capt., Mar. Mgr., Flt. Mgr.				

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	Findings on Effluent Quality	Interim Operations or Systems Contributors	Sampling Results
1.	**Influent Source Reduction Evaluation**						
iii.	**Other Potential Contributors**						
iii a)	identify all possible sources of water influents going for treatment and currently formed by: laundry water, water originated by passengers and crew accommodations, water from the toilets	15 Dec 08 Outcome report, completed	Ch. Eng., Tech. Suptd.	Studying shipboard documentation (drawings, diagrams, manuals). Verifying by tracking pipe lines	It has been verified and confirmed that the following grey water is the influent source for the effluent discharge in Alaskan waters: accommodation waters (sinks, showers), public areas, laundry and very seldom Jacuzzi water. **As per action item ref. 1.ii.bb), a proposed modification of the laundry piping will eliminate the laundry water from the effluents**	Not known	Separate samplings done, as per Attachment 1
iii b)	Based on the review, any new sources identified to be further analyzed as influents for contributors to copper and nickel	01 Mar 09 **report not due yet**	Env. Off., Ch. Eng., Tech. Suptd.				
iii c)	identify the different types of materials used in the piping of the fresh water and waste water systems of the discharge	15 Dec 08 **report not due yet**	Env. Off., Ch. Eng., Tech. Suptd.	Onboard investigation through manuals, drawings, system specifications, visual observations	Hot water distribution delivery pipes with engine apparatus and up-riser – Cupronickel (CuNi). Local water distribution to cabins (from manifolds to cabin tech. spaces) – contain copper elements. The material of the heater exchangers (three available onboard with 12 pipes each,		

Ref	Action	Time Limit & Status	Person(s) in Charge	Update			
				Methodology Used	Findings on Effluent Quality	Interim Operations or Systems Contributors	Sampling Results
1.	**Influent Source Reduction Evaluation**						
					two exchangers in service, one in standby) for fresh water heating is in Cu-Ni. There are sacrificial anodes into the condenser, the seawater outlet of which feeds the evaporator.		
iii d)	Based on the outcome of the above review to consider change of pipes made of different materials, metals and alloys	01 Mar 09 **report not due yet**	Ch. Eng., Flt Mgr.				
iii e)	identify the mixing ratio of sewage and greywater influent before it is treated. To identify if changing this ratio affects effluent quality. This to be done by additional sampling	15 Dec 08 Outcome report, completed	Env. Off., Ch. Eng., Mar. Mgr., Flt. Mgr.	Technical investigation	No sewage is mixed with grey water for subsequent discharge. Sewage is kept onboard and discharged outside Alaska waters	No	Not applicable, no treated sewage samples done
iii f)	consider separating and landing waste water from galley to shore facilities (procedure already in place) and to identify through sampling if this changes the effluent quality for copper and nickel	15 Dec 08 Outcome report, completed	Env. Off., St. Capt., Mar. Mgr, Flt. Mgr	Studying shipboard documentation (drawings, diagrams, manuals). Verifying by tracking pipe lines and valve arrangements	Galley grey water does not go for treatment to the AWWTP and is not a possible influent source	Unknown, this has been a standard operating practice (no galley water to the AWWTP)	No separate sampling deemed feasible

Ref	Action	Time Limit & Status	Person(s) in Charge	Update	
				Research Efforts – New Technologies	Research efforts – Current AWWTP
2.	**Treatment Technology Evaluation**				
i	**Investigation with the Manufacturers of AWWPS re available technology to reduce copper and nickel with the following scope**				
i a)	Need for different Instructions on the way of operating the current system	15 Dec 08 Outcome report, completed	Env. Off., Ch. Eng., Flt. Mgr.	Not applicable	Enquiry with manufacturers (ISIR, Italy) made. No particular operational instructions provided that could improve the level of dissolved metals on the outlet of the AWWTP
i b)	chemical treatment processes changes or introduction of new/different chemicals	15 Dec 08 Outcome report, completed	Ch. Eng., Flt. Mgr.	Not applicable	Enquiry with manufacturers (ISIR, Italy) made. No alternative chemicals could be suggested. Following the finding in item ref. 1.i a), the MC (Meitler Consulting Inc) waste water treatment system chemicals contain - MC -730 up to 1.5 ppm nickel and 0.85 ppm copper and MC-335 up to 6.5 ppm of copper. As these chemicals are of biocide nature (and very high pH) to attack bacteria following Action item ref. 1.i a) further investigation would be made for alternative chemicals, though it appears unlikely such would be available without an amount of metals in them in order to exercise the biocide properties required as per their designation in the treatment system.
i c)	need for modifications or add-ons to the existing plant	15 Dec 08 Outcome report, completed	Ch. Eng., Flt. Mgr.	investigation for new technology	Enquiry with manufacturers (ISIR, Italy) made. No add-ons or modifications to existing plant could be offered that could improve the level of dissolved metals
i cc)	**New Action:** Continue Investigation with other manufacturers	01 Mar 09	Fleet Manager, Flt Suptd	Ongoing investigation for new technology	Another add-on equipment

Summary of findings and intentional action plans:

1. Influent SRE

   i. Chemicals:

   - two hotel department chemicals - Solid Power and Balance Fusion by Ecolab were reported to contain zinc and the wastewater treatment chemicals: MC- 730 by Meitler Consulting Inc. was reported to contain nickel and MC -335 by the same manufacturer to contain copper
   - Water tank paint coatings - the potable water tank coating Sigmaguard CSF85 (blue gloss) was found to contain copper

   ii. Water Source SRE:

   - additional onboard sampling at various locations found out the laundry grey water as great contributor to copper contents – plans in place for:
     - modification of the laundry grey water system, so that all laundry water is retained onboard and not discharged in Alaska waters (due 15 May 09)
     - onboard use of a sampling test kit for copper and nickel for continuous sampling (due 01 Apr 09)

   - the sampling of potable water bunkered onboard in and outside Alaska and used (and discharged as wastewater) when in Alaska did exhibit values above the interim and final Permit limits for copper and nickel, however it appears this is not a direct and main contributor to the high levels of dissolved metals onboard. Assessment was made for preferable ports for bunkering of potable water if feasible for next seasons (preferred bunker ports should be: Ketchikan, Skagway, Vancouver; ports where bunkering with potable water should be avoided if possible: Juneau, Wrangell, Victoria BC)

   iii. Other Potential Contributors

   - Determined the constitution of waste waters, treated by the Advanced Waste Water Treatment Plant (AWWTP) and discharged in Alaska waters: no sewage/black water, only grey water from the following areas: accommodation (sinks, showers), public areas, laundry (which as per the intended action plan will be excluded) and seldom Jacuzzi water

   - analysis carried out for the type of metals from which the devices and materials constituting parts of in the water distribution system are made with the following findings:
     - Cupronickel (Copper and Nickel) material: hot water distribution piping, the heat exchangers
     - Copper material: some of the piping elements of the local water distribution to cabins (from manifolds to cabin tech. spaces)

2. Treatment Technology SRE

   i. The Manufacturers of the existing AWWTP could not offer instructions or upgrade options for that equipment with regards to:
   - Different operation instructions
   - Alternative chemicals to use
   - Possible upgrade modules or add-ons

   ii. Intended action plan (due 01 Mar 09)- continue investigation with other manufacturers, different from the ones of the existing AWWTP for possible additional equipment or technology

Attachment 1

Water Distribution Locations Samples

- Results that are in excess of the 2010 ADEC general permit regulatory limits are in **bold**.
- Consistent results in exceedance during both sampling dates are highlighted

metal (ug/L)	date	evap 1 port	evap 2 stbd	RO before Tk	FW Tk 3 SB influent	FW Tk 3 Port	Domestic Water Heater Outlet	GW inlet to AWWTP Marisan	GW AWWTP Marisan outlet	GW Tk 1 SB	GW Tk 1 Port	Dk 3 hot water	Dk 5 cold water	Dk 7 pantry hot water	Dk 9 hot water	Dk 9 cold water	FW bunker stn	FW Tk 4 SB	AC condensate	Laundry wash machine disch Tk	ADEC Interim limit (current)	ADEC Final limit year 2010
Dissolved Cu	06-Jun-08	**17.7**	**19.9**	n/a	0.602	n/a	n/a	n/a	n/a	n/a	n/a	**26.1**	**6.38**	n/a	**25.9**	n/a	0.345	2.25	n/a	n/a	**66**	**3.1**
	09-Aug-08	**55.0**	**32.0**	**5.3**	n/a	n/a	**30.0**	**110.0**	n/a	n/a	n/a	**35.0**	**18.0**	n/a	**40.0**	n/a	n/a	n/a	n/a	n/a		
	15-Nov-08	n/a	n/a	n/a	**23.0**	**19.0**	n/a	n/a	**96.0**	**110.0**	**69.0**	**24.0**	**34.0**	**48.0**	n/a	**19.0**	n/a	n/a	**1400.0**	**870.0**		
Dissolved Ni	06-Jun-08	4.18	5.42	n/a	2.24	n/a	n/a	n/a	n/a	n/a	n/a	**16.6**	1.59	n/a	**17.2**	n/a	<0.15	1.29	n/a	n/a	**180**	**8.2**
	09-Aug-08	**29.0**	8.0	2.5	n/a	n/a	**57.0**	**11.0**	n/a	n/a	n/a	**9.1**	3.0	n/a	**8.6**	n/a	n/a	n/a	n/a	n/a		
	15-Nov-08	n/a	n/a	n/a	5.1	5.9	n/a	n/a	**17.0**	**14.0**	**12.0**	**8.5**	6.3	**10.0**	n/a	2.9	n/a	n/a	0.0(ND)	4.9		

Attachment 2

Water Bunkered from shore IN Alaska Samples

- Results that are in excess of the 2010 ADEC general permit regulatory limits are in **bold**

Date	Port	Dissolved Cu (µg/L)	Dissolved Ni (µg/L)
08/30/08	Juneau Potable Water Connection	**70**	**17**
09/07/08	Wrangell Potable Water Connection	**7.7**	4.3
09/08/08	Skagway Potable Water Connection	2.4	7.8
09/10/08	Ketchikan Potable Water Connection	2.3	<1.0

Water Bunkered from shore IN Alaska AND used in Alaska, cubic meters (highest income highlighted)

Port /Date	06/06/08	06/14/08	07/05/08	08/03/08	08/29/08			**TOTAL**	**% from total AK bunkered water**	***% from ALL bunkered water used in AK (from outside and AK)***
Ketchikan	293	313	357	206	309			1478	26.0	*19.1*
Port /Date	08/06/08	07/07/08	07/19/08	07/27/08	08/22/08	08/30/08	09/08/08			
Skagway	360	207	214	302	641	93	198	2015	35.5	*26.1*
Port /Date	06/15/08	06/16/08	07/18/08	08/23/08	08/30/08					
Juneau	169	22	201	112	99			603	10.5	*7.8*
Port /Date	08/05/08									
Haines	456							456	8.0	*5.9*
Port /Date	08/13/08	09/07/08								
Wrangell	259	218						477	8.4	*6.2*
Port /Date	08/17/08									
Seward	499							499	8.8	*6.5*
Port /Date	08/18/08									
Valdez	159							159	2.8	*2.1*
TOTAL								5678	100.0	*continued*

Attachment 3

Water Bunkered from shore OUTSIDE Alaska Samples

- Results that are in excess of the 2010 ADEC general permit regulatory limits are in **bold**.

Date	Port	Dissolved Cu (µg/L)	Dissolved Ni (µg/L)
09/04/08	Victoria (Canada) Potable Water Connection	**21**	<1.0
09/05/08	Vancouver (Canada) Potable Water Connection	**1.7**	<1.0

Water Bunkered from shore OUTSIDE Alaska AND used in Alaska, cubic meters (highest income highlighted)

Port /Date	06/04/08	07/03/08	07/15/08			**TOTAL**	**% from total outside AK bunkered water**	***% from ALL bunkered water used in AK (incl. from outside AK and from AK)***
Victoria	218	177	136			531	26.1	*6.9*
Port /Date	06/12/08	06/21/08	07/23/08	08/01/08	08/10/08			
Vancouver	313	183	167	247	594	1504	73.9	*19.4*
TOTAL						2035	100.0	
GRAND TTL	**of ALL water bunkered from shore and used in AK (from outside AK and from AK)**					7713	26.4% from outside AK vs 73.6% from AK	*100.0*