AIRA Phase A Preliminary Risk Assessment
Task 4 Spill Scenario Assumptions and Parameters

Scenario	Location	Vessel Type	Oil Type	Density (Ref 2)	Capacity	Incident	Season	Spill Vol (bbl)	Spill Vol (MT)	Length (m)	Berth (m)	Depth (m)	Fully Loaded Draft (m)	Tank Height (m)	Height above hole (m)	Hole Diameter (m)	Spill Velocity (m/s)	Spill Flow (m^3/s)	# Tank Leaks	Spill Load Rate (MT/'hr)	Duration (hr)	COMMENTS
1	1 - North Unimak Pass	Container Ship	Bunker C	0.981	3.5kDWT	Collision	Summer	3,000	391	397	56	30	15.5	15	3	0.04	5.7	0.01	1	25	15	Assume 2 tanks, 3500 MT total capacity (ref: baseline Scen 1). 1 loses 22% fuel
2		Bulk Carrier	Bunker C	0.981	60kDWT	Collision	Summer	15,000	2,339	292	45	24.7	18.2	10.5	2	0.09	4.4	0.03	1	100	23	Assume 5 tanks, each holds 12kDWT. (Ref 1) 19% loss in 1 tank
3		Crude Oil Tanker	Crude oil	0.863	110kDWT	Collision	Summer	400,000	54,882	333	60	29	20.5	18	18	0.18	13.3	0.32	1	1000	55	Assume 110kMT capacity, 2 tanks, 1 loses 100% fuel
4		Product Tanker	Diesel	0.820	50kDWT	Collision	Winter	25,000	3,430	180	32.2	19.3	11.7	10	5.5	0.04	7.3	0.01	1	29	120	Assume 50kMT capactiy, 8 tanks, 6250 MT each, 1 loses 55%
5		Tank Barge	Diesel	0.820	30kDWT	Collision	Summer	40,000	5,215	400	28.3	12.5	7.5	6	4.2	0.15	6.4	0.11	3	1000	5	Assume 30kMT capactiy, 12 tanks, 2,500 MT each, 3 lose 70%
6	2 - Sanak Island	Container Ship	Bunker C	0.981	3.5kDWT	Drift Grounding	Summer	3,000	391	397	56	30	15.5	15	3	0.04	5.7	0.01	1	25	15	Assume 2 tanks, 3500 MT total capacity (ref: baseline Scen 1). 1 loses 22% fuel
7		Bulk Carrier	Bunker C	0.981	60kDWT	Drift Grounding	Summer	15,000	2,339	292	45	24.7	18.2	10.5	2	0.09	4.4	0.03	1	100	23	Assume 5 tanks, each holds 12kDWT. (Ref 1) 19% loss in 1 tank
8		Crude Oil Tanker	Crude oil	0.863	110kDWT	Drift Grounding	Summer	400,000	54,882	333	60	29	20.5	18	18	Large	-	-	1	19210 -1st hr 171.5 - next 48 hrs	49	Assume 110kMT capacity, 2 tanks, 1 loses 100% fuel, massive rip in hull
9		Tank Barge	Diesel	0.820	30kDWT	Drift Grounding	Summer	40,000	5,215	400	28.3	12.5	7.5	6	4.2	0.15	6.4	0.11	3	1000	5	Assume 30kMT capactiy, 12 tanks, 2,500 MT each, 3 lose 70%
10	3 - Holtz Bay Attu Island	Container Ship	Bunker C	0.981	3.5kDWT	Drift Grounding	Winter	25,000	3,259	397	56	30	15.5	15	3	0.04	5.7	0.01	2	50	65	Assume 2 tanks, 3500 MT total capacity (ref: baseline Scen 1). 2 lose 93% fuel
11		Bulk Carrier	Bunker C	0.981	60kDWT	Drift Grounding	Summer	15,000	2,339	292	45	24.7	18.2	10.5	2	0.09	4.4	0.03	1	100	23	Assume 5 tanks, each holds 12kDWT. (Ref 1) 19% loss in 1 tank
12		Crude Oil Tanker	Crude oil	0.863	110kDWT	Drift Grounding	Spring	400,000	54,882	333	60	29	20.5	18	18	Large	-	-	1	19210 -1st hr 171.5 - next 48 hrs	49	Assume 110kMT capacity, 2 tanks, 1 loses 100% fuel, massive rip in hull
13		Product Tanker	Diesel	0.820	50kDWT	Grounding	Spring	50,000	6,995	180	32.2	19.3	11.7	10	5.5	0.04	7.3	0.01	2	57	122	Assume 50kMT capactiy, 8 tanks, 6250 MT each, 2 lose 55%
14	4 - Adak Island	Tank Barge	Diesel	0.820	30kDWT	Grounding (powered/ drifting)	Summer	40,000	5,215	400	28.3	12.5	7.5	6	4.2	0.15	6.4	0.11	3	1000	5	Assume 30kMT capactiy, 12 tanks, 2,500 MT each, 3 lose 70%
15	5 - Amilia Island	Container Ship	Bunker C	0.981	3.5kDWT	Drift Grounding	Summer	40,000	5,215	397	56	30	15.5	15	3	0.04	5.7	0.01	2	50	103	Assume 2 tanks, 6000 MT total capacity. 2 lose 87% fuel
16	6 - Urilia Bay	Bulk Carrier	Bunker C	0.981	60kDWT	Drift Grounding	Spring	15,000	2,339	292	45	24.7	18.2	10.5	2	0.09	4.4	0.03	1	100	23	Assume 5 tanks, each holds 12kDWT. (Ref 1) 19% loss in 1 tank

Ref 1 Dimensions of vessels from: www.ships-info.info, shipbuildinghistory.com, www.ec21.com
Ref 2 Density of Alaskan crude, diesel fuel, Bunker C from: French, et al. 1996. The CERCLA Type A Natural Resource Damage Assessment Model for Coastal and Marine Environments (NRDAM/CME).
Ref 3 Velocity calculation from: Fay, J.A. Model of Spills and Fires from LNG and Oil Tankers. 2002. Journal of Hazardous Materials 3916 (2002) 1-18
Ref 4 Model Tests of Accidental Oil Spill Due to Grounding. Karafiath G. and R. Bell. 1993. Presented at the International Conference of Hydroscience and Engineering, Washington, D.C. June 7-11, 1993.

Notes
Hole Diameters chosen to derive assumed mass load rates
OGP Risk Assessment Data Directory (Report No. 434-10, March 2010) provides accident statistics. Rates of release on an annual basis, not per incident