Appendix D

Emissions Estimation Methodology for Ocean-Going Vessels

Emissions Estimation Methodology for Ocean-Going Vessels

OCTOBER 2005

California Environmental Protection Agency

Air Resources Board

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EXECUTIVE SUMMARY

The California Air Resources Board (ARB) staff developed a statewide emissions estimation methodology from ocean-going vessels (OGVs) operating in California coastal waters and California ports and inland waterways. This effort was undertaken to support the development of a statewide emission control strategy addressing emissions from auxiliary engines on ocean-going vessels. The methodology reflects updated population and activity data for ocean-going vessels statewide. Emissions estimates were developed for main and auxiliary engines and eight vessel types, for the year 2004 and projected to 2010 and 2020. As shown in Table ES-1, there were approximately 10,000 vessels visits at California ports in 2004 and almost half of those visits were by container ships.

Table ES-1: Estimated Statewide 2004 Ocean-Going Vessel Visits

Vessel Type	Numbers of Visits in 2004
Auto	750
Bulk	946
Container	4744
General	721
Passenger	687
Reefer	52
RoRo	34
Tanker	1941
Totals	9875

Table ES-2 presents the statewide estimate of emission from ocean-going vessels auxiliary engines for 2004. Table ES-3 presents similar information for emissions from the main engines.

Table ES-2: Statewide Emissions from Ocean-Going Vessel Auxiliary Engines in 2004 (tons per day)

Vessel Types	2004 Pollutant Emissions, tons per day				
	PM	NOx	SOx	HC	CO
Auto	0.10	1.11	0.71	0.03	0.08
Bulk	0.35	4.02	2.55	0.11	0.30
Container	1.57	18.11	11.48	0.50	1.37
General	0.15	1.75	1.11	0.05	0.13
Passenger	1.39	14.44	10.24	0.39	1.09
Reefer	0.05	0.60	0.38	0.02	0.05
RoRo	0.03	0.40	0.25	0.01	0.03
Tanker	0.27	3.16	2.00	0.09	0.24
Totals	3.93	43.60	28.72	1.20	3.29

Table ES-3: Statewide Emissions from Ocean-Going Vessel Main Engines in 2004 (tons per day)

Vessel Types	2004 Pollutant Emissions, tons per day				
	PM	NOx	SOx	HC	CO
Auto	0.71	8.49	5.02	0.28	0.66
Bulk	0.82	9.76	5.77	0.33	0.75
Container	10.44	124.32	73.42	4.16	9.60
General	0.51	6.03	3.56	0.20	0.47
Passenger	0.00	0.00	0.00	0.00	0.00
Reefer	0.04	0.50	0.30	0.02	0.04
RoRo	0.18	2.12	1.25	0.07	0.16
Tanker	2.01	23.93	14.13	0.80	1.85
Totals	14.72	175.15	103.44	5.86	13.53

The data in Table ES-4 summarizes the baseline and the projected statewide emissions inventory for diesel PM and NOx from main and auxiliary engines in 2004, 2010 and 2020.

Table ES–4: Ocean-going Vessel Diesel PM and NOx Emission Estimates for Main and Auxiliary Engines for 2004, 2010 and 2020 (tons per day)

Engine Type	2004 Diesel PM	2010 Diesel PM	2020 Diesel PM	2004 NOx	2010 NOx	2020 NOx
Main	14.7	18.1	26.9	175.2	215.6	319.1
Auxiliary	3.9	6.2	12.7	43.6	68.1	137.7
Total	18.6	24.3	39.6	218.8	283.7	456.8

I. BACKGROUND

In this document, ARB staff provides background on the ocean-going vessel emissions inventory, our purpose and goals in preparing an emissions inventory update, and a general overview of the methodology and assumptions used to developed the inventory.

For the purposes of this inventory, an ocean-going vessel (OGV) is a commercial vessel greater than or equal to 400 feet in length or 10,000 gross tons; or propelled by a marine compression ignition engine with a displacement of greater than or equal to 30 liters per cylinder. The emissions inventory includes all OGV emissions occurring within 100 nautical miles of the California coastline. The 100 nautical mile boundary is generally consistent with the California Coastal Waters (CCW) boundary except along the south central coast (Ventura and Santa Barbara Counties) where the CCW boundary is approximately 30 nautical miles offshore.

OGV emissions occur during three distinct operating modes: transit (emissions from vessel operations between ports), maneuvering (slow speed vessel operations while in-port areas), and hotelling (also known as berthing; in-port emissions while moored to a dock).

Two types of engines are found on OGVs, main engines and auxiliary engines. The main engine is a very large diesel engine used mainly to propel the vessel at sea. Main engines are used during the transit and maneuvering modes. Auxiliary diesel-fueled engines on OGVs provide power for uses other than propulsion (except for diesel-electric vessels). Typically, an OGV will have a single, large main engine used for propulsion, and several smaller auxiliary “generator-set” engines. Auxiliary engines are used during all three operating modes. An exception to this configuration are diesel-electric vessels where diesel engine generator sets provide power for both propulsion and auxiliary power needs.

There are a number of types of ocean-going vessels including: auto carriers, bulk cargo carriers, container vessels, general cargo carriers and other miscellaneous vessels, passenger vessels, reefers (refrigerated vessels), roll-on-roll-off vessels (also known as a Ro-Ro: vessels in which vehicles can be driven on or off the vessel). A list of the different types of ocean-going vessel and a brief description of the goods transported by them presented in Table I-1.

Table I-1: Categories of Ocean-Going Vessels Included in the Emissions Inventory

Vessel Type	Description
Auto	Vessels designed to carry autos and trucks
Bulk Cargo	Bulk carriers are vessels used to transport bulk items such as mineral ore, fertilizer, wood chips, or grain.
Container	Container vessels are cargo vessels that carry standardized truck-sized containers.
General Cargo	Vessels designed to carry non-contaminated cargo such as steal, palletized goods, and heavy machinery.
Passenger	Passenger cruise vessels are passenger vessels used for pleasure voyages.
Reefers	Vessels used to transport perishable commodities which require temperature-controlled transportation, mostly fruits, meat, fish, vegetables, dairy products, and other foods.
Ro-Ro	A vessel designed to carry large wheeled cargo such as large off-road equipment, trailers or railway carriages. Ro-Ro is an acronym for “roll on/roll off”.
Tankers	Vessels designed to transport liquids in bulk.

Ocean-going vessels are a significant source of diesel particulate matter (PM) emissions and ozone-forming oxides of nitrogen (NOx) in communities near ports. To reduce diesel PM and NOx emissions, ARB staff are undertaking a rulemaking effort to require reductions in emissions from auxiliary engines on OGVs. To support that rule-making and to assist in understanding the impacts from any proposed rule, it is necessary to develop a detailed emissions inventory for OGVs.

The goals of this emissions inventory effort were to:

- Update the inventory to reflect the most current ocean-going vessel fleets;
- Develop a consistent methodology that could be used statewide to estimate emissions from ocean-going vessels;
- Establish a structure that would allow allocation of the statewide emissions to individual ports and Districts; and
- Accurately reflect adopted regulations and other regulatory programs in the baseline inventory and in any future year forecasts.

II. EMISSION CALCULATION METHODOLOGY

In this section, we provide a discussion of the methodology used to develop the ocean-going vessel emissions inventory.

This methodology is similar to the methodology developed by the Starcrest Consulting Group for the Port of Los Angeles Baseline Air Emissions Inventory (2004). As described below, the Starcrest Port of Los Angeles methodology and assumptions were modified in certain instances to incorporate more recent data. The key data sources staff used to develop this inventory were ARB's 2005 Ocean-going Vessel Survey, 2004 California Lands Commission ocean-going vessel visit data, and the ocean-going vessel element of the 2001 Port of Los Angeles emissions inventory.

Emission estimates were developed for three operating modes (transit, maneuvering, and hotelling) and eight vessel types as described in Table I-1. Estimates were made for diesel particulate matter (PM), oxides of nitrogen (NOx), sulfur dioxide (SO_2), hydrocarbons (HC), carbon monoxide (CO), and carbon dioxide (CO_2).

A. Methodology

The basic equation used for estimating emissions from ocean-going vessels is:

$$E_{y,t,om,e} = \Sigma\, Pop_{t} * EF_{e,om,f} * Hrs_{om,t} * VP_{om,t} * \%Load_{om,t}$$

where

E = pollutant specific emissions (tons per year of NOx, HC, CO_2, SO_2, and diesel PM)
Pop = population of ocean-going vessels by vessel type
EF = emission factor by engine type, operating mode, and fuel (units of glkw-hr)
Hrs = average annual use in hours by operating mode and vessel type
VP = average power by operating mode and vessel type
% Load = average engine load by operating mode and vessel type
y = inventory year
om = operating mode (transit, maneuvering, hotelling)
t = vessel type (auto, container, bulk cargo, etc.)
f = fuel (HFO or MGO/MDO)
e = engine type

Each of these elements, and how they were incorporated into the ocean-going vessel emission estimates, are discussed below. The base year for the ocean-going vessel emissions inventory is 2004.

B. Emission Inventory Inputs

3. Operating Mode

Emissions from OGVs vary by operating mode. Three operating modes are used to characterize OGV activity: transit (emissions from vessel operations between ports), maneuvering (slow speed vessel operations while in-ports), and hotelling (also known as berthing; in-port emissions while moored to a dock). Main engine emissions occur during transit and maneuvering modes. Auxiliary engine emissions occur during all three modes. Separate emission factors have been developed for main engines in the transit and maneuvering modes. Main engines do not operate during hotelling except for the generator sets on diesel-electric vessels. For the purposes of this emissions inventory, all diesel-electric vessel emissions are reported as auxiliary engine emissions.

4. Vessel Population

2004 California State Lands Commission vessel visits data was used as the primary source of vessel population information (CLC, 2004). The Lands Commission collects statewide information from the various Marine Exchanges and Port Authorities on vessel port visits and vessels transiting along the California coast. The vessel data collected includes vessel identity**,** arrival and departure time, port of arrival, last port, and next port. ARB staff used this information to determine the number and type of vessels visiting California ports and transiting within the California emissions inventory zone. Table II-1 identifies the 2004 vessel population by vessel type, number of vessels, and number of visits made by these vessels. As shown in the Table II-1, approximately 10,000 vessel visits occurred in California in 2004.

Table II-1: Estimated Statewide 2004 Ocean-going Vessel Visits

Vessel Types	Numbers of Vessels	Numbers of Visits
Auto	225	750
Bulk	475	946
Container	594	4744
General	196	721
Passenger	44	687
Reefer	19	52
Ro-Ro	13	34
Tanker	372	1941
Totals	**1938**	**9875**

3. Engine Type

Emissions vary depending on the engine type. The two broad classifications of OGV engines are main engines or auxiliary engines. The primary purpose of the main engine is to propel the vessel on the open sea. There are two subcategories of main engines, slow speed and medium speed engines. Slow speed engines are two-stroke engines and are used on 95 percent of all OGVs. (ARB 2005 OGV Survey) Medium speed engines are four-stroke and are used on the remaining 5 percent of OGVs. Both types of OGV main engines have different emission rates associated with them. Since the emission rates from slow and medium speed engines vary, staff developed composite emission factors for main engines using information from the ARB's OGV Survey by weighting the emission factors by the appropriate percentage of slow speed (95%) and medium speed (5%) engines.

Auxiliary engines are diesel engines on ocean-going vessels that provide power for uses other than propulsion (except as noted below for diesel-electric vessels). Auxiliary engines are usually coupled to generators used to produce electrical power. Auxiliary engines are used to provide ship-board electricity for lighting, navigation equipment, refrigeration of cargo, and other equipment. Typically, an OGV will have a single, very large main engine used for propulsion, and several smaller auxiliary "generator-set" engines. It was not necessary for ARB staff to develop composite emission factors for OGV auxiliary engines because all were assumed to be medium speed engines.

Passenger cruise vessels, and some tankers, use a different engine configuration which is referred to as "diesel-electric." These vessels use large diesel generator sets to provide electrical power for both propulsion and ship-board electricity. For the purposes of the proposed regulation, and this emissions inventory, these large diesel generator sets are included in the definition of "auxiliary engines."

4. Fuel

OGV emissions also vary based on the type of fuel used. Two fuel types, marine distillate [marine gas oil (MGO) and marine diesel oil (MDO)] and heavy fuel oil (HFO), are used in OGVs. For main engines, staff assumed all OGVs were using HFO. This is based on information reported in the ARB's 2005 OGV Survey which indicated that 99 percent of main engines were using HFO. According to the Survey, 29 percent of the auxiliary engines used marine distillate and 71 percent used HFO, except for passenger vessels that use approximately 8 percent marine distillate and 92 percent HFO.

The ARB 2005 OGV survey also collected information about the average sulfur content of the fuels used by OGVs. From the Survey, the sulfur content of HFO averaged 2.5 percent sulfur while the distillate ranges from 0.03 – 1.5 percent sulfur with an average 0.5 percent.

5. Emission Factors

Emission factors for OGVs vary by pollutant, operating mode (transit, maneuvering, or hotelling), engine type (main engine/slow speed, main engine/medium speed, or auxiliary/medium speed), and fuel type (HFO or marine distillate). Emission factors for diesel particulate matter (PM), oxides of nitrogen (NOx), sulfur dioxide (SO_2), hydrocarbons (HC), carbon monoxide (CO), and carbon dioxide (CO_2) were compiled. Emission factors for ocean-going vessels are expressed as grams of pollutant emitted per kilowatt-hour of energy (g/kW-h).

Tables II-2, II-3, and II-4 below present the emission factors used in the development of the ocean-going vessel emissions inventory. Table II-2 presents the emission factors for OGV main engines during transit or high load operation while at sea. As shown in the table, a composite emission factor was developed to take into the account the differences in emissions between the slow speed (two-stroke) and medium speed (four-stroke) engine. This was done by weighting the emission factors by 95 percent for slow speed engines and 5 percent for medium speed engines.

Table II-2: Main Engine Emission Factors – Transit Mode (g/kW-hr)

Engine Type	Fuel Type	PM	NOx	SO2	HC	CO	CO2
Slow Speed	HFO	1.5	18.1	10.5	0.6	1.4	620
Medium Speed	HFO	1.5	14	11.5	0.5	1.1	677
Composite EF	HFO	1.5	17.9	10.6	0.6	1.4	623

Table II-3 presents the emission factors for OGV main engines during maneuvering or low load operation near ports. Again, a composite emission factor was developed to account for the differences in emission between slow speed and medium speed engines.

Table II-3: Main Engine Emission Factors – Maneuvering Mode (g/kW-hr)

Engine Type	Fuel Type	PM	NOx	SO2	HC	CO	CO2
Slow Speed	HFO	1.5	14.5	11.6	1.8	1.4	682
Medium Speed	HFO	1.5	11.2	12.7	1.5	1.1	745
Composite EF	HFO	1.5	14.3	11.7	1.8	1.4	685

Table II-4 presents the emission factor for OGV auxiliary engines, including diesel-electric vessels. As shown in the table, the emission factors for auxiliary engines vary depending on the type of fuel used.

Table II-4: Auxiliary Engine Emission Factors – Transit, Maneuvering, and Hotelling (g/kW-hr)

Engine Type	Fuel Type	PM	NOx	SO2	HC	CO	CO2
Medium Speed	HFO	1.5	14.7	12.3	0.4	1.1	722
Medium Speed	Marine Distillate	0.3	13.9	2.1	0.4	1.1	690
Medium Speed	Marine Distillate @0.1% S	0.25	13.9	0.4	0.4	1.1	690

The emission factors for both main and auxiliary engines used by ARB staff are generally consistent with the emission factors used by *Starcrest* in developing the 2001 Port of Los Angeles emissions inventory (Entec, 2002). The *Starcrest* emission factors were based on work done by *Entec*. The *Entec* emission factors were developed using *Lloyd's of London* and *IVL Swedish Environmental Institute* data that related emissions to engine speed and the type of fuel used. The *Entec* emission factors also relied on earlier work done by *Arcadis* in 1999 and *Accurex* (Arcadis, 1999; Accurex, 1996).

The *Starcrest/Entec* emission factors are an improvement over the *Arcadis* and the *Accurex* emission factors because they reflect more recent test results. These emission factors also account for an increase in emissions at lower loads. This allows for more accurate estimates of main engine emissions during maneuvering where an engine load as low as 2 percent was observed.

Staff adjusted the emission factors for PM and SOx to reflect the average sulfur content of HFO obtained from 2005 OGV survey. ARB staff elected not to use *Starcrest/Entec* emission factors for PM for auxiliary engines using HFO. ARB staff also developed an emission factor for CO to supplement the *Entec* emission factors.

ARB staff developed an alternative PM emission factor for auxiliary engines using HFO. Instead of the *Starcrest/Entec* emission factor for PM of 0.8 g/kW-hr for auxiliary engine using HFO, ARB staff used a PM emission factor of 1.5 g/kW-hr. Staff believes that the *Starcrest/Entec* emission factor was too low based on the results of calculations based on a U.S. EPA methodology (EPA, 2003). Based on that methodology, the sulfate PM fraction by itself was estimated to be approximately 0.8 g/kW-hr. In addition, several other sources (Environ, 2002 and Sine Maersk Testing Report) support using a higher emission factor for auxiliary engines using HFO.

The emission factor developed was based in part on work reported by *Environ.* The emission factor was then adjusted to reflect updated information on sulfur content and

break specific fuel consumption for HFO. *Environ* reported a PM emission factor of 1.74 g/kW-hr for medium speed, four-stroke engines using HFO. This emission factor was based on a HFO with a sulfur content of 3 percent and a brake specific fuel consumption of 222 g/kW-hr. Staff adjusted the emission factor to account for the lower average sulfur content of HFO reported in the 2005 ARB OGV Survey (2.5 percent) and a lower brake specific fuel consumption of 210 g/kW-hr.

For CO emissions from the main engines during transit, staff elected to use a U.S. EPA emission factors published in the *Environ* report (Environ, 2002). This emission factor is consistent with the CO emission factors used by *Starcrest* for the Port of Los Angeles emission inventory.

6. Operating Time – Time in Mode

Time in mode is the total amount of time that a vessel operates in a particular mode. To estimate emissions, it is necessary to determine the average time vessels spend in transit, maneuvering, and hotelling by vessel type.

Transit Time

Transit time is estimated by dividing the length of the transit by the average vessel speed. The length of the transit (in miles) associated with each vessel trip listed in the Lands Commission data was estimated using US Army Corps of Engineers (USACE) National Waterway Network map data (Cooper, 2004). Since the shipping lanes in the National Waterway Network are intended as either actual or representative shipping lanes, it was necessary to adjust the shipping lanes and the route distances to reflect actual routes where the USACE routes were not accurate. For example, shipping traffic bound for Northern Asia ports follow the "Great Circle Route", which passes through the Santa Barbara channel and then travels northwest. This is different from how the trip is typified by the USACE data. The USACE data routes those vessels to the southwest.

ARB staff plan to supplement the National Waterway Network data with geographic data obtained from the NOAA International Comprehensive Ocean-Atmospheric Data Set (ICOADS). The ICOADS data are meteorological and geographic data collected from participating vessels and can be used to infer vessel routes. This data is currently being analyzed by Dr. James Corbett of the University of Delaware under contract with the ARB. The inventory will be revised as this data becomes available.

Average vessel speeds were obtained from the *Starcrest* report, which used a proprietary Lloyds of London vessel information database to calculate average vessel speed by vessel type. *Starcrest* also used data from a vessel boarding program that allowed the direct measurement of vessel speeds, as well as other vessel characteristics such as maneuvering time and load factors. These speeds, average vessel data, are summarized in Table II-5.

Table II-5: Main Engine Characteristics - Transit

Vessel Type	Average Vessel Speed (knots)	Average Vessel Speed (mph)
	Transit	Transit
Auto Carrier	18.7	21.5
Bulk	14.5	16.7
Container Ship	22.6	26.0
General Cargo	15.6	18.0
Passenger	19.2	22.1
Reefer	20.1	23.1
Ro-Ro	14.8	17.0
Tanker	14.7	16.9

Source: Port of Los Angeles Baseline Air Emissions Inventory
Passenger Vessels use the same engines for propulsion and auxiliary power

Maneuvering Time

Maneuvering times from the Port of LA were assumed representative for all ports statewide. The average maneuvering time by vessel type was obtained from the *Starcrest* report (Starcrest Consulting Group, 2004). Maneuvering times were determined based upon direct observation in the vessel boarding program. Table II-6 summarizes the maneuvering times used to develop the emissions inventory. As port specific maneuvering times become available, they will be incorporated into the OGV inventory.

Table II-6: Auxiliary Engine Characteristics – Time In Mode (hours)

Vessel Type	Average Transit	Hotelling	Maneuvering
Auto Carrier/Ro-Ro	19/14	45	3
Bulk Carrier/General Cargo	20/19	88	2
Container Ship	14	48	2
Passenger	19	11	1
Reefer	5	60	3
Tanker	23	38	2

Hotelling Time

Average hotelling times were obtained from the 2005 ARB OGV survey and are shown in Table II-6. For the Ports of LA, Long Beach, and Oakland, vessel specific hotelling times were used. These hotelling times were obtained from time in port data provided by the port Marine Exchanges. For LA and Long Beach, the time in port included maneuvering times, so the hotelling times were calculated by subtracting the maneuvering time from the time in port. For all other ports in California, the average hotelling times were used to calculate emissions.

7. Vessel Power

Vessel power is the total power of a vessel's engines. Often there is a single main and multiple auxiliary engines. For this inventory, these engines are represented as the total power of either the main or the auxiliary engines.

Main Engines

Table II-7 summarizes the main engine power characteristics. These power estimates were obtained from the *Starcrest* report, which used a proprietary *Lloyds of London* vessel database to calculate average main engine power by vessel type. Essentially all main propulsion engines in ocean going vessels are compression ignition engines that burn heavy fuel oil. Although there were at least seven steam turbine powered ships still in operation in 2004, they are declining in number and their emissions are not specifically estimated here.

Passenger vessels and a few tankers use diesel-electric engines for both propulsion and auxiliary power; emissions calculations for these vessels were adjusted to avoid double counting by assuming all emissions occurred from auxiliary engines. In 2004, only a few diesel-electric tanker, were in operation, but others are planned for service.

Table II-7: Vessel Main Engine Power Characteristics (kilowatts)

Vessel Type	Average Power
Auto Carrier	10,700
Bulk	8,000
Container Ship	30,900
General Cargo	9,300
Passenger*	Allocated to auxiliary engines
Reefer	9,600
Ro-Ro	11,000
Tanker	9,400

Source: Port of Los Angeles Baseline Air Emissions Inventory
*Passenger vessels use the same engines for propulsion and auxiliary power

Auxiliary Engines

Electrical power for an OGV is generally provided by auxiliary and diesel generator sets during transit maneuvering and hotelling. However, in some cases, electrical power can be provided by a shaft generator on the main engine. At dock power is generally provided by only the auxiliary engines.

In the case of tankers transporting crude oil, the crude oil is generally pumped using steam-driven pumps; the steam is provided by a boiler. As mentioned above, all passenger vessels and a few tankers obtain their electrical power from their main diesel-electric engines.

Table II-8 summarizes the power characteristics of auxiliary engines. The auxiliary engine power profiles were obtained from the 2005 ARB OGV Survey (ARB, 2005).

Table II-8: Vessel Auxiliary Engine Power Characteristics (kilowatts)

Vessel Type	Average Vessel Power
Auto Carrier/Ro-Ro	2,850
Bulk Carrier/General Cargo	1,776
Container Ship	6,800
Passenger	46,670
Reefer	3,900
Tanker	1,985

Load Factor

The main engine load factor for transit mode was estimated to be 80 percent; the main engine load factor during maneuvering was estimated to be 2 percent. As shown in Table II-9, the load factors for auxiliary engines vary depending on vessel type and operating mode. The auxiliary engine load factor represents the actual engine power used divided by the total installed auxiliary engine power. All load factors were obtained from the *Starcrest* report and were developed by the Port of Los Angeles from the results of the vessel boarding program.

Table II-9: OGV Auxiliary Engine Load Characteristics (percent load)

Vessel Type	Load Factor (%)		
	Hotelling	Maneuvering	Transit
Auto Carrier/Ro-Ro	26%	45%	15%
Bulk Carrier/General Cargo	10%	45%	17%
Container Ship	18%	50%	13%
Passenger	16%	64%	80%
Reefer	32%	45%	15%
Tanker	26%	33%	24%

C. Emission Projections

Emission projections for the years 2010 and 2020 were developed. These projections reflect expected growth rates in the ocean-going vessels populations and activity;

changes in emission factors over time as the new engine standards are implemented, and the fleet turn over. Below, ARB staff describes the assumptions used to generate the emission projections for future years.

1. Growth Factors

Future year vessel population estimates were developed based on work done by Dr. James Corbett of the University of Delaware. Dr. Corbett has developed growth factors based on vessel type and by air basin. The methodology differs from the methodology used by ARB in CEIDARS and by *Starcrest* in the Port of Los Angeles emissions inventory. The revised methodology estimates growth based on the changes in the installed power of vessels for the years 1997-2003. The growth rates selected are the midpoint between the best fit compounded annual growth rate in vessel power between 1997 through 2003 and the best fit linear (arithmetic) growth rate in vessel power for the same time period. The estimated growth rates, from the 2004 levels, by vessel type for 2010 and 2020 are presented in Table II-10.

Table II-10: Growth Rates, By Vessel Type, for 2010 and 2020 (base year – 2004)

Vessel Type	**2010**	**2020**
Auto Carrier	15%	43%
Bulk Carrier	-27%	-67%
Container Ship	39%	130%
General Cargo	-9%	-24%
Passenger	94%	496%
Refrigerated Vessel	1%	3%
Ro-Ro	15%	43%
Tanker	29%	92%
Total - All Vessel Types	**20%**	**90%**

ARB staff evaluated this surrogate, and found projected growth using this surrogate to be consistent with growth rate estimates developed by the Port of Los Angeles for their No Net Increase report. As a result, growth rates projected by the Port of Los Angeles in that report were applied to both the Ports of Los Angeles and Long Beach. For ports outside of Los Angeles, ARB staff developed an average growth rate based on the installed power surrogate.

Table II-11 presents the estimated growth rate calculated by air basin based on the installed power surrogate developed for that air basin. The air basin specific growth rates were applied to in-port emissions: hotelling, maneuvering, and transit emissions within three miles of the coast of the California coast. Transit emissions that occur in the Outer Continental Shelf (OCS) (beyond the three mile limit out to 100 miles) cannot be tied directly to a single port. As a result, the vessel type-specific growth factors specified in Table II-10 were used. The vessel type-specific growth factors were also be

used where port-specific factors are not available, such as passenger vessels calling in Monterey.

For the South Coast Air Basin, ARB staff found that the projected growth with this surrogate to be consistent with growth rate estimates developed by the Port of Los Angeles for their No Net Increase report (No Net, 2005). As a result, growth rates projected by the Port of Los Angeles in that report were applied to both the Ports of Los Angeles and Long Beach. For ports outside of Los Angeles, ARB staff developed an average growth rate based on the installed power surrogate.

Table II-11: Growth Rate by Air Basin (base year – 2004)

Air Basin	2010	2020
South Coast	51%	108%
Bay Area	39%	133%
San Diego	91%	486%
South Central Coast	34%	111%
San Joaquin Valley	48%	171%
Sacramento	11%	30%
North Coast	-75%	-91%

2. New Engine Standards

The annex VI emission standards, that were ratified in 2005, are projected to result in very little change in the fleet average in the foreseeable future. As such, the emissions inventory did not project any emissions reductions due to these standards.

III. EMISSION ESTIMATES

A. Statewide Emission Estimates

The emission inventory for ocean-going vessel includes total statewide emissions. The data in Tables III-1summarizes the statewide inventory for diesel PM by engine type and operating mode for 2004, 2010, and 2020.

Table III-1: OGV Diesel PM Emissions for Main and Auxiliary Engines for 2004, 2010, and 2020 (tons per day)

Engine Type	Operating Mode	2004 Diesel PM	2010 Diesel PM	2020 Diesel PM
Main	Transit	14.7	18.0	26.7
Main	Maneuvering	0.1	0.1	.2
Total Main		14.7	18.1	26.9
Auxiliary	Transit	1.6	2.7	7.3
Auxiliary	Maneuvering	0.2	0.3	0.5
Auxiliary	Hotelling	2.1	3.2	4.9
Total Auxiliary		3.9	6.2	12.7
Main + Auxiliary		18.6	24.4	39.6

The data in Table III-2 summarizes the statewide inventory for oxides of nitrogen (NOx) by engine type and operating mode for 2004, 2010, and 2020.

Table III-2: OGV NOx Emissions for Main and Auxiliary Engines for 2004, 2010, and 2020 (tons per day)

Engine Type	Operating Mode	2004 NOx	2010 NOx	2020 NOx
Main	Transit	174.7	214.9	318.0
Main	Maneuvering	0.5	0.7	1.1
Total Main		175.2	215.6	319.1
Auxiliary	Transit	17.5	29.0	76.7
Auxiliary	Maneuvering	2.2	3.4	5.8
Auxiliary	Hotelling	24.0	35.8	55.3
Total Auxiliary		43.6	68.1	137.7
Main + Auxiliary		218.8	283.7	456.8

The above inventories do not include emissions from boilers. Many OGVs have small boilers that produce steam used to heat heavy fuel oil. The ARB believes that this is a relative minor source of emissions compared to the main and auxiliary engine emissions. These emissions will be assessed as more data becomes available. Tables III-4, III-5, and III-6 at the end of this section present the 2004, 2010, and 2020 emissions inventory by engine type, operating mode, and vessel type.

B. District-specific Emission Estimates

The ARB California Emissions Inventory Data and Reporting System (CEIDARS) emission inventory database requires emissions occurring in the OCS Air Basin to be assigned to specific counties and specific air pollution control districts. It is important to note that meteorology defines how OCS emissions impact land; assignment of specific OCS areas to counties and districts is done for database reasons, and not to indicate that a specific county or district is either responsible or impacted by a specific OCS area. There exists no official federal or state governmental assignment of OCS waters to specific counties, districts or air basins. Currently, emissions are allocated on the basis of spatial allocation factors developed by Sonoma Technology, Inc. (STI), under contract to the ARB (US Army, 2005 and map 1). The STI spatial surrogate accounts for all emissions within 100 miles of the coast; assignment of portions of the OCS to various counties was done by extending county boundaries due west where possible. In Southern California, however, these county waters assignments were redrawn for this inventory so that the Los Angeles and Orange county portions of the OCS corresponded to the *Starcrest* Port of LA inventory study area.

Transit emissions were spatially allocated by assigning vessel emissions to the vessel route along the shortest path found in the National Waterway Network. As stated previously, modifications were made to the shipping lanes to reflect actual conditions. All transit emissions beyond the three mile limit are assigned to the OCS air basin. Transit emissions within the three mile limit and within the San Francisco Bay are assigned to the appropriate air basin.

Maneuvering and hotelling emissions were assigned to the port where the activity takes place, except for tanker hotelling emissions in the Pacific Lightering Area, which were assigned to the OCS air basin.

Table III-6 summarizes the emissions by district, air basin, and engine type for 2004.

Table III-3: Statewide Emissions Estimates – 2004 (tons/day)

Emissions in tons/day								
Engine	Mode	Vessel Type	CO	CO2	NOx	PM	SOx	HC
Auxiliary	Hotelling	Auto	0.05	33.63	0.68	0.06	0.43	0.02
Auxiliary	Hotelling	Bulk	0.27	175.57	3.57	0.31	2.26	0.10
Auxiliary	Hotelling	Container	1.01	655.10	13.31	1.16	8.44	0.37
Auxiliary	Hotelling	General	0.12	74.81	1.52	0.13	0.96	0.04
Auxiliary	Hotelling	Passenger	0.17	111.31	2.26	0.22	1.61	0.06
Auxiliary	Hotelling	Reefer	0.04	26.90	0.55	0.05	0.35	0.02
Auxiliary	Hotelling	Roro	0.02	14.14	0.29	0.02	0.18	0.01
Auxiliary	Hotelling	Tank	0.13	87.12	1.77	0.15	1.12	0.05
Auxiliary Hotelling Total			**1.81**	**1178.56**	**23.95**	**2.10**	**15.35**	**0.66**
Auxiliary	Maneuvering	Auto	0.01	3.71	0.08	0.01	0.05	0.00
Auxiliary	Maneuvering	Bulk	0.00	2.34	0.05	0.00	0.03	0.00
Auxiliary	Maneuvering	Container	0.08	49.55	1.01	0.09	0.64	0.03
Auxiliary	Maneuvering	General	0.00	1.20	0.02	0.00	0.02	0.00
Auxiliary	Maneuvering	Passenger	0.07	44.48	0.90	0.09	0.64	0.02
Auxiliary	Maneuvering	Reefer	0.00	0.80	0.02	0.00	0.01	0.00
Auxiliary	Maneuvering	Roro	0.00	1.21	0.02	0.00	0.02	0.00
Auxiliary	Maneuvering	Tank	0.01	5.01	0.10	0.01	0.06	0.00
Auxiliary Maneuvering Total			**0.17**	**108.30**	**2.20**	**0.20**	**1.46**	**0.06**
Auxiliary	Transit	Auto	0.03	17.43	0.35	0.03	0.22	0.01
Auxiliary	Transit	Bulk	0.03	19.96	0.41	0.04	0.26	0.01
Auxiliary	Transit	Container	0.29	186.77	3.79	0.33	2.40	0.10
Auxiliary	Transit	General	0.02	10.23	0.21	0.02	0.13	0.01
Auxiliary	Transit	Passenger	0.85	553.97	11.27	1.09	7.99	0.31
Auxiliary	Transit	Reefer	0.00	2.04	0.04	0.00	0.03	0.00
Auxiliary	Transit	Roro	0.01	4.29	0.09	0.01	0.06	0.00
Auxiliary	Transit	Tank	0.10	63.50	1.29	0.11	0.82	0.04
Auxiliary Transit Total			**1.31**	**858.19**	**17.45**	**1.62**	**11.91**	**0.48**
Main	Maneuvering	Auto	0.00	1.38	0.03	0.00	0.02	0.00
Main	Maneuvering	Bulk	0.00	1.24	0.03	0.00	0.02	0.00
Main	Maneuvering	Container	0.03	16.24	0.34	0.05	0.28	0.04
Main	Maneuvering	General	0.00	0.75	0.02	0.00	0.01	0.00
Main	Maneuvering	Passenger	0.00	0.00	0.00	0.00	0.00	0.00
Main	Maneuvering	Reefer	0.00	0.20	0.00	0.00	0.00	0.00
Main	Maneuvering	Roro	0.00	0.48	0.01	0.00	0.01	0.00
Main	Maneuvering	Tank	0.01	2.85	0.06	0.01	0.05	0.01
Main Maneuvering Total			**0.05**	**23.14**	**0.48**	**0.06**	**0.39**	**0.06**
Main	Transit	Auto	0.65	294.73	8.46	0.71	4.99	0.28
Main	Transit	Bulk	0.75	339.14	9.74	0.82	5.74	0.32
Main	Transit	Container	9.57	4318.35	123.98	10.40	73.14	4.12
Main	Transit	General	0.46	209.51	6.01	0.50	3.55	0.20
Main	Transit	Passenger	0.00	0.00	0.00	0.00	0.00	0.00
Main	Transit	Reefer	0.04	17.40	0.50	0.04	0.29	0.02
Main	Transit	Roro	0.16	73.37	2.11	0.18	1.24	0.07
Main	Transit	Tank	1.84	831.41	23.87	2.00	14.08	0.79
Main Transit Total			**13.48**	**6083.91**	**174.66**	**14.65**	**103.04**	**5.80**
Grand Total			**16.82**	**8252.11**	**218.75**	**18.64**	**132.16**	**7.06**

Table III-4: Statewide Emissions Estimates – 2010 (tons/day)

Emissions in tons/day								
Engine	Mode	Vessel Type	CO	CO2	NOx	PM	SOx	HC
Auxilliary	Hotelling	Auto	0.08	52.73	1.07	0.09	0.68	0.03
Auxilliary	Hotelling	Bulk	0.40	257.28	5.23	0.45	3.31	0.14
Auxilliary	Hotelling	Container	1.50	975.74	19.82	1.72	12.56	0.55
Auxilliary	Hotelling	General	0.17	111.21	2.26	0.20	1.43	0.06
Auxilliary	Hotelling	Passenger	0.27	176.54	3.59	0.35	2.55	0.10
Auxilliary	Hotelling	Reefer	0.06	40.07	0.81	0.07	0.52	0.02
Auxilliary	Hotelling	Roro	0.03	20.79	0.42	0.04	0.27	0.01
Auxilliary	Hotelling	Tank	0.19	126.56	2.57	0.22	1.63	0.07
Auxiliary Hotelling Total			**2.71**	**1760.92**	**35.78**	**3.15**	**22.95**	**0.98**
Auxilliary	Maneuvering	Auto	0.01	5.80	0.12	0.01	0.07	0.00
Auxilliary	Maneuvering	Bulk	0.01	3.42	0.07	0.01	0.04	0.00
Auxilliary	Maneuvering	Container	0.11	72.47	1.47	0.13	0.93	0.04
Auxilliary	Maneuvering	General	0.00	1.77	0.04	0.00	0.02	0.00
Auxilliary	Maneuvering	Passenger	0.11	71.24	1.45	0.14	1.03	0.04
Auxilliary	Maneuvering	Reefer	0.00	1.20	0.02	0.00	0.02	0.00
Auxilliary	Maneuvering	Roro	0.00	1.76	0.04	0.00	0.02	0.00
Auxilliary	Maneuvering	Tank	0.01	7.15	0.15	0.01	0.09	0.00
Auxiliary Maneuvering Total			**0.25**	**164.80**	**3.35**	**0.30**	**2.23**	**0.09**
Auxilliary	Transit	Auto	0.03	20.19	0.41	0.04	0.26	0.01
Auxilliary	Transit	Bulk	0.02	15.80	0.32	0.03	0.20	0.01
Auxilliary	Transit	Container	0.40	258.92	5.26	0.46	3.33	0.14
Auxilliary	Transit	General	0.01	9.57	0.19	0.02	0.12	0.01
Auxilliary	Transit	Passenger	1.63	1065.82	21.68	2.09	15.38	0.59
Auxilliary	Transit	Reefer	0.00	2.06	0.04	0.00	0.03	0.00
Auxilliary	Transit	Roro	0.01	5.00	0.10	0.01	0.06	0.00
Auxilliary	Transit	Tank	0.08	48.87	0.99	0.09	0.63	0.03
Auxiliary Transit Total			**2.18**	**1426.23**	**29.00**	**2.73**	**20.02**	**0.79**
Main	Maneuvering	Auto	0.00	2.09	0.04	0.01	0.04	0.01
Main	Maneuvering	Bulk	0.00	1.80	0.04	0.01	0.03	0.00
Main	Maneuvering	Container	0.05	23.71	0.50	0.07	0.40	0.06
Main	Maneuvering	General	0.00	1.10	0.02	0.00	0.02	0.00
Main	Maneuvering	Passenger	0.00	0.00	0.00	0.00	0.00	0.00
Main	Maneuvering	Reefer	0.00	0.30	0.01	0.00	0.01	0.00
Main	Maneuvering	Roro	0.00	0.69	0.01	0.00	0.01	0.00
Main	Maneuvering	Tank	0.01	4.09	0.09	0.01	0.07	0.01
Main Maneuvering Total			**0.07**	**33.79**	**0.71**	**0.09**	**0.57**	**0.09**
Main	Transit	Auto	0.75	339.26	9.74	0.82	5.75	0.32
Main	Transit	Bulk	0.56	252.43	7.25	0.61	4.28	0.24
Main	Transit	Container	13.26	5986.07	171.86	14.41	101.39	5.71
Main	Transit	General	0.42	191.36	5.49	0.46	3.24	0.18
Main	Transit	Passenger	0.00	0.00	0.00	0.00	0.00	0.00
Main	Transit	Reefer	0.04	17.59	0.51	0.04	0.30	0.02
Main	Transit	Roro	0.19	84.63	2.43	0.20	1.43	0.08
Main	Transit	Tank	1.36	613.61	17.62	1.48	10.39	0.59

Table III-5: Statewide Emissions Estimates – 2020 (tons/day)

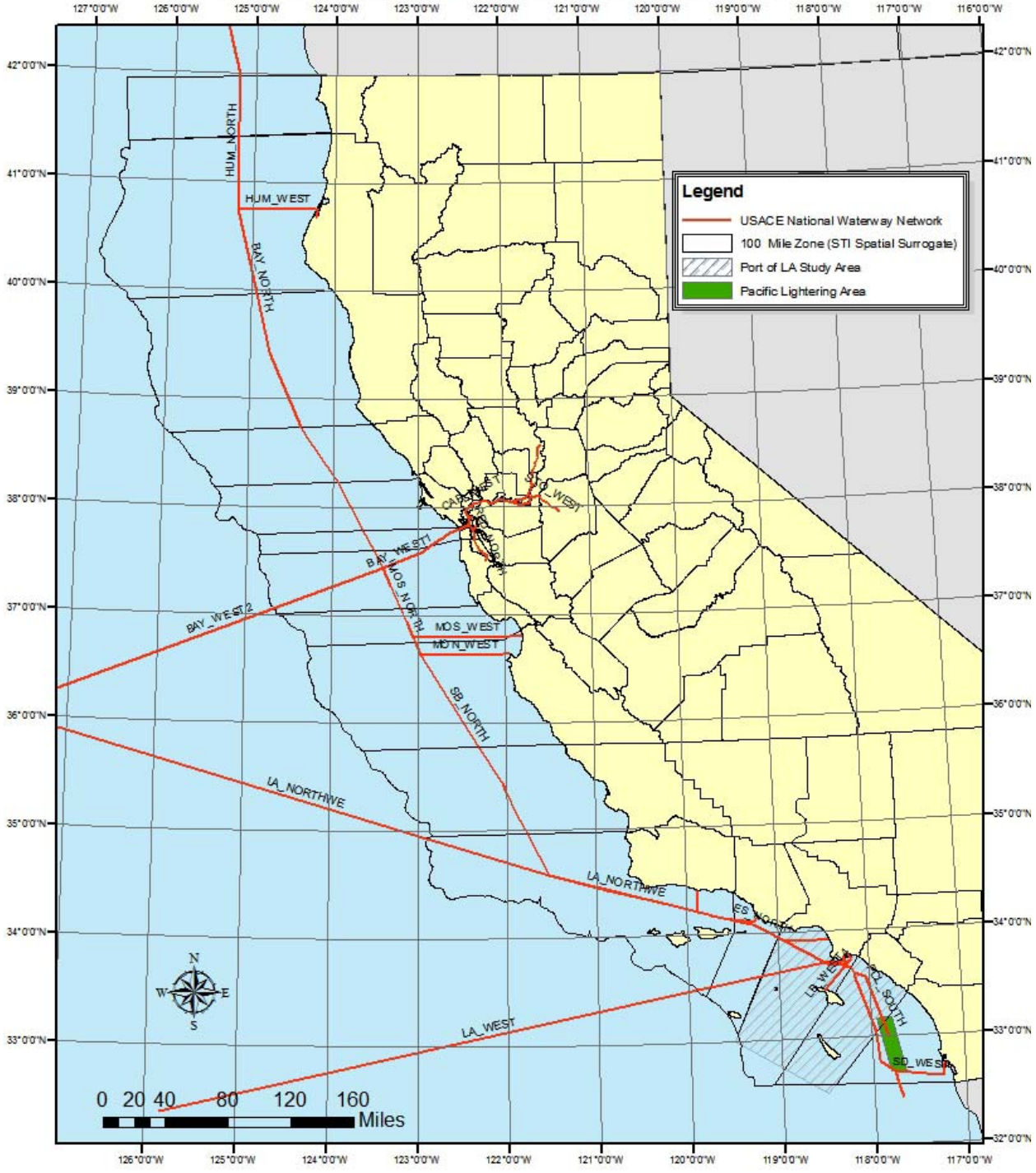
Emissions in tons/day								
Engine	Mode	Vessel Type	CO	CO2	NOx	PM	SOx	HC
Auxiliary	Hotelling	Auto	0.17	107.88	2.19	0.19	1.39	0.06
Auxiliary	Hotelling	Bulk	0.62	402.27	8.17	0.71	5.18	0.22
Auxiliary	Hotelling	Container	2.14	1393.99	28.32	2.46	17.95	0.78
Auxiliary	Hotelling	General	0.32	211.30	4.29	0.37	2.72	0.12
Auxiliary	Hotelling	Passenger	0.51	332.20	6.76	0.65	4.79	0.18
Auxiliary	Hotelling	Reefer	0.09	59.57	1.21	0.11	0.77	0.03
Auxiliary	Hotelling	Roro	0.05	30.42	0.62	0.05	0.39	0.02
Auxiliary	Hotelling	Tank	0.28	184.12	3.74	0.33	2.37	0.10
Auxiliary Hotelling Total			4.18	2721.75	55.31	4.87	35.56	1.52
Auxiliary	Maneuvering	Auto	0.02	11.61	0.24	0.02	0.15	0.01
Auxiliary	Maneuvering	Bulk	0.01	5.42	0.11	0.01	0.07	0.00
Auxiliary	Maneuvering	Container	0.17	108.14	2.20	0.19	1.39	0.06
Auxiliary	Maneuvering	General	0.01	3.29	0.07	0.01	0.04	0.00
Auxiliary	Maneuvering	Passenger	0.21	140.51	2.86	0.28	2.03	0.08
Auxiliary	Maneuvering	Reefer	0.00	1.74	0.04	0.00	0.02	0.00
Auxiliary	Maneuvering	Roro	0.00	2.67	0.05	0.00	0.03	0.00
Auxiliary	Maneuvering	Tank	0.02	10.76	0.22	0.02	0.14	0.01
Auxiliary Maneuvering Total			0.44	284.14	5.78	0.53	3.88	0.16
Auxiliary	Transit	Auto	0.04	25.49	0.52	0.05	0.33	0.01
Auxiliary	Transit	Bulk	0.02	10.49	0.21	0.02	0.14	0.01
Auxiliary	Transit	Container	0.66	429.84	8.73	0.76	5.53	0.24
Auxiliary	Transit	General	0.01	8.73	0.18	0.02	0.11	0.00
Auxiliary	Transit	Passenger	4.98	3256.40	66.25	6.38	46.98	1.81
Auxiliary	Transit	Reefer	0.00	2.10	0.04	0.00	0.03	0.00
Auxiliary	Transit	Roro	0.01	6.38	0.13	0.01	0.08	0.00
Auxiliary	Transit	Tank	0.04	29.13	0.59	0.05	0.38	0.02
Auxiliary Transit Total			5.77	3768.56	76.65	7.29	53.58	2.10
Main	Maneuvering	Auto	0.01	3.97	0.08	0.01	0.07	0.01
Main	Maneuvering	Bulk	0.01	2.83	0.06	0.01	0.05	0.01
Main	Maneuvering	Container	0.07	35.59	0.74	0.10	0.61	0.09
Main	Maneuvering	General	0.00	2.04	0.04	0.01	0.03	0.01
Main	Maneuvering	Passenger	0.00	0.00	0.00	0.00	0.00	0.00
Main	Maneuvering	Reefer	0.00	0.44	0.01	0.00	0.01	0.00
Main	Maneuvering	Roro	0.00	1.06	0.02	0.00	0.02	0.00
Main	Maneuvering	Tank	0.01	6.17	0.13	0.02	0.10	0.02
Main Maneuvering Total			0.10	52.11	1.09	0.15	0.89	0.14
Main	Transit	Auto	0.94	423.36	12.15	1.02	7.17	0.40
Main	Transit	Bulk	0.29	129.77	3.73	0.31	2.20	0.12
Main	Transit	Container	22.01	9933.53	285.18	23.92	168.24	9.47
Main	Transit	General	0.36	163.92	4.71	0.39	2.78	0.16
Main	Transit	Passenger	0.00	0.00	0.00	0.00	0.00	0.00
Main	Transit	Reefer	0.04	17.92	0.51	0.04	0.30	0.02
Main	Transit	Roro	0.23	106.00	3.04	0.26	1.80	0.10
Main	Transit	Tank	0.67	302.26	8.68	0.73	5.12	0.29
Main Transit Total			24.54	11076.78	318.01	26.67	187.61	10.56
Grand Total			35.03	17903.34	456.83	39.51	281.51	14.47

Table III-6: District Emissions Estimates – 2004 (tons/day)

Emissions in tons/day

District	Air Basin	Engine	CO	CO2	NOx	PM	SOx	HC
Bay Area AQMD	Outer Continental Shelf	Auxiliary	0.17	109.31	2.22	0.20	1.50	0.06
		Main	2.31	1040.63	29.88	2.51	17.63	0.99
	San Francisco Bay Area	Auxiliary	0.39	253.62	5.15	0.45	3.31	0.14
		Main	0.15	67.90	1.88	0.17	1.15	0.08
	Bay Area AQMD Total		**3.01**	**1471.46**	**39.13**	**3.33**	**23.58**	**1.27**
Mendocino County AQMD	Outer Continental Shelf	Auxiliary	0.06	41.64	0.85	0.08	0.58	0.02
		Main	0.61	273.65	7.86	0.66	4.63	0.26
	Mendocino County AQMD Total		**0.67**	**315.29**	**8.70**	**0.74**	**5.21**	**0.28**
Monterey Bay Unified APCD	North Central Coast	Auxiliary	0.00	2.39	0.05	0.00	0.03	0.00
		Main	0.00	0.00	0.00	0.00	0.00	0.00
	Outer Continental Shelf	Auxiliary	0.10	66.80	1.36	0.13	0.92	0.04
		Main	1.18	532.48	15.29	1.28	9.02	0.51
	Monterey Bay Unified APCD Total		**1.29**	**601.67**	**16.69**	**1.41**	**9.98**	**0.55**
North Coast Unified APCD	North Coast	Auxiliary	0.01	6.49	0.13	0.01	0.08	0.00
		Main	0.00	0.06	0.00	0.00	0.00	0.00
	Outer Continental Shelf	Auxiliary	0.10	65.82	1.34	0.12	0.92	0.04
		Main	0.96	432.83	12.43	1.04	7.33	0.41
	North Coast Unified APCD Total		**1.07**	**505.19**	**13.90**	**1.18**	**8.33**	**0.45**
Northern Sonoma County APCD	Outer Continental Shelf	Auxiliary	0.03	19.28	0.39	0.04	0.27	0.01
		Main	0.28	126.70	3.64	0.31	2.15	0.12
	Northern Sonoma County APCD Total		**0.31**	**145.98**	**4.03**	**0.34**	**2.41**	**0.13**
San Diego County APCD	Outer Continental Shelf	Auxiliary	0.30	197.10	4.01	0.38	2.83	0.11
		Main	0.33	150.50	4.32	0.36	2.55	0.14
	San Diego	Auxiliary	0.11	73.64	1.50	0.14	1.00	0.04
		Main	0.00	0.60	0.01	0.00	0.01	0.00
	San Diego County APCD Total		**0.75**	**421.83**	**9.84**	**0.89**	**6.39**	**0.30**
San Joaquin Valley Unified APCD	San Joaquin Valley	Auxiliary	0.03	18.77	0.38	0.03	0.24	0.01
		Main	0.00	1.73	0.05	0.00	0.03	0.00
	San Joaquin Valley Unified APCD Total		**0.03**	**20.50**	**0.43**	**0.04**	**0.27**	**0.01**
San Luis Obispo County APCD	Outer Continental Shelf	Auxiliary	0.06	38.56	0.78	0.07	0.53	0.02
		Main	0.75	337.05	9.68	0.81	5.71	0.32
	San Luis Obispo County APCD Total		**0.81**	**375.61**	**10.46**	**0.88**	**6.24**	**0.34**
Santa Barbara County APCD		Auxiliary	0.22	145.19	2.95	0.27	1.95	0.08
		Main	4.37	1973.91	56.67	4.75	33.43	1.88
	South Central Coast	Auxiliary	0.00	0.60	0.01	0.00	0.01	0.00
		Main	0.00	0.00	0.00	0.00	0.00	0.00
	Santa Barbara County APCD Total		**4.60**	**2119.70**	**59.63**	**5.02**	**35.39**	**1.96**
South Coast AQMD	Outer Continental Shelf	Auxiliary	0.18	114.37	2.33	0.22	1.59	0.06
		Main	1.73	779.79	22.39	1.88	13.21	0.74
	South Coast	Auxiliary	1.44	934.65	18.99	1.67	12.19	0.52
		Main	0.03	13.42	0.28	0.04	0.23	0.03
	South Coast AQMD Total		**3.37**	**1842.24**	**43.99**	**3.80**	**27.22**	**1.36**
Ventura County APCD	Outer Continental Shelf	Auxiliary	0.05	31.99	0.65	0.06	0.43	0.02
		Main	0.83	373.89	10.73	0.90	6.33	0.36
	South Central Coast	Auxiliary	0.03	16.27	0.33	0.03	0.21	0.01
		Main	0.00	0.60	0.01	0.00	0.01	0.00
	Ventura County APCD Total		**0.90**	**422.75**	**11.73**	**0.99**	**6.99**	**0.39**
Yolo/Solano AQMD	Sacramento Valley	Auxiliary	0.01	8.58	0.17	0.02	0.11	0.00
		Main	0.00	1.31	0.04	0.00	0.02	0.00
	Yolo/Solano AQMD Total		**0.02**	**9.88**	**0.21**	**0.02**	**0.13**	0.01
	Statewide Total		**16.82**	**8252.11**	**218.75**	**18.64**	**132.16**	7.06

Map 1
Ocean-Going Vessel
Emission Inventory Overview



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(US Army, 2005) US Army Corps of Engineers Navigation Data Center, *National Waterway Network*, http://www.iwr.usace.army.mil/ndc/data/datanwn.htm, July, 2005

Attachment 1: Statewide Ocean-going vessel Survey

Oceangoing Vessel Survey

January 2005

RETURN DATE: February 28, 2005

California Environmental Protection Agency

Air Resources Board

THIS PACKET CONTAINS:

IF YOUR PACKET IS MISSING ANY ITEMS LISTED ABOVE, PLEASE CONTACT:

Mr. Paul Milkey at (916) 327-2957 or pmilkey@arb.ca.gov

Facsimile number (916) 327-6251

Part I

Survey Forms

(These are the forms you will return to
the California Air Resources Board)

CALIFORNIA AIR RESOURCES BOARD SHIP SURVEY

PART I: COMPANY AND CONTACT INFORMATION

☐ Confidential

Company Name: _____

Division Name: _____

Mailing Address: _____ City: _____

State / Province: _____ Zip Code: _____ Country: _____

Contact Person: _____ Title: _____

Phone: _____ Fax: _____ Email Address: _____

Do you consider any part of this survey to be confidential? Yes

Type of Business : ☐ Deep Sea Transportation of Freight ☐ Deep Sea Transportation of Passengers ☐Other , Specify: _____

Certification: I am an officer of the company listed above and hereby certify that all information entered by my company on this “Air Resources Board Ship Survey” is complete and accurate to the best of my knowledge and belief.	
Print Name:	Title:
Signature:	Date:

CALIFORNIA AIR RESOURCES BOARD SHIP SURVEY

Part II. A. SHIP AND ENGINE INFORMATION

(Please complete one form per vessel)

SHIP INFORMATION ☐**Confidential**

Vessel Name: _____ Lloyds/IMO #: _____ Country Flag: _____ Vessel Age: _____ Years

Vessel Type: _____ Ship Electrical Power: _____ Volts _____ Hertz (Hz) _____ Phase

Direct Drive Main Engine/s (Note: For diesel-electric/generator-set engines on cruise ships, etc. please list under "auxiliary engines" below)

Number of main engines: _____ Engine Type: Diesel Piston If diesel engine, type? 4 Stroke

Make: _____ Engine Age: _____ Years

Model: _____ Rated Power at MCR: _____ kW RPM at MCR: _____

Fuel Used #1: Residual S% _____ Fuel Used #2 : Residual S% _____

Would requiring MGO use in auxiliary engines while in California waters require modification of the vessels fuel system? NoIf Yes, comment below.

Normal cruise power at sea: kW Normal cruise speed at sea: Knots

Please describe any engine modifications completed to either improve fuel efficiency or reduce emissions (e.g., slide valves):

Auxiliary Engines (and all diesel-electric engines, whether for ship propulsion or on-board power). Exclude emergency/standby engines.

	Engine #1	Engine #2	Engine #3	Engine #4	Engine #5	Engine #6
Make:						
Model:						
Engine Age:	Years	Years	Years	Years	Years	Years
Rated Power at MCR:	Kw	Kw	Kw	Kw	Kw	Kw
Engine Type:	Diesel Piston 4 Stroke	Diesel Piston 4 Stroke	Diesel Piston 4 Stroke	Diesel Piston 4 Stroke	Diesel Piston 4 Stroke	Diesel Piston 4 Stroke
Fuel Type:	Residual S%	Residual S%	Residual S%	Residual S%	Residual S%	Residual S%
Average total ship power generated from engines #1-6 above	At Sea: kW		Maneuvering: kW		Hotelling: kW	

Comments: _____

CALIFORNIA AIR RESOURCES BOARD SHIP SURVEY

Part II.B. CALIFORNIA PORT VISITS

(Only for ships that visited the same CA port 5 or more times in 2004)

☐ Confidential

Vessel Name: **Error! Not a valid link.**

Total # of California Port Visits in 2004:_____ _____

Typical # of calls in California per year:_____ _____

Note: Please copy and attach additional sheets if necessary

2004 California Port Call Summary

Month of visit	Port of Last Call Outside CA	California Port #1 and Pier/Berth #	Hrs. at Port #1	California Port #2 and Pier/Berth #	Hrs. at Port #2	California Port #3 and Pier/Berth #	Hrs. at Port #3	Next Port Call Outside of CA

Comments: _____

Part II

Survey Overview and Instructions

SURVEY OVERVIEW

The California Air Resources Board's (ARB) oceangoing vessel survey (Survey) is intended to collect information about the various oceangoing vessels operating in California's coastal waters. This information is being collected to help update the emissions inventory for oceangoing vessels operating in the State and to support emission reduction activities. Below, we have provided information about the Survey in a question and answer format.

What is the ARB's authority to conduct this Survey?

This request for information is made pursuant to sections 39600, 39607, 39665, 39701, 41511 and 43013 of the California Health and Safety Code, title 17, California Code of Regulations sections 91100 to 91102 (CCCR). These sections authorize the ARB to require the submission of information needed by the ARB to estimate atmospheric emissions and carry out its other statutory responsibilities.

Why is the Survey necessary?

The ARB maintains a statewide emissions inventory for all sources of air emissions such as cars, trucks, marine vessels, construction equipment, industrial facilities, and architectural coatings. The ARB's emissions inventory is regularly updated to reflect the most up-to-date emission information, including results of surveys such as this one.

The oceangoing vessel (OGV) component in the emissions inventory has not been updated on a statewide basis for more than 10 years. It is necessary for us to gather information about the current in-use fleets entering California coastal waters. That way, we can reflect current fleet populations and provide a more accurate estimate of emissions from oceangoing vessels.

The Survey is also designed to provide technical information that will help us develop more effective programs to reduce emissions from oceangoing ships and evaluate the feasibility to implement shore-side power connections from the vessel.

Who should complete the Survey form?

All owners/operators of oceangoing vessels that operate in California coastal waters are being asked to complete the Survey. OGV's means any marine vessels that meet any of the following criteria:

(1) a foreign trade vessel with a “registry” endorsement on their United States Coast Guard certificate of documentation, or registration under the flag of another country.
(2) a vessel greater than or equal to 400 feet in length overall (LOA) as defined in 50 CFR § 679.2, as adopted June 19, 1996.
(3) a vessel of 10,000 gross tons (GT ITC) or greater per the convention measurement (international system) as defined in 46 CFR 69. .51-.61, as adopted September 12, 1989.
(4) a vessel propelled by a marine diesel engine with a per-cylinder displacement of 30 liters or more (United States Environmental Protection Agency “category 3” engine).

This Survey is not intended to apply to commercial harbor craft such as commercial fishing vessels, tugs, or ferry vessels that do not otherwise meet any of the above criteria.

Do I have to complete the Survey?

Yes. State law requires that you provide the requested information by completing and returning the Survey. If the Survey does not apply to you, please state in the Survey why it does not apply to you and return it to the address indicated.

What information needs to be provided in the Survey?

The Survey requests specific information about each vessel. This includes information related to vessel operation, ownership, and the frequency the vessel visits California ports. The Survey also requests information on the propulsion and auxiliary engines, including the make and model, the horsepower, and the engine’s age on the vessel. Information on the typical operating parameters is also requested, including normal cruise speed at sea, average total ship in-use power generated, and California port/berth visits in 2004.

If the Survey information is claimed as confidential, how will it be treated?

The ARB has adopted regulations to protect the confidentiality of trade secrets (Title 17, CCR, sections 91000 to 91022). A summary of ARB's confidentiality regulations can be found in Part II of the Survey on the “Confidential Information Submittal Form.” You should fill out this form if you wish to designate any Survey information as confidential.

When do I need to return the Survey, and where do I send it?

Please return the Survey by February 28, 2005 to:

California Air Resources Board
Stationary Source Division
Attn: Mr. Paul Milkey
P.O. Box 2815
Sacramento, CA 95812-2815
CONFIDENTIAL MATERIALS ENCLOSED (if applicable)

In an effort to simplify and streamline the data gathering process, we have made the Survey forms available electronically. If you prefer to submit the Survey forms electronically, please see the Electronic Submittal Form in Part II for the information about how to obtain a diskette (or download the Survey from the Internet). To access the Survey on our website, go to:

http://www.arb.ca.gov/msprog/offroad/marinevess/marinevess.htm

Who can I call if I have questions about the Survey?

If you have any questions, please contact the following staff person:

Paul Milkey (916) 327-2957 pmilkey@arb.ca.gov

SURVEY INSTRUCTIONS

Before you begin filling out the Survey form, please read the instructions carefully. Included for your assistance are sample forms.

THE SURVEY FORM

Explanations for each Survey data field are provided below. If you own and/or operate more than one vessel, please complete the engine information (Part II A) and port/berth information (Part II B) for each vessel you own/operate. If you need additional forms, those can be downloaded from the website listed on the previous page. If that method is unavailable to you, please contact Paul Milkey at (916) 327-2957, and he will work with you to make arrangements to get you additional forms.

Part I: Survey Data Fields

Company and Contact Information

Company Name/Division Name: Please enter the name of the company that owns/operates the vessel in the Survey.

Contact Name (and title): Enter the name and title of the person to be contacted by the ARB if we have questions about the information provided.

Address/City/State/ZIP Code: Mailing address, city, state, ZIP code, and country of the company.

Phone/Fax Number: Enter the phone and fax number of the contact person.

E-mail Address: Enter the e-mail address of the contact person.

Confidential: Please indicate as to whether or not you would like the ARB to treat your information as confidential information. If you designate information as confidential, you also need to fill out the confidential information submittal form **(see page III-6 of this package)** and return that to the ARB with your Survey.

Type of Business: Please place a mark (an "x" or a check mark) in the appropriate box indicating whether the business is instead in the deep sea transportation of freight, deep sea transportation of passengers, or another type of oceangoing vessel business.

Sign and Date: Please print name, title and date. Sign name in the designated area.

Part II.A: Ship and Engine Information

Ship Information

Confidential: Please indicate as to whether or not you would like the ARB to treat your information as confidential information. If you designate information as confidential, you also need to fill out the confidential information submittal form **(see page III-6 of this package)** and return that to the ARB with your Survey.

Vessel Name: Enter the vessel name for which the data is being provided.

Lloyds/IMO Number: Enter the vessel Lloyds Registration # or International Maritime Organization (IMO) documentation number assigned to your vessel.

Country Flag: Enter the name of the country the vessel is registered under.

Vessel Age: Enter the vessel age. (in years).

Vessel Type: Enter the most appropriate vessel type. (e.g. container, tanker, bulk carrier, passenger cruise, auto carrier, general cargo, reefer, RoRo, or other)

Ship Electric Power: Enter the voltage, frequency in hertz , and phase of the power generated for ship board power (such as lighting and navigation) by ships generator(s).

Main Engine Information

Number of Main Engines: Enter number of main engines. For most cargo vessels there will be a single main engine (used primarily for propulsion). For diesel-electric vessels (such as cruise ships) where propulsion is provided by gen-sets that also provide power for shipboard electricity, skip this section and enter gen-sets as an "auxiliary engines".

Engine Type: Please place a mark (an "x" or a check mark) in the appropriate box whether the engine is a diesel piston engine, gas turbine, steam turbine. Only for diesel main engines mark if the engine is a two- or a four-stroke engine.

Engine Make and Model: Please provide the name of the manufacturer and the model of each main engine on the vessel. If there is more than one main engine of the same:

> make, model, horsepower, and age, you would write "X2" next to the make and model information.
>
> or,
>
> if there are more than two main engines and they are different types, explain under "comments".

Engine Age in Years: Enter the engine age. (in years)

Rated Power at Maximum Continuous Rating (MCR): Enter the vessels main engine MCR. Please mark the appropriate box, kilowatts or horsepower.

RPM at MCR: Enter the revolutions per minute at the maximum continuous rating.

Fuel Used: Enter the type(s) of fuel(s) used (residual = IFO 180 or 380, distillate = MDO or MGO) and your best estimate of the average percent sulfur content(s). If residual and distillate fuel is stored on the vessel, please list main fuel in #1 and other in #2.

Multiple fuel type storage: If vessels entering California waters were required to use MGO fuel in their auxiliary engines, would modifications to the fuel system or fuel tanks be necessary? If yes, please briefly mention modifications necessary under "Comments" (e.g. Add new tank and piping)

Normal Cruise Power at Sea: Enter your best estimate of average (nor3mal) cruise power at sea. (Kilowatts or horsepower)

Normal Cruise Speed as Sea: Enter your best estimate of average (normal) cruise speed at sea. (in knots)

Auxiliary Engine Information

Engine Make and Model: Please provide the name of the manufacturer and the model of each auxiliary engine on the vessel. Please do not list emergency generators that would not normally operate in routine service.

Engine Age in Years: Please enter the auxiliary engine age. (in years)

Rated Power at MCR: Please place a mark (an "x" or a check mark) in the appropriate box whether kilowatts or horsepower of each auxiliary engines Maximum Continuous Rating.

Engine Type: Please place a mark (an "x" or a check mark) in the appropriate box whether the engine is a diesel piston, or turbine. Only for diesel engines mark if the engine is a four or a two stroke engine.

Fuel Type: Please place a mark (an "x" or a check mark) in the appropriate box whether the fuel type is residual or distillate and your best estimate of the average percent sulfur level in the fuel.

Average Total Ship In-Use Power Generated: Enter your best estimate for the total power generated from the auxiliary engines, at sea, maneuvering, and hotelling. If you cannot estimate an average put the range in the comment section. Please place a mark (an "x" or a check mark) specifying Kilowatts or horsepower.

Part II.B: California Port Visits

Port of Call Information

Note: Only for ships that visited the same CA port 5 or more times.
(e.g. a vessel that visited the Port of Los Angeles 5 or more times in 2004)
Also, see example form on Page III-4.

Confidential: Please indicate as to whether or not you would like the ARB to treat your information as confidential information. If you designate information as confidential, you also need to fill out the confidential information submittal form **(see page III-6 of this package)** and return that to the ARB with your Survey.

Vessel Name: Enter the vessel name for which the data is being provided.

Total # of California Port Visits: Enter the number of 2004 California visits.

Typical # of California Port Visits: Enter the typical number of California port visits per year.

Month of Visit: Enter the month or number corresponding to the month (e. 7 = July)

Port of Last Call Outside CA: Enter the port name/city of the last port of call.

California Port with Pier/Berth: Enter the California port and the pier/berth #.

Hours at Port: Enter the number of hours the ship was docked at the port.

California Port with Pier/Berth #2 and #3 with hours at Port: If the vessel travels along the California coast to another port, please continue to enter the information requested.

Next Port of Call Outside of CA: Enter the port name/city of the next port of call outside California.

Part III

Supporting Attachments

A) Survey "Example Only" Forms
B) Confidential Information Submittal Form
C) Electronic Data Submittal Form
D) Excerpts from the California Code of Regulations pertaining to the handling of confidential information:
Title 17, California Code of Regulations, Sections 91000 to 9110

DRAFT 2004 Oceangoing Vessel Survey
PART III: SUPPORTING ATTACHMENTS

CALIFORNIA AIR RESOURCES BOARD SHIP SURVEY

PART I: COMPANY AND CONTACT INFORMATION

☒ Confidential

Company Name: Beyer Shipping Company

Division Name: Marine Container Division

Mailing Address: 1234 Terminal Way City: Los Angeles

State / Provence: CA Zip Code: 99901 Country: USA

Contact Person: Mr. Peter Beyer Ttile: Vice President

Phone: (555) 767-2676 Fax: (555) 767-2676 Email Address: pbeyer@address.net

Do you consider any part of this survey to be confidential?

☐ No
☒ Yes

Type of Business : ☒ Deep Sea Transportation of Freight ☐ Deep Sea Transportation of Passengers ☐ Other , Specify: _____

Certification: I am an officer of the company listed above and hereby certify that all information entered by my company on the "Air Resources Board Ship Survey" is complete and accurate to the best of my knowledge and belief.

Print Name: Peter Bayer	Title: Vice President
Signature:	Date: 9/10/04

DRAFT 2004 Oceangoing Vessel Survey
PART III: SUPPORTING ATTACHMENTS

CALIFORNIA AIR RESOURCES BOARD SHIP SURVEY

Part II.A. SHIP AND ENGINE INFORMATION

(Please complete one form per vessel)

SHIP INFORMATION ☒ **Confidential**

Vessel Name: Allison | Lloyds/IMO #: 123456789 | Country Flag: USA | Vessel Age: 10 Years

Vessel Type: Container Ship | Ship Electrical Power: 440 Volts 60 Hertz (Hz) | Three Phase

Direct Drive Main Engine/s (Note: For diesel-electric/generator-set engines on cruise ships, etc. please list under "auxiliary engines" below)

Number of main engines: 1 Engine Type: ☒ diesel piston ☐ gas turbine ☐ steam turbine If diesel engine, type? ☒ two stroke ☐ four stroke

Make: MAN B & W Engine Age: 10 Years

Model: ABC-XYZ 123 Rated Power at MCR: 50,000 ☒ kW ☐ hp RPM at MCR: 95

Fuel Used: ☒ Residual ☐ Distillate %S 2.5% Fuel Used: ☐ Residual ☒ Distillate %S 0.5 %

Would requiring MGO use in auxiliary engines while in California waters require modification of the vessels fuel system? ☐ Yes ☒ No If Yes, comment below.

Normal cruise power at sea: 40,000 ☒ kW ☐ hp Normal cruise speed at sea: 22 Knots

Please describe any engine modifications completed to either improve fuel efficiency or reduce emissions (e.g., slide valves): Installed slide valves in 2001

Auxiliary Engines (and all diesel-electric engines, whether for ship propulsion or on-board power). Exclude emergency/standby engines.

	Engine #1		Engine #2		Engine #3		Engine #4		Engine #5		Engine #6	
Make:	MAN B & W		MAN B & W		MAN B & W		Wartsila					
Model:	DEF - 456		DEF - 456		DEF - 456		GHI - 789					
Engine Age:	10	Years	10	Years	10	Years	10	Years		Years		Years
Rated Power at MCR:	2,000	☒ kW ☐ hp	2,000	☒ kW ☐ hp	2,000	☒ kW ☐ hp	1,500	☒ kW ☐ hp		☐ kW ☐ hp		☐ kW ☐ hp
Engine Type:	☐ Turbine ☒ Diesel Piston ☒4 stroke ☐2 stroke		☐ Turbine ☒ Diesel Piston ☒4 stroke ☐2 stroke		☐ Turbine ☒ Diesel Piston ☒4 stroke ☐2 stroke		☐ Turbine ☒ Diesel Piston ☒4 stroke ☐2 stroke		☐ Turbine ☐ Diesel Piston ☐4 stroke ☐2 stroke		☐ Turbine ☐ Diesel Piston ☐4 stroke ☐2 stroke	
Fuel Type:	☒Residual ☐Distillate	%S 2.5 %S___	☒Residual ☐Distillate	%S 2.5 %S___	☒Residual ☐Distillate	%S 2.5 %S___	☐Residual ☒Distillate	%S___ %S 0.5	☐Residual ☐Distillate	%S___ %S___	☐Residual ☐Distillate	%S___ %S___

Average total ship power generated from engines #1-6 above	At Sea:	750	☒ kW ☐ hp	Maneuvering:	1,000	☒ kW ☐ hp	Hotelling:	1,500	☒ kW ☐ hp

CALIFORNIA AIR RESOURCES BOARD SHIP SURVEY

Part II.B. CALIFORNIA PORT VISITS

(Only for ships that visited the same CA port 5 or more times in 2004)

☒ Confidential

Vessel Name: Allison
Total # of California Port Visits in 2004: 15
Typical # of calls in California per year: 8 - 15
Note: Please copy and attach additional sheets if necessary

2004 California Port Call Summary

Month	Port of Last Call Outside CA	California Port #1 and Pier/Berth #	Hrs. at Port #1	California Port #2 and Pier/Berth #	Hrs. at Port #2	California Port #3 and Pier/Berth #	Hrs. at Port #3	Next Port Call Outside of CA
1	Singapore	Los Angeles / 121	50	Oakland / 30	40	NA	NA	Tacoma
2	Singapore	Los Angeles / 121	50	Oakland / 30	40	NA	NA	Tacoma
3	Singapore	Los Angeles / 121	50	Oakland / 30	40	NA	NA	Tacoma
4	Singapore	Los Angeles / 121	50	Oakland / 30	40	NA	NA	Tacoma
7	Singapore	Los Angeles / 121	50	Oakland / 30	40	NA	NA	Tacoma
8	Yokohama	Los Angeles / 121	50	NA	NA	NA	NA	Yokohama

9	Yokohama	Los Angeles / 121	50	NA	NA	NA	NA	Yokohama
10	Yokohama	Los Angeles / 121	50	NA	NA	NA	NA	Yokohama
11	Yokohama	Los Angeles / 121	50	NA	NA	NA	NA	Yokohama
12	Yokohama	Los Angeles / 121	50	NA	NA	NA	NA	Yokohama

Comments: _____

DRAFT 2004 Oceangoing Vessel Survey
PART III: SUPPORTING ATTACHMENTS

CONFIDENTIAL INFORMATION SUBMITTAL FORM

If you wish to designate any information contained in your survey data as **CONFIDENTIAL INFORMATION**, please provide the information requested below and return it with your completed Survey form.

In accordance with Title 17, California Code of Regulations (CCR), Sections 91000 to 91022, and the California Public Records Act (Government Code Section 6250 et seq.), the information that a company provides to the Air Resources Board (ARB) may be released (1) to the public upon request, except trade secrets which are not emissions data or other information which is exempt from disclosure or the disclosure of which is prohibited by law, and 2) to the Federal Environmental Protection Agency, which protects trade secrets as provided in Section 114(c) of the Clean Air Act and amendments thereto (42 USC 7401 et seq.) and in federal regulation, and 3) to other public agencies provided that those agencies preserve the protections afforded information which is identified as a trade secret, or otherwise exempt from disclosure by law (Section 39660(e)).

Trade secrets, as defined in Government Code 6254.7, are not public records and therefore will not be released to the public. However, the California Public Records Act states that air pollution emission data are always public records, even if the data comes within the definition of trade secrets. Even so, the information used to calculate air pollution data is not "emission data," and will not be released to the public if it is a trade secret.

If any company believes that any of the information it may provide is a trade secret or otherwise exempt from disclosure under any provision of law, it **must identify the confidential information as such at the time of submission to the ARB and must provide the name, address, and telephone number of the individual to be consulted**. If the ARB receives a request for disclosure or seeks to disclose the data claimed to be confidential, the ARB may ask the company to provide documentation of its claim of trade secret or exemption at a later date. Data identified as confidential will not be disclosed unless the ARB determines, in accordance with the above referenced regulations, that the data do not qualify for a legal exemption from disclosure. The regulations establish substantial safeguards before any such disclosure.

-- -

In accordance with the provisions of Title 17, California Code of Regulations, Sections 91000 to 91022, and the California Public Records Act (Government Code Sections 6250 et seq.)

Enter Company Name: _____

declares that only those portions specifically identified (by checking the upper right-hand corner confidentiality box on each form) and submitted in response to the California Air Resources Board's information request on the Survey are confidential "trade secret" information, and requests that it be protected as such from public disclosure.

We have designated confidential information by page for each survey data form submitted by checking (x) the upper right-hand corner confidentiality box.

Printed Name:	Title:
Signature:	Date:
Mailing Address:	
City/State:	Zip/Country:

Telephone Number: E-mail Address:

ELECTRONIC DATA SUBMITTAL FORM

To simplify and streamline the data gathering process, we have made the "Oceangoing Vessel Survey" available electronically. You can download the Survey from our website or we can send you a diskette if you complete this form and return it to us by fax. Microsoft Word97 or 2000 is required to complete the Survey electronically.

Internet Access: http://www.arb.ca.gov/msprog/offroad/marinevess/marinevess.htm

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If you would like us to send you a diskette containing the Survey, please complete the form below.

California Air Resources Board
Stationary Source Divisiona
P.O. Box 2815
Sacramento, CA 95812-2815

Attention: Paul Milkey
Phone Number: (916) 327-2957
Fax Number: (916) 327-6251

Date: _____

Name: _____

Company: _____

Phone Number: _____

Fax Number: _____

Mailing Address: _____

_____

_____

_____

Division 3, Air Resources Board
Chapter 1, Air Resources Board
Subchapter 4. Disclosure of Public Records
Article 1. General

§91000. Scope and Purpose.

This subchapter shall apply to all requests to the state board under the California Public Records Act (Government Code Sections 6250 et seq.) for the disclosure of public records or for maintaining the confidentiality of data received by the state board. Written guidelines shall govern the internal review of such requests.

NOTE: Authority cited: Sections 39600 and 39601(a), Health and Safety Code. Reference: California Public Records Act, Chapter 3.5 (commencing with Section 6250), Division 7, Government Code.

§91001. Disclosure Policy.

It is the policy of the state board that all records not exempted from disclosure by state law shall be open for public inspection with the least possible delay and expense to the requesting party.

NOTE: Authority cited: Sections 39600 and 39601(a), Health and Safety Code. Reference: Section 6253, Government Code; Black Panther Party v. Kehoe (1974) 42 Cal.App.3d 645.

Article 2. Board's Requests for Information

§91010. Request Procedure.

The state board shall give notice to any person from whom it requests information that the information provided may be released (1) to the public upon request, except trade secrets which are not emission data or other information which is exempt from disclosure or the disclosure of which is prohibited by law, and (2) to the federal Environmental Protection Agency, which protects trade secrets as provided in Section 114(c) of the Clean Air Act and amendments thereto (42 USC 7401 et seq.) and in federal regulations.

NOTE: Authority cited: Sections 39600, 39601 and 39602, Health and Safety Code. Reference: Sections 39701, 41510, 41511, 41512 and 42705, Health and Safety Code; and Section 6253, Government Code.

§91011. Submissions of Confidential Data.

Any person submitting to the state board any records containing data claimed to be "trade secret" or otherwise exempt from disclosure under Government Code Section 6254 or 6254.7 or under other applicable provisions of law shall, at the time of submission, identify in writing the portions of the records containing such data as "confidential" and shall provide the name,
address and telephone number of the individual to be contacted if the state board receives a request for disclosure of or seeks to disclose the data claimed to be confidential. Emission data shall not be identified as confidential. The state board shall not disclose data identified as confidential, except in accordance with the requirements of this subchapter or Section 39660(e) of the Health and Safety Code.

NOTE: Authority cited: Sections 39600 and 39601, Health and Safety Code. Reference: Sections 39660, 39701, 41500, 41511, 41512 and 42705, Health and Safety Code; Sections 6253, 6254 and 6254.7, Government Code; Natural Resources Defense Council v. EPA, 489 F.2d 390 (5th Cir. 1974) (6 ERC 1248); Northern California Police Practices Project v. Craig (1979) 90 Cal.App.3d 116; Uribe v. Howie (1971) 19 Cal.App.3d 194.

Article 3. Inspection of Public Records

§91020. Disclosure Policy.

§91021. Disclosure Procedure.

NOTE: Authority cited: Section 39601, Health and Safety Code. Reference: Sections 6253-6257, Government Code.

§91022. Disclosure of Confidential Data.

(a) This section shall apply to all data in the custody of the state board

(1) designated "trade secret" prior to the adoption of this subchapter,

(2) considered by the state board or identified by the person who submitted the data as confidential pursuant to this subchapter, or

(3) received from a federal, state or local agency, including an air pollution control district, with a confidential designation, subject to the following exceptions:

(A) Except for the time limits specifically provided in subsection (b), only subsections (c) and (d) of this section shall apply to information submitted pursuant to Health and Safety Code section 39660(e).

(B) Appropriate portions of an application for approval, accreditation, or certification of a motor vehicle emission control device or system shall

be kept confidential until such time as the approval, accreditation, or certification is granted, at which time the application (except for trade secret data) shall become a public record, except that estimates of sales volume of new model vehicles contained in an application shall be kept confidential for the model year, and then shall become public records. If an application is denied, it shall continue to be confidential but shall be subject to the provisions of this section.

(C) If disclosure of data obtained after August 9, 1984 from a state or local agency subject to the provisions of the Public Records Act is sought, the state board shall request that the agency which provided the data determine whether it is confidential. The state board shall request that it be notified of the agency's determination within ten days. The state board shall not release the data if the agency determines that it is confidential and so notifies the state board; provided, however, that the data may be released with the consent of the person who submitted it to the agency from which it was obtained by the state board.

(b) Upon receipt of a request from a member of the public that the state board disclose data claimed to be confidential or if the state board itself seeks to disclose such data, the state board shall inform the individual designated pursuant to Section 91011 by telephone and by mail that disclosure of the data is sought. The person claiming confidentiality shall file with the state board documentation in support of the claim of confidentiality. The documentation must be received within five (5) days from the date of the telephone contact or of receipt of the mailed notice, whichever first occurs. In the case of information submitted pursuant to Health and Safety Code section 39660(e), the documentation must be received within 30 days of the date notice was mailed pursuant to that section. The deadlines for filing the documentation may be extended by the state board upon a showing of good cause made within the deadline specified for receipt of the documentation.

(c) The documentation submitted in support of the claim of confidentiality shall include the following information:

(1) the statutory provision(s) under which the claim of confidentiality is asserted;
(2) a specific description of the data claimed to be entitled to confidential treatment;

(3) the period of time for which confidential treatment is requested;

(4) the extent to which the data has been disclosed to others and whether its confidentiality has been maintained or its release restricted;

(5) confidentiality determinations, if any, made by other public agencies as to all or part of the data and a copy of any such determinations, if available; and

(6) whether it is asserted that the data is used to fabricate, produce, or compound an article of trade or to provide a service and that the disclosure of the data would result in harmful effects on the person's competitive position, and, if so, the nature and extent of such anticipated harmful effects.

(d) Documentation, as specified in subsection (c), in support of a claim of confidentiality may be submitted to the state board prior to the time disclosure is sought.

(e) The state board shall, within ten (10) days of the date it sought to disclose the data or received the request for disclosure, or within 20 days of that date if the state board determines that there are unusual circumstances as defined in Government Code Section 6256.1, review the request, if any, and supporting documentation, if received within the time limits specified in subsection (b) above, including any extension granted, and determine whether the data is entitled to confidential treatment pursuant to Government Code Section 6254, 6255 or 6254.7 or other applicable provisions of law and shall either:

(1) decline to disclose the data and, if a request was received, provide to the person making the request and to the person claiming the data is confidential a justification for the determination pursuant to Government Code Section 6255; or

(2) provide written notice to the person claiming the data is confidential and, if a request was received, to the person requesting the data that it has determined that the data is subject to disclosure, that it proposes to disclose the data, and that the data shall be released 21 days after receipt of the notice by the person claiming confidentiality, unless the state board is restrained from so doing by a court of competent jurisdiction. The state board shall release the data in accordance with the terms of the notice unless so restrained.

(f) Should judicial review be sought of a determination issued in accordance with subsection (e), either the person requesting data or the person claiming confidentiality, as appropriate, may be made a party to the litigation to justify the determination.

NOTE: Authority cited: Section 39601, Health and Safety Code.
Reference: Sections 6253, 6254, 6254.7, 6255, 6256, 6256.1, 6258 and 6259, Government Code.