



TECHNICAL REPORT – STUDY / SERVICES

ECONOMIC & FINANCIAL ANALYSIS

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to Advance Military Responsiveness to National Needs***

**Task Order No. 0004
*Operational, Economic and Financial Evaluation of a Logistics Solution
based on the High Speed Ship/Agile Port Concept***

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Operational, Economic and Financial Evaluation of a Logistics Solution Based on the High-Speed Ship/Agile Port Concept (N66001-02-D-0039-0004)

Economic & Financial Analysis

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Executive Summary

The economic and financial analysis of the High Speed Ship / Agile Port (HSS/AP) System examines the potential profitability of two ventures, each operating one of the two most promising vessel deployments that were identified in previous research. These two Transpacific deployments are:

Deployment 1: 7 vessels

Los Angeles-Dutch Harbor-Yokohama-Hong Kong (Yantian)-Shanghai-Dutch Harbor-Los Angeles

Deployment 2: 8 vessels

Los Angeles-Dutch Harbor-Busan-Hong Kong (Yantian)-Singapore-Hong Kong (Yantian)-Busan-Dutch Harbor-Los Angeles

It is assumed that these vessels would be incorporated into a fleet of conventional already-operating vessels so that typical start-up investments would not be necessary (e.g. establishment of computer systems, recruiting, office build out, etc.). The figures contained throughout the report reflect estimated “incremental” investment and operating costs for the introduction of each of the individual deployments.

Proforma financial statements, shown in Appendices G and H, were generated for each deployment based on specific underlying operating assumptions that are presented in the Appendices of this report. The most fundamental of these assumptions, all of which generate the Base Case results, are:

- The high speed vessel can be built for \$135 million in the United States and sustain an operating life of 25 years¹
- U.S. Maritime Administration (MARAD) Loan guarantees will allow an investor/operator to finance 87.5% of the vessel construction costs at 7.5% over a term of 25 years
- The vessel will attract sufficient cargo at a rate per container equal to a 50% premium over the current surface rate
- The high speed vessel will be able to utilize existing container equipment as well as existing terminal infrastructure to load and discharge cargo at similar costs to existing containership operators
- The vessel will operate at an average service speed of 50 knots and will consume fuel at a rate of 58 tons per hour (IFO 380 fuel)

Based on these assumptions, the internal rate of return (IRR) for the HSS/AP operation in the Transpacific is estimated to be in the range of 9%-26% and net present value (NPV) of the cash flow are estimated at (\$9) to \$246 million for Deployment 1 and Deployment 2, respectively. These results are sensitive to various factors and, therefore, alternative scenarios were examined with alterations made to: newbuild cost,

¹ Shipbuilding sources indicate the capital cost of the vessel to be from \$120 - \$150 million, if built in the U.S.

the method of financing and terminal infrastructure utilized. The IRR results are presented in Table 1 and the NPV results are presented in Table 2 below.

Table 1
Sensitivities To The Base Case – Internal Rate of Return

Internal Rate of Return (IRR)	Base Case (US Built @ \$135 MM / HSS)	US Built @ \$150 MM / HSS	Foreign Built @ \$100 MM / HSS & 80% Financed @ 8% over 12 yrs	New Terminal Technology
Deployment 1	9.4%	5.4%	14.4%	17.9%
Deployment 2	25.8%	20.7%	23.9%	34.2%

Table 2
Sensitivities To The Base Case – Net Present Value of Cash Flow

NPV @ 10% \$ in millions	Base Case (US Built @ \$135 MM / HSS)	US Built @ \$150 MM / HSS	Foreign Built @ \$100 MM / HSS & 80% Financed @ 8% over 12 yrs	New Terminal Technology
Deployment 1	(\$9.0)	(\$74.9)	\$109.1	\$103.2
Deployment 2	\$246.4	\$183.3	\$349.3	\$339.4

Deployment 2 consistently outperforms Deployment 1 even though it requires an extra vessel to provide three times weekly service. The additional revenues associated with the greater Intra-Asia volumes carried on Deployment 2 generate greater profitability. It is important to keep this Intra-Asia market capture in mind when determining the final deployment of the HSS/AP service as it has a large impact on profitability and return on investment.

Background & Objectives

This report, the deliverable of Task Six, examines the economic feasibility of the High Speed Ship / Agile Port (HSS/AP) service and provides an estimate of the financial return of such a service. Many of the inputs to this deliverable have been presented in the four previously submitted reports: (Task One was devoted to data acquisition.)

- Competitor Analysis (Task Two)
- Logistics & Operation Simulation (Task Three)
- Infrastructure Analysis (Task Four)
- Supply Chain Analysis (Task Five)

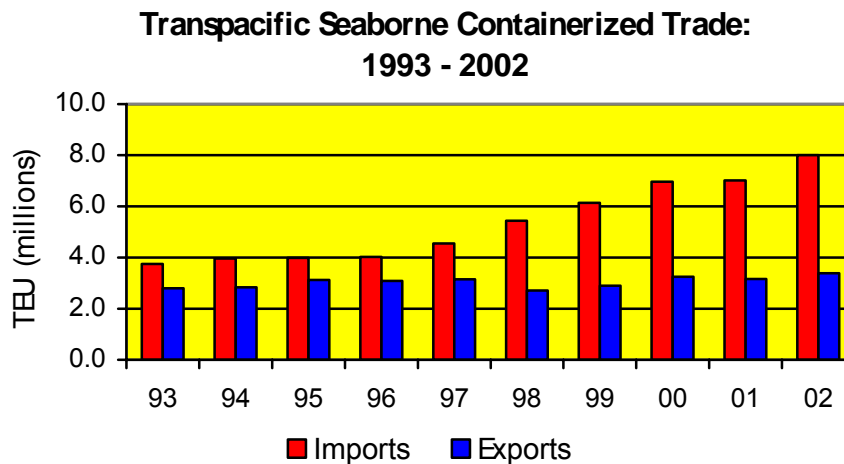
The premise of the HSS/AP system is that it can fulfill the needs of the middle market, that is, for transit faster than current ocean but not as fast as air at a reasonable rate. This rate is a heavy discount to air but a premium over current ocean rates. The product to be carried on the HSS/AP system is referred to as “diverted” cargo as its source is from existing volume that is currently moving via surface (ocean) or air.

The presence of the HSS/AP system will also have significant effects on the international supply chain over time, as companies relocate their productions and distribution facilities to take further advantage of the service. This will help lock in the HSS/AP as a logistics provider for this “middle market”.

The results contained in this report should be considered preliminary until the vessel design has been finalized and actual size, dimensions and operating characteristics can be compared to the assumptions utilized herein. The different scenarios included in the financial results section consider potential alternative assumptions although the basic premise of a vessel that can operate at 50 knots with a range of 3,500 nautical miles at full payload is always assumed to be achievable.

Market Operating Environment

The Transpacific trade lane is the proposed setting for the introduction of the HSS/AP system in 2006. This lane is the largest of the three main east-west routes, accounting for over eleven million TEU of cargo in 2002.² During the past ten years, 1993 – 2002, the compound annual growth rate of the eastbound trade averaged almost 9% while the growth of the westbound trade has been a slower 2%. The majority of the cargo to be carried on the HSS will be drawn from these volumes (as displayed in the Logistics & Operations Simulation Report, December 2002).



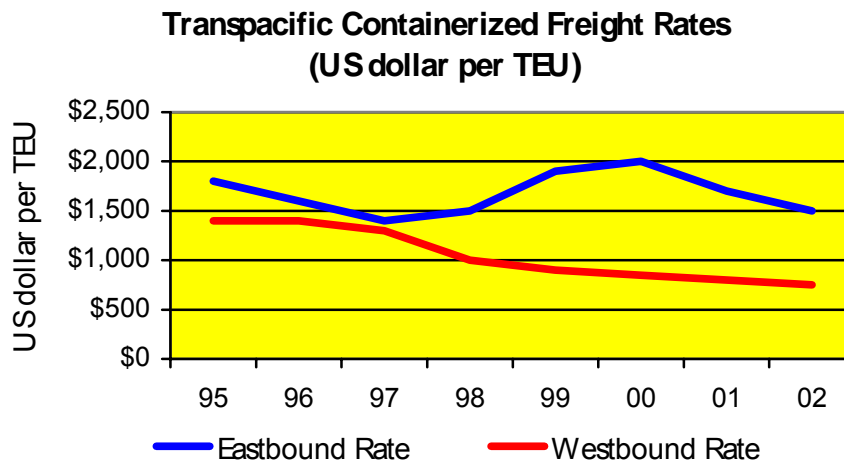
Source: JOC PIERS
Note: Includes US cargo only

The difference in directional growth rates has created a massive equipment imbalance on the trade, growing from 25% in 1993 to 58% in 2002. The percentage refers to the share of containers moving in the heavy direction that must move empty back to their origin. This imbalance has had severe cost repercussions for containership operators who must reposition these empty containers back to Asia. The imbalance for the potential divertible cargo on the HSS/AP system is actually higher than the Transpacific container trade in general, as divertible cargo tends to be higher-value goods and, while there are plentiful higher value goods moving eastbound, there is a dearth of this type of cargo moving westbound. For this reason the HSS/AP system will move a portion of the westbound cargo at no premium over current containership rates, in order to reposition containers.

In addition to increasing costs due to repositioning equipment, the containership operators have also been dealing with reduced freight rates in the last few years. The reduced rates are the result of overcapacity on the trade. Many of the large containership operators have added large new vessels in the past couple of years in an effort to reduce their per slot operating costs. Overcapacity and reduced rate levels

² The three main east-west routes are the Transpacific, the Transatlantic and Europe-Asia

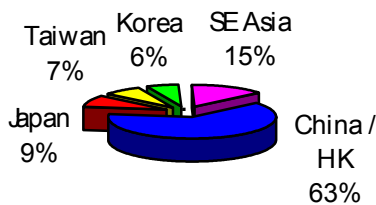
have led to large losses for the operators on this trade, particularly in 2002. These rates are expected to show gains in 2003 as demand catches up to supply. The average rate levels are displayed in the chart below. Capacity on the Transpacific lane is determined by the volume in the heavy direction or in this case the eastbound route. When trade grew substantially in 1999 and 2000 the eastbound rates improved but as volumes declined in 2001 and 2002 rates fell. The rates on the westbound route reflect the level of imbalance on the trade; as there has been increasingly more empty space in this direction the price of moving cargo has declined. Rates and revenue in this report focus on the trends of surface volumes as the majority of the cargo carried on the HSS/AP system is diverted from ocean. Yields on world air cargo have been in a general decline for the past two decades.



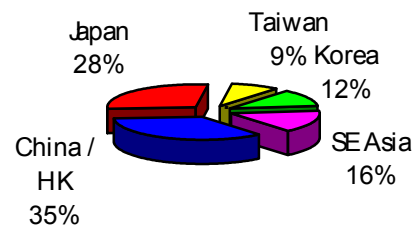
Source: Dyna Liners Trades Review 2002

More than 60 percent of current eastbound transpacific containerized imports moving via surface (sea) originate in China/Hong Kong. US exports are more evenly spread throughout Asia with the largest shares belonging to China/Hong Kong and Japan, together accounting for over 60 percent.

Transpacific Containerized US Imports by Origin Country

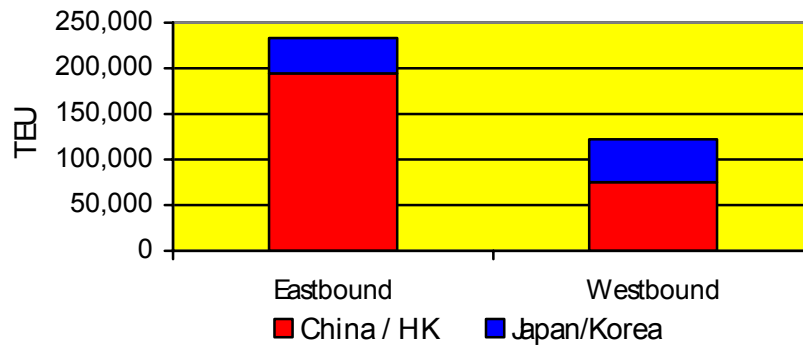


Transpacific Containerized US Exports by Destination Country



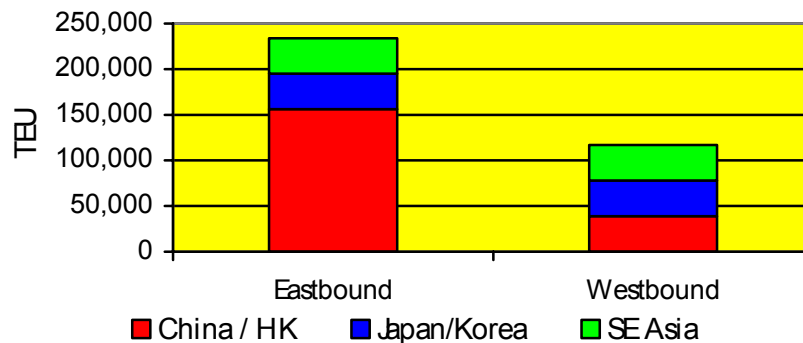
These data are important in planning the HSS/AP vessel deployments, although the origin / destination mix of the potential diverted trade looks slightly different. Deployment 1, LA – DH – YK – HK – SHG – YK – DH – LA (referred to in the Logistics & Operations Simulation Report as the Base Case Deployment), with scheduled port calls in South China (Hong Kong or Yantian), Shanghai and Yokohama has the cargo split displayed in the chart below.³

**Asia Origin / Destination of Deployment 1
Transpacific Cargo Volumes**



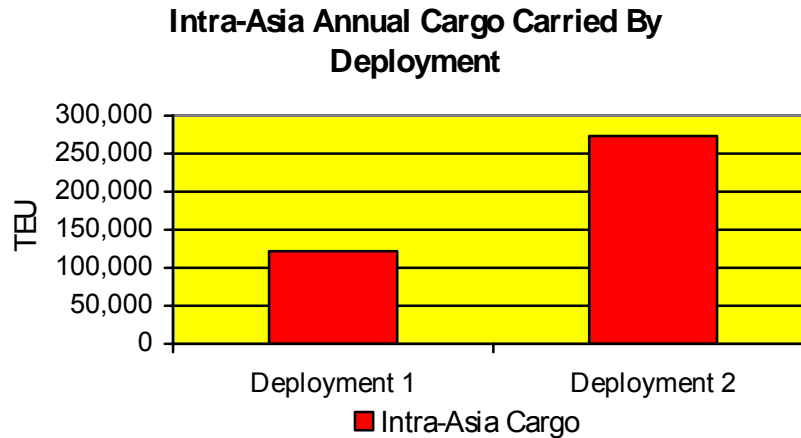
The design of the deployment is based on cargo moving into the United States Pacific Southwest (PSW), the only US port call but also the major gateway of the Transpacific. There is a second deployment (Deployment 2) which is included in the financial analysis later in this report which is characterized by an additional port call in Singapore, thus capturing a portion of the available Southeast Asia divertible cargo (LA – DH – BU – HK – SG – HK – BU – DH – LA). The chart below shows the projected diversion by region of origin and destination in Asia.

**Asia Origin / Destination of Deployment 2
Transpacific Cargo Volumes**



³ Port abbreviations used in the report: LA=Los Angeles, DH=Dutch Harbor, YK=Yokohama, HK=Hong Kong/Yantian, SHG=Shanghai, BU=Busan, SG=Singapore

Although both deployments are projected to carry similar levels of Transpacific cargo, there is a large variance in the Intra-Asia cargo carried by each deployment. Deployment 2 has one more Asian port call than Deployment 1. These additional cargoes, some 2.5 times the Intra-Asia volume of Deployment 1, translate into significant incremental revenues. The chart below displays the level of Intra-Asia cargo transported on each deployment.



In 2001, Intra-Asia accounted for approximately 13 million TEU per year of trade between Asian countries. As shown in Table 3, below, the major demand areas in the Intra-Asia country to country import/export trade are Japan and China/Hong Kong. China/Hong Kong supplies Japan with over 50% of its containerized imports. China/Hong Kong rely fairly equally on Taiwan, South Korea and Japan for their imports with each country contributing approximately 25% of total imports. In the last few years, China’s imports and exports have played an increasingly larger role in the Intra-Asia trade.

Table 3
Estimated 2001 Intra-Asia By Origin/Destination Country

TEU 000's	Origin Country / Region						Total
	Japan	So Korea	China	HK*	Taiwan	SE Asia	
Japan		316.1	1,230	329.2	205.0	873.2	2,953.5
So Korea	238.8		748.3	66.3	45.0	208.9	1,307.3
China	444.0	555.6		866.3	199.4	311.6	2,376.9
HK*	281.1	234.8	895.0		650.0	415.4	2,476.3
Taiwan	350.0	66.1	68.9	285.0		297.3	1,067.3
SE Asia	641.7	422.7	366.1	306.5	292.3	721.9	2,751.2
Total	1,955.6	1,595.3	3,308.3	1,853.3	1,391.7	2,828.3	12,932.5

**Note: Hong Kong includes Shenzhen ports (Yantian, Shekou, & Chiwan)
Source: Intra-Asia Container Trades Dynamism Beyond Bounds, January 2003, Drewry*

Projected Financial Operating Results

Several deployments or service strings were analyzed for their ability to serve the markets where the potential divertible cargo volume was highest in both directions. The result is two vessel deployments that are most likely to generate the highest utilization of the vessel, thus generating revenue levels most likely to support a profitable enterprise. Key features of these two deployments are shown in Table 4 below.

Table 4
Major Attributes Of Deployments 1 and 2: Base Case

Deployment Attribute	Deployment 1	Deployment 2
Itinerary	LA-DH-YK-HK-SHG-YK-DH-LA	LA-DH-BU-HK-SG-HK-BU-DH-LA
# of Vessels Required ⁴	7	8
Cost of Each Vessel	\$135 million	\$135 million
Annual Transpacific TEU carried	355,377 TEU	351,070 TEU
Annual Intra-Asia TEU carried	121,819 TEU	273,055 TEU
Total annual TEU carried	477,195 TEU	624,125 TEU
Revenue in first year (\$ million) ⁵	\$860.3	\$1,022.0
IRR	9.4%	25.8%
NPV @ 10%	(\$9.0)	\$246.4

Rates Per TEU

During the twenty-five year life of the vessels, it is assumed that the price premium rate per TEU over current surface increases while still maintaining the identical vessel utilization or cargo carried. ⁶ As trade grows the potential divertible market grows as well, and, with fixed capacity, an increasing price premium can divert the same level of cargo as the years progress. The growth of the potential divertible market under various pricing assumptions is displayed in Appendices E (deployment 1) and F (deployment 2). Both deployments utilize the same rate assumptions and these are highlighted in the chart below. ⁷

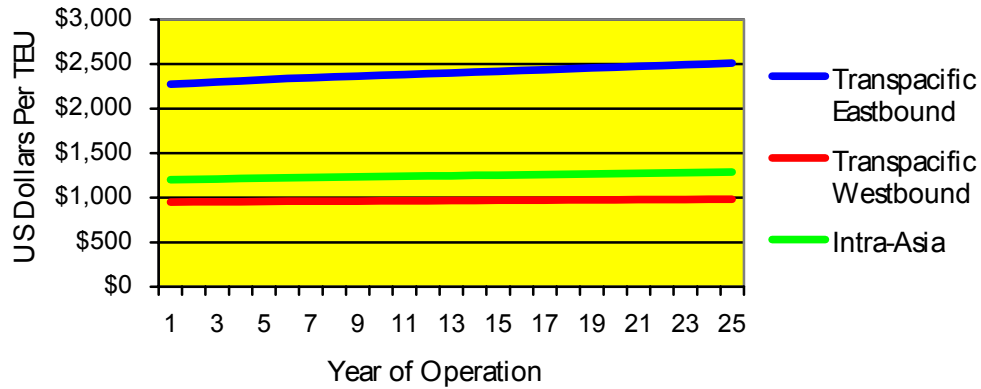
⁴ The number of vessels required to provide three times weekly service with 10% contingency included on transit time and time in port.

⁵ Assumes the HSS is operating at a 50% price premium to current surface rates

⁶ Twenty foot equivalent unit, the container industry standard measure of volume

⁷ Westbound rates exclude the impact of potential refrigerated cargoes

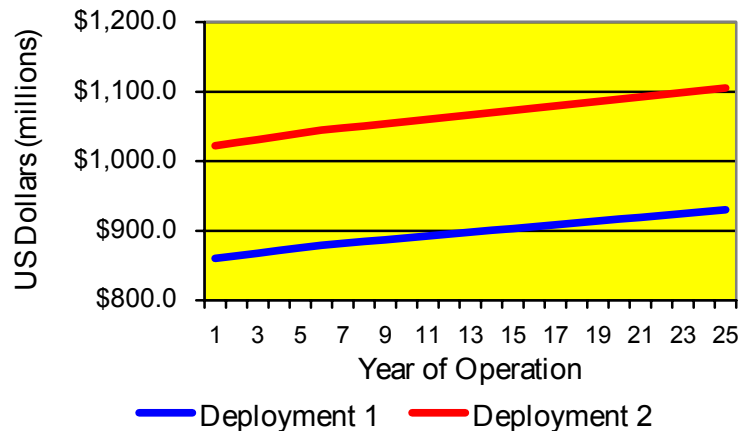
Projected HSS Rates Per TEU By Lane And Direction



Revenue By Deployment

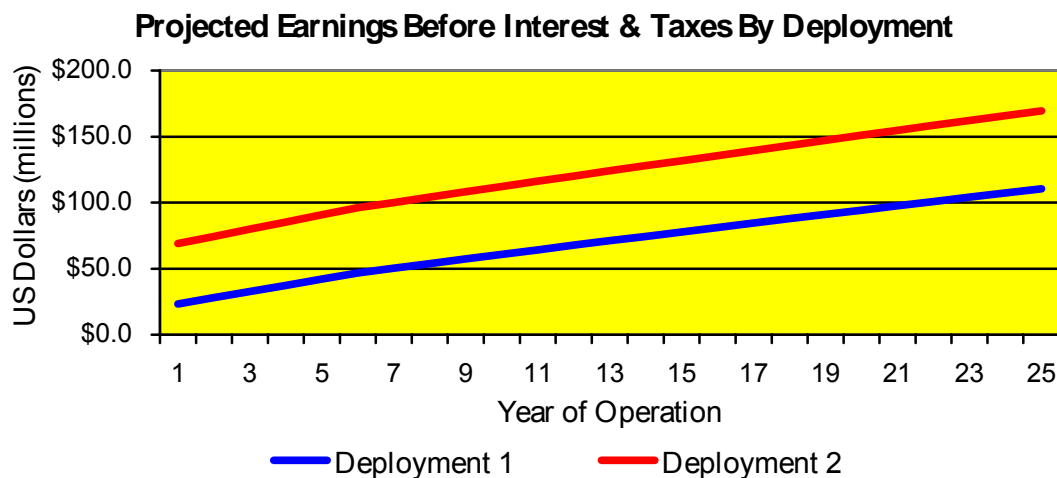
The level of revenues generated by each deployment is highlighted in the chart below. These revenue levels reflect the change in rates applied to the cargo moved; these rate increases are implemented on a yearly basis. The variation in total revenue is largely due to the greater Intra-Asia cargo being carried by Deployment 2. The underlying expenses, both direct and indirect, are projected to remain constant, as they are volume-related. This allows the profitability of the enterprise to improve as overall Transpacific and Intra-Asia trade grows and the price premium charged on its cargo increases.

Projected Total Revenue By Deployment



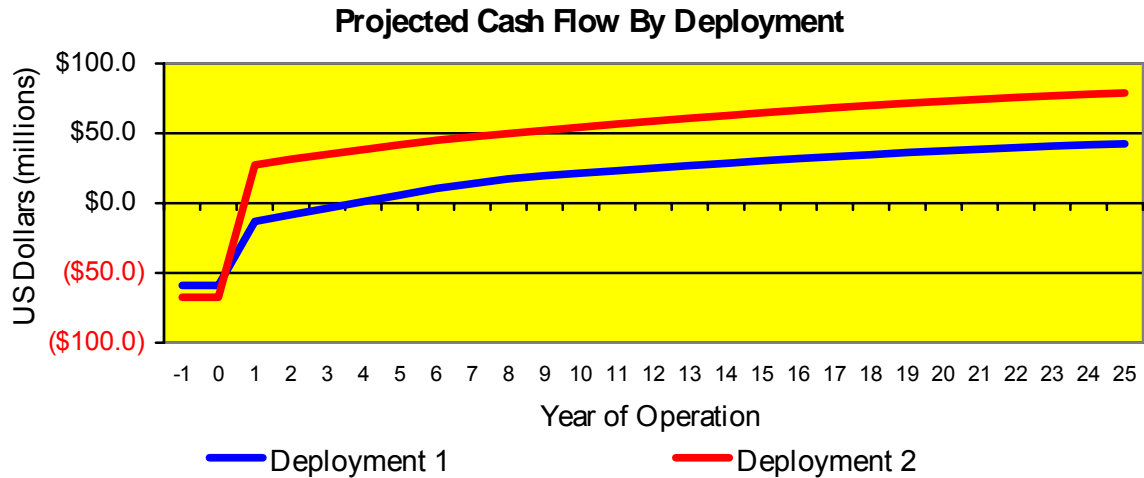
Profitability

The associated expenses incurred to move the cargo have been applied to these revenue assumptions.⁸ The largest expense associated with the enterprise is fuel, which is consumed at an estimated rate of 58 tons per hour at a vessel service speed of 50 knots. Fuel costs account for approximately 53%-54% of total annual expenses of the enterprise. Typically, large unexpected increases in fuel prices are passed on to the shipper/consignee in the form of bunker surcharges, in an effort to recover the incremental fuel expenses that were not already built into the contracted rate. Secondary to fuel costs are the terminal charges associated with the load and discharge of cargo, at approximately 21%-23% of total expenses. The resulting earnings before interest and taxes (EBIT) are displayed in the chart below.



The method for examining profitability of the overall operation is the analysis of the cash flow generated by each of the service deployments. In this analysis, several items are added or subtracted to EBIT to derive a simple total cash flow. Added back to EBIT is depreciation and subtracted are interest, taxes, principal payments and capital investments. The total cash flow is then discounted to generate a net present value over the 25 – year life of the operation or investment. It is assumed that in the two years preceding vessel delivery there will be cash outflows equal to the equity invested in the project. The chart below highlights the cash flows from each of the deployments and indicates the current net present value as well as the internal rate of return (IRR) associated with each.

⁸ Revenue assumptions are detailed in Appendix B and expense assumptions are detailed in Appendix C and D



Profitability	Net Present Value of Cash Flow (@10%, \$ in millions)	Internal Rate of Return (IRR)
Deployment 1	(\$9.0)	9.4%
Deployment 2	\$246.4	25.8%

A strong factor in determining the overall financial success of the operation is the price of the vessel. The base case results were generated assuming a newbuild price of \$135 million each, an estimate based on US construction. The final cost of these vessels will have a major impact on profitability, and therefore some additional scenarios were run addressing the potential range of this cost assuming in each case that construction takes place in the U.S and that financing terms are equal to those in the Base Case.⁹ In order to be eligible for MARAD loan guarantees the vessels must be U.S. built and US-flagged and therefore employ US officers and crew. If the vessels were to be built by an overseas shipyard there are potential capital cost savings in the range of 25%-30%, although loan terms would not be as favorable. Keeping all other factors equal, the resulting internal rate of return (IRR) and net present value (NPV) are outlined in Table 5 below at the various vessel costs.

Table 5
IRR and NPV For Alternative Vessel Construction Costs

	@ \$135 MM / vessel	@ \$120 MM / vessel	@ \$150 MM / vessel
Deployment 1: IRR	9.4%	13.9%	5.4%
Deployment 1: NPV (\$ MM)	(\$9.0)	\$54.4	(\$74.9)
Deployment 2: IRR	25.8%	31.4%	20.7%
Deployment 2: NPV (\$ MM)	\$246.4	\$305.2	\$183.3

⁹ MARAD loan guarantee allowing the financing of 87.5% of construction costs at 7.5% interest over a term of 25 years

For a containership operator there are several options related to vessel finance and ownership. Assumptions regarding these various options have been applied in the two deployments to gauge the impact on profitability. The base case assumes the vessels are US-built and underwritten by a MARAD loan guarantee allowing the investor to finance 87.5% of total construction costs with an interest rate of 7.5% over a 25 year term. Alternative scenario one assumes that the vessels are built overseas, therefore there is no MARAD loan guarantee and commercial rates are applied, 80% of costs are financed at 8% interest over a 12 year term. Alternative scenario two assumes that the enterprise charters the vessels from a third party. The charter rate is based on a return of 13% to the owners of the vessel over a 25 year term (charter rate = \$13.65 million per year per vessel), assuming the vessels can be purchased at \$100 million each from a shipyard overseas. The profitability results of these alternative scenarios are presented in Tables 6 and 7 below. It is important to note that if the vessels are built overseas they could be manned by foreign officers and crew, at a substantial savings to US officers and crew.

Table 6
Alternative Purchase Options For Deployment 1

Case	Deployment 1 – Purchase Options	Vessel Cost (US \$ MM)	NPV @ 10% (in millions)	Internal Rate of Return
Base	US built/flagged-MARAD Loan Guarantee	\$135	(\$9.0)	9.4%
Alt 1	Vessel is 80% financed @ 8% over 12 yrs	\$100	\$109.1	14.4%
Alt 2	Vessel is lease/chartered @ \$13.7 MM / yr	\$100	\$16.5	NA

Note: Alternative Cases 1 and 2 assume that the vessels are manned by foreign officers and crew

Table 7
Alternative Purchase Options For Deployment 2

Case	Deployment 2 – Purchase Options	Vessel Cost (US \$ MM)	NPV @ 10% (in millions)	Internal Rate of Return
Base	US built/flagged-MARAD Loan Guarantee	\$135	\$246.4	25.8%
Alt 1	Vessel is 80% financed @ 8% over 12 yrs	\$100	\$349.3	23.9%
Alt 2	Vessel is lease/chartered @ \$13.7 MM / yr	\$100	\$260.1	NA

Note: Alternative Cases 1 and 2 assume that the vessels are manned by foreign officers and crew

The results displayed in all the above Tables 4 to 7 and accompanying charts reflect the current conventional containership load and discharge technology, crane usage. Another option, depending on the vessel final design is a cassette-type system as explained in the Infrastructure Analysis Report (Task 4). This option would allow the vessel to save time in port during the load/discharge process. In fact, if this system were twice as fast as the conventional system in all ports of call, it would generate time savings of such a degree that each deployment could save one vessel and still maintain

three times-weekly service. In addition to the capital investment savings from having one less vessel, there would be port cost savings due to less time spent in port and potentially the attraction of new cargo as days saved in door-to-door transit would increase. In exchange for these savings there would be a terminal charge to the operator of the HSS, allowing the third party terminal investor to recover their investment. The HSS operator makes no investment in the cassette terminal infrastructure. The projected financial results of this scenario assume that a third party investor would undertake construction of the cassette terminal and recover their investment through competitive charges to the operator of the HSS/AP vessels. The assumptions underlying this particular alternative scenario are as follows:

- Each deployment could provide three times weekly service with one fewer vessel
- There would be MG&A savings related to the savings of a vessel
- There is no net change in port-related expenses (container handling in the terminals and port charges)

The results are displayed in Table 8 below.

Table 8
Profitability For An Alternative Port Design By Deployment

	Conventional Lift-On/Lift-Off Terminal System	Cassette Terminal System
Deployment 1: IRR	9.4%	17.9%
Deployment 1: NPV (\$ MM)	(\$9.0)	\$103.2
Deployment 2: IRR	25.8%	34.2%
Deployment 2: NPV (\$ MM)	\$246.4	\$339.4

In considering this option it is important to note that this new terminal technology would be available at a limited number of ports and that the introduction of new services calling at different ports would require lead time for terminal construction.

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Appendix A – Operating Assumptions

- High Speed Ship/Agile Port operations are assumed to begin in 2006
- There are agile port time savings in the direct discharge port of call but none were included in the load port or for locations that were feeder ports. (Diversion estimates were run for 0, 0.5 days and 1 day time savings per discharge port
 - 0.5 days saved was assumed for the proforma financials for both deployments (see Appendix E & F for results of the 0.5 days saved)
 - Agile port savings are the result of the size of the vessel, higher terminal priority given to the service, on-dock rail and efficient integration with local truck transport
- Transportation to/from the port of call, either via rail or truck, is assumed to be a direct pass-through to the customer (shipper/consignee), and therefore does not impact the level of profitability (it is reflected in the financials as both revenue and expense)
 - Some shipping lines can potentially operate at a loss in their intermodal operations
 - Rail intermodal inland moves generate an additional cost (not offset by revenue) of moving the container back to the west coast as an empty
- As trade grows in each of the years of the financial projections, the price premium charged while maintaining a constant volume of market capture
 - The impact of this assumption is in Appendices E & F
- In both deployments it was necessary to load feeder cargo (cargo from areas not being directly served by the HSS)
 - Market area definitions were large, therefore it was assumed that 20 percent of HSS eastbound and westbound cargo utilized conventional feeder service to the HSS Asian ports of call, generating a feeder slot cost and an additional two lift charges
 - This expense is projected to decline over the life of the vessels as market size grows and less cargo is required to be feedered to maintain eastbound capacity utilization at the proposed 88%

- Feeder expense is estimated to decline by 3% each year
- 5 hours was estimated for refueling stops at Dutch Harbor
- Port time was based on 70 lifts per hour (2 cranes) in U.S ports, 80 lifts per hour (2 cranes) in Singapore and Busan, 90 lifts per hour (2 cranes) in South China (Yantian), Yokohama and Shanghai
- 10% contingency was built into transit and load/discharge time to determine number of vessels needed to achieve three times weekly frequency
- Average service speed was assumed to be 50 knots
- Deployment 1 is characterized by the following port itinerary: Los Angeles, Dutch Harbor, Yokohama, Hong Kong (South China), Shanghai, Yokohama, Dutch Harbor, Los Angeles
- Deployment 2 is characterized by the following port itinerary: Los Angeles, Dutch Harbor, Busan, Hong Kong, Singapore, Hong Kong, Busan, Dutch Harbor, Los Angeles
- The vessel can be manufactured in the U.S. for \$135 million, assuming no increased specifications for heavier usage

Appendix B – Revenue Assumptions

- Operating revenue is generated by the average ocean transportation rate resulting from moving cargo port to port on the HSS as well as moving cargo door-to-door
 - The ocean transportation fees are a function of the average rate applied to the cargo being transported on a port-to-port basis
 - Land transportation (for door-to-door moves), via either truck or rail, is assumed to be a pass-through cost and is reflected as both a revenue and an expense item in the proforma financial statements (revenue for intermodal can be arbitrary as all-in door-to-door rate is bundled)
 - One third of the eastbound cargo is estimated to be port-to-port
 - One third of the eastbound cargo is estimated to require trucking services
 - One third of the eastbound cargo is estimated to require rail intermodal services

- Different port-to-port rate assumptions are applied for each lane, direction, and equipment type in the financial model
 - Eastbound Transpacific
 - 20' and 40' dry vans
 - Westbound Transpacific
 - 20' and 40' dry vans, 40' refrigerated containers
 - Intra-Asia
 - 20' and 40' dry vans

- Eastbound Transpacific Assumptions
 - 67% of containers moved are 40' and 33% are 20'
 - 100% of containers moved are carrying cargo (88% revenue utilization of vessel eastbound)
 - 100% of cargo carried generates a premium rate
 - 90% of cargo is ex-surface and 10% is ex-air
 - Ex-air cargo generates a premium of 2.5 times 2003 surface rates
 - 2006 rates are estimated to be 10% greater than 2003 rates

Eastbound HSS/AP Rates

	2003 Rate / Ctr	Premium Rate / Ctr	Avg HSS Rate / Ctr	Avg HSS Rate / Ctr With Air Included	Year 1 Avg HSS Rate / Ctr (Air Incl)
20'	\$1,460	\$2,190	\$2,190		
40'	\$2,500	\$3,750	\$3,750		
Avg / Ctr	\$2,154	\$3,231	\$3,231	\$3,446	\$3,790
Avg / TEU	\$1,292	\$1,938	\$1,938	\$2,067	\$2,274

- Westbound Transpacific Assumptions
 - 67% of containers moved are 40' and 33% are 20'
 - 50% of containers moved are carrying cargo (45% revenue utilization of vessel westbound)
 - 50% of cargo carried generates a premium rate
 - Remaining 50% of cargo is moved at current surface rate
 - 55% of cargo is ex-surface and 45% is ex-air of the premium-rated cargo
 - Ex-air cargo generates a premium of 2.5 times 2003 surface rates
 - Westbound refrigerated cargo is projected to move at the current surface rate due to little transit improvement from Alaska to Japan
 - 2006 rates are estimated to be 10% greater than 2003 rates

Westbound HSS/AP Rates

	2003 Rate / Ctr	Premium Rate / Ctr	Avg HSS Rate / Ctr	Avg HSS Rate / Ctr With Air Included	Year 1 Avg HSS Rate / Ctr (Air Incl)
20'	\$670	\$1,005	\$838		
40'	\$1,130	\$1,695	\$1,413		
Avg / Ctr	\$977	\$1,465	\$1,221	\$1,441	\$1,585
Avg / TEU	\$586	\$879	\$732	\$864	\$951
Reefer TEU	\$2,500		\$2,500		\$2,750

- Intra-Asia Assumptions
 - 67% of containers moved are 40' and 33% are 20'
 - 100% of containers are full (carrying cargo)
 - 100% of cargo carried generates a premium
 - 70% of cargo is ex-surface and 30% is ex-air
 - Ex-air cargo generates a premium of 2.5 times 2003 surface rates
 - 2006 rates are estimated to be 15% greater than 2003 rates

Intra-Asia HSS/AP Rates

	2003 Rate / Ctr	Premium Rate / Ctr	Avg HSS Rate / Ctr	Avg HSS Rate / Ctr With Air Included	Year 1 Avg HSS Rate / Ctr (Air Incl)
20'	\$660	\$990	\$990		
40'	\$1,120	\$1,680	\$1,680		
Avg / Ctr	\$967	\$1,450	\$1,450	\$1,740	\$2,001
Avg / TEU	\$580	\$870	\$870	\$1,044	\$1,201

- Incremental door-to-door revenues
 - The provision of door-to-door transport service to the customer is assumed to break even; that is revenue collected will offset expenses by 100%. In practice, the total move is usually quoted as one and unless managed and accounted for properly it has the potential of generating losses on either the sea or the land transport side.
 - One third of eastbound cargo is estimated to generate trucking revenue (two thirds of this cargo is moved within 100 miles and one third is moved over one hundred miles)
 - The average composite revenue per unit is \$187
 - \$160 for short haul and \$240 for long haul
 - One third of eastbound cargo is estimated to generate rail intermodal revenue
 - 35% is projected to be bound for the Midwest, 15% is projected to be bound for the Northeast, 30% is bound for the South Central Region and the remaining 20% is projected to be bound for the Southeast
 - Rates per 40' for: Midwest destination = \$800, Northeast destination = \$1,300, South Central = \$710, and Southeast destination = \$840. These rates represent average high-volume contract rates and are thus lower than published railroad tariff rates
 - Delivery by truck from the rail ramp to the customer at destination is assumed to average \$150
 - This incremental revenue is offset by expenses generated to move the cargo. Additional expense is generated to reposition a portion of the empty units back to the PSW.

Eastbound Cargo	Share	Share	Incremental Revenue/20' Unit	Incremental Revenue/40' Unit
Door-to-door	33.3%	33.4%	\$0	\$0
Trucking	33.3%			
Short haul		22.2%	\$160	\$160
Long haul		11.1%	\$240	\$240
Intermodal Rail	33.3%			
Midwest destination		11.7%	\$550	\$800
So Central destination		10.0%	\$460	\$710
Southeast destination		6.6%	\$535	\$840
Northeast destination		5.0%	\$650	\$1,300
Total	100%	100%		
Avg. spread over all units:			\$240	\$347

Appendix C – Direct (Variable) Operating Cost Assumptions

- Container handling charges are assessed on both full and empty containers at the following rates
 - A call in South China is currently assumed to be Hong Kong, although the service could potentially call at another Pearl River delta port (e.g. Shenzhen ports of Yantian, Shekou or Chiwan)
 - Container handling charges are paid to the terminal operator for stevedoring handling in the terminal and inland transport loading/discharge (on-dock and trucking)

Port	Lift Charge Per Move
Hong Kong	\$275
Shenzhen	\$125
Busan	\$127
Singapore	\$255
Shanghai	\$125
Yokohama	\$275

Port	Lift Charge Per Move
LA/LB	\$250
Dutch Harbor	\$250

- Land transport is assumed to be a pass through – therefore land transport revenues will equal land transport costs. For details see the revenue assumptions for the breakdown of charges by equipment type and mode of transport.
 - One element that is not recovered as revenue is the cost of repositioning the empty container once it has been delivered to the customer’s door. This repositioning cost is reflected in the container equipment expense line and is detailed under container equipment.
- Port charges are generated each time the vessel calls a specific port (in both deployments there are 156 sailings per year). The components of these charges are discussed in detail in the Infrastructure Analysis Report. The charges assume HSS has similar dimensions as a conventional 1,700 TEU containership (180 meters in length, approximately 35,000 GRT, 17,000 NRT and 11 meters draft).
 - Port charges include port dues/dockage and pilotage only; wharfage is excluded as it is a pass through to the shipper/consignee

Port	Port Charge
Hong Kong	\$3,956
Busan	\$4,745
Singapore	\$4,000
Shanghai	\$3,502
Yokohama	\$2,923

Port	Port Charge
LA/LB	\$5,787
Dutch Harbor	\$5,406

Economic And Financial Analysis

- Manning cost is estimated at \$8,000 per day per vessel for U.S. officers and crew, assuming a 21st century technology operating vessel that allows for small crew size. If foreign officers and crew were required the cost would be an estimated \$4,000 per day per vessel.
- Fuel consumption is assumed to be 58 tons per hour of IFO 380 at the service speed of 50 knots (1,392 tons per day), while in port fuel consumption is assumed to be 0.1 ton per hour (2.4 tons per day). Fuel price per metric ton is estimated at \$150 based on the past twelve-month average price.
- Container equipment requirements are estimated based on a ratio of head haul loads to container fleet. For the Transpacific loads it is assumed that for every five full eastbound loads the fleet will require one unit, and on the Intra-Asia lane it is assumed that for every eight full loads the fleet will require one unit. The equipment requirements for Deployment 1 and 2 are displayed in the table below.

Deployment 1	Full Container Loads (Units)		Units Required		
	Transpacific (EB)	Intra-Asia	Transpacific	Intra-Asia	Total
20' Dry Van	47,530	24,821	9,506	3,103	12,609
40' Dry Van	92,870	48,499	18,574	6,062	24,636
40' Refrigerated	4,680	0	936	0	936
Total Units	145,080	73,320	29,016	9,165	38,181

Deployment 2	Full Container Loads (Units)		Units Required		
	Transpacific (EB)	Intra-Asia	Transpacific	Intra-Asia	Total
20' Dry Van	46,753	54,545	9,351	6,818	16,169
40' Dry Van	93,647	109,255	18,729	13,657	32,386
40' Refrigerated	0	0	0	0	0
Total Units	140,400	163,800	28,080	20,475	48,555

Source: Industry standard adjusted for increased speed of vessel

- In addition, it is estimated that 1,000 chassis in North America will be required (for both deployments), operating out of the LA basin. It is assumed that the container equipment will be long term leased at the daily rates listed in the table below.

Equipment Type	Lease Cost Per Day
20' Dry Van	\$0.75
40' Dry Van	\$1.25
40' Refrigerated Container	\$10.20
Chassis (see note)	\$10.00

Note: The chassis rate includes maintenance and repair

- There are additional costs associated with delivering containers to a customer’s location; specifically, moving the container back to the Pacific Southwest for its westbound leg. The model assumes that the enterprise is responsible for moving two thirds of the cargo beyond the port, specifically half of this by intermodal rail. Assuming that one third of these intermodal containers can find a westbound load that provides a breakeven move back to the Pacific Southwest there are still two thirds of these containers that generate an empty repositioning cost. Therefore, 22% ($22\% = \frac{2}{3} * \frac{1}{2} * \frac{2}{3}$) of all eastbound units will generate an empty repositioning cost associated with the intermodal rail move that is not recovered through charges to the customer. Charges for empty moves vary by lane and are presented below.

Rail Move to PSW	Repositioning Rate/20' Unit	Repositioning Rate/40' Unit
<i>Intermodal Rail</i>		
Midwest origin	\$400	\$400
So Central origin	\$450	\$575
Southeast origin	\$500	\$650
Northeast origin	\$650	\$650

**The empty intermodal rail units have an additional dray charge at the inland point of loading generating an incremental cost of approximately \$50 per unit*

Appendix D – Indirect (Fixed) Operating Cost Assumptions

- Vessel depreciation is based on a 25 year life (no residual value), according to industry standards. The straight line method of depreciation is utilized. There is no depreciation associated with container/chassis equipment as they are all leased.
- The vessels are estimated to cost an average of \$135 million (alternative scenarios were run for costs of \$120 million and \$150 million and are shown in the financial results section), assuming the vessels can be built in US shipyards. If foreign built, the cost is estimated at 25%-30% less, approximately \$100 million.
- Insurance (both protection and indemnity and hull and machinery) and cargo claims expense is estimated at one million per vessel per year or approximately 0.7% - 1.0% of the newbuild price.
- Maintenance and repair of vessels is estimated at \$2,000 per day per vessel.
- Maintenance and repair of container equipment is estimated at \$0.15 per day per dry van TEU and \$0.50 per day per refrigerated container TEU. The maintenance and repair cost for chassis is included in the \$10.00 per day rental expense. These charges reflect current market analysis of per diem damage and maintenance.
- Overhead in the form of management, general and administrative (MG&A) is estimated at \$2,000 per TEU in operation based on a sample of current containership operators. This level of MG&A assumes that a string of high speed ships would be incorporated into a larger group of operating vessels either among a single operator or a group of operators, thus enjoying the economies of scale associated with the estimated \$2,000 per TEU.
- The base case assumes that vessels are purchased at \$135 million each, underwritten by a MARAD loan. An alternative scenario assumes 80% of the purchase price is financed as long term debt at an 8% interest rate over the life of the loan, assumed to be twelve years. Another alternative is to lease/charter the vessel, providing the vessel owners a 13% return on their investment of \$100 million on each vessel (assumes vessels are foreign built).
- The income tax rate is estimated at thirty percent.

Appendix E – Deployment 1 Estimated Diverted Surface Volumes

Deployment 1 & .5 day saved for agile port system at discharge ports served directly (@ 50 kts)					
2000 Eastbound Volumes (TEU)					
Origin	50% PP	55% PP	60% PP	65% PP	
ANZ (Melbourne)	0	0	0	0	
Central Asia (HK)	134,287	107,675	84,442	65,726	
No Asia (Busan)	60,485	49,685	40,597	32,654	
So Asia (Singapore)	19,723	15,525	11,848	8,639	
Total TEU	214,496	172,885	136,887	107,019	
% Change		-19.4%	-20.8%	-21.8%	
* Assumes PSW as the single direct destination					
2000 Westbound Volumes (TEU)					
Destination	50% PP	55% PP	60% PP	65% PP	
ANZ (Melbourne)	0	0	0	0	
Central Asia (HK)	6,776	4,995	3,745	2,893	
No Asia (Busan)	7,975	6,058	4,873	3,965	
So Asia (Singapore)	1,429	1,103	823	583	
Total TEU	16,180	12,155	9,441	7,441	
% Change		-24.9%	-22.3%	-21.2%	
* Assumes PSW as the single direct origin					
2006 Eastbound Volumes (TEU)					
Origin	50% PP	55% PP	60% PP	65% PP	
ANZ (Melbourne)	0	0	0	0	
Central Asia (HK)	218,834	175,467	137,606	107,107	
No Asia (Busan)	55,011	45,188	36,923	29,699	
So Asia (Singapore)	17,238	13,569	10,355	7,550	
Total TEU	291,084	234,224	184,884	144,356	
% Change		-19.5%	-21.1%	-21.9%	
* Assumes PSW as the single direct destination					
2006 Westbound Volumes (TEU)					
Destination	50% PP	55% PP	60% PP	65% PP	
ANZ (Melbourne)	0	0	0	0	
Central Asia (HK)	9,188	6,773	5,079	3,923	
No Asia (Busan)	10,814	8,214	6,608	5,376	
So Asia (Singapore)	1,938	1,496	1,116	791	
Total TEU	21,940	16,483	12,802	10,090	
% Change		-24.9%	-22.3%	-21.2%	
* Assumes PSW as the single direct origin					
2010 Eastbound Volumes (TEU)					
Origin	50% PP	55% PP	60% PP	65% PP	
ANZ (Melbourne)	0	0	0	0	
Central Asia (HK)	276,538	221,735	173,890	135,350	
No Asia (Busan)	68,888	56,587	46,237	37,191	
So Asia (Singapore)	20,231	15,924	12,153	8,861	
Total TEU	365,657	294,247	232,280	181,401	
% Change		-19.5%	-21.1%	-21.9%	
* Assumes PSW as the single direct destination					
2010 Westbound Volumes (TEU)					
Destination	50% PP	55% PP	60% PP	65% PP	
ANZ (Melbourne)	0	0	0	0	
Central Asia (HK)	11,705	8,628	6,470	4,998	
No Asia (Busan)	13,777	10,465	8,418	6,849	
So Asia (Singapore)	2,469	1,906	1,422	1,007	
Total TEU	27,951	20,999	16,310	12,855	
% Change		-24.9%	-22.3%	-21.2%	
* Assumes PSW as the single direct origin					

Note: PP = price premium

Appendix F – Deployment 2 Estimated Diverted Surface Volumes

Deployment 2 & .5 day saved for agile port system at discharge ports served directly (@50 kts)				
2000 Eastbound Volumes (TEU)				
Origin	50% PP	55% PP	60% PP	65% PP
ANZ (Melbourne)	0	0	0	0
Central Asia (HK)	159,027	130,785	105,240	82,927
No Asia (Busan)	64,450	53,022	43,634	35,363
So Asia (Singapore)	64,441	56,255	48,918	42,202
Total TEU	287,917	240,062	197,793	160,492
% Change		-17%	-18%	-19%
* Assumes PSW as the single direct destination				
2000 Westbound Volumes (TEU)				
Destination	50% PP	55% PP	60% PP	65% PP
ANZ (Melbourne)	0	0	0	0
Central Asia (HK)	6,851	5,051	3,788	2,923
No Asia (Busan)	10,441	7,743	5,961	4,834
So Asia (Singapore)	9,458	7,362	5,623	4,207
Total TEU	26,750	20,157	15,372	11,964
% Change		-25%	-24%	-22%
* Assumes PSW as the single direct origin				
2006 Eastbound Volumes (TEU)				
Origin	50% PP	55% PP	60% PP	65% PP
ANZ (Melbourne)	0	0	0	0
Central Asia (HK)	259,150	213,127	171,500	135,137
No Asia (Busan)	58,617	48,224	39,685	32,163
So Asia (Singapore)	56,321	49,167	42,755	36,885
Total TEU	374,088	310,518	253,939	204,184
% Change		-17.0%	-18.2%	-19.6%
* Assumes PSW as the single direct destination				
2006 Westbound Volumes (TEU)				
Destination	50% PP	55% PP	60% PP	65% PP
ANZ (Melbourne)	0	0	0	0
Central Asia (HK)	9,290	6,850	5,136	3,964
No Asia (Busan)	14,157	10,500	8,084	6,555
So Asia (Singapore)	12,825	9,983	7,624	5,705
Total TEU	36,273	27,332	20,844	16,223
% Change		-24.6%	-23.7%	-22.2%
* Assumes PSW as the single direct origin				
2010 Eastbound Volumes (TEU)				
Origin	50% PP	55% PP	60% PP	65% PP
ANZ (Melbourne)	0	0	0	0
Central Asia (HK)	327,484	269,325	216,722	170,771
No Asia (Busan)	73,403	60,388	49,696	40,276
So Asia (Singapore)	66,099	57,702	50,177	43,288
Total TEU	466,986	387,416	316,594	254,334
% Change		-17.0%	-18.3%	-19.7%
* Assumes PSW as the single direct destination				
2010 Westbound Volumes (TEU)				
Destination	50% PP	55% PP	60% PP	65% PP
ANZ (Melbourne)	0	0	0	0
Central Asia (HK)	11,836	8,727	6,543	5,050
No Asia (Busan)	18,037	13,377	10,299	8,351
So Asia (Singapore)	16,339	12,718	9,713	7,268
Total TEU	46,212	34,821	26,555	20,668
% Change		-24.6%	-23.7%	-22.2%
* Assumes PSW as the single direct origin				

Note: PP = price premium

Appendix G – Deployment 1 Proforma Financial Projections

HSS / AP Deployment 1: LA-DH-YK-HK-SHG-YK-DH-LA

USD MM

	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	
Revenue																												
Eastbound			530.4	533.4	536.4	539.4	542.4	545.3	547.5	549.6	551.7	553.9	556.0	558.1	560.3	562.4	564.5	566.6	568.8	570.9	573.0	575.2	577.3	579.4	581.6	583.7	585.8	
Westbound			132.9	133.1	133.3	133.5	133.7	133.9	134.1	134.2	134.4	134.5	134.6	134.8	134.9	135.1	135.2	135.4	135.5	135.6	135.8	135.9	136.1	136.2	136.4	136.5	136.6	
Intra-Asia			146.2	146.8	147.4	148.0	148.5	149.1	149.5	149.9	150.3	150.7	151.1	151.5	151.9	152.3	152.7	153.2	153.6	154.0	154.4	154.8	155.2	155.6	156.0	156.4	156.8	
Subtotal Port-to-Port Revenue			\$809.6	\$813.4	\$817.1	\$820.9	\$824.6	\$828.4	\$831.0	\$833.7	\$836.4	\$839.1	\$841.8	\$844.4	\$847.1	\$849.8	\$852.5	\$855.2	\$857.8	\$860.5	\$863.2	\$865.9	\$868.6	\$871.2	\$873.9	\$876.6	\$879.3	
Land Transport Revenue			50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	
Total Revenue			\$860.3	\$864.0	\$867.8	\$871.5	\$875.3	\$879.0	\$881.7	\$884.4	\$887.1	\$889.8	\$892.4	\$895.1	\$897.8	\$900.5	\$903.2	\$905.8	\$908.5	\$911.2	\$913.9	\$916.6	\$919.2	\$921.9	\$924.6	\$927.3	\$930.0	
Direct Operating Costs																												
Load / Discharge			169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	169.0	
Land Transport			50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	
Feeder Slot			33.7	32.7	31.7	30.8	29.9	29.0	28.1	27.2	26.4	25.6	24.9	24.1	23.4	22.7	22.0	21.4	20.7	20.1	19.5	18.9	18.3	17.8	17.3	16.7	16.2	
Port Charges			4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	
Manning			20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	
Fuel			441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	441.6	
Lease / Charter Fees			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Container Equipment & Repositioning			39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	
Subtotal Direct Operating Costs			\$759.6	\$758.6	\$757.6	\$756.7	\$755.8	\$754.9	\$754.0	\$753.2	\$752.3	\$751.5	\$750.8	\$750.0	\$749.3	\$748.6	\$747.9	\$747.3	\$746.6	\$746.0	\$745.4	\$744.8	\$744.2	\$743.7	\$743.2	\$742.6	\$742.1	
Indirect Operating Costs																												
Depreciation			37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	
Claims / Insurance			7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Maintenance & Repair																												
Vessels			5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	
Container Equipment			3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	
Overhead Items (MG&A)			23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	
Subtotal Indirect Operating Costs			\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4	\$77.4
EBIT			\$23.2	\$28.0	\$32.7	\$37.4	\$42.1	\$46.7	\$50.3	\$53.8	\$57.3	\$60.8	\$64.2	\$67.7	\$71.1	\$74.4	\$77.8	\$81.1	\$84.5	\$87.8	\$91.0	\$94.3	\$97.6	\$100.8	\$104.0	\$107.2	\$110.4	
Interest @ 7.5% on 87.5% of OEC			62.0	61.1	60.1	59.1	57.9	56.7	55.4	54.0	52.5	50.9	49.1	47.2	45.2	43.0	40.7	38.2	35.5	32.6	29.5	26.1	22.5	18.6	14.5	10.0	5.2	
Taxes @ 30%			-	-	-	-	-	-	-	-	1.4	3.0	4.5	6.1	7.8	9.4	11.1	12.9	14.7	16.6	18.5	20.5	22.5	24.6	26.9	29.2	31.6	
After Tax Earnings			(\$38.8)	(\$33.1)	(\$27.4)	(\$21.7)	(\$15.8)	(\$10.0)	(\$5.1)	(\$0.2)	\$3.4	\$6.9	\$10.6	\$14.3	\$18.1	\$22.0	\$26.0	\$30.1	\$34.3	\$38.6	\$43.1	\$47.7	\$52.5	\$57.5	\$62.7	\$68.0	\$73.6	
Cash Flow																												
EBIT			23.2	28.0	32.7	37.4	42.1	46.7	50.3	53.8	57.3	60.8	64.2	67.7	71.1	74.4	77.8	81.1	84.5	87.8	91.0	94.3	97.6	100.8	104.0	107.2	110.4	
Depreciation			37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	37.8	
Taxes			-	-	-	-	-	-	-	-	(1.4)	(3.0)	(4.5)	(6.1)	(7.8)	(9.4)	(11.1)	(12.9)	(14.7)	(16.6)	(18.5)	(20.5)	(22.5)	(24.6)	(26.9)	(31.6)		
Interest			(62.0)	(61.1)	(60.1)	(59.1)	(57.9)	(56.7)	(55.4)	(54.0)	(52.5)	(50.9)	(49.1)	(47.2)	(45.2)	(43.0)	(40.7)	(38.2)	(35.5)	(32.6)	(29.5)	(26.1)	(22.5)	(18.6)	(14.5)	(10.0)	(5.2)	
Principal Payments			(12.2)	(13.1)	(14.1)	(15.1)	(16.2)	(17.5)	(18.8)	(20.2)	(21.7)	(23.3)	(25.1)	(27.0)	(29.0)	(31.1)	(33.5)	(36.0)	(38.7)	(41.6)	(44.7)	(48.1)	(51.7)	(55.5)	(59.7)	(64.2)	(69.0)	
Capital Outlays	(59.1)	(59.1)																										
Total Cash Flow	(\$59.1)	(\$59.1)	(\$13.2)	(\$8.4)	(\$3.7)	\$1.0	\$5.7	\$10.4	\$13.9	\$17.4	\$19.5	\$21.4	\$23.3	\$25.1	\$26.9	\$28.6	\$30.3	\$31.9	\$33.4	\$34.8	\$36.2	\$37.5	\$38.7	\$39.8	\$40.8	\$41.7	\$42.4	
IRR		9.4%																										
NPV (@ 10%) (in millions)		(\$9.0)																										
Rate Assumptions:																												
Rate per TEU:	EB		\$2,274	\$2,287	\$2,299	\$2,312	\$2,325	\$2,338	\$2,347	\$2,356	\$2,365	\$2,374	\$2,383	\$2,393	\$2,402	\$2,411	\$2,420	\$2,429	\$2,438	\$2,447	\$2,457	\$2,466	\$2,475	\$2,484	\$2,493	\$2,502	\$2,511	
	WB		\$951	\$953	\$954	\$956	\$958	\$960	\$961	\$962	\$963	\$965	\$966	\$967	\$968	\$970	\$971	\$972	\$974	\$975	\$976	\$977	\$979	\$980	\$981	\$982	\$984	
	Reefer WB		\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	\$2,750	
	Intra-Asia		\$1,201	\$1,205	\$1,210	\$1,215	\$1,219	\$1,224	\$1,227	\$1,231	\$1,234	\$1,237	\$1,241	\$1,244	\$1,247	\$1,251	\$1,254	\$1,257	\$1,261	\$1,264	\$1,267	\$1,271	\$1,274	\$1,277	\$1,281	\$1,284	\$1,287	

Appendix H – Deployment 2 Proforma Financial Projections

HSS / AP Deployment 2: LA-DH-BU-HK-SG-HK-BU-DH-LA

USD MM

	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25		
Revenue																													
Eastbound			532.2	535.2	538.2	541.2	544.2	547.2	549.3	551.4	553.6	555.7	557.8	560.0	562.1	564.3	566.4	568.5	570.7	572.8	574.9	577.1	579.2	581.4	583.5	585.6	587.8		
Westbound			111.3	111.5	111.7	111.9	112.1	112.3	112.4	112.6	112.7	112.9	113.0	113.2	113.3	113.5	113.6	113.8	113.9	114.1	114.2	114.4	114.5	114.7	114.8	114.9	115.0	115.1	
Intra-Asia			327.8	329.1	330.4	331.6	332.9	334.2	335.1	336.0	336.9	337.8	338.7	339.7	340.6	341.5	342.4	343.3	344.2	345.1	346.0	346.9	347.8	348.8	349.7	350.6	351.5		
Subtotal Port-to-Port Revenue			\$971.3	\$975.7	\$980.2	\$984.7	\$989.2	\$993.6	\$996.8	\$1,000.0	\$1,003.2	\$1,006.4	\$1,009.6	\$1,012.8	\$1,016.0	\$1,019.2	\$1,022.4	\$1,025.6	\$1,028.8	\$1,032.0	\$1,035.2	\$1,038.4	\$1,041.6	\$1,044.8	\$1,048.0	\$1,051.2	\$1,054.4		
Land Transport Revenue			50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	
Total Revenue			\$1,022.0	\$1,026.5	\$1,031.0	\$1,035.4	\$1,039.9	\$1,044.4	\$1,047.6	\$1,050.8	\$1,054.0	\$1,057.2	\$1,060.4	\$1,063.6	\$1,066.8	\$1,070.0	\$1,073.2	\$1,076.4	\$1,079.6	\$1,082.8	\$1,086.0	\$1,089.2	\$1,092.4	\$1,095.6	\$1,098.8	\$1,101.9	\$1,105.1		
Direct Operating Costs																													
Load / Discharge			212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	212.9	
Land Transport			50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	
Feeder Slot			34.0	32.9	32.0	31.0	30.1	29.2	28.3	27.4	26.6	25.8	25.0	24.3	23.6	22.9	22.2	21.5	20.9	20.2	19.6	19.0	18.5	17.9	17.4	16.9	16.3		
Port Charges			5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9		
Manning			23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4		
Fuel			497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	497.0	
Lease / Charter Fees			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Container Equipment & Repositioning			40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	40.5	
Subtotal Direct Operating Costs			\$864.4	\$863.4	\$862.4	\$861.5	\$860.6	\$859.7	\$858.8	\$857.9	\$857.1	\$856.3	\$855.5	\$854.8	\$854.1	\$853.3	\$852.7	\$852.0	\$851.4	\$850.7	\$850.1	\$849.5	\$849.0	\$848.4	\$847.9	\$847.3	\$846.8		
Indirect Operating Costs																													
Depreciation			43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	
Claims / Insurance			8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0		
Maintenance & Repair																													
Vessels			5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8		
Container Equipment			4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4		
Overhead Items (MG&A)			27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2	27.2		
Subtotal Indirect Operating Costs			\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	\$88.7	
EBIT			\$68.9	\$74.4	\$79.9	\$85.3	\$90.7	\$96.1	\$100.1	\$104.2	\$108.2	\$112.2	\$116.2	\$120.1	\$124.1	\$128.0	\$131.8	\$135.7	\$139.5	\$143.4	\$147.2	\$151.0	\$154.7	\$158.5	\$162.2	\$165.9	\$169.6		
Interest @ 5.5% on 87.5% of OEC			70.9	69.8	68.7	67.5	66.2	64.8	63.3	61.7	60.0	58.1	56.1	54.0	51.7	49.2	46.5	43.6	40.6	37.2	33.7	29.8	25.7	21.3	16.5	11.4	5.9		
Taxes @ 30%			-	1.4	3.3	5.3	7.3	9.4	11.0	12.7	14.5	16.2	18.0	19.8	21.7	23.6	25.6	27.6	29.7	31.8	34.0	36.3	38.7	41.2	43.7	46.4	49.1		
After Tax Earnings			(\$2.0)	\$3.2	\$7.8	\$12.5	\$17.1	\$21.9	\$25.8	\$29.7	\$33.8	\$37.9	\$42.0	\$46.3	\$50.7	\$55.1	\$59.7	\$64.4	\$69.3	\$74.3	\$79.4	\$84.8	\$90.3	\$96.0	\$102.0	\$108.2	\$114.6		
Cash Flow																													
EBIT			68.9	74.4	79.9	85.3	90.7	96.1	100.1	104.2	108.2	112.2	116.2	120.1	124.1	128.0	131.8	135.7	139.5	143.4	147.2	151.0	154.7	158.5	162.2	165.9	169.6		
Depreciation			43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2		
Taxes			-	(1.4)	(3.3)	(5.3)	(7.3)	(9.4)	(11.0)	(12.7)	(14.5)	(16.2)	(18.0)	(19.8)	(21.7)	(23.6)	(25.6)	(27.6)	(29.7)	(31.8)	(34.0)	(36.3)	(38.7)	(41.2)	(43.7)	(46.4)	(49.1)		
Interest			(70.9)	(69.8)	(68.7)	(67.5)	(66.2)	(64.8)	(63.3)	(61.7)	(60.0)	(58.1)	(56.1)	(54.0)	(51.7)	(49.2)	(46.5)	(43.6)	(40.6)	(37.2)	(33.7)	(29.8)	(25.7)	(21.3)	(16.5)	(11.4)	(5.9)		
Principal Payments			(13.9)	(14.9)	(16.1)	(17.3)	(18.6)	(20.0)	(21.5)	(23.1)	(24.8)	(26.7)	(28.7)	(30.8)	(33.1)	(35.6)	(38.3)	(41.1)	(44.2)	(47.5)	(51.1)	(54.9)	(59.1)	(63.5)	(68.2)	(73.4)	(78.9)		
Capital Outlays			(67.5)	(67.5)																									
Total Cash Flow			(\$67.5)	(\$67.5)	\$27.3	\$31.4	\$34.9	\$38.4	\$41.8	\$45.1	\$47.5	\$49.9	\$52.2	\$54.4	\$56.6	\$58.7	\$60.8	\$62.7	\$64.7	\$66.5	\$68.3	\$70.0	\$71.5	\$73.0	\$74.4	\$75.7	\$76.9	\$78.0	\$78.9
IRR																													
NPV (@ 10%) (in millions)																													
Rate Assumptions:																													
Rate per TEU:																													
EB			\$2,274	\$2,287	\$2,299	\$2,312	\$2,325	\$2,338	\$2,347	\$2,356	\$2,365	\$2,374	\$2,383	\$2,393	\$2,402	\$2,411	\$2,420	\$2,429	\$2,438	\$2,447	\$2,457	\$2,466	\$2,475	\$2,484	\$2,493	\$2,502	\$2,511		
WB			\$951	\$953	\$954	\$956	\$958	\$960	\$961	\$962	\$963	\$965	\$966	\$967	\$968	\$970	\$971	\$972	\$974	\$975	\$976	\$977	\$979	\$980	\$981	\$982	\$984		
Intra-Asia			\$1,201	\$1,205	\$1,210	\$1,215	\$1,219	\$1,224	\$1,227	\$1,231	\$1,234	\$1,237	\$1,241	\$1,244	\$1,247	\$1,251	\$1,254	\$1,257	\$1,261										

List of Abbreviations and Acronyms

BU	Busan, Korea
EB	Eastbound
EBIT	Earnings before interest and taxes
DH	Dutch Harbor, Alaska
GRT	Gross registered tonnage
HK	Hong Kong
HSS / AP	High Speed Ship / Agile Port
IFO 380	Intermediate fuel oil
IRR	Internal rate of return
LA	Los Angeles, California
MARAD	Maritime Administration
MG&A	Management, general and administrative
NPV	Net present value
NRT	Net registered tonnage
PP	Price premium
SHG	Shanghai, China
SG	Singapore
TEU	Twenty foot equivalent unit, a standard shipping container measure of volume
YK	Yokohama, Japan