Appendix C: Compendium of Studies

Contents

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Report on the Management of Vessel Refurbishment Programs, Legislative Transportation Committee, 1991
Booz Allen & Hamilton Inc. and M. Rosenblatt & Son, Inc.
Objectives:
1) Evaluate the ferry vessel refurbishment process & procedures, particularly those related to vessel inspection, engineering, cost estimating, construction management, change order management & budget procedures.
2) Compare the process used with other marine operators.
3) Make recommendations (p. I-1)
- Impetus for the study: cost overruns in vessel refurbishment program (p. IV-2)
- Legislative Transportation Committee wanted to know:
  - The role & impact of the budget process on the refurbishment programs.
  - The shortcomings, if any, of the budgeting process that may affect cost management of the vessel refurbishment program.
  - What improvements, if any, are required. (p. VI-1)

Reviews of Audit:
1) Recommendations in this audit were reviewed in 1998 Booz Allen & Hamilton JLARC Audit
2) WSF: 2006 Status Report on the Recommendations Contained in the 1998 JLARC Audit of the WSF

Area	Key Findings	Recommendations	Status/Questions
Organization Development	• The WSF refurbishment program has prevented capacity erosion and maintained service at a savings of at least $12 million. (p. III-7) • Need to refurbish aging vessels transformed WSF from an operations-oriented entity to a more capital and construction intensive organization. (p. III-8)	1) Re-organize by o reducing the organization layers between the Assistant Secretary and those directly responsible for engineering design and construction management	1) Implemented: (1998 Audit Appendix D) Changes reflected in 2006 organization chart.

Area	Key Findings	Recommendations	Status/Questions
	• Better work definition for refurbishment specifications developed in-house has contributed to reductions in actual growth of refurbishment project budgets. (p. VII-9)	o creating a senior-level position solely responsible for new construction & refurbishment programs reporting directly to the Assistant Secretary o unified vessel operations & maintenance under a single executive o terminal design and operations separate from vessel operations and maintenance, & combined at equivalent senior level. (p. VIII-2) 2) The Assistant Secretary and Operations Superintendent job descriptions: require previous shipyard and/or vessel maintenance management experience. (p. VIII-4) 3) Continue in-house design engineering capacity: with continuing use of outside design consultants as required. (p. VIII-5) 4) Assign ships to "single owner" port engineer and create a program manger position for ships under construction or refurbishment. (p. VIII-6)	2) Not implemented/not needed: Job descriptions for Executive Director and Director of Operations appropriately emphasize strategic capacity. Shipyard & vessel maintenance experience at Director of Vessel Engineering level. (Job descriptions) 3) Implemented (1998 Audit Appendix D) 4) Implemented (1998 Audit Appendix D)
Policy	• Decline in region's shipbuilding & repair industry's ability to provide service – leaving WSF vulnerable to higher-than-normal ship refurbishment costs for large vessel drydocking. (p. III-9) • One shipyard available to drydock largest boats – Todd Shipyard. (p. III-10-11) • Fourteen shipyards for non-drydock work. (p. III-11)	5) WSDOT and the legislature should support a policy of renewed shipyard competition & additional shipyard capacity in the region: including facilitating pre-qualification of shipyards with drydocks capable of handling fleet and to support out-of-state shipyards. (p. VIII-7)	5) Implemented (1998 Audit Appendix D)

Area	Key Findings	Recommendations	Status/Questions
Pre-Planning Phase	• Five case studies represented 95% of the WSF ferry refurbishment expenditures from 1985-1990. • WSF received value for 81% of the expenditures (78% in original contract/22% growth items that added value). (p. IV-16) • WSF received no value for 19% of the expenditures (42% for growth items where premiums are paid and 58% for delay & disruption penalty charges). (p. IV-16) • The 19% premium results primarily from inadequate planning, inspection, specification & contract development and poor construction and change management procedures. (p. IV-16) • Forty-one percent of growth came from problems during the planning phase, indicating inadequate planning and control processes that result in subsequent changes and cost increases. (p. IV 8-10) • Lack of inspection procedures resulted in "hidden surprises" during refurbishment causing increases in the scope of work. (p. IV-11)	6) Formalize refurbishment decision process, including: o justification o utilization of maintenance history o collection of inputs for conceptual design o development of conceptual design o development of program estimate o impact of changes on program estimate o justification for slipping schedule o impact of schedule slippage on program estimate o translation of program estimate to program budget. (p. VIII-9) 7) Establish a steel maintenance program to include: o scheduled inspections & condition monitoring o condition reports on all steel by location using standard forms o trend analysis of the condition reports to refine the inspection schedule o non-destructive testing as a regularly scheduled part of the condition monitoring o evaluation of reports and records to determine ▪ most effective coatings ▪ schedules of routine maintenance ▪ work scope identification for refurbishment o evaluation of benefits/costs of classifying all vessels under American Bureau of Shipping rules to assist with the steel maintenance program.	6) Implemented (1998 Audit Appendix D) Note: refurbishment now preservation program. 7) Implemented (see # 14 1998 Audit) Steel maintenance program formalized & single-compartment ferries surveyed. (WSF June 06 p. 19)

Area	Key Findings	Recommendations	Status/Questions
		8) Establish formal pre-refurbishment inspection to include: o Coordination with vessel operating, maintenance and routine drydocking schedules, even if done in phases rather than at once. o Identification of areas of concern through: ▪ Review of vessel maintenance history. ▪ Interviews with operations personnel. ▪ Review of change order data from previous refurbishment. o Complete inspection of all systems and spaces recorded on standard forms developed for each type of system and space. o Identification of location and quantity of any item that was hidden or inaccessible. o Standardized approach to non-destructive testing for steel deterioration. (p. VIII-11)	8) Partially implemented: WSF does not remove vessels from service for stand alone inspections. o Accomplished through life cycle cost model o Monthly vessel condition worksheets implemented o Destructive testing program part of the inspection process – e.g. remove deck tile etc. to inspect interior portions. (WSF Aug.06 response)
Specification Development	• Insufficiently detailed specifications allow shipyards too many loopholes to increase scope and price of work. (p. IV-12)	9) Standardize work scoping process to include: o All data from the earlier concept design and strategic planning phases. o Vessel maintenance history, including steel maintenance. o Input from operations including maintenance, masters & deck officers and operating engineers. o Regulatory bodies' input. o Lessons learned from previous refurbishments. o Pre-refurbishment inspection report. o Ship checks.	9) Implemented: 2001-02 developed standardized work specification language. (WSF June 06 p. 21)

Area	Key Findings	Recommendations	Status/Questions
		o Asbestos and toxic paint surveys. o Other sources as appropriate. (p. VIII-12)	
		10) Develop a procedure for estimating planned growth using data from: o Pre-Refurbishment Inspection o Ship Maintenance History o Change order data base for previous refurbishments (p. VIII 013)	10) Implemented: Included in 2002 Vessel Engineering Manual. (WSF June 06 p. 22)
		11) Develop a standard structure for unit pricing as a basis for: o Identification of planned growth at the contract unit price bids. o Development of the engineer's estimate. o Change order estimating during construction. (p. VIII-14)	11) Implemented: (1998 Audit Appendix D)
		12) Specify bid lots for all planned growth to ensure that all planned growth that has been estimated is not identified in the specification, but has bid lots included for unit pricing in the contract. (p. VIII-15)	12) Implemented (1998 Audit Appendix D)
Contract Development	• Proper contract development is a critical tool for controlling growth. (p. IV-13) • Thirty percent of all cost growth included charges for delay & disruption, & provided no value to WSF. (p. IV-6) • At peer ferries' work scope & price are controlled with growth work covered by unit prices; shipyards required to estimate work within 2 weeks of change request, and if disputed, work must proceed on a time & material basis with a ceiling. (p. V-10)	13) Revise standard contract language on the use of unit prices to preclude "increased/decreased quantities" from negotiation. o For increased work covered by bid lots (planned growth), require payment of unit prices at direction of project engineer. o Allow negotiation of planned growth only if it exceeds some reasonable limit above bid lot quantities. Specifying this limit places it in the control of Washington State Ferries, not the shipyard or claims court.	13) Implemented (1998 Audit Appendix D)

Area	Key Findings	Recommendations	Status/Questions
		14. Award planned growth along with base work package to: o Increase control of the overall budget. o Enable better understanding of vessel out-of-service time. o Improve ability to schedule other assets. o Reduce the basis for shipyard claims for delay and disruption. (p. VIII-17) 15) Require the shipyard to provide additional management tools to supplement existing shipyard master construction schedule and progress breakdown reports with: o Planned progress curve – to track progress to plan and evaluate responsibility for delay and disruption. o Critical path method network – to maintain schedule and analyze the cause of delay and disruption. o Inspection plan – to ensure that growth work is identified earlier in the construction period. (p. VIII-18)	14) Implemented (1998 Audit Appendix D) 15) Implemented (1998 Audit Appendix D)
Construction Management	• Current construction management practices and procedures allowed shipyards too much leeway in determining the size, scope & price of changes. (p. IV-14) • The procedure currently in use for change orders results in loss of negotiating leverage & effective control of the shipyard work. (p. IV-15) • The cost per change order at WSF is between 3 and 4 times that of other ferry systems. (p. V-II) • Some other ferry systems have independent engineering auditors. (p. V-11)	16) Improve change order management procedures to include: o Negotiate unplanned growth with shipyard to provide the following: ▪ Impact on schedule, testing, and other work. ▪ A price that would include all delay and disruption. o Allow no work without negotiated fixed price. o For work that must proceed immediately, authorize work not to exceed tight time and cost limits. o Include these procedures in standard	16) Implemented (1998 Audit Appendix D)

Area	Key Findings	Recommendations	Status/Questions
		contract language. (p. VIII-19) 17) Modify change order approval authority by: o Reducing change authority. o Establishing cumulative limits in change, which should be enforced at a higher level in the organization than the manager of construction management. o Disallowing grouping of unrelated changes into omnibus change orders. (p. VIII-20)	17) Implemented (1998 Audit Appendix D)
		18) Establish an audit function within WSF by establishing one or more audit functions for construction & cost management reporting directly to the Engineering Superintendent or even the Assistant Secretary. (p. VIII-21)	18) Not Implemented WSF does not have a separate audit function. Vessel Engineering Manual specifies budget adherence reporting process.
		19) Formalize the asbestos abatement program including: o Conducting fleet-wide survey to locate remaining asbestos. o Planning removal of asbestos as part of scheduled fleet maintenance and refurbishment programs. o Tracking asbestos condition of the fleet until it is asbestos free. (p. VIII-22)	19) Not implemented WSDOT Asbestos Operations & Maintenance Manual does not have specific section on WSF. (WSF June 06 p. 22) o Fleet wide survey not conducted/but did survey by vessel class 1991-1996. (WSF Aug 06) o Asbestos removal part of fleet preservation program (WSF Aug 06) o Eagle Harbor repair facility updating 2004 asbestos survey – currently estimate 5% to 10% of asbestos is remaining on vessels (WSF Aug 06) o Bainbridge, Anacortes & Seattle terminals have asbestos remaining (WSF Aug 06)

Area	Key Findings	Recommendations	Status/Questions
Budget Recommendations	• Inaccurate program budget estimates lay the ground for growth in refurbishment capital budgets. (p. VI-6) • Project prospectus: Defines new projects for inclusion in six-year plan and includes initial budget estimate. o No formal guidelines to prepare, justify and show linkage to traffic demand – done on ad hoc basis. (p. VI-6) o Average variance in initial estimate and final cost in five case studies ranged from 33% to 58%. • Program budget estimates: developed prior to start of project & used in biennium budget request. o Average variance in program budget estimates and final costs for five case studies is from 12% to 33%. (p. VI-6) • Initial and program budget estimates: o Based on historical information for similar class ships, not always reliable or accurate. o WSF has no detailed cost estimating guideline. (p. VI-6) • The system used for accountability & monitoring of the original program budget estimates may be contributing to the continued inaccuracy of the estimates. (p. VI-7) • Reports use the current authorized budget not the original budget estimate. (p. VI-7) o Cumulative impacts of budget revisions are not reported against the original budget estimate or explained. (p. VI-7) o Post program reviews do not include a review of initial and program budget estimates relative to actual program costs. (p. VI-7) • Budget revisions beyond contingency limits lack some of the controls & formal internal scrutiny reserved for original budget requests. (p. VI-8) • Budget revisions start at the work-order level and are compared to the prior level of authorization rather than to the adopted budget. (p. VI-8) • Work-order level may not be high enough for evaluating tradeoffs in priorities & impact on achievement of long-range service objectives. (p. VI-8)	20) Strengthen budgetary procedure to more closely monitor budget revisions o Establish a process for evaluating budget revisions against service objectives. o Major budget revisions (i.e., those exceeding 15% contingency) should always be compared to original budget, as well as the prior budget revision. o Budget revisions must be evaluated in terms of their impact on service (traffic) and performance objectives prior to approval. o Monitor and report budget variances from original budget to top management on a quarterly basis, and the impact on achievement of service and performance objectives. o Limit budget revision authority at the Washington State Ferries. All budget/cost growth over contingency (15%) provisions should be scrutinized by an inter-departmental review committee. (p. VIII-23) 21) Develop guidelines for project prospectus and program budget estimate development. Include analysis of program budget estimate compared to actuals in post-program review. o Project prospectus and program budget estimates must be more accurately based on historical refurbishment database. o Detailed guidelines should be	20) Not implemented (1998 Audit indicated it was). Budgets are not compared to the original budget and are not tied to service and performance objectives. Budgets are compared to the biennium budget, which was not done before this study. 21) Implemented (1998 Audit Appendix D) life-cycle cost model information used.

Area	Key Findings	Recommendations	Status/Questions
		developed for project cost estimation. (p. VIII-24) 22) Policy implications of schedule & budget adherence should be more clearly communicated to the Legislature in the original budget & subsequent versions to include: o Impact of budget revisions and program progress on attainment of service level commitments to the public. o Impact of incremental budget revisions on total program costs. o Total actual program costs relative to benefits anticipated at project start. (p. VIII-25)	22) Not implemented (1998 Audit said it was). Budgets and budget revisions are not tied to service projections.

Department of Transportation Ferry System Performance Audit Report 98-6, Oct. 6, 1998
Booz-Allen & Hamilton, Inc. for Joint Legislative Audit and Review Committee (JLARC)
Independent & comprehensive audit of WSF overall operations including:

- Organizational structure & human resources
- Operations
- Maintenance & safety
- Vessel construction & refurbishment
- Long-range planning

Section on public/private partnerships not endorsed by JLARC.

Reviews of Audit:

1. 2001 Office of Financial Management Audit reported on implementation of 1998 recommendations
2. WSF: 2006 Status Report on the Recommendations Contained in the 1998 JLARC Audit of the WSF

Area	Key Findings	Recommendations	Consultants Report on Status
Organizational Structure & Human Resources	• Diversity of stakeholder interests impedes ability to manage & operate effectively & efficiently. (20 groups) (p. 4-1) • Organizational structure is inverted, with senior management having numerous direct reports and lower management having few. (p. 4-3) • Management characterized by high turnover in key positions, which affects operational continuity and succession planning. (p. 4-7) • Compensation levels of top management are below comparable positions in the region. (p. 4-7) • Compensation of maritime & lower-level administrative support staff is above comparable positions in the region & state. (p. 4-8) • Collective bargaining & dispute resolution process impacts the day-to-day operations and management of WSF & its ability to operate efficiently & effectively. (p. 4-11) • Services provided by the Marine Employees Commission are not fully utilized by WSF management & labor unions. (p. 4-13) • Grievances & Unfair Labor Practice charges are disproportionately high. (p. 4-14) • Required safety-based programs are effectively developed & delivered, but adequate employee development & leadership training are not provided. (p. 4-15) • Training programs are underfunded, understaffed & not centrally	1) Evaluate management structure system & identify options to reduce decision cycle time, clarify accountability & responsibility, eliminate conflict, & facilitate access to capital. (p. 4-16) 2) Develop an employee training & development system. (p. 4-16) 3) Conduct a comprehensive job classification & compensation study to support collective bargaining negotiations. (p. 4-17)	1) Implemented 2005 legislative session established WSDOT as a cabinet agency reporting to the Governor. (WSF June 06 p 3) ➢ Management continues to be characterized by high turnover. 2) Not implemented Training programs not funded. (WSF June 06 p. 4) 3) Implemented Improved research & analysis supports collective bargaining with additional staffing. Passage of SHB 3178 in the 2006 legislative session, which reformed collective bargaining statutes for WSF assigning responsibility to the Governor, modifying the timeframe for negotiations, including a determination of financial feasibility by Office of Financial Management, a provision to return to collective bargaining in the event of a revenue

Area	Key Findings	Recommendations	Consultants Report on Status
	coordinated. (p. 4-15)		shortfall & i an interest arbitration provision. (WSF June 06 p. 6)
		4) Implement recommended organization structure to right the span-of-control situation, create succession planning opportunities, direct focus on "key" strategic areas, and alleviate communication and departmental gaps within the organization. (p. 4-18)	4) Implemented Assistant Secretary has 7 direct reports rather than the 5 recommended due to decision to have terminal engineering & vessel engineering report to Assist Secretary separately & creation of Director of Communications. (org chart)
		5.) Align WSF employee overtime policy to that of state employees, where basic overtime rates will be no greater than 150% of base wage. (p. 4-19)	5) Not implemented Collective bargaining agreements not changed. (WSF June 06 p. 7)
		6) Remove mandatory cost of living adjustment for WSF employees resulting from legislative action, and assign responsibility to WSF and WSDOT management to achieve legislative limits on appropriations. (p. 4-19)	6) Not implemented (WSF June 06 p. 8)
		7) Evaluate the benefits of improving current Marine Employees Commission services or placing WSF employees and labor organizations under the jurisdiction of the Public Employee Relations Commission (PERC) or a similar organization. (p. 4-20)	7) Partially implemented Passage of SHB 3178 in the 2006 legislative session lays the groundwork for improved labor relations. There is no plan to pursue movement of maritime union employees or labor organizations to Public Employee Relations Commission (PERC) jurisdiction. (PERC includes non-maritime union employees & labor organizations.) (WSF June 06 p. 9)
Operations	• The Operations Center drives WSF's ability to optimize operations, control costs & interact with customers. (p. 5-2) • Systematic & documented procedures are needed to ensure	8) Develop an information technology plan that leverages current system initiatives, identifies future information &	8) Not implemented WSF technology challenged with aging & non-integrated system. (WSF June 06 p.

Area	Key Findings	Recommendations	Consultants Report on Status
	continuous service & appropriate relief staffing. (p. 5-3) • WSF incurs expenses & reduced vessel availability from non-revenue trips that might be avoided. (p. 5-4) • The lack of documented operating practices & procedures inhibits the sharing of standards & potentially impedes performance. (p. 5-5) • Existing operating manuals are neither comprehensive nor kept in a timely manner. (p. 5-5) • The existing operating manuals do not coincide with management practices or procedures. (p. 5-6) • International Safety Management (ISM) procedures are required for international compliance & for safety, & should result in improvements in documentation, analysis capabilities & performance. (p. 5-6) • Documented emergency plans are required to prevent delayed or improper response to a crisis. (p. 5-7) • WSF does not maintain adequate emergency response documentation to meet situational needs. (p. 5-7) • Documentation to support ship-specific emergency response is needed. (p. 5-7) • WSF employs redundant & modern systems to communicate vessel locations & condition. (p. 5-8) • The Operations Center information agents use a modern, sophisticated telephone system to communicate with the public. (p. 5-8) • Recent WSF computer system development initiatives have had mixed success. (Maintenance Management System and Automated Operations Support System) (p. 5-9) • WSF does not fully utilize technology internally or externally to achieve operational savings and support management decision-making. (p. 5-10)	data requirements, leverages technology to achieve operational & organizational efficiencies, & supports management decision making and operational monitoring. (p. 5-11) 9) Analyze vessel deployment strategies to reduce or eliminate the frequency of non-revenue generating boat moves and refueling operations. (p. 5-12) 10) Extend the International Safety Management effort to include WSF domestic routes and terminal operations, including the development of documentation defining policies, procedures, and responsibility across the WSF organization. (p. 5-12) 11) Develop emergency response & contingency plans for WSF, vessels and terminals. Documents should address field operations, management and support, and communications. (p. 5-13)	10) WSF will seek funding from the 2007 legislature to improve information systems. (WSF Aug 06) 9) Implemented Reduced non-revenue boat moves from 1.8% of total moves (1996) to .5% of total moves due to more efficient fueling practices (1999 - 1,383 fueling trips/2006 - 317), vessel retirements and service reductions. 10) Implemented 2001 WSF Safety Management System (SMS) evolved from International Safety Management expanded to include all vessels, terminal and Eagle Harbor repair facility. (WSF June 06 p. 13) 11) Implemented WSF is in compliance with the new federal regulations in 46 CF W. (WSF June 06 p 13)
Maintenance & Safety	• Vessels have high level of operating maintenance. (p. 6-2) • Terminals older but adequate, but uncertain piling conditions. (p. 6-2) • System is reliable in terms of scheduled voyages completed & on-time performance. (p. 6-3)	12.) Accelerate implementation of Maintenance Management System, & redirect current Maintenance Management System efforts to validate system functionality requirements with	12) Implemented Maintenance Productivity Enhancement Tool (MPET) in use for all vessels, terminals, at the warehouse, in the purchasing department and at Eagle

Area	Key Findings	Recommendations	Consultants Report on Status
	• Customers highly satisfied (lowest parking & terminal access). (p. 6-5) • All WSF vessels have Coast Guard certifications of inspection. (p. 6-6) • Cited by Coast Guard for safety infractions less often than other ferry systems. (p. 6-8) • Safety performance statistics compare favorably to other transportation modes. (p. 6-9) • Fleet older than other ferry systems. (p. 6-10) • Greater oversight, ownership & resources dedicated to fleet than to terminals. (p. 6-11) • Eagle Harbor repair facility is antiquated & poorly laid out. (p. 6-14) • Eagle Harbor cost of labor comparable to private shipyards & facilities. (p. 6-15) • Eagle Harbor staffing not aligned with seasonal workload. (p. 6-15) • Eagle Harbor repair facility does not have capability to estimate projected costs for comparison with private-sector bids. (p. 6-17) • Unsuccessful in implementing a Maintenance Management System. (p. 6-17)	users & identify additional development costs. (p. 6-19) 13) Restructure Eagle Harbor repair facility operation, addressing facilities, staffing levels, workload management and job cost-estimating processes. (p. 6-20)	Harbor repair facility. (WSF June 06 p. 16) 13) Partially implemented Master facility plan complete, with phase 1 to create a drive-on slip nearing completion. Maintenance Productivity Enhancement Tool developing a labor collection cost capability that will permit improved job planning, budget forecasting & accurate job costing. (WSF June 06 p. 18) o Eagle Harbor repair facility staffing leveled through mission integration program which permits Eagle Harbor staff to work on a "not to interfere" basis on vessels while in commercial shipyards. (WSF Aug 06) o Project Planning Office at Eagle Harbor repair facility includes two planners/estimators. (WSF Aug 06)
Vessel Construction & Refurbishment	(see 1991 report for related findings & recommendations) • Refurbishment programs appear to be effective in reducing maintenance costs &, to a lesser degree, in increasing service reliability. (p. 7-5) • Refurbishment programs appear to result in only minor savings in overall operations costs. (p. 7-9) • WSF has planned & implemented a preservation program to replace its historic refurbishment program. (p. 7-10) • Refurbishment program may not result in the greatest return on capital investments as expenditures for some refurbishments have exceeded 67% of new construction costs. (p. 7-10) • Preservation offers an opportunity to maintain WSF vessels in sound operating condition while controlling costs. (p. 7-11) • Preservation program offers potential advantages over the renovation approach. (p. 7-13)	14) Implement a more systematic and formal Steel Maintenance Program and, as part of this program, the older single-compartment ferries should be subject to an independent survey. (p. 7-19) 15.) Continue implementation of other recommendations made by the 1991 Booz Allen report that have not been fulfilled. (p. 7-19) 16) Modify legislation controlling ferry firm, fixed-price contracting practices to allow WSF more discretion and flexibility in its procurement/contracting policy. (p. 7-20)	14) Implemented Steel maintenance program formalized & single-compartment ferries surveyed. (WSF June 06 p 19) 15) See 1991 above. 16) See 2001 study below.

Area	Key Findings	Recommendations	Consultants Report on Status
	• Preservation approach needs appropriate management tools to ensure savings are realized (life-cycle cost model– does not help with Maintenance Management System or formalized steel maintenance program. (p. 7-13) • Reduced non-value added contract growth in major shipyard projects completed during the 1990s. (p. 7-15) • Procurement Partnership Process is designed to share more risk with contractors and reduce change orders. (p. 7-17) • In-house vessel design & construction support adequately staffed. (p. 7-18)	17) Assign a contract administrator from the Contracts/Legal Department to new construction, renovation and preservation contracts over $10 million. (p. 7-20) 18) Modify the standard contract language on Contract Problem Reports to require timely submission of proposals to accomplish Indefinite Quantity Work. (p. 7-20) 19) Increase the length of time between contract award and ferry shipyard arrival. (p. 7-21) 20) Reduce the amount of preplanned Indefinite Quantity Work included in the contract award to no more than 10% of the base work package. (p. 7-21)	17) Implemented in 2001 for M.V. Yakima Preservation. Fleet preservation program has eliminated shipyard contracts over $10 million. (WSF Aug 06) 18) Implemented Indefinite Quantity Work (IQW) clauses have been eliminated from WSF vessel preservation & new construction contracts. (WSF June 06 p. 25) 19) Implemented Lengthened to 30 days. (WSF June 06 p. 25) 20) Implemented Indefinite Quantity Work (IQW) clauses have been eliminated from WSF vessel preservation & new construction contracts. (WSF June 06 p 26)
Long-Range Planning	• Mission statement is not adequately supported by detailed standards & performance measures. (p. 8-1) • Supporting service standards are proposed by WSF's Planning Department, reflecting community input but are defined by Legislature. (p. 8-2) • Service goals consistent with Alaska State Ferries. (p. 8-3) • Operational service goals & standards should be expanded to address on-time performance, customer satisfaction. (p. 8-3) • Forecasts since 1989 have overstated the passengers and vehicles handled through 1996 by as much as 5.5% and understated them by as much as 4.1% in a given year. (p. 8-5) • Cornerstone of current 20-year planning process is the use of the Travel Forecasting Model for demand forecasting. (p. 8-5) • Current 20-year demand projections are for 66.6% increase for passengers & 49% for vehicles. (p. 8-6) • Fleet capacity insufficient for vehicle demand, but sufficient for passenger demand over next 20 years. (p. 8-7) • Passenger capacity utilization for passenger-vehicle ferries less than 15% in 1997/23% in peak hours. (p. 8-7)	21) Build from WSF's corporate strategy to develop a strategic plan detailing corporate goals/objectives, actions and implementation steps, timing of actions, department and individual responsibilities, costs/benefits, and broader service standards. (p. 8-19) 22) Validate the current Travel Forecast Model forecast with a new origin/destination study and augment the current supply side analysis with demand elasticity and fleet optimization analyses. (p. 8-20) i. Update Origin/Destination study every five years. 23) Conduct a clean slate fleet and service optimization study to identify and evaluate benefits-costs of an unconstrained fleet and compare to the current 20-year plan. (p. 8-20)	21) Partially implemented Management turnovers have led to periodic updates of strategic plans. There is not currently a plan that extends to department & individual responsibilities, costs/benefits and broader service standards. 22) Partially implemented 1999 Origin/Destination study conducted. South Sound update 2003 & 2004. i. Update Origin/Destination study planned for Oct. 2006. (WSF Aug. 06) 23) Not implemented 2006-2030 Long Range Plan based on current fleet & service constraints. (Long-Range Plan p. 66)

Area	Key Findings	Recommendations	Consultants Report on Status
	• Vehicle capacity utilization in 1997 71% and on many routes 100% at peak times. (p. 8-7) • Twenty (20)- year plan includes retirement of older vessels, addition of incremental capacity & preservation of current fleet. (p. 8-9) • Fleet planning process is scenario-based, focused on service planning by route & region. May not optimize operating & capital costs. Best practices of shipping companies incorporate fleet & deployment optimization exercises. (p. 8-11) • Attributes of an efficient terminal include safety, multi-modality, adequate capacity, & efficient loading/unloading. WSF terminals generally fall short in one or more areas. (p. 8-12) • Terminals are out-of-date & have insufficient capacity to support current peak demand. (p. 8-13) • Terminal capacity insufficient to support growth over 20 years. (p. 8-14) • Estimating capital expenditure requirements builds from recent construction costs, the life-cycle cost model & professional experience. (p. 8-18)	24) Develop a life-cycle cost model for terminals. (p. 8-20)	24) Implemented Terminal life-cycle cost model used for terminal preservation program. (WSF June 06 p. 29)

Office of Financial Management: Performance Audit of the Washington State Ferry System Capital Program, 2001
Talbot, Korvola & Warwick
Capital Investments Model (Life-Cycle Cost Model)
1. Assess and validate the Ferries' decision-making process/model for capital investments.
2. Determine/define preservation vs. maintenance.

Contracting/Bidding Process
1. Assess how various state and federal procurement/bidding requirements affect acquiring and preserving assets.
2. Determine: compliance with applicable rules and regulations/effectiveness/fairness/total costs as compared to other bidders /timeliness.

Determine current procurement practices used by other entities.

Reviews of Audit :
1. WSF 2006 Response to 2001 Performance Audit
2. WSF 2006 Response to 1998 Performance Audit includes portions regarding 2001 Audit

Area	Key Findings	Recommendations	Consultants Report on Status
Life Cycle Cost Model	• The life-cycle cost model can support an economic condition rating provided the models contain all cost data for preservation of vessel, and terminal systems and structures & inventory maintained. • An economic condition rating would provide an effective tool for measuring the impact of expenditures.	1) Use a modified version of the current systems/structures condition rating, weighting it by life cycle costs of systems and structures, to indicate an economic condition rating. (p. 27)	1) Implemented WSF began using economic condition rating in 2002. (WSF 06 p. 2)
Contracting/ Bidding	• Review of contract files found files with incomplete, missing or misfiled information. • WSF contracting manual needs to include: o Process from budget to contract distribution. o Procedures & requirements for Request for Proposal process. o List of applicable laws, regulations, codes. o List of U.S. Department of Transportation manuals for reference.	2) Implement the use (or modify as appropriate) of current checklist & assure contract coordinators maintain contract files. (p. 53) 3) Modify current contracting procedures manual & update as appropriate. (p. 54)	2) Implemented (WSF 06 p. 2) 3) Not implemented (WSF 06 p. 3) Plan to complete by Dec. 31, 2006.
Alternative Methods	• Use of Invitation for Bid method for dockside & small ferry maintenance & repair services is appropriate. • For dry dock & related services for large ferries, there is only one local-area shipyard. Navy faced with same situation at Everett, and has entered into multi-year service agreements. • Request for Proposal-Best Value process best for auto ferry equipment & systems. Process requires approval from WSDOT Secretary of Transportation. Unnecessary & overly restrictive. • Invitation for Bid is only process available to WSF for new auto ferry construction, which is a process no longer used by other entities for procurement of large vessels. Request for Proposal process should be	4) Examine and pursue alternative procurement approaches and statutory authorization regarding procurement of vessel maintenance and repair services. (p. 64) 5) Seek legislative changes allowing the procurement of auto ferry equipment and systems through the Request for Proposal-Best Value process without first requesting an exception to the	4) Implemented SHB 2221 passed in the 2001 legislative session enables WSF to negotiate single sole source contracts for vessel services when there is only one bidder able to accommodate a vessel or class of vessels in their facility. 5) Implemented SHB 2221 passed in the 2001 legislative session streamlined WSF's approval process for utilizing the RFP process.

Area	Key Findings	Recommendations	Consultants Report on Status
	allowed to: o Enhance partnership between builder & owner. o Use relative strength of both parties. o Involve both in design & equally share design ownership.	invitation for bid process. (p 65) 6) Seek legislative authority to allow the use of a modified Request for Proposal process to procure large ferry new construction. (p. 67)	6) Implemented SHB 1680 passed in the 2001 legislative session included authority for WSF to utilize the modified RFP process for new vessel construction.

Report of the Legislature's Joint Task Force on Ferries, January 15, 2001
Objectives:

1. Establish a goal for farebox recovery.
2. Options for different levels of service.
3. Feasibility of privatization, public-private partnerships or state and local partnerships.
4. Establishing the short-term and long-term capital needs of the system.

Reviews:
WSF Report on Joint Task Force on Ferries Study 2006

Area	Key Findings	Recommendations	Consultants Report on Status
Service Delivery Alternatives	• Washington State Constitution establishes the state operated ferry system as part of the state's highway system. (p. 19) • Focused on alternatives for passenger only ferry (POF) because the Transportation Commission's post I-695 budget proposed eliminating POF service. (p. 20) • No provider expressed any interest in providing auto ferries and/or terminal services. (p. 20) • Existing laws limit alternative providers: o Ten-mile rule (RCW 47.60.120) o Assume labor agreements (RCW 47.64.090) o Contracting-out prohibition (RCW 41.06.380) (p. 20-21) • Alternative service providers cannot offer the current level of service as cost effectively, in part because of the need for significant capital investment and would need subsidy. (p. 25) o More cost effective & less risky to continue WSF operation than a Kitsap Transit Seattle-Bremerton POF. (p.23) o Private operation of POF not viable. (p.24) • State-local or public-private partnership might be used to expand POF service. (p. 25) o Viable option for expansion of POF to Kingston might be a state-local or public-private partnership with Kitsap Transit. (p. 24) • FY 2000 Eagle Harbor repair facility accounted for 60% of WSF's maintenance program, even though required to contract out projects in excess of $50,000 by RCW 47.28.030. (p. 24) • Access to immediate maintenance & preservation staff crucial for WSF operation. (p. 24)	1) Ferries are part of the state's highway system and should remain open. No currently operated ferry routes should be terminated. (p. 19) 2) State should continue to provide & maintain both auto ferry and POF. (p. 25) 3) WSF should maintain an in-house maintenance & preservation facility service. (p. 25)	1 & 2) Changed Through legislative action WSF is discontinuing POF service. In 2003 WSF ceased Seattle-Bremerton passenger only service. In response to the 2005 study, *Ten-Year Passenger Strategy for Washington's Multimodal Ferry Transportation System,* the Legislature in SB 6787 adopted in the 2006 legislative session required WSF to sell 2 POF vessels, & authorized Vashon-Seattle service to continue until such time as a county ferry district's assumption of the route & required Office of Financial Management to study alternatives to state provision of POF on the Seattle Vashon route. (WSF 06 p. 2/SB 6787) 3) Implemented Funding appropriated for preservation of Eagle Harbor repair facility and master plan prepared.

Area	Key Findings	Recommendations	Consultants Report on Status
Operations: Service & Farebox Recovery	• I-601 would limit ferry tariff increases to 2.7% annually without a waiver from the legislature. (p. 29) • Current tariff relationships & route groups are based on the tariff structure WSF inherited from the Black Ball system in 1951. (p. 30) • There is no policy rationale for the current relationship among tariffs on routes of different lengths. (p. 30) • WSF Tariff Policy Committee has proposed to adjust ferry pricing between routes to reflect time on the ferry route as a variable component with all riders contributing to the fixed costs. (p. 30) • WSF has never implemented a tariff increase of a magnitude to cause a decrease in ridership. (p. 31) • Phasing in fee increases will allow WSF to gather data on price elasticity in a unique market. (p. 31) • POF service fees have been the same as passenger tariff on auto boats, with much lower farebox recovery on the POF. (p. 32) • Nationwide other ferry services charge a premium for POF service. (p. 32) • Farebox recovery includes maintenance costs as part of operating costs, which is not done for highways. (p. 33) • WSF projects that 80% farebox recovery will reduce ridership from 27 million trips per year to 25.1 million in 2007, therefore Task Force only dealt with 2001-03 service levels. (p. 35)	4) Legislature should exempt ferry tariffs from I-601 so that tariff increases can be phased in: a. Increases to raise farebox recovery to 80%, with tariff increases phased in over six years. b. The effect on demand should be evaluated following each tariff increase. c. POF (passenger only ferries) tariff set at double passengers level on auto ferries. Should be reviewed if: o Ridership drops threaten viability of the program; o Bremerton POF loses fast-boat service, d. Implement tariff route equity based on a journey time-based model of time based tariff structure. (p. 34-35) 5) Ferries should continue reduced level of service through 01-03, including POF. (p. 38)	4) Implemented The Legislature exempted ferry tariffs from I-601. Since 2000, fares have increased between 60% and 108%. (p. 1 2006-2030 Long Range Plan) a. Partially implemented Farebox recovery in FY 2005 76%. (pg. 57 2006-2030 Long Range Plan/Route Statement Summary Fiscal Year 2000-2005) b. Not implemented No annual report on the effect of tariff increases on demand. Elasticity is considered in the fare forecasts. c. Changed POF service is being eliminated. d. Implemented All routes are on distance based fares except San Juan Interisland route (planned May 09) & oversized vehicles on Anacortes-Friday Harbor route (planned May 07). 5) Implemented WSF has not restored any of the service cuts made in 1999 in response to I-695. (WSF 06 p. 5)
Capital Program	• Three goals define capital program: o Set investment level to maintain condition of capital assets. o Set investment level to meet proposed service levels. o Incorporate one-time investment opportunities to preserve, improve, and expand existing terminals to meet current & future service demands. (p. 40) • First priority for the capital program is the maintenance & preservation of existing assets. (p. 42) • WSF capital program information is not included in the Legislative Project List. (p. 47)	6) Short- and long-term capital preservation program requirements should be met to ensure the delivery of operating services. a. Current life cycle preservation activities do not address the replacement of assets as they reach the end of their useful life. (p 48) b. Catching up and keeping up with ferry and terminal preservation &	6) Delayed implementation a. Not implemented The life cycle model does not separate replacement of assets at the end of their useful life. b. Partially Implemented Recommended

Area	Key Findings	Recommendations	Consultants Report on Status
	• WSF classifies expenses as operating and capital. WSDOT uses maintenance, operation, preservation and improvement categories. (p. 47)	maintenance means raising the condition rating for: i. vital systems to between 90% and 100% by 2011. ii. non-vital systems to between 60% and 80% by 2011. (p. 48) c. New construction to replace vessels & terminals will result in reduced preservation costs. (p. 49) i. Replace 4 auto ferries. ii. Mukilteo & Anacortes terminal projects address preservation & multi-modal needs. iii. Replace 2 POF vessels. 7) State needs to do a better of job telling citizens what they are getting for their ferry operating & capital investments. a. Format presentations under maintenance, operations, preservation & improvements. b. Include ferry capital in Transportation Executive Information System (TEIS). c. Present information in a performance-based budgeting module similar to WSDOT's maintenance accountability program (MAP). d. Increase information available to the public. (p. 49)	levels of preservation to be reached by 2015 (WSF 06 p. 5) – See Gray Notebook June 05 p. 64 regarding delays in implementation. c. Partially implemented i. 4 new vessels funded ii. Anacortes and Mukilteo terminal projects funded iii. Not needed due to legislative direction to eliminate WSF POF service. 7) Partially implemented a. Not implemented Continuing to use preservation & improvement categories. b. Implemented Ferry projects are in Transportation Executive Information System (WSF 06 p 7) c. Implemented Through the life-cycle model reporting d. Implemented See web site/Gray Notebooks/Advisory Committees. (WSF 06 p. 8 and web site/Gray Notebooks)

Area	Key Findings	Recommendations	Consultants Report on Status
Budget Funding Shortfall	• 62% of revenue from tariffs (FY 01-03). (p. 50) • 60% of operational costs labor/88% of positions directly employed in operations & maintenance. (p. 51) • Of staff assigned to vessels, 97.8% are mandated by Coast Guard regulations & 2.2% by union agreements. (p. 51) • WSF eliminated 158 positions in response to I-695 or 8.6% of all positions. (p. 53) • WSF should continue to work with transit systems to coordinate tariff processing equipment & media. (p. 53) • New tariff processing equipment would allow WSF to implement demand pricing, i.e. different tariffs for peak & off-peak periods. (p. 54)	8) WSF must continue to adopt operational efficiencies. a. Continue to implement efficiencies proposed in 1998 JLARC audit. b. Invest in technology to enable WSF to implement time-of-day and time-of-week variable tariffs. (p. 55)	8) Partially implemented a. See 1998 report. b. Electronic fare system funded ($15.7 million) 2003-05 legislative session. Implementation behind schedule. Testing on Pt. Townsend/Keystone route started Jan. 06 – implement at Anacortes Oct. 06. (WSDOT report to the legislature June 30, 2006 on Electronic Fare System Project) ➢ Electronic Fare System implementation will enable WSF to implement variable rate tariffs (WSF Aug 06)
Governance	• Task Force determined that service & revenue issues facing the system were most pressing at this time, but that governance should be examined. (p. 56)	9) The Legislature should review ferry governance options. a. Creation of local or regional ferry transit districts as funding mechanism for expanded POF service. b. Once funding stable, legislature could examine options for ferry governance as part of the overall review of transportation governance per the Blue Ribbon Commission.	9) Implemented a. RCW 36.54 adopted in the 2005 legislative session allows for the creation of county ferry districts. SB 6787 adopted in the 2006 legislative session establishes ferry grant program for county ferry districts offering POF service, requires WSF collaboration in terminal operations. b. 2005 Legislative session established WSDOT as a cabinet agency reporting to the Governor.