

# **Center for the Commercial Deployment of Transportation Technologies**

## **Meeting Minutes**

### **CCDoTT Advisory Committee**

The Watergate Hotel, Washington, D.C.  
Friday, November 1, 2002

#### **Attendees:**

##### Advisory Committee Members:

James Ackerman, Esq., Chair  
Vice Admiral Al Herberger, USN ret.  
Eugene Pentimonti (absent in part)  
J. Brian Sharkey (absent)  
Stanley Siegel  
Jordan Truchan (absent)  
Lt. General Kenneth Wykle, USA ret.

##### Invited Guests:

Margaret Blum, MARAD  
William Aird, MARAD  
Robert L. Boyd, Jr., DOD  
Chel Stromgren, SAIC  
Michael C. Darcy, D'Arcinoff Group, Inc.  
Jonathan Kaskin, CNR  
Paul Rispin, ONR  
William Brierre, Brierre  
Carl J. Seiberlich, TranSystems Corp.

##### Presenters:

M. John Vickerman, TranSystems  
Blair R. Garcia, TranSystems  
David R. Lavis, Band, Lavis & Associates  
Jalal Mapar, SAIC (absent)  
Dr. Igor Mizine, SAIC  
John Avis, Kvaerner Masa Marine  
Steven Loui, Pacific Marine & Supply  
Dr. Lawrence G. Mallon, CSULB/CITT  
John S. Detwiler, Maya Viz  
J. Douglass Coates, Manalytics

##### Staff:

Marianne Venieris, CSULB Foundation  
Stan Wheatley, CCDoTT  
Steven Hinds, CCDoTT  
Carrie Scoville, CCDoTT

#### **Welcome and Comments:**

Mr. Ackerman called the meeting to order at 8:10 a.m. He started by welcoming everyone and introducing the members of the Advisory Committee: LtGen Ken Wykle, VADM Al Herberger and Mr. Stanley Siegel. He advised the group that Mr. Jordan Truchan had become ill and would not be able to attend, Mr. Brian Sharkey and Mr. Eugene Pentimonti were expected to arrive shortly.

Mr. Ackerman mentioned the new adjustments that have taken place at CCDoTT since the last meeting of the Advisory Committee. There is a new Executive Director of the Foundation, Dr. Robert Behm whom many already know, there is a new association with SPAWAR, and a new

position of Director of Transportation Programs, Marianne Venieris, who will introduce herself to the Committee members later. He then introduced Margaret Blum, Associate Administrator for Ports and Intermodals at the Maritime Administration and member of the CCDoTT Steering Group, who wished to say a few words.

Ms. Blum stated she stood before the Committee as a full partner. Last year three things were said that CCDoTT needed to develop: CCDoTT has to have a vision, and that is the development of commercial technology with military applications; CCDoTT needs to become a Center; and marketing needs to be done. The vision is needed now more than ever. We need to bring the pieces together. If you don't know that you're not a Center that's on the edge. We still have that opportunity. She continued that USTRANSCOM and MARAD need to repair the partnership, and this board needs to work with USTRANSCOM.

These three things are still relevant, now she is adding a fourth for the next year: partnering and supporting each other. CCDoTT is positioned in a place to take the leadership. She has stepped back over the last few months "waiting for the dust to settle", now MARAD is ready to become more active. For example, with Fast Ship – the Navy was saying no, now they and the Army are saying yes. The Alameda Corridor is undergoing significant evolution. CCDoTT can take leadership.

Mr. Ackerman thanked Ms. Blum and added she always tells it like it is.

### **CCDoTT Overview:**

Mr. Ackerman introduced Stan Wheatley, CCDoTT Managing Director.

Mr. Wheatley stated the objectives of this meeting are to relay to the Advisory Committee where we are, where we have been, and where we are going.

He gave a brief background of CCDoTT. The program was developed in the early '90s from an Economic Adjustment Grant. Early programs established then have continued to the present day. The new direction is to: (1) get "end users" for the technology, and (2) demonstration and validation of the technologies, and (3) convergence of these technologies over the next three to four years.

Mr. Wheatley then gave a review of CCDoTT accomplishments. In the High-Speed Sealift segment CCDoTT has not worked on monohull or catamarans. Instead we have worked on multi-hulls, lifting bodies, CFD codes and improved thruster technologies. In the Agile Ports segment we have worked on Efficient Marine Terminals, inland port assessments, and have established relationships with commercial partners. In the Rapid Deployment segment we have worked on transpacific trade analysis, a Transportation Internet Portal device, and coastal shipping analyses. In the Decision Support Tools (Command and Control) segment we have developed collaborative visualization technologies. In the Port Security segment we have

worked on inspection technologies, goods movement technologies with American President Lines, and a planned program in supply chain security oversight.

Mr. Ackerman thanked Mr. Wheatley and asked all attendees for their views and opinions. He invited questions, but asked that they be held until all presentations have concluded.

## **PRESENTATIONS**

### **Agile Port Program: TranSystems Corporation**

Mr. Ackerman introduced John Vickerman, Principal, and Blair Garcia, Associate and Vice President, of TranSystems Corporation.

(TranSystems presentation.)

Mr. Vickerman gave an overview of the Agile Port system. He referenced Ms. Blum's statement on the evolution of the Alameda Corridor and its potential privatization. The focus is to empower commercial and military freight into the Agile Port program. Mr. Vickerman presented background and statistics on the increase in growth of container traffic over the next ten years, and the lack of capability to handle the cargo.

Mr. Garcia reviewed past work TranSystems did with CCDoTT. He asserted the TranSystems programs promise a potential increase in port productivity of up to 200%. He added this is from preliminary data only – it has not yet been demonstrated.

Mr. Vickerman presented FY 2003 proposed work with CCDoTT related to American President Lines and the Alameda Corridor, Class 1 railroads, and port security. He emphasized the need to bring freight to inland facilities. A military exercise is included to demonstrate improved capability. Direct flatcar loading is proposed through an innovative load/offload offset concept called the KACI (Keeping America Competitive Intermodally) System.

LtGen. Wykle asked Mr. Vickerman if there is a ramp involved in the flatcar loading. Mr. Vickerman responded, yes, the entire train is instantly off ramped. Mr. Garcia added that reduces dwell time and improves flexibility for loading.

Mr. Ackerman stated the finances involved in these projects are tremendous. Mr. Vickerman responded Hyundai and Washington United Terminals are full paying partners.

### **HSS Technology: Band, Lavis and Associates, Inc.**

Mr. Ackerman introduced David Lavis, General Manager of Band, Lavis and Associates.

Mr. Lavis stated the most recent projects completed for CCDoTT were in the areas of High-Speed Waterjet Propulsors and Structural Loads. Band, Lavis has just completed Phase I of both of these projects and is starting Phase II the of Waterjet program. Hopefully, Phase II of the Structural Loads program will be approved soon.

(Band, Lavis presentation.)

Mr. Lavis reviewed the Waterjet program. He discussed the industry trends and current DOD interests. He explained that the lack of improved waterjet propulsion systems, along with the current poor understanding of ship structural loads, are the two major impediments to conserve fuel and structural weight that would otherwise allow fast ships to carry acceptable large payloads over long unrefueled distances at sea. Now that CCDoTT has allowed Band, Lavis to explore new concepts for waterjet propulsion this has paved the way for further improvements in waterjet efficiency and reduction in system size, density and weight. He went on to explain that most development work is being accomplished outside of the U.S. and that one of the goals of this CCDoTT program is to bring more development work within the U.S.

Mr. Lavis concluded by reviewing prior work accomplished by Band, Lavis for CCDoTT, including: (1) work with Stanley Associates on characterizing the state-of-the-art for fast ships, (2) work with Kvaerner Masa Marine on the Very High-Speed Trimaran, and (3) Ship concept design for the U.S. Navy's High-Speed Ship Innovation Cell at NSWC Carderock, which concluded that improved waterjets and structural load predictions were of critical importance for the way ahead.

### **Trimaran Program: SAIC and Kvaerner Masa Marine**

Mr. Ackerman announced that the main speaker for SAIC, Jalal Mapar, could not make it to this morning's session but that Dr. Igor Mizine would speak on the Trimaran. Mr. John Avis, President of Kvaerner Masa Marine will also speak on their part in this project.

Dr. Mizine explained he will address the technologies related to the Trimaran, Mr. Avis will follow with the programmatic aspects.

(SAIC presentation.)

Dr. Mizine gave a detailed description of the technological results of the Trimaran program. Among the developments reached to date are the conclusions that bigger side hulls allow the craft to split power. Waterjets have been determined to best suit the VHSST, with one in the side hulls and three in the center hull. The calculations and testing results provided to investigate hull-waterjet interaction effect and ship scale correlation factors have shown that there can be a 30% drop in resistance.

He went on to explain the trimaran niche is in large and very large High-Speed ships. These allow for cargo, passenger and storage areas relative to the payload. This is especially advantageous for military use.

Mr. Avis gave a presentation on prior work Kvaerner Masa Marine has done with CCDoTT. He continued with a review of the work planned with the D'Arcinoff Group, the end user for the technologies to be developed with this program. The new ship being designed will be a combination cruise and cargo ship. It will be a trimaran cruise ship with RO/RO capabilities. This ties in with the future Band, Lavis Structural Loads project and provides shipbuilding technology transfer. Construction is expected within the next five years.

This presentation was followed by a ten minute break.

### **HSS Lifting Body: Pacific Marine and Supply Co., Ltd.**

Mr. Ackerman introduced the next speaker, Mr. Steven Loui, President of Pacific Marine & Supply Co., Ltd.

Mr. Loui gave a brief background on the project underway. It started eight years ago through DARPA and ONR.

(Pacific Marine and Supply Co., Ltd. presentation.)

Mr. Loui reviewed current projects under construction at Pacific Marine. The new project is the development of the HYSWAC (Hybrid Small Waterplane Area Craft), the Navy SES (Surface Effect Ship) 200 with a lifting body. The HDV (Hybrid Deep Vee) 100 currently under construction has a design speed of 50 kts. and is expected to be launched November, 2003. The volume from the lifting body can also be used as a fuel tank.

CCDoTT funding has linked Pacific Marine's research with Dr. Hamid Hefazi at the CSULB College of Engineering. Pacific Marine has provided test data to Dr. Hefazi that validate programs initiated by Dr. Tuncer Cebeci. Dr. Hefazi's validation results have shown a 17% improvement in the lift to drag ratio of the Pacific Marine model.

The current CCDoTT project between Pacific Marine and the CSULB College of Engineering is the lifting body tests for a 2-1/2 ton scale model ship. Full scale will be a 160 ton ship being developed for ONR.

In addition to their CCDoTT projects, Pacific Marine is developing a trimaran. Mr. Loui explained the difference between the designs developed by Pacific Marine and those of SAIC / Kvaerner Masa is that the SAIC team is of the "long and skinny" school while Pacific Marine takes the "short and fat" approach. He continued with further project developments. Pacific Marine is also working with Mr. Stan Siegel on a San Diego commuter ferry. It is expected to be finished in the next 60 days.

**Inspection Technology and Goods Movement: CSULB / CITT**

Mr. Ackerman introduced Dr. Larry Mallon, Director of Research for CITT (Center for International Trade and Transportation) at California State University, Long Beach.

Dr. Mallon spoke on the Inspection Technology and Goods Movement projects currently underway for CCDoTT and gave a detailed presentation of conclusions to date.

(CITT Inspection Technology and Goods Movement presentations.)

The Inspection Technology project consists of a graduated series of laboratory experiments and eventual field demonstrations designed to test the hypothesis of an integrated inspection platform to meet the requirements of Federal inspection agencies. The FY 2001 research describes a general seaport inspection planning model designed to optimize the use of various inspection technologies including imaging, materials detection and container integrity. The FY 2002 research will incorporate a known sample structure experiment utilizing the same simulants to test the initial interoperability of three inspection platforms and the potential for automated inspection.

The Goods Movement project is based upon the formulation of a regional supply chain database comprised of common elements contained in electronic data interchange. The FY 2001 effort describes the regional supply chain planning model including vector flows comprising the major patterns of freight movement through Southern California. These include on-dock rail, contract rail, trans-loading, mini-landbridge, and store door movements to local consignees. The FY 2002 effort will incorporate commercial simulation models to measure the performance of a single freight flow (on-dock rail) against customer-driven requirements.

Dr. Mallon explained the IT program is moving away from a “rules based” system to container seals and data analysis. Major warehouses are moving to air freight, that traffic is not inspected as thoroughly as the U.S. mail.

In the Ports of Los Angeles and Long Beach shippers pay a price per container for the Alameda Corridor whether they use it or not. If there is no on-dock rail facility the Corridor is not used.

Current estimates are 50% of the freight from the Ports of LA/LB is absorbed in California and Arizona, 50% is distributed throughout the U.S. The IT focus is on supply chain velocity.

Dr. Mallon’s presentation was cut short due to time limitations.

**Collaborative Visualization: Maya Viz, Ltd.**

Mr. Ackerman introduced Mr. John Detwiler, Program Manager for Maya Viz., Ltd.

Mr. Detwiler reviewed the collaborative visualization software being developed for military logistical and supply chain use.

(Maya Viz, Ltd. presentation.)

Mr. Detwiler explained the term “decision community” is now being used as opposed to “collaboration”. Decision community more accurately describes the end users of the software.

The military advantage to using this type of program is that it saves time in prep work and strategizing. Once technology is in place human interaction becomes a barrier to movement. Maya Viz is developing tools to help the human processes.

Mr. Detwiler gave an interactive demonstration of the software, displaying simultaneous ability to identify geographical areas on a map and strategic port capabilities. He explained the advantages to this software are that it uses data integration technology to enable access to information, it is sharable/mutable/flexible, and it builds trust between parties.

Maya Viz has previously worked closely with the DARPA Information Awareness Office.

### **HSS Pacific Market: Manalytics International**

Mr. Ackerman introduced the final speaker, Mr. J. Douglass Coates, Principal of Manalytics International.

Mr. Coates gave an overview of prior work completed for CCDoTT on the potential of High-Speed trade in the transpacific market.

(Manalytics International presentation.)

Mr. Coates explained the studies performed by Manalytics concluded that the High-Speed Ship with an Agile Port concept could provide a low cost, fast speed alternative to air and conventional ship freight.

He pointed out, however, that adequate terminal movement is needed or the High-Speed Ship is pointless.

### **Discussions - Questions and Answers:**

Mr. Ackerman opened the session to questions and answers.

LtGen. Wykle asked Mr. Detwiler who would maintain the database needed for the software. Mr. Detwiler responded the question is for AT21 and JT21. A combination of TPFDD (Time-Phased

Force and Deployment Data) and APOD (aerial port of debarkation) data would be used. Data would also be taken from other sources. What drives the investment is determined by the use.

Adm. Herberger asked Mr. Detwiler about the use of classified vs. unclassified data. Mr. Detwiler responded that issue is not completely resolved. Maya Viz is focusing on the human processes now.

Adm. Herberger asked Mr. Coates why the Pacific was used for the studies as opposed to the Atlantic market. Mr. Wheatley responded the precursor to this study took place at a CCDoTT conference held at Carderock in 1998. The conference concluded the military will not buy and maintain a high-speed ship, but if there is commercial use the military would be interested. Fast Ship Atlantic was the only program at the time so the Pacific was initiated.

Adm. Herberger asked Mr. Coates why the study only involved cargo movement. Mr. Coates explained there is a huge market for goods. They are carried over long distances, many ports are utilized, and there is a huge volume of movement. The Atlantic market is much smaller. Mr. Avis added Kvaerner Masa Marine worked with Bath Iron Works in 1995 and decided the Atlantic market was not there. The Pacific market was the way to go. They found 1500 TEU ships at 32 kts. to be the optimum. Mr. Coates stated further research in that area will be in the next phase of the Manalytics study. Smaller ships are needed to go into small ports.

Mr. Ackerman asked Mr. Vickerman what is being done to finance the port expansion. Mr. Vickerman responded only traditional methods of approach are being used at this time. No infrastructure funding is foreseen.

LtGen. Wykle asked Mr. Vickerman about the number of container lifts per crane hour in Asian Ports versus U.S. ports. Mr. Vickerman responded the U.S. has 24-28 lph., it could get 30-35. With automation it could get up to 50 lph. He added right now there is a maximum of 6 cranes per ship, but in reality if more than 4 cranes are used there are diminished returns. More than 4 cranes interfere with each other and the on-dock traffic. Mr. Vickerman went on to explain about the development of a ship-in-a-slip plan where 3 to 4 cranes simultaneously unload a ship from each side of a slip. Problem areas are that the apron cannot flow any faster. Technologies are there but degradation of movement holds up the freight.

Discussion followed re cargo movement in Port of LA/LB vs. Hong Kong and Singapore. Mr. Vickerman stated LA/LB moves approximately 5,000 containers / per acre / year while Hong Kong can move 22,000. This is mainly due to three shifts moving cargo out of the yard.

Mr. Hinds asked if in Hong Kong the trucks come for any cargo or does all cargo go to an offsite location to determine final transit point. Mr. Vickerman responded trucks and trains get all the cargo. Selectivity is determined in-transit.

Dr. Mizine added a vertical lift in New York can cost \$120, whereas in Jacksonville it can be \$80. Handling costs are comparable to the capital costs. An alternative is less lifts for HSS with designs like RO/RO. Dr. Mizine explained a whole train can be done on Automated Guidance

Vehicles (AGVs). The train can come into the hull. This does not take a big modernization, just a rearrangement of the craft.

Ms. Venieris stated the statistics on container moves per crane hour in Asian ports cannot be compared with U.S. ports. In Hong Kong and Singapore there is a higher amount of trans-shipment cargos. Mr. Vickerman concurred 90% of Hong Kong's containers are trans-shipped, meaning the cargo is moved from ship to ship so movement is counted twice or three times for the same item. Ms. Venieris added that, combined with landside access and gate hours, gives and inaccurate picture. Mr. Vickerman responded even taking these into account the movement in Hong Kong and Singapore is still higher, a little over double the productivity of West coast U.S. ports.

Dr. Mizine asked Mr. Lavis what is the lead time for delivery of a 50k HP Axial waterjet unit. Mr. Lavis responded with four to five years, if adequately and continuously funded (which is not usually the case with the military). Mixed-Flow Waterjet Pumps of this size could be made by KaWeMA and other manufacturers within about two years. Such KaWeMa mixed-flow pumps are suitable for short-fat ships like Fast Ship Atlantic but not for vessels with slender hulls like the KMM trimaran. They also have an interest in manufacturing pumps of composite material to save further weight.

Mr. Avis asked Mr. Lavis if these are designed for commercial use only. Mr. Wheatley responded that there is no commercial market yet. Mr. Lavis added this is a slow growth field for commercial ships requiring high-power waterjets but this development is applicable to both commercial and military vessels. A commercial market will come with time.

Mr. Ackerman thanked everyone for participating and adjourned the morning session at 12:22 p.m.

*Minutes submitted by Carrie Scoville, 12/13/02.*