

ORENDA MARINE ENGINES / Trailer Traffic Control System



Student Edition



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01. Overview ::

- 1) This case study takes place in an alternate timeline, where events have progressed differently than in our own. Thanks to decisions made in the 1950s, Canada has a small but healthy Defense Industries Sector, which not only supplies our Armed Forces with modern equipment, but also exports to many aligned nations.
- 2) The Canadian Patrol Frigate Project (CPFP) was a procurement project undertaken by the Canadian Forces beginning in 1975 to find a replacement for the Mackenzie-class, Annapolis-class, Restigouche-class, and St. Laurent-class destroyers. The CPFP evolved into the Canadian Navy's Halifax-class frigate program, which saw 9 warships built at Saint John Shipbuilding during the early 1990s.
- 3) After the success of the CPFP, the Canadian government issued the next major shipbuilding initiative called the Maritime Sovereignty Protection Program (MSPP) which saw the design and construction of a highly versatile patrol vessel called the Mi'kmaq-class, 20 of which have been ordered by the Canadian Forces, and 10 for the Coast Guard. Also on the books are export orders from 5 other nations.
- 4) A partner in the CPFP and MSPP programs is Orenda Marine Engines, a subsidiary of Orenda Engines, a famous Canadian aircraft engine manufacturer located in Ontario. Orenda Engines has produced the engines for the highly successful Avro Arrow series of jet fighters since the 1950s. Orenda Marine Engines was created in the 1970s to develop engines for the marine sector, which encompasses defense, Coast Guard, civilian, and the export market.



01. Overview ::

- 5) Located in Saint John, New Brunswick since 1979, Orenda Marine Engines produces a series of marine diesel engines of various sizes and capacities. The current range of engines comprises 5 different models sharing many common components. At the moment, priority production is of the OME 20V M90 Milspec diesel engine for the MSPP, but production of other products continues as schedules permit. As a world leader in design and quality, the production line is constantly busy supplying the global demand. Products consist of entire engines, or subcomponents used by other manufacturers.



- 6) Components for OME's family of marine diesels are sourced from various suppliers throughout North America. They arrive by transport truck / trailer to OME, where the trailers are dropped off in a secure Parking Area. Due to a lack of storage space, trailers are retained as needed until components are used, at which time the trailers are released back to the appropriate Shipping Companies.



- 7) Once at OME, trailers need to be "shuttled" as required between the Parking Area, the Plant, and the Warehouse. OME has a contract with a local trucking company who supply the specialized rigs (called Terminal Tractors) and drivers. Tracking movement of trailers by OME is accomplished via an old process/system called the Trailer Traffic Control System (TTCS).



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8) The increase in business over the years has resulted in growing pains. A process that was once simple to maintain has grown to such complexities that many problems are apparent. Also, the old Trailer Traffic Control System (TTCS) is so outdated, patched, broken, and inaccurate that it is practically useless. OME has decided to formally investigate the existing process, improve and correct, and implement a new TTCS to automate the process as much as possible.



9) Your consulting firm has been invited to undertake this study, with the goal of submitting a design and proposal for the new TTCS.

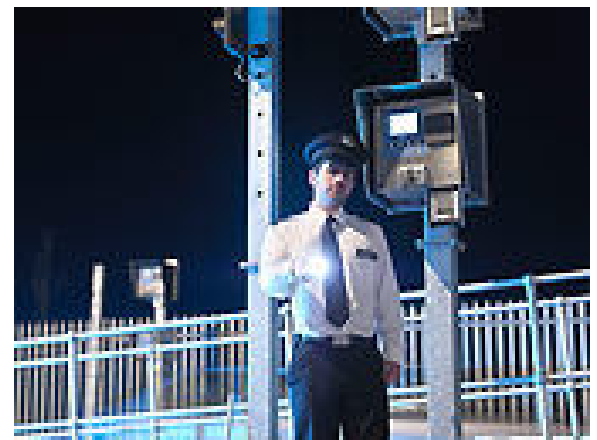


02. Trailer Arrivals ::

- 1) When trailers containing components arrive at the OME facility, they report to the Dispatch Office where they submit their Bill of Lading. The Dispatcher checks the trailer number against the Bill of Lading, and checks the door seal to ensure it is unbroken and matches the one on the Bill of Lading. If anything is incorrect, the driver is refused entry until the issue is resolved at a higher level, typically by the Production Manager. Once a trailer is cleared for acceptance, the Dispatcher on duty assigns a numbered spot in the secure Parking Area for the driver to park the trailer. Trailer Information along with Location is recorded in the system.



- 2) The Dispatch Office is open from 0600 to 1800 Monday through Friday, with the Dispatchers working staggered shifts. Outside of those hours, Dispatchers are not on duty, and a Security Guard logs incoming arrivals. The guard checks the trailer number against the Bill of Lading, and checks the door seal to ensure it is unbroken and matches the one on the Bill of Lading. If anything is incorrect, the driver is refused entry and will have to return during normal business hours to resolve the anomaly. If everything is correct, the driver leaves the Bill of Lading with the guard, who creates an entry in the After Hours Arrival Log. Drivers proceed into the Parking Area, and generally leave their trailer in the first free spot they find.



03. Trailer Movements ::

- 1) Trailer movements are caused by a request from the Plant for components, or a request from the Plant for an empty trailer to move finished products to the Warehouse, or a request from the Warehouse or Plant for an empty trailer to ship finished products to end customers.
- 2) Requests are made by the foremen of the various Docks via telephone to the Dispatch Office. Each “Dock” consists of a number of “Bays”. When a component is requested, the Dispatcher has to locate an appropriate trailer, identify an available driver by radio, who then shuttles the trailer to the Dock/Bay. The driver may then wait while the trailer is unloaded (times can vary), or they may unhitch to perform other tasks. There is no exact procedure in place; it is left at the discretion of the driver.
- 3) If a driver waits for the trailer to be unloaded, he/she returns with it (empty) to the Dispatch Office who then tells the driver where to place it in the lot. Trailers may return to different locations from where they left.
- 4) If a driver chooses to not wait for a trailer to be unloaded, he/she radios the Dispatch Office to inform the Dispatchers of availability for other tasks. Usually, until reassigned, they remain at the Dock until instructed otherwise.
- 5) If a trailer is at a Dock without a driver, the Dock Foreman will contact the Dispatch Office when they want the trailer removed.



02. Trailer Departures ::

- 1) Trailers are the property of the various Shipping Companies. By agreement, OME is allowed to keep a trailer for one week. After that time, daily detention penalties are accrued consisting of \$50 per day for the first week over, and \$75 per day thereafter.
- 2) OME is prepared to absorb some of these costs and write it off to “cost of storage” (cheaper than renovating/expanding the existing warehouse), however, they are interested in reducing costs incurred due to inefficiencies or oversights.
- 3) OME also likes a certain number of empty trailers on hand to move finished products from the Plant to the Warehouse. Also, trailers are required to ship finished products to end customers.
- 4) It is the responsibility of the Dispatcher to juggle the above issues, and decide when to release trailers back to the Shipping Companies.



04. Existing Systems ::

- 1) The current Trailer Traffic Control System (TTCS) is an old DOS based application that has been in place for 20 years. In all aspects it is outdated, and is in such a state that the reality is that many people have reverted to manual or mental processes. Nothing would be gained from exploring the features of this old system. OME is interested in a custom solution built from the ground up, and does not wish to migrate anything from the old system.
- 2) The Production Plant has a Materials Management System that is beyond the scope of this study. Basically, you can assume they know exactly all components that are (supposed to be) “on site”, but not “where” they are located. When the Plant needs a trailer containing a shipment of pistons, it will be the job of the new TTCS to locate the correct trailer and deliver it to the requesting dock.



05. Key Personnel ::

1) Monica Munoz : Production Manager (played by Sybil deGrasse)

The Plant and Warehouse are her jurisdiction. She is in charge of keeping the production lines running, and finished products retained in the Warehouse until released to end customers. The Dock Foremen report to her.

2) Jose Perez : Traffic Administrator (played by Joe Marriott)

He likes to say he's "in charge of everything with wheels". The Dispatchers and Terminal Tractor Drivers report to him.

3) Chris Patstone : Dock Foreman (played by Sybil deGrasse)

Each Dock has a Foreman. They are the "interface" between "the yard" (the trailers) and "the line" (Plant and Warehouse). They report to Monica Munoz.

4) Eduardo Concepcion: Dispatcher (played by Joe Marriott)

One of two, is responsible for the daily movement of trailers. They are the "interface" between the Dock Foreman and the Drivers. They report to Jose Perez.

5) Charles Norris: Terminal Tractor Driver (played by Dave Morris)

Unionized employee of Acadia Trucking Ltd., contracted to OME. Technically, all TT Drivers report to Jose Perez, but they also report to a supervisor at Acadia Trucking Ltd.