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| Trailer Traffic Control System  *An analysis by Beemo Industries* | | | |
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# Executive Summary

The attached report provides a detailed analysis and evaluation of the current Trailer Traffic Control System (“TTCS”) currently implemented at Orenda Marine Engines (“OME”). It examines any current problems that are caused by the TTCS not being able to keep up with the rapid increase of traffic at OME, as well as any potential problems that may arise due to the same reasons. It is to provide an overview of our understanding of the aforementioned system, as well as our views on potential areas for improvement.

Our research reveals that lack of proper system upgrades and maintenance have resulted in the current TTCS being left virtually unused. In many instances, temporary records are being kept on paper and many other important details are left up to the memory of the employee responsible for the information. These methods of storing information have taken the place of the system due to the many inaccuracies that exist, as well as the complexities of the process that the system has been unable to absorb.

Further investigations show that said method of recording important information results in many errors, further revealing the need for an all new TTCS to be built to cater to the current needs, as well as incorporate flexibility to accommodate growth and change.

Moreover, communication between departments is also an area of concern. Because methods of communication are not subject to a standard process, an overwhelming amount of crucial communications are being delayed, resulting in dependant actions being completed behind schedule or outside of a reasonable time frame. Automating as much as possible using the new TTCS will cut down on wasted time and maximize productivity.

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|  |  | Beemo Industries |

Our vision is to aid in the success of Orenda Machine Engines. The failures and limited capabilities of the current Trailer Traffic Control System have caused many avoidable issues within OME. Investing in the implementation of a new system would minimize costs associated with inconsistencies and oversights that currently exist, as well as improve overall job performance. We look forward to working with you in the near future to increase the effectiveness of the Trailer Traffic Control System.

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# Analysis

## Trailer arrivals

### Business Hours Arrivals

During regular business hours, an externally employed External Driver ("the External Driver") will arrive at the dispatch office with a trailer containing components order by OME.

Upon arrival to the facility, the External Driver in question is to present the Bill of Lading to the Dispatcher.

This Bill of Lading contains information on the trailer itself, most notably; the trailer number, the trailer's seal number, the contents of the trailer, and the shipper company.

At this time, the Dispatcher is most concerned with the trailer number and the seal number. The Dispatcher will take this Bill of Lading (“the Bill”) and verify himself that the trailer number and the seal number are a match with the Bill, while also checking for any damage to the seal.

Assuming nothing is amiss, the Dispatcher takes note within the system of all aforementioned fields on the Bill, as well as the current date (Trailer Arrival Date field), and the listed contents of the trailer (Description field). The Dispatcher is then responsible for locating an empty spot within the lot for the trailer to be left, which is also entered into the current system. Once complete, the trailer is approved entry and the External Driver is granted access to the lot. The External Driver leaves the trailer in the pre-decided spot, and the trailer admittance process is complete.

#### Uncovered Issues

There is currently no method being used for the organization of the trailers in the lot. At the moment trailers are essentially parked where ever a spot is available. The Dispatcher attempts to create some semblance of order but that is not always possible, especially with trailers that show up at night. (see *After Hours Arrivals* (pg*.7*)) It tends to make it slightly difficult as trailers are not relocated in the morning. The issue that arises here is the difficulty in locating specific trailers if they are not in their designated spot (See *Trailer Lost* (pg.32)).

### Day Time Arrival Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 27/09/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Day-time Arrivals | | **Use Case Type: SA** | |
| **Use Case ID** | ALPHA-001 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Dispatcher | | | |
| **Other Participating Actors** | External Driver | | | |
| **Other Interested Stakeholders** |  | | | |
| **Description** | This use case describes the event of a truck delivering a trailer to the compound. The driver for the delivery truck must present a Bill of Lading so that the trailer and seal can be checked. This will cover the event of both trailer and seal matching bill, and not matching bill. | | | |
| **Precondition(s)** | Truck driver is on the way with a trailer during day hours. | | | |
| **Trigger(s)** | Triggers when delivery driver reaches the dispatch office with a trailer. | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| Step 1: Truck driver meets with dispatch officer who will get the Bill of Lading from the driver.  Step 3: Dispatch officer confirms everything matches correctly and that seal is not broken.  Step 5: Driver is told to go to a spot which is noted by the dispatcher. | Step 2: Dispatcher will check the trailer number and the seal number to make sure they are correct as well as intact seal.  Step 4: None.  Step 6: Location is entered into system by dispatcher. | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
|  |  | | |
| **Conclusion** | Delivery driver is granted access to compound and the trailer is put into a location which is by the dispatcher. | | | |
| **Postcondition** | Trailer is now in our possession, ready for any use required of it. | | | |
| **Business Rules** | * Bill of Lading must be presented. * Trailer and seal should match the bill. * Any discrepancies with the bill and trailer are handled by the production manager. | | | |
| **Implementation Constraints and Specifications** | * This use case only to be used during day-time hours Monday-Friday 0600 – 1800. * Frequency: It is estimated that this use case will be used 65 times on average. | | | |
| **Assumptions** |  | | | |
| **Open Issues** | None | | | |

### Day Time Arrival Use Case Diagram



### After Hours Arrivals

When the External Driver shows up at the dispatch office after hours, he is met by a security guard. This security guard will take the External Driver’s Bill of Lading and in the same fashion as the Dispatcher, and much like during the day, will check the seal number, trailer number and ensure the seal is still intact.

If everything is verified and correct, the Security Guard will note the date, time, trailer number, seal number, his name, and any comments relating to the trucks arrival. This is all written on a sheet of paper called the After Hours Arrival Log. The External Driver is then granted access and is told to park wherever he is able to find a spot, and unlike during business hours, this is not documented upon trailer arrival.

The After-Hours Arrival Log is left by the Security Guard and picked up by the Dispatcher upon arriving in the morning. Currently, it is the responsibility of the Dispatcher to go onto the lot himself in the morning and locate any trailers written on the After Hours Arrivals Log to obtain the spot number.

#### Uncovered Issues

Currently, when the External Driver is granted access to the lot, the location of the trailer is both left to his discretion and not documented. When arriving in the morning, the Dispatcher has a potentially time consuming task that needs to be dealt with immediately. The time spent locating trailers in the morning could be better spent elsewhere.

### Night Time Arrivals Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 27/09/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Night Arrivals | | **Use Case Type: SA** | |
| **Use Case ID** | ALPHA-002 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Security | | | |
| **Other Participating Actors** | External driver | | | |
| **Other Interested Stakeholders** | Dispatcher | | | |
| **Description** | This use case describes the event of a truck driver arriving after hours to make a trailer delivery. Use case covers the entire scenario of the truck either gaining access to complete delivery or being denied access until normal hours. | | | |
| **Precondition(s)** | Truck driver arrives after hours. | | | |
| **Trigger(s)** | Triggers when a truck arrives with trailer after normal hours | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| Step 1: Driver arrives at compound with trailer and presents his Bill of Lading to the security guard.  Step 3: Security guard will compare trailer number and seal number with the Bill.  Step 5: Confirms matching seal and trailer numbers, granting the driver access to park the trailer in the lot.  Step 7: During regular hours dispatcher will find the trailers to find out what spot they are in. | Step 2: None  Step 4: None  Step 6: Security guard writes in afterhours log the information from the trailer.  Step 8: Trailer lot numbers are written down by dispatcher when found. | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
| Step 5: Trailer number or seal number do not match. Seal possibly broken.  Step 7: Doesn’t happen | Step 6: Driver advised to come back during regular hours.  Step 8: Doesn’t happen | | |
| **Conclusion** | Use case concludes when the trailer is either granted accessed and is parked, or the driver is advised to come back during regular hours. | | | |
| **Postcondition** | Trailer arrival is documented in the afterhours log. | | | |
| **Business Rules** | * Trailer number and seal number must match Bill of Lading. * Seal cannot be broken. | | | |
| **Implementation Constraints and Specifications** | * Use case available for afterhours use. | | | |
| **Assumptions** | None | | | |
| **Open Issues** | No record of rejected trailers and no record of where any trailer may park. | | | |

### Night Time Arrivals Use Case Diagram



### Trailer Rejections

In the event the Dispatcher finds an error in his verification process, the trailer is temporarily denied entry to the lot. While the Production Manager is responsible for resolving issues, it is up to the Dispatcher to be sure records are updated accordingly once discrepancies are resolved. In the event that the Bill of Lading does not match the trailer and/or seal number, at the permission of the Production Manager, the Dispatcher is to update both the system and the Bill to reflect the actual values. Likewise, in the event the seal has been breached, once the contents have been approved, the trailer is to be re-sealed with an OME provided seal, and all records are to be updated. If issue cannot be resolved, the trailer is rejected permanently.

When the Dispatcher locates a potential problem, assuming he has no other tasks waiting on his input for the length of time needed to resolve the issue, he will contact the Production Manager by phone and notify her of the problem. In this scenario, once all issues are dealt with and records updated and the Production Manager deems the trailer fit to enter the lot, the process for admittance will resume as normal. This scenario, while ideal, may not be all that common due to the high traffic of incoming trailers to OME each day.

Alternatively, if the Dispatcher has other trailers waiting to be admitted at the Dispatch office, he must direct the External Driver to park the trailer, usually within the lot, and the External Driver is then responsible for locating the Production Manager via the Administration Office. In this scenario, once all issues are cleared, the External Driver is to return to the dispatch office once again and the process continues as intended.

Trailer rejections at night are also a scenario that can arise. When the Security Guard finds an inconsistency, he is merely instructed to inform the External Driver to return the next day during business hours to have it resolved. The Security Guard is not responsible for documenting these scenarios in any way.

#### Uncovered Issues

Due to the constant flow of traffic at the dispatch office, trailers are likely to be sent into the lot and the External Drivers, in this case, are left to locate help on their own. While they are informed that the Administration Office is where they will need to go, the process is all-together inefficient. Additionally, there is no guarantee the Production Manager will be available at this time, and may not be available for some time. The potential inconvenience to OME as well as the External Driver is time-consuming and not at all ideal.

Concerning the approach to After-Hours rejections, the lack of any record is a potential problem as well. Important shipments that had inconsistencies or other disagreements with the admittance requirements will be rejected and there will be no record that is was ever at the facility. Potentially, the Production Manager could be waiting on a trailer that has already arrived, been rejected and has yet to return.

### Day Time Arrival Rejection Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 01/10/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Rejected Trailer | | **Use Case Type: SA** | |
| **Use Case ID** | ALPHA-003 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Dispatcher | | | |
| **Other Participating Actors** | External Driver  Production Manager | | | |
| **Other Interested Stakeholders** |  | | | |
| **Description** | This use case describes the event of a trailer being rejected and the steps taken for resolution. | | | |
| **Precondition(s)** | Truck driver arrives and there is a discrepancy with the Bill of Lading and the trailer. | | | |
| **Trigger(s)** | A discrepancy arises with Bill and trailer. | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| Step 1: Truck driver arrives with trailer.  Step 3: Dispatcher gets Bill of Lading from driver and checks to make sure everything matches and seal is not broken.  Step 5: Dispatcher notices issue.  Step 7: Production manager resolves issue and allows the driver to park trailer. | Step 2: None  Step 4: None  Step 6: Contact production manager to handle situation.  Step 8: Trailer now in lot, and entered into system | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
| Step 5: Dispatcher notices issue, too busy to help resolve issue. | Step 6: Dispatcher advices truck driver to park somewhere and to get in touch with production manager to help resolve issue. | | |
| **Conclusion** | This use case concludes when the truck driver has to deal with production manager. | | | |
| **Postcondition** | Rejection will be handled by production manager, no longer affects system until rejection is dealt with (use case ALPHA-001 Day-time Arrivals takes effect) | | | |
| **Business Rules** | * Production manager must handle this situation | | | |
| **Implementation Constraints and Specifications** | * Use case must be available during all regular hours | | | |
| **Assumptions** | * Driver always can get in touch with production manager | | | |
| **Open Issues** | There may be potential issues with when an external driver is advised to just park the trailer in the compound and to find the production manager himself, creates security issue. | | | |

\**Day rejection are covered in Use Case ALPHA-002 Night Arrivals*

### Day Time Arrival Rejection Use Case Diagram



## Trailer Movements

### Request for Components (Pre-Planned)

At the beginning of each work day, the Production Manager is responsible for providing a preliminary list of all components needed throughout the day, when they will be needed, and which dock the trailer will be needed at. Currently, this “schedule” is recorded by the dispatcher by either memory or hand written memo.

Before the component is needed, the Dispatcher locates a trailer that contains the components in question. He does this using the information entered during Trailer Arrivals (Pg.). He notes the spot number, which he will later give to the driver. If no trailers exist on the lot with the needed components, the Dispatcher will call the Production Manager, who will need to look into the issue (out of scope).

When the time approaches that a component is needed at a dock, the Dispatcher radios any driver he believes is available. There is currently no official record of which drivers are busy and which are available, so the process of locating a driver to do the work is based entirely on the Dispatchers memory. Once a driver has been allocated to the task, he tells the driver where to find the trailer (via spot number), and where the trailer needs to be delivered to. The driver travels to the location of the trailer, and transports it to the appropriate dock. The driver is not concerned with verifying trailer numbers or checking seals before transportation. (In the event that the trailer is not in its designated spot, see *Trailer Lost* (pg.32)

Once arrived at the dock, the Dock Foreman is responsible for verifying that the Purchase Order (“P.O”) matches the content of the trailer. If no issues are found, the entire trailer is to be emptied.

Once the trailer is dropped off, it is currently left to the driver’s discretion whether or not he needs to radio the Dispatcher to say he is done his task. If the driver believes the unloading process will be quick, he has the choice to wait. Ideally, if he thinks it will take some time, he is to radio the Dispatcher for work. The “Request for Component” scenario is considered complete when the Driver leaves the dock.

#### Uncovered Issues

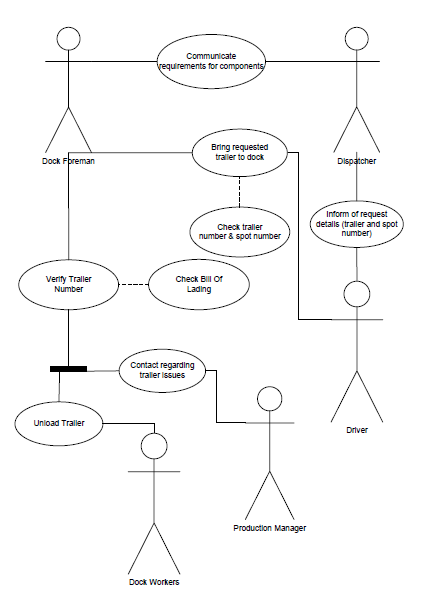
Currently, the “schedule” is logged manually or memorized by the Dispatcher. Requests for components are at high risk of being forgotten and overlooked. The time spent trying to recover ground on backed-up requests due to inattention or forgotten information is essentially time needlessly wasted.

Moreover, there is currently no way for the Dispatcher to keep track of Drivers schedules/tasks other than his own memory or written documentation. When a driver brings a trailer to the dock to be unloaded, they are asked to radio the Dispatcher for a new task if the unloading process is going to take a long amount of time. Otherwise, if they feel or are told it will be quick (i.e. 15 minutes), they have the option to wait with the trailer and return it to the lot when completed. Since the Dispatcher has no easy way of keeping track of every Driver, time is being lost with some driver waiting longer than the suggested time. This causes multiple problems, including a slow in the transportation of trailers, as well as complicating the Dispatchers job of locating “available” Drivers.

### Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 27/09/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Trailer request | | **Use Case Type:SA** | |
| **Use Case ID** | BETA - 001 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Dock Foreman | | | |
| **Other Participating Actors** | Dispatcher  Truck Driver | | | |
| **Other Interested Stakeholders** | Production Manager | | | |
| **Description** | This use case describes an event when a request is made for parts by the dock foreman to the dispatcher. | | | |
| **Precondition(s)** | Dock foreman contacts dispatcher with request for a trailer that is sitting in the lot. | | | |
| **Trigger(s)** | Dock foreman makes trailer request. | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| **Step 1:** Dock foreman creates report for parts needed for dispatcher.  **Step 3:** Dock foreman contacts dispatcher with requests for daily activities.  **Step 5:** Dispatcher will memorize when the parts are needed at the loading bays and at what time.  **Step 7:** Dispatcher will verify the trailer information and contact driver with info for pickup.  **Step 9:** Driver will pickup and delivery the trailer to appropriate dock.  Step 11: Dock foreman will ensure trailer is correct.  Step 13: Trailer gets unloaded. | **Step 2:** None  **Step 4:** None  **Step 6:** Dispatcher memorizes this information  **Step 8:** Dispatcher checks trailer info on system record.  Step 10: None  Step 12: Verification done by comparing Bill of Lading.  Step 14: None | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
| Step 13: If not valid contacts production manager. | Step 14: None | | |
| **Conclusion** | This use case concludes when a trailer is successfully delivered. | | | |
| **Postcondition** | Trailer has been delivered, parts have been removed. Trailer is now ready removal. | | | |
| **Business Rules** | * Dock foreman must have list of parts needed for the day. | | | |
| **Implementation Constraints and Specifications** | * Use case must be available during all regular hours * Frequency: It is estimated that the use case will be used approximately 100 times a day. | | | |
| **Assumptions** | * Trailer is in lot | | | |
| **Open Issues** | None | | | |

### Use Case Diagram



### Request for Components (Not Planned)

If at any point during the day the Production Manager discovers they need a component that was not mentioned in the request sent in the morning, the first step is contacting the Dispatcher. Assuming they get through to the Dispatcher in a timely manner, the Dispatcher will add this new request to the schedule and proceed with it as he normally would.

#### Uncovered Issues

This scenario only works when the Dispatcher is readily available. However, due to a constant flow of incoming traffic, as well as balancing all the other requests and Drivers, the Production Manager will occasionally experience difficulty in reaching the Dispatcher.

\*\*For Use Case Diagram, see *Request for Components(Morning Plan*) (Pg. 18)

### Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 02/10/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Trailer Request Unplanned | | **Use Case Type: SA** | |
| **Use Case ID** | BETA-006 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Dock Foreman | | | |
| **Other Participating Actors** | Truck Driver  Dispatcher | | | |
| **Other Interested Stakeholders** | Production Manager | | | |
| **Description** | This use case describes the event of the warehouse needing a trailer that was not requested during the morning with the regular request. | | | |
| **Precondition(s)** | There is a need for a trailer outside of morning request. | | | |
| **Trigger(s)** | The dock foreman needs a trailer that wasn’t previously requested. | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| Step 1: Dock foreman contacts dispatcher with a need for a trailer that wasn’t requested in the morning.  Step 3: Truck driver gets trailer and brings it to the appropriate bay.  Step 5: Dock foreman will ensure trailer is correct.  Step 7: Trailer gets unloaded. | Step 2: Dispatcher contacts driver to get a trailer delivered.  Step 4: None  Step 6: Verification done by comparing Bill of Lading.  Step 8: None | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
| Step 5: If not valid contacts production manager.  Step 7: Doesn’t happen. | Step 6: None  Step 8: Doesn’t happen. | | |
| **Conclusion** | This use case concludes when a trailer is delivered, or when it is determined that reaching the dispatch office is not possible until the next business day | | | |
| **Postcondition** | Trailer is delivered, or dispatch office was too busy. | | | |
| **Business Rules** | * Trailer is available | | | |
| **Implementation Constraints and Specifications** | * Use case must be available during all regular hours. | | | |
| **Assumptions** | * Always can contact dispatcher | | | |
| **Open Issues** | Issues would be with having problems trying to get in touch with the dispatcher. | | | |

### Request for an Empty Trailer at the Dock

When the Dock Foreman requires an empty trailer at one of the bays, his first step is to call the Dispatcher with two pieces of information; the dock the trailer needs to be at, as well as the shipping company that is coming to retrieve the trailer once filled. The second piece of information is crucial, as all trailers are under our responsibility to be returned to the correct facilities. The Dispatcher must also find out which trailer we have had the longest. This is done by logging into the system and manually counting the days since we’ve had it (system will display arrival date, added during Trailer Arrivals (Pg.4). Trailer rentals increase in price at both one week of possession and two weeks of possession, and so the Dispatcher attempts to return the trailer that has been on the lot the longest, as it costs more to keep than newer trailers

The Dispatcher locates the appropriate trailer information using the current TTCS. He then forwards this information to an available driver via radio. The Driver then drives to the spot given to pick up the trailer and then transports the trailer to the dock. Once the trailer is at the dock, the Driver radios the Dispatcher for additional work and leaves the dock.

#### Uncovered Issues

Many of the issues with this scenario are comparable as *Request for Components* (Pg.15), including manual tracking of driver schedules and difficulties contacting the Dispatcher. A new issue that may arise is the inability or difficulty of finding a trailer owned by a specific company. Whether keeping one on site has been an oversight, or the trailer is not where it is supposed to be, the end-product can’t be loaded on until this specific trailer is found. (see also *Lost Trailer* (pg.32))

### Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 30/09/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Empty Trailer For Product | | **Use Case Type: SA** | |
| **Use Case ID** | BETA-004 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Dock Foreman | | | |
| **Other Participating Actors** | Internal Driver  Dispatcher | | | |
| **Other Interested Stakeholders** | Production Manager | | | |
| **Description** | This use case describes the event of needing an empty trailer for use. The general use of this use case is for when a product is finished and is prepared for shipment. | | | |
| **Precondition(s)** | Product is ready for shipment. | | | |
| **Trigger(s)** | Dock foreman has product that needs to be prepared for shipping. | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| Step 1: Warehouse completes the production of product and is ready to prepare it for the customer.  Step 3: Dock foreman contacts dispatcher to get a driver to bring an empty trailer to the bay.  Step 5: Dispatcher finds a trailer belonging to a specific company so that it makes shipping the trailer appropriately easier.  Step 7: Dispatcher finds an available driver and has them pick up a trailer to deliver to bay.  Step 9: Trailer is delivered then filled with product. | Step 2: None  Step 4: None  Step 6: None  Step 8: Dispatcher has to locate a driver available manually, sends them to get and empty trailer.  Step 10: None | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
|  |  | | |
| **Conclusion** | Use case concludes when trailer is delivered. | | | |
| **Postcondition** | Trailer is delivered to appropriate loading bay. | | | |
| **Business Rules** |  | | | |
| **Implementation Constraints and Specifications** | * Use case available during all regular hours. | | | |
| **Assumptions** | * Trailer is not already at location * Empty trailer always available | | | |
| **Open Issues** | Finding drivers is not as easy as it should be sometimes. | | | |

### Use Case Diagram



### Returning a trailer to the lot

When the Dock Foreman needs a trailer stationed at a dock to be returned to the lot, whether it’s empty or filled with end product to be picked up at a later date, the process is the same. The Dock Foreman starts by informing the Dispatcher via telephone that a driver is required to move a trailer. The Dock Forman tells the Dispatch the location of the trailer, as well as the trailer number, seal number (if trailer is filled with end product), and the contents (whether empty, or filled with end product). After updating the system to reflect the changes, the Dispatcher then needs to locate an available driver to retrieve the trailer. Once a driver has been contacted with the appropriate information, he brings it back to the lot and radios the Dispatcher to update the spot number.

#### Uncovered Issues

Many of the issues with this scenario are comparable as *Request for Components* (Pg.15), including manual tracking of driver schedules and difficulties contacting the Dispatcher.

### Use Case Scenario

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author** | Josh Gravel | | **Date** | 30/09/2012 |
| **Version** | 1.0.0 | |  | |
| **Use Case Name** | Request To Remove Empty Trailer | | **Use Case Type: SA** | |
| **Use Case ID** | BETA-003 | | **Business Requirements**  **System Analysis** | |
| **Priority** | HIGH | |
| **Source** | Requirement | | | |
| **Primary Business Actor** | Dock Foreman | | | |
| **Other Participating Actors** | Internal Driver  Dispatcher | | | |
| **Other Interested Stakeholders** | Production Manager | | | |
| **Description** | This use case describes the event of a driver being requested for empty trailer removal. | | | |
| **Precondition(s)** | Dock foreman makes needs a trailer removed from one of the docks. | | | |
| **Trigger(s)** | Foreman contacts dispatcher to remove a trailer. | | | |
| **Typical Course of Events** | **Actor Action** | **System Response** | | |
| Step 1: Foreman gets hold of the dispatcher for trailer removal.  Step 3: Driver picks up trailer and puts it in any free spot in the lot.  Step 5: New spot is determined by the dispatcher. | Step 2: Dispatcher finds an available driver and sends him to remove trailer.  Step 4: None  Step 6: New spot is recorded. | | |
| **Alternate Courses** | **Actor Action** | **System Response** | | |
| Step 1: Driver is still located at bay. Is already available to remove the trailer. | Step 2: None | | |
| **Conclusion** | This use case ends when the empty trailer is put back into the lot. | | | |
| **Postcondition** | Empty trailer has been removed from the dock and is now parked in the lot awaiting either use in the future or to be returned to the owning company. | | | |
| **Business Rules** | * Trailer must be empty | | | |
| **Implementation Constraints and Specifications** | * Use case available during all regular hours. | | | |
| **Assumptions** | * Trailer is always empty * There is room in the lot to accommodate the trailer(s) | | | |
| **Open Issues** | Finding drivers can sometimes be more difficult than it needs to be. | | | |

### Use Case Diagram



## Trailer Departures

### Empty Trailer Departure

In this scenario concerning departure of an empty trailer, the dispatcher must first find out which trailer we have had the longest. This is done by logging into the system and manually counting the days since we’ve had it (system will display arrival date, added during Trailer Arrivals (Pg.4). Trailer rentals increase in price at both one week of possession and two weeks of possession, and so the Dispatcher attempts to return the trailer that has been on the lot the longest, as it costs more to keep than newer trailers. The Dispatcher also ensures that the departing trailer is from the same company that is coming to retrieve that trailer; this is also logged in the system. After the departing trailer has been determined the Dispatcher waits for the External Driver to arrive with a regular delivery. At this point during the arrival, the Dispatcher informs the External Driver of the location of the trailer to be picked up. The External Driver is responsible for locating this on his own. An empty trailer is not sealed and as such does not require a bill of lading. The trailer leaves the lot with no verification, and the Dispatcher removes the now departed trailer from the System.

#### Uncovered Issues

Issues with this scenario include the method of determining how long a trailer has been in the compound. The main issue is that rental time and rental cost are calculated manually. This is both inaccurate and time consuming, especially if done many times a day.

Moreover, there is currently no way of informing the Dispatcher that a trailer has (or is about to) increase in rent price. If it were brought to the attention of the Dispatcher, he could possibly have it removed before it increases in price (assuming it is not a necessary trailer).

There may also be a security issue with outside drivers entering the OME compound. Currently when an External Driver arrives to retrieve a trailer they are let into the facility themselves. Allowing a non-employee to access the lot without supervision increases risk of theft, as well as the margin for error. Also, since empty trailers are not verified on the way out, and External Driver could easily take the wrong trailer and no one would be aware for quite some time, which could cost both time in locating the trailer, and money for rentals.

### Full Trailer Departure

In this scenario concerning departure of a trailer full of end product, the External Driver arrives at the Dispatch office, at which point the Dispatcher informs the External Driver of the location of the trailer to be picked up. The External Driver is responsible for locating this on his own.

If the trailer is located at a dock, the External Driver receives a Bill of Lading from the Production Manager. After all has been verified to be correct (trailer number, seal number) the External Driver is free to leave, and the Production Manager contacts the Dispatcher to update the system to reflect the departure of the Trailer.

However, if the trailer is in the lot, the External Driver retrieves it himself with direction from the Dispatcher. Once he locates the trailer and attaches it, he travels back to the Dispatcher, where he receives a Bill of Lading. After all has been verified to be correct (trailer number, seal number) the External Driver is free to leave, and the Dispatcher updates the system to reflect the departure of the Trailer.

An empty trailer is not sealed and as such does not require a bill of lading. The trailer leaves the lot with no verification, and the Dispatcher removes the now departed trailer from the System.

#### Uncovered Issues

There may be a security issue with outside drivers entering the OME compound. Currently when an External Driver arrives to retrieve a trailer they are let into the facility themselves. Allowing a non-employee to access the lot without supervision increases risk of theft, as well as the margin for error. Also, since empty trailers are not verified on the way out, and External Driver could easily take the wrong trailer and no one would be aware for quite some time, which could cost both time in locating the trailer, and money for rentals.

## Miscellaneous Scenarios

### Component Needed - Emergency

In the event that the production needs a part on short notice, they will first contact the Dispatcher with information regarding which part they need. Once receiving the part information the Dispatcher will locate which trailer in the facility contains the part that is needed. Once the Dispatcher locates which trailer the part is in he will contact the Production Manager and meet with them at the trailer location.

Once they arrive at the location of the trailer the dispatcher and the Production Manager will break the seal on the trailer and enter the trailer. The Production Manager will then remove the part they need. Once the part is removed from the trailer then the Dispatcher will seal the trailer with a new seal. The Production Manager will then return with the part to where it is needed. The Dispatcher will update the Bill of Lading and the System with what parts the trailer now contains, as well as the new seal information.

#### Uncovered Issues

While this situation may not be ideal, it is needed in the case of emergencies. The time spent by both the Dispatcher and the Production Manager could be much better spent; however, such situations are currently unavoidable due to problems elsewhere.

### Trailer Lost

In the event that a trailer cannot be located by a driver, it is the responsibility of the Dispatcher to manually search the lot for said trailer. Once the trailer is found, the Dispatcher notes the spot that it is parked in and updates the system accordingly.

#### Uncovered Issues

This process can be potentially lengthy, wasting a lot of time, due to the fact that with no form of organization within the lot, the Dispatcher may have to search the entire lot for a trailer that matches the description.

# Overall Issues

## Communication

The difficulties experienced with properly communicating information have been ongoing themes among our analysis. On a few occasions, concerns have been expressed about the ability to reach the Dispatcher throughout the day. As the dispatch office experiences a high volume of traffic each day, coordinating close to 200 movements and admitting approximately 60 trailers during work hours among other things, telephone communication is not always the most convenient way to relay information, though it is currently the only way for most to gain contact with the Dispatcher.

On a different note, it has also been discovered that the Traffic Administrator is not receiving nearly as much feedback as he should. Throughout the day, business resumes as normal, problems occur and are solved all without much communication to the Traffic Administrator, who is currently in charge of the operations around the TTCS.

## Data Recording

Upon speaking with the Dispatcher, we learned that most of his daily operations are recorded via memory or by hand written memos as opposed to the system that was built for that purpose. As a result, inconsistencies and mistakes have become more commonplace throughout the day. With no simplistic way of keeping track of approximately 200 movements to be performed by 12 drivers all at specific times, efficiency has suffered and OME has ultimately had to settle for delayed requests and slowed production.