

**Intelligent Transportation Systems**

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## CTMS/CTIS

### UC CTMS 7.10 - Generate Equipment Failure Report

Version 1.3

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UC CTMS 7.10 - Generate Equipment Failure Report	Date: April 19, 2005

## Revision History

<b>Date</b>	<b>Version</b>	<b>Description</b>	<b>Author</b>
April 29, 2004	1.0	Initial Version	Raj Chaudhuri
August 31, 2004	1.0	Added Alt flow, pre/post conditions, Data Elements and Issues	Raj Chaudhuri
September 20, 2004	1.1	Updated flows. Added logic to get Data from CTMS app to MAT system. Added wire-frame	Raj Chaudhuri
November 11, 2004	1.2	Added Basic Flow (from Alt Flow)	Nancie Fay
December 1, 2004	1.3	Revised flows based on discussion with Lee, Ramesh and Jason. Removed PM per discussion with Lee (we will do when we have the MAT system in CTMS)	Raj Chaudhuri
January 17, 2005	1.3	Removed all references to alarms	Nancie Fay

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## 1. Use Case

### 1.1 Abstract

The system generates this report. It lists all the DMSs that are in need of service. The MAT System queries CTMS and automatically creates the new Work Orders in the MAT system

### 1.2 Actor(s)

Actor	Description
Administrator	The System Administrator for the Colorado Transportation Management Center (CTMC)
Maintenance	The Maintenance person on duty for the Colorado Transportation Management Center (CTMC)
Operator	The Operator on duty for the Colorado Transportation Management Center (CTMC)
MAT System	The existing MAT Database system for tracking WO for DMSs and other equipment failures

## 2. Flow of Events

### 2.1 Basic Flow

1. The user clicks on Manage > Generate Equipment Failure Report
2. For each device type (device categories such as VMS, CCTV etc) the system gets all the devices that are in an error state. For this iteration, only DMS (i.e. VMS) devices are discussed and elaborated. A DMS is said to be in Error state if it's State is 'Service' or 'Failed'
3. For each DMS, the system checks if it is in Service or Failed status (the system does not check any DMSs that are New or Offline). If it is in Service or Failed status, the DMS is added to the equipment failure report. In the event the state is Service the Failure code is set to OP. Otherwise, if the state is Failed, the Failure Code is set to NON-OP. The Work Type is always set to RO
4. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Generate Equipment Failure Report), Time (current time), Owner (logged in user), ID (blank), Device Type (blank), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details)
5. The system lists the following elements in the report (by device category, which in this iteration only includes DMS): Report Header (Equipment Failure Report), Current Date/Time (on the system), for each Device Common Name, Failure Code, Problem (Short Error Code, Pixel Errors, Sensor Failures), Time (Poll Time), Work Type (refer to Special Requirements for more). Refer to Data elements for Rules of Failure Codes, Work Type and other data validation. The system provides the following button: Cancel
6. The user clicks on Cancel
7. The system returns the user to the desktop

### 2.2 Alternate Flow

1. The user clicks on Manage > Generate Equipment Failure Report
2. For each device type (device categories such as VMS, CCTV etc) the system gets all the

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devices that are in an error state. For this iteration, only DMS (i.e. VMS) devices are discussed and elaborated. A DMS is said to be in Error state if it's State is 'Service' or 'Failed'

3. For each DMS, the system checks if it is in Service or Failed status (the system does not check any DMSs that are New or Offline). If it is in Service or Failed status, the DMS is added to the equipment failure report. In the event the state is Service the Failure code is set to OP. Otherwise, if the state is Failed, the Failure Code is set to NON-OP. The Work Type is always set to RO
4. The system logs this event. It passes the following elements to UC Log User Activity: Task Name (Generate Equipment Failure Report), Time (current time), Owner (logged in user), ID (blank), Device Type (blank), Message Text (blank), Username (blank), Instruction ID (blank), Notes (blank) (refer to UC Log User Activity for details)
5. The system lists the following elements in the report (by device category, which in this iteration only includes DMS): Report Header (Equipment Failure Report), Current Date/Time (on the system), for each Device Common Name, Failure Code, Problem (Short Error Code, Pixel Errors, Sensor Failures), Time (Poll Time), Work Type (refer to Special Requirements for more). Refer to Data elements for Rules of Failure Codes, Work Type and other data validation. The system provides the following button: Cancel
  - 5.1. In the event there are no devices in an error state, the system informs the user that no devices are in error.
  - 5.2. The system provides a Cancel button.
  - 5.3. The user clicks on Cancel.
  - 5.4. Go to end.
6. The user clicks on Cancel.
7. The system returns the user to the desktop.
  - 7.1. In the event there is an error generating the Equipment Failure Report, the system logs this event with the additional data that this task was not successful
    - 7.1.1. In the event there is a timeout generating the Equipment Failure Report, the system logs this event with the additional data that this task was not successful (and that it timed out).

### 3. Special Requirements

1. The system will provide the ability for the data generated in this report to be incorporated into the existing MAT system
2. The MAT system will create a new Work Order (WO) in its system for each DMS that is in error state, and does not have an open WO. This is further defined next
3. For each Work Type, a DMS can have only 1 open Work Order at any given time. Hence, as there is only 1 known Work Type (that pertains to CTMS), only 1 open WO can exist for a DMS
4. An open Work Order is one that does not have a timestamp in the Repair Time field (on the MAT system)
5. This report can be as many times as requested (by a logged in user or the MAT System) on a given day

### 4. Assumptions

1. The MAT System (PC with access to the MAT Access DB) will be setup to access the CTMS Oracle DB
2. The MAT System will run queries to get the list of failed/error state DMSs (see Flows for rules). The query can be run manually
3. The MAT System will insert these DMSs into the MAT System and create new WOs based on the rules defined in the Special Requirements section above
4. No WO or other data from the MAT System will be transferred to the CTMS system
5. The CTMS system will not close out a WO

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## 5. Pre-Conditions

UC CTMS 2.00 – Navigate Desktop

## 6. Post-Conditions

Equipment Failure Report is generated

MAT system is able to access this data and create new WOs for each DMS (in the MAT system)

## 7. Extension Points

## 8. Issues / Constraints / Questions

## 9. Data Elements

Name	Description	Validation	Example
Device Category			
Device ID			
MAT ID			

For VMS Device – Refer to UC Poll DMS for details of each element (values/validation)

Name	Description	Validation	Example
Device ID		Refer to UC Poll DMS for all data element validations/sizes	
MAT ID	FK to MAT (external subsystem)		
Device Common Name			
Sign Status	If the device is in one of the following states, then it makes it to the Equipment Failure Report:  1=Service 2=Failed  Refer to UC Poll DMS for entire list		
Poll Time			
Short Error Status			
Pixel Errors			
Sensor Failures			

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Failure Code	Based on the status of the DMS, the Failure Code is determined. Here are the details:  Failed = NON-OP Service = OP  Note – there is an OFFLINE Failure Code, but we do not use/provide it	Enumerated Type	
Work Type	The type of work request this is. The values include:  RO = Routine Work Order ← this is the default value and is the Work type gets set to if the DMS is in Service or Failed mode and makes it onto the Equipment Failure Report  PM = Preventive Maintenance Each DMS has a PM schedule, however, this is not going to be part of the current iteration  CM = not used by the app, so do NOT put this type in	Enumerated Type	

Work\_Order - MAT System Tables and Fields that are relevant

Name	Description	Validation	Example
Repair Time			
Work Order ID	Auto-generated in Access		
ID Number	MAT ID for Device		
Problem			
Failure Time	Poll time		
Asset Type ID	VMS		
Work Type			

## 10. Wire-frame

The screenshot shows a software application window with a menu bar (File, Edit, View, Tools, Window, Help) and a toolbar. The main content area displays a table titled "Equipment Failure Report". The table has the following columns: System, Location, ID\_Number, Failure Code, Problem, Field Notes, Failure Time, and Work Type. The data is organized into sections: Callbox, CCTV, VMS, and Weather Station.

System	Location	ID_Number	Failure Code	Problem	Field Notes	Failure Time	Work Type
<b>Callbox</b>							
	005S014	CB-S-SH5-Mt. Evans Summit	ANI	NON-OP	last report 9/16	9/19/2004 7:12:48 AM	RO
<b>CCTV</b>							
	006W000	CCTV-W-US6- 6th/Sheridan		OP	debris hanging in dome	9/20/2004 9:16:05 AM	RO
	076W000	CCTV-W-1-76/1-25		OP	cable tie hanging in dome	9/20/2004 9:15:23 AM	RO
<b>VMS</b>							
	025S103	VMS-S-I25-North Pueblo		OP	3 Lamp Failures	9/20/2004 10:10:03 AM	RO
	070E205	VMS-E-I70-Silverthorne		OP	4 Lamp Errors	9/20/2004 6:24:19 AM	RO
	287N001	VMS-N-US287-Teds Place		NON-OP	Comms failure (no answer)	9/18/2004 7:46:10 AM	RO
	070E232	VMS-E-I70-Empire		NON-OP	Comms failure, LED 1 low	9/17/2004 6:51:45 AM	RO
	025N094	VMS-N-I25-Pueblo		OP	2 failed lamps	9/11/2004 8:27:13 AM	RO
	025N192	VMS-N-I25-Lincoln Ave		NON-OP	Comms failure coordinating with R-1	7/30/2004 2:25:55 PM	RO
<b>Weather Station</b>							
	470E000	WS-E-C470- Jct. I-25		NON-OP	Last report 9/15	9/18/2004 7:20:26 AM	RO
	040W460	WS-W-U40-Firstview		OFF	Under construction	9/13/2004 1:58:33 PM	RO

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Ready