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A United Technologies Company



# Chemical Management Service

**Karel Miller**  
**Alan Brown**



# Chemical Management Service



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*Chemical Management and Supply includes inventory management and delivery of chemicals to the point of use to meet production demands in accordance with established baselines with no material expirations or material stock outs*





# Reasons to Implement CMS

- **Recognized need for intelligent chemical procurement**
  - **Centralize chemical provision**
  - **Reduction of inventory**
  - **Single source for hundreds of products**
- **Required improved Quality Control**
  - **Independent resolution of inadequate documentation**
  - **Perform inspections prior to delivery**
  - **Elimination of expired material in stock**



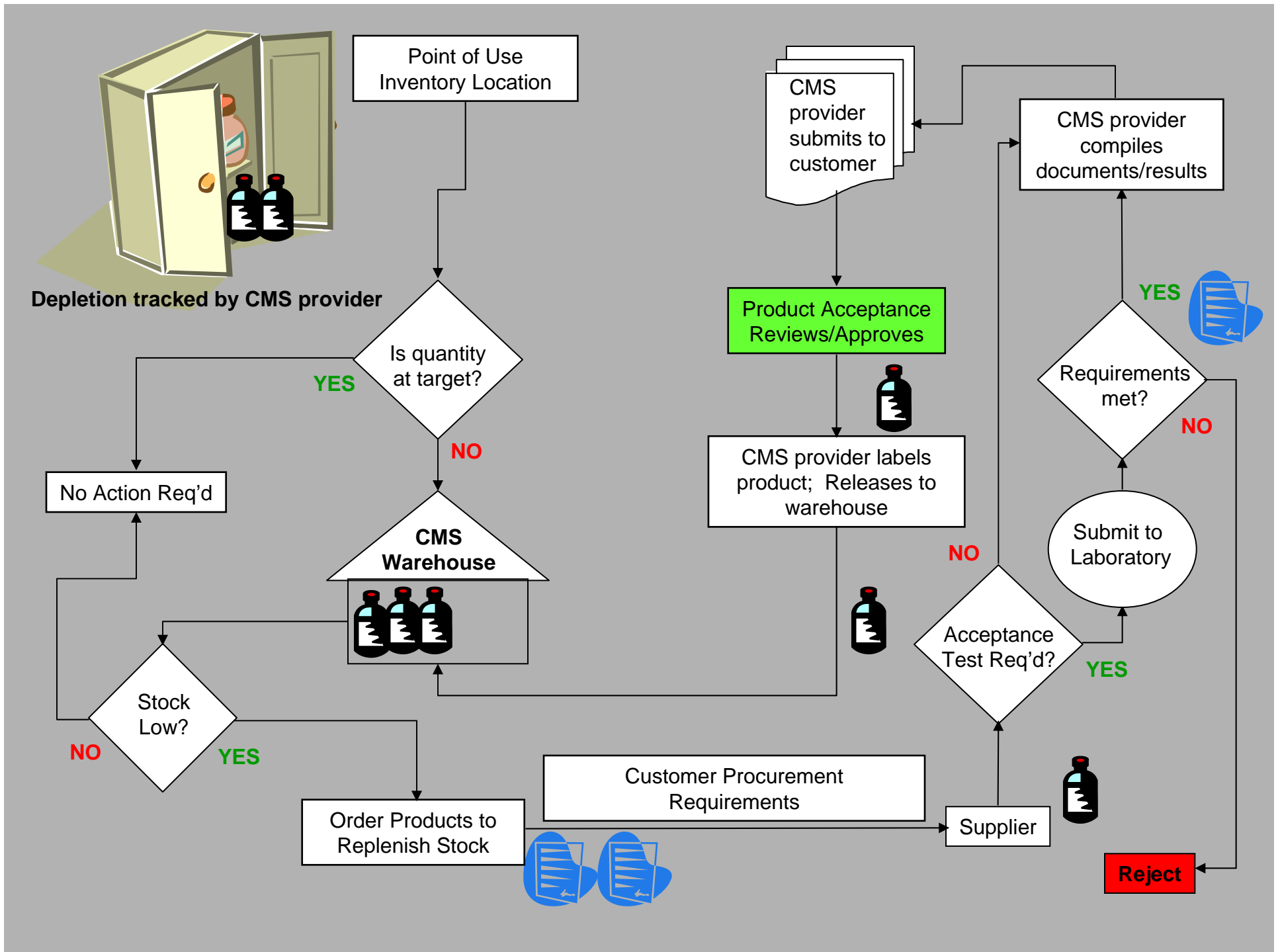


# Challenges To Implementation

- **New Paradigm**
  - **Management Fee Concept**
  - **Cost Accounting**
    - Direct vs Indirect
  - **Bargaining Unit Issues**
    - Transportation
    - Displacing workers
  - **Inventory Management**
    - Releasing control
    - Stock-outs
    - Expired materials
- **Trust**







# Benefits



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## Full service chemical supply

- **Consolidated procurement/shared resources**
  - Advanced visibility to supply risks
- **Pre-delivery acceptance quality verification**
- **Material warehousing**
- **On demand delivery to point of use**
  - Eliminates standard ordering and stocking effort
- **Inventory management, labeling and control**
  - Forecasting needs
  - Affords opportunity for efficiency gains (right sizing)
  - Consumption tracking and reporting
  - Shelf life management and tracking of chemicals





# Serendipitous Benefits of CMS

- **Better EH&S Management**
- **Centralized Inventory Management**
  - **Visibility of product and location**
- **Co-located chemical management team**
  - **Focused responsibility**
- **Standardized process and procedures**
  - **6S organization and housekeeping**
- **Process is easily transportable to other sites**
- **No Escapes to the Shop Floor**
  - **In-process material is held off-site**



# Examples



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## Sorting and Standardizing



## Reducing onsite inventory



## Simplifying and Sweeping





# 2008 Goals



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- **Improve performance across the board**
- **Track metrics**
  - **More meaningful**
  - **Wider implementation**
  - **Better metric performance**
    - **Product Cycle Time for Restock (Backfill Report)**
    - **Expired Chemicals metrics**

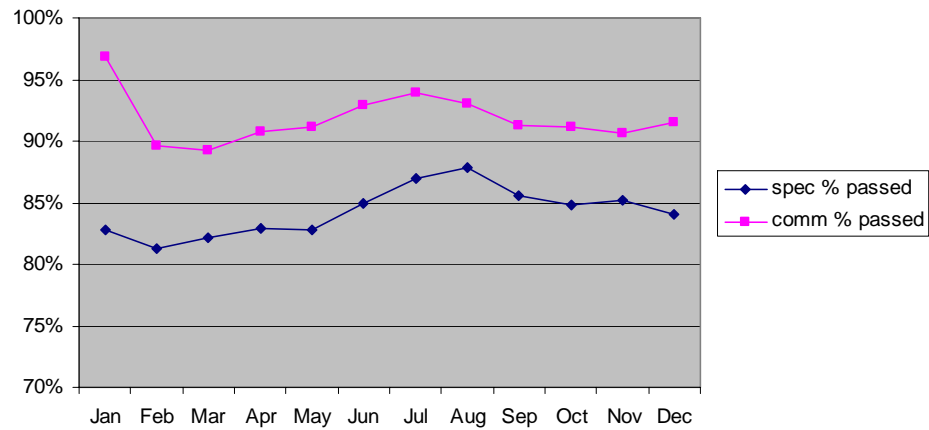


# Metrics

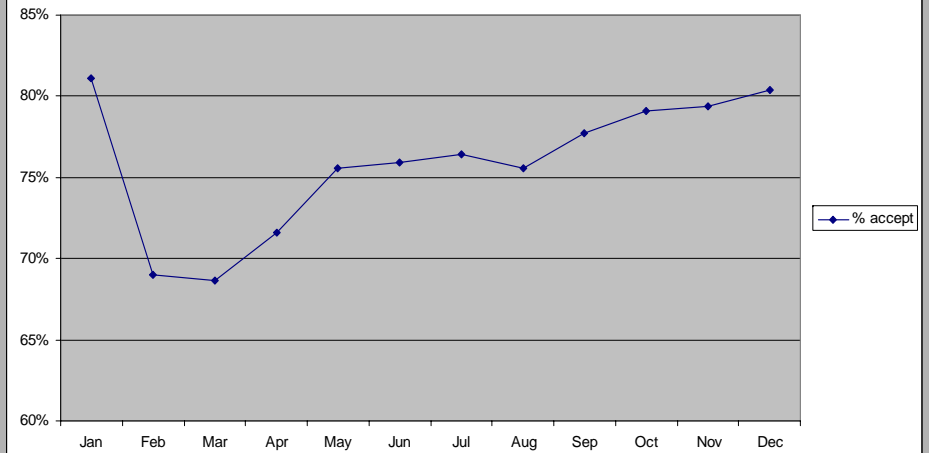


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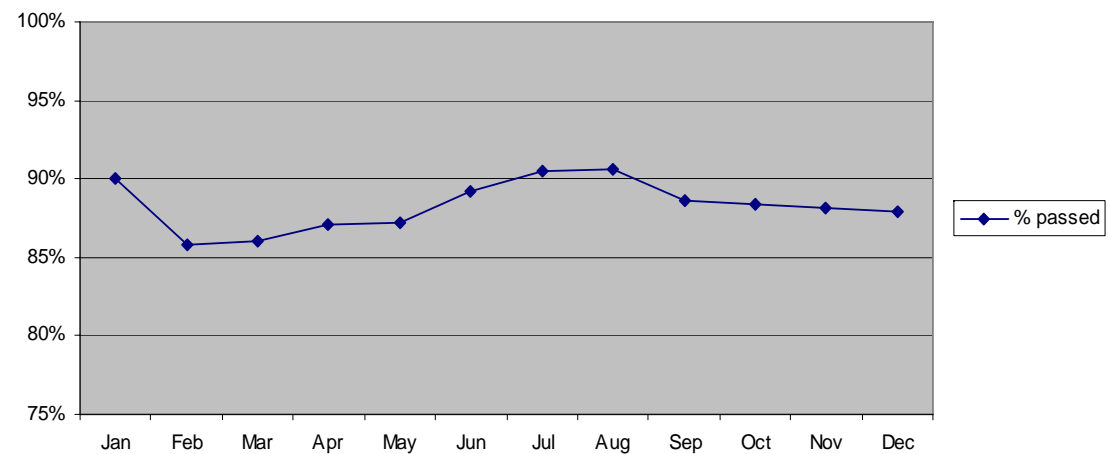
### Specification vs. Commercial Material Acceptance 2006



### Lab Acceptance 2006



### CofC Acceptance 2006

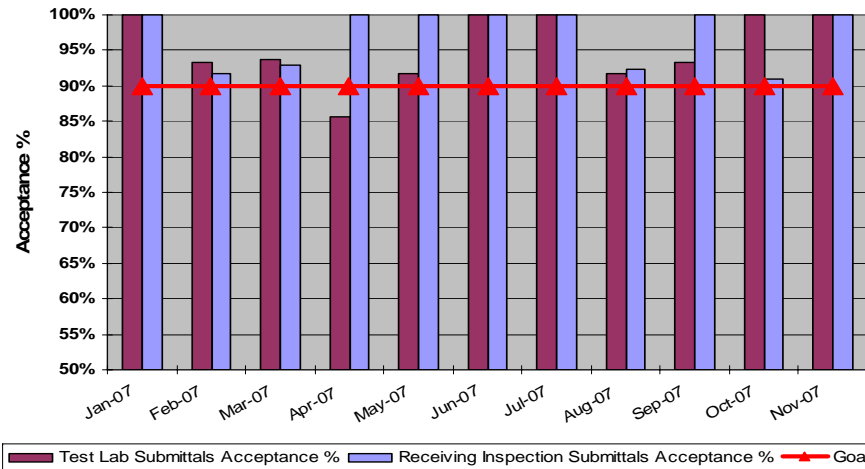


# Metrics

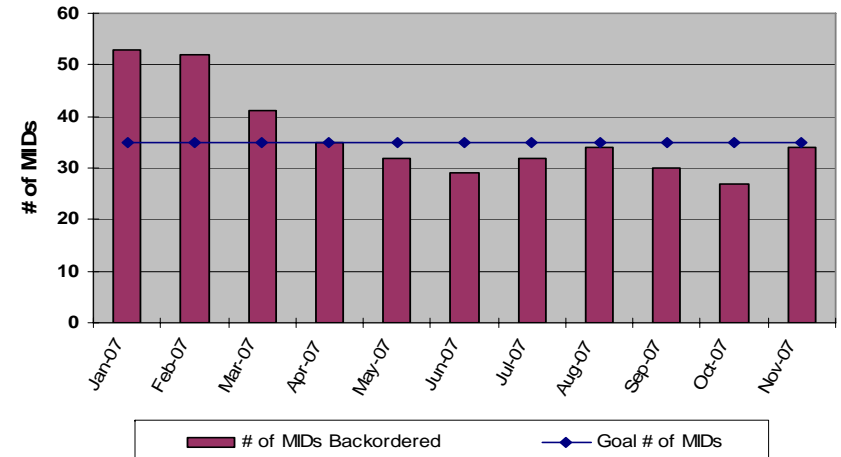


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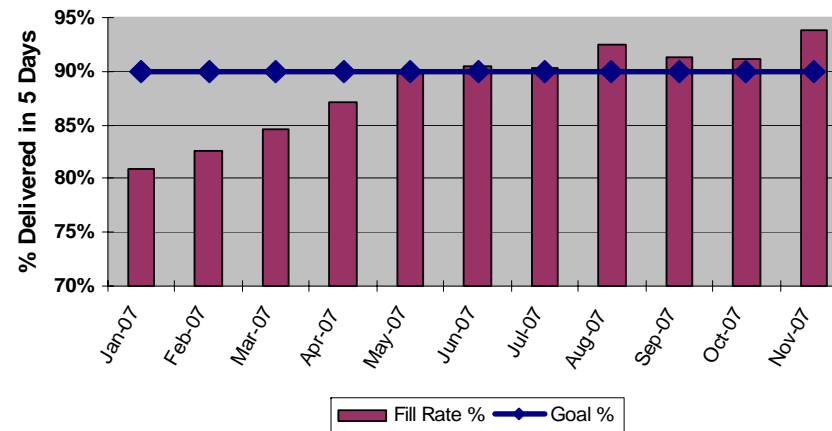
**Pratt & Whitney Rocketdyne - CMS  
First Time Through Performance**



**Pratt & Whitney Rocketdyne - CMS  
Backorders "Yes Restock" MIDs**



**Pratt & Whitney Rocketdyne - CMS  
Fill Rate - "Yes Restock" Items**

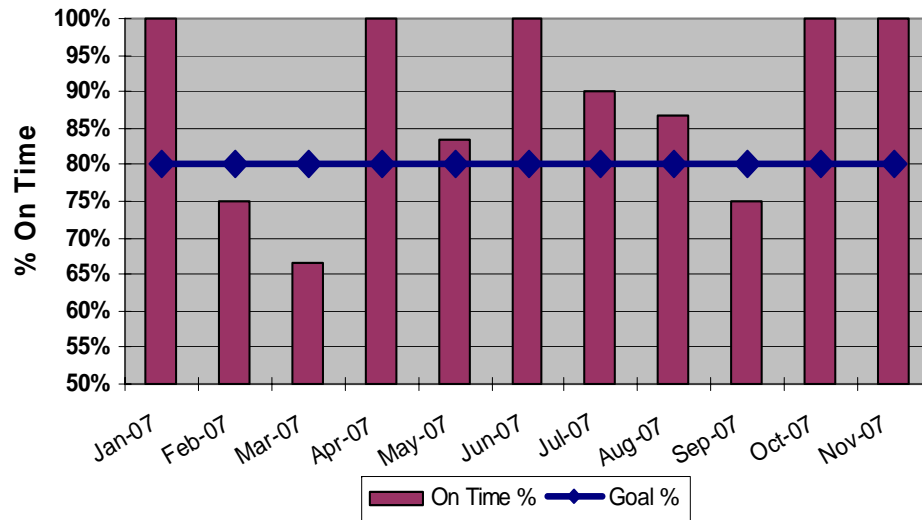


# Metrics

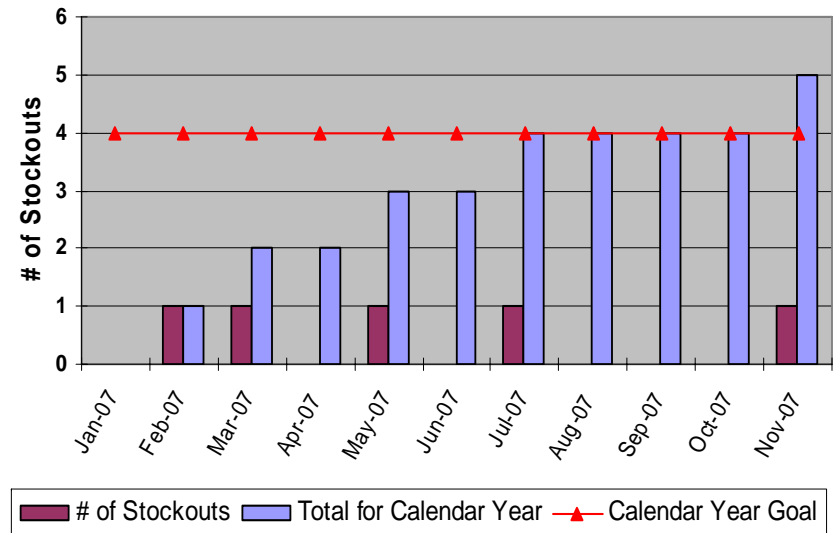


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**Pratt & Whitney Rocketdyne - CMS First Time Buy On Time %**



**Pratt & Whitney Rocketdyne - CMS # of Stockouts**





# Metrics



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## Interruption in Manufacturing and Incorrect "Point of Use" Inventories Due to Chemical Stock Outs and Expired Chemicals

### Chemical Management Services Program

This notification is a tool by which to **document** stock outs or **material expirations** that have resulted in an interruption of manufacturing. **It is not intended to be your sole method of communication to ..... that you are shut down! To ensure that your issue is addressed immediately by Avchem, please follow up this email with a phone call to your Canoga Park or Desoto Contact (See contacts listed below).**

**Stock-Out Definition:** A lack of a chemical with a "yes re-stock" flag that causes an interruption in production or causes PWR to reschedule their production plan.

**Expired Chemical Definition:** A chemical product whose shelf life written on the product label has been exceeded.

#### **Instructions for Pratt & Whitney Rocketdyne Production focal:**

- 1: If you experience a stock-out, **expired material** fill in the PWR information and save.
- 2: Attach it to an e-mail and send to the PWR program contacts and your Canoga Park or Desoto Avchem site leader and cabinet chemical technician (see below).

#### **Instructions for ..... site team:**

- 1: Immediately address all shortage issues.
- 2: Notify the ..... Enterprise contacts and PWR production focal of all actions taken and expected product delivery.
- 3: After manufacturing has resumed, please complete the form with the ..... information and forward to the PWR program contacts noted below:

### ..... Contacts

#### **Canoga Park and Desoto Contacts**

Site Leader	office 818-	cell 818-
Chemical Tech	office 818-	cell 818-
Chemical Tech	office 818-	cell 818-

#### **Warehouse Contact:**

..... cell 818-

#### **Enterprise Program Contacts:**

253-  
856-

Revised 6-6-07

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### **Pratt & Whitney Rocketdyne Program Contacts**

Karel Miller	<a href="#">karel</a>	office 818-
Alan Brown	<a href="#">alan</a>	office 818-
Gary Hebdon	<a href="#">gary</a>	office 818-

### **To Be Completed by Pratt & Whitney Rocketdyne:**

PWR personnel should complete this portion of the Stock Out form and forward to the PWR program contacts listed above.

- Stock Out  
 Expired Material

Point of Use location where chemical is stored: .....  
Point of Use contact name: .....  
Contact phone number: .....  
Contact email address: .....  
Pratt & Whitney Rocketdyne Part Number or  
MIDS Number: .....

Program(s) or Production Department affected by stock out, **material expiration:** .....

Date of stock out or material expiration when manufacturing was interrupted: .....  
Program impact/risk: .....

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### **To Be Completed by CMS :**

Date when stock was replenished and manufacturing resumed: .....  
Action taken to resolve issue and future preventative measures: .....

Date the corrective action request was submitted: .....  
Date the corrective action request was completed: .....



# Factors for Success



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- **Solid metrics used to manage the process**
- **Over 700 current products delivered**
- **Perform to the metrics**

