WASH & TEST REPORT

REPORT NUMBER

T-10000

123
MODEL NUMBER

123
CUSTOMER

123
RMA #

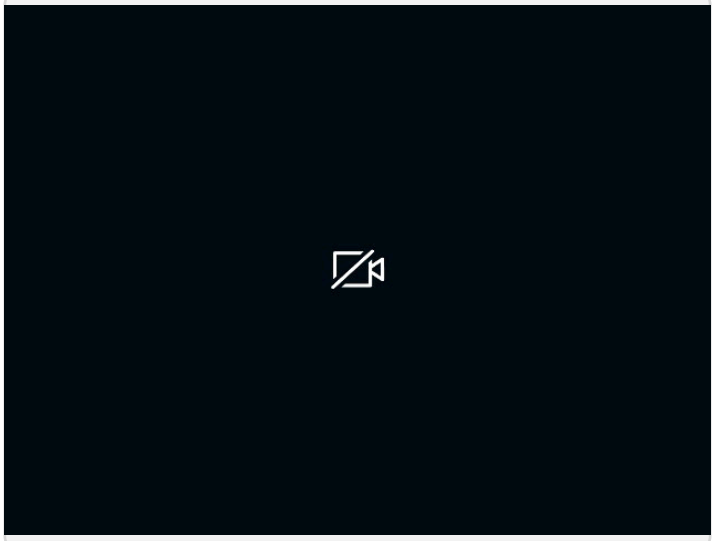
123
SERIAL NUMBER

Chad Root
CHIEF INVESTIGATOR

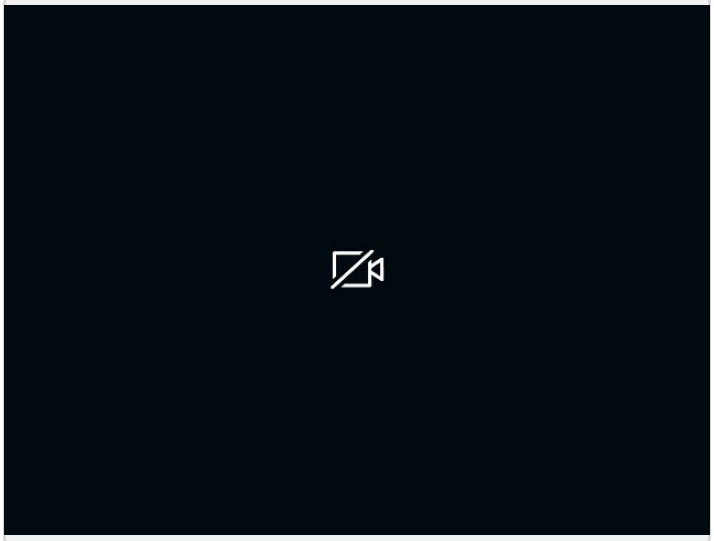
123
PART NUMBER

- ☐ Catalysts have been restored to acceptable performance
- ☐ Catalysts have been restored for limited service
- ☑ Catalysts are irreversibly damaged and should be replaced

BEFORE WASH



AFTER WASH



CUSTOMER CATALYST TESTING

CATALYST	TYPE	TEMP	CO	NO2	NO	Result
STANDARD OXIDATION	OX	500	62.05	0.0	0.86	
STANDARD OXIDATION	OX	500	767.18	0.26	25.64	

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WASH & TEST REPORT

MIRATECH

INTRODUCTION:
This study was conducted to evaluate the performance of the following catalyst modules after return from service.

TEST CONDITIONS:
The modules were chemically washed prior to testing. The modules were then tested on MIRATECHs' test engines under standard conditions: Oxidation and Diesel Oxidation catalysts are tested at a gas hourly space velocity of 200,000/hr SV 550-800°F and Three-Way catalysts are tested at 100,000/hr SV at 900°F. Daily standards are run to ensure accuracy of catalytic performance.

RESULTS AND CONCLUSIONS:
The test results are summarized in the tables on the following page. Catalysts marked Red are irreversibly damaged and should be replaced. Under special circumstances, MIRATECH recommends catalysts that have met two or more performance metrics but not all performance metrics be returned to the field for limited service.

NOTICE:
All parts that fail to meet destruction requirements will be set aside for reclamation. MIRATECH must receive written confirmation to reclaim these parts within 10 Days of receiving this report or they will be returned to their point of origin at the customer's expense.

RESULTS COMPARISON

CATALYST	TYPE	CO	NOx	VOC	HCHO	C3H8
STANDARD OXIDATION	OX	97%	0%	80%	80%	0%
THREE-WAY	3W	98%	94%	0%	0%	0%
PROPANE OXIDATION	P	98%	0%	80%	88%	60%
DIESEL OXIDATION	DOC	80%	0%	60%	72%	0%

TESTING EXCLUSION BULLETIN

DETAILED INSPECTION FOR ASH CONTAMINATED CATALYSTS:
The purpose of this bulletin is to provide clear guidelines for the inspection and evaluation of catalytic converters, focusing on the identification of blockage levels caused by ash contamination and ensuring structural integrity. By categorizing blockages into light, moderate, and severe, this bulletin aims to assist qualified technicians and the ACS Customer Property Manager in determining the appropriate actions required for each scenario. Additionally, the inspection should assess the structural integrity of the catalyst, ensuring that it is free from cracks, corrosion, or other signs of damage that could compromise performance.

Specifically, this bulletin emphasizes the importance of recognizing severe blockage as a critical condition that necessitates the removal of contaminated catalysts from service for precious metal reclamation. This process is vital for maintaining the efficiency, performance, and longevity of catalytic converters, ultimately ensuring optimal engine function and compliance with environmental standards.

This bulletin should be referenced during inspections and may be updated as new guidelines or findings become available. For further inquiries or clarifications, please contact the ACS Customer Property Manager.

INSPECTION PROCEDURES:
- **Inspect for Blockages:** Ensure honeycomb cells are free from debris or soot. Refer to Appendix A for examples of severe blockages.

TESTING EXCLUSION CRITERIA:
- **Purpose:** Define the specific conditions under which a catalyst should be excluded from further testing or service.
- Catalysts that exhibit severe ash blockage or structural damage (as defined in this bulletin) are automatically excluded from further testing. These catalysts should be immediately replaced and sent for reclamation. If there is any uncertainty regarding the condition of a catalyst, it should be flagged for further evaluation before being returned to service.

BLOCKAGE CATEGORIES:
- **Light Blockage:**
  - Criteria: Majority of cells allow light to pass with minimal obstruction.
  - Action: The catalyst is likely functioning adequately; no immediate washing required.
- **Moderate Blockage:**
  - Criteria: Significant portions of cells show blockage but are not fully obstructed.
  - Action: Consider further inspection or cleaning to maintain performance.
- **Severe Blockage:**
  - Criteria: A high percentage of cells are heavily blocked with ash.
  - Action: The catalyst must be removed from service and sent for precious metal reclamation. Severe blockage reduces efficiency, obstructs exhaust flow, increases back pressure, and may lead to increased fuel consumption and engine damage.

INSPECT STRUCTURAL INTEGRITY:
- **Objective:** Ensure that the catalyst's physical structure remains intact and free from cracks, corrosion, or other forms of damage that may compromise its performance.
- **Criteria:** Look for visible signs of erosion, cracking, or distortion in the cell walls. Any structural damage can affect the catalyst's ability to process exhaust gases properly, leading to decreased efficiency or failure.
- **Action:** If structural integrity is compromised, the catalyst must be removed from service and assessed further for replacement or reclamation.
- **Reference:** Refer to **Appendix B** for examples of structural damage

CONCLUSION:
In summary, the inspection of catalytic converters reveals insights into both their operational integrity and structural condition. The blockage levels and physical condition of the catalyst must be thoroughly evaluated to ensure optimal performance:

- Light Blockage indicates that the catalyst is functioning adequately and does not require immediate attention.
- Moderate Blockage necessitates further inspection or cleaning to ensure optimal performance and prevent potential issues.
- Severe Blockage, characterized by a high percentage of cells heavily blocked with ash. Such catalysts must be replaced and sent for precious metal reclamation to restore efficiency and prevent further damage to the engine.
- Structural Integrity is equally important. Any visible cracks, corrosion, or signs of physical damage to the catalyst must be addressed immediately, as these issues compromise the overall effectiveness of the catalyst and may lead to additional engine damage. Reasonable damage to the catalyst frame can be repaired. Extensive damage will necessitate replacement.

Regular monitoring and timely action regarding both blockage levels and structural condition are important for maintaining the performance and longevity of catalytic converters. Following these guidelines will significantly contribute to operational efficiency, engine safety, and compliance with environmental standards.