MEMORANDUM

TO: Dan Blankenship/RFTA
CC: Mike Hermes/RFTA
FROM: Dan Richardson/SGM
DATE: January 2, 2015
SUBJECT: CNG Support

Project Summary

The purpose of this project is to support the Roaring Fork Transportation Authority (RFTA) in its effort to maintain the CNG-related safety components at the GMF.

Executive Summary

Inspections were conducted and there are no significant areas of concern to report. *RFTA staff has consistently 'passed' inspections and I recommend reducing the intervals of inspections to quarterly.*

Noteworthy issues include:

- Building maintenance staff continues to do a commendable job keeping equipment maintained so that CNG fueling is safe and as uninterrupted as possible.
- Staff that was interviewed about safety protocol generally were well informed; however due to the complexity of the evacuation plan, it is recommended that this area be emphasized during regular training of all GMF employees. It is also recommended that an evacuation plan be hung in the fueling bay.

Unannounced Safety Inspection Summary

Task: At least once a month, confirm safety procedures are being followed by on-site observation. Procedures include use of fuel bay and maintenance bays.

Progress Report: Since the last report, fueling, vehicle maintenance, building maintenance, driver and administration staff on duty at the time was randomly surveyed with the questions listed in the 'Inspection Checklist'. In general, all staff was familiar with CNG safety protocol and was adhering to CNG procedures as outlined in the training manual. *RFTA staff has consistently 'passed' inspections and I recommend reducing the intervals of inspections to quarterly.*

Quarterly Safety Inspections

Tasks:

1. Review maintenance checklists and methane detector calibration record completed by RFTA staff and/or contractors: Confirm whether maintenance and methane detector calibration is being documented regularly. *Yes, however most recent GSC report was not received in time for this report.*

2. Review contractor bids and/or invoices: Verify that costs and billing are justified. *The only invoices that have been reviewed are the ones included in Bob's maintenance book. The only comment is that Al Ray's trip charges seem high but it also may be the best alternative. A review of HVAC service costs may be worthwhile.*

3. Physical inspection of equipment: Confirm whether maintenance is occurring regularly and that it is being performed properly. Inspected equipment includes CNG-related HVAC equipment, overhead doors, methane detectors (visual inspection only), horns and strobes, emergency generator and BAS system. *Spot visual inspection of equipment and maintenance records*

indicates that maintenance is being completed.

4. Functional testing of the sequence of operations: Confirm whether the sequence of operations for CNG safety components as listed in the Emergency Response Plan is functioning as intended. This test will include setting off one methane detector for the sole purpose of verifying sequence of operations. *The sequence of operations was tested unintentionally tested on July 25 as a result of a defective high pressure gas fitting. All aspects of RFTA's safety plan operated as intended.*

5. Run and review trend logs from BAS: Identify any irregular operations or malfunctions through the review of trend logs.

Progress Report: Grimes Service Company (GSC) is contracted to perform semi-annual service to equipment. RFTA Facilities Maintenance staff also performs daily, monthly and quarterly maintenance. RFTA staff has maintained its increased maintenance inspection interval from monthly to daily on several components that are critical to the CNG safety system. Staff also continues to replace fan belts on CNG-related exhaust fans and MAU's monthly in an effort to reduce shut-downs.

GSC performed its maintenance and combustion gas sensor calibration in September of this year. All work appeared to be performed as required and there are no obvious signs to the contrary. **There are repair and maintenance notes in the GSC reports that should be addressed as soon as possible.** RFTA staff maintenance logs were thorough and indicated no obvious signs of system failure – **except one of the catalytic heaters in the fuel bay. The GMF Maintenance Manual is complete which can now be used to streamline the maintenance and documentation process.**

Annual Safety Inspections

Task: Physical test of all methane detectors: Conduct 20% and 40% test of all methane detectors.

Progress Report: This inspection was conducted in the Fall of 2014. The calibration by GSC was completed per manufacturer's recommendations.

Inspection Summary

CNG Support Inspection Report						
#	Inspection	Freq.	Pass/ Fail	Date	Inspector	Recommendation
1	Fueling procedures	Mnthly	pass	2/20/14, 4/18/14, 5/29/14, 6/25/14, 7/16/14, 9/11/14, 10/8/14, 11/26/14, 12/29/14	Dan R/SGM	Install an evacuation plan in the fuel bay.
2	Vehicle maintenance procedures	Mnthly	pass	See above	Dan R/SGM	None at this time.
3	Building maintenance procedures	Mnthly	pass	See above	Dan R/SGM	Consider using RFTA's GMF Maintenance Manual O&M sheets for regular maintenance checklists.
4	Grimes Service					
a	Electronic detector testing	Qrtrly	pass	3/25/14	GSC	None at this time.
b	EF & MAU Maintenance	Semi-annual	pass	3/25/14	GSC	None at this time.
c	Sequence of Operations testing	Semi-annual	pass	3/25/14	GSC	None at this time.
d	BAS trend log review	Semi-annual	pass	3/25/14	GSC	None at this time.
e	Report communication	Semi-annual	pass	3/25/14	GSC	None at this time.
5	Trillium Service	Qrtrly	n/a			None at this time.
6	Physical detector testing	Annual	n/a	3/25/14		None at this time.
7	Other					Stress the importance of understanding the evacuation plan to all staff and place an evacuation plan in the fueling bay.

Inspection descriptions:

1. Verify that RFTA staff follows fueling procedures as outlined in 'Mechanics Training Manual for Compressed Natural Gas (CNG) Transit Vehicles' (CNG Training Manual).
2. Verify that RFTA staff follows vehicle maintenance procedures as outlined in the CNG Training Manual.
3. Verify that RFTA staff follows best practice maintenance procedures as outlined in 'GMF Maintenance Manual'.
4. Verify that Grimes Service Company is complying with its preventative maintenance contract as outlined in its May 1, 2013 Scope of Work.

5. Verify that Trillium CNG is complying with its service contract as outlined in its Exhibit D. Physically test methane detection system with gas.
6. Miscellaneous