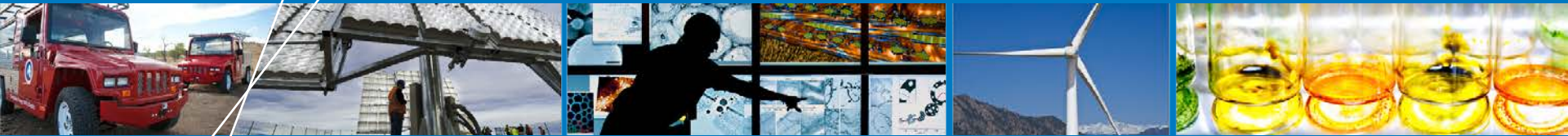


CNG Cylinder Safety

Education, Outreach, and Next Steps



Natural Gas Vehicle Technology Forum
Brookhaven National Laboratory, Upton, New York
Mark Smith and Alex Schroeder
January 14th, 2014

Overview and Objectives

Project Participants



Presentation and Discussion Objectives

- Describe CNG Cylinder Safety Project Objectives
- Get Feedback from NGVTF on CNG Cylinder Education and Outreach Efforts, Best Practices and Next Steps

Project Background

Background

- NGV2 cylinder safety standards promulgated in 1994 provide for 15, 20, and 25-year lifetimes
- No formal tracking to ensure cylinders are properly disposed of at end of life

Example State Regulations

- Texas – Requires verification of cylinder age at time of vehicle inspection, which occurs annually
- Utah – State Patrol includes end of life as part of 3 year/36,000 mile inspection program
- Inspection legislation introduced in CA in 2013, considered in other states



CNG Cylinder Safety Project Objectives

Project Objectives

- **Identify any existing information and/or datasets on NGV cylinders**
- **Create educational materials for NGV owners and support industries on cylinder safety**
- **Engage with stakeholders to get feedback and create awareness**
- **Develop a system to begin collecting relevant data on CNG cylinders**

Cylinder Awareness and Safety Monitoring Outreach

- Development of material explaining NGV2 standards and post collision best practices
- Developed material explaining how to “defuel” a damaged or expired cylinder
- Project roll-out at Natural Gas Vehicle Task Force (NGVTF)
- Various presentations at conferences

Legacy Cylinder ID and Documentation

- Determination that no database of cylinder lifetimes exists in the industry and there is no mechanism in place to do so, particularly for conversions
- Development of web materials and database to begin collecting data on cylinders
- Outreach to stakeholders on strategies for cylinder data collection

National Coordination

- Project discussion at the NGVTF

Technical Support

- Provide technical support as needed/requested

Education and Data Collection from the Public

Alternative Fuels Data Center: Natural Gas Vehicle Cylinder End-of-Life Data

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Alternative Fuels Data Center

Alternative Fuels Data Center SEARCH

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Natural Gas Vehicle Cylinder End-of-Life Data

Provide information about the cylinders in your natural gas vehicle(s) to help us collect data and share [safety information](#) about the end of cylinder life. This data collection is not an official registration of vehicle cylinder information and is used only for analyzing the industry as a whole.

Vehicle #1

VIN * 123456 Conversion * Yes # of Cylinders * 3

Cylinder	Month Manufactured *	Year Manufactured *	Years of Life *
1	August	2013	15
2	March	2010	25
3	May	2011	25

Vehicle #2

VIN * 654321 Conversion * No # of Cylinders * 6

select #	Month Manufactured *	Year Manufactured *	Years of Life *
1	select month	select year	select years
2	January	2014	15
3	February	2013	20
4	March	2012	25
5	April	2011	25
6	May	2010	15
	June	2009	25
	July	2008	15
	August	2010	25
	September		
	October		

ADD A VEHICLE

Email I would like to receive cylinder safety information periodically

SUBMIT

The U.S. Office of Management and Budget (OMB) approved this data collection under control number #####-####. You are not required to respond to this collection of information.

OMB #: #####-#### | Expires: #/##/2014

- One-Stop Portal for Information Related to CNG Cylinder Safety and End of Life Regulations

- Voluntary Web-based Data Collection of CNG Cylinders

Website Ready to Launch Pending OMB approval

- Outreach with Stakeholders to Promote Awareness and Encourage Data Collection

What Will NREL do With the Data?

Data is intended to inform educational efforts and will be non-attributable

- **Inform accident prevention outreach and education efforts**
- **Primary audience for outreach is not large fleets, but resale and secondary markets**
- **Will not be used as an enforcement or regulatory tool**

Questions for Discussion


How big of an issue do you perceive CNG cylinder liabilities as being?



Do you believe that a majority of industry actively manages their CNG cylinder inventory for end of life?



In what situation do you believe there is the greatest risk of CNG cylinder failure due to “expired” cylinders?



What do you feel is the best approach for addressing cylinder end of life?



How is this best communicated to NGV stakeholders at large?