GUJARAT GAS



Learnings from recent incidents at CNG stations

2nd Knowledge Sharing Workshop for CGD entities

14 February 2022

Details of Major Incidents at CNG stations (FY 19-20)

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Incident Title	Third party fatal Injury case at franchisee CNG Station, Rajkot	Date	15 Oct 2019
Incident description	A third party person was entering in to CNG station area and was hit by reversing MCV (CNG transport vehicle). Person got seriously injured and was immediately taken to Civil hospital where he was declared dead		
Key findings	• Victim had unauthorised entry in the CNG station and was walking carelessly and even did not pay attention to the sound of MCV reverse horn • Victim was walking in the blind spot zone when he was hit by the reversing MCV • Reversing of MCV without proper assurance of “no personnel movement” in MCV reversing path		
Photograph			

Lesson Learnt	• Before reversing vehicle, driver must ensure that there is no movement of personnel in vehicle reversing path
	• For safe reversing, driver must check and control full path during reversing of the vehicle with the help of either
	  ◦ Rear view camera / sensors (proximity distance alarm signal device) to have warning about personnel movement or obstruction in blind spot while reversing of the vehicle or
	  ◦ other person watching & controlling personnel movement in the vehicle reverse path and properly guiding the driver
	• During movement of the MCV within CNG station, other traffic at the CNG station is to be stopped and movement of the person has to be restricted / controlled in MCV movement path e.g. use of barricade
	• Carry out marking of MCV movement path / area and display warming sign like “Accident prone zone – Stay alert”
	• Installation of rear view camera for the observance of the vehicle reversing path or warning sensor with alarm system to warn the driver in case of any personnel coming in the vehicle reversing path
	• Entry of Third party persons and trespassers must be restricted at CNG station premises
	• Safety awareness of CNG station staff / MCV driver to avoid vehicle & traffic related incidents at CNG station		

Major Incidents at CNG stations (FY 20-21)

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Incident Title	On-board CNG cylinder explosion, Sirohi	Date	09 Jan 2021
Incident description	On 09/01/2021 at 08:58 Hrs., during CNG refueling in the on-board CNG cylinder of customer vehicle bearing registration number MH-14-HK-1821 at M/s Sagar Petroleum, IOCL-RO (Daughter Booster CNG Station), the on-board CNG cylinder exploded in two parts and also a rectangular section fitted on the cylinder body got blown off with high pressure gas. This resulted in to damage to the customer vehicle being filled. Minor injuries reported to the driver and a co-passenger (who were standing near the vehicle during CNG refueling) of the vehicle due to pieces of flying broken glasses of the vehicle resulting from the explosion. Injured persons were taken to the nearest hospital for treatment in OMC dealer's car. Vehicle was manually pushed to safe location by CNG Filler, compressor operator and other station staff.		
Key findings	• Filling of high pressure gas (Compressed natural gas) in the spurious cylinder leading to failure (explosion) of the cylinder body & rectangular plate fitted on the cylinder body. • The flying broken glass pieces due to cylinder explosion caused minor injuries to driver and a co-passenger of the vehicle. • Unauthorised alteration / modification of the on-board CNG cylinder by vehicle's owner compromising the integrity of the cylinder • Unsafe act by CNG vehicle driver & Co-Passenger since they were standing near the vehicle during CNG filling • Inadequate control to restrict passengers in CNG filling area		
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Lesson Learnt	• Lessons learnt from the incident to be shared amongst CNG station staff
	  • Continue safe practice of 'no passenger' in the vehicle during CNG filling in on-board CNG cylinder
	  • Continue practice of verification of on-board cylinder test life validity
	  • Be watchful for any gas smell or sound during CNG filling. In case of any indication of gas leakage or any unusual sound, immediately stop CNG filling
	  • CNG refueling shall not be done if on-board CNG cylinder is observed spurious / altered / modified
	  • Restrict people near the CNG filling area
	• Raise awareness amongst CNG customers to avoid installation of spurious / modified / altered on-board CNG cylinder
	• Communicate to owners/dealer of retail outlets to ensure compliance to safety requirements during CNG filling		

Major Incidents at CNG stations (FY 21-22)

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Incident Title	On-board cylinder explosion, Mansa, Punjab	Date	11 July 2021
Incident description	On 11/07/2021 at around 18:10 Hours, during CNG refuelling in the on-board CNG cylinder of customer vehicle bearing registration number HR-59-8782 at M/s Jagdish Oil Company, HPCL-RO (Daughter Booster CNG Station), the on-board CNG cylinder exploded in multiple parts. This resulted in to damage to the customer vehicle being filled and serious injuries to filler who was filling CNG in on-board cylinder. Filler was immediately taken to the nearest hospital for treatment, where he was declared dead by the doctor. Minor injury was also reported to a third person (who was standing near the vehicle, waiting in the queue for CNG refuelling) due to pieces of flying debris of the vehicle due to the explosion.		

Key findings	• Filling of high-pressure gas (Compressed natural gas) in the spurious cylinder leading to failure (explosion) of the cylinder body and fatal injury to the Filler (Deceased) .
	• Violation of Gas cylinder rules by vehicle owner –
	  • Unauthorised/illegal fitment of the spurious cylinder by vehicle's owner compromising integrity of the cylinder
	  • The spurious onboard cylinder was painted in combination of red and white colors by vehicle owner/retrofitter to give resemblance to CNG Cylinder.
	• Unsafe act by filler – It is suspected that the filler either failed to identify spurious onboard cylinder due to resemblance to CNG cylinder or the filler might not have followed practice of verification of metal plate/RC book/cylinder test life validity before CNG filling.
	• Unsafe act by RO dealer - The RO dealer deployed untrained filler for CNG filling on the day of incident as trained filler was not available		

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Lesson Learnt	• Lessons learnt from the incident to be shared amongst CNG station staff & relevant stakeholders.
	  • Only trained fillers to be deployed at RO/CNG stations for CNG filling operations
	  • Continue practice of verification of on-board cylinder test life validity by checking Metal Plate / RC book / Hydro-test Certificate and maintain record of rejected vehicles refused for CNG filling
	  • CNG refueling shall not be done if on-board CNG cylinder is observed spurious / altered / modified
	• Raise awareness amongst CNG customers to avoid installation of spurious / modified / altered on-board CNG cylinder
	• Communicate to owners/dealer of retail outlets to ensure compliance to safety requirements during CNG filling		

Major Incidents at CNG stations (FY 21-22)

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Incident Title	On-board Type-4 composite cylinder explosion, Bharuch	Date	27 Oct 2021
Incident description	On date 27.10.2021 at 23:55 Hrs., while refueling CNG in the onboard Type 4 composite cylinder of third party customer vehicle bearing registration number GJ 01 RX 3964 (Honda Jazz) at M/s GGL COCO CNG Station, Near GNFC Bus depot, Narmada Chokdi, Bharuch (Mother Online facility), the on-board cylinder exploded. This resulted in to severe damage to the customer vehicle being filled along with damage to CNG canopy over forecourt area. No injury reported.		
Key findings	• **Bursting (Rupture) of onboard Type-4 composite cylinder**– During CNG refueling, the body of onboard Type-4 composite cylinder did not sustain the normal pressure (maximum 200 bar) of CNG being filled and got ruptured at two diagonally opposite points at bottom spherical portion of cylinder body. Rupture of the cylinder body led to propelling of the cylinder causing severe damage to the vehicle being filled and minor damage to canopy of the filling area. • The possible causes of bursting (Rupture) of onboard Type-4 composite cylinder body may be due to “damage to the cylinder during storage/transportation/handling/retrofitting” or “manufacturing defect”		
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Lesson Learnt	• Lessons learnt from the incident to be shared amongst CNG station staff & relevant stakeholders.
	  • CNG refueling shall not be done if on-board CNG cylinder is observed type-4 composite cylinder till establishment of the root cause for the cylinder failure by competent authority.
	  • Continue safe practice of ‘NO PASSENGER’ in the vehicle during CNG filling in on board CNG cylinder.
	  • Driver of Vehicle must stay away from the on board CNG cylinder being filled.
	• CNG filler to note down the details of vehicle with on-board Type 4 composite cylinders coming for refueling.
	• Details of on-board Type 4 composite cylinder to be captured in CNG filler training module for creating awareness amongst all CNG fillers.		

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Thank You