

Media Relations Contact:
Morgan Lyons

March 12, 2001

The road to zero emissions

LNG use is getting easier, transit agencies report

Representatives of six U.S. public transit agencies, meeting at one of the newest and most advanced liquefied natural gas (LNG) bus facilities in the nation, reported increasing successes with a high-tech fuel that only exists at 260 degrees below zero.



"Getting an LNG operation up and running presented us with a lot of challenges," said Dallas Area Rapid Transit (DART) vice president of maintenance Mike Hubbell. "Working with cryogenic fuel required us to learn a whole new technology. We have issues that need more research, but our LNG buses pull out every morning."

DART hosted the Feb. 9 meeting at its new \$34-million South Oak Cliff Bus Operations Facility, where up to 69 LNG buses are garaged, fueled and serviced. DART's fleet of 139 LNG buses is one of the oldest and the third-largest LNG transit operation in the country, behind Phoenix's 311 LNG vehicles and OCTA's 232.

"We still have a lot to learn, but we're using the fuel that's going to get us to zero emissions," added Jim Ortnier, manager of Transit Technical Services for Orange County Transportation Authority (OCTA) and co-chair of the 2001 LNG Users Group. "California law says transit must be at zero emissions by the end of the decade, and LNG, as a source of hydrogen, is our migration strategy to fuel cells."

At OCTA, DART, ValleyMetro of Phoenix, El Paso's Sun Metro, Santa Monica Transit and Gary (Indiana) Public Transit Corp., the introduction of LNG has turned ordinary bus routes into advanced research and development operations more typical of space flight than bus rides.

Cryogenic Difficulties

As with outer space operations, LNG requires special equipment and procedures at every step of the way, because it cannot exist at normal temperatures. The fuel is produced at a temperature of minus 260 degrees Fahrenheit.

However, even though all storage and processing equipment is heavily insulated, the LNG immediately begins to gain heat, which tends to cause the liquid to return to a gaseous state.

In order to keep the fuel liquid, pressure must be added to storage tanks. The amount of pressure required, a function of the fuel's temperature, is called the saturation pressure, a fluctuating value of paramount importance to every LNG user. Meeting participants spent considerable time just comparing notes on ideal saturation pressures.

Range and Dependability

Because the use of LNG in transit goes back less than a decade, every transit property that adopts it is blazing new trails toward zero emissions operations. Several agencies reported initial difficulties in predicting the range of LNG-fueled buses, due in part to lower than expected mileage performance and in part to problems fully loading bus fuel tanks.

Often, LNG buses must be equipped with more than one fuel tank, and inequalities in pressure between multiple tanks has caused false fuel quantity readings. DART reported having to install additional tanks on buses and fuel gauges on each tank to achieve the necessary 380-mile range.

Several agencies also reported initial problems keeping their LNG buses running. DART continues to work with engine makers to iron out problems with various types of failures.

Small Scale Limitations

Because LNG use is still very limited, agencies reported difficulties in finding various equipment and replacement parts. Worse, supplies of LNG have been precarious at times. When one LNG producer took a plant off-line, DART reported its fuel reserves dropped to one day's supply.

The conference featured representatives from all phases of the industry, including fuel producers and marketers, manufacturers of handling equipment, vehicles and engines. Several manufacturers admitted that because of its relatively small size, the LNG market does not command the same kind of attention that the diesel market does.

A consultant's report to DART distributed at the conference told the LNG story: "Lessons Learned -- Transit agency employees should learn all they can about potential problems with alternative fuels in field operations. Agencies should plan for unexpected contingencies and exercise patience through the start-up process."