Our Vision Clean Air

Santa Barbara County
Air Pollution Control District

July 29, 2005

Mr. Gary Yee
Manager-Industrial Section
California Air Resources Board
1001 I Street
P.O. Box 2815
Sacramento, California 95812

Regarding: Compressed Natural Gas Fuel Specifications

Dear Mr. Yee:

This letter provides comments on the Air Resources Board's (ARB) draft proposed concept to revise the motor vehicle compressed natural gas (CNG) specifications under Title 13, California Code of Regulations, section 2292.5. For several years, "hot gas" that does not meet ARB's CNG specifications has been delivered to Santa Barbara County, and we have been working closely with all the stakeholders to try and resolve this important issue. I am concerned with ARB's draft proposed changes to the CNG specifications and offer the attached comments (see attachment).

In summary:

- Assuming the existing CNG specifications need to be changed, adopt the same statewide minimum performance and compositional standards for all areas of California (e.g., MN80 minimum, Wobbe Number, etc.);
- Do not allow MN73 minimum for South Central Coast Air Basin (SCCAB) counties as you propose;
- The Wobbe Number maximum should be less than the 1400 limit being suggested by the gas industry; instead consideration should be given to an upper Wobbe Number limit from 1357 (the ninetieth percentile level of 1992 GRI survey of gas supplies) to 1375 (upper range of SoCalGas Interstate supplies by volume) in any new CNG specification, since the Wobbe Number appears to have the largest single effect on air pollution emissions based on the LNG Study results;
- Pursuant to the Natural Gas Vehicle Legacy Fleet Study, existing heavy duty vehicles operating in the SCCAB and other hot gas areas must be upgraded, or other solutions must be implemented in order for legacy fleet vehicles to operate on any revised CNG specifications adopted by ARB;
- It is neither right nor fair that natural gas suppliers be allowed to socialize the impact of hot gas and privatize the profit to be realized from relaxed gas specifications. Therefore, natural gas suppliers and marketers should bear the costs of the legacy fleet retrofits since potential cost savings from introducing Liquefied Natural Gas (LNG) into California gas supplies as well as cessation of current blending practices will likely not be passed on to consumers;

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- Before modifying the CNG specifications, ARB should analyze the statewide impact of MN80 (or proposed MN73 to SCCAB counties) gas on emissions from non-mobile sources (e.g., power plants, generators, residential use), including future results from Phase II of the LNG Research Study.

I support efforts to consider necessary revisions to the CNG specifications, and I understand ARB's desire to eliminate the exemption system for gas users in the SCCAB region that has been in place for some years now. I do not, however, support a revision to the CNG specifications that would degrade air quality and jeopardize the progress we have made in cleaning up our air. All potential revisions to the CNG specifications must take into account environmental and health impacts upon the public.

Thank you for the opportunity to comment on this important issue. Attached is a detailed technical discussion of our concerns summarized above. If you have any questions, please feel free to contact me at (805) 961-8853, or Gary Hoffman at (805) 961-8818.

Sincerely,

Terry Dressler
Air Pollution Control Officer

cc: Barry Wallerstein, SCAQMD
Larry Allen, SLOAPCD
Mike Villegas, VCAPCD
Catherine Witherspoon, ARB
Leslie Crowell, ARB
Michael Peevey, California Public Utilities Commission
David Maul, California Energy Commission

Attachment

Technical Discussion -Compressed Natural Gas Fuel Specifications

RE: Air Resources Board's (ARB) draft proposed concept, dated June 28, 2005, to revise the motor vehicle compressed natural gas (CNG) specifications under Title 13, California Code of Regulations, section 2292.5.

Summary: Relaxing the CNG standard by allowing MN73 gas to be sold in the South Central Coast Air Basin (SCCAB) counties may cause operability problems with existing heavy-duty "legacy" CNG engines if they are not upgraded, it does not require natural gas producers and marketers to clean up their rich or "hot" gas, and it may lead to increased oxides of nitrogen (NOx) levels regionally, from motor vehicles and stationary sources, and make it difficult for SCCAB counties to meet and maintain air quality standards.

Lowering the Gas Quality Standard: The rationale for allowing MN73 in the SCCAB counties exclusively is not clear. The proposed MN 73 specification is significantly different than the existing CNG specifications. Why should the SCCAB counties be saddled with hotter gas, while the other areas of the state enjoy the air quality benefits associated with MN80 gas. Under the proposal to allow MN73 gas, the compliance flexibility accorded natural gas producers and marketers (gas utilities) will guarantee hotter gas and higher emissions in the SCCAB for years to come. Once MN73 gas is allowed be sold in the SCCAB, local gas utilities such as Southern California Gas Company (SoCalGas) can legally sell this gas in their public fueling stations. Moreover, in many SCCAB producing fields, the local pipeline gas is already around the MN73 minimum value. The current practice of methane blending to meet a higher current CNG standard would be stopped. The gas utility can then, legally, make a business decision to cancel those customers that have a few legacy engines that cannot burn MN73 fuel, and cannot afford to have them modified to burn such fuel. Several SCCAB school bus operators that currently get blended gas for their legacy engines may fall in that category. The MN73 proposal cites conditions that must be met to sell MN73 gas to captive fleets but we are concerned if ARB is prepared to enforce those conditions once the relaxed standards become law.

NGV Legacy Fleet Study: Although MN73 for SCCAB counties is being proposed by ARB, the NGV Legacy Fleet Study covering some 3,000 heavy-duty legacy vehicles in SoCalGas's service territory has not yet been finalized or released in draft form as yet, even though the report was originally slated to be released in July 2004. We understand that preliminary study results show over 2,700 of the legacy vehicles require MN80 gas and above. On-going testing is still in progress on legacy Detroit Diesel gas engines (over half of legacy fleet are this brand) to address warranty issues and update their fuel specifications. Many of the legacy engines in the SCCAB (i.e., Detroit Diesels and Cummins) require MN80(+) CNG fuel. Without this information, we still do not know precisely which legacy engines in our SCCAB region can burn this hotter fuel down to MN73 since this information is not available yet.

Depending on what the Legacy Fleet Study recommends, the question that arises is "who" pays to upgrade these legacy engines, if necessary, so they can operate on CNG fuel down to MN73 (or lower). For example, one of our local school districts' CNG-powered buses uses a Cummins 5.9G gas engine. Although the Legacy Study is not released yet, we understand this engine can accommodate

MN73 fuel or lower with a $12,000 upgrade. If several of the engines in our SCCAB captive fleets cannot operate on MN73 without these modifications, who will pay for these upgrades? Until the Legacy Fleet Study is released and these types of details are forthcoming, any proposal to modify the CNG standard and allow MN73 gas to our captive fleets should be tabled until these questions are answered. The legacy fleet operators in the SCCAB region should not be required to pay for these upgrades just because ARB changes the CNG specification to allow what is currently non-compliant CNG to be sold legally by fuel providers in the future.

Lastly, ARB's February 2002 staff report ("Proposed Amendments to the California Alternative Fuels for Motor Vehicle Regulations") included heavy-duty engine test data from the NGV Technology and Fuel Performance Evaluation Program ("PEP studies") completed in 2000. Engines with advanced and first generation controls (e.g., John Deere 8.1L and Cummins 8.3L) showed 6% and 10% increases in CO_2 and NMHC respectively in switching from MN81 to MN73 CNG fuel. The open-loop control Detroit Diesel Series 50G and Cummins L10 engines showed increases in NMHC emissions approaching 50% with MN73 fuel. Many of the legacy engines in the SCCAB region are these models. Again, the "legacy" engine issues surrounding the current NGV Legacy Study cited above need to be addressed, and assurances given to the legacy engine operators, prior to any decision to change the CNG standards.

Implications for Stationary Sources: Varying gas quality can be detrimental to both mobile and stationary sources. Relaxing the CNG spec to MN73 can have serious implications for stationary sources in our region as well. The recently completed LNG Research Study sponsored by SoCalGas showed higher temperatures and higher NOx emissions occur when higher BTU and higher Wobbe Number gas was burned in many common residential and commercial gas appliances found in Southern California. Relating the study results to motor vehicle CNG fuel specifications proposed by ARB, the critical test Gas # 3 composition equated to MN 75 gas. Therefore, we would expect similar effects on air emissions if the SCCAB region is saddled with MN 73 gas.

With the anticipated introduction of Liquefied Natural Gas ("LNG") into the southern California natural gas supply system in the future, the hot gas problem may be exacerbated. LNG is generally hotter because of elevated levels of ethane and propane and near zero inerts, and it may not meet current ARB CNG standards. In fact, the desire to lower the gas quality standards seems to come largely from the LNG developers proposing to build LNG terminal facilities in Southern California. As indicated above, the LNG Research Study showed that emissions of both NOx and CO are significantly elevated using hotter test gases, especially in newer low-NOx burners. In some instances, NOx emissions could more than double if the hottest gas were used in commercial applications, while CO has been shown to increase from 50 to 1200 ppm in certain instances. The hottest test gas used in the study (Gas # 3), moreover, is within the limits of both California gas production and potential LNG supply in terms of higher heating value (HHV) and Wobbe Index. In theory, gas customers could be burning this gas quality in residential and commercial appliances today.

ARB should conduct an analysis of the statewide impact of MN80 (or MN73 proposed for SCCAB counties) gas on emissions from non-mobile sources (e.g., power plants, generators, residential use), as this is a significant issue. Phase II of the LNG Research Study is now being initiated by SoCalGas to investigate gas compositional effects (BTU values vs. Wobbe Number), and performance and emissions from Low-NOx boilers. These results should also be considered by ARB before revising the CNG standards as proposed.

Regional Wobbe Number: In its draft proposal, ARB indicates that a "regional" Wobbe Number is being considered for the SCCAB, with a different value statewide. We are alarmed by this since we should have the same standards as the rest of the state. As previously stated, the LNG Research Study shows quite clearly a strong positive correlation with higher Wobbe (and higher BTU gas) and higher NOx emissions. Based on recommendations from the National Gas Council (NGC), the Gas Quality Working Group, SoCalGas, and others, an upper Wobbe limit of 1400 is being proposed for California's gas quality specifications. We feel the 1400 upper Wobbe limit should be lower since the Wobbe Number appears to have the largest single effect on air emissions based on the LNG Study results. An upper Wobbe Number limit from 1357 (the ninetieth percentile level of 1992 GRI survey of gas supplies) to 1375 (upper range of SoCalGas Interstate supplies by volume) should be considered (instead of 1400). This is especially important with the potential introduction of foreign hot LNG gas into our domestic gas supplies. While the 1400 Wobbe limit is perceived by the gas industry as a tightening of the gas standard, local producer gas data we have reviewed seems to indicate the Wobbe average is typically below 1400 in 11 of 14 SCCAB producing fields. Thus, placing a 1400 Wobbe limit on future gas in new CNG specifications will do little to clean up the domestic rich gas and to ensure air quality is not being degraded. We believe that ARB's proposal to allow both MN73 and a higher Wobbe Number for natural gas in the SCCAB will have adverse impacts in our local air quality.