

To be included in the Final Basic Assessment  
Report

Comments received on withdrawn Application



# DYNAMIC COMMODITIES (PTY) LTD

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RE: EXPANSION OF LIQUID OXYGEN AND DIESEL STORAGE AT THE AIR PRODUCTS FACILITY LOCATED WITHIN THE COEGA SPECIAL ECONOMIC ZONE, PORT ELIZABETH, EASTERN CAPE PROVINCE

PROVINCIAL REGISTRATION NUMBER: ECm1/C/LN1/M/40-2019

The effects of a 23m3 diesel tank on a Food Manufacturing Facility

Diesel is a mixture of hydrocarbons used as a fuel source for the combustion engine. Air Products South Africa (Pty) Ltd intends to construct a 23m3 (23 000L) diesel tank on their premises and chose a location near the boundary fence. This fence separates Air Products South Africa (Pty) Ltd, now referred to as “the initiator”, and Dynamic Commodities, now referred to as “us/we or our”. In addition, the initiator intends to construct a liquid oxygen (LOX) tank of volume  $\pm 103\text{m}^3$ .

We would like to raise the following concerns regarding this project. If our understanding of the project is incorrect, we would welcome additional information and cordial communication between our business ventures to address this miscommunication or misunderstandings. The initiator intends to use the 23m3 tank as a fuel point for trucks. These trucks would emit high concentrations of exhaust emissions into the surrounding area. This area is located less than 50m away from our raw material collection point. It has been noted that exhaust smoke from diesel engines introduce unburned hydrocarbons, carbon monoxide, sulphur dioxide, nitrogen oxide and particulate matter into the atmosphere [1]. Carbon monoxide is of concern due to its effect on biological systems. Additionally, it has been acknowledged that the age of the engine plays a major role in the degree of pollution with older models introducing higher quantities of such gasses. Likewise, the quality of the diesel also effects these emissions with low centane diesel facilitating higher emissions (Fig 1 - 3).

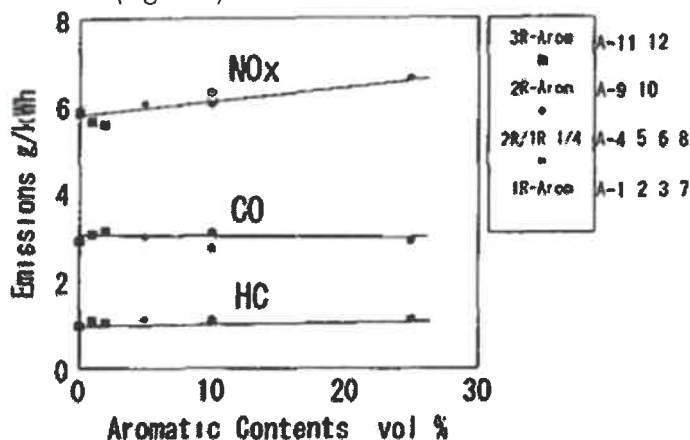


Figure 1. Emissions from an older generation diesel engine. The emissions are displayed in g/kWh on the y-axis with the percentage of aromatic contents, such as hydrocarbons, being displayed on the x-axis [1].

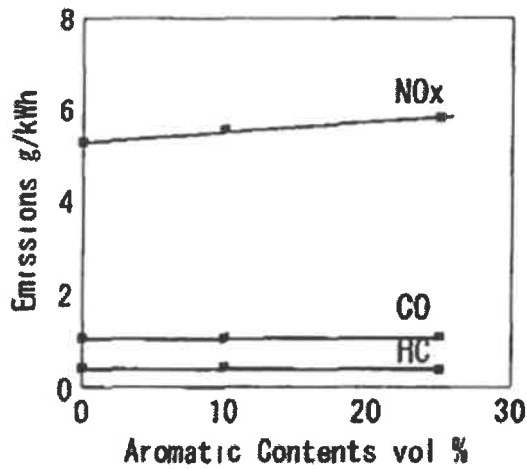


Figure 2. Emissions from a newer generation diesel engine. Figure displayed as per figure 1 [1].

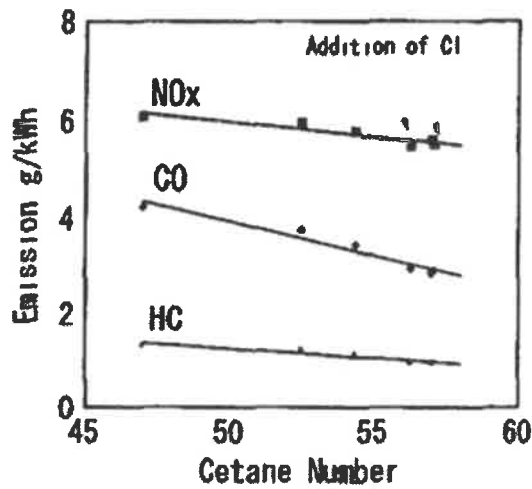
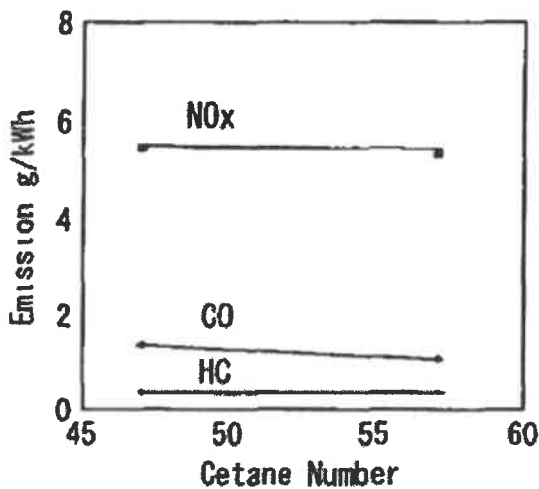


Figure 3. The effects of diesel quality on emission generation represented by cetane number of diesels. The cetane number is represented on the x-axis whilst the emissions in g/kWh are represented by the y-axis as in figure 1 [1].

These factors would have to be considered from a food safety perspective as these emissions are harmful to food products. Additionally, under the South African National Standard 10131:2004 subsection 4.2.2 "Location of above-ground tankage" [2] it states that, cognizance shall be taken of population densities around the premises and good housekeeping such as the removal of flammable materials such as rubbish, dry vegetables and oil-soaked soil. Additionally, it states under subsection 4.3.1 "General tankage layout – minimum safety distances" that safety distance is based upon the class of liquid. Diesel is classified as a class II liquid, therefore the minimum safety distance from a boundary of an adjacent property is 3m. The proposed location of the diesel tanks (Fig 4) lies close to our boundary fence. Furthermore, since we are a food manufacturing facility specialising in fruits and vegetables such dried matter can occasionally be found along our boundary fence. Additionally, the area directly adjacent to the proposed location houses our old equipment and storage bins. This old factory equipment could contain reflective material possibly able to generate heat while the bins contain rubbish, which may be ignited. Fires started by reflective metals or glass have had devastating effects and their ability to start fires has been studied for many years [3].

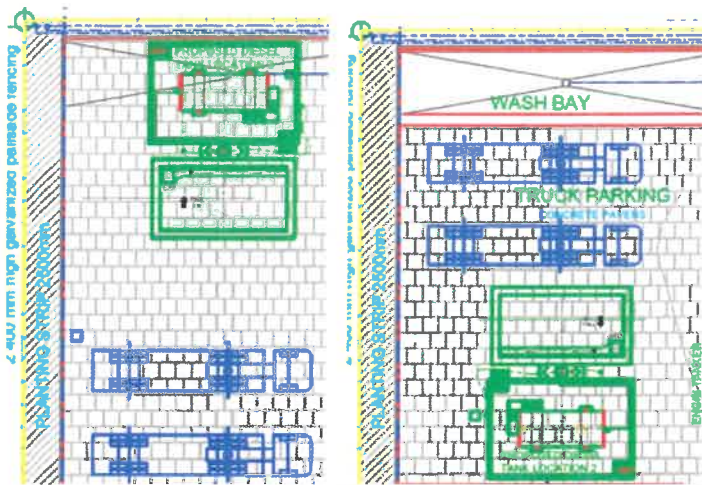


Figure 4. Location of Diesel Tanks. Diesel tank locations are highlighted in green. The boundary wall is located at the top of the image which borders Dynamic Commodities.

From an operational healthy and safety aspect, some of our maintenance and raw material personnel frequently operate in this area. As stated in the Major Hazard Installation report, the tank was not to be placed near the guard house on the initiator's premises due to the presence of the building and personnel. We would like if this courtesy were extended to encompass our own personnel who work in the area. The Major Hazard Installation report also reflects that wind is likely to blow vapours in the direction of the bulk cryogenic storage facility, however, this appears to be unlikely. Data gathered from two differing sources (Fig 5 [4] and 6 [5]) indicate that, for most of the year, wind direction maintains a South to South West consistency. Our storage facility and collection point lie at South-West: 202° whilst our location for storage of old equipment lies at South: 207°.

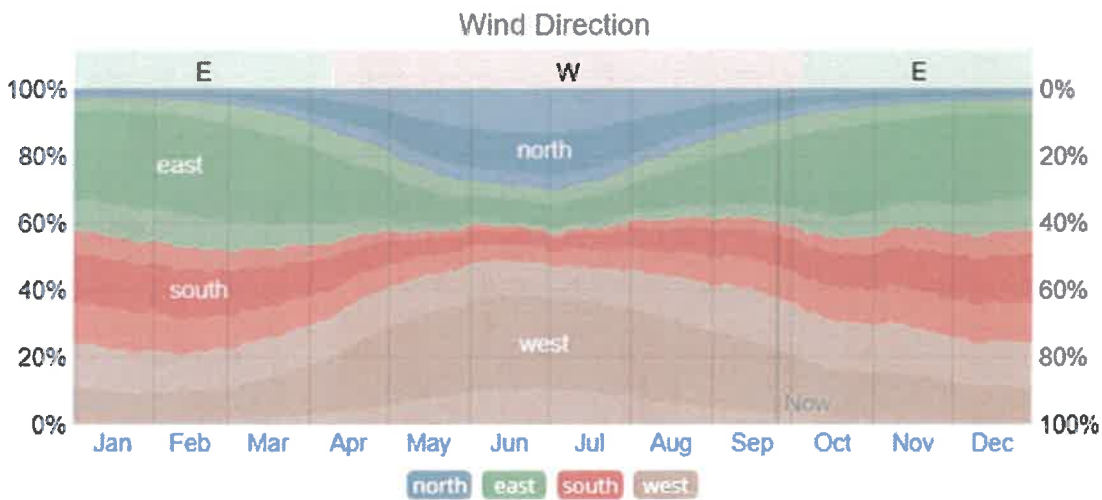


Figure 5. Percentage of time from which wind direction spent in a direction during 2018 within Coega.

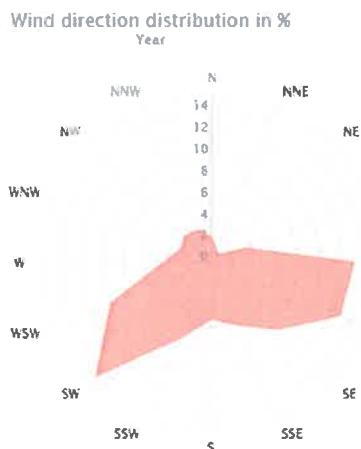


Figure 6. Percentage of time from which wind direction spent in a direction during 2018 within Coega.

*[Handwritten signature]*

Diesel vapour is another concern to us, as our own standard (ISO22002-1) states that diesel powered forklifts shall not be operated within a food storage facility. Although not necessarily within our facility it should also be noted that diesel vapour has a density greater than that of air [6]. The location is completely paved on both sides and light winds could potentially dissipate diesel vapour into our own warehouse depending on the amount of vapour produced during refuelling of trucks or during a leak of the diesel tank.

In the Major Hazard Installation report, it was reported that location numbers three and four were not okay based on their proximity to the boundary fence (Fig 7). In this report, it appears that location two and three were submitted as proposed locations based on the information provided within the "Coega BAR Appendix A2.1 and A2.2" report. However, location two was deemed not okay due to the presence of the security building. This should automatically rule out the proposed option for the alternative second location. Therefore, only location three, or proposed location one as noted in the A2.1 report should be viable. However, it was noted as being not okay due to the boundary fence. It seems that the proposed location four within the Major Hazard Installation report was not proposed as a location for the diesel tank. However, this would place the tank on the far side of the facility in relation to Dynamic Commodities.

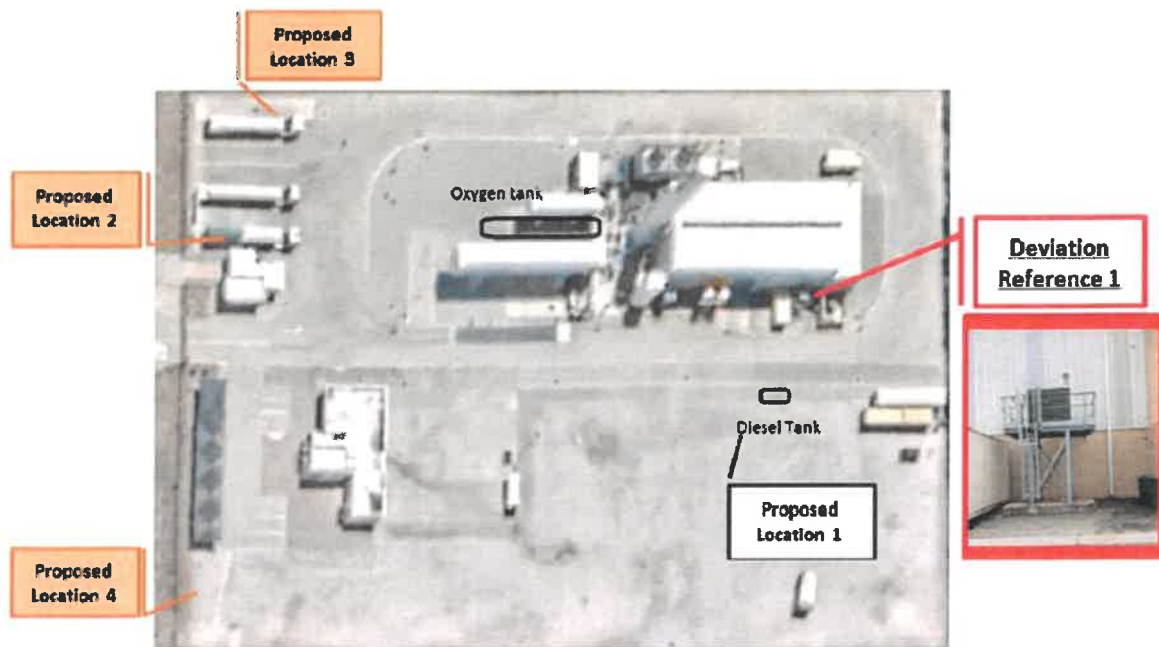


Figure 7. Locations of Diesel Tanks as reviewed by Major Risk Installation Assessment. The initial proposed location one is highlighted in white with all secondary locations highlighted in orange. Proposed locations 2 and 3 were submitted as the proposed diesel tank locations as depicted in Figure 4.

Other concerns include the effect of the diesel tank on our insurance premium, the potential for an explosion or an accidental release of large volumes of diesel in the surrounding area. This installation has the potential to directly affect with our production lines from both an operational health and safety perspective as well as from a food safety perspective. Therefore, we feel that the current proposed location of the diesel tank does not satisfy our current level of food safety that we provide our international customers.

Yours faithfully

*J. Bundy*  
 CHIEF EXECUTIVE OFFICER

References

- [1] P. TAN, J. ZHAO, Z. HU, D. LOU, A. DU, and D. DU, "Effects of fuel properties on exhaust emissions from diesel engines," J. Fuel Chem. Technol., vol. 41, no. 3, pp. 347-355, 2013.
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- [4] Weatherspark, "Mean wind direction," 2018. [Online]. Available: <https://weatherspark.com/y/91692/Average-Weather-in-Port-Elizabeth-South-Africa-Year-Round>. [Accessed: 25-Sep-2019].
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- [6] C. Schaschke, I. Fletcher, and N. Glen, "Density and viscosity measurement of diesel fuels at combined high pressure and elevated temperature," Processes, vol. 1, no. 2, pp. 30-48, 2013.