

Reasoned Document for 1600 hp CNG DPC draft specification

CEA Comments

SN	Clause no. of RDSO spec.	Clause, as it exists in RDSO specification/STR	Clause, as it should read after incorporation of comments/ suggestion in the RDSO specification/STR	RDSO's remarks
1.	1.5	Conversion has been envisaged to be done based on fumigation technology.	Conversion has been envisaged to be done based on fumigation and / or any other suitable / alternate technology in the Field of Dual Fuel Conversion, providing similar / better conversion rate / result(s).	Not accepted. Since conversions on fumigation technology for 1400 hp DPC engines has been successful. Therefore only fumigation technology has been envisaged for this conversion also.
2.	2.1.3.1	Testing engine as per engine particulars, CNG storage and delivery system, measurement facilities for regulated emissions viz. NOx, CO, THC, PM, smoke opacity, Coriolis based mass flow measurement system for net diesel fuel consumption and CNG consumption, measurement facilities for engine performance parameters etc. to enable testing first in pure diesel mode and then subsequently after conversion to dual fuel in diesel and in dual fuel mode.	Testing engine as per engine particulars, CNG storage and delivery system, for net diesel fuel consumption and CNG consumption, measurement facilities for engine performance parameters etc. to enable testing first in pure diesel mode and then subsequently after conversion to dual fuel in diesel and in dual fuel mode. Measurement facilities for regulated emissions viz. NOx, CO, THC, PM, smoke opacity, Coriolis based mass flow measurement system is desirable, in absence whereof same will be carried out by RDSO at RDSO / ICF Chennai / Site after the completion of the Dual Fuel Conversion process.	Not accepted. Tenderer must comply with para 2.1.3 as measurement facilities for regulated emissions viz. NOx, CO, THC, PM, smoke opacity, Coriolis based mass flow measurement system is essential for carrying out dual fuel conversion work.

IROAF comments

SN	Clause no. of RDSO spec.	Clause, as it exists in RDSO specification/STR	Clause, as it should read after incorporation of comments/ suggestion in the RDSO specification/STR	RDSO's remarks
1.	5.12	CNG Storage system: CNG cascade consisting of 40 high pressure cylinders. Cylinders indicative specification :-Water	The CNG storage as mentioned in the specification (refer point no 5.12) is having capacity of 50 ltrs. which appears to be too less for DEMU operation,	Accepted. Point no 5.12 to be read as "CNG Storage system: the water

		capacity -50ltrs, Outer diameter- 232 mm, Wall thickness-7.0 mm, Length-1515 mm, Steel grade –seamless chrome molybdenum steel. These specifications are indicative and successful tenderer may offer CNG cascade /cylinders with better specifications. Cylinders in the cascade to be firmly secured in their position to prevent any movement during run.	Presently the converted DPCs are in operation with 75 litres *40=3000 litres cascade.	storage capacity of CNG cascade to be used on converted DPC should not be less than 3000 litres. This value is indicative and successful tenderer may offer CNG cascade /cylinders with better specifications. Cylinders in the cascade to be firmly secured in their position to prevent any movement during run.”
2.	8.2	Engine performance and emission performance in dual fuel mode should be similar or better than that in diesel mode over the duty cycle.	Emission parameters -Emission parameters for dual fuel operation (point 8.2) will not be better than diesel for all the pollutant gases, For THC, the figure will always be on the higher side, For CO, the figure will be more or less equal. This has been noticed in a number of emission tests done by RDSO on dual fuel DPC’s converted by IROAF as well as from various technical literature.	Not accepted. Similarity or better values of emissions parameters in diesel and dual fuel mode has been envisaged for 80% substitution on energy content basis also. Therefore the same has been envisaged for 20% substitution as well. Higher values of THC Emissions are an indicative of an optimized gas flow into the engine and higher total energy input given to the engine.
3.			Now it is possible to have a LNG tank in place of cascade having larger capacity of natural gas. The cost of such LNG tank has also seen a reduction in the recent times. It may be worthwhile to give an option to LNG tank also.	Not accepted. Use of LNG for 20% substitution has not been envisaged for this conversion. However for using LNG, location of batteries has to be changed and approval from MP & Carriage Dte. of RDSO has to be taken.