

UNION CARBIDE CORPORATION
CHEMICALS AND PLASTICS
ENGINEERING
SOUTH CHARLESTON, WEST VIRGINIA

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MEMORANDUM

R.E.O'B

October 17, 1977

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SUBJECT: Fuel Oil Blending - Texas City

A number of questions have developed in the last couple of months concerning the fuel oil blending capabilities of the fuel oil handling and distribution system. The system as designed and installed on the Phase II Project is intended to blend a No. 2 oil and a No. 6 oil to make a No. 4 oil (max. sulfur of .35%). A normal No. 4 oil would have a viscosity in the range of 45 to 125 SSU at 100°F with desired objective of 100 SSU at 100°F. A brief review of the critical pumping systems can be summarized as follows:

(1) The No. 2 oil pump (GUT-711) at the Marine Terminal is designed for 300 GPM at 360 FT (151.2 psia). This pressure will deliver No. 2 oil at rated volume to the in-plant storage tanks. The No. 6 oil pumps (GUT-712,713) are designed to deliver No. 6 oil at a rate of 450 gpm and 311 psia discharge pressure. These latter pumps were designed to handle higher viscosity oil (1700 SSU @ 140°F) directly to the plant. This was a future design consideration built into the system. When the blender is in service these two pumps (GUT-711, GUT-712) will deliver required volumes (225/225 gpm on a 50/50 basis) to the blender control valves for proper mixing to the desired No. 4 oil characteristic. (either sulfur limit or viscosity limit). Discharge pressure from the blender should be approximately 120-130 psia for delivering No. 4 oil

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to the in-plant storage tank. The characteristics of the feed materials must be known in order to establish the correct setting for the blender controls.

(2) The centrifugal pumps at No. 1 Steam Plant are designed for 225 gpm at 425 FT (161 psig) with viscosity of 60 SSU @ 30°F. At a viscosity of 300 SSU these pumps should develop 175 gpm at 157 psig. This flow rate is equivalent to approximately 36,000 MM BTU/D input at No. 1 Steam Plant. The attached viscosity characteristics of fuel oils indicates the viscosity ranges of a blended No. 4 oil. This should be used as a guideline in blending operations.

Based on the above information, we believe blending operations to a .35% sulfur and/or 300 SSU viscosity limitations are obtainable without additional investment. However, operation of the system with a .7% sulfur limit cannot be accomplished due to TACB provisions for SO₂ monitoring of either the stacks at No. 1 Steam Plant or a sulfur analyzer on the total fuel to the plant. This monitoring will be included on Stage II and will be done as soon as TACB approval is obtained. If the 300 SSU viscosity is determined to be a serious limitation, then steam piping could be installed to the existing steam coil at the day tank at No. 1 Steam Plant.

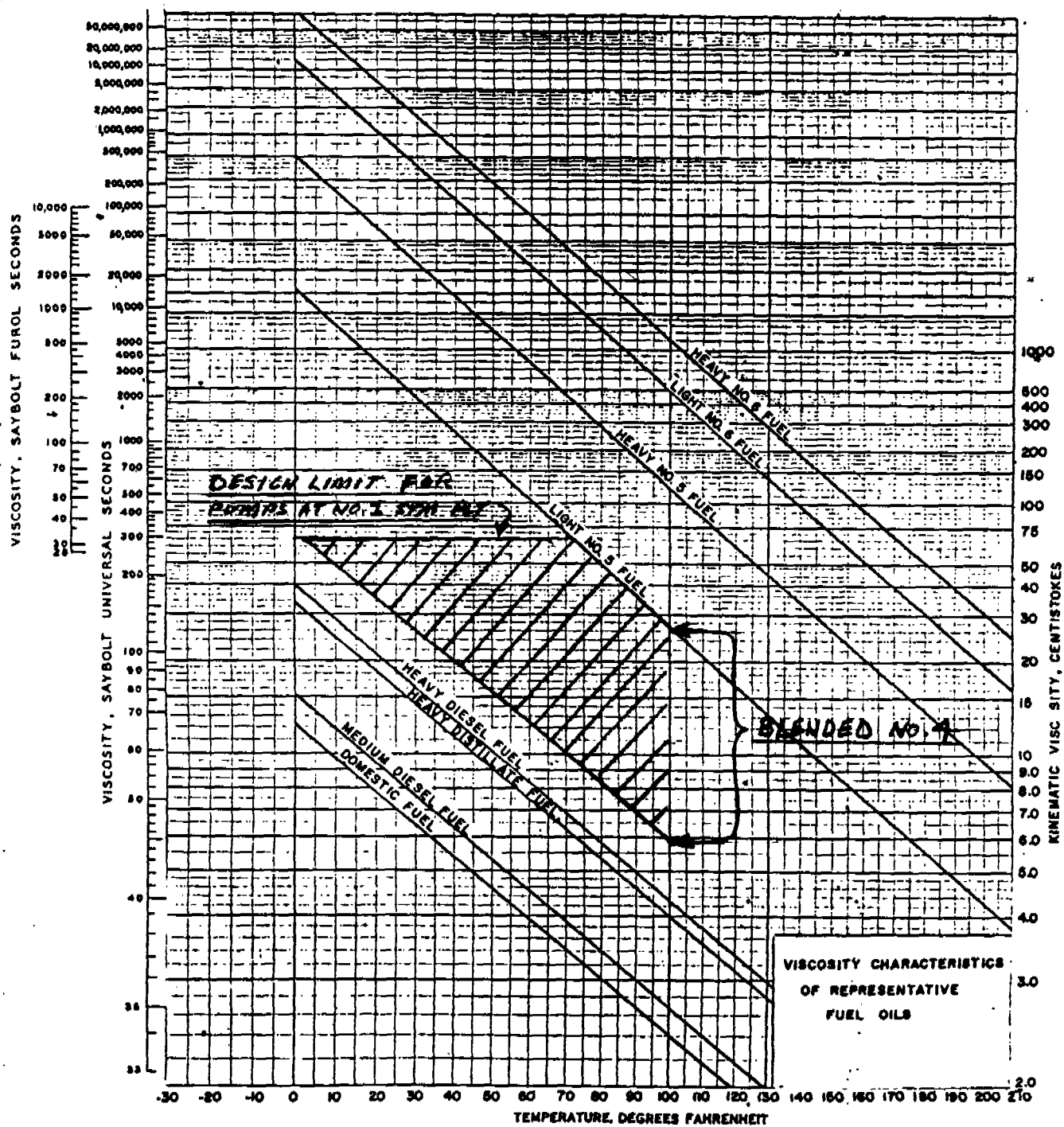
Please advise if you have questions or comments.


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