

Memo on Socony-Vacuum (Lubrite) Proportioneer Experimental
Plant at East St. Louis

Visited the plant in company of Lewis, Crane, Boudreau, meeting representatives of Socony-Vacuum, Mr. Doiron, of Proportioneer Mr. and Mr. Strickland, local dealer for Proportioneer. Inspected entire equipment and saw it in operation. The flow of Ethyl Fluid is adjusted to the gasoline flow by a very ingenious arrangement of a venturi on the gasoline flow line, by means of which, through a synchronizing motor and a revolving cam, the retraction of the poise on the beam of the scales of the Fluid weigh-tank is accomplished intermittently i.e. for some definite proportion of a minute which is determined by the rate of flow of the gasoline through the venturi. Whether or not the retraction occurs, and the period of time over which it occurs is determined by the electrical activation of an oversize solenoid through the action of the cam of the synchronizing motor. The movement of the beam of the scales regulates the pressure in an air line, which pressure operates on a large and powerful diaphragm thereby opening (by positive pressure) a piston valve and permitting the flow of Ethyl Fluid into the eductor line, the latter being under vacuum. The rate of flow of the Fluid is determined by the degree of pressure, which in turn is controlled by the upward movement of the scale beam. Various control mechanisms have been installed to prevent a flow of Fluid except at the proper time. If the pressure of compressed air fails for any reason, (failure of compressor, plugged air line) the valve controlling the flow of Fluid closes. If vacuum in the eductor line is lost, a sensitive gauge gives a signal by lighting a

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light on the control board, also causing the Fluid-flow valve to close.

The equipment seemed well adapted for the purpose and seemed satisfactory. Various questions arose.

(1) A hollow metal box, the halves of which came together with a gasket and a sensitive membrane of neoprene, the lower half being connected directly to a vertical tube from the eductor, the upper half being connected to a similar tube rising and passing to a bourdon gauge, this being an indicator of the existence of vacuum in the eductor. Fluid could rise in this tube to the neoprene diaphragm if pressure were to develop in the eductor. It might leak out at the gasketed edge. The use of neoprene as gasket material was questioned, as was also its imperviousness to Fluid and the vapor of Fluid.

(2) The stem of the cylindrical valve controlling the flow of Fluid passes through about 1-1/2 inches of packing, which may allow vapor to pass, especially when the packing has been saturated. No provision has been made to evacuate any vapor from this point.

(3) The valve surface may become coated with decomposition products of Ethyl Fluid and may have to be cleaned periodically. No provision exists for cleaning such portion of the equipment before dismantling for examination and repair.

(4) The frequency with which repairs may have to be made to any and all parts of this complicated equipment is unknown and must be determined by prolonged experience.

(5) The degree of precision, initially and subsequently attainable with this equipment must be established by a considerable period of experience.

(6) It appears that the management anticipates operating this

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lights having been set up in a building some distance from the blending plant. All compounding operations, such as the addition of inhibitor, dye and other materials are controlled in this building. One questions the feasibility of this procedure for handling Ethyl Fluid in continuous operation, blending the gasoline as it comes from the preceding manufacturing operations.

(7) The considerable cost of this equipment is to be balanced presumably by the discontinuance of recirculating operations, these being costly in time and in piping hookups and also in losses of volatile material.

(8) It may be supposed, although denied by the management, that direct blending into mobile equipment is anticipated. This must be anticipated by close contact with these people and by explaining the need for adequate control of outgoing stocks.

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