

HF:DOB.

July 7th, 1939.

Mr. J.H. Schaefer.

Dear Mr. Schaefer,

Many thanks indeed for your letter of the 30th June in answer to my memorandum regarding the provision of bomb-proof Ethyl blending facilities. I received your letter together with your cable A.31.

I am afraid I must apologise for not having been more explicit in my original memorandum, for the various comments on the proposals you sent me really miss one vital point. The Air Command, purely from a strategical point of view, have given a definite order that the vital services of gasoline and Ethyl Fluid storage must be fully protected, and the Engineering Department of the Air Force naturally have to meet their wishes even if, for technical reasons, any undesirable features are involved. This naturally implies that, apart from the tanks, all pipe lines are buried, and a completely independently protected electric supply will be installed. This power plant will be operated either by Diesel or gasoline engines.

The gasoline storage is calculated to be sufficient for six months' active service, divided amongst about five or six tanks which are completely buried and are protected against a direct hit from the heaviest bomb. Oscar Lewis' premise, therefore, that the tanks will appear as grass covered mounds is completely untenable, for absolutely nothing will be visible from the air.

The Air Ministry have already provided and equipped a large number of bulk storage points in this manner, and when discussing the Fluid blending facilities, we were opposed to any vital variation from our considered safety practices, so that these were installed on the surface, - naturally camouflaged and protected from blast. The Air Command, however, now insist that the entire scheme shall be self-contained and fully protected. That is the problem we have to face, and not a hypothesis as to the undesirability of the scheme which, of course, is agreed to by all parties.

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In the existing protected gasoline storage installations, quite obviously very complete and elaborate forced ventilation schemes have been worked out to deal with concentrations of gasoline or other vapours which might accumulate. The Military Engineers are fully satisfied, as a result of their experience, that such a ventilating equipment can be so duplicated and protected that the possibility of its being put out of commission entirely is extremely remote. The outlet ducts will be carefully chosen, and are so designed that in the unlikely possibility of a direct hit on the duct, a duplicate is available, and the damaged one can be repaired as soon as conditions permit.

The entire system of tanks, discharge points, and the Ethyl blending platform will be connected by a series of tunnels, and so alternative exits are provided and under normal conditions, i.e. outside a gas attack, various exits will be open and so induce natural through ventilation.

So far as the actual Ethyl blending is concerned, sufficient lead and gasoline are contemplated for six months' supply, so that blending presumably would only take place once during the six months. The only problem is to lead up the entire stock of gasoline in only one or two operations. It is necessary to keep clear gasoline in store as the period of time that such a reserve stock may be held in storage is indefinite, and therefore it is considered undesirable to hold it as leaded gasoline. Naturally we all earnestly hope that the necessity of operating these plants may never arise, but the present political situation just forces us to consider it.

I discussed the scheme suggested by Mr. Colvin with the engineers at the Air Ministry, and they ruled out the suggestion of having several protected surface blending platforms as being impracticable, since they would be too visible from the air, and at some particular points where this scheme is projected we are led to expect heavy and concentrated attack. Therefore any equipment visible on the surface will present a direct target. The entire scheme, as it is conceived today, will be completely invisible, the only outlet being the various ventilating ducts for the tank compartments and for the proposed blending platform.

I would therefore be grateful if you could give your further considered opinion to the problem when reviewed in the light of the further explanation contained in this letter, the principal points of which may be summarised essentially as follows:-

1. The Air Command demand that the whole installation be completely protected and invisible.
2. Continuous blending operations are not contemplated, and it is possible, but not certain, that the major quantity of the stored gasoline will be leaded up before trouble actually starts.

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3. Mixes would not be made during an actual air raid, for it is anticipated that all men working in the underground installation could be evacuated before an attack arrives.

4. It would be impossible for a direct hit to damage either the tanks or the blending platform, and it is only conceivable by chance that the ventilating ducts or tunnel exits would be hit. The Military Engineers for the design have, of course, foreseen this, and the arrangements are so duplicated and conceived that repairs could be made.

Having seriously reviewed the points I have established in this letter, I would still appreciate your comments on the practicability or otherwise of installing the closed but ventilated blending and storage room. As I am asking your advice, I naturally do not expect you to concur with my views, if you being in my position would yourself definitely rule against them. If, however, when reviewed in the light of the added explanation given, you consider that such a scheme should be practicable, allowing for the premise that the ventilating system will not be put out of commission whilst blending is taking place, (this must be accepted on the experience of the Military Engineers), I would greatly appreciate some detailed recommendations from you on the ventilating scheme, i.e. the design of the hood, capacity of fan and capacity of suction fan and ducts serving the blending area. This system will definitely be a suction system, drawing pure air and discharging back again into the atmosphere, - this being in line with the ventilating equipment which will be installed for the ventilation of the tank areas. It is not contemplated, therefore, to maintain a positive pressure inside the installation.

Yours very truly,

H. FOSSETT.

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