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Dear Matt,

Thanks for your letter plus encls of 2nd Sept. Oddly enough I too had been working up a similar table of minimum requirements, primarily for my projected piece for the IISS's Survival (in regard to which you recall my question about your Captain ?Brown--possible collaborant with or substitute for me, and sight of that paper of his ?): but your approach is better than mine. Will you mind some plagiarism ? One reservation: might critics not argue that retaliation in kind limited only to targets within artillery reach--and may not your one-third estimate be over-generous--be insufficient for/overall degradation thereby imposed to be significant in redressing asymmetries, having regard especially to (a) Soviet successive-wave tactics and (b) tac air turnaround ? The premises on which your table is based could then admit a rationale for Bigeye procurement, when taken with the expressed unwillingness of USAF tac air to fly spray missions. (Somewhat in which connexion, have you heard anything to suggest that the recent London Times report of the projected UK-based cruise missiles being equipped with 30% nerve gas warheads is correct "?)

I take it that your ca 10 ha assumption for the area over which a WTC company might be expected to deploy is carefully considered--notwithstanding the company R_m of 250 metres (equiv to about 20 ha) used in the GMT described in FM 6-20 of 1977 ? In regard to which, incidentally, I have come across a piece which states that Soviet artillery doctrine takes a US platoon strongpoint as covering about 4 ha; the platoon R_m in the GMT is 150-200 m (7-13 ha).

I am afraid I have nothing on the manner in which anyone's CW requirements have been calculated in the past. Enclosed are some documents setting out the British, French and American (note the far-seeing eye of MI 2c) CW artillery requirements as of the late 1950s, plus intelligence appraisals of German, Soviet, Japanese & ditto. You will see that these are all expressed as percentages of total artillery capacity--which suggests to me that the dominant considerations in formulating the requirements, at that time at least, were more to do with prevailing user artillery practice than with effects to be imposed on enemies. Just as you are suggesting, in other words.

For your interest I also enclose a recently released Cabinet paper (CID 1465-B of July 1938) which indicates the main considerations that influenced EMC last time it thought seriously about CW rearmament. I have this courtesy of a PhD student--the author of the enclosed RUSIJ article--who has been burrowing in the Archives.

On VX required contamination densities, the WTC figure was a misprint: mg for gm. So far as I can recall, we based the 0.5-5 figures on a hint from you plus a

calculation involving the 6 mg LD50 (which came from a Swedish defence source on 'F gas') and a figure for the surface area of a man. David Fisher, I remember, remained tactfully silent. US Army figures are---I presume---set out in the old FM 3-10B: though classified this was nonetheless used, apparently, by a French official for the enclosed tables; in which observe the 15 mg percutaneous LD50 figure in Table 2 and the VX munitions expenditure data in Table 6. It was from the latter that I derived the 300 mg/m² figure for our SciAm piece.*

If one were ^{using} ~~using~~ VX firing tables ^{based} on a figure as high as 3-5 g/m², would one want to seek complete target-area coverage, as opposed to sufficient coverage to create, in the minds of the attacked, a high doubt about noncontamination---say 10% coverage?

I would certainly love to be in America before too long, but it's none too easy getting away. Mary---to whom I am entrusting this for speedy delivery to you---may have some views ~~on this~~ which you could talk about with her.

As ever,

Julian

J P Ferry Robinson

Encs: As stated (viz WO 32 3663 07021; CAB 29 159 06107; RUSIJ 125(2):56-62, ~~and~~ 1980; plus CAB 4 28 05573; plus FAF 24: 449-475, 1969 (Ganas), extracts only)

And: Fin Times 10 June 80; New Statesman 22 Aug 80 pages 8-9.

*55 M23 mines would spread 262 kg of VX over the 1 km² surface covete; 45 M55 rockets, 208 kg over the 0.7 km². Which works out at just short of 300 mg/km².