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21 Jan 80

Dear Matt,

This is by way of being a postscript to my letter of 18th January: things I forgot about in the rush of trying to catch the post.

(1) In your notes on your 12 Dec 79 session at the Pentagon, you quote DoD people as saying that it is a "figment of the imagination" to suppose there is a problem of nerve-agent stability. Yet there is congressional testimony from 1975 to the effect that VX at Tooele has been showing signs of "accelerating deterioration" (Iquote this on page 115 of your Carnegie volume); and there is a Berdes/Frank annotation of our 15 Oct (rev 2) draft about "allegations to the effect that the stabilizer in the bulk agents are rapidly deteriorating". I take it it was the latter that you had been asking about ?

(2) The same notes record the Soviet buildup--you meant of CW weapons, I take it--as starting in the late 1960s. Was this ascertained (your wording suggests it is 'confirmed' intelligence) only in the wake of the post-Yom Kippur upgrade of CW intelligence effort ? Presumably, to judge from European military-press reporting, there was some sort of intelligence on this prior to Yom Kippur, though maybe only of an inconclusive sort ?

(3) Still on those same notes: "US stockpile is 30% bulk": am I right in supposing (a) that this meant both mustard and nerve gases, and (b) that 'stockpile' subsumed all types of weaponized agent: usable, unserviceable, scheduled for destruction but not actually destroyed, inside and outside the United States ?

Note this though: when testifying on the FY 1970 defence budget, the then Chairman of the JCS (Gen Wheeler) spoke early in 1969 as follows:

> "We actually have not too large a supply of what we classify as lethal chemical agents, mustard gas and nerve gas. The total comes to about (deleted). About (deleted) half of this is mustard gas, (deleted). The immediately usable portion of the stockpile, which is the portion that is in the filled munitions, comes to about 50 percent of the total supply".

So far as I have been able to make out from the public record--particulars following under separate cover--chemdemil operations since Wheeler spoke have consumed the following quantities (tonnes) of mustard and nerve gases:

Agent	Bulk	Weaponized	TOTAL
Nerves	1900 (20)	2000 (250)	3900 (270)
Mustards	2800 (40)	0 (300)	2800 (340)
TOTAL:	4700 (60)	2000 (550)	6700 (610)

(the tonnages given in parentheses referring to agent currently--no, at the time of the March 1977 Environmental Impact Statement--scheduled for destruction at CAMDS Tooele). If the current stockpile is indeed 30% bulk, and if the Wheeler statement of 50% bulk is comparable with what you were told, the figures in the above table mean that the total supply of bulk and weaponized agent in the present

stockpile, T tonnes, is given by: 0.3T + 4700 = 0.7T + 2000; i.e. T = 6750 tonnes. In which case our estimate of 7500 tons for present stocks of weaponized nerve gas can hardly be "phenomenally accurate". Something doesn't square somewhere. Have you any means of checking my chemdemil figures ?

(4) Do you know what the June 1979 Detroit meeting of the Military Operations Research Society was and why Berdes/Frank should have supposed that Falter and Watson were expecting the Europeans to go for binaries there ?

(5) Enclosed is ACSFOR congressional testimony of March 1974 claiming quantitative adequacy of USAREUR protective-equipment supply, conflicting with what Dashiell comments. Maybe the criteria of adequacy have changed since then.

(6) On CW downwind-hazard/collateral-damage, have you heard any more about the S.D.Fair study for ACDA ?

As ever,

Julian

J P Perry Robinson

enc: US chemdemil operations since 1969' (following under separate cover)
Almquist testimony in SASC FY75 9:4929.

OBSERVATIONS ON THE US CHEMDEMIL DATA

(1) When the currently scheduled operations at CAMDS Tooele are completed, the total number of M55 rockets to have been demilitarized over the years will be at least 118,000. Further supplies are known to exist on Johnston Island, where M55s alone occupy 33 igloos (19), and presumably also in West Germany.

(2) The four ocean-dumping operations of 1967-70 (CHASE VIII, X, XI and XII) appear to have been planned originally as parts of a series of seven, the projected CHASE XIII, XIV and XV chemical dumps being abandoned during the 1969 controversy over the M34s (3). The weight of agent dumped in CHASE X (60 tonnes of GB) was about one percent of the total weight of all the chemical agents which would have been included in the sea-dump planned for 1969 (20). Observe that the total quantity of agent disposed of during CHASE X and both phases of Project EAGLE is 4737 tonnes. Since there was no intention in 1969 to declare surplus the non-M34 GB materiel at Rocky Mountain, this suggests that at least some of more than 1000 tonnes (100 x 60 - 4737)of agent identified for disposal in 1969 has since been reclassified for retention.

Additional evidence on this: Apart from 21,108 M34 cluster-bombs (which were later destroyed in EAGLE-II) and the 418 coffins of M55 rockets (which later constituted the CHASE X cargo), the original 1969 ocean-dump plans included a total of 5311 1-ton containers of mustard located at Rocky Mountain, Edgewood and Anniston (2). This mustard comprised 2572 short tons of HD and 2214 short tons of H (21). A further 7332 1-ton containers of mustard, located at Pine Bluff and Tooele, had been identified for future disposal operations (2). The mustard destroyed during EAGLE-I constituted the entire Rocky Mountain stocks, namely 2214 short tons of H and 857 short tons of HD (7). Therefore, there currently remain undestroyed, despite their inclusion in the 1969 plans, some 1715 short tons (2572 - 857) of HD, constituting the formerly condemned stocks at Edgewood and Anniston: 2975 short tons of filled containers at Edgewood and 165 short tons at Anniston (24)--i.e. 1474 tonnes of actual HD at Edgewood and 82 tonnes HD at Anniston. Of the additional supplies of mustard identified for post-1969 ocean dumping, nothing is known from the open literature about those at Pine Bluff (which was a WW2 production site for H but not for HD (22)); but, with regard to those as Tooele, it seems that no code-H supplies of mustard in 1-ton containers are on hand for proof of CAMDS (16); instead items "which are currently in the serviceable stockpile" are to be used, and these are filled with HD not H (16). (Note: "storage condition code H applies to materiel which have been declared unserviceable or obsolete and identified for disposal" (16)).

So: were there subsequently rescinded plans to declare mustard obsolete ?

(3) The demil data enable estimates to be made about current US CW stockpile content when collated with other data.

In May 1974 DoD informed the Zablocki Subcommittee that its "research confirmed the almost 75 percent reduction in worldwide stockpiles since World War II when the worldwide inventory exceeded 100,000 tons" (24). On 9 May 1974 General Lewis of the OJCS had told the subcommittee that: "The stockpile has gone down. We now have about one-fourth of the agent we had at the end of World War II" (25). A volume of the official US Army WW2 history (22) records WW2 procurement of CW agents as approximately 146,000 short tons. The implication, then, is that the total US agent stockpile as of May 1974 somewhat exceeded 36,500 short tons (25% of 146,000). It seems reasonable to assume that Lewis/DoD were including in their 75% reduction figure those stocks that were, as of May 1974, scheduled for destruction but not actually destroyed. The 36,500 short-ton estimate would then be as valid for 1980 as it was for 1974, almost.

Early in 1969 the then Chairman of the JCS, Gen Wheeler, spoke as follows to the Senate Defense Appropriations Subcommittee, the gist of his remarks being repeated by several other DoD witnesses during subsequent testimony on the FY70 defence budget:

> "We actually have not too large a supply of what we classify as lethal chemical agents, mustard gas and nerve gas. The total comes to about (deleted). About (deleted) half of this is mustard gas, (deleted). The immediately usable portion of the stockpile, which is the portion that is in the filled munitions, comes to about 50 percent of the total supply." (18)

During the period intervening between the Wheeler and the Lewis statements, it appears that the total quantity of CW agent destroyed or scheduled for destruction --namely the agent destroyed during demil operations (3)-(6) above--amounted to 7316 short tons. From this it may be supposed that the total CW agent stocks at the time of the Wheeler statement amounted to not less than 43,800 short tons (36,500 + 7316).

Late in 1973 the JCS provided the following statement for the record of the House Armed Services Committee:

> "....during the period 1968 ("2½ wars") to 1973 ("1½ wars") the United States nerve agent stockpile was reduced 17.5% (this includes M-34 clusters located at Rocky Mountain previously approved for destruction but does not include the stocks at Rocky Mountain Arsenal whose destruction was approved by the National Security Council on 3 October 1973." (17)

On the assumption that the 17.5% reduction was constituted by chemdemil operations (1), (2), (3) and (5), in which at least 2623 short tons of nerve gas were destroyed, the nerve-gas stocks prior to 1968 would have constituted at least 15,000 short tons. On the alternative assumption that the 17.5% reduction referred only to the agent of chemdemil operations (3) and (5), namely 2152 short tons, the pre-1968 stockpile would have been about 13,000 short tons. Note, however, that this range of from 13,000 to greater than 15,000 short tons seems too low to jibe with the estimate of total GB/VX production derived by Robinson (26) from DoD congressional testimony and the MRI/ACDA history of US nerve-gas facilities, namely 22,500 - 28,400 short tons. Possible ways of reconciling these divergent estimates include assuming (a) that some 10,000 tons of the original GB/VX production were consumed in field trials or undisclosed demilitarizations, or (b) that the 1973 JCS statement referred only to nerve-gas stocks located within the United States, or (c) that the reduction referred to included not only the nerve-gas stocks consumed during chemdemil operations (1 or 3)-(5) but also further, undisclosed, supplies that had been categorized out of the War Reserve for reasons of munition-obsolescence, unserviceability, &c.

For several months from late 1977, two US newspapers were embarked upon investigative journalism into the security of US chemical and nuclear weapons storage locations. In one of the many resultant articles there is this passage:

> "....congressional sources have said the Army has more than 3 million nerve gas bombs and artillery shells as well as about 4000 tons of nerve gas in one-ton bulk containers. In addition, the Army has a very large inventory of mustard gas." (27)

No additional information seems to be available with which to judge the reliability of this report or, in particular, the likely accuracy of the 4000 ton figure for bulk nerve gas. However, during July-August 1973 newsmen ~~were~~ had been given access to the Tooele depot: their subsequent published accounts and photographs (28) can be interpreted (29) to suggest that there could have been upto as much as 6000 tons of bulk GB at Tooele. The 4000 ton figure therefore seems plausible.

So, if the 4000 ton figure is inserted into the appropriate slot of the following matrix, and if the 36,500 ton figure derived from the Lewis statement