RE: APPROACHES TO DETERMINE ARMY OPERATIONAL STOCKPILE LEVELS

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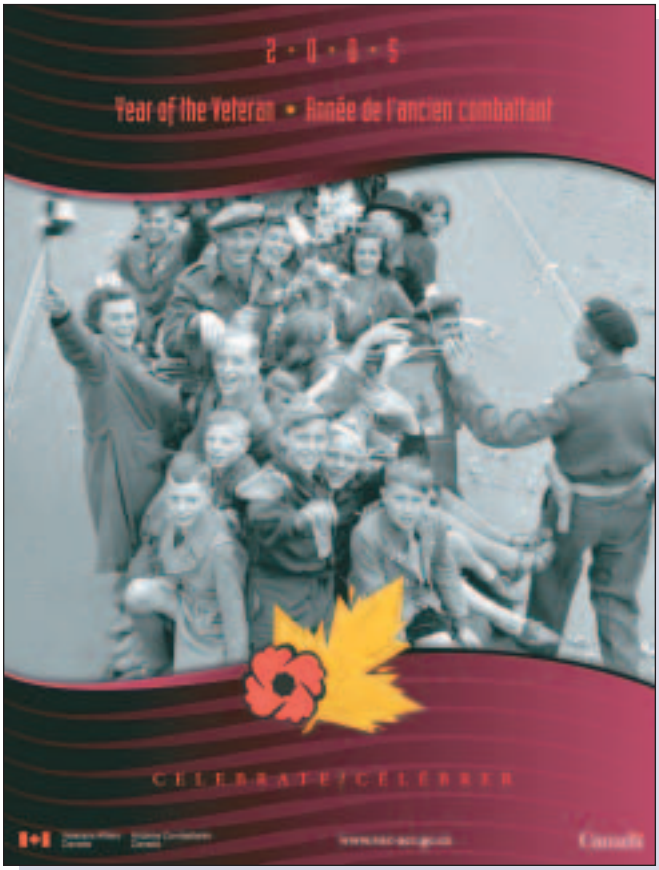
I am Philip Guy, Principal Scientist with NC3A at NATO Headquarters within the Intelligence Division, and project leader for the ACROSS project area. I was recently made aware of the article published in your Journal. I thoroughly enjoyed reading this article, which I believe is well considered and intelligent.

However, it did contain a number of factual errors that I would like to take this opportunity to correct. At the time of your publication, the most recent version of the SPG (Stockpile Planning Guidance) was not the SPG-2001, but was the SPG-2003, dated April 2003. Also at the time of your publication, the most recent versions of ACROSS were version 3.2, released March 2003, and SP (Service Pack) 1, released November 2003. Since then, ACROSS version 4.0 was released in October 2004. Also, in 2001, the definition of ACROSS was changed from "ACE Resource Optimization Software System" to "Allied Commands Resource Optimization Software System" in order to reflect the Bi-Strategic Commands (Bi-SC) nature of the Stockpile Planning Guidance and the tools it uses.

The article states: "The underlying algorithm in ACROSS is not readily available." This is, in fact, not true, as the mathematical formulation documents, as well as the full tutorial material, are included on both the software CD and the SPG CD. It also discusses the issue of 'breakpoints,' what we refer to as 'defeat criteria,' at some length. This has been an ongoing topic in the SPG for quite a few years. Defeat Criteria are considered in ACROSS and are actually handled in the target list generation stage of the SPG, with it being possible to set different defeat criteria for each target category. For example, if the enemy has 100 tanks and the defeat criteria for armour is defined at 30 per cent, then the ACROSS/LEMEM model will display 30 tanks that need to be neutralized.

Interestingly, there is also an opposing argument for not using defeat criteria for stockpile planning. Let us suppose that we have stockpiled our munitions based on the historically-validated defeat criteria of 30 per cent. Then, during a real conflict, we successfully use all of our munitions to destroy 30 per cent of the enemy assets, but the enemy continues to fight, to



our great surprise. We have no munitions stockpiles left, and the only course of action remaining open to us is to write a strongly worded letter to the enemy, informing them that they ought to have surrendered by now!

Based on this argument, there is one school of thought that says we ought to stockpile based upon a defeat criteria of 100 per cent, and another that says we ought to stockpile based upon a defeat criteria that is significantly higher than that historically displayed, say 60 per cent. The representation of indirect fire in ACROSS/LEMEM was completely overhauled in 2002, based on a proposal by The Netherlands, that is mentioned in the article as the surface versus point target representation. This proposal has been well accepted by all nations, though it does have to be said that obtaining data on the split between engaging targets with direct versus indirect systems has been problematic.

Contrary to the article, which states: "(The models ignore) situational awareness (informed opinions on how to destroy specific targets with specific munitions)," ACROSS/LEMEM also allows the user to enter targeting data in order to guide what is a purely mathematical model towards an operationally realistic result. This data is entered in the form of "my tanks will neutralize between 40 per cent and 80 per cent of the enemy tanks," or "munition X will neutralize between 20 per cent and 50 per cent of the enemy AFVs." Again, contrary to the article, ACROSS/LEMEM also allows the user to enter data on logistics allowance, expenditure on false targets, losses due to enemy action, 'zeroing,' and losses on board destroyed platforms.

Finally, two fundamental concepts in ACROSS/LEMEM are those of Basic Fill and Post Fill. Basic Fill is the requirement that all platforms will enter a conflict with at least one full payload of munitions onboard, one combat load, regardless of the number of munitions that will actually be expended. To plan otherwise is operational nonsense.

Post Fill is the requirement that all surviving platforms at the end of a conflict will still have one full payload of munitions available. To plan otherwise means that the last round of munitions will be in the right place at the right time to neutralize the last target, while all other remaining platforms will be empty! This is also clearly nonsensical.

I would like to thank Dr. Andrews and Dr. Hurley for their informative article, and it is nice to see national defence communities putting some serious thought into this important issue. We at NC3A have been looking for some time into a practical and logical methodology for Operational Stockpile Planning, which differs from the existing models, that are designed as Strategic Stockpile Planning tools. This is a challenging area, to say the least, and I think the coming years are going to produce some interesting developments.

Yours sincerely,

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