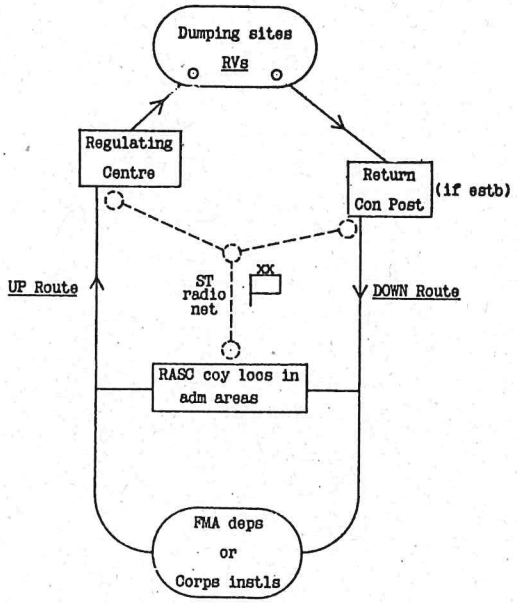
ORG AND CON OF DUMPING



FUNCTIONS AND RESPONSIBILITIES

Con 1. Responsibility - Q Staff. Detailed exec by ST from fmn HQ.

Org 2. Reg Centre estb on UP route in fwd area to:
(a) Coord guides to dumping sites.
(b) Reg flow to dumping sites and keep con HQ info of progress.

Composition would probably incl RASC offr, RA offr (if gun ammo being dumped), guides, pro for TC.

3. Return Con Post may be estb on DOWN route to con return of empty vehs. It will be manned by the RASC. Whenever possible will be combined with the Reg Centre.

4. Vehs will normally check in through their coy loc in bde gp adm area.

5. Dumping Sites. Bde gp units will be responsible for selection, marking and org, incl TC, of dumping sites and for the provision of guides and unloading parties.

Comms

6. The programme will normally be con by the fmn RASC, e.g. CRASC at rear div HQ, who will be in radio comm with the reg centre, return con post (if estb) and the coys involved.

DUMPING CALCULATIONS

Gen

1. The planning and procedure involved in a dumping programme are described in a separate adm precis. A dumping problem usually resolves itself into one of two simple questions:-

(a) How long will it take to dump so many tons/stores with a given no of vehs?

or

(b) How many vehs will be required to dump so many tons/stores within a specified period of time?

2. The answers to these questions can be resolved by two main methods; by first principles or by formula.

3. When sec line tpt is used, their normal loads may have to be dumped in the coy locs. When this happens remember that a dumping programme is not complete until sec line tpt is reloaded.

4. The org and con arrangements required to carry out a dumping programme are shown on page 440.

Solution by First Principles

5. All problems can be solved from first principles, that is by examining in detail how long each journey will take and then tracing the mov of each colm/packet/or individual vehs by noting down the timings stage by stage, or by showing the timings pictorially on a simple graph. Both are shown in a very simple example on page 443.

6. This method is more accurate than the use of a formula and will have to be used where the problem is complicated by route or other restrictions which cannot be 'built into' the formula. However, the method does take longer than the use of the formula.

Solution by Formula

7. Solution by formula produces a quick answer, but a formula is merely a means of striking an average and unless certain factors are constant it can produce a grossly inaccurate answer. Formula should therefore be used with discretion especially when dealing with short dumping programmes, when a marginal error may have serious repercussions. Where time permits it is usually better to use first principles, and where there are variable factors involved and restrictions on the use of routes or possible delays in loading arrangements the first principle method is the only reliable means of producing an accurate answer. As a SO dealing with dumping calculations, it is usually quicker and advisable to call in the expert - the RASC rep.

8. However, the SO must be able to do a quick staff check and for this purpose the accepted formula can be useful within its limitations. The formula is:-

$$\text{No of vehs} \times \text{running time} = \frac{\text{Total load miles}}{\text{Overall average speed}} + \text{Loads} \times \text{time for unloading and loading per round trip}$$

or $V \times T = \frac{L \times M}{S} + L \times R$

9. Since this formula cannot be precise, for Staff College purposes, an allowance of 10% should be added to the answer.

10. An example is given on page 443.

DUMPING CALCULATIONS - EXAMPLES

LIFT	200 x 3-ton from A to B	TPP	- Ignore as very small no of vehs involved
DISTANCE	From A to B 40 miles	REST/SVC TIME	- 4 hrs during daylt
SPEED	Day 20 mph Ni 15 mph	VEHS AVAL FOR LOADING	- First lt D day
FIRST LT	0400 hrs	LOADING TIMES	- 2 hrs each loading and unloading
LAST LT	2000 hrs	TIME AVAL	- Programme complete when last load delivered to B. This must be by 1600 hrs D + 1.

FIRST PRINCIPLES

	hrs	
ə A 0400 hrs loaded by	0600	
40 miles at 20 mph)	0800	
hrs unloading)	1000	1st load complete
40 miles at 20 mph)	1200	
4	1400	
3)	1800	
40 miles at 20 mph)	2000	
hrs unloading)	2200	2nd load complete
40 miles at 15 mph)	0040	
hrs loading)	0240	
1 hr 20 mins at 15 mph)		
1 hr at 20 mph)	0500	
hrs unloading)	0700	3rd load complete
40 miles at 20 mph)	0900	
hrs loading)	1100	
40 miles at 20 mph)	1300	
; B	1500	4th load complete

FIRST PRINCIPLES BY GRAPH

	0400 D day	Arrive A	0100 D + 1	Arrive A
	0500		0200	Loaded
	0600	Loaded	0300	
	0700		0400 Lt	
	0800	Arrive B	0500	Arrive B
	0900	1st Load	0600	3rd Load
	1000	Complete B	0700	Complete B
	1100		0800	
	1200	Arrive A	0900	Arrive A
	1300		1000	
	1400	Loaded	1100	Loaded
	1500		1200	
	1600	Rest	1300	Arrive B
	1700		1400	4th Load
	1800		1500	Complete B
	1900	Arrive B	1600	DEADLINE
	2000 Dark			
	2100	2nd Load		
	2200	Complete B		
	2300			
	2400			

FORMULA

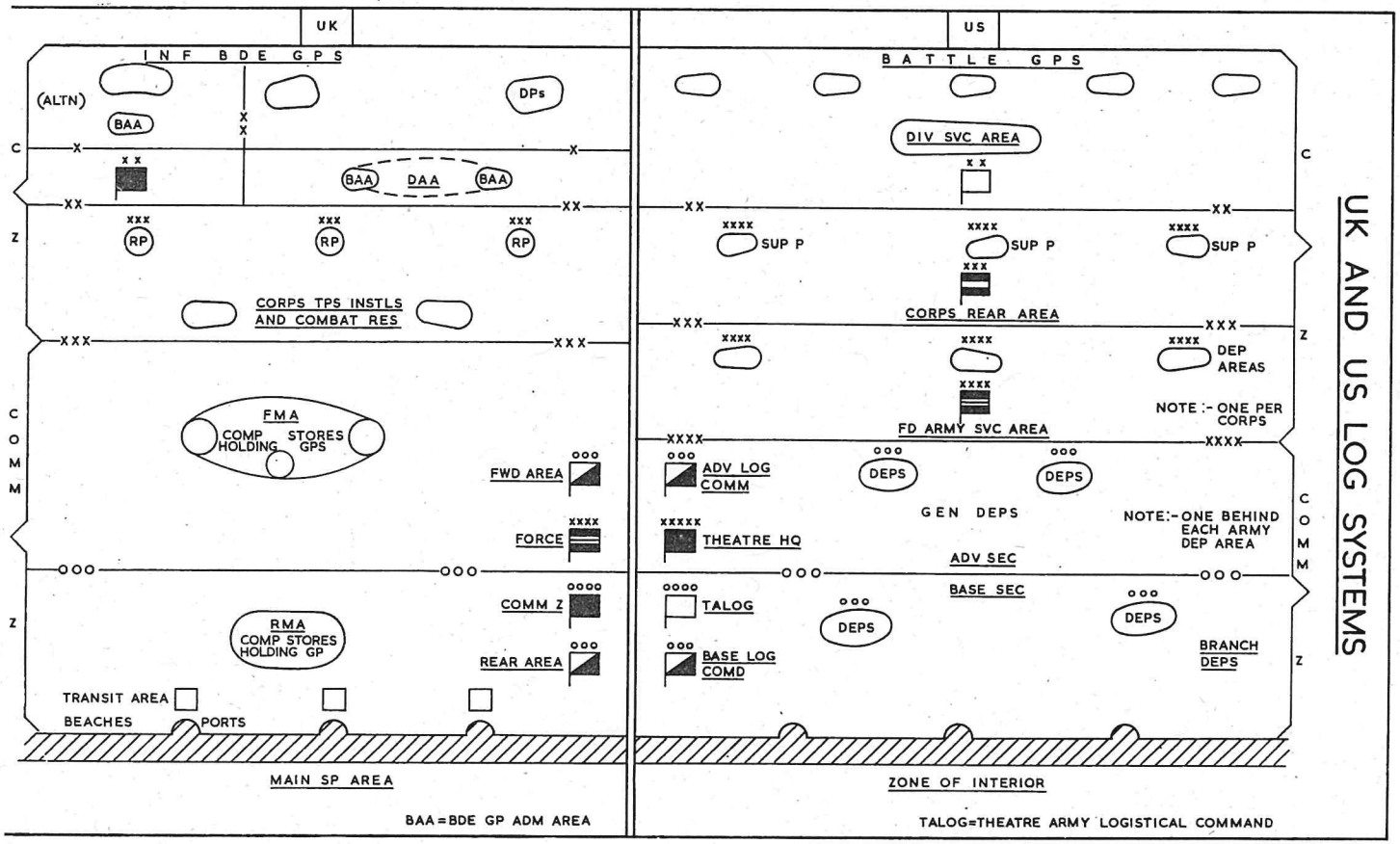
1. Loads 200 (L) x 80 miles (M) round trip = $\frac{\text{Load miles}}{16{,}000}$ (LM)
2. Running Time
   Day (28 hrs less 4 hrs rest) = 24 hrs
   Ni = 8 hrs
   } 32 hrs (T)
3. Average Speed
   $$\frac{24 \text{ hrs day} \times 20 \text{ mph} + 8 \text{ hrs ni} \times 15 \text{ mph}}{32 \text{ hrs}} = \frac{600}{32}$$
   = 19 mph (S)
4. Loading/unloading time per turnround = 4 hrs (R)
5. Apply Formula (Page 441)
   (a) $V \times T = \frac{L \times M}{S} + L \times R$
   (b) $\therefore V \times 32 = \frac{16{,}000}{19} + 200 \times 4$
   (c) $\therefore V = \frac{842 + 800}{32} = \frac{1{,}642}{32} = 51$
   (d) 51 vehs + 10% (Staff College safety margin - para 9 of page 442) = 56 x 3-ton vehs required.

loads per veh can be delivered at B within the 36 hrs aval. Therefore, $\frac{200}{4}$ = 50 x 3-ton s will be required.

.s case vehs would then return to unit where they would have their rest for D + 1. Some- it is nec to take the time required for return to unit and, in the case of sec line, ling into acct in the time aval.

COMPARISON BETWEEN US AND UK SVCS AND CLS OF SUP

Task	BR Svcs	US Cl of Sup	US Svcs
Procurement and Storage:			
Ammo		V	OrdC
Vehs		II or IV	OrdC, CE
All E and M eqpt	RAOC	II or IV	Primarily OrdC, CE, and SigC
Clo		II	QMC
POL	RASC	III	QMC
Sups (rat)		I	QMC
Distr to Units:			
Sups (rat), POL, ammo	RASC	I, III, V	QMC, TC and OrdC
Vehs (except tks)	RAOC	II or IV	OrdC, CE
Tks	RAOC, RAC	II or IV	OrdC
Repair and Rec	REME	-	Each svc
Cas, Care and Evac	RAMC, RASC	-	AMS
Tn:			
Rd	RASC		TC
Rail, ports, waterways	RE(Tn), RASC		TC
Fire	RASC		CE


UK
INF BDE GPS
(ALTN)
BAA
DPs
C
BAA
DAA
BAA
Z
RP
RP
RP
CORPS TPS INSTLS AND COMBAT RES
COMM
FMA
COMP HOLDING
STORES GPS
FWD AREA
FORCE
COMM Z
RMA
COMP STORES HOLDING GP
REAR AREA
Z
TRANSIT AREA
BEACHES
PORTS
MAIN SP AREA
BAA=BDE GP ADM AREA
US
BATTLE GPS
DIV SVC AREA
C
SUP P
SUP P
SUP P
CORPS REAR AREA
Z
DEP AREAS
NOTE :- ONE PER CORPS
FD ARMY SVC AREA
ADV LOG COMM
DEPS
DEPS
GEN DEPS
NOTE:- ONE BEHIND EACH ARMY DEP AREA
COMM
THEATRE HQ
ADV SEC
BASE SEC
TALOG
DEPS
DEPS
BRANCH DEPS
BASE LOG COMD
Z
ZONE OF INTERIOR
TALOG=THEATRE ARMY LOGISTICAL COMMAND
UK AND US LOG SYSTEMS

GLOSSARY OF SOME USEFUL NUCLEAR TERMS

(Agreed Tac Terms in everyday use are contained in the Joint Svc Glossary)

1. Atomic Damage Template (ADT). A graphical representation for a given yield, height of burst, and map scale, showing a GZ pt surrounded by concentric circles or arcs depicting damage radii, incl arcs for consideration of tp safety.

2. Buffer Distance (D_b). In tp safety considerations, the distance between the limit of radius of safety and the nearest posn of our own tps. It may be expressed in multiples of the CEP. In consideration of burst heights it is the distance between the desired burst height and the min safe height of burst.

3. Circular Error Probable (CEP). A measure of accuracy in del of wpns. One CEP is the radius of a circle about the mean pt of impact within which 50% of all shells, wpns or bombs will fall. It is also referred to as the Circular Probable Error.

4. Damage Radius (R_d). The distance from GZ at which there is 50% probability that a tgt elm susceptible to the wpn effect considered will be damaged to a specified degree of damage.

5. Del Error. The dispersion of pts of burst around a desired pt of burst due to ballistic characteristics of the projectile, atmospheric conditions, and other factors.

6. Del System. The means of delivering nuclear wpns to the tgt. The five principal means are: gun, free flt rkt, GW, ac and prepositioning.

7. Desired Ground Zero (DGZ). For a surface burst, the pt on the earth's surface where detonation is desired. For an airburst or underground burst, the pt is on the earth's surface directly below or directly above the desired pt of detonation.

8. Fall-Out Safe Height of Burst ($H_{b(fs)}$). The height of burst above which there should be no significant fall-out. This height is usually less than one fireball radius from the ground; a burst therefore which is technically a surface burst may give no significant fall-out provided it is detonated above the fall-out safe height of burst.

9. Free Flt Rkt. A wpn carrying its own propulsion system and over which there is no con once it has been fired; it fols a ballistic trajectory.

10. Ground Zero (GZ). The pt on the earth's surface at which, above which, or below which, a nuclear detonation occurs.

11. Guided Wpn (GW). A wpn whose trajectory is con by a guidance system which may either be carried by the wpn or be on the ground.

12. Height of Burst (H_b). The height above (or below) the surface of the earth at which a nuclear detonation occurs. For convenience burst heights are referred to as high, low, surface or sub-surface. The height zone or bracket within which a burst must occur to be classified in this way is given in the damage tables (Table III).

13. Immediate Effects. Those effects which occur within one min after the detonation.

14. Induced Radioactivity. Radioactivity produced in certain materials as a result of nuclear reactions, particularly the capture of neutrons.

15. Kiloton (KT). The energy of a nuclear detonation which is equivalent to that produced by the detonation of one thousand tons of TNT.

16. Kiloton Wpns. This covers all wpns producing a yield of one kiloton and less than 1,000 kilotons.

17. Megaton. Equivalent to the energy rel by 1,000,000 tons of TNT.

18. Megaton Wpns. This covers all wpns producing a yield of 1,000 kilotons or above.

19. Min Safe Distance (MSD). The total distance from DGZ to our own tps required to ensure safety. It is the sum of the radius of safety (R_s) and the buffer distance (D_b).

20. Nominal Atomic Bomb. A term to describe a nuclear wpn with an energy rel equivalent to 20 KT.

21. Non-Eff. As applied to an individual, cannot perform combat duties, may require evac, and can be considered a cas.

22. Nuclear Wpn. A gen name given to any wpn in which the detonation of the warhead results from the energy rel by reactions involving atomic nuclei, either by fission or fusion or both.

GZ [illegible]

27. PINFOR. Plotted Info Report.

28. Prepositioned. Actual placement of a wpn at the DGZ and prep for firing by some form of remote con or time mechanism.

29. Probability of Damage. The probability that damage will occur to a tgt or tgt elm. May be expressed as a percentage or a decimal.

30. Radius of Safety (R_s). The horizontal distance from GZ beyond which the wpn effects on our own tps are acceptable.

31. Sub-Kiloton Wpns. This covers all wpns producing a yield below one kiloton.

32. Tgt Analysis. The study of a tgt to determine the proper wpn(s), yield(s), del means, burst height(s), DGZ(s), and time(s) of burst to obtain a desired level of damage or cas.

33. TOT. Time over tgt.

34. Warhead. That part of a nuclear wpn comprising the material and devices for the fission or fusion process.

35. Wpn. The warhead and its carr, eg a complete shell.

36. Wpn Effects. The damage or cas producing agents, specifically blast, thermal radiation, and nuclear radiation, resulting from a nuclear detonation.

37. Wpn Selector. A transparent piece of material on which are drawn circles and arcs at reg intervals to the scale of the map in use for fire planning.

38. Wpns System. A nuclear wpn and its del means.

39. Yield. The energy rel in a nuclear detonation; usually measured by the est equivalent tonnage of TNT required to produce the same energy rel. It is expressed in kilotons (KT) or megatons (MT).