PART 4

STAFF COLLEGE

SOs' HANDBOOK

PART IV - STAFF PLANNING DATA

INDEX

Task	Planning Times	Average Extra Plant, Tpt etc	Purpose of Tables
Checking unmetalled rd for mines	Sec - 1 mph by day (leaving fair risk)		1. In real life, ests of the time, lab and resources for engr tasks are made as a result of detailed recce by engr offrs. They vary greatly for every task. These variations are particularly great in such tasks as breaching minefds and clearing airstrips, where much depends on the type of ground, type of mine and trg. 2. Detailed recce is seldom possible in Staff College exs. It will therefore be assumed that these planning times are the ests given by the CRE, fd sqn comd etc unless stated otherwise. 3. These tables may also be used in assessing what engr tps should be placed under comd or in sp.
Mh routes across country, (level ground) with temp surface	Tp - ½ mile per 24 hrs	Angledozer, grader, 8 tippers (carrying prefabricated surfacing, or fetching rubble locally).	
Tk route to keep tks off rds	Sec - 3 miles per 24 hrs	Angledozer	
Filling in craters	Sec - 2 hrs	Angledozer	
Ford or culvert - 20 ft gap - 60 ft gap	Sec - 2 hrs Sec - 10 hrs	Med wh dozer - 2 tippers " " " - 6 tippers	
BB Cl 80 70 ft	Two tps - 7 hrs (day) - 12 hrs (ni)	17 loads br eqpt, 6 tippers (for approaches)	
HGB Cl 100 150 ft	Tp - 12 hrs (day) - 18 hrs (ni)	39 loads br eqpt, 6 tippers, 2 cranes	
Cl 80 hy ferry op on 400 ft river	One fd tp: 1½ hrs by day, 2 hrs by ni Crew of 12 up to 12 loads/hr by day to op: up to 10 loads/hr by ni	Hy ferry carried on 4 x 10-ton and spec tlrs and 2 x 3-ton. Angledozer and crane required for const and launching. Typical load - one tk or six wh vehs.	
Cl 30 lt aslt floating br over 400 ft river	One fd sqn 3-5 hrs by day, 5-7 hrs by ni	Br carried on 18 x 3-ton trucks and spec tlrs. Two br cranes and two tugs required for assy.	
Cl 80 hy aslt floating br over 400 ft river	One fd sqn 4-6 hrs by day, or 6-8 hrs by ni	Br carried on 15 x 10-ton trucks and spec tlrs. Two br cranes and two tugs required for assy.	
Culverts or gps of 4 rd craters	Sec - 2 hrs. Tp - 24 per 24 hrs	1 3-ton load explosives for 6 tasks	
Brs 200-400 ft : 1,000 ft and over	Tp - 4 hrs : tp 24 hrs	1 3-ton of explosives per br: 2 3-ton per br	
Assistance in digging def posns	Allow one tp per bde and one for div tps	Excavator, med wh dozer, and compressor	
Digging in tks	NO engr tps - 10 tks per 24 hrs per dozer	Med wh dozer or angledozer	
Mech minelayer - hedged farmland open heath, etc	Tp - 2,000 A tk mines/24 hrs Tp - 4,000 " " " "	Angledozer and minelayer. 4 x 3-ton trucks fetching mines (if dump within 5 miles).	
Laying by hand A tk only A tk and A pers	Tp - 1,000 " " " " Tp - 600 " " and 600 A pers per 24 hrs	3 x 3-ton trucks fetching mines (if dump within 5 miles).	
Rooting and mining rds - Concrete Remainder	Sec - 1 mile per 24 hrs Sec - 4 miles per 24 hrs	Size I angledozer, rooter, 2 x 3-ton trucks (mines)	
Booby trapping and nuisance mining	Tp - 15 houses, rd juncs etc per 24 hrs		
By hand 8 yd lane 100 yds deep/400 yds deep	Tp - 3-6 hrs/three tps 6-12 hrs		
Flails 8 yd lane 400 yds deep	Flail tp - ½ hr (with reasonable allowance for snags)	Actual speed of the flail is about 100 yds in 2 mins.	
Giant Viper	See Precis Tac 4 - Breaching		

PREP AND MARKING OF LNDG STRIPS/LZ

HELS

Dimensions

1. The LZ must be of sufficient area to accommodate the undercarriage and allow clearance for the main and tail rotors.

2. For single rotor hels a clear area of 30 yds diameter is required.

3. A further area 10 yds wide and cleared to 2 ft above the ground all round the clear area will also normally be prep. The whole LZ will thus be 50 yds in diameter.

4. NO branches must overhang this 50 yds clearing.

Ground

5. The ground must be level and firm. Hels cannot touch down on a gradient steeper than 1 in 13. The surface must be clear of all loose rubbish, tree stumps etc. Loose gravel, grass, ashes, etc can cause great hazard.

6. The ground must NOT be cleared by burning nor must any fires be allowed near the LZ during hel ops.

Approaches

7. For normal op LZ angles of approach will not be greater than 20° measured from the edge of the clearing. If there are trees higher than 100 ft at the edge of the proposed LZ, an approach (or exit) lane through them will be required.

8. In emergency, with single ac lightly loaded, it may be possible to use an LZ when the approach angle is up to 45°.

LZ Markings

9. LZs will be marked with the letter "H" at the best touchdown pts. This sign must be pegged securely so that it cannot blow up into the main or tail rotors.

10. The dimensions of the "H" should be about 6 ft x 4 ft. It is best made of wood or reasonably hy material but fluorescent panels may be used.

11. If a wooden sign is used it should be painted drab on one side and white on the other. It should be exposed only when the hel is heard approaching.

12. If, for any reason, hels should NOT land on the LZ the letter "H" should be replaced by a letter "X" of similar dimensions.

13. A wind indicator (smoke, flag or "T") is also required.

14. For ni ops lts will be laid out in the form of an "H" and a "T". The "T" (min dimensions 12 ft x 12 ft) will be placed approx 30 ft upwind of the "H". If aval, a ptbl angle of approach indicator should be used.

FIXED WING AC

Dimensions of Strip

1. The amount of usable ground needed for a lndg strip will vary with the type of ac which are to op from it.

Approaches

2. The approaches should be clear of all obstruction. If trees or other obs are in the way and cannot be removed, add 50 yds length to the strip for every 20 ft of height of the obs.

Surface

3. Recce of the surface should be made on ft and the fol conditions should be met:-

(a) The ground should be reasonably level. Slight undulation is acceptable.

(b) The max slopes acceptable are 1 in 50 laterally and 1 in 30 lengthways.

(c) The surface must be free of potholes, large stones and sharp ridges.

(d) The ground must be firm. Meadowland or mown hayfields are usually the best.

4. A surface is generally satisfactory if a ¼-ton truck can be driven over it at 35 mph without undue discomfort.

Marking the Strip

5. AAC units in the fd will normally op from strips with the min of marking in order to help concealment of the strips. An easily removable "T" marking wind dir and touchdown should normally be sufficient.

6. Wind dir should be indicated by either:-

(a) A "T" in white with the bar of the "T" facing the dir from which the wind is blowing. The "T" should be sited at the downwind end of the strip and to the left

or (b) a smoke grenade in the same posn as the "T" described above but placed so that the smoke does not obscure the approach line

or (c) a windsock or flag positioned at the downwind end of the strip and well clear to the left.

Emergency Lighting for Ni Lndgs

7. If it is nec for an ac to land on a strip at ni the fol lighting methods are acceptable:-

(a) Two landrovers, 30 yds apart, with headlamp beams intersecting at the required touchdown pt. The vehs should face up wind away from the line of approach. A clearly visible lt must also be positioned at the far end of the strip to prevent overshooting

or (b) two lines of hurricane lamps or torches, 30 yds apart. Lt to be at least every 50 yds along the length of the strip.

8. Wind dir will be indicated by lts laid out in the form of a "T".

SIZE OF DZs FOR MEN AND EQPT

Width

1. As a gen rule a standard DZ for men or eqpt is 800 yds wide. A panel DZ, ie where an ac drops eqpt to the side of a DZ on which men have been dropped, is usually about 1,200-1,400 yds wide.

Length

2. HASTINGS

Two simultaneous sticks of 15.

15 x 64 + 400 = 1,360 yds.

3. BEVERLEY with 64 parachutists

24 men in upper rear (or boom) compartment drop first in single stick.

40 men in lower freight compartment drop in two simultaneous sticks of 20.

For safety reasons a gap of about 3 secs (approx 200 yds) would be allowed between upper and lower compartment sticks.

24 x 64 + 200 + 20 x 64 + 400 = 3,416 yds.

4. BEVERLEY with 60 parachutists

40 men in lower freight compartment, 20 men in boom. The latter come down to lower compartment for drop. Two simultaneous sticks of 30.

30 x 64 + 400 = 2,320 yds.

5. BEVERLEY in hy drop role only

Undershoot (200 yds) + hy drop 2 platforms (800 yds) + throw fwd 2nd platform (300 yds) + overshoot (200 yds) = 1,500 yds.

6. BEVERLEY in mixed hy drop and parachutist role

Depending on individual ac and platform wts and centre of gravity factors, up to 20 parachutists can be dropped from the boom after 2 med stressed platforms or 3 x 8,000 lb sup platforms. In practice dropping of mixed loads in one run is limited to ops, owing to the danger of tps lndg on loads already on the DZ, or being hit by loads from fol ac. Mixed pers and hy drop require a DZ of 2,400 yds.

7. C130 with 64 parachutists

Two simultaneous sticks of 32.

32 x 72 + 400 = 2,704 yds.

American ac have a standard dropping speed of 130 knots. Approx 72 yds per man is therefore allowed when calculating stick lengths.

8. C130 and C119 in mixed hy drop and para roles

Parachutists can drop in single sticks over the ac sill after platforms or 1-ton containers have been dropped.

STORES

9. DZs should be 1,000 x 100 yds, if possible in the dir of the prevailing wind. Much less may have to be accepted in difficult country.

10. There should be no obs to the approach of ac at dropping height (400-800 ft) within one to three, preferably three, miles of the DZ at either end.

11. The surface of the DZ and the ground on the down wind side of it should be as clear as possible to facilitate the rec of stores.

12. The DZ should be near a prominent landmark or otherwise easily loc from the air.

13. It should be free from en obsn and not exposed to en fire. There should be no danger to ac from our own arty or mors. This is a real problem in the jungle where the lack of open spaces will often mean gun areas and DZs having to share the same clearing.

MOV PLANNING DATA

DEFINITIONS

1. Average Speed. The average no of miles travelled per hr calculated over the whole journey, excl specifically ordered halts. Standard figures for planning purposes are:-

	Day	Ni
Colms excl tks, tptrs, etc		
Good rds	24 mph	12 mph
Twisty and hilly rds with good surface	21 mph	10 mph
Bad rds	18 mph	9 mph
Colms incl all types of vehs		
Good rds	12 mph	9 mph
Bad rds	7 mph	6 mph

2. Time Past a Pt (TPP). The time required by a serial to pass a given pt.

3. Extra Time Allowance. Within serials extra time will be allowed, calculated at one min per 25 vehs.

4. Gaps. Between serials no standard times are prescribed. Time between serials will be determined and allocated by the staffs responsible for mov and are defined as gaps.

5. Running Time. The time taken by one veh to travel the total distance.

6. Time Taken to Complete a Move. This comprises:-

(a) Running time.

(b) Total TPP (serial TPPs plus any gaps ordered).

(c) Time spent on specifically ordered halts.

7. Flow. The calculated no of vehs which pass a given pt in an hr at a given speed and density. This should never exceed capacity.

8. Capacity. The no of vehs which can physically pass a given pt in an hr. This can only be determined by obsn.

FORMULA

9. $\text{TPP (in mins)} = \frac{\text{No of vehs} \times 60}{\text{Density (vpm)} \times \text{average speed (mph)}} + \frac{\text{No of vehs}}{25}$

10. $\text{Running Time} = \frac{\text{Distance (miles)}}{\text{Average speed (mph)}}$

11. Flow (vph) = average speed (mph) x density (vpm).

12. Instead of using the formula the same results can be obtained by using the graphs set out in pages 84-86 of WO pamphlet Rd Mov 1956.

STAFF COLLEGE VEH LOAD CLS

(These figures are for Staff College purposes only.)

A VEHS	
Armd C - Saladin	10
APC - Saracen	10
Scout car - Ferret	4
SP - 155-mm	28
Tk - Centurion	56
Tk - Conqueror	70
Tk - Chieftain	50
ARV - Centurion	50
ARV - Conqueror	64
AVRE - Centurion	58
AVRE - Churchill	80
Tracked carr FV 430 series	16

B VEHS	
Truck ¼-ton GS	2
Truck ¼-ton GS ¼-ton tlr	3
Truck 1-ton GS	6
Truck 1-ton armd	16
Truck 3-ton GS	9
Truck 3-ton tipping	9
Truck 10-ton GS	21
Half track	9
Amb car	6
Saloon car	2

TPTRS	
Tractor and tlr unladen	45
Carrying Centurion	120
Carrying Conqueror	147

C VEHS	
Coles crane	26
Excavator truck mtd ¾ yd (shovel in travelling posn)	24
Grader (average)	11
Tractor crawler size 4	10
Angledozer size 2	18
Lt wh tractor	12
Med and hy wh tractor	19
Tptr RE plant 30-ton (laden)	58

ARTY AND WPNS	
120-mm (MOBAT)	3
105-mm pack how	7
25 pr	10
8-in how	30
L70 gun	11
FCE7	11
Radar AA No 4 Mk 7	16
SAGW No 1 (Thunderbird)	7
Radar AA No 7 Mk 4	15
Radar No 3 Mk 8	20
762-mm rkt launcher	24
Corporal train (erector is heaviest veh)	34
Radar GS No 9 Mk 1	10
Radar FA No 8 Mk 1	10

(NOTE: Cl of towed guns and eqpt incls towing vehs.)

RD MOV TABLE
(Security cl)

Copy No .....
Anx ..... to ..... (fmn/unit)
OO ..... dated .....

.....

Average speeds
Density
Halts
Routes

5. Critical pts
   a. SPs
   b. Rel Ps
   c. Other critical pts

6. Main routes to SPs
7. Main routes from rel Ps
8. Lts (if nec)
9, 10, etc for TC, med, rec etc as nec

	Date	Unit/ Fmn	No of Vehs	Load Cl of Heaviest Veh	From	To	Route	Route to SP	Critical Pts			Route from Rel P	Remarks
									Ref	Due	Clear		
	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(j)	(k)	(l)	(m)	(n)	(o)

1. Use only the min no of colms. Any info which is common to all recipients should be incl under the data paras.
2. As the table may be issued to TC pers, remember the security aspect. It may not be desirable to incl dates or locs. TC details may be noted in tables.
3. If the table is issued by itself, and not as an anx to a more detailed order, the table must be signed or authenticated in the normal way.
4. TC pers are helped if unit/fmn veh nos are shown in brackets after the unit/fmn in colm (c).

SOME DEFINITIONS OF ADM TERMS

Serial	Term	Definition
1	Adm	The function of comd which deals with org, discipline and well being of men, and the mov and maint of men and materials. It is divided into: (a) Gen Adm. The planning and gen application of maj adm policy. (b) Local Adm. The day-to-day adm of units and fmns in accord with the policy of force HQ.
2	Adm Areas	Areas in which are loc adm units and echs. Although tpt may be temporarily off loaded, an adm area differs from a MA in that the former does not normally hold stocks on the ground in excess of sec line res.
3	Adv Base	At times an adv base may be estb in a theatre of war when it is impracticable to maint the armed forces operating in the theatre directly from the main base. The HQ controlling the main base will often arrange for log requirements to be met from sources outside the theatre dir to the adv base. An adv base will require some of the facilities needed in a main base.
4	Air Mov	The routine mov of complete units, drafts and individuals (but excl AB aslt fmns). It may also incl bulk freight mov but NOT where this falls under the heading of air sup.
5	Air Sup	The sup by either air dropping or air lndg of the maint requirements of the army in the fd.
6	Combat Res	Stocks of essential items held on the ground in the corps area, normally within reach of sec line tpt and for use only in an emergency.
7	Comm Z	The rear part of the theatre of ops (behind but contiguous to the CZ) which contains the L of C, estbs for sup and evac, and other agencies required for the immediate sp and maint of the fd force.
8	DPs	The locs at which unit tpt takes del of each commodity and stores, eg APs, sup Ps etc.
9	Logs	The science of planning and carrying out the mov and maint of forces.
10	L of C	All routes, land, water and air, which connect an operating mil force with its sp areas, and along which rfts and materials move.
11	Maint	All sup, repair and pers replacement action taken to keep a theatre or force in a condition to carry out its msn.
12	MAs	Areas in which res are held on the ground for the maint of the armed forces in the fd and to meet any emergency. For convenience, or by nature of their work, other adm units may be loc in or near these MAs.
13	Main Base	A large area containing the complex org which gathers together, holds and issues the men and material needed to maint the activities of armed forces engaged in war. It will contain all or most of the fol facilities:- ports, beaches, rlys, rds, airfds, hosps, holding units for men and material, wksps, tels, skilled and unskilled civ lab. An example from the 1939-45 war is EGYPT.

SOME DEFINITIONS OF ADM TERMS (Cont)

Serial	Term	Definition
14	Operating Stocks	Stocks required for day-to-day maint to avoid breaching the res stocks for purposes other than those for which they are held. Operating stocks must cover the interval between the periodic arrival of consignments into the theatre and also the time taken to distribute them within the theatre. This time must incl that required for receipt and sorting in stores holding units and a reasonable margin for delays in arrival. Operating stocks are expressed in terms of days consumption for the force.
15	Repair Pools	Pools of eqpt such as vehs, guns and radios which are provided to allow immediate replacement of unserviceable but rep eqpt evac to REME wksps. Res and operating stocks are not intended to cover these requirements. Repair pools are expressed in percentages of total unit eqpts.
16	Res Stocks	The qty of stocks required to be held to ensure against emergency, unforeseen increases in consumption and expenditure, delays in production and delays or losses in transit. Res are expressed in terms of no of days consumption for the force.
17	RP	The loc at which is held a limited tonnage of vital commodities (ammo, POL, sups and fast moving med stores) and which is sited within range of sec line tpt to permit daily replenishment of the fmns the RP sps.
18	Sp Area	Those areas which contain sources of manpower, industrial potential, food and raw materials. Sp areas of such importance that they are essential to our war effort are known as "main sp areas". The UK, CANADA, AUSTRALIA are examples from the 1939-45 war.
19	Theatre Stocks	The total of items not in present use in the theatre. They are the sum of the three elms:- res stocks, operating stocks and repair pools.
20	Tpt - First Line	Unit tpt, the adm echs of which take over ammo, POL, sups and other stores from sec line tpt at DPs.
21	Tpt - Sec Line	RASC MT coys allotted for the maint of fighting fmns and units in the fwd areas. It is divided into two categories:- (a) Basic Sec Line Tpt. RASC MT coys organic to armd, inf and para bde gps. (b) Supplementary Sec Line Tpt. RASC MT coys org into colms and allotted to corps for the maint in action of corps armd and arty units, and for supplementing the basic sec line tpt of armd bde gps when actively engaged. Supplementary sec line tpt is not specifically allotted for inf bde gps.
22	Tpt - Force	A pool of RASC gen tpt (GT) coys org into colms and operating under the executive con of comm Z HQ. Some of this tpt may be sub-allotted to corps for specific tasks.
23	Tpt - Spec	RASC MT coys which may be org into colms and allotted as required as force tps. They are designed to carry out a particular role, eg tk tptr coys, amphibian coys, br coys, and may be sub-allotted to corps for specific tasks.