## The Demise of the 1975 Pattern Design & Route to the '90 Pattern.

A. '75 Pattern Prototype.

1. Following the Troop Trials and APRE's initial input, [i] in January 1973 SCREDE designers and specialists, MOD's C&T staffs and Army staff officers from D Inf and other relevant areas, met to consider the results, examine the '75 Pattern and the current US Army design. In discussion they noted that while many of the problems with the UK model highlighted in trial, could be overcome by improvisation and others were comparatively minor matters of design, they undoubtedly had affected the views 'trialees' and adversely influenced their view of the equipment as a whole.[ii]

2. It was felt that the pre-troop trial testing of the new PLCE had been unduly curtailed due to the need for speedy introduction of the equipment; clearly more thorough development testing might have eliminated many of the minor, but irritating, faults before the world-wide trials began.

3. Indeed one of the units commented that the equipment embodied too many new ideas at once, the bad invalidating the good. Among the latter points were the PLCE's capacity and its overall comfort even when fully loaded[iii]. With hindsight the introduction of a new material for the containers, straps & buckles which had caused many of the minor 'niggles' and problems, should have been eliminated through more extensive testing before proceeding to Troop Trials.

4. The PLCE was clearly unacceptable in its present form, with the exception of the GS Rucksack, and Man-pack Carrier, which had of course already been accepted for service. Although even with this item, here FARELF still thought it unsuitable for jungle use being, FARELF said, too wide for the limited clearance on jungle tracks. The view of trialees in the Arctic role was that the GS Rucksack, although a clear advance on the '58 pack, lacked adequate capacity given the bulkier loads used in that theatre because of the extreme climatic conditions.

B. Way Forward.

5. The meeting now considered the wider question of the wider aspects of PLCE & physiology. It noted that in 'fighting order' the physiological indications were that the waist area with the exception of the body's immediate front, were the most suitable for the carriage of weight. However the amount that could be carried in that position depended on the wearer's build and it was therefore difficult to design one equipment enabling both the large & small man to carry the equivalent maximum amount on the waist. (This was true even of belted designs, where the man's girth dictated the amount of available belt space).

6. It was decided that there was a clear demand for a more versatile approach to equipment design. The 1944 Pattern was considered by some to be an effort in that direction as compared to the '58 & '75 patterns which had both been designed primarily to take a pre-determined fighting load. As these loads had been found to be insufficient for particular operational needs, the equipments were therefore found wanting. This view was in fact incorrect: the 1944 Pattern as originally designed had only a very limited capacity and was not that versatile. Its capacity could only be increased by improvisation either through adding extra carriers – not provided for in the issue equipment set - onto the waist belt, or enlarging the pack : the '44 Rucksack had long since faded from issue. Both these *ad hoc* methods had been adopted post 1944 and had therefore coloured popular understanding of the actual design. These additions actually ran contrary to the

equipment designer's intention to keep the waist area as free as possible of carriers and similarly to limit the size of the back pack as in jungle climates where the humid climate and the light clothing worn, meant that sweating and associated chafing where equipment was in contact with the body, was always a problem for the troops.

7. The Meeting's final recommendations were that the PLCE requirements should be reviewed in consultation with Theatre Commands. It was considered doubtful if lightness at the expense of other features, and the interests of the infantryman should be given such importance as previously. The PLCE should be re-designed to meet the new requirements and adequate testing and trials should be arranged. In the light of the recent experience with the '75 Pattern, it was essential that sufficient time be allowed for these in the development programme. The 'ideal' development plot would see the following timetable:- 9/1973: Requirement published; 12/1974: Development complete; 1/1975: Prototype accepted; 1-9/197 Troop trials ; 12/1976: Acceptance for service;
1/1977: Ist deliveries to troops. However it was felt that, allowing for inevitable slippage, an 'in-service' date of 1980 might be the best achievable.

8. In considering design features, in these discussions it was suggested that the '75 design did not meet the present day overall operational requirement. In particular it was felt the lack of a belt limited the equipment's 'flexibility' in terms of the orders of dress that it could accommodate. This was regarded as being a particular failing with the increased use of 'light order' for IS ops: these had of course dramatically increased in importance following the deployment of troops onto the streets of N. Ireland in August 1969 and which operations had seen the garrison there grow from c6,000 pre-deployment to 23,000 by 1973.

9. Of particular interest in the post-trial discussions was the input from BAOR [iv] which commented adversely on the principle of basing the equipment's concept primarily on the needs of the dismounted infantryman. BAOR stated that, as the equipment would have to be worn by all Arms and Services, the infantry's needs should not be given especial weight. However BAOR admitted that, although it now disagreed with the basic concept of the '75 PLCE, the QMR 310 of 1967 which clearly gave priority to the needs of the infantry had been staffed through BAOR and that theatre's views had clearly been taken into account during the development of the equipment: these views had however now changed.

10. In further internal correspondence in the late summer of 1973 SCRDE noted that the wish for a belt was only apparent on the troop trial; representing a *'volte-face'* from the earlier user trials where its lack had been acceptable. This view was however contested by an officer of D Inf's staff who commented to GS(OR)2 in November the same year that a re-examination of the QMMR led the officer to conclude that the failure of PLCE 75 was due in the main to the designers' failure to include a belt. Although he admitted that the User Trial had failed to 'reveal this as a fault', he suggested that this latter failure was due to the 'indecent haste' with which these trials were pushed through, and the limited numbers of equipments available - thus limiting COIN (N. Ireland type) and Jungle role trials - all in the cause of saving money. He felt that any suggestion that the QMMR was wrong in the first place was merely a smokescreen to hide these shortcomings.

11. Subsequent correspondence between C&GS, SCREDE , APREE & GS(OR) reflected the current concern about the importance that the QMMR had placed on the infantry's needs and it was agreed that a re-write or reconsideration was necessary. The types of troops and environments for which it was considered must be catered spanned the full range of Service

activities, not just those of the infantry. Identified as types or roles were: Infantry on foot; mechanised infantry; snipers; Para & SAS; Limited Warfare (?); IS; Arctic (including Skiers); Jungle; Desert; Nuclear; Engineers, Artillery, Signals; and Armoured (MBT) troops. The new version should address several different loads:

a. subsistence load; b. marching load; c. Para/air-landed load and d. mechanised load.

12. All of these roles and loads called for differing quantities of ammunition, rations, water-bottles etc. while the different threats had called for a variety of additional items such as surveillance equipment (IR/Radar). In addition the new design was to be compatible with NBC dress, any Combat Body Armour (CBA) that might be introduced and new weapons. This last point was of particular concern and in July 1973, the question, raised earlier by DCD of the interface between the PLCE and the new small arms then being planned, was considered. It was clear that there must be as much cross-fertilization as possible between the design of clothing/PLCE and the Small Arms system. It was felt that this could best be achieved by the Staff Target or QMMR stage; two points on this aspect that were noted were that:

a. The thickness of clothing and webbing straps would affect the length of the weapon's butt.

b. The pouches must be capable of accepting the new magazines: the '58 Pattern had been designed around the SLR magazine.

13. During these general discussions APRE said that whereas the QMMR gave priority to infantry foot soldier, it was now suggested by some that in a modern, vehicle mounted army the need was now for greater flexibility in design even if this was at the expense to some extent of the lightness of the equipment. These views can be seen as reflecting the changed perspective of likely operational areas. The design for '75 PLCE was very much the product of the efforts given impetus by the jungle warfare operations of the Indonesian 'Confrontation' of the mid-1960s where the foot soldier engaged in often long-range patrolling, dominated the Army's operational activity. Now, with the withdrawal from much of the Far East and the desert areas of the Persian Gulf, attention was more fully focussed on the Central Region of Europe where mechanised warfare was seen as the likely norm.

14. The Army Board (AB) when briefed on the situation, noted the proposed way ahead for PLCE in a paper taken in mid 1973[v] (AB/G(73)8). This stressed (somewhat inaccurately given the above) that the '75 Pattern had been designed for NW Europe operations as well as the tropical areas and was 'firm' before the Northern Ireland 'IS' requirement had arisen. The total cost of the project before its termination had been some £90,000.

15. The new emphasis on the importance of mechanised troops was reflected in an article by [redacted], then serving in ITDU .

> .."armoured infantryman will not normally leave his vehicle for an indeterminate period i.e. dismounted attack in terrain unfavourable to armour: therefore he needs to be able to grab his survival load easily"[vi]..

Hirsh suggested that in 'belt order' (assault order) the soldier could cope with up to 5 kg of unsupported weight: ie without use of a yoke. Above this the belt equipment tended to chafe the hips. Soldiers preferred to carry ammunition belts like bandoliers (rather than in pouches) as these were more comfortable and easier to redistribute. He favoured a form of 'bum bag' similar

to that now favoured by skiers that would fit across the rear of the waist but slightly lower than the existing 'kidney' pouches this meant that a rucksack could be used more easily: its weight resting more on the hips. This last of course would better conform to best physiological principles .

16. With design and principles were under review as the PLCE designers and sponsors 're-grouped' after the '75 Pattern setback, interest in the problem of the total load carried remained strong. At the 1973 Infantry Conference, the Director of Infantry presented a paper on the subject. Apart from the ever-present problems of the weight of the equipment itself, clothing and other 'survival' items, he noted that there were the added burdens imposed by new equipment such as night vision aids and other surveillance items. D Inf told his audience that the work to reduce the weight of ammunition (by adopting a smaller calibre of round), radios and weapons - both personal and sub-unit - would not reach fruition until the early 1980s. Until then the Commanding Officers of units must judge what was not to be carried:

> 'to attempt to carry the present complete fighting scales (ranging between 70-100 lbs) would simply defeat the soldier'. [vii]

C. Stocks & Funding.

17. At the same time the retention of '37 Pattern equipment in service resulted in criticism. There was considerable feeling in the TAVR 'teeth arms' that they were considered as 'second class' troops because they were still equipped with '37 or '44 Equipment some 20 years after the introduction of the '58 pattern. However to replace it with '58 Pattern for the Regular and Territorial troops earmarked for Home Defence troops - some 32,000 plus 8,000 individual reservists would take 2 years of industry's production capacity and cost £2 million. In addition this expenditure would delay the next PLCE pattern by 1-2 years.* Reflecting this, the Director of Clothing & Textiles (DCT) used his 'Liaison Letter' to keep key parts of the Army advised that work was in hand on the PLCE front.[viii]

18. The possibility of delay in a new PLCE had however possible benefits, D Inf's felt that it was better to await further details on the new small arms series which as a result of problems now had an 'in-service' date of c1985. A delay in designing a new PLCE would also enable any requirement stemming from the 'encapsulated man' project if this was proceeded with.

19. There was therefore support in the MOD in the summer of 1975 for delay on the PLCE front. DMO agreed with QMG that the purchase of more '58 to phase out the '37 pattern still in use with some Regular and TAVR units would be the best course (although a Note to the Treasury in support of the bid, reaffirmed that, although more trials of '58 Pattern were to take place in the Far East, the Hong Kong garrison would retain '44 Pattern in use.

* *The reality of the provision of new equipment – even once orders had been agreed – was that apart from financial restrictions that required maximum use of available item (existing stocks of obsolete '37 Pattern were costed at c£300,000 of which £200,000 at the most was likely to be recovered by sales), there were also the practical production aspects. There were only a few contractors able, or ready to produce webbing equipment because it required considerable amounts of heavy sewing by hand or hand operated machines. Existing production of '58 Pattern sets had also been affected by shortages of the basic webbing material and some of the metal fittings, therefore there was some months' slippage in the issue of 58 Equipment to all Regular units and l TAVR 'Teeth Arms' units with a NATO role: issues would not be complete until the end of 1977. The re-equipping of other TAVR NATO assigned units would then have taken at least a further year, but this was further delayed when the main contractor obtained a 'lucrative' overseas order which absorbed most of his capacity.*

20. In September 1975, the question of the funds earmarked for the next PLCE was raised by VCGS. He was assured that a formal QMMR had not yet been raised by ACGS(OR) and that the sums shown in the LTCs merely reflected the possibility of a new PLCE being needed to maintain compatibility with other equipment.[ix]

D. Design Aspects & 'Interim' Pattern.

21. This delay in progressing a wholly new PLCE and the associated agreement to further expenditure, allowed DCT's staff to suggest the development of a Mk2 '58 Pattern. This had two key aspects; SCRDE could use their experience of new synthetic materials such as those tried in the PLCE '75 to try a similar nylon/butyl laminate material for the new designs. This material was lighter than cotton webbing by some 30%, more waterproof, resistant to penetration and contamination by chemical warfare agents, and should give a 5% saving in manufacturing costs. Secondly the use of a 'proven' design would reduce troop-acceptability aspects.

22. In terms of design, the replacement of the existing '58 pack by the new GS rucksack (without the manpack carrier frame) was considered. Further, the use of a new digging tool (a folding variety) would remove the need for the earlier divided 'Kidney' Pouches' feature allowing these to be replaced by a single pouch improving thereby storage flexibility. If the existing cape carrier could also be integrated to the rear pouch this would further simplify production and reduce costs.

23. It was decided to produce a limited number of sets of the '58 Pattern (apparently four in total) in this new material, as well as two designs of the new single 'kidney' pouch. If assessment of these proved satisfactory, some 300 sets for troop trials could be ready by late 1976/early 1977[x].

24. Similarly if this design plus the new rucksack proved satisfactory as a solution to the problems of the webbing '58 pattern, PLCE 80 might be postponed indefinitely. In that case 60,000 sets of the new (Mk 2) '58 pattern would be needed with an in-service date of 1978 for 1(BR)Corps and 'Priority 1' troops for BAOR. This in turn would release Mk I '58 for other units. There would be development and production cost of several million £s but there was general support for the idea, including DMO, and authority was given for sample sets to be made.

25. Reflecting this, consideration of the longer term provision of a PLCE for the 1980s had to be judged largely on its own merits. As WEPC were told in October 1975 when considering the wider subject of Infantry Close Combat Capability, it was possible that with minor modifications the '58 pattern could meet the requirement for a considerable time ahead:

> '. . . infantry will fight dismounted it is necessary to provide a PLCE designed to be lightweight, water resistant and comfortable, therefore easing the burden on the soldier' [xi]

26. It is unclear as to whether this sudden move away from the emphasis on the needs of 'armoured infantry' back to those of the 'dismounted' infantryman: - apparently contradicting fairly recent views – was a result of the financial stringency affecting all planning at that time or rather the acceptance that while the equipment had to 'fit' the needs of vehicle mounted personnel, its greatest impact on combat efficiency was inevitably on the dismounted soldier.

27. After the month-long trial of the MkII '58 pattern, at a meeting in November 1975 ITDU reported that the divided 'Kidney' pouches were still preferred to the new designs of single rear pouch. The single rear pouches were found to be too rigid across the man's back and the pick

head and helve tended to hit the man during vigorous movements. In addition their use with the GS Rucksack was difficult (in the case of this latter point, any rucksack and 'belt order' with side/rear pouches always has problems: ideally rucksacks 'sit' on the hip girdle not on the waist).

28. Overall the overwhelming favourite was the basic copy of '58 in the new fabric (called Type A). The Mk 2 had a lower weight despite the fact that it had larger ammunition and rear pouches; more importantly its was far lower in weight when wet :

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| Mk 1 '58 | Dry | 13.4 kg | 29lb 8¼oz ; | Type A Mk 2 : | 12.8 kg | 28lb 3oz |
| Mk 1 '58 | Wet | 14 kg | 30lb 15½oz; | Type A Mk 2 : | 13.1 kg | 28lb 15oz |

29. As the reports were favourable it was agreed to produce a number of sets for troop trial. As - in contrast to the '75' pattern - the '58 Mk2 was basically the same as that design in use with the troops, it was felt that the trial could test the suitability of the new material free from distractions of a new design. In order that there should be no interaction between the new material used for the '58 equipment and the Rucksack, the latter item would be worn only with the existing cotton webbing 58 Pattern. The prospects for this new equipment were set out in the December 1975 edition of the Director of Infantry's 'Infantry Bulletin'.

30. In the light of the favourable reports from the initial small trial,[xii] in July 1977 the Clothing & General Stores Committee was advised that it had been decided not to develop a new PLCE (PLCE 80) but to update the '58 Pattern using the new fabric[xiii]. Reflecting this intention that the Mk2 would be adopted, an Answer to a Parliament Question in the spring of that year on the situation concerning PLCE stated that 81% of the Regular Army & 66% of the TA would have 'modern webbing' by early 1981.[xiv]

31. By September 1977, the first of the 300 sets of '58 Mk 2 were available for troop trials worldwide including FARELF, the Arctic and N. Ireland. The new (folding) Entrenching Tool Hand (ETH) was not available so the trial was concerned solely with the Type A Mk II '58 and the GS rucksack. It was used for on average 12 months. As no new design features were involved no special tests for stability, overall comfort etc. were required, normal training/operational duties sufficed to test the equipment.

32. The three monthly user reports and trial officers' reports recorded that the new material was preferred as it was more comfortable, waterproof, cooler in hot weather, easier to clean. There were however disadvantages in that it was more difficult to assemble and to adjust as there was considerable slippage of the nylon straps. It also made more noise when worn in bushy or high undergrowth. Overall 58% of trialees preferred the Mk 2 Pattern with 2% undecided. The comments from FARELF, which still disliked the 58 Pattern because it did not permit carriage on a second water-bottle on the belt, noted that the Mk 2 was better than the Mk 1.[xv]

E. Wider Factors Affecting Loads

33. While the Troop Trials were in progress a study had been undertaken on the load carrying capacity of the infantry battalion. This found, part from any improved PLCE for non-mechanised infantry, that although many new models of equipment were lighter than those they replaced, the overall amount of equipment was increasing. Factors in this increase were:

a. the new Small Arms with a higher rate of fire would result in increased expenditure: carriage of more ammunition was therefore likely.

b. surveillance and communications equipment was more widely available and therefore being distributed to a lower level.

c. NBC equipment, including 'alarms' were becoming more important and as these were still 1st generation, they would be bulky.

d. counter-armour weapons of greater importance and more widely distributed (particularly in the Central Region).

Although current doctrine left it to unit commanders to decide what could be left out of the load, the Infantry Directorate issued a guide list to the soldier's required load in a 'temperate' climate to assist in designing changes to PLCE[xvi] :

> 'It must be the aim of all commanders to take every opportunity to lighten the load carried by their men. Experience has shown that a tired man is not only less alert and less observant but he succumbs to fear more readily.. Therefore platoon commanders should constantly ensure that their men only carry their fighting load plus absolute essentials. Other items of the load should be readily available but not man-packed. Platoon commanders must get away from the tendency to carry everything that might be needed under every eventuality. General Scharnhorst wrote: "The Infantryman should carry an axe in case he may have to break down a door". Such an outlook is the start of overloading. Aim at carrying the essential items only'[xvii]

F. '58 Pattern Mk 2 & Rucksacks.

34. While summer 1980 Troop Trial results showed that the '58 Mk 2 was preferred by 58% of trialees and it was initially hoped to introduce the Mk2 into service from 1982. However in the continuing tight financial climate then prevailing, there was concern within the procurement area over expenditure on an item likely to be replaced by a new equipment to fit the new small arms of the mid-1980s - not too far in the future. Accordingly as the superiority of the Mk2 was not felt to be sufficiently clear to justify the expenditure, it was subsequently therefore not accepted for service. This sad news was disseminated through the Infantry Liaison Letter of December 1980.

35. The GS Rucksack previously found acceptable was – as against the '58 Pack – preferred by 93% of trialees. As it was clearly far superior to the exiting item, it was accepted and originally intended for gradual introduction for General Service with a larger version being used by the SAS and also the airborne forces who *modus operandi* imposed special load-carriage needs. However the wider use of rucksacks as a GS item also fell victim to financial stringency so that by January 1981 it had been decided that it was not to be issued as a general replacement for the '58 Pattern pack, but rather only to units currently scaled with the old 'Bergan' rucksack[xviii].

36. The rucksack had of course to date been more of a specialist item used by those with long-range patrolling or other special requirements such as arctic or mountain warfare. The RM Commando forces with an arctic commitment considered that the 1970s GS rucksack was too small and therefore wanted to trial the larger SAS version, as well - to SCRDE's dismay - several civilian models. The latter tended not only lack the robustness required of service equipment, but often used more expensive materials.

37. Having trailed the SAS model in 1973 on the annual Cold Weather Warfare (CWW) exercise 'Exercise Hardfall' in Norway - the RM Cdos stated that although the SAS model was popular, it was too heavy and the frame and harness were not ideal. They wanted in particular more weight on the hips thus keeping the centre of gravity low which was better for skiing. 1 Royal Scots, the Army infantry battalion which was the current 'in-role' AMF(L) battalion also with CWW responsibilities but who were less experienced in arctic operations, wanted to raise the rucksack and its centre of gravity! APRE noted that it:

> ". . was not possible to lay down an ideal method of carrying a load. However conventional subjective opinion was that when marching loads were best arried high. When on skis it was generally held that a lower centre of gravity was desirable with more weight on the hips.'[xix]

38. The further trials in 1973/74 saw an identical sack tried on two different external frames, one a model by the civilian firm 'Berghaus' and the other a SCRDE design. The Berghaus design found greater favour with the troops. It was decided to carry out a special trial of rucksacks, three civilian types, a new Dutch Commando sack (Dutch marines also served in the AMF(L)), the standard Canadian model of Bergen, the GS Bergan and the SAS model. As a result of these trials SCRDE designed a design of a special arctic rucksack with a version of the civilian external 'H' frame. After further evaluation, the service design was accepted in July 1975 for issue in 1977.

39. At the same time the RM Commando troops also reported a requirement for a smaller 'patrol pack' to permit operations of up to 36 hours duration when the full rucksack was not suitable. Initially as the new Arctic Rucksack could also be carried without the frame, it was hoped this would meet this requirement with any items not required being stored in a special waterproof bag.
However in the event the latter, a pretty basic waterproof 'sack' was developed into the 'patrol pack' specially for Arctic operations use.[xx] This confirms the tendency for very specialist activities, some of which imposed both different military and physiological requirements, to lead to a different type of LCE equipment.

G. New PLCE Requirement.

40. With the rejection of the Mk 2 '58 pattern, and reflecting the need for a new PLCE, during 1981, D Infantry's organisation set in hand a new 'Requirement' for a PLCE to cater for the range of changes that had occurred and also the forthcoming small arms - the SA80 family. It was hoped that the equipment would be available for troop trials in 1984 when SA80 entered service. The aim was to embrace a 'whole' load concept including clothing, the soldier's basic load plus 'special' loads to reflect particular employments: the impact of the future MICV for armoured infantry operations was clearly of significance, as were developments with 'Combat Body Armour' (CBA), hitherto too heavy/unwieldy for general combat use. The possibility of using a DPM material for the PLCE was also mooted.

41. In late 1980 the School of Infantry's NCO Tactical Wing at Brecon had carried out studies into the infantryman's load and individual items of equipment. These suggested that non-essential items be eliminated (shades of 1921) and the remainder carried in a Bergan-type rucksack. At the same time UK personnel who had served with the Commonwealth Monitoring Force in Rhodesia/Zimbabwe brought back to Brecon samples of equipment used in that theatre. The general design which found most favour with the NCOs was a load-carrying 'waistcoat'[xxi]

42. Internal D Inf staff notes on the overall subject of PLCE as part of the review for the C&T Development Committee recorded that three factors were held to affect the fighting man's requirements for load carrying, these were:

a. the nature of the threat which determined ammunition requirements;

b. time/distance away from support which affected rations/water re-supply;

c. the climate which affected clothing and associated items.

43. It was accepted that the soldier should carry only those items which he needs for the immediate foreseeable future. The temptation to load the soldier with the multitude of 'just in case' items had to be resisted. Fighting Order must be the basic PLCE and it must be lightened considerably. There must be the facility to include NBC and ancillary items in the load quickly when necessary. While it was felt not practical to actually combine CBA into the PLCE, (this had been attempted – unsuccessfully – in the early 1950s) they must be compatible with each other. Further the Infantry Review of PLCE prior to the drafting the Requirement, also noted that this design would almost certainly use some form of rucksack, probably the approved GS Rucksack, but without its frame thereby making it less costly and therefore more acceptable as a General Issue item.

44. Input from the Army's Medical Department on the draft SCDR for the new PLCE highlighted significantly the need for a human factors assessment of design by APRE at an early stage. This was essential to avoid any 'unfortunate' design aspects such as occurred with previous PLCE designs. AMD's input also expressed the hope that some progress might be made towards a reduction in the maximum load which had long been medically considered should be some 30% of the man's body weight. [xxii]

45. An associated part of this work for the SCDR was an Army Management Services Study Infantry Team on 'Equipment in the Assault', produced in December 1981. This noted that the loads laid down by D Inf for the Combat Fitness Test (30-35lbs) bore small relation to the actual loads being laid down to be carried by the man in war. The figure they recorded for the man's Assault Load and clothing was just over 52 lbs. All parties however realised that there was little that could be done to reduce these loads significantly and some felt that too much attention should not be given to 'theoretical' figures as such weights had been carried and coped with by Servicemen in previous periods[xxiii].

46. The School of Infantry's Tactics Wing study of the 'Carriage of Equipment in the Assault' [xxiv] which informed consideration of loads and 'orders of dress', used these and was in turn incorporated in the SCDR issued in late 1981 for the new design, known at that time as 'PLCE '86'. This made the dismounted non-mechanised soldier in general war in NW Europe the Priority 1 user. Priority 2 covered infantry role personnel world-wide in all other circumstances from general war to IS duties. Aspects specific to Priority 2 could be included in the design provided they did not seriously affect adversely Priority 1. Three desired 'orders' were set out:

a. Assault Order (to provide for operations lasting a few hours);
b. Combat Order (for operations of 24 hrs, accepting that ammo re-supply would be needed);
c. Marching Order (containing all the man's issued items that he had in the field. [xxv]

47. When considering designs, the net was spread wide. Among these was one by a civilian firm J & S Franklin which had obtained several overseas orders for a design similar to the '58 model but using 'proofed canvas' and some USA style fastenings. Also a more thorough trial of the Zimbawe 'combat vest' was undertaken by the School of Infantry's Tactics Wing which however dismissed the concept and design as probably not worth pursuing.[xxvi]

48. However the School of Infantry's NCO Tactical Wing based at Brecon still considered the concept worthy of future consideration and set about designing a more suitable model. With the help of a private firm - 'Compass Equipment Ltd' - an 'Infantry Load Carrying Vest' design was produced and trialed by students on the Wing's 'Battle School' courses which covered a wide range of tactical phases, including mechanised operations. The Wing's report suggested that overall the item was considered to be more comfortable than existing designs and that only minor modifications were needed to create an acceptable design. The areas needing attention were principally to permit the carriage of digging tools, and to reduce over-heating, a problem freely acknowledged as an occurrence when energetic activity was undertaken[xxvii]. A further 'Battle Jerkin' design was considered. This came from the civilian firm 'GQ', who had taken over the old 'Mills Equipment Co' for many years the mainstay of PLCE design and production, and whose management included a retired former senior Infantry officer able to approach D Inf himself and 'lobby' for the design. Interestingly during the discussions it was claimed that the concept of a load carrying vest instead of web equipment was a new one for the British Infantry.*

49. After these general considerations, there seemed to the designers be three main alternatives:

Option 1: Pattern 58 Mk2 with the rucksack GS plus a Combat Body Armour (outer); in fact already trialed by ITDU and proved to be possible. This would be the 'status quo' and could be implemented quickly if money was available.

Option2: A new design of Yoke/Belt order for carriage of the important parts of the fighting load (ammunition, water etc) plus a rucksack for the remainder of the fighting load. The Rucksack ideally should be the Rucksack GS but a new design might be needed. Combat Body Armour (outer) should also then be available for this option.

Option 3: A waistcoat style jacket similar to the model used by the Zimbawean forces. However it was noted that carriage of a rucksack over such a design might prove difficult. Therefore a possibility was to start with the Combat Body Armour outer weighing 5lbs and add onto it the pockets and pouches of the Zimbawe Equipment. (This idea had been unsuccessfully tried in a Battle Jerkin from CEPRE in the mid 1950s).

I. Falklands Operations 1982.

50. Although design considerations for a successor to the '58 Pattern was therefore well underway – indeed two 'mock-up' designs were produced by SCRDE in February 21982 - when the troops deployed by sea on operations to the Falklands in the South Atlantic in the spring of 1982, they did so with the '58 Pattern as the basic element supplemented in the case of the Royal Marine Commandos and Paras by variants of the in-service arctic/PARA/SF pattern rucksacks.

*. This reflects the problem where there is no 'institutional memory' of designs and concepts which pre-date that of current personnel. The UK had considerable operational experience of 'Battle Jerkins' from WW2.

51. This meant that the troops in a wet/cold climate with almost no real roads and with limited vehicle support and inevitable limitations on helicopter transportation, were frequently operating on a man-packing basis. The 'follow-on'/second wave of the re-constituted 5 Infantry Brigade of basic 'line' infantry deployed with '58 pattern plus such other rucksacks – including hastily purchased civilian models – as could be made available at short notice. (A number of civilian firms such as Berghaus and Karrimor had been manufacturing such items in suitably sombre 'olive drab' material for some time to meet the wishes of some individuals - in both Regular Army and the TA as well as RM Commandos - to have a more comfortable and practical item for use than the issue 58 pack or issue rucksacks: a practice tolerated in many units).

52. The operations, in particular the wet conditions, highlighted the well-known disadvantages of the '58 pattern equipment. Both its limited capacity, made worse by the additional cold/wet clothing items issued since its inception, and its lack of resistance to water absorption and the consequent increase in its weight were major 'niggles'. More specific points were its lack of pliability, the difficulty of closing the ammunition pouch fastenings with one hand, especially in the wet and cold, and the problem of loss of kit from the rear 'kidney' pouches due to the fact that these had only one central fastening.

53. The general suggestion was that greater load carry capacity was necessary. Post operational reports from both RM Commando and Army units spelled out the difficulties. 3 PARA's post-operational report said:

> 'When loaded to operational scales of ammunition, it is not easy to find room for minimum scales of clothing for operations of, say, up to 48 hours [i.e. without carrying the rucksack]'. [xxviii]

54. The Paras considered that there was a requirement for short operations for a small pack big enough to carry a sleeping bag and rations thus leaving the belt free for ammunition. Aware of the need for financial restraint, 3 Para suggested that the Bergen frame could be used as an ideal, comfortable substitute to carry the sleeping bag, kidney pouches and poncho roll. (These complaints - hardly surprising since the loads now carried far exceeded that for which the '58 pattern was designed - and the suggestions for a larger capacity, vindicate the original concept of the '58 Pattern additional order 'CEFOIL'; intended for just such extended operations away from base support. The use of a 'frame' to carry the non-battle items was of course an old one having been tried first c1902 and at intervals since then).

55. A further suggestion from the Paras was that an 'Assault Vest' was required to carry extra ammunition when assaulting with no webbing or only reduced 'belt order'. This was clearly influenced by American Special Forces equipment - and the Assault Vests used by some British Special Forces unit. A company commander from 3 Para described how in the final assault phases during the fighting for on Mount Longdon the men dropped off all webbing and ammunition was carried in the pockets of their airborne smocks[xxix].

56. 3 Cdo Bde's Report of proceedings noted that far from reducing the infantry soldier's burden, technology had increased it and that a detailed study of loads was therefore needed. The senior land commander – CLIFFI – reported that the Falklands operations were indeed a 'real test' as there was no pre-determined end-date unlike exercises or trials.[xxx] However a RM Commando Company Commander from 45 RM Commando in his personal 'Diary' summary of the campaign pointed to unnecessary, voluntary 'over-loading' by individuals. [xxxi].
57. APRE's Human Factors area produced a report on the Falklands operation which noted that

the troops pre-deployment training – even for the Royal Marines – was not carried out with 'realistic' combat loads. The Team considered that a combat load in excess of 80lbs was common and those man-packing with Support Weapons carried between 140-180lbs. As the troops had no experience of carrying loads of this size, they considered that the troops would not be fit for immediate battle after carrying such a load[xxxii].

58. The inadequacies of the '58 pattern equipment and the troop's criticisms received wide publicity in the aftermath of the operations with the lack of a 'new' webbing and sufficient supplies of new rucksacks being highlighted: not least because TV coverage of the operation showed some troops deploying with 'civilian' "blue" coloured rucksacks. However some of the media articles did also record that work was well in hand, but that financial restraint over the years up to 1982 had naturally had an effect in this area[xxxiii].

59. The problem of PLCE was inevitably taken up by the House of Common's Defence Committee in its hearings. The first of these in 1984 for their 'Report on Implementing the Lessons of the Falklands' took evidence from a number of officers and officials. However RM Commando officers highlighted not so much in their case the lack of an adequate rucksack – many had apparently bought one of the various civilian para-military models – but rather that they actually over-loaded themselves. Lt.Colonel *van der Horst* who had been the 2i/c of 45 RM Commando told the Committee echoed the RM Company Commander's comment mentioned earlier:

> '. . .Actually sir, we carried too much. . . Because we over-indulged when we first landed because we did not really know what the conditions were like. . . Therefore we carried too much kit to begin with, on the march'.[xxxiv]

60. The further discussions with the HCDC on the question of load carriage were effectively answered by the MOD/Services' pointing out the lack of the 'normal' logistic re-supply chain which meant that men had to carry far more than usual for much longer periods. The MOD stressed that work was already in hand to provide a new PLCE and samples of the alternative designs already produced were made available for the HCDC to examine. This point about voluntary 'over-loading' was also noted by another RM Commando Company Commander from 45 RM Commando in his personal 'Diary' summary of the campaign[xxxv].

I. Post-Falklands : Design & Loads.

61. Although during the Falkland Islands' operations very heavy loads had been carried without any evidence of long-term harm or even of immediate serious ill-effects, the question of what was the sensible combat load for the soldier remained one of debate. A study on Efficiency of Load Carriage by a member of APRE's staff produced in September 1982 concluded that:

> a. The load of 35%A of the body's weight is subjectively suitable walking at 4.9 k mph for 1 hour. As the size/structure of an individual is important in these calculations it is difficult therefore to fix a single maximum figure to cover all men).
>
> b. An important factor governing performance during carriage of heavy loads is the method of carriage. The more efficient the mode of carriage, the lower the level of operator stress at any given load. [xxxvi]

62. Reflecting on the earlier work on the 'load', for the 'philosophy' for the new equipment it was felt that the individual items of the load as well as its total weight needed to be re-assessed using the three orders previously identified:

1). Assault Order: This consisted of those items needed to 'close with and defeat an enemy', then hold off his immediate counter attack. In essence this meant weapons, ammunition, water and digging tools.

2). Combat Order: This added to the Assault order those items needed to operate in close contact with the enemy for at least 24 hours. In other words some food and just enough clothing to keep warm and dry. (using side pouches from the rucksack).

3). Marching Order: This consisted of what remained of the man's kit. Clearly the items would vary from theatre to theatre and unit to unit, but must either fit inside the rucksack (now at last replacing the '58 large pack) or be left out of battle.

63. In each of these however there were a number of additional items some of which might be required. This reflected experience since 1957 which had demonstrated that the soldier's total load could not be set out in inflexible detail. There was clearly a need to provide sufficient flexibility in the PLCE's capacity and design to cope with the differing demands which would be presented by the varied operational & tactical situations; there was also acceptance that achieving this flexibility was one of the hardest parts of PLCE design. The Director of Infantry in a note on the new designs noted that inevitably whichever design was adopted, there would have to be some compromise. In an accurate summary of PLCE design, he wrote to VQMG that:

> 'We are dealing with an emotive subject on which there are many personal views which are difficult to reconcile. . . .there are conflicting demands of climate, operational requirements and threat and role. We cannot have different sets for varying circumstances because of cost, we inevitably move towards some form of compromise.. . . Complicating the issue are the NBC items which are quite bulky and heavy' [xxxvii]

64. The reconsideration of the 'load' saw a resurgence of the view that the infantry's needs should be paramount and must not be prejudiced by those of other arms as it had been to some extent in the discussions that led to the demise of the '75 Pattern. Further the need to 'keep it simple' and a realisation that the inevitably fairly long timescale before full issue meant that the compatibility with the new small arms (SA80) was more important that compatibility with existing, in effect obsolescent, weapons. A note in the internal papers of the Army's Clothing & Textiles directorate stated that while the desire for quick results was appreciated, it was important that the basic design was right if the fate of the '75 Pattern was to be avoided[xxxviii]. Reflecting this a small working party involving all key players from design areas, service staffs and user representatives was formed. [xxxix]

65. The 3 designs of Assault Order PLCE that had been produced by SCRDE were:

a) 'Dickie'. This was a belt and yoke design with six supporting straps attached to the belt/ammunition pouches. The latter were arranged in a vertical line on either side of the chest thus spreading their load over a larger area than in pouches at waist level. The design kept the man's back clear so that combat and marching order could be easily added. As the basic design

came in four separate pieces, it could be easily fitted or altered for different roles including IS (now called Counter-Insurgency COIN).

b) 'Waistcoat' This was a more integrated design, the only removable piece was the belt. The ammunition pouches were similarly set out to those of the 'Dickie' but, as with the other, pouches were all fastened to a 'mesh' waistcoat that covered the back. Although this model was seen as the favourite, it had not yet been tested in a hot climate where it might cause over-heating (as has been seen, always a problem with waistcoat/jerkin designs).

c) 'Conventional' The only real difference from 'b' was that the ammunition pouches were placed two to each side on the waist belt. This was also a possible basis for a 'COIN' system.

66. As part of the evaluation of the new equipments, APRE at the end of 1982 carried out a limited 'human factors assessment' of the three candidates using 6 trial subjects. The results of this small trial showed that no one prototype was consistently superior. However the 'Traditional' design not only performed somewhat more favourably than the 'Waistcoat or the 'Dickie' models but it was also the most popular as 4 of the 6 trialees preferred it - the other two voted one for each of the other two. The 'Waistcoat' design was found to be more difficult to adjust to the man and to different orders of dress - particularly the needs of arctic or NBC conditions. The need was therefore seen for different sizes of any such design - a repeat of criticisms of the earlier 'Jerkin' designs. The result of this trial was that no one prototype was consistently superior but on balance the 'traditional' design performed better[xl]. Therefore the recommendation was that only the 'Traditional' model should go further for further evaluation and trial. [xli]

67. D Inf's Conference in December 1982 included a session on the future of PLCE. All three prototypes were discussed and the pro-and cons of the military GS rucksack as against the civilian 'Crusader' model were aired. As D Inf himself noted, a major 'obstacle' in PLCE design was the need for adjustability even within a basic equipment size to cope with the inevitable changes of clothing ranging from shirt sleeve order through to full NBC clothing. [xlii] Following from this discussion 1st Battalion Grenadier Guards volunteered to carry out a limited trial of the designs during training in Kenya in early 1983 which would feed further information into the DCT Prototype Selection Meeting scheduled for late February 1983. The results coincided with those of the APRE trial.

68. At the DCT Prototype Selection Meeting attended by all interested parties from MOD, D Infantry, SCDRE and APRE, held meeting early in March 1983, the points that had arisen from the trials were considered and the three optional designs were examined. The waistcoat had been made adjustable to remove the need for 'sizing' of individual waistcoats. The 'Dickie' was replaced by a 'Hybrid Traditional' where the pouches were on the waist belt but a mesh 'load spreader' was used on the man's back rather than a traditional yoke.

69. The plan was now to have a larger 'user' trial of the new PLCE in November 1983 before moving on to large-scale troop trials. The former would be carried out by two battalions in the UK, while a number of sets would also be passed to APRE to evaluation by them. An important factor in the timings was the need to have the PLCE available for the trial of the new rifle for the Army - the SA80 - whose magazines had naturally influenced the design of the ammunition pouches. Both the Waistcoat and Hybrid Traditional designs were to be produced for these further user trials[xliii].

J. Rucksacks.

70. The Falklands experience naturally had an impact on the progress of the new PLCE. The general agreement that a 'rucksack' was a vital part of the ensemble now included acceptance that the previous 'GS model' from the '75 Pattern was too small. However the question of the most suitable rucksack was not yet settled. Troop experience, including both the recent Falklands operations and RM Commando arctic training, were clearly to be significant factors in decision making.

71. With regard to the best 'new' design, there was considerable support for newer civilian models, the most commonly used of these last being the 'Crusader' model with a capacity of c100 litres, produced by the *'Berghaus'* company. This had already been procured by the Royal Marines for the 'Special Boat Squadron' and its design – removable side pockets that could be combined to form a 'daysack' - was considered by the Royal Marines to have great possibilities as a replacement for both the existing issues 'Arctic' rucksack, and the 'Patrol Pack'.[xliv] The *Berghaus* firm, were in contact with existing military users to make modifications to suit their needs and, probably sensing the prospects of further sales, also passed a sample of the 'Crusader' model to the MOD's staff with responsibility for parachuting/airborne equipment who naturally forwarded relevant details to the MOD Clothing & Textiles branch dealing with the PLCE.

72. Understandably the central MOD Service staff were determined to avoid any 'special pack for each element' of airborne and commando forces and accordingly sought a single, agreed common use design.[xlv] The different rucksacks finally considered were the existing in-service 'SAS/Para' Rucksack introduced in 1972, the civilian 'Crusader Mk 2' from the *Berghaus* company and a new SCRDE PLCE prototype which reflected many of the features of modern civilian model particularly an internal rather than external metal frame. The smaller 1970s 'GS' model of rucksack was now out of favour - mainly because of its small capacity.

73. All these types were tested on a five mile march. All trialees preferred the 'Crusader' because it was the most comfortable but its waist belt was considered superfluous. Access to some items of the PLCE's waist area pouches was more difficult when wearing the rucksack and the tendency of the rucksack to sit on the waist pouches was criticised. A significant point was that all agreed that large rucksacks as the 'Crusader' could encourage overloading (both by commanders and by the men themselves). Reflecting this initial look at the designs, a key favoured feature was the removable side pouches of the 'Crusader' model. These, when worn jointly on the back with Assault Order, gave the soldier a 24 hour capability including the full NBC suit.

74. This concept was adopted as desirable and the in-service SAS model with its external frame was modified to permit the removal of its side pouches. This type, the Berghaus model and the SCRDE design were trialled further. The SAS/Para rucksack, although it fitted the back just above and clear of the belt and its pouches, being an external frame model, had its centre of gravity some way away from the back. The Berghaus model was very close fitting to the back and was comfortable but being a civilian design not intended for wear with 'belt order', was somewhat long and 'clashed' with the belt order. Also its narrowness prevented the carrying of the GS sleeping bag except vertically. The SCRDE design was also a snug fit but wide enough to take the sleeping bag widthwise. Its overall capacity was about equal to the Berghaus but slightly less than the SAS model. Nevertheless it was decided to trial only the SCRDE model which had all the essential 'plus' features of the civilian model but within a more 'military' orientated design.

75. Nevertheless as an 'interim', the Royal Marines were permitted to procure the *Berghaus* 'Crusader' model as a 'maintenance' replacement for the existing in-service, external-framed arctic rucksack until the new PLCE (including rucksack) came into service. [xlvi] However the 'buy' of up to 10,000 additional rucksacks for more general use, authorised following the Falklands was not fully actioned, reflecting the lack of an approved 'GS' model. Essential 'immediate' needs were met by issuing existing Artic pattern and '75-type GS rucksacks as a stop-gap' and increasing the 'buy' of PLCE rucksacks for the future trials [xlvii]. This unfortunately led many troops serving in the Falklands to buy their own 'civilian' model rucksacks[xlviii].

L. Major Trials of the New PLCE : Views & Practical Difficulties.

76. The progress in developing the new PLCE was briefed to the Clothing & Textiles Development Committee (CTDC) at its meeting on 28 October 1983 and the general progress was disseminated wider to the Infantry through the medium of the Infantry Liaison Letter produced by D Inf's staff. This noted that the earlier user trials had firmed up the two main contending designs, and explained that the 'zipped' rucksack side pockets perhaps offered the best way forward for the combat order problem. The hoped for schedule was given as limited user trials from November 1983-March 1984 with troop trials worldwide in 1985/6 and an 'in-service' date of 1987[xlix]. In an internal note D Inf's area noted that the aim of the new PLCE design was to make the soldier more agile, able to move more freely in such tasks as FIBUA, climbing through windows etc., and one improvement was, with the abandonment of the '58 Pattern shovel, the removal of the 'yard of wood' on his back (although the folding entrenching tool intended to replace it had not been proved a success).

77. The trial directives for the new PLCE were very clear with guidance for officers overseeing the trials and included a most interesting explanation on the value and pitfalls of using 'Questionnaires' in such trials. APRE's Trial Division added advice against the overloading of the rucksacks and that, if operational efficiency was to be maintained, the recommended weight equal to between 30-40% of the body weight should be the maximum load for carriage over extended periods: and this only after training. Because of need to allow access to rear pouches, most of rucksack's weight was therefore carried on shoulders, not placed on the hips via the waist-belt.

> '. .Excessive weight carried on the shoulders can put pressure on the collar bones and co-located nerves and blood vessels which in turn can result in numbness, muscular weakness in the arms and a tingling sensation in the hands'.[l]

78. Although clearly the infantry were the 'key' users of PLCE - particularly in terms of the 'Assault' Order - the trials included representative units from the artillery, armour, engineers and signallers, 4 'standard' infantry units, 2 in the arctic role, 1 in jungle role plus the SAS. The outcome of the trials were that the 'Waistcoat' style gathered 4 supporters including two infantry units, the armoured corps, engineers and RAF Regiment, while the remainder preferred the Type B 'Traditional' style of new PLCE. In all 72% of trialees preferred the new PLCE design but 80% felt it would require modification before it could be introduced into service. For example as ITDU pointed out, the PLCE was not of itself 'waterproof' and therefore interior waterproof bags would still be required to keep the man's kit dry.

79. Of the two units currently in an arctic role, 1 PARA & 42 RM Commando, in considering the Assault Order the former felt that the Waistcoat 'cluttered' the chest, 42 Cdo also preferred on balance the 'traditional' design, although they said that this was a 'reluctant' decision because the

Waistcoat model spread the load well. It was felt overall that the traditional model permitted easier access to the pockets of the man's jacket, while the waist-belt of the rucksack was not affected by it as was the case with the 'waistcoat' version. Further, the troops preferred a belt order design that permitted the carriage of extra pouches on the belt thus giving greater flexibility to the allocation of loads. In the case of 'Combat Order', this was seen as the most popular part of the PLCE design being comfortable yet able to provide a 36-hour combat capability. The only doubts were as to the durability of the side pouches' zips, particularly in snow/ice conditions.

80. The practical difficulties that affect design and decision making are amply demonstrated by the fact that while the trials were in progress DCT's area became aware that there were some difficulties with the new rifle – SA80 – and that the PLCE might have to cater for the existing rifle model which, being of a larger calibre; 7.62mm as against 5.5mm – had more bulky magazines: in the event this problem did not arise[lii]. A further problem was the Chemical Warfare (CW) protection qualities of the material used for the PLCE and the rucksack. Although somewhat resistant to water and POL penetration, the fabric was not moisture-proof and would in addition, in the view of the Chemical Defence Research Establishment (CDRE) Porton Down, be difficult to decontaminate. Any attempt to add proofing would however add to the fabric's cost and water, CW agent etc. could still penetrate through stitching holes[liii].

81. With regard to the rucksack, 78% felt that the SCRDE design was better than any 'in-service' rucksack model, but 42 Cdo RM in the arctic role and who had extensive experience of the civilian *Berghaus* 'Crusader' design were particularly critical of the SCRDE model. They considered the Service designs too square and that carrying all the weight on the shoulders as it did led to numbness and injuries. They felt that the rucksack should be longer to rest on the pelvic area thus supporting weight on the stronger part of the body. It was too small for all the kit that the Commando felt was required - including Section stores. 1 PARA, also in an arctic role, was less critical, although they found that the close-fitting pack made the wearer's back wet - a serious hazard in cold weather conditions – and they suggested an open-weave pad on the back of the pack (a concept rejected by APRE – although now widely in use with civilian sacks!).

82. As a result of these comments, SCRDE produced a modified rucksack - the 'Prototype Model' (PM3). The modifications reflected both general comments and the arctic units' complaints eg. The side pouches had been raised to clear the swing of the man's arms; the whole back of the pack and shoulder straps were better padded; a waist-belt was added. Consideration was also given to a 'rip-off' pouch (attached by velcro) for the small PRC 349 radio which could then go onto the man's belt thus freeing the side pouches for the NBC kit. Of the 30 trialees of this new model, 75% found the PM3 more comfortable and 79% considered the PM3 model the best overall for military duties; 59% were happy to have the PM3 as it stood, 27% wanted the PM3 but after minor modifications; the remainder preferring the PM1 model. There was also a feeling that if, as with most civilian rucksacks, it was produced in two or three sizes, every soldier would have a comfortable fitting. In addition there was support for its manufacture in DPM fabric rather than relying on a suitably camouflaged external cover. One point about the adoption of a rucksack with an integral frame, was that a separate man-pack carrier was now needed for the man-packing of Milan ATGW and 81mm mortar equipment.[liii]

83. In May 1984 the PLCE Working Party in considering the trial results agreed minor modifications to the design of both Rucksack and the basic PLCE before the troop trials. Among the more interesting alterations to the Assault Order were the addition of small loops to the bottom of the belt order pouches and the provision of a nylon cord to allow the pouches to be better stabilised by being tied down thus preventing them swinging away from the body during

vigorous movement.[liv] This search for extra stability had been tried with the '58 Pattern as well as having been a frequent modification at unit level to both the '58 and the '44 Patterns.

84. While the PLCE design was firming up, the cost of providing the full set to 'All Arms' caused concern. The likely cost per PLCE set was 33% above that set out in the SCDR. The possibility of a less complex design for non-infantry 'Other Arms' was formally raised with VQMG by Director Clothing & Textiles (DCT) in mid-1984. Not only might the basic PLCE be different – one instead of two ammunition pouches and no entrenching tool and carrier – but a less complex rucksack might be designed. This way forward was generally endorsed by other key Army Directors [lv]

85. The consideration of this – albeit on financial grounds – had clear benefits for the infantry in that while the maximum use of universal items was made for both designs, it meant that its own specialist needs would receive their proper attention without distraction of those of non-infantry troops whose requirements for carriage of heavy loads or of Assault Order operations was far less but which had nevertheless in the past had great impact on the outcome of PLCE trials. This latter pint is reflected in the views expressed by HQ RAC BAOR who had supported the 'Waistcoat' design for PLCE as against the 'infantry-preferred' Type-B belt-order design[lvi].

86. While D Inf was keen to have the PLCE in service as quickly as possible, the dates for the full Troop Trial of the PLCE could be undertaken was affected by several factors, the availability of units under the pre-planned Regular Army Assistance Table, as well as the need to comply to financial policy and seek competitive tenders even for Troop Trial quantities of equipment.

M. <u>The Overall Load – Again.</u>

87. With minor modifications in hand as the PLCE for large-scale troops trials being produced, D Inf and his staff examined the whole question of the infantryman's load to see if savings in weight could be made. The benchmark was the total load carried by the Infantryman identified by the School of Infantry in 1981 when the subject was last examined there. Data from the Falklands War was also fed in as was ITDU's work with the PLCE combat load and weaponry such as LAW80. Some historical data from the Army's earlier operations and PLCE experiences was also provided by the Army's General Staff Historical Branch. [lvii]

88. The US Army's Development & Employment Agency (ADEA) also produced a paper on 'Lightening the Foot Soldier's Load' which was passed to D Inf. This recommended the economical combat load for a fit soldier as 30% of his body weight with a maximum marching load of 45%. With a basic body weight of 156 lbs, this gave loads of 47 lbs and 70 lbs[lviii]*.

* Recent US experience (US Army study of the Grenada 1983 operations) based on interviews with men from the seven battalions involved, including the `elite' Ranger and Airborne' elements, found that in many instances the soldiers were still going to combat grossly overloaded :

> `Most people jumped [para assault] with excessive loads.... I jumped with an M60 MG, my rifle and my .45 pistol. I also had about 1,000 rounds of 7.62mm ammunition and some frags [grenades]. . . We were like slow moving turtles. My rucksack weighed 120 lbs. I would get up and rush for 10 yards, throw myself down and couldn't get up. I'd rest for 10-15 minutes, struggle to get up, go 10 more yards and collapse. After a few rushes I was physically unable to move, and I'm in great shape. Finally after I got to the assembly area, I shucked my rucksack and was able to fight, but I was totally drained. . ..[lix]

89. APRE when consulted suggested that a soldier could operate carrying about 33% of his body weight - averaged at 52 lbs he weight of the agreed D Inf list of items gave totals of 58lbs for Assault Order and & 88 lbs for Marching Order respectively. Clearly loads were well in excess of the totals recommended. D Infantry's staff considered these inputs which all emphasised the need to constantly check what loads needed to be carried, while accepting that there was always a compromise between having 'enough' ammunition, personal protection against CW, weather etc plus essential food and water. The aim was an infantryman agile and mobile with enough stamina in the assault to change position quickly and bring effective fire down on the enemy. In Combat and Marching Order he should have enough stamina to keep going all day, if necessary, at a reasonable pace.. The need to practice realistic ammunition re-supply during training was also stressed.

90 Although fitness would play a part, excessive loads carried combat penalties . Overloaded soldiers would quickly become exhausted & the mission put at risk. This could result in soldiers carrying excessive Assault Order loads unable to get up quickly and change position; the 'throwing away' of 'unnecessary loads' - even NBC kit or extra ammunition; soldiers in Marching Order moving no faster than 5 kph/3 mph on roads and 3 kph/2 mph across country.

91. Accordingly the paper recommended:

Assault Order (AO) 16 kgs (35lbs): to be used for the Annual Personal Weapon Test and Combat Fitness Training Test - both annual requirements for all soldiers.

Combat Order (CO) 23 kgs (51lbs) as the standard exercise load;

Marching Order (MO) 36 kg (80 lbs) as 'rucksack' or large pack load: (this included the man's personal clothing, ammunition and personal weapon.

92. An examination of the load was undertaken to see where redesign or removal to the 'F' echelon kit could help. Possibles were: removing a one of the two mess tins and using a metal water-bottle cup; re-examining the need for both a cold weather cap and a beret. This was intended for patrolling needs and to provide relief from the steel helmet but; with the new more comfortable, lighter Mk6 helmet, the cap could be left in MO and patrolling needs met by a beret and face veil. Removing the boot cleaning and shaving/washing kit would save .7kg (1½lbs). Removing other spare clothing from Marching Order would reduce overall weight. The 'Entrenching Tool Hand' (ETH) was lighter than existing pick/shovel - saving about .5 kg (1.1 lbs). But, less robust, the ETH could only give an immediate 'shell scrape' capability, more conventional digging tools would still be needed for main defensive battle positions though not considered for carriage in Assault Order.

93. All of these were however really 'small beer'. The most difficult area was ammunition. The infantryman was now scheduled to carry 330 rounds of 5.56mm ammunition for himself and the section light support weapon as compared with the earlier 7.62mm SLR/GPMG scale of 150 rounds. A total of 180 rounds – still an increase – would save some 4½lbs (2.2 kgs). However there was strong opposition to this.

* the subject of just how much ammunition 'on the man' is "enough" was a controversial one. With the adoption of a fully automatic capability for the new infantry firearm and a greater acceptance of what was termed 'suppressive' (but some might call 'prophylactic') fire, an increase in ammunition carried was perhaps inevitable.

94. Trials to validate the PLCE loads in tactical scenarios were not possible because of lack of funds for additional School of Infantry time. Reflecting the comment by the School's Tactics Wing that detailing of soldiers' loads was not a staff function but the responsibility of unit COs, the Directorate of Infantry, issued guidelines on loads, which included desired maximum weights. [lx]

95. Further, the Infantry Directorate did make efforts to educate the infantry on the need for 'load awareness'. The 'Infantry Newsletter' which, designed for unit notice-boards had a wider distribution and audience than the 'Infantryman' Journal, as well as the latter carried articles about load carriage and weights. In the June 1987 edition of the Newsletter was an article on 'Sustaining Mental and Physical Robustness'. This stated that the aim was to develop and sustain the necessary physical fitness while at the same time trying to lighten the infantry load and allocate necessary loads sensibly. Nevertheless it was accepted that while be some lightening of the load through the introduction of lighter items, the battlefield threat and the number of tasks for the infantryman was always increasing with extra items to be carried. Two photographs included with the May 'Infantryman' showed troops from an infantry unit's Support Company with 'typical' anti-armour team loads thus perfectly making the point about overloading.[lxi] The need both the minimise weights carried and to train carrying realistic battle loads was subsequently set out in the next edition of the Infantry's Platoon Training manual.[lxii]

N. Troop Trials of PLCE.

96. The Troop Trials demonstrated the general popularity of the PLCE. However final acceptance and production was not reccommended as there were still some unsatisfactory components, although these related primarily to stability and attachments rather than any fundamental false principles. The main deficiencies reported during the trial were: that the belt was not rigid enough and deformed under pressure; the yoke needed a better method of attachment to the belt; there was some concern over the stability of the pouches and their attachment to the belt. This led to a decision to go for modifications and a third phase of Troop Trials.

97. Cash saved on the non-procurement of Trial quantities of PLCE in the financial year was used instead for the new Combat Helmet so not 'lost' to the infantry. [lxiii] However there were inevitably financial pressures and led to a perception in some in the infantry that the delay in issuing what they saw as essential items used daily on operations and training, was due to lack of funds.

98. Following the modifications made to the PLCE both before and after subsequent trials by APRE with the help of ITDU between August 1986 and September 1987, after further minor 'tweaks' the PLCE Working Party agreed that the equipment could go for a further Troop Trial.

O. Non-Infantry PLCE & Combat Vests.

99. During the period up to the Autumn of 1987 when the remodelled equipment was ready, it had been decided not to make the current PLCE design an 'all-arms' issue but one for infantry only: an 'other Arms' PLCE would be developed thus picking up the SCRDE suggestion of 1984. This design would be less complex and reflect the different needs of non-infantry troops with the main change being in the form of the rucksack. This decision was an important one, the financial benefits of such a move proved more powerful than the desire for a single 'GS', Army-wide item.

100. Throughout this period, the suggestion of 'Combat Vest' with a small pack re-surfaced at regular intervals. A US model was put forward for general consideration in 1984 after the UK's own 'Waistcoat has been dropped. The view expressed then was, that while the UK didn't oppose vests *per se*, it was felt that it had to be considered in conjunction with a rucksack or man-pack carrier. When this method was raised again in 1987, D Inf responded to US views which stressed the benefits of the Combat Vest and the small pack to prevent 'large pack syndrome' ie over-loading, by pointing out that, apart from the fact that a vest was not felt to be flexible enough, much of the new kit: the sleeping mat, thermal undergarments etc, had low weight but very high bulk therefore a rucksack with its larger capacity than a pack was still required[lxiv].

101. Pressure for the new equipment was also exerted by the House of Commons Defence Committee's report in its 1986-87 Session which finalised its work on the Falklands when it evaluated the 'Implementation of Lessons from the Falklands Campaign'. Drawing on both evidence from its 1984 hearings and subsequent work, it said:

> 'Reports suggest that the new bergen is a considerable improvement on the '58 Pattern webbing, but that is not large enough to carry all the requirements necessary to support airmobile troops in sustained operations. (this reflected comment by a young LI officer whose battalion was involved in new airmobility trials and who stated in an article in British Army Review[lxv] that the Berghaus 'Centurion' [100 litre capacity] rucksack was more popular than the issue item) We consider that there should be a regular review of load-carrying equipment to take into account any changes in or additions to personal kit. It does not make sense to issue soldiers with new items of gear if they do not have the capacity to carry it' [lxvi]

However the same Committee was less complimentary over progress with PLCE 90 in its July 1988 report on 'British Forces in Belize'. It noted:

> 'The shortcomings of the standard 58 pattern webbing (rucksack) were clear to us during our visit. . . Introduction of the new PLCE is not as far advanced as might be surmised . . . We hope that the Ministry of Defence will now proceed as quickly as possible towards the introduction of the new PLCE' [lxvii]

102. The Army was advised of progress through the Army Board Bulletin which in its December 1988 edition advised of the 'final confirmatory trial of the PLCE (Infantry)' which was underway. If successful the PLCE would be accepted for service in the first quarter of 1989 with the first 20,000 sets being delivered by April 1990; full scaling would, dependent on funding, take a further three years'. This article also recorded the formal decision to provide a 'PLCE (Other Arms)'.

103. The 1000 sets of PLCE (inf) for a 'Confirmatory' trial were issued to 17 appropriate units across the odd the widest possible range of climatic and tactical situations including units serving in the Britain & N Ireland, in the Falklands, on training in Canada, in Cyprus, Belize, Norway and BAOR, while both mechanised and non-mechanised infantry units, RM Commando, & RAF Regiment units, all with 'infantry-type roles, were also included.

104. The results were that 47% felt the PLCE was acceptable for GS issue. 75% felt the ammunition pouches were not ideal: a result of the new larger magazine for the SA80. The Utility or 'Side' pouch proved the most popular piece of kit - reflecting the limited capacity of the

current '58 Pattern and the greater accessibility of the new PLCE model. A unit in N. Ireland reported a need for more room on the belt although PLCE could now carry both significant ammunition plus utility pouch, water bottle and respirator, although the latter's carriage was more difficult if both ammunition pouches were worn.

105. The reports from ITDU and the Brecon JNCOs School said that the PLCE had been well-received. This was an indication of its quality: students at Brecon were experienced with their own 'personalised' equipment and the PLCE had to overcome inevitable scepticism.

> "it is felt that with some minor alterations the equipment will make a satisfactory and durable replacement to the current webbing pattern"[lxviii].

106. With regard to the rucksack, overall some 50% felt that the Marching Order assembly was unsatisfactory because of the incompatibility of the rucksack with Belt Order: often because of the rucksack's length, or the 'uncomfortable' shoulder straps, when 30kg was carried some troops found that the shoulder straps of the rucksack cut and led to numbness, tingling in the arms and back-ache. The greatest criticism came from RM Commandos, one unit noted:

> "Although clearly a copy of the Berghaus Crusader which was developed by industry in conjunction with soldiers views, the PLCE [model] is relatively robust but requires a review of design. It is most uncomfortable...Marines would revert to buying their own civil Bergens were it to be introduced in the current form"[lxix].

107. 1 Para said the rucksack was a sensible design but difficult to wear with belt order as it was too long and most soldiers preferred the existing SAS Bergen model which was 'squatter' in shape but 3 Para said the rucksack represented 'a quantum leap from the old SAS Bergen'.

108. APRE noted in its formal report that 42 & 45 RM Cdo's dislike of the PLCE rucksack could be traced to problems with the frame which was weak and easily distorted. In addition it chafed which sapped the men's stamina leading to a deterioration in morale. No real physiologically measured difference between the civilian and PLCE rucksacks could be found, especially when Marching Order and Belt Order were worn. The difference between the Berghaus 'Crusader' model and the PLCE was not sufficient to prohibit the introduction of the PLCE Rucksack[lxx]. Somewhat later a most revealing and honest statement of the difficulties facing the Service designer was made in a letter from APRE to a firm of civilian rucksack designers.

> 'MOD suffers disadvantages when designing a rucksack which civilian firms don't have. Military rucksacks have to be worn both on their own and <u>in conjunction</u> with a 'belt order'. Therefore both the rucksack and belt order are competing for space on the pelvic girdle. From the military point of view future work should be concentrated on resolving this particular conflict noting that many loads are heavy/high density and that weapons and equipment are often awkwardly shaped.'[lxxi]

109. The long development period of the PLCE proved its value, 1 PARA's view was:

> "PLCE is a massive step in the right direction and a vast improvement over the British Army's existing '58 Pattern. Apart from minor teething problems outlined above, durability, non-water retentive quality of the material and logical inter-changeability and adaptability of the various equipments make PLCE a sound and desirable concept benefiting the British Army of the 90's".[lxxii]

P. PLCE '90 Accepted.

110. PLCE (Inf) 90 was accepted for service on February 1989. At the acceptance meeting various minor changes were agreed both to the 'belt order': eg: use of a 'T bar' instead of the 'C' hooks, a concept tested during the 'Other Arms' user trial between July and November 1989; a triangular universal buckle for the attachment of the yoke straps to the ammunition carriers thus allowing the pouches to be interchangeable: a clear fitting and stock usage improvement. The rucksack's frame was made 'removable' so when a frame was damaged it could be easily replaced in the unit & the stowage of rucksacks in confined spaces – a complaint from armoured infantry units using 'Warrior' - could be eased by the frames' temporary removal; two lengths of pack back-size were also agreed as was better padding for the shoulder straps.

111. At a meeting in August 1989, it was reported that following the availability of funding in the Financial Year 1988/89 some 22,500 rucksacks had been completed to the trial design model and were at Bicester. First issues of the full PLCE '90 (inf) to eleven Regular Army infantry battalions would begin in November that year with all the Regular infantry battalions in N. Ireland receiving the PLCE by Christmas that year. eqj . By July 1990 37,000 PLCE sets had been issued to
3 Cdo Bde, 5 Airborne Brigade, the UK infantry component of the Allied Mobile Force (land) (AMF(L)) and 24 Brigade.

112. A trial of the PLCE and the new 'Combat Body Armour' (CBA). When worn with PLCE the CBA did result in a small increase in physiological and human factors load on the wearer but this was only apparent at high workloads and was thought unlikely to be a limiting factor in performance.[lxxiii] Subsequently in February 1990 the problem of the vulnerability of the equipment to Infra-Red vision aids was discussed. The current model had been accepted with a 'visual only' camouflage property but research was in hand at SCRDE to overcome the 'IR' detection hazard and later models were made 'IRR' capable.

113. In October 1990, consideration was given and eventually adopted of the use of a 'Disruptively Patterned Material' (DPM) for the equipment: this had been considered in the 1984-86 development phase but had been rejected on cost grounds. Now agreed stocks of the new model would begin to arrive in late 1992; the original 'olive green' pattern would pass to the TA & RM Reserve with '58 items being used for 'Individual Reservists' and for the ACF/CCF who were still officially in possession of '37 Pattern equipment. [lxxiv]

Q. The Test of Combat.

114. British forces deployed to the Gulf area on Op GRANBY and the operations there between August 1990 and March 1991 provided a true test of the new PLCE. The infantry operations were primarily conducted by Armoured Infantry (AI) who had to cover little ground independent of their vehicles and accordingly carried only limited total weight as compared to that had they been primarily on foot.

115. Accordingly, compared to the Americans, there as little UK evidence about the overall comfort/capability of the full PLCE in man-pack-type operations, whereas the US Army's air-assault units did carry out a number of helicopter-borne movements. The US Army's `Infantry' Journal for May-Jun 1992 addressed the 'Soldier's Load' and in particular that of the non-mechanised infantryman. It described how in DESERT STORM in 1991:

> 'The battalions that entered the Euphrates River Valley had learned a valuable lesson of their earlier training attack. . Although their fighting and approach march loads were still as heavy, they knew better how to manage them. When units arrived at their landing zones, the battalions secured their rucksacks (approach march load) with a minimal guard force while the rest occupied their positions. As soon as practicable, soldiers went back, a few at a time, to retrieve the rucksacks'[lxxv]

116. The UK's ITDU Granby Post-Op Report provided the most detailed coverage of PLCE[lxxvi] and noted that there were a number of 'hybrid' equipments used in the Gulf the most common of which were:

i) adaptations of Combat Body Armour (CBA) with belt order ie CBA and pockets sewn on the external cover.

ii) Adaption of 90 Pattern with Yoke reversed as 'Chest Rig'.

iii) 90 pattern belt order only.

iv) Chest Webbing.

117. The value of 'chest webbing' became a topical issue. The APRE team that examined Gulf War experience found much variation in views on the best design of PLCE, but the 'chest rig' was very popular with some infantry in 'Warrior' [lxxvii] . Troops in some units had been using a design produced by the civilian firm 'Arktis' who had developed it a short while before as a private venture apparently drawing on infantry officers' experience. The Arktis design was evaluated by ITDU after the Gulf operation. Their view was that the design was very poor, lots of dirt and sand entered the pouches when the soldier crawled and it affected the use of SA80 in the prone position. In addition the 'Chest Rig' design imposes a heat burden on the soldier if used for general duties.

118. Some troops used a 'COP' Vest either civilian designs based on US Service models or ad hoc civilian designs. These tended to be a waistcoat with several rows of ammunition and utility pouches and a large pouch on the back. Although apparently having proved popular for NI operations, it was found to be very hot and uncomfortable for active foot infantry operations in the desert.

119. The Army Department's overall Post-Op Report, drawing on ITDU, APRE, the Armoured Infantry Training Advisory Team (AITAT), and units' reports noted that :

> 'PLCE 90 This is generally popular, but some units did not consider it suitable because of its bulk, for Armoured Infantry operations. One battalion bought 'Survival Aids' Chest Webbing for all its Riflemen. There is definitely some merit in this argument for those operations where
> the infantry only debus to clear a position and then rapidly move on (having re-mounted their MICV).. . .(it was suggested that chest webbing be considered for Armoured Infantry). . 'Perhaps in the form of a loose cover for CBA' [lxxviii].

120. The 'Infantry' in its October 1991 edition noted the suggestion that 'Chest Webbing' be issued to Armoured Infantry as :

> '...full 90 Pattern webbing cannot be worn by those in a fully manned WARRIOR. . . [but] Stripped down to its essentials for the mission on hand with the side pouch to the Bergan (or "Jet Pack" as it is known) to carry NBC kit and spare ammunition, 90 pattern has been found by some Armoured Infantry battalions to be suitable.'[lxxix] *

121. The April 1992 edition of the Army Training Directorate's 'Newsletter' issued army-wide included a summary from DCT in the aftermath of Op GRANBY. This confirmed that the '90 Pattern was pretty successful. The lessons of the limited space in the Infantry's AIV 'Warrior' were being addressed with the possibility that the armoured infantry might adopt the 'Other Arms' rucksack. In general PLCE 90's design appeared to have met its specification and to be one of the most flexible and adaptable PLCE's ever produced. It was accepted however that changing operational tasks and equipments might well require subsequent adjustments to it or the introduction off particular 'special-to-arm' or 'special-to-task' LCEs[lxxx].

122. Reflecting the above comments work was already in hand on a special form of LCE for the units deployed in N. Ireland. This 'chest webbing' was designed by SCRDE after HQNI made the request in July 1990 for an issue item of this nature as PLCE 90 was 'not used to best advantage in NI' on account of the specific type of operations often undertaken and soldiers therefore often purchased 'military-type' LCEs – usually of the 'chest rig' type – from civilian firms[lxxxi]. (A special '1-off' issue of chest webbing' had in fact been made in 1987 to support the specialist work of the Close Observation Platoons (COPs) in N. Ireland).

123. The SCRDE design was trialled in the autumn of 1991 reports were favourable and its adoption for N.Ireland use was recommended[lxxxii]. During the process a significant comment was made by an Infantry Staff Officer in Military Operations Directorate in the MOD who said:

> We do, however, remain sceptical [as to the real need for the item] 90 Pattern webbing was identified as being suitable for use in NI and was deployed there in advance of the rest of the Field Army on these grounds; are we now to believe that it has ceased to be suitable? Soldiers will always believe that they can buy better kit in the shops; give them a Gortex jacket for example and some will still go out and buy one with more pockets (I comment from experience in my own battalion)' [lxxxiii]

124. Similarly despite the flexibility of the PLCE 90 design, further specialist items emerged. A 'Patrol Pack' of some 30 litres capacity – was asked for and introduced primarily for troops in N. Ireland ad the RM Commando, 5 Airborne and 24 Air Mobile Brigades. Its design reflected many civilian 'daypack' models although with a range of additional features to suit it for the varied demands of military use. This enabled soldiers to carry more than the capacity of the Bergan side pouches without the bulk of the Bergan itself[lxxxiv]. Reflecting perhaps the 'special' requirements of the airborne/heliborne troops. A further development in PLCE designs was the arrival for 'GS' use of an 'Operational Waistcoat'. Having its origins in Special Forces interest in such items (see the Light Assault Waistcoat for the SAS of the early 1970s) and the 'COP' vests/US Police-type Assault Vests, a model was produced by Service personnel in conjunction with the civilian firm 'Universal Specialist Equipment' in the late 1980s. In due course a specification for a similar concept was produced by SCRDE. Although titled 'GS Ops Waistcoat' its origins was clearly in the [redacted] area.

*This calls into question how realistically Armoured Infantry units had trialled PLCE 90: these issues should obviously have surfaced at that point.

125. The recent operations in Iraq (Op TELIC) have seen a plethora of equipments and combinations. PLCE '90 has been worn in full, in parts with the Patrol Pack, the GS operational Waistcoat and NI Chest webbing, plus variations of civilian produced designs: often all within the same sub-unit: a Quarter-Master's "nightmare"!

126.The naturally continuing R & D and the 1992 considerations of the concepts for 'Combat Soldier 2005' naturally included PLCE aspects. Although not considered in detail in this overview of PLCE 1990 & immediate modifications & additions, it is worth noting that the trend towards the full 'system' concept embracing all items – including weapons – was not new; the 1958 Pattern and indeed 1990 Pattern PLCE had both sought this.

127. However the most interesting 'historical' aspects were a comment from LSOR 10 which suggested that increasing loads was in fact a 'piece of received wisdom that ignores modern trends towards lightweight equipment and materials and reduced small arms calibres [author's emphasis]. . . '[lxxxv]. While this is factually true, the study of PLCE shows that the Army has rarely taken advantage of such developments to educe the overall load, the weight saved in one area has been used to incorporate another item deemed if not essential at least "useful" and the amount of ammunition is rarely reduced (see SA80 quantities).

128. A subsequent April 1993 D HQ Inf desk-level paper on the Concept of PLCE for a possible new PLCE for issue by 1999 used - inevitably - the 'maximum and optimum loading list' and 'military judgement' in discussing loads as well as highlighting the need for compromise to avoid unnecessary multiplicity of equipments for every different scenario[lxxxvi]

129. The account in 2000 edition of 'The Infantryman' by the CO of the UK's sole TA Parachute Battalion of its was annual camp, in the Czech Republic, from 10-24 July with the 43rd Czech Mechanized Parachute Battalion, part of the 4th Rapid Reaction Brigade noted:

> '....We become ever more heavily laden. The Czechs by contrast carried less webbing, and as a result moved faster. They sometimes paid a price for this. Last year at STANTA [Stanford Training Area], 4 PARA hosted a Czech platoon, which during a very rainy exercise rapidly became non effective, because they were not properly equipped to cope with the weather. The balance perhaps lies somewhere in between. We persist in carrying too much "just in case" and need to address the problem, by being prepared to make compromises.'[lxxxvii]

130. Finally confirming the ever-present problem of 'load' and that the British Army is not alone in having this problem, US Army too had difficulties with lack of 'Corporate Memory'. Despite the lessons of the dangers of over-loading so clearly demonstrated in the Grenada operations of 1984, more recent operations revealed continuing problems with loads. The British Army's 'Doctrine & Training News' published a US forces "personal" 'Lesson Learnt' summary from the operations in Afghanistan. The author was a W02 Equivalent) in the 101st Airborne (AA) Div writing to a US Army officer after he returned to the US in July 2002:

> 'How's everything going sir? Hope you're doing fine.. . . I would like to pass on a few things learned during our recent deployment. It won't be in a specific order so bear with me.. . . Some of the things in particular were soldiers' load, because you're in the mnts of Afghanistan you try to invent new packing lists, or new uniforms.. . . . Because of the high altitudes and rough terrain we all should have been combat light. That's the first thing you learn at JRTC, you can't fight with a ruck [rucksack] on your

back. We packed to stay warm at night, which was a mistake; you take only enough to survive until the sun comes up. We had extreme difficulty moving with all our weight. If our movement would have been to relieve a unit in contact or a time sensitive mission we would not have been able to move in a timely manner. It took us 8 hours to move 5 clicks.

With just the vest and Ibv (load bearing vest) we were easily carrying 80lbs. Throw on the ruck and your sucking.. . . Bottom line is we have to train at the right soldiers' load, relearn how to conserve water. How many batteries does it take to sustain for three days etc? Take what you need to survive through the night and then wear the same stuff again the next day, you can only wear so much snivel gear it doesn't do any good to carry enough to have a different wardrobe every day. . . All personel involved hated the lbv it's so constricting when

you wear it with the vest, then when you put a ruck on, it cuts off even more circulation. I would also recommend wearing the body armor during all training, I doubt if we'll ever fight without it again. It significantly affects everything that you do...'[lxxxviii]

***Plus ca change!***

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