BORDER GEO OF PAKISTAN

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"Knowledge of the cty is to a Gen what a musket is to an inf-man and what the rules of arithmetic are to a geometrician. If he does not know the country, he will do nothing but make grave mistakes."

Quote unquote

FREDERICK THE GREAT

(Instrs to his Gens)

Intro

1. The geo-strat significance of a nation greatly depends on its geo. It not only harnesses state's power potential, but also significantly influences its foreign and security policies. The nature of a cty's people, shape of its borders and the comm infrastructure lend it either strat str or weakness. There is indeed a fundamental relationship b/w geo and the conduct of mil ops symbolized in 'Space', which is a principal factor of vital imp from mil's pt of view. Re-call the vastness of Russia contributing to the failure of Napoleon in 1812 and later Hitler's failure in WW II. In our case, hostile gap of over 1000 miles b/w East and West Pakistan in 1971 was one of the factors that negatively affected the conduct of mil ops in East Pakistan.

2. The geo has various branches like physical, political, economic and mil geo. Mil geo determines the impact and influence that terrain exerts on the security of a cty. Border geo, as part of mil geo, deals with the frontier regions and its impact on imp op and strat aspects like the pattern of ops based on interior or exterior lines, suitability of Zs for offn, and the magnitude of scale of ops etc. Its main aspects are ***shape and length of borders, terrain, vegetation, obs and comm infrastructure*** etc. This involves a close exam of the concerned border

belt upto approx 150 kms depth from purely mil angle. An int use of this factor can protect weaknesses and project one's str; hence study of the border geo is an inescapable necessity.

Aim

3. To familiarize you with the salient aspects of the border geo of Pakistan for determining its influence on the mil ops.

Seq

4. The subj will be covered in two parts: -

   a. **Part I – Movie**. In Part 1, a film of 44 mins duration will be screened.

   b. **Part II – Influence of Pakistan's Border Geo on Mil Ops**. In Part II, I shall highlt the influence of terrain in various Zs along Pakistan's frontiers on mil ops.

Part I – Movie

5. Please watch the movie carefully so that you can understand the linkages during the reiterations in Part II.

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PART II

INFLUENCE OF PAKISTAN'S BORDER GEO ON MIL OPS

Gen

6. Gentlemen in this Part, I shall skip the details that have been amply covered in the movie and focus on important ones that merit elaboration.

7. Before I proceed further, let us first understand two imp terms i.e. superior strat orientation and interior / exterior lines that I will refer to frequently during the course of my lecture.

a. **Superior Strat Orientation**

(1) Suppose there are two opposing sides with intl border and loc of their sensitive areas or objs as shown on the slide. Superior Strat Orientation is obtained by the concentrated emp of forces along a strat dir which will enable these forces to reach such areas or obj in the en's territory more rapidly than any which the en can reach in our territory.

(2) Force threatening the obj earlier is said to have superior strat orientation.

(3) Plesae note that this time ascendancy over the en can be achieved due to multiple reasons for example the obj is loc closer to our border or forces, or if the dist is more for us than the terrain friction for the en is such that it will slow down his forces in reaching to their obj. Other reasons could be superior mob or use of force multipliers etc.

(4) In nutshell, some of the factors that contributes towards achieving superior strat orientation are as flashed.

(5) Superior strat orientation forces the en to turn and face us if he is to save himself from the disloc of his initial disposn. This can dilute his forces.

(6) The superiority of orientation is, therefore, the foundation of superiority of mnvr; it is by means of this orientation that one gains an ascendancy over the en, facilitates the task of his subordinate comds, inc the compass and rg of his victory and ensures successful strat exploitation.

b. **Interior and Exterior Lines**

(1) **Interior Lines**. A force is said to be op on interior lines when its ops diverge from a central pt or assy. Interior lines benefit a weaker force by allowing it to shift the main effort laterally, more rapidly than the en and conc at the pt of decision. But in order to be able to do that, the force op on interior lines must have adequate mob.

(2) **Exterior Lines**. A force is said to op on the exterior lines when its ops converge on the en. Successful ops on the exterior lines req a stronger force, and offer the opportunity to encircle and annihilate a weaker opponent. In 1971, Pakistan was op on interior lines in East Pakistan whereas India was on exterior lines. Likewise, in WW II, Poland had the adv

of op on interior lines and German forces were on exterior lines.

8. With this backgr knowledge of the imp terms, I now come to the main part of the lec and shall first take on the overall geographical description and some maj concls, fol by its mil implications to draw relevant inferences from various Zs as flashed:-

a. **Eastern Border**

(1) Northern Sec.

(2) Kashmir Sec.

(3) Corridors of Ravi-Chenab and Ravi-Beas, and area South of Sutlej.

(4) Desert Sec.

b. **Western Borders**

(1) Pak-Afghan Border.

(2) Pak-Iran Border.

c. Coastal Areas.

9. To avoid any misconception, I may also clarify that the concls are confined to geographical aspects and bear no relevance to the force lvls and mil caps existing on either sides. Moreover, assuming that you have some backgr knowledge on the subj, I shall restrict myself to broader and imp aspects.

To help you understand the lec better, I shall show you two slides to quickly recapitulate Pakistan's geo as explained in the movie i.e. the layout of various mtns, passes, rivers and desert.

If you make a 3D of this map bg in mind mtns, river corridors, desert and coastal areas, it will give you an insight how terrain affects mil ops

and what types of ops can be conducted in various parts of the cty. Keep this 3D map in your imagination as we mov fwd.

Geo Description and Inferences

10. Pakistan has a north to south longitudinal stretching of approx 1500 kms and ltd east to west depth of about 450 kms along Line Rahim Yar Khan – Chaman. In the south, its coastline of 1067 kms on the Arabian Sea dominates the sea routes ldg to the Persian Gulf.

11. Broadly speaking, River Indus divides the cty into two longitudinal halves. The Eastern half is composed of the plains formed into river corridors which facilitate comb arms ops. The Western half comprises Suleman and Kirthar Ranges with their offshoots affording adequate protection and restricting any offn into narrow and easily defendable valleys.

12. Some maj concls from geo compulsions are: -

a. Pakistan lacks requisite strat depth. Our core areas, GT Rd and rly line are loc close to the Eastern border, which has serious implications.

b. In the critical areas of Punjab, border configuration and better comm infrastructure, particularly the laterals, facilitate ops on interior lines. This allows us to gen greater cbt power with comparatively smaller forces.

c. However, front line canals on the Eastern Border are exposed to Indian in-dir water reg.

d. In the desert sec, comparatively poor comm infrastructure, by default, provides some security against an Indian offn due to the enormity of log sp req for a maj op.

e. Total dependence on Karachi and Port Qasim can be extremely detrimental to the national security, esp in a long drawn war. However, Jinnah Naval Base at Ormara and deep sea port at Gwadar will address this vuln.

f. Suitable time for mil ops as dictated by the climate is from Sep to Mar.

Eastern Borders

Gentlemen, I shall now home onto specific Zs / secs. First Northern Areas and Kashmir or the "Kashmir Sec" as we shall call it.

12. **Kashmir and Northern Sec**. Kashmir Sec starts from Indira Koli Pass in the North in Karakorum Range and goes down to Merala HW or River Chenab in the South. It covers the Indian occupied areas of Kargil, Srinagar, Rajuri and Jammu. On the cisfrontier, it covers our Northern Areas, Azad Kashmir and portions of Jhelum and Gujrat District. Maj ranges in the area are Karakorum, Ladakh, Himalayan and Pir Panjal. We shall now see the influence of Himalayan and Pir Panjal Range on mil ops. To understand their impact well, please note the loc of Jammu, Srinagar, and Kargil.

a. **Impact of Main Himalayan and Pir Panjal Ranges**

(1) The Main Himalayan Ridgeline is like a wall mov across Kashmir separating Srinagar Valley from Kargil Sec. Pir Panjal Range serves as a smaller wall jutting out of the main wall. These walls divide the area into three regions or compartments namely Ladakh, Kashmir Valley proper and Jammu. To enter into these compartments, the lowest Xing pts over Pir Panjal Range is Banihal Pass and Zojila Pass over

the main wall. The main highway (also called National Highway Number 1A) that links Jammu with Leh nav through these two passes.

(2) Other strat imp areas are the natural routes i.e. the River Jhelum in Muzaffarabad Sec where it enters into Pakistan and the Dras River Valley in Kargil Sec.

(3) Though India has the advantage of op from interior lines, however, the compartmentation eff of these ranges partially deny this advantage to India.

(4) Himalayan Range also separates Kashmir from Northern Areas.

b. **Northern Area**. Northern Areas are loc north of Main Himalayan Ridgeline between Indra Koli Pass and Anzbari in Astore Sec.

(1) Here the terrain is mostly glaciated with inhospitable envmt.

(2) Hts vary from 6000 to over 10000 Ms.

(3) Imp comcen transfrontier are Dras, Kargil and Leh and cisfrontier are Gilgit, Astore, Skardu and Khaplu.

(4) The Indian Army con the natural entry pt of Zojila Pass and River Dras.

(5) Pakistan, however, enjoys overall superior strat orientation as all routes ldg to our tps mov along secured valleys and mostly remain open round the yr.

(6) Moreover, Karakoram Highway has enhanced our ability to depl and sustain large forces. On the slide you can see the alignment of Karakurum Highway wrt

Gilgit and Skardu. Skardu is one of the main bases to sp the tps depl along the LOC.

(7) On the contrary, Indian line of communication negotiates at least four maj ridgelines before it reaches Siachen.

(8) Zojila Pass and the main highway ldg to Kargil and Leh are close to the LOC. At places the dist is less than 4 kms.

(9) **Influence of Terrain on the Conduct of Mil Ops**

(a) Difficult terrain makes the mov, assy and sustenance of large scale forces difficult. Therefore, only small scale inf ops are possible. Even these are time consuming, highly expensive in men and material, and req specialized eqpt and trg.

(b) Hts and steep gradient make the area suitable for def.

(c) The intensity, duration and speed of ops are contingent upon the two maj limiting factors i.e. logs and weather.

(d) Air and arty sp is ltd in scope and effs.

(e) Whereas, heliborne ops and avn sp can play decisive role in the conduct and outcome of ops.

(7) **Effs of Terrain**

(a) Owing to the sensitivity of the region, even tac gains in sel areas may create strat effs on both sides like intd of Rd Dras-Kargil, Kargil city etc.

(b) However, to address this vuln, Indian have const a 105 Km long Sanku bypass which originates from Drass, passes through Umba – Sanku – Salaskot all along Suru River and terminates at Kargil. Presently it is a class-9 fair weather rd.

(c) Road Drass – Sanku –Barke bridge and Shergol is an other by pass of class-9F1. Work for upgrading of this by-pass is also under progress.

(d) In addn, Indians have dev a 485 Km long route from Manali-to Leh which has addsd the vuln of Zojila Pass. This altn route remains open for tfc from July to Mid-Oct.

(e) Violable nature of LOC and mtn terrain compel both sides to adopt exaggerated fwd def posture thereby giving on spot resistance.

c. **Kashmir Sec**

(1) Kashmir Sec starts from Anzbari and goes down to the Marala HW or River Chenab in the south.

(2) Terrain less rugged and fairly well populated.

(3) The area is char by hts varying from 6000 to over 13000 ft around Srinagar and 3000 to 6000 ft around

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Rajauri hence gradually rolling down southward. On the next two slides, you can see the view of Pir Panjal Range around Srinagar and Rajauri near River Chenab.

(4) Some imp towns both cis-frontier and transfrontier are shown on next two slides.

(3) The natural apch i.e. River Jhelum cutting through Pir Panjal Range crosses into Pakistan near Chakothi in Muzaffarabad Sub Sec. Pakistan holds the watershed of Pir Panjal Range and dominates the entry pt.

(4) There are numerous Salients and Bulges of mil significance all along the LOC.

(a) **Jura Bulge**. First is the Jura Bulge. It provides depth and security to own L of C that links Mzb with Kel. The Bulge threatens the base of Indian Tangdhar Salient.

(b) **Bedori Bulge**. Next is Bedori Bulge which is of immense op advantage to Pakistan. It threatens the Uri Salient in the north and Mendhar Enclave in the south.

(c) **Nikial Bulge**. In Kotri Sec, Nikial Bulge neut Mendhar Enclave by posing a threat to its base from the south. In addn, the configuration of this Bulge facilitates ops against the Indian held town of Rajauri in the east and Jhangar Enclave in the south.

(5) **Choke Pts**. There are certain choke pts which affect mov, build-up and sustenance of forces on both sides.

(a) **Transfrontier**. Transfrontier, Pir Panjal Range causes a serious choking eff because of Banihal Pass, the main link b/w northern and southern parts of IHK. In 1960s, India const the Jawahar Tunnel to reduce the vuln of the valley in winters. This is the view of Jawahar Tunnel. Recently, India has undertaken one of its most challenging rly projects ever, by bldg a line to connect Kashmir with the Himalayan fthills i.e. Jammu to Srinagar and Baramula. The 290 kms route incls 11 kms tunnel and the world's highest rly br which towers 359 ms above the Chenab River and is 1315 ms long. More than 75% of its Udamphur – Qazigund alignment runs undergr, with a further 10% on brs.

(b) **Cisfrontier**. Cisfrontier, the brs over River Jhelum at Kohala and Azad Pattan are the imp choke pts.

(6) **Strat Imp**. All main rivers emanate and flow through this region and irrigate the plains of Punjab, therefore, Indian con of these rivers will have adverse effs on our irrigation canal sys having mil orientation. The loc of Mangla Dam and Marala HW as well as vuln of our

L of C (GT Rd) accentuate our sensitivity. India is equally sensitive to Kashmir due to political reasons.

(7) **Types of Ops**. The entire Kashmir Sec is suitable predominantly for inf ops less Eftikharabad Sec where use of armr is possible. Terrain affords immense str to the defender, therefore, recapture of lost area is gen highly expensive. Attk by inf and emp of hels in sp of ops can pay dividend. Like Northern Areas, Kashmir Sec also necessitates exaggerated def posture giving on spot resistance.

Imp Corridors

13. **River Sys**. Before we mov further, I shall give some basic facts about the river sys, though a few have already been covered in the movie. All main rivers originate from Indian con areas of Himalayas. After the Indus Water Treaty in 1960, India has so far const five dams as shown (Salal Dam, Chemera Dam, Thien Dam, Pong Dam and Bhakra Dam). The sixth dam at Buglihar is presently under const. Dams, however, serve to store water and produce elec. These are the canals and barrages that take out water from the rivers. The maj barrages and HWs are as flashed. India has the cap to manipulate the flow of water into all rivers except River Indus. This can have adverse effs on Pakistan's irrigation canals sys with mil orientation.

14. **Ravi-Chenab Corridor**. RCC is bounded by River Chenab in the north and River Ravi in the South. These rivers flow throughout the yr and are obs of varying deg to mil mov. Some significant concls from this Sec are: -

a. **Strat Imp**. Strategically, the corridor is the most imp Z for both the sides. Indian L of C and life-line to IHK runs close to the intl border. Another Indian vuln is Madhopur HW which reg water in River Ravi and network of canals in Ravi-Beas corridor. Capture of Madhopur HW by us can have strat consequences. On our side, Marala HW has immense imp for the successful conduct of def ops in Ravi-Chenab as well as Ravi-Beas Corridors. Loc in the extreme north, Marala HW reg water in the def oriented canals rt upto River Sutlej. Besides, link canals from River Jhelum and River Chenab feed River Ravi and River Sutlej. Con of water of River Chenab by virtue of Salal Dam and Baglihar Dam by India is a maj vuln of Pakistan.

b. **Superior Strat Orientation**. Since Pakistan enjoys superior strat orientation by threatening Indian L of C to IHK and Madhopur HW, therefore, this is an Indian compulsion to put in an offn in this Sec to deny an advantage to us. Both sides are thus highly sensitive to the loss of the territory.

c. **Forms of Strat Mnvr**

(1) The shape of Shakargarh Salient forces India to op on exterior lines, which affords her an opportunity for double envelopment from north and south thereby threatening initially Pasrur and subsequently Gunjranwala or Shahdara.

(2) Contrarily, Pakistan op on interior lines will have the time and space advantage of central assy to eff deal with each pincer.

(3) Moreover, the southern end of Shakargarh Salient is protected by River Ravi and on the northern flk both the sides have const a no of A tk ditches and bunds.

d. **Nature of Ops**. The Corridor is suitable for comb arms integrated ops. Possibility of emp of AB /heliborne tps in sp of mech forces is more likely. Presence of DCBs and other water obs place hy demand on engrs' eqpt.

15. **Ravi-Beas Corridor**

a. The Sec is bounded by River Ravi in the north and River Sutlej / Beas in the South. This Sec also has immense strat imp for both the sides because of the significance of Lahore, Baloki HW and Ravi Siphon on our side; and Amritsar, Hussainiwala HW and Harike HW on the en's side.

(1) Terrain favours dev of two directional threat to Lahore from Amritsar and Kasur/Raiwind; simultaneously threatening Balloki HW. This can foreclose own offn options in RBC.

(2) RBC out-flks def in RCC. Dev of ops across River Ravi in conjunc with offn in Ravi Chenab Corridor could be highly advantageous to Indians.

(3) Lack of adequate depth and vuln of strat objs, therefore, dictate overall fwd def posture. However, in the south successive lines of def along the canals are

aval and somewhat rearward posture may be adopted.

(4) The pronounced effs of overall congestion of space, nevertheless, render a maj effort rather difficult. Numerous water channels also place hy demand on engr/br eqpt, besides retarding speed of op.

(5) Due to highly dev obs sys on both sides, vertical envelopment becomes imp.

16. **Area South of Sutlej**

a. **Chars**

(1) This Sec is from River Sutlej to Salamsar in the south.

(2) The area can be divided into two halves: area north and south of Fort Abbas.

(3) Northern side is typical plains with high water table as it has numerous irrigation canals whereas the southern portion is vast semi-desert.

(4) Sulaimanki HW, lying very close to the intl border forms the nodal pt and con the flow of water into the River Sutlej and the canal sys south of it.

(5) Hy Xings over River Sutlej are ltd to Sulaimanki, Mailsi Siphon and Bahawalpur. This can prove to be a serious handicap for the mov of own mech forces north and south of the River.

(6) There are no lateral links b/w the three parallel rly lines running astride River Sutlej and River Ravi. Switching from one to the other is only possible

through Lodhran and Samasata which is a long circuit, hence is time consuming.

b. **Imp Concls**

(1) This Sec is of particular imp to India because: -

(a) It affords large scale emp of mech forces for which India has pursued a developmental strat for the last three decades.

(b) India enjoys a superior strat orientation as any success across River Sutlej would dir threaten central Punjab.

(c) Moreover, a thrust in Sulaimanki area takes the en straight into our strat depth. North of Fort Abbas, therefore, the nature of terrain and aval of successive lines of def favour fwd def posture.

(d) South of Fort Abbas, adequate depth is aval which allows a comparatively rearward def posture aimed at causing max attrition and then launching a ctr offn to restore integrity of our borders.

17. **Desert Sec**. The desert sec extends from Salamsar to the coastline. Indira Canal has turned most of the Rajasthan Desert into green belt thus facilitating offn ops of Indian mech forces into northern desert of Pakistan. Like Kashmir, here also a no of Salients exert significant influence on ops in its various sub sec: -

a. **Kishangarh Salient**. The Salient has its base at Ramgarh. The Salient provides an ideal jump off pt and base of op to

India against Rahim Yar Khan. However, SCARP-VI (Salinity Control and Reclamation Project) is a maj obs and protects the shortest apch to Rahim Yar Khan.

b. **Islamgarh Salient**. Islamgarh Salient is loc adjacent to the Kishangarh Salient jutting into its base from the north. This Salient places Pakistan in a posn of advantage as it threatens Kishangarh Salient as well as Indian base of op against Rahim Yar Khan Sec.

c. **Shahgarh Salient**. Shahgarh Saleint is an Indian Salient bulging into the Nara Gap which is a difficult desert to negotiate and therefore so far makes it an un-exploitable dead Z for both sides.

d. **Khokhropar Salient**. Khokhropar is an Indian salient in Chhor Sec, which considerably reduces the dist to the green belt at Chhor.

e. **Gadra Salient**. Gadra Salient dominates and dir threatens en's L of C to Khokhropar Salient. As long as it is held by own tps, no offn can be dev by the en along Khokhropar Axis without serious interference by us.

f. **Nagarparkar Salient**. Nagarparkar Salient is loc in the extreme SE. Its dist and difficult accessibility makes it difficult to protect for Pakistan.

g. **Salient Concls**

(1) Major portion of the area is suitable for the emp of large mech forces. However, logs is one of the most imp factors for successful conduct of ops in this Z.

(2) Desert coupled with SCARP-VI in Rahim Yar Khan area and Nara Gap, are the maj obs.

(3) India enjoys superior strat orientation owing to short dist to main L of C and Guddu Barrage.

(4) For us, ops on exterior lines pose problems of initial placing of res. Absence of lateral comm b/w the sub-secs creates maj imbal.

(5) Terrain dictates fwd def posture in Rahim Yar Khan Sec. In Chhor Sec, a rearward def posture with a view to forcing the en to extend his L of C is possible. However, recent discovery of huge qty of coal deposits in Thar and ongoing dev of comm infrastructure warrant fwd def posture.

(6) Ltd offn from Islamgarh Salient and Gadra Salient can place the en in disadvantage.

(7) In this Z, the pre-requisites for large scale ops are: -

(a) Favourable air sit.

(b) Mech forces.

(c) Elaborate log sp, esp sup of water.

(d) Adequate engr resources.

Western Borders

18. Pakistan's Western Border extends over 3300 kms from the Chinese border in the north to the Arabian Sea in the south con the imp Khyber and Bolan Passes, the traditional invasion routes b/w Central Asia and the Indian Subcontinent.

19. **Pak – Afghan Border (Durand Line)**. Pak – Afghan Border passes through an inhospitable terrain of Hindukush and Suleman

Ranges. Stretching from extreme north till Chaman, the terrain is difficult where mov is restd to the existing routes. However, the part south of Chaman till Iranian Border is mostly a vast stretch of desert, but lack of comm infrastructure makes any large scale mov difficult. There are a no of passes of spec geographical and hist interest. Khyber Pass, the largest and the most renowned of these is 35 miles long and connects Kabul with the Peshawar Valley. Other imp passes are Tochi, Gomal and Bolan Passes. Hence no threat of mech forces is expected from this dir. Ops, however, can be inf dominated along the scarce comm infrastructure. Serious op implications, in case of threat materializing from the west, could be: -

a. Chitral remains cut off from the rest of the cty during the winters because of lack of proper comm link.

b. North to south rd or rail link b/w Peshawar and Quetta is not as good as the rail rd arteries b/w Sukkur and Lahore. Lack of requisite comm infrastructure and difficulty of terrain, therefore, impede mil ops.

20. **Pak – Iran Border**. Poor comm infrastructure, inhospitable terrain and absence of any productive activity have kept the area extremely backward. The area has now prominently fig out as the most likely transit route for CARs energy resources. Moreover, with the Gwadar deep sea port coming up, the area is likely to gain tremendous strat significance.

Coastal Areas

21. The coastal Areas occupy a strat posn in economic and security terms. Under our present envmt, dev new ports and comm on the Mekran Coast would:-

a. Enhance Pakistan's geo-strat imp.

b. Inc strat depth towards west of the Indus.

c. Reduce our dependence and corresponding vuln on a single port complex.

22. **Mil Implications**

a. **Amph Landing**. The coast is vuln to amph landing. Considering such a threat, own coastline can be divided as fol: -

(1) **Indus Delta**. The area east of Karachi comprises creeks with mangrove forests. Although it can be used for small scale surprise amph actions by the en, however, there is little possibility of large scale amph op.

(2) **Balochistan Coast**. The area west of Karachi has beaches considered suitable for landing of sizeable amph forces. These are Gadani, Sonmiani, Ormara, Pasni, Gwadar and Jiwani.

23. **Sea Lines of Comm (SLOCs)**. Indian SLOCs of pri interest to us are b/w Kandla and Mumbai to the Persian Gulf. Owing to the fact that India is an energy resource hungry cty, it has total dependence on the Middle East oil. Its Gulf bound SLOCs pass very close to the Pakistani Coast that provides Pakistan a superior strat orientation.

Concl

24. To conclude Gentlemen, border geo of a cty exerts considerable influence on how the ops are to be conducted. An area's strat imp drawn from the configuration of gr i.e. loc of imp comcens and L of C places constraints and limitations on the mil comds thereby either

limiting or expanding their choices. In our case, due to the length of our eastern frontiers, persistence of the Kashmir dispute and the obvious dir of threat, the future war may well again be fought and decided on land. Hence the imp of understanding the border geo stands highlt. The endeavour was to intro the subj to you so that you consolidate this knowledge with your own studies which should form the basis for further analysis, enquiry and debate. A stage is hence set for understanding the mil significance of our frontiers.

PAKISTAN'S BORDER GEOGRAPHY

CHAPTER-I
INTRODUCTION

" . . . to estimate the enemy situation and to calculate the distance and degree of difficulty of the terrain so as to control victory are virtues of the superior general ".

1. Military geography looks to the application of geographic discipline in the conduct of military affairs. There is strong relationship between national strategy and geography. The evolution of a war plan is based on the national aspirations of a country and the orientation of its foreign policy. Both are related to the geographical situation; to the physical environment which has shaped the characteristics of the race and the configuration of the frontier. The purpose of strategy is to diminish the possibility of resistance by movement and surprise. Movement creates surprise and surprise generates movement. 2 The possible configuration of this duality are constrained by topography, transport capacity and time; all related to geography.

2. The principle geographical factor is space which is of great importance in military operations. **Consider vastness of Russia contributing to the failure of Napoleon in 1812 and that of Hitler in World War II. Hostile gap of over 1000 miles between East and West Pakistan**, a major factor contributing to the fall of Dacca in 1971. Terrain is infinitely variable. Its intelligent use is the most difficult aspect of military art. If well used, it can conceal and protect, multiply and project one's' force and strength. Strategic masters manipulate the physical environment, exploit its strengths, evade its weaknesses, acknowledge constraints and contrive always to make nature work for them instead of against them.

3. The geographic location of country in a given region gives rise to certain geo-political compulsions and Pakistan is no exception. Pakistan, lying between latitude of 23` 30 and 36` 45` north and longitude of 61` and 75` 31 east with North East to South West longitudinal configuration is bounded by Afghanistan and China in the West, North and north East, and extensively irrigated plains in the East. The North East South West (NE-SW) axis of the country is about 1500 KM, the maximum East West distance is about 1100 KM. Its narrow waistline (about 450 KM) lies at the line linking Cholistan Desert-Sukkur – Quetta-Chaman –About 85 KM long coast line on the Arabian Sea lies at the mouth of strategies Persian Gulf.

4. The study of frontier regions determines the facility of fighting interior or exterior lines, its configuration determines to a Greta extent the concentration of forces, corridors of invasion, scale an magnitude of operation determined by pattern of obstacles and openness areas. Frontiers

are indeed the razor's edge on which hang suspended modern issues of war or peace, of life or death to nations 4. Frontiers regions are important because :-

a. These are the basis of all defensive and offensive operations.

b. It is near the border that the strategic concentration.

c. It is in its vicinity that the opening engagements take place, sometimes scene of a major defensive battle in the ultimate phase of an unsuccessful offensive into enemy territory.

d. The closer the degree of war preparation of the two camps and the relative strength situation involved, the greater the importance of border areas.

5. Aim. The aim of this paper is to determine the characteristics of Pakistan's geographical frontiers with a view to considering operational possibilities available to Pakistan and its neighbours.

6. Scope and Sequence. The study involves a close examination of the **border region upto approximately 100 KM depth either side from a purely military angle** in the following sequence :-

a. Zone on eastern and western front.

b. Salient features of each zone.

c. Aspects of Operational Strategy.

d. Mobility and counter mobility aspects.

e. Conclusions and Recommendation.

Fronts and Zones (Annex A)

7. Broadly, the country can be divided into two longitudinal halves. The western half facing Afghanistan and Iran is composed of the Suleman and Kirthar Ranges with their several offshoots affording adequate protection and restricting major movements into narrow and easily definable corridors. The eastern half facing india is composed of Himalyan mountains, plains of Punjab and the desert terrain of Sind.

8. In terms of geographic regions, the two fronts may be roughly but conveniently viewed as under :-

a. Eastern Rront

(1) **Northern Zone.** It extends from the **Northern end of the border at Karakorum Pass to River Chenab in the south**. It is characterised by lifty mountains and hostile terrain composed of glaciated areas in the north and narrow constricted valleys formed by the rivers in the centre finally tappering down to low hlls and comparatively open valleys and narrow plains in the south. This has been further sub divided into two sectors as under :-

(a) Northern Areas. It extends from Karakorum Pass to Kel.

(b) Kashmir Sector. It extends from Kel to River Chenab.

(2) **Central Zone.** This **zone generally coincides with the administrative boundaries of Punjab Province**. It is composed of NE-SW corridors formed by Rivers Chenab, intricate network of canals and distributaries in the world which further compartment the area within the main corridors. Besides water obstacles, this zone is also characterised by high density of population with major cities and towns located close on the cisfrontier and transfrontier side of the border. This zone has been divided into three sub sectors :-

(a) Ravi – Chenab Corridor.

(b) Ravi- Beas/Sutlej Corridor.

(c) Area South of Sutlej.

(3) **Desert Zone.** It forms the **Se region of Pakistan and generally conincdes with the administrative boundaries of Priovince of sind**. It is characterised by the green belt and the desert belt running longitudinally from north to south. The green belt, through which the eastern border runs, is composed of prime desert with sand dunes laid out in successive rows. The desert Zone has been further divided into following sectors:-

(a) **Reti –Rahim Yar Khan Sector.** It **comprises areas opposite Ramgarh Salient of India from Darawar Fort Salamsar Line in the north to nara Canal in the south.**

(b) **Chhor Sector.** Includes a**rea between Nara Canal in the north and Rann of Kutch in the south.**

(c) **Kutch Sector.** Comprises the vast mud flats of great **Rann of Kutch and the Gulf of Kutch.**

(4) **Coastal Zone.** The coastal zone of Pakistan opens into the Arabian Sea and runs along its entire southern breadth. It is bordered in the east by India and in the west by Iran. The coast area south and South East of Karachi is formed by the Indus Delta while in the West is the Mekran Coast.

b. **Western Front.** It extends from **Kilik Pass in the north to Jiwani on the coast in the south sharing borders with Afghanistan and Iran**. It can be divided into two zones :-

(1) **Frontier Zone.** **Extending from Kilik Pass to Gomal river, i**t can be further sub divided into two sectors :-

(a) Wakhan – Chitral Sector.

(b) **Khyber Sector**.

(2) **Baluchistan Zone.** **Extending upto Jiwani,** it can be further sub divided into three sectors :-

(a) Zhob Sector.

(b) Quetta Sector.

(c) **Pak –Iran border**.

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1. Sun Tzu.
2. Liddel Hart.
3. John M Collins.
4. Lord Curzon.

CHAPTER-II
NORTHERN ZONE

Northern Area Sector (Annex B)

9. General. This **sector starts at the Indra Koli and Karakoram passes in the north and ends at Anzbari in the Astore area and forms the northern flank of Indian held Kashmir (HK)** Salient. This sectors is one big mountain mass formed by such inspiring ranges as the Karakoram and the Himalayas. The most striking physical feature of this area is the nearly parallel and successive mountain ranges running North West to South East. Quite obviously the rivers and the resultant valleys conformto the same pattern. Move is possible only through passes and roads/tracks characterised by their high grandient, hairpin bends, running along the river vallyes. Most passes remain closed for better part of the year.

10. Mountain Ranges

a. Located in the north, its rough alignment is along Pak-China and India china borders. It has numerous peaks above 5000 M. **Siachin glacier,** one of the longest glaciers in the world lies here. It is located north of Shyok River in the upper reaches of Norba River. From Pakistan it **can be approached through three passes, namely, Sia La 5800 M, bilafond La 5500 M and Gyong La 5500 M. these passes remain snow bound through out the year. From India, approach is comparatively easy through Nobra valley. They glacier is 78 KM long and one to four KM wide. It is littered with stones and boulders at lower heights and has pure ice above 4000 M.**

b. Ladakh. Lies mostly in Indian held territory while some of it spills into Pakistan. It has peaks upto 6250 M.

c. Zaskar. Also known as Inner Himalyas. Has peaks above 4600 M. It is bisected length wise by the river Zaskar which joins River Indus at leh.

11. **Terrain.** The terrain of this area can be divided into three categories as under :-

a. Valleys. The low lying areas astride rivers are known as valleys which are enclosed on either side by lofty mountains mostly devoid of vegetation. Main valleys are :-

(1) **Nobra Valley.** It is an open valley formed by River Nobra which originates from Siachin and Chumik Glaciers and joins River Shyok east of Thoise. Indian L of C to Daulat Beg oldi and Siachin Glacier Passes through this valley.

(2) **Shyok Valley.** It is along River Shyok and is comparatively oepn valley Joins Shingo/Indus valley about 48 kilometers east of Skardu.

(3) **Shingo/Valley.** It is along Rivers Indus and Shingo. Indus originates from Tibet and is joined by River Shingo at Marol north of Kargil.

(4) **Astore Valley.** It is along River Astore, which joins River Indus near Bhunji.

(5) **Deosai Plains.** Located between Skardu, Kargil and Astore, it is a vast stretch (approx 64 Kilmeters x 48 Kilometers) of plains at an average altitude of over 4000 m. During summers, multidirectional move through these plains to Skardu, Astore, Chilam Chauki, Gultari and Kargil is possible with ease. This area can also be used for large scale hel landing and as dropping zone.

b. Upper Raches. Areas near the upper reaches of rivers/tributaries, usually at altitudes ranging between 1800 Ms to 3000 Ms, are reasonably green having clumps of trees.

c. Snow Bound. The areas above 3000 Ms are without trees and remain snow clad for better part of the year. The terrain along Line of Control is mostly of this type.

12. Communication Infrastructure

a. Transfrontier. All roads in the sector constructed by the Indians are defence oriented, sponsored and built by the defence agencies. Minimum class 9 roads have been extended upto Divisional Maintenance Areas, Class 5 upto Brigade Administrative Area and Jeepable/mule tracks upto forward posts.

(1) Penetrants

(a)	Srinagar – Dras	-	35A2/24aA1
(b)	Bandipura –Dawar	-	9A1
(c)	Kishtwar – Kargil	-	9F1/5F1
(d)	Thoise – Siari	-	9F1/5F1

(e) Leh - Zingrulma (Nobra Valley) - 9 F1

(2) Laterals

(a) Dras –Kargil –Leh - 24A1

(b) Leh –Khalse- Thoise - 9F1

(c) Dawar – Dras - 9F1

b. Cisfrontier

(1) Penetrants

(a) Gilgit – Skardu - 24A2

(b) Skardu-Dansam – Goma - 3F1(upto Dansam) bridge 24F2)

(c) Skardu – Marol - 3F1

(d) Gilgit – Astore – Minimerg - 3F1 (upto Astore 24 F2)

(2) Laterals

(a) Karakorum highway (EKH) - 70A2

(b) Rattu –Kel - 3F1

13. Passes. Important passes in the area are :-

a. Transfrontier		Height	Open	Road/track
(1)	Zojila	3048 (M)	Mid July to mid October	Srinagar - Dras
(2)	Chorbat La	5091	"	Shyok-Indus
(3)	Sia La	5793	"	Siachin Galacier
(4)	Bilafond La	5488	"	"
b. Cisfrontier				
(1)	Babusar	4174	"	Kaghan-Chilas
(2)	Surgun	3658	"	Kel-Kaghan
(3)	Shonthar	4564	"	Kel-Astore
(4)	Seriwala	4292	"	Nikrum Rattu
(5)	Kamri	4076.2	"	Rattu-Kamri
(6)	Burzil	4200	"	Gorikot-Minimerg
(7)	Marpola	4908	"	Dras-Gultari
(8)	Ali Malik mar	4268	" Chouki	Chilam-Skardu
(9)	Chachar	4268	"	" "

14. Communication Centres

a. Transfrontier. Kargil, Leh and Thoise.

b. Cisfrontier. Gilgit, Skardu, Khaplu and Astore.

15. Airfields/Landing Strips

a. Transfrontier

(1) Jet Capable. Leh, Thoise and Soinagar.

(2) Non Jet. Kargil.

b. Cisfrontier

(1) Jet Capable. Skardu.

(2) Non Jet. Gilgit and Chilas.

16. Obstacles. The terrain by itself is the major obstacle and offers great friction. River/mullahs are fast flowing and eny crossing. The main rivers are :-

a. River Indus

(1) It has its source in Tibet. It cuts its way through deep gorges in karakoram and Himalayas and is joined by numerous small streams on either bank. The main tributaries that contribute to its flow in this area Zaskar, Shyok and Dras. Dras River takes the combined flow of Shigar, Shingo, Suru and Wukka rivers feeding Indus at Marol.

(2) It lies between Zaskar range and Ladakh range and flows from South East to North West. Indus valley is wide and sandy between Stakna and Pituk and then between Sorai and Saspul Gumpa. After this point upto the Line of Control the valley becomes narrow with steep sloping sides. Plains on the left bank are narrow but the soil is harder than that of the plains one the right bank. The terrain of the left bank has therefore permitted a few families to live in hamlets called Demchok. Otherwise, there is no habitation elsewhere in the region. Due to the harder nature of soil, the vehicles also run along the left bank. The possible crossing places on this river are Urg, Marsalang, Pituk, Nimu, Khalsi and Karmang.

b. River Zaskar. This river has its source in glacers on Himalayas and Zaskar range. Length river is 283 KM (176 miles). Doda and tsirap tributaries join this river near Thonde. It is a fast flowing river and passes through some very difficult terrain. It joins Indus near Nimun.

c. River Shyok. This river originates from Karakorum ranges. Initially it flows from north to south and then changes its course in north westerly direction near Shyok. River Nubra also joins this river near Desh Kit. It enters Pakistan near Thang and joins Indus river at Kiris. The length of this river is 322 KM (200 miles). Since this is a snow fed river, its discharge is subject to the behaviour of glaciers from where the river emanates. If a glacier suddenly bursts the river is flooded and tracks on banks are washed off. Because of this eratic behaviour of the glaciers, the river changes its course very often – making bridge building uneconomical and difficult. Possible crossing sites on the river are at Turtok (IHK) and at Prahnu and Piun in own area.

d. River Dras. This river emanates from Himalayan ranges and flows through very difficult terrain. It receives the flow of Shigar and Shingo at Kakshar and combined discharge of Suru and Wukka at Kharal. It passes near Dras which is an important communication centre. Total length of this river is 80 KM (50 miles).

17. Climate and Suitable Period for Operations. Climate offers sharp contrast. The valleys are hot in summers, temperature rising upto 115` F. Rivers and nullahs get frozen in upper reaches in winter. The peaks remain snow clad round the year. Snow lasts from September to May. Suitable weather for military operations is between May to october.

18. Attitude of Population. Indian muslims are likely to have favourable attitude towards us but they have been kept highly suppressed and under strict security conditions. Own mal administration of population resulting into diverging sectraian feelings can alienate sections of society.

19. Strategic Importance. The construction of KKH , linking Pakistan with China has created an important relief zone in Pakistan . Northern Areas have thus been linked , socially and politically , with the main land which has brought economic prosperity in the area . With the induction of comparatively large Forces , its security against external aggression has been ensured . With the improvement of communication infrastructure and our enhanced ability to deploy and sustain large forces in this sector , the vulnerability of Indian L of C opposite Kargil has been accentuated .

20. Strategic Objectives

a. Transfrontier. Kargil , Zojila pass ,Bandipura , Thoise , Nobra valley and Leh.

b. Cisfrontier. Skardu , Astore, Gilgit /KKH and Babusar /Chillas .

21. Strategic Approaches . The approaches are basically restricted to roads /tracks along river valleys or over the glaciers. Main approaches available both to India and Pakistan are:-

a. Siachin Glacier Approach. On the transfrontier side, its leads to Nubra Valley and onwards to Thoise and Leh . Any progress along this road would adversely affect Indian defence capabilities against China in Krakurum Pass/ Daulat Beg oldi area. However sustained large-scale operation without specialized equipment are not possible presently. On cisfrontier side , approach leads through Siala pass to mountaineer a paradise (K 2 and large number of other world famous peaks) jeopardizing Pakistan of a considerable source foreign exchange earnings from tourists mountaineering expeditions .

b. Shyok Valley Approach. This is a direct approach connecting Thoise/Leh with Skardu. Both sides can isolate Siachin Area to each other's disadvantage. Can take upto a brigade on man pack basis.

c. Indus Valley approach. Connects Srinagar or Leh with Skardu through Kargil. Operations along this approach cause isolation of Leh/Ladakh on transfrontier side and Siachin Glacier and Shyok Valley on cisfrontier side. Gen take upto a brigade on man pack basis.

d. Astore Valley approach. Runs along the traditional route Stinagar –Gilgit and connects Astore with Bandipura. Has a number of subsidiary approaches which, when combined, can taken an infantry division plus on pack basis.

e. Kel Approach. Connects Chilas through Babusar Pass with Kapower. Can take a brigade on pack basis.

22. Forms of Manoeuvre. In this sector we are operating on interior lines though facing considerable problems due to lack of laterals. Indians are forced to operate on exterior lines. However, their lateral communication, though better developed, runs perilously close to LOC in Kargil sector which enhances their vulnerability to interdiction.

23. Critical Spaces

a. Transfrontier. Zojila Pass, Kargil and Thoise.

b. Cisfrontier. Sia La Pass, Khapha, Skardu, Astore and Babusar Pass.

24. Offensive Options

a. Own. Pre-emption or limited offensive against Kargil will sever Indian L of C to Leh and deny base of operation for offensive in Indus/Shingo valley.

b. Enemy. In order to secure more depth for their L of C Indians are likely to avail offensive options, opposite Kargil and Kamri/Astore area.

25. Time and Space Implications. Due to difficult nature of terrain and poor communication infrastructure progress of operations would be slow. India would reguire more time to capture their objectives as these are located well in depth. Comparatively, we would take less time ; particularly, in Kargil area.

26. Strategic Posture. Violable nature of LOC and mountainous nature of terrain compels both sides to adopt an exaggerated forward defensive posture.

27. Scale of Operations. Large scale operations are not possible in the entire sector, However, even a small scale offensive in selected areas offers opportunity of creating strategic effects on both the sides.

28. Communication Imbalances

a. Transfrontier. Communication infrastructure is well developed. Indian L of C at Kargil is highly vulnerable.

b. Own penterants; particularly, in Indus and Astore valleys are not adequately developed. Lateral communications between the valleys are non existant. However, this affords considerable security against enemy's offensive Kel is supported and maintained from Kashmir sector. Own L of C to Kel is highly vulnerable as it runs along LOC in Tithwal and Keran area.

29. Nature of Operations. Small scale and infantry predominant operations are possible which would be highly expensive in men, material factors on the intensity and duration of operations. Troops require a period of approximately 3 months for high altitude acclimatization. Air and artillery support is limited in scope. Aviation support plays decisive role in the conduct of operations.

Kashmir Sector (Annex B)

30. General. The **Pirpanjal Range,** running from Muzaffarabad area in a North West –South East direction, cutting across the Bedori Bulge and going further South East into Indian Held Kashmir (IHK) divides Kashmir into two halves. This range is an off shoot of Great Himalayan Range. Hajipir Pass in the bedori Bulge traverses through the Pir Panjal Range River jhelum marks its northern end. Further north of the River Jhelum is the famous nanga Parnbat which lies at the northern end of Himalayan Range. Kashmir and Ladhakh are thus separated by the Himalayan Range in the North East. Pirpanjal Range has a number of peaks which remain snow bound and restrict the move from west to east and north to south except through the passes and available routes along valleys. Jehlum valley route is the old traditional route which links Muzaffarabad with Kashmir valley and Srinagar.

Bannihal and Hajipir Passes provide the access but both get snow bound in winter. Bannihal Pass is with India and Haji Pir Pass is in our possession.

31. Terrain. The terrain, for ease of description can be divided into various sub sectors :-

a. **Muaffarabad.** This sub sector **extends from Kel to Bedori Bulge with Muzaffarabad as its base of operations** with all approaches/penetrants leading to it. Due to mountainous nature of terrain, slow moving infantry operations are dictated. The area is interspersed with lofty spurs, deep and rugged nullahs/streams and deeply discted valleys. Due to this compartmentation, inter valley movement is difficult and restricted to exising roads/tracks. Following salients/bulges from north to south of LOC in this sub sector are of operational significance :-

(1) **Jura Bulge. Held by Pakistn, it threatens the base of Indian Tangdhar Salient.**

(2) **Tangdhar salient.** Affords advantage to India as it reduces the operational distance to Muzaffarabad and poses a direct threat to the base of own Lipa Valley and Muzaffarabad –Chakoti Axis.

(3) **Lipa Salient.** Through this salient, we can threaten both Tangdhar and Uri Salients.

(4) **Uri Salient.** Indian held salient, which reduces the operational distance to Muzaffarabad and also outflanks the Bedori Bulge and threatens Bagh.

(5) **Bedori Bulge.** This is of **immense operational advantage to Pakistan. It reduces operational distance to Gulmarg, Bardamula and Srinagar. At the same time it outflanks the Uri Salient in the North and the Mendhar Enclave in the south.**

b. **Mangla – Mirpur.** This **sub sector extends from Bedori Bulge to Jhangar** Salient the cisfrontier operational orientation of approaches/penetrants converage here. South of Pirpanjal, the area is mountainous and rugged with the exception of naushera and Rajouri valleys. North east of line Mendhar – Rajouri Akhnur, area is a steep rise in elevation towards Pirpanjal, Range. Naushera Valley is longer and wider than Rajouri Valley. Both these valleys are parallel to the LOC. Height ranges from 1064 Meters to 2134 Meters.On the cisfrontier side, economically important Mangla

Dam is located here. The terrain dictates infantry operations but the valleys being somewhat broader ; specially Khuirratte Valley, do allow limited use of armour. The following salients are of operational importance :-

(1) **Mendhar Enclave.** **Indian held enclave which threatems Kotli. It also allows generation of a Northern pincer against the Bedori bulge threatening Bagh Rawalakot.**

(2) **Nikial Bulege.** **Held by Pakistan and neutralises the Mendhar Enclave by posting a threat to its base from the south**. Its configuration also facilitates operations against Naushera in the south.

(3) **Jhangar Enclave.** This **enclave is of great adbantage to India. It reduces the operational distance to Mirpur, Mangla and Jarikas, and also threatens Kotli from south through the Khuirratta valley.**

c. **Kharian- Gujrat.** This sub sector **extends from Jhangar Salient to marala Headworks and is contained by the Jhelum- Chenab Corridor.** Wherease the transfrontier side is hilly comprising off shoots of the Paramandal Range, the cisfrontier side is plain. After the initial crust of terrain along the border which dictates infantry operations, the the area opens out and facilitates the use of armour. In fact, this is the only sub sector in the entire Kashmir sector which allows integrated infantry armour operations. Operations through the saddabad Gap and bhimber to Jarikas/Mirpur turn the flanks of Pir Gali –Tandar defences from the south.

32. Communication Infrastructure. It is fairly well developed on both sides but the roads/tracks generally traverse valleys with intervening hills separating them and preventing any form of mutual support between them.

a. Transfrontier

(1) Penetrants

(a) Panzgam –Tangdhar –Tithwal - 12A1

(b) Srinagar-Baramula –Uri - 70A2

(c) Srinagar-Shupiyan-Pirpanjal - 9A1
Surankot –Punch. (Pirpanjal Pass remains closed during winter)

(d) Akhnur –Naushera - 50A2

(2) Laterals. These are gnerally tenuous and vulnerable to being severed from own side. Main laterals are :-

(a) Jammu- Srinagar - 70A2

(b) Ramban – Rajouri - 18A1

(c) Akhnur –Naushera –Rajouri - - 50A2/40A1

b. Cisfrontier

(1) Penetrants

(a) Muzaffarabad –Jura (from nauseri - 24A1/9F1
to Jura-kel 9F1 track also serves as lateral)

(b) Muzaffarabad –Chakoti - 24A1

(c) Kohala –Bagh-Lasdana - 24A1/9A1

(d) Azad Pattan-Trarkhel-Hijira - 9A1

(e) Azad Pattan –Trarkhel-Hijira - 24A1

(f) Karot-Kotli-Khuirratta - 50A2/12A1

(g) Mirpur-Kotli –Khuirratta - 30A1

(h) Mirpur –Pirgali-Poona-Tandar - 9A1

(j) Mirpur –Jari –Bhimber - 30A1

(k) Bhimber-Samani - 9A1

(l) Gujrat-Bhimber - 70A2

(m) Gujrat –Jalalpur Jattan - 70A1

(2) Laterals

(a) Muzaffarabad-Kohala-Arja - 24A1

(b) Sensa-Trarkhel - 24A1

(c) Kotli –Jarikas-Bhimber - 9A1

(d) Rawalpindi-Murree- - 70A2 Murree-Kohala-muzaffarabad (also via Abbottabad)

33. Railways

a. Transfrontier. There is no railway line on the transfrontier except for the terminal at Jamu. Tailway line from Jammu to Udhampur is under construction. Survey work on udhampur . Srinagar section has been completed but the work yet not started. Location of the tunnel on Pir Panjal Ranges has also not been finalised.

b. Cisfroniter. There is no Railway line in Azad Kashmir (AK) territory.

34. Choke Points

a. Transfrontier. Bannihal tunnel, Pir Panjal Pass, Akhnur Bridge.

b. Cisfrontier. Kohala, Azad Pattan, and Karot bridges

35. Communication Centres

a. Transfrontier. Panzgam, Baramula, Bandipura, Srinagar, Surankot, Rajouri, naushera and Akhnur.

b. Cisfrontier. Muzaffarabad, Abbottabad, Gagh, Rawalakot, Mangla/ Mirpur, Jarikas, Kharian, bhimber and Gujrat/Jalalpur jattan.

36. Airfields

a. Transfrontier

(1) Jet Capable. Srinagar, Awantepura and Udhampur.Dras

(2) Not Jet. There are a number of fair weather non jet air fields for light aircrafts like Smla, tithwal, Baramula, Punch and Pampur.

b. Cisfrontier. Kamra and Chaklala are Jet Capable whereas Rawalakot and Muzaffarabad are non Jet capable.

37. Obstacles. The mountainous terrain itself acts as the greatest obstacle. However, there are innumberable deep nullahs/ravines which render move across them very difficult and they compartment the whole area. The important rivers, which are all weather major obstacles are :-

a. River Neelam. It enters Pakistan in Nikrun area and then runs along the LOC to Kel and then to Muzaffarabad where it joins River Jhelum.

b. River Pohru. Many seasonal mullahs join this river. It flows from NW to SE direction and Joins River Jhelum at Baba Rasul, West of Scopor. The bed of the river is generally sandy and negotiable. It is a slow flowing river except during rainy season when the water rises 10 to 20 feet. The width of the river ranges from 90 to 240 feet and the depth varies from 3 to 15 Feet.

c. River Jhelum. It originates from a deep spring at Vering, about 80 KM SE of Srinagar. In the valley it is also known as Veth River. It meanders for about 130 KM north westwards upto Wular Lake and then flows westwards emerging from the Lake near Sopor. After its confluence with River Kishanganga (Neelam) near Muzaffarabad it course of flow southwardly direction. The river is navigable from Antanag to the gorge at Baramula. The river is not fordable in any season. Major engineer effort will be required for crossing. The width of the river as ascertained at the following bridge sites is as under :-

(1) Srinagar - 390 feet

(2) Sopor - 550 feet

(3) Sumbal - 900 feet

(4) Baramula - 540 feet

d. River Suran. It originates from Pir Panjal Range. It flows in north westerly direction and joins River Punch near Chandak. Many seasonal nullahs join this river. During rainy season the water level rises considerably.

e. River Punch. The river originates from Pir Panjal Range near Surankot (NR 3555) and is known as Suran River till it reaches Punch. From Punch onwards it is known as Punch River. It crosses LOC near Madarpur. A ferry site it evailable at Zindapir. The river finally falls into Mangla Lake. The river is not crossable except at bridge sites.

f. River Mendhar. A nuber of Nullahs draining from heights around Surankot – Bhimber Gali from into river Mendhar near Mendhar. The river flows from est to west almost parallel to the LOC and joins river Punch near Daruchian. The river is fordable at carefully selected sites except during raing season. In IHK crossing exist near Sagra and Mendhar.

g. Ban River. Originates from IHK area around Jhangar. Flowing through Khuirratta Valley, joins river Punch near Rahman Brigade. It has extremely steep banks and crossing is possible at pre selected or exsting sites at Akbar and Rahman bridges.

h. River naushera/Munawar Tawi. It originates from the hills on the north east of Jammu where it divides into two main channels namely River Tawi and Jammu Tawi. These channels rejoin about five kilometers north of Chaprar. It has a narrow bed upto jammu beyond which it splits into a number of channels with wide beds. Its bed is sandy. Average wet span near Jammu is 240 -–00 meters. South of Jamu average width of channels varies from 90 – 10 meters in dry season. During wet season, all channels overflow their banks and the span extends upto 2.5 kilometers. Average current speed is 0.3 –0.6 knots in dry and 2.4 –3.6 knots in wet season.

j. River Chenab. The River flows along the southern boundry of the sector in the area under study from North East to south West. The river from Riasi to Akhnur has a width ranging from 910 meters (1000 yards) to 1820 meters (2000 yards). From remain comparatively dry during dry season. The main channel of the river is not fordable even in the dry season. The

crossings are available at Riasi, Akhnur, Marala and on GT Road between Gujrat and Wazirabad.

k. Akhnur Canal

(1) It is taken out from River Chenab near Akhnur and runs east to west for about 32 KM upto Shamwani. The canal is 9-13 meters (30-40 feet) wide and 3 meters (8 feet) deep with ¼ meters (3-4 feet) water. The baks are brick lined with cement, with number of aduaducts.

(2) With many syphons and aquaducts available, the obstacle value of the canal is considerably reduced, both for infantry and tanks.

l. Partab Canal

(1) Canal takes from River chenab near Devipur 8063. It is 8 meters (25 feet) wide, 2 meters (5 feet) deep with brick lined banks. It has 1-1 ¼ meters (3-4 feet) water in it and after taking out distributary No 3 from it near Jaurian, it does not remain any worth while obstacle.

(2) In a 16 Kilometers (10 miles) distance from Devipur to reduce its obstacle value.

38. Attitude of Population

a. Transfrontier. Muslims are in majority, they are moderately favourable to Pakistan and exhibit fairly hostile feeling towards India.

b. Cisfrontier. Patriotic and motivated.

39. **Strategic Importance.** **Major portion of Jammu and Kashmir is held by India. All main rivers originate and flow through it providing irrigation water to fertile plains of Punjab. Their control by India, and her water diversion plans have adverse effects on Pakistan's economy. The location of dams/regulators as well as the vulnerability of our L of C accentuate our sensitivity. India is also equally sensitive to Kashmir due to political reasons and also because the access to Ladhakh is only possible through Kashmir. India held Kashmir is highly alternative rote Ramban Rajouri in depth.**

40. Strategic Objectives

a. Transfrontier. Baramula, Srinagar, Naushera, Akhnur and Salal Dam.

b. Cisfrontier. Muzaffarabad, Mangla – Mirpur Complex, Karian/Gujrat/ Line of National Highway and Maral headworks.

41. Strategic Approaches

a. Approaches from India

(1) Neelam Valley. Panzagam –Tithwal –nauseri –Muzaffarabad. It connects Baramula with Muzaffarabad through Tangdhar –Tithwal. Can take an infantry division.

(2) Jhelum Valley. Baramula –Uri –Chakoti –Muzaffarabad. This is the main approach north of Pir Panjal Range. Can support and infantry division plus.

(3) Uri-Hajipur and Punch – Hajipir. These approaches originate from Uri in the north and Punch in the south of Bedori Bulge. Each can take a division size force. These provide a link to the enemy operations north and south of Pir Panjal Range.

(4) Punch-Madarpur Bridge-Hajira-Rawalakot/Trarkhel. Can take upto an infantry division upto hajira and thereafter a division each on Rawalakot and Trarkhel Axes. It is also supported by subsidiary appraoch Punch-Hajira.

(5) Mendhar/naushera-Kotli. It is two divisions plus approach which threatens Kotli from north and south. Mendhar Approach can take a division and naushera Approach division plus supported by some armour.

(6) Mendhar/Daruchian –Hajira. Can take an infantry division.

(7) Naushera- Mangla. Can take an infantry division plus and threatens Mangla/Mirpur complex.

(8) Naushera-Saadabad/Samani-Bhimber-Gujrat. Can take a division. Some armour can also be used.Threatens gujrat, Kharian and Mirpur. It is supported by Beri Pattan Padhar Approach which can take a division with some armour in fire support role.

(9) Munawar Gap. It is astride Palanwala- -Iftikharabad-Munawar-tanda. Can take 2/3 divisions supported by upto an armoured brigade plus.

b. Approaches from Pakistan. Almost same approaches are available to us. Main difference is that we would be operating uphill while Indians will

generally be attacking downhill. Various approaches with their capacity are shown below :-

(1) Duduial –Panzgam. Infantry Brigade.

(2) Muzaffarabad-Nauseri –tithwal-Panzam-Baramula. Infantry division minus.

(3) Muzaffarabad-Chakoti Uri –Baramula-Srinagar. Infantry division plus.

(4) Bagh-Uri. Infantry division.

(5) Rawalakot-Hajira Punch. Infantry division.

(6) Kotli Nikkial-Bhimber Gali. Infantry brigade.

(7) Kotli naushera. Infantry division.

(8) Pirgali Jhangar-Naushera. Infantry division.

(9) Bhimber –Iftikharabad Akhnur-Jammu. Two Infantry division with an armoured brigade.

42. **Forms of Strategic Manoeuvre.** In Kashmir Sector, we are on exterior lines and Indians are on the interior lines having Srinagar as their main base of manoeuvre. However Pir Panjal range and Bedori Bulge meuterliess interior line advantage to India particularly in central sector of Kashmir.

43. **Strategic Posture.** The violable nature of LOC, the avilability of successive rows of hill features and lack of depth in the Muzaffarabad, Mirpur/Mangla and Kharian/Gujrat sub sectors dictate a forward defence posture in these areas. Offensive posture against Akhnur by us is favoured by terrain.

44. **Balance in Defence.** The laterals connecting various sub sectors and within sub sectors are very tenuous and traverse difficult mountainous terrain. Coupled with this communication infrastructure is the pattern of defence based on inaccessible hill features. By implications therefore, inter sector move and mutual support will be hazaradous difficult and time consuming.

To ensure adequate balance in defence each sub sector should be made self contained in defence allowing retention of strong reserve down to the lowest level. Reserve division and corps levels may have to be split initially to cater for threatened areas.

45. Implication of Limited Space for Assembly. Kashmir sector has the capacity to absorb major infantry based effort of 4/5 infantry division and one armed brigade plus from our side. But the space for concentration and assembly of forces is not

available. A major offensive, perforce, has to be spread over the entire front and distributed to various available approachs. Indians can induct 2 to Iinfantry divisions north of Punch and 3 to 4 division with some armour south of Mendhar in similar manner.

46. **Time and Space Implication**

a Indians, relatively will regure more time than us for inducting additional forces in this sector. The move of troops also cannot remain unoticed. Assembly of forces is likely give away their intentions.

b. Strategic objectives on own side are relatively close to LOC Comparatively, Indians can capture their objectives in less tiem. Own objectives, on the other hand, are too deep except in the south; ie, Akhnur. It capture can create serious difficulties for India.

47. **Implications of Major Indian Offensive.** There is only one L of cetering Kashmir through the Modhupur choke point. The alternate rou via Basoli – Udhampur is not very dependable and is highly arduous Pumping in major force of approx 5 x infantry division and an armours brigade for offensive will have following implications :-

a. The forces will gept inextricably involved, foreclosing a options in other sectors in a short war scenario.

b. Time for assembly and progress of operations will be slow. Superiority of strategic orientation will thus be conceded to Pakistan.

c. Loss of security and surprise would be inherent.

d. Logistic sustainance of forces would be difficult.

48. Communication Imbalances.

a. Enemy. Passage through Pir Panjal Range for movement north and south of it is main Indian vulenerability in the north. However, a new road between Udhampur- Awantipura and Srinagar has reduced their vulnerability. Similarly, their L of C to Kashmir is highly vulnerable at Madhupur and Kathua/samba. These are also vulnerable at Akhnur. Its capture can create serious logistic problems for sustenance of their operations south of Pir Panjal Range during witners.

b. Own. In the north, L of C to Jura and Kel is vulnerable at Tithwal ad neelam. Construction of alternative route would ease the problems.

49. **Type of Operations.** Except in Iftikharabad area where use of armour by both, India and Pakistan, is possible, the entire Kashmir sector is suitable only for infantry

predominant operations. Achievement of difficult. Terrain affords immense strength to the defender. Recapture of lost area generally proves highly expensive venture. Attack by infiltration and employment of helicopters in support of operations can pay dividends. India has deployed large number of troops for protection of L of C and rear area security. This aspect favours own offensive posture, and thus should get our due attention.

CHAPTER –III

CENTRAL ZONE

Chenab –Ravi Corridor (Annex C)

50. General Description. This corridor is **flanked in the north and south by River Chenab and Ravi** respectively. Total length of border between India and Pakistan in this sector is approximately 190 kms. The unnatural hape of border forms three salients. Shakargrh and Pukhlian, the two main Pakistani Salients, exercise an all pervasive influence threatening enemy choke points at Madhopur Headworks and Akhnur respectively; while Indian Suchet Garh Bulge in centre threatens Sialkot and Chawinda/Pasrur. The grain of the ground is generally from NE and SE. This corridor is suitable for large scale integrated infantry armour operations except in areas close to the water obstacles.

51. Terrain

a. **Transfrontier.** This area; the south eastern end of Indian held Kashmir (IHK) comprising the districts of Jammu, Kathua, Udhampur and Riasi, consists of foot hills of the Himalayas and is littered with rivers and streams of various sizes. Parmandal Range divides the area into two distinct compartments. Northern compartment is mountainous, hilly and comparatively restricted, while southern compartment undulating and broken. The area between Basantar nullah and River Ravi is more broken with mullahs having steep banks. The area south of Parmandal Range has well developed irrigation system. The entire area has good communication network emanating from Madhopur – Jammu Highway linking it with the forward areas. However the space between Parmandal Range and the working boundary is restricted. This terrain constriction has serious operational implications both for India and Pakistan.

b. Cisfrontier. Compared to the correspomding transfrontier the cisfrontier is flat, open and gently sloping. All natural obstacles are flowing perpendicular to the borders while the canals are flowing parallel to them. This way the sector is divided into a number of sub compartments. The crossing places over the water obstacles assume immense importance. The area is well cultivated, heavily populated and well served by roads Going for both wheels and tracks in generally good except in the vicinity of water channels. During

wet weather cross country move of wheels is impossible. The area can be further divided into three sub sectors :-

(1) **Sialkot Sub Sector.** Lies between River Chenab and Deg Nadi- In the north, Pukhlian Salient reaches out just short of Akhnur but is fifficult to defend. The area in the cetre is restricted and hamed in between River Chenab, Sialkot city and its surrounding vilage, and the portion provides shortest approach to India from Suchetgarh and through Chaprar converging on to Sialkot. In the south, area between Aik Nullah and Deg nadi is open and firm permitting large scale employment of mechanised (mech) forces. However, assembly of such forces will be resticted due to the influence of parmandal Range.

(2) **Shakargarh Sub Sector.** Between Deg nadi in the north and River Ravi in the south, this sub sector is compartmented in NE- SW direction by Deg nadi, Basantar Nullah and Bein River. Area north of Line Zafarwal- Shakargarh Ikhlaapur is comparatively broken. Area south of this line is flat and undulating.

(3) **Maboolpura Sub Sector.** Area between MRL\BRBL canals and Ravi Syphon is restricted, marshy and boggy in the vicinity of international border due to River Ravi and BRBL Canal. Once across this bog, in the west the terrain is open and firm affording sustenance of larage scale employment of meh forces. Provides shortest approach to cisfrontier core areas, but operations along this approach would be difficult to sustain in isolation.

52. Communication Infrasructure. The area either side of the border has a well developed communication network as under:-

a. Transfrontier. Indian life line to IHK the Madhopur-Jammu Udhampur Road and Madhopur-Jammu Rail Line runs perilously close to the border. The Indians are alive to this situation. They have constructed Basoli-Udhampur lateral in depth. They have also started construction of Manali-Kyelang-Upshi,Kyelang-Kishtwar and Balaspur-Sumdo-Bara Lachla roads.

(1) Penetrants.

(a)	Udhamour –Jammu.	-	70A2
(b)	Jammu –Suchetgarh.	-	40A1
(c)	B D Bari-Kot Khubba.	-	9A1

	(d)	Batala-Sabma-Ramgarh.	-	9A1
	(e)	Ramkot-Duala Chak-Jasmirgarh.	-	9A1
	(f)	Basoli-Kathua.	-	40A1
	(g)	Kathua-Parol.	-	9A1
	(h)	Batala-Fatehgarh-Churian-Ajnal	-	70A1
	(j)	Amritsar –Fatehgarh-Churian-Dera Nanak.-		40A2
	(k)	Amritsar-Anala.	-	70A2
	(l)	Amritsar-Rasulpur.	-	40A2
	(m)	Gurdaspur-Nainakot.	-	70A1
(2)	Laterals			
	(a)	Basoli –Ramkot\Ramgarh-Udhampur.	-	70A2
	(b)	Pathankot-Mahdopur-Kathua- - Samba-Jammu Akhnur.	-	70A2
	(c)	Kathya-Jasmirgarh-Mawa-Bajpur.	-	9A1
	(d)	Amritsar-Batala-Gurdaspur-Pathankot-Madhopur.		70A2
	(e)	Rasulpur-Ajnala-	-	9A1
	(f)	Ajnala-Dera Nanak	-	40A1
	(g)	Jallunder –Mukerian –Pathankot	-	70A2
b.	Cisfrontier			
(1)	Penetrants			
	(a)	Sialkot Chaprar-	-	30A1
	(b)	Sialkot –Suchetgarh-	-	40A1
	(c)	Wazirabad-Sambrial –Sialkot	-	70A2
	(d)	Gujranwala- Daska-Sialkot	-	70A2
	(e)	Eminabad- Sialkot-	-	70A1
	(f)	Gujranwal-Pasrur-Cawinda-	-	50A1
	(g)	Pasrur-Narowal	-	70A2
	(h)	Muridke/Shahdra-Narang-	-	70A2
(2)	Laterals			
	(a)	Marala Headworks-Sialkot	-	70A1
	(b)	Sialkot –Pasrur-Narowal	-	70A2
	(c)	Narowal-Zafarwal-Darman	-	50A1
	(d)	Badiana-Shakargarh	-	70A2

(e) Sialkot-Sabzpir-Zafarwal - 50A1

(f) Narowal-Jassar-Shakargarh - 70A2

(g) Wazirabad-gujranwala-Lahore - 70A2

c. Railways. All broad guage.

(1) Transfronter

(a) Pathankot-madhopur-Samba-Jammu.

(b) Jullunder-Pathankot.

(c) Amritsar-Batala-Pathankot.

(d) Amritsar-Dera Nanak.

(e) Jammu-Udhampur (under construction)

(2) Cisfrontier

(a) Wazirabad-Gujranwala-Lahore.

(b) Wazirabad-Sialkot.

(c) Sialkot-Pasrur –Narowal.

(d) Shahdra-Narowal –Shakargarh-Chak Amru.

d. Airfields

(1) Transfrontier

(a) Jet Capable. Pathankot, Udhampur, Amritsar and Jammu.

(b) Non Jet. Gujranwala and Pasrur.

e. Communication Centres

(1) Transfrontier. Jammu, Samba, Kathua, Udhampur and Akhnur.

(2) Cisfrontier. Pasrur, Shakargarh, Narowal, Daska, Gujranwal, Wazirabad and Shahdra.

53. Obstacles. The corridor is littered with rivers and nullahs. Rivers Chenab, Jammu Tawi, Jjh and Ravi are the main water channels which flow throughout the year and are obstacles to military movements. Water in these rivers being to rise by end of Marh, reaching maximum in July/August and starts receding in September October. Other rivers and nullahs are seasonal hill torrents and remain generally dry or have little water in dry season. The beds of these streams are covered with coarse sand, pebbles and boulders in hilly areas. Therefore, in hilly reaches they can be negotiated by wheels and tracks. Till the beginning of monsoons the nullahs do not present much difficulty in crossing. All water channels flow in the general direction North East to South West and therefore from IHK to Pakistan. By the direction of their flow and spacing, these water courses tend to channelise move in a fixed direction. Since there is no significant natural obstacles running parallel to

the border, both India and pakistan have constructed anti tank ditches and canals or diverted/improved drains and nullahs to run parallel to the border to seve as obstacles. Various obstacles are:-

a. Transfrontier

(1) River Chenab. It originates from area Lahul or Great Himalya and flowing swiftly through the hills of himachal Pradesh, enters IHK near Kilar. It flows in North West direction upto Kishtwar and then cahnges its direction of flow to South West. Many samll nullahs and streams join River Chenab at different place3s. Just south of Akhnur it divides into many channels. The channels keep changing their courses gradually with the deposit of silt. Along the main channel the river is deep enough for navigation. The banks have gradual slope and the approaches and exits are sandy. The water during monsoons overflows the banks of the channels and floods the surrounding areas. Available data on the river is as follows :-

(a) River Bed. Flowing through the hills, the river has a narrow bed upto Akhnur. But as it enters the plain area south of Akhnur it divides into a large number of channels. The two main channels run around Phuklian Salient joining again about a 5.1 KM NW of Marala Barrage thus turning the salient into a large river island. The main river, however, flows west of the Salient, the channel of the eastern side of the Salient having very little water in dry season. The western channel again splits into a large number of channels which keep changing their courses gradually. Width and depth, therefor , vary considerably during the year.

(b) Discharge at Akhnur During Winter (Cusec)

		Maximum	Minimum
i.	November	1833 (1986)	4696 (1980)
ii.	December	36115 (19860)	3872 (1980)
iii.	January	57800 (1973)	4259 (1982)
iv.	February	37882 (1987)	4998 91982)

(c) Average Wet Span

i. At Akhnur. 650 feet.

ii. South of Akhnur. Each channel is 400 to 700 meters, during dry season and upto 2 KM, during wet seasons.

(d) Flow Characterestics

		Average	Depth (Feet)
i.	Wet season	5 to 6	15 to 16
ii.	Dry season	2 to 3	6 to 9

(e) Canals offtaking. Near Akhnur, Ranbir and New Partab Canal take off from River Chenab.

(2) River Tawi. It originates from the hills on the NE. Many nullahs and streasm join river Ravi at different places. Flowing swiftly through the hills, it changes the direction and flows in SW direction. Near Jammu it divides into two main channels namely the Nikki Tawi and Wadi Tawi or Tawi river and Jamu Tawi and rejoining again changing their course gradually. Near the confluence of Nikki and Wadi Tawi, where it is also jonied by a channel flooded in wet season and area around it forms a large marshy stetch. The flow of water is quite fast during monsoons. During winter the water level recedes. Data on the river is as follows :-

(a) River Bed Narrow bed upto Jammu. South of Jamu it splits into a large number of channels with wide beds. The river bed is sandy and firm.

(b) Average Wet Span.

i. Near Naushera. 600 feet.

ii. South of Rajuri. 1600 feet.

iii. Near Jammu. 800 to 1100 feet.

iv. South of Jammu. Each channel is 300 to 500 feet, during dry season and upto 1/1/2 mile during wet season.

(c) Average Seepd of Current

i. Dry Season. 1 to 2 feet per second.

ii. Wet Season. 4 to 5 feet per second.

(d) Depth of Water

i. Dry Season. 4 to 6 feet.

ii. Wet Season. 8 to 12 feet.

(e) Canal Taking Off. Jammu Tawi lift Irrigation Channel under construction.

(3) River Ravi. It originates from Pirpanjal Hills (Kangra) and flows in general direction north east to south west. It enters Pakistan a few KM norht of gurdaspur and generally flows along the Indo Pakistan boundary. The river with its wide course, is fordable at many places in dry season. Where the course is narrow, fording is not possible. During monsoon period various channels join the main stream making the river a very formidable obstacle. The main channel continues changing its course and forms new sand bars and rive flats each year. This highlights the need for confirmation of the latest course of the river every year particularly after rainy season. Important data of the river during dry season, (November to May) is appended below :-

(a) Water Gap. 300 to 550 feet.

(b) Depth. 4 to 10 feet.

(c) Width. 900 to 2000 feet.

(d) Current. 1 to 2 feet per second.

(e) Bed Condition. Mainly sandy. River flats are sandy loam to caly loam.

(f) Canals Taking Off. Following canals take off from this river at Madhopur :-

i. Upper Bari doab Canal. 12,000 cusecs.

ii. Ravi-Beas Link Canal. 12,000 cusecs.

iii. Kashmir Basantpur Canal. 800 cusecs.

(4) River Ujh. A tributary of River Ravi. It origninates from Kuloru Range NE of Basantgarh and is joined by River Bein and may nullahs. It divides itself into many smaller channels when it enters the plain area south of Chak Sakta. Some of the channels flow NE to Se and join Tarnah nullah which flows along IHK/Pakistan borders. The main channel, however, flows norht to south until joned by Tarnah nullah seast of Ikhlaspur and then joins River Ravi NE of nainakot. The water of Ujah River is regulated at Jasrota regulator.

(5) Seasonal Rivers/Nullahs

(a) Seasonal rivers/nullahs in this area are Palkhu Nullah, Aik nullah, River Devak, Basantar River/Degh Nadi, and Bein

(b) These water channels overflow their banks when it rains in their catchment areas and become major obstacles to military movement. In dry season, however, these are not obstacles of much consequence and can be crossed with little engineer effort. Some of the common characteristics of these channels are :-

i. Water Gap. During heavy rains particularly in west season floods cause inundation of surrounding areas. After rains water is left in the main water channels as well as in the deper portions of the bed. In dry season there is almost no wtaer in these channels except in wet patches here and there.

ii. Current. Being hill torrents, the current of water is very fast during rains but in dry weather the current is negligible.

iii, Banks. Are generally high and steep, the heigh varying from 3 to 12 feet. These can however be negotiated with little engineer effort.

iv. Bed Condition. Almost all these water channel have wide sandy beds. These can be crossed at existing crossing sites after econnaissance For sustained traffic, however the crossing sites would require improvement and regularly maintenance.

(6) Ranbir Canal. The canal originates from river chenab north of Akhnur bridge. A regulator cum bridge with five bays exists on eastern bank of the river to regulate water into the canal. The canal runs roughly in Se direction until north of Charwa and then runs westwards roughly parallel to the border and tails off near indo-Pakistan border, north of Bajragarhi. Data on the canal is as follows :-

(a) Capacity. 1000 Cusecs.

(b) Width and Depth

i. Near the regulator it si 60 65 feet wide 10 feet deep.

ii. Width and depth gradually decrease towards tail end.

iii. Service Road. A class 70, all weather, two metalled road runs on the western side of canal from Akhnur to Jammu. From Jamu to the tail and of canal it is a class 9, fair weather, one way, unmetalled road.

(7) Ujh Canal. The canal originates from River Ujh near Jasrota. The regulator has 3 spans of about 100 feet each. At right angle t the canal regulator there is an escape regulator having two spans of 7 feet each. It flows in NW direction upto Karariyan and then flows towards south tailing off near Ragal.

(a) Capacity. 200 cusecs at head.

(b) Width and Depth

i. Near the head it si 28 to 30 feet wide and 8 to 9 feet deep.

ii. Width and depth gradually decrease towards the tail end.

(c) Service Road. There is an unmetalled service road on the southern bank of the canal.

(8) Old Kashmir (Basantpur) Canal. The old Kashmir (Basantpur) canal which takes off from River Ravi near Basantpur with a capacity of 120 cusecs has been remodelled beyond Madhopur. The The remodelled canal below Madhopur is known as new Kashmir (Basantpur) canal. The upper reach of the old canal still exists and acts as an independent inundation canal for the irrigation of a small area.

(9) New Kahmir (Basantpur) Canal. This canal takes off from a regulator on river Ravi just above Madhopur heasworks. Canal. At Rd 17252 the canal bifurcates into two branches namely the Kathua Canal and Chak Andher Feeder.

(a) Main Branch upto RD 17252 is 47 feet wide and 8 feet deep.

(b) Kathua Canal is 25 feet wide and 6 feet deep at the maximum and 6 feet wide and 1.5 feet deep.

(c) Chak Andher Feeder is also about 24 feet wide and 6.5 feet deep at the maximum decreasing grandually towards the tail end.

(10) Akhnur Canal. Taken out from River Chenab through a regulator near Akhnur and runs East to West for 20 miles upto Sahameran. It is 30 to 40 feet wide and 8 feet deep.

(11) Partab Canal. Taken out from Chenab. It takes off from River Tawi near parallel to road Akhnur Iftikharabad upto Khaur. The canal is dry and not very effective obstacle because of shift in Chenab River course. It is 25 feet wide and about 5 feet deep.

(12) Tawi Lift Irrigation canal. It takes off from River Tawi near jammu and runs in south easterly direction upto River devak. It is 25 –30 feet wide and 4 to 6 feet deep.

(13) Ditches (Appendix –1)

(a) In the absence of any major natural obstacle running parallel to the border, India has constructed a large number of ditches and bunds in the area Existing water channels have been improved to enhance their obstacle value. The bias of defence works is towards Tawi-Basantar Sector. Main ditches in the area are:-

i. Mokhe Ditch. 12 to 15 with water.

ii. Sidar Ditch. 12 to 14.

iii. Rarbir Singhpura Ditch. 15 to 20 wide and 8 deep dry ditch. On home side 5 high bund.

iv. Miran Sahib Ditch. 25 to 30 x 8 to 10 with water

v. Chakroi Ditch/Bund. 13 x 6 dry ditch, with 16 – 20 high bound on home side.

vi. Ramagrh Arnia Ditch/Bund. 18 –26 x 12 –13 with 6 –7 high bund.

vii. Ramgarh Bajpur Ditch/bund. 18 x 10 ditch with 16 high bund.

b. Cisfrontier

(1) River Chenab. It flows on eastern/southern flank. Banks, height varies from 6 to 13 feet. Duringt wet weather it becomes unfordable. In dry weather A vehicles can however cross it with some engineer effort.

(a) Wet Span. Varies upto 800 feet.

(b) Depth. 6 meter to 8 feet.

(c) Bed Condition. Sandy.

(2) River Tawi (Jammu Tammu Tawi) It flows from east to west and separates Phuklian Salient from main lend. It is also a major obstacles.

(a) Width. Varies from 300 feet to 6000 feet.

(b) Bed. Sandy.

(3) River Ravi. It flows from NE to SW. It enters Pakistan opposite nainakot. It is fordable at many places except during wet weather. It is keeps changing its course every year. The flow of river is regulated through Madhopur headworks (India). Main data about the river is as follws :-

(a) Width. 600-6000 feet.

(b) Depth. 4-18 feet

(c) Banks. 6-12 feet high

(d) Bed Condition. Sandy.

(4) River Bein. It enters Pakistan near Sukmal and runs from North to South where it is joined by Tranah Nullah and Bhabban Nullah. IT is a partial tank obstacles during dry weather and effective obstacles during monsoons. The bed of the river is sandy. Main data of the river is as follows :-

(a) Depth. 2-6 feet

(b) Banks. 2-6 feet high

(c) Wet Span. 225 –1800 feet.

(d) Width. 300-2400 feet.

(5) Degh Nadi

(a) Depth

i. Dry Weather - 1-2 feet.

ii. Wet Weather - 2-6 feet

(b) Wet Span. 300 –3000 feet.

(c) Height of Bank. 9 feet.

(6) Basantar Nullah

(a) Depth

i. Dry Weather - 1-2 feet.

ii. Wet Weather - 2-6 feet

(b) Wet Span. 180 – 1800 feet

(c) Height of Bank. 2-12 feet.

(d) Width. 300-2400 feet.

(e) Obstacle Value

i. Wet Weather –Complete obstacles.

ii. Dry Weather – can be crossed by all types of vehicles at existing crossing places.

(7) Nullahs

(a) Ghag Nullah. It is a partial tank obstacles.

i. Width. 90 to 120 feet

ii. Depth. 4 to 8 feet.

iii. Bed Stony in the North but in the South it is sandy.

(b) Palkhu Nullah. Is a partial tank obstacles.

i. Width 54 to 84 feet.

ii. Depth. 2 to 5 feet.

iii. Bed. Sandy/clay.

(c) Aik Nullah. Is a partial tank obstacles.

i. Width. 300 to 500 feet.

ii. Dept. 6 to 10 feet.

iii Bed. Sandy/Clay.

(d) Doara, Bhimber and Bhundar Nullah. These are seasonal nullahs which can be crossed after 6-12 hours of rainfall in catchment areas. In dry season, engineer effort will be required for sustained traffic.

(8) Canals

		Width (feet)	Depth (feet)	Remarks
(a)	MRl Canal	350	10	Flows for six months in summers.
(b)	UCC	320	12	
(c)	BRBL	180	8	Emanates from Bhambanwala

(9) Defence Bund/Ditches. About 130 kms length of bunds and ditches have been integrated into obstacle system.

55. Water Regulation. (Appendix 2 to Annex C)

a. Chenab River. Chenab water is used for canals in Sialkot and Lahore border area through Marala Heasworks which is not connected with any national water grid. Through construction of Sala Dam on Chenab, about 64 KM upstream of Marala, India has acquired following physical capability:-

(1) The total quantity of water that can be manipulated for stoppage of supplies to Pakistan is 2,25000 Af and 58000 Af with and without using low level outlets respectively.

(2) India can empty dam in about 4-6 hours. Therefore, depending on flow received at Sala, the number of days for which the supplies can be stopped by India in one mal operation of the plant is as under :-

		Summer (days)	Winter (Days)
(a)	With low level outlets	½ -9	3-28
(b)	Without use of low level outlets	1/5 –3	2-8

b. River Ravi

(1) Madhopur –Headworks. Madhopur Headworks has insignificant pondage capacity of 8000 AF and diversion capacity of 22800 cusecs (10,000 Cusecs to MBL, 1200 Cusecs to UBDC and 800 Cusecs to Kashmir canal) closing these canal and taking into account inflow river, india can release :-

(a) Upto 22800 Cusecs druing medium flow period –span 1500-1800 feet.

(b) During low yield period, 3000 to 600 cusecs for 1 to 2 days creating a span of about 600 feet.

(2) Thein Dam With construction of thein Dam (25.6 KM upstream of Madhopur, India is able to store 1.9 MAF of water enabling her to dry up the river completely River Ravi stands completely regulated and India is able to maintain following flow pattern or any other intelligent combination there of :-

	Flow (Cusecs)	Wet Span (feet)	Sustaining Period (Days)
(a)	9000	600-800	Over 100
(b)	25000-3000	Over 800	Over 100

(c) Combination of 100,00 1200 Over 20

c. Effects of Water Regulation on Military Operations

(1) Indian Operations. India will have to negotiate three canals (MRL) (BRBL and UCC in case she wants to achieve worthwhile strategic objectives. The obstacle value of these canals can be neutralised by denying water/rendering Salal may be regulated under following conditions :-

(a) Complete Blockade.Empties the reservior and depending on inflow, dries up the river and hence denies water to MRL BRBL and UCC upto maximum of 28 days operating under sluices or upto about 8 days without using under sluices during winter moths. Offensive from west.

(b) Stedady Flow/Partial Blockade It will be to the advantage of Pakistan since partially full canals pose a difficult scenario to support the offencive. Physical control of Marala Headworks will be a necessity besides Salal Dam.

(2) Own Operations.

(a) Offensive Operations. On the Indian side, our offensive is not affected by water regulation because of absence of any worth while water obstacle.

(b) Defensive Operations.

i. In case India attempts to neutralise the obstacle values of canals in support of her offensive by stopping flow in the River Chenab, following quantity of water is available to regulate into MRL while short fall in BRBL would be in the region of about 800-2000 cusecs (200-700 cusecs in case of partial blockade).

aa. Inflow of 1700 cusecs downstream of Salal.

bb. 10,000 AF pondage now available at marala which can be fed to MRL as under or any other combination thereof :-

- 600 cusec for about 20 hours.
- 5000 cusec for about 25 hours.

- 4000 cusec for about 30 hourse
- 2500 cusec for about 48 hours.

ii. The minimum requirement for MRL is 6000 cusec. With the reduced quantity of available water at Marala, we can charge the reservoir to the maximum and run. The MRL for two days (6000 cusecs) and operate available regulartory weirs to pond water so as to make MRL effective obstacle as under (BRBL will have insignificient water) :-

aa. Between RD-0 to 140 Partial obstacle (Marala to Daska)

bb. Between RD 140 to Daska)

cc. Down stream of - 302 Effective negligible

56. **Suitable Time for Military Operations. Winter months from October to March are best suited for military operations. Wet weather from June to September is unfavourable period.**

57. Attitude Population

a. Transfrontier. Sikhs and muslims are likely to have anti Indian feelings. Sikh insurgency in Punjab and Jammu can facilitate own operations in this corridor.

b. Cisfrontier. Own population is dependable and patricotic.

58. **Strategic Importance.** **Strategically, this corridor is most important for both India and Pakistan. Indian L of C and life line to IHK runs perilously close to the international border. Development of access to IHK is cocerned.** However Road Basoli –Udhampur, the alternate road, is equally vulnerable once Khathua Jammu highway has been severed by Paistan. **Another Indian vulnerability is Madhopur headworks which requlates water in River and network of canals in Ravi Beas. Capture of Madhopur headworks by Pakistan can have strategic consequences,** As far as **Pakistan is concerned, besides socio-political implications of loss of territory and important communcation centre of Sialkot, Marala headworks has immense importance for the successful conduct of defence operations in Ravi – Chenab as well –Beas Corridors. Located in extreme north, it regulates water in number of**

defence oriented canals emanating from it and flowing south right upto River Sutlej. Thus both sides are highly sensitive to loss of territory.

59. Strategic Objectives

a. Transfrontier

(1) Line Akhnur Jammu Samba – Kathua/Mandhopur.

(2) Line madhopur Headworks pathankot- Mirthal/Mukerian Bridges and Gurdanspur.

b. Cisfrontier

(1) Marala Headworks.

(2) Line of MRL canal/Pasrur.

(3) Line Waxirabed-Gujranwala –Shakhdara.

60. Strategic Approachs

a. From India

(1) West of Deg Approach. It is about 60-70 Kms wide. It can take 2 to 3 infantry divisions and an armoured division . Two subsidiary approaches, Akhnur/jammu-Paukhlian Salient (infantry brigade supported by armoured regiment)and Naushera –Jura Marala heasworks/Sialkot (infantry division and an armoured brigade) support this appraoch.

(2) Narowal/Raya Khas –Pasrur Appraoch. Supported by subsidiary Approach Ajnala-Raiya Khas Pasrur, this appraoch can sustain a corps effort comprising 2-3 infantry divisions and an armoured division.

(3) Maqboolpur –Muridke/Shahdara Approach. Shortest approach to own L of C ie G T Road Operations across River Ravi/BRBL are initially difficult. Once across, provides good going to wheel and tracks. Infitally, an infantry divisions with an armoured brigade can operate on this approach.

(4) East of Deg Approach. Area near and SE of border is broken and poses difficulty to vehicular movement. An infantry division plus with an armoured brigade can operate on this approach.

b. From Pakistan

(1) East of Deg Approaches

(a)	Shakargarh - Madhopur	Ikhlaspur	-Infantry division
(b)	Shakargarh – Gurdaspur	Naiknkot	Infantry division
(c)	Shakargar –Chak Amru		Infantry Brigade with some armour.
(d)	Zafarwal Samba.		Infantry brigade with some armour

(2) <u>West of Deg Approaches</u>

(a)	Pasrur Charwa-Ramgarh –Jammu	Infantry division (+) Supported by an armoured brigade
(b)	Sialkot Suchetgarh Jammu	Infantry division supported by an armoure brigade

(3)	Narowal-Jassar Dera naik Gurdaspur/Batala Approach	Infantry division Supported by some armour
(4)	Maqboolpur –Rasulpur Ajnala/amritsar	Infantry division Approachsupported by some armour.

c. This corridor, on the whole, can take about 6 to 7 infantry division and an armored division plus

61. **<u>Forms of Strategic Manoevuvre.</u>** The **shape of Shakargarh Salient as a whole forces Indian to operate on exterior lines. The terrain dictates large scale combined infantry armour operations but the space in Jammu Kathua area is inadequate for assembly of large forces. Therefore, the Indian effort perforce has to be multidirectional. Indian operations on exterior lines affords them environment for a classic double envelopment with north and south pincers closing at Pasrur initially and at Gujranwala/Shahdara subsequently. Contraril, Pakistan menoeuvring on interior lines, will have the time and space advantage of putting a concentrated force to deal with each pincer in turn.**

62. Superiority of Strategic Orientation. Pakistan enjoys superiority of strategic orientation by threatening India's L of C to IHK and/or Madhopur headworks. It is therefore an Indian compulsion to put in an offensive from the north to gain depth for their vulnerable L of C.

63. Strategic Posture

a. India. The vulnerability of their L of C dictates an offensive posture and an all time alert forward defence posture.

b. Pakistan. The lack of depth from north and south dictates a forward defence posture. In general area north line Sialkot Zafarwal and in Narowal, a forward defensive posture is indicated. In the East in Shakargarh Salient, availablity of adequate depth and successive water obstacles permit a comparatively rearward defensive posture and trading space for time. However, and offensive posture in Shakargarh Salient promises immense dividends.

64. Implications of Limited Space for Assembly of Forces. Ravi Chenab corridor has the capacity to absorb a major offensive but the space in the north is restricted. Therefore, a major offensive in this corridor has to be divided into a northern and southern pincer. A major offensive from the north will have to be cheloned through the Madhopur heaworks all along Kathus Samba –Jammu Axis or the forces will have to be inducted piecemeal.

65. Pivots of manoeuvre. Pasrur in the south and Sialkot in the north serve as ideal pivots of maneuver to capitalise on the time and space advantage of interior lines and attempt piecemeal destruction of two pincers directed from the north and south.

66. Critical Space

a. Transfrontier.

(1) Space bounded by Madhopur headworks Pathankot Mukerian/Mirtahal bridges and Gurdaspur. Its loss would imbalance his defence in IHK as well as pose serious threat to his defence in Ravi Bease Corridor.

(2) Line Akhnur Jammu –samba –Kathua. Indians are, in fact, foriming a front towards their flank in this corridor. Any progress here by us serioulsly jeopardieses their defence in entrire IHK.

b. Cisfrontier. Space east of MRL bounded by Marala headworks –Sialkot-Chawinda/Phillora-Dhamtal Narowal.

67. Strategic depth. From the Maqboolpur Approach, the enemy directly enters our strategic depth once he crosses BRBL, and turns the defences in the Shakargarh Salient. It must be guarded in strength.

68. Improvement of Defensive Posture With the progress of an Indian offensive upto MRL, their front for defence contracts and defensive posture thus improves. India will also, in such an eventuality, be able to induct his holding divisions into the offensive improving their relative strength ratio. The enemy, therefore must not be allowed to reach Pasrur.

69. Offensive Options

a. Enemy

(1) Configuration of border offers Indians the opportunity of planning operations for the battle of encirclement. Multidirectional threat can cause dislocation to the defender.

(2) Elimination of Pukhlian envlave, maral headworks and Jassar enclave at outset is imperative for the success of offensive operatios

b. Own

(1) The Ravi Chenab corridor on the transfrontier side, with its flanks resting on Akhnur and Kathua/Madhopur and enjoying the protection afforded by Parmandal Range in the north, provides security and improves own defence posture. It also creates strategic efects on enemy forces in IK. Hence, pre emption in this area is the most favourable option.

(2) Offensive towards south across River Ravi without first capturing Madhopur headworks is fairly difficult to sustain. Hence it is imperative to secure madhopur Headworks before undertaking offensive in the south; and securing Bajpur/Samba and Jasmirgarh before undertaking offensive against Madhopur headworks.

(3) Elimination of dharam enclave is necessary for denying/making difficult for enemy, offensive from the south.

70. Communication Imbalances. Within the corridor and inter corridor, move can be disrupted by the destruction of bridges which can seriously effect operations on either side as shown below :-

a. Transfrontier. Bridges on roads Pathankot Madhopur-Jamu and Basoli Udhampur.

b. Cisfrontier. Bridges on MRL, BRBL UCC and rivers Chenab and Ravi gain added importance.

71. Nature of Operations. The corridor is suitable for combined infantry armour integreted operations by either side. Possibility of employment of air/helicopter troops in support of mech troops is more likely. More bridging equipment is needed to support the mech operations. Interdication of L of C of side undertaking offensive is likely to retard the speed of operations.

Ravi-Beas/Sutlej Corridor (Annex C)

72. General Description. This **corridor on the cisfrontier side is flanked by River ravi in the north and River Sutlej in the south, extending upto Suleimanki Headworks**. On the transfrontier it includes Ravi Beas corridor as well as Ferozepur fazilka sector upto general area Bhatinda. Thus River Beas further divides the Ravi Sutlej Corridor (northern half of the area into two and joins River Sutlej at Harike Headworks.

73. Cisfrontier. The Ravi sutlej corridor is enclosed by the retangle formed by River Ravi, River Sutlej, the BRBL canal and BSL (Balloki Sulemarnk Link) canal forming a tight compartment limited in space. The frontage is approx 300 KMs. The area is flat, extensively cultivated and irrigated by a network of canals and distributaries. The effect of conurbation is very pronounced, denying free move to major forces. Mobilization/move is further restricted by canals, distributries, drains and the Changa Manga Reserve Forest. Communication infra structure is well developed linking all improtant cities and towns. Shahdra and balloki serve as main links between Ravi Chenab and Ravi beas Corridors ; while bridges over BSl canal connect Ravi Beas Corridor to South of Sutlej Sector. Salient outflanks and threatens Khen Karen and valtoha. Old bed of River Beas, with its 10 to 40 feet high escarpement, runs in East West direction, almost in the centre of the cisfroniter area andidivides it into two sectors :-

a. Northern Sector. This portion, about 150 KMs in length contains highly developed communication infra structure, is comparateively more cultivated and thickly populated. iT has a number of evenly spaced obstacles cutting across various penetrants, BRBL, Wagah and Chathanwala Drains are the Major obstacles in this part of the area.

b. Southern Sector. In this portion about 160 KMs long including 40 KMs of Shejra Salient, River Sutlej runs almost along the international boundary. Going for vehicles is good in the entire sector except areas just south of the escarpment for close to the River Sutlej and astride Dipalpur Canal.

Communication infra structure is comparatively less developed The flow of water in River Sutlj is controlled by India at Harike and Hussainiwala Headworks.

74. Transfronteier. On the transfrontier side, there are two distinct compartments as follows :-

a. Ravi Beas Corridor. Flat but compartmented into NE SW sub corridors formed by several channels originating from madhopur headworks. Move is channelised. Communication infra structure is extensively develped with Amritsar seving as the main communication centre. Large scale operations are possible in this corridor . Entry into this corridor is restricted to the major bridges spanning River Beas ; namely harike Headworks, Govindwal, Beas Bridges Sri Govindpur, Mukerian and Mirthal bridges.

b. Ferozepur Sector. Area south of River Sutlej upto line Sulemanki headworks Bhatinda. This area is further divided into two vertical halfs by the twin Rajastan Sirhind canals emanting from harike headworks. Communication infra structure is well developed in the Wstern part with Ferozepur, muktsar, Fazilka and Jalalabad serving as the main communication centres. Twin Eastern Canal and Bikaner (Gang) Canal are the major obstacles cutting the Western part into two sub sectors.

75. Communication Infra Structure

a. Transfrontier.This sector, as stated earlier, has a well developed ntwork of roads and rails. Increase in population, establishment of industry and improvement in agriculture coupled with the requirement of defence has resulted in a marked improvement in the communication network :-

(1) Penetrants (Ravi Beas Corridor)

(a)	Amritsar Atari	-	70A2
(b)	Taran Taran Raja Thal Attari	-	40A1
(c)	patti Bikkiwind	-	40A2
(d)	Patti Khen karan.	-	70A1

(2) Penetratans (Ferozepor Sector)

(a)	Makhu Ferozepur	-	70A2
(b)	Ludhiana Moga Ferozepur	-	70A1
(c)	Bhatinda Ferozepur	-	70A2
(d)	Bhatinda Muktsar Jalalabad	-	40A2

(e) Bhatinda malaut fazilka. - 60A2/40A1

(3) Laterals

(a) Pathankot Gurdaspur Amritsar - 70A2 Farikkot Bahtinda

(b) Amristsar Khan karen - 70A2

(c) Makhu Faridkot muktsar malaut. - 40A2

(d) Ferozepur Muktsar malaut - 40A2

(e) Harike Headworks Ferozepur Fazilka- 70A2

b. Cisfrontier

(1) Penetrants

(a) Lahore wagah - 70A2

(b) Lahore Barki harike - 70A1

(c) Lahore bedian - 70A1

(d) Raiwind Kasur Canda Singh Wala- 70A1

(e) Balloki Headworks Chunian kangarnpur- 50A1

(f) Renala Hujra mandi Hira Singh - 50A1/40A1

(g) Okara-Dipalpur Basirpur Dulla - 50A1/40A1

(2) Laterals

(a) Lahore Ballowki - 70A2

(b) Lahore Okara - 70A2

(c) kasur Khudian Dipalpur - 50A2

76. Railways. All railway tracks are broad guage :-

a. Transfrontier

(1) Dera Baba Nanak amritsar.

(2) Gurdaspur Amritsar.

(3) Jullundur amritsar (Double line)

(4) Amritsar Taran Taran Patti Khem Karen.

(5) Amritsar Attari (to Lahore)

(6) Ferozepur Jalalabad fzilka

(7) Ferozepur makhu.

(8) Bhatinda Malaut Hindumalkot.

(9) Bhatinda Kotkapura Fazilk.

b. Cisfrontier

(1) lahore Wagah (to Amritsar)

(2) Lahore Raiwind pattoki Okara.

(3) Raiwind Kasur

(4) Kasur Kanganpur pakpattan.

(5) Lahore skejkhupura/Gujranwala/Narowal.

77. Airffields

a. Transfrontier

(1) Jet Capable. Raja Sansi (Amritsar) Adampur, Pathankot, Bhatinda, Ambala and halwara.

(2) Non Jet. Jullundur, Ferozepur and Faridkot.

b. Cisfroniter. Lahore and Shorkot.

78. Obstacles. (Appendices 3 and 4 to Annex C). Natural obstacles exist in the from of rivers. Canals initially constructed for irrigation purposes became mainstary of defence system after the partition. To reinforce the obstacles system, bunds and ditches have been constructed parallel to the border. In Ravi Beas/sutlej Corridor, India has about 190 KMs of these bunds/distches while Pakistan has about 75 KMs. In the Ferozepur Sector total length of Indian/distches is about 200 KMs.

a. Transfronteir

(1) River Beas. The river is under total control of India and does not enter Pakistan. The effects of inflow in the river are only seen in Sutlej where it merges into it at harike. The river is regulated at Pong and Pandoh Dams. The width of river at Mirthal is 1725 feet and at Dhilwan is about 1990 feet.

(2) River Sutlej

(a) originating from Tibet, it swiftly flows through the Siwalik Hills at Rupar. From here onwards it flows west in the fertile valley of East Punjab. It enters Pakistan in Shejra salient, North east of Ferozepur.

(b) India has constructed a high dam at Bhakra and a low diversion dam at nangal and rupar on this river. It is now possible for India to bottle up the river completely. To meet the Irrigation requirements at Harike, some water may be relased below Rupar. Some flood water may be expected during August and early September after the reservoir has been filled to capacity.

(c) Average span varies as under :-

		Width (feet)	Depth (feet)
i.	During dry season	225-400	1 to 5
ii.	During wet season	1500-3000	3 to 30

(d) Average Speed

i. During dry season -1 to 25 fps

ii. During wet season -4 to 6 fps

(3) Canals and Drains. The entire area is extensively irrigated by all well laid out canal system. The canals and distributors flow on relatively higher ground, from NE to SW. The average width of distributors is 12-20 feet and depth 203 feet. Important canals and drains are :-

(a) Upper Bari Doab Canal (UBDC). This canal with a total held capacity of 21,000 cusecs takes off from madhopur Headworks. Out of this, 10,000 cusecs are passed into River beas through Madhopur Beas Link. UBDC further branches off in the following canal and Flows in general direction North east to south west Average distance between canlas is about 19 KM forming well defined corridors in this sector :-

		(Width) (feet)	(Depth) (feet)
i.	UBDC Lahore Branch	75	4-7
ii.	UBDC main Branch	145-150	8-11
iii.	UBDC Kasur Branch	100	3-6
iv.	UBDC Sbraon Branch	80	4-5

(b) Kalanur Canal. This canal runs in close proximity to Dhussi bund form Galri Headworks over Kanuni Nala at 5581 sheet P/8

i. Width 12-20 feet

ii. Depth 5-7 feet

(c) Kiran/Sakki Nala

i. A tributary of river Ravi. It rises in Bahranpur marshes ((gurdaspur) and joins Ravi North of Lahore. It runs parallel to Dhussi bund at a distance of 1.5 to 6 KM East

and forms and effective tank obstacle with the following data :-

aa. Width - 80 feet

bb. Depth - 15-20 feet

ii. The Nala is being improved at six existing crossing places between Kalanaur and Anjanal to make it into an effective obstacle.Following places astride bridges have been improved. The total length being improved is 20.8 KM :-

aa. Road Burdaspur –Dera Nanak.

bb. Road Batla Dera Nanak.

cc. Road Fatehgarh Ghurain –Dera Nanak.

dd. Road Fatehgarh Churain Ramdas.

ee. Road Chamisari –Gago Mahal.

ff. Road Ajnala –Dera Nanak.

(d) Hudiara Drain. It originates from Majitaha and flowing in South Westerly direction for 48 KM enters Pakistan near Qila Jiwan Singh 8504. Several other drains joins Hudiara Drain before it enters Pakistan.

(e) Rohi Nala. One of the longest water line in this Sector, originating from Marrar 3439 it enters Pakistan North East of Kasur. It crosses chunganwan Kem Karam drain though a syphon near Bberwal 8672 and flows parallel and adjacent to it upto Dholan 8168. The Nala has been improved from Dholan to mastgarh 7960. Width of Nala is 150 feet and depth 10 feet.

(f) Patti Nala. It originates from North of Qadian 6244 and terminates in River Sutlej. Runs a total distance of 96 KM. Patti Nala has been improved and it now outfalls in 0958. For new alignment refer to Annexure U and X. Width of the Nala is 80 feet.

(g) Chuganwan-Khem Karan Drain

i. A major tank obstacle from Ravi to Valtoha has been constructed by India after 1965 War along Indo Pakistan border. It originates from the old bed of river Ravi, near

Rani and flows in a general direction North to South at an approximate distance of 3 to 13 KM and ultimately terinates at nikasu nala, East of Khem karan. The drain has been made formidable by having concerete bunders, pill boxes along its entire length at regulator intervals.

ii. the drain has been dug to an average depth of 14 feet or 2 feet below the natural sub soil water level. Since it is entirely below natural ground level and in cut, no breaching of banks or flooding of the country side si possible.

iii. We have called it Chuganwan –khem Karan Drain for its entire length from Ravi to Valtoha. The Indian have given different names to different portions of this drain. These are as follows :-

	Name	Width	Depth (feet)	Bund heght (feet) Bank	(Indian Home)
aa.	Chuganwan Drain	80	10-15	10-15	
bb.	Atari Drain	80	10-15	10-15	
cc.	Hudiara Drain	100	15-20	4-5	
dd.	Gandi Wind	40-50	6-8		4-5
ee.	Mari Megha	80	10-15	15-20	
ff.	Valtoha Drain	80	10-15	15-20	

Drain

(4) Anti Tank ditches and Bunds

	Ditch) (Width x Depth Feet)	Bund (Width x height feet)
(a)	Dussi Bund	
	Kathalpur to Chanan Nullah (opposite Ikhlaspur to maqboolpur)	- 8-15 x 10
(b)	Khem Karan Ditch/Canal	80x12-15

b. Cisfrontier

(1) Canal. Main canals of interest are under :-

		Origin	Capacity (Cusec)	Width x Depth (feet)
(a)	BRBL	Bambanwala	4853 to 2198	142-125x15.4-5.5

i. The data given is between Ravi Syphon to tail.

ii. Brick lined upto Barki.

iii. Water supply dependent on availability of water at Mrala.

iv. Home bank is higher than far bank.

(b)	UBDC (Main)	Bedian	118	80x4-5

i. Fed from BRBL from Bedian.

ii. Is disused east of BRBL.

(c)	Dipalpur Canal (DPC)	Ganda singwala	1400	110-100x5-7

i. Dependent on water from BRBL-Complete obstacle if water is available.

ii. Both banks are higher (6 to 8)

iii. A number of distributors originate from it.

(5) Drains. Main drains in the area are as under :-

		Origin	Width x Depth (feet)
(a)	Wagha Drain	Ravi Syphon	50-60x8-10

i. Homeside bund 10-12 feet higher

ii. Can take 400 cusecs from UBDC Lahore Branch

iii. Head up arrangements for water exists through weirs.

iv. Runs parallel to border

(b)	Chattan Wala Drain	-	75 x 10-4

i. Extension of Wagha Drain

ii. Assumes name below the UBDC (main disused)

iii. Runs close to border at a distance of 50-1200 meters

iv. Home bank height 15 feet.

(c)	Hudiara Drain	85 x 8-10

i. Comes from India and flows in SW direction.

ii. Partial obstacles during dry season but effective during rainy season.

iii. Bank height above ground level is 2 feet.

79. Water Regulation (Appendix 2 to Annex C)

a. Beas River. Entire course is in India and is completely regulated.

(1) Pandoh Dam. The dam is situated about 113 KM upstream of Pong with the storage capacity of 33240 AF. Mainly used for generation of electricity. Transfers 9000 cusec water to Sutlej through Beas Sutlej link.

(2) Pong Dam. It is located 40 KM upstream of Mukerain and has storage capacity of 5.91 MAF.

b. River Sutlej. Through construction of Bhakra Dam, Nagal Dam cum Barrage, and harike Barrage, India has regulated the river with a total live storage capcity of 5.72 MAF. In conjunction with storage of Pong Dam, India can manipulate water to maintain the following flow pattern in the river :-

	Discharge (Cusecs)	Span (feet)	Sustaining Period (Days)
(1)	25000	1500-1800	Over 200
(2)	5000	3000-3200	Over 50
(3)	Over 1 Lac	Low to high flood condition	Over 5

c. Effects of Water Regulation On Military Operations.

(1) Indian Operations

(a) Ravi runs along the Indo Pakistan border from Madhopur to Ichogill, criss crossing the border. Thus for her offensive operations :-

i. India has the option of crossing the river in their own territory.

ii. The situation of near Zero flow below madhopur does not pose much problem in undertaking the crossing even where river flows inside Pakistan. However during wet weather crossing will pose considerable problem because of limited available regulatory capacity at madhopur a condition which will exist even after the construction of Thein Dam because of large quantities of available water.

(b) About 2500 cusecs can be released into Ravi by Pakistan through MRL escape downstream of Jassar creating a wet gap of about 1000 feet (6 to 10 feet depth) between Ramidian and Ravi syphon, which can seriously hinder the Indian operations but is subject to the availability of sufficient water at marala headworks.

(c) Other obstacle to be encountered by India is the BRBl which is an effective obstacle in this corridor. The manipulation of water in this canal will be affected from Marala and Sala Dam.

(d) If Rvi syphon is destroyed, it will drain BRBL into the river thereby drying up of both BRBL and dipalpur canal opposite Lahore Kasur sectors respectively.

(e) Similarly loss or destruction of Baloki Headworks will denude Balloki Sulemanke link canal of the water being fed to cnals emanating from Sulemanke hedworkd. Drying up of these canals will render the water based obstacles south of Sulemanki ineffective.

(f) In the event of offensive from Ferozepur Fazilka sector, india can dry up river Sutlej to suit her operations.

(2) <u>Own Operations.</u>

(a) During winter season, flow in Ravi is insignificant downstream of Madhopur. However India can create problems for Pakistan by direct regulation of Ravi as under :-

i. Presently through Madhopur, cause a sudden release of 5000-10,000 cusecs and disrupt floating bridges, or resort to fluctuating the span and water level by alternately incresasing and decreasing he discharge. This will prove problematic for Pakistan.

ii. After construction of Thein Dam, india wll be able to release a gigantic discharge (about 2 to 3 lac cusecs) creating flood conditions and will most certainly wash away all equipment bridges on Rvi, beside inundating large areas in Lahore, sheikhupura nd Faisalabad districts. Ravi water will also be availbale to India for transfer (through

MBL) to Beas and Sutlej for feeding Rajasthan and Gang Canals round the year.

(b) Intact capture of Madhopur headworks will place the control of the water of River Ravi in our hands and will facilitate operations more than if destroyed.

(c) By releasing water into Sutlej, own operation across Sutlej betwenHusainewala and Sulemanki stand disrupted.

80. Important Communication Centres

a. Transfrontier. Pathankot, Gurdaspur, Amritsar, Jullundur, Ferozepur, Muktsar
and Bhatind.

b. Cisfrontier. Lahore, Kasur Raiwind, Pattoki, Okara and Diplpur.

81. Attitude of Population. Transfrontier side is predominently Sikh area. Majority of Sikh population presently has anti-hindu feelings. They aspire to have an independent state of their own. Political unrest of sikhs can be exploited to our advantage. India is likely to have considerable problems in proteing L of C and rear areas security.

82. Strategic Importance. This sector has immense strategic importance for both india and pakistan because of Politico-economic senistivity and its military significance. Any gains or losses in this sector will have great impact and physical effects. Due to sikh insurgency and up risings, indians are highly sensitive to the possibility of offensive from pakistan. Any loss of territory in this Sector by inida can have far reaching strategic effects onot only East Punjab but also in IHK, as it can encourage secessionist movement.

83. Strategic Objective

a. Transfrontier. Bridges on Beas, amritsar and Pathankot, Harike and hussainiwala headworks, line of Rajistan canal/Sirhind Feeder and Bhatinda.

b. Cisfrontier. Lahore, shahdra Bridges, Balloki headworks, Bridges on BSL canal and Suleimanki headworks.

84. Strategic Approaches. Ravi Beas Corridor has a total capacity of four infantry divisions and an armoured division plus; while in the Ferozepur sector, pakistan can employ about three infantry divisions with some armour.

a. From India

(1) Lahore/Shahdra. This approach originating from Amritsar, Tarn Taran and Patti, threatens Lahore/Shahdra from the directions of Wagah, Bedian and Burki. Using all the available penetrants, it has the capcity of

about three infantry divisions and an armoured divison minus. The space for manoeure is extermely limited in this approach because the effect of conurbation is maximum.

(2) Kasur/Raiwind. Originating from patti and Ferozepur, it threatens kasur/Raiwind and then has the option of heading toward Lahore or Balloki. Using all penetrants, it has the capacity of approx 2/3 infantry divisios and an armoured division minus. The base of this approach is initially divded by River Sutlej but it subsequently converges on to Kasur/Raiwind.

(3) Jalalabad –Kanganpur. Originating from Muktsar, it goes via Kanganpur to the bridges on BSL and finally to Ballowki headworks. Its capacity, utilising all the penetrants, is approximately two infantry division and one armoured brigade. The comunication infra structure and going between Jalalabad and kanganpur is poor and would need engineer effort.

b. From Pakistan

(1) Lahore-Amritsar. It leads to Amritsar from where it threatens ridges on River Beas. Can take approx two infantry divisions and an armoured brigade.

(2) Lahore Barki harike.It leads to harike Headworks and then to bridges on River Beas. Can take an infantry division and armoured brigade.

(3) Kasur Patti. It leads to Patti and thereafer to Harike Headworks or further noth to bridges on River Beas. Can take an infantry divison and an armoured brigade.

(4) Kasur Khem karan Ferozepur. It leads to Ferozepur and line of Fajistan Canal/Sirhind Feeder. Can take an infantry division and armoured brigade. Involves fighting in built up area initially.

(5) Kasur Khem karan Muktsar. It involves river crossing and has poor communication infrastructure initially. Leads to Eastern Canal/Bikaner Canal and thereafter to Muktsar/Line of Rajistan Canal Sirhind Feeder. Can take an inf div minus.

(6) Suleimanki-Fazilk-Malaut/Abohar.It can take an infantry division but has considerable problem of assembly of forces and river crossing.

85. Priority of Approaches. Considering the capacity and trafficability of the appraoches and the strategic objectives they threaten, following priority emerges :-

a. Approaches Leading from Inida

(1) Kasur Raiwind.

(2) Lahore Wagah.

(3) Jalalabad Kanganpur.

b. Approaches Leading from Pakistan

(1) Kasur Patti.

(2) Lahore Barki Harike.

(3) Lahore Amritsar.

(4) Kasur Ferozepur.

(5) Kanganpur jalalabad.

(6) Suleimanki Fazilka.

86. Forms of Strategic Manoevure. The shae and alignment of border and the layout of cisfroniter communication infrastructure places India on exterior lines, conceding the advantage of interior lines to Pakistan. However classic manoeuvre based on converging axes generally associated with exterior lines cannot be developed.

87. Critical Space

a. Transfrontier. The space bounded by Valtoha Bhikkiwind-Tarn Taran harike headworks is critical as it affords the offensive force to develop operations towards nroth and south taking flank protection from Rivers Sutlej/Beas. This is the most riposte by Pakistan.

b. Cisfrontier. A foot hold gained in the space enclosed by lahore Raiwind Kasur allow an offensive force to threaten multiple strategic ojbectives. Its retention by defender allows the option of riposte or counter offensive. The Triangle Lahore Rawind kasur is therefore the critical space.

88. Pivots of Manoeuvre

a. Transfrontier. Amritasar in Ravi Beas Corridor and Muktsar/Faridkot in Ferozepur Sector Privide balance and offer options to develop mulitidirectional operations across Ravi, towords Lhaore /Kasur and Kanganpur areas.

b. Cisfrontier. Raiwind serves as an ideal pivot of manoeuvre to capitalise on the time and space advantage of interior lines. It provides balance to own system of forces and simultaneously denies the enemy the capbility to unablance the defence.

89. Strategic Posture

a. Enemy. It is a compulsion on India to adopt adopt a forward defence posture all along the Ravi Beas Corridor. However, in Ferozepur Sector, successive lines of defence along the canals are available and somewhat rearward posture may be adopted except in hussainiwala Headworks where she must offer spot resistance.

b. Own. Lack of depth and the vulnerablity of the strategic objectives dictate an overall forward defensive posture.

90. Offensive Options

a. Enmy

(1) Most dangerous offensive option availabel to India is to develop two directional threat to lahore from Amritsar and Kasur/Raiwind, simultaneously threatening Balloki headworks. This can foreclose own offensive options in Ravi Beas Corridor.

(2) Capture of Shejra Salient would afford better defence balance.

(3) Any offensive towards Amritsar and Beas bridges can be coutered by threatening Ballowki across River sutlej.

(4) Ravi Beas Corridor outflanks own defence in Ravi Chenab Corridor. Development of operation across River Ravi in conjuction with offensive in Rvi Chenab corridor could be highly advatageous to India.

b. Own

(1) Notwithstanding terrain difficulties, Ravi Beas corridor Provides most suitable avenue for launching of offensive by Pakistan from the direction of Kasur. The strategic objective are well within reach; River Beas providing and ideal defence line to consolidate the gains achieved and improving own defence posture. The defence resting on River Beas would reduce requrement of troops for its defence. It would also provide security to Ravi Chenab corridor and isolate IHK from rest of India.

(2) Two directional threat can be developed against Ravi Beas Corridor from Ravi Chenab cooridor and from Kasur.

(3) Capture of Khem karan would provide security to Sehjra Salient.

91. Time and Space Implications

a. Enemy would enjoy superior straegic origentation as she can threaten/capture our core areas earlier than we can devlop threat t her sensitive areas which are located compartively in depth.

b. Better developed communication infra structure affords us to optimise the advatage of operation interior line.

c. Limited depth imposes limitations on our capability to assess enemy's intentions, size of forces, and the direction his effort. However, operations across River Sutlej will be slow resulting in loss of surpirse.

92. Communication Imbalance. Destruction of bridges and blocking of choke points by helicopter/para commando troops can create serious vulnerabiliteis. Shahdra Bridges, Ballowki headworks and the bridges on BSL Canal are the main choke ponts on cisfrontier side. On the transfrontier side, bridges on River Beas, Eastern/Bikaner Canals and Rajistn Canal/Sirhind Feeder are of immense important to India. Protection of the bridges and provision of bridging eqipment near important bridges becomes necessary.

93. Type and Scale of Oeprations. The pronounced effect of conurbations and the overall cogestion of space in Ravi Beas Corridor renders generation of major effort rather difficult. Employment of large scale mech forces will suffer from other limitations like canal network ditches and def bunds. Therefore, an auxiliary or maxium a secondary effort of the enemy can be expecteed in this corridor. Securing bridges intact is required to facilitate speed of operations. Numberous water channels place exorbitant demands on engineer/bridgine equipment. Deu to highly developed obstaolon sytem on both sides of border, vertical envelopment becomes improtant.

94. Suitable Time for operations. Suitable time for imitary operations is October to March, dictated by climate, moonsoon rains and river flow

South of Sutlej (Annex D)

95. General Description. This **Secotr extends from Sulaimanki headworks in the east to Salmasar in the west**. On the cisfrontier side it is enclosed by BSl canals, River Ravi, line Salamsar- Panjand and the international boundary. On the transfrontier side, it comprises the Indian districts of Ganganagar and parts of Punjab and Haryana Sates. The area is generally flat, open and extensively cultivated except some barren patches due to water logging and salinity.

Communication infrastructure on both sides of the border is well developed. Trafficability/going is good and suitable for movement of wheels and tracks. Water table gets progressively lower from nrth to south Rainfall is scarece.

96. Cisfrontier. Cisfrontier area is known for the growth of cotton. The climate is hot and ample water is avialable for irrigation. The SW fringes taper off in the Cholistan desert. Area is compartmented by a number of water channels flowing in the NE SW direction. Any move from SE to NW cuts across the gain of the country and has to negotiabte successive lines of water obstacles. River Sutlej divides the area into two distinct havels. Class 70 crossing are available at Sulaimanki Tibbi lal Beg Islam headworks. Mailsi and Bahwalpur. Other crossing sites on River Sutlej are lakha, Sahuka, Pir ghulam Qadir and Pir Ghani Northen half has an excellent road commuication and East West rail links, contains strategic ojbectives and is suitable for large scale operations. In the southern half, areas of mandi Sadiq Ganj Minchinabad, Bahawalnagar and Dunga Bunga, being extensively water logged, are not suitable for large scale mechanised opertions. This part is dominated by headworks and canals exending upto line islam headworks harunabad/Signai headworks. Area west of line harunabad- Chishtaian Mandi is highly suitable for large armour operations. Desert area lies south and SW of general line Hasilpur fort Abbas having poor communication infra structure, sparece population and lack of water obstacle except hakra canal with its tail at Marot. Important communcation centres are Sulaimanki minchinabad, Bahawalnagar, Harunabad, Chishtain Mandi, Fort Abbas Dipalpur, Pattoki Okara, Bahawalpur and Panjnad. (Ftrafficability map at Appendix 1 to Annex D)

97. Transfrontier. Here too, the area is divided into two lateral halves by the Rajistan Canal. The eastern half has the communication base at Bhatinda and Sirsa from where several roads emandate west wards crossing the Rajistan Canal and linking with the communication centres in the western half. The area is plain and cross country movement is generally feasible. In the recent years efforts are being made for improvement of communication centres in the western half comprising Fazilka, Abohar, Ganganagar, Hanumangarh, Raisinghnargar Anupgarh and Surategrh.

Communication Infra – Structure.

98. Roads

a. Transfrontier. The area has been grandually brought under cultivation. New settlements create the need for communication network. Since 1947 the area has seen a marked improvement in the number of newly constructed roads :-

(1) Penetrants

(a)	Abohar – Fazilka	-	70A2
(b)	Malaut –Abohar –Hindumalkot	-	70 A2/9A1
(c)	Ganganagr –Sri Karanpur	-	40 A1
(d)	Ganganagar –Dullapur	-	40 A1
(e)	Surategarh –Anupgarh	-	40 A1
(f)	Satjanda –anupgarh	-	40 A1

(2) Laterals

(a)	Sri Karanpur- Raisingh Nagr Anupagarh.	-	40 A1
(b)	Fazilka-Hindumalkot	-	40 A1/9A1
(c)	Fazilka-Ganganagar-Surategarh	-	70 A2
(d)	Abohar –Hamumangarh Rawatsar/Surategarh	-	70 A2/40 A1

b. Cisfrontier

(1) Penetrants

(a)	havli –Sulaimanki	-	50A1
(b)	Sahiwal-Arifwal-Tibbi	-	70 A2/9A1
(c)	Chishtain mandi-Harunabad	-	50 A1
(d)	Chishtian Mandi-Dharanwala	-	50 A2
(e)	Bahawalpur –Yazman/Kudwala	-	70 A2/50 A1

Marot-Fort Abbas (from Kudwala to Marot only class 40 F1)

(2) Laterals

(a)	Okara –Khanewal Multan Bahawalpur-		70 A2
(b)	Multan Vehari –Pakpattan Haveli Dipalpur-		70 A2
(c)	Bahawalpur-Bahawalnagar	-	50 A1
(d)	Bahawalpur-Bahawalnagar-Sulaimanki-		70 A2
(e)	Bahawalpur-harunabad Fort Abbas	-	30 A1
(f)	Fort Abbas Marot	-	40 F1

99. Railways

a. Transfrontier

(1)	Hindumalkot –Ganganagar	(Board guage)
(2)	Rawatsar-Surategarh-Sarupsar-Anupgarh	“
(3)	Hanumangarh-Sarupasar	“

(4) Gauganagar-Siri Karanpur-Raisingh nagar- Sarupsar (Meter guage)

(5) Suratégarh-Bikaner (broad guage)

b. Cisfrontier. All are broad guage.

(1) Okara –Multan.

(2) Haveli-Arifwala-Vehari-Lodran

(3) Multan –Lodran-Bahawalpur.

(4) Bahawalpur-Hasilpur Bahawalnagar Minchinabad.

(5) Bahawalnagar- Dunga Bunga-fort Abbas.

100. Airfields

a. Transfroniter. Suratégarh, Bahatinda, Sirsa and Bikaner, Hanumangarh and Mehajan are under construction.

b. Cisfrontier. Vehari and Multan.

101. Obstacles

a. Transfroniter. (Appendix 2 to Annex D) main cnals and ditches/bunds are as under :-

		Origin	Capacity (Cusec)	Width x Depth (feet)
(1)	Eastern Canal	Hussainiwala HW	3320	150 x 8
	(a) 109.43 KM in length			
	(b) Is not lined.			
	(c) Addl water through Ferozepur feeder.			
(2)	Banker/Gang Canal	Hussainiwala HW-	2720	100-80x18-5
	(a) Below hindumalkot it is called gang canal and is lined throughout			
	(b) Service tracks exists on bot sides			
(3)	Ferozepur Feeder	Harike HWs	11000	180x20
	It is 17.7 KM in length. Provide water to Gang Canal.			
(4)	Sirhand Feeder	Guridittwal HW	4762	118-100x20
	(a) Takes off from Guridittiwal HW on Ferozepur Feeder.			
	(b) Feeds branches of Sirhand canal.			
	(c) Runs parallel to Rajistahan feeder.			
(5)	Rajiasthan Feeder/Canal	Harik Headworks	18500	210-180x28-18

(a) For first 216 KM length, it is called Feeder, while remaining 469 KM is called Rajasthan Canal.

(b) Now the canal is renamed as “Indra Canal” and is lined throughout.

(c) Service tracks exist on both sides planned to build class 70 road on home bank.

(d) Presently water is running upto Ramgarh. Its construction is planned upto kandla.

(6) Fida Qutfall drain - - 120x5

Can be fed from Sirhind or Eastern/Bikaner Canals.

(7) Chand Bhan Drain. It is 20 to 180 feet wide and 8 to 6 feet deep.

(a) It runs westwards across twin canals and after crossing bikaner and Eastern Canal, it joins Sutlej near Fazilka.

(b) It has 8-10 feet high bank on northern side.

(c) It is joined by following main drains near chand Bhan village.

i. Jalalabad Drain - (80x7-8)

ii. Barkat Wah Drain - (80-60x7-8)

iii. Tarobi Drain -

(8) Saburna Drain. It consists of Sabuna drain and Sabuna distributry and is effecive obstacle.

(a) Sabuna Drain. It is formed by Sabuna Nala, Kuranwala and Jahilwala drains and joins fazilka distributry near Aisfwala. It is 30-30 wide and 8 feet deep.

(b) Sabuna Distributry. It originates from Gang Canal south of Jand Wala (44 J/4) and runs parallel to Indo-Pak border so as to prtect fazilka from south west direction. It is 105 feet wide and 10 to 14 feet deep. On home bank, there is 10 to 18 feet high low lying area towards its tail end is possible.

b. Cisfrontier

(1) River Sutlej. It is completel regulated by India. About 18500 cusec water available at Sulemanki through BS lineks can be fed into the river for making it an effective wet channel but then Eastern Sadiqia (ESC) and Ford Wah canals.

(2) BS Link –1. It is a link between balloki and sulemanki hedworks and feeds water to Sulemanki headworks. It is 250 to 300 fet wide and 12 to 15 feet deep. Its designed capacity is 12000 cusecs.

(3) BS Link –II. It is also a link between Balloki Sulamanki headworks. It is 150 to 200 feet wide and 12 to 13 feet deep. Its designed capacity is 6500 cusecs. Primarily. This canal is designed to take the overflow of water from BS link and has common bank with BS link –I. All the three banks are almost at equal heigh from the surrounding area.

(4) Eastern Sadiqia canal. (ESC) Origniates from Sulemanki HW and is an effective obstacle.

(a) Wet Span. 250 feet.

(b) Width from Bank to Bank. 275 feet.

(c) Depth. 10 feet.

(d) Height of Bank. 10 to 15 feet.

(f) Speed of Currant. 4 to 5 feet.

(5) fordwah Canal. Originates from Sulemanki headworks (left bank) runs parallal to Eastern Sadiqia canal upto RD 29 and then flows NE to SW. It tails off at sq 5213 (map 44 F/4) near Bahawalnagar. Road Sulemanki –Bahawalnagar runs along homw bank of this canal details of the cnal are :-

(a) Wet Span. 180 feet

(b) Width. 210 feet

(c) Depth. 8 feet

(d) Height of Banks. 10 to 15 feet.

(e) Speed of Current. 3 to 4 feet per second.

(f) Discharge. 34 cusecs.

(6) Harkra Brach. It take off from tail ESC at Jalwala and runs parallel and close to border. Its dimesions are 110-95 ftx 5.5 feet and is effective obstacle upto Wullar. Thereafter it flows to Fort Abbas and Marot where it is partial obstacle.

(7) Pakpattan Canal. Originates from Sulemanki Headworks with maximum discharge of 6, 594 cusecs. Main characteristics are :-

(a) Width. 205 feet at head upto RD 52, 145 feet at Rd 218, 124 feet at RD 266 and 108 feet at RD 384.

(b) Depth. 12 feet at head upto RD 52, 8 feet at RD 218, 266, 7 feet at RD 384.

(c) Wet Span. 180 feet.

(d) Height of Banks. 10-15 feet.

(e) Seed of Currant. 2-3 knots.

(8) LBDC. This canal originates from Balloki and runs parallel to main railway line (Lahore Karach) as well as national highway Lahore Multan. This is one of the major canal flowing from NE to SW. Width of this canal varies. From 200 to 240 feet with depth ranging from 10 to 13 feet, with discharge of 700 cusecs. 9 F1 service tarck exists on southern bank.

c. Scarp –VIII (Appendix 3 to Annex D). This is a land reclamation and salinity control project covering the area Bahawalpur and Bahwalnagar districts scheduled for completion in 1992. It consists of three main drains which are of defence importance main points of which are as under :-

		Width	Depth
(1)	Chistian Drain	100	5-7
(2)	Link Drain –1	65	4-5
(3)	Link Drain –2	58	4-5

(4) Pondage covers area north of Fort Abbas Marot as shown the Sketch. (Part of 6 R Hakra command management Project

102. Suitable Time for Operations. Keeping in view the climate, monsoons, and river flow, most suitable time for military operations is from October to March.

103. Attitude of Population.. On the transfroniter side, the population is pre dominatly Hindu. Thus India will be no problem of rear area security. On the cisfrontier side, area south of River Sutlej is being reclaimed from the sesert mainly by the settlers from Central Punajb. They will be highly partiotic to national cause.

104. Strategic Importance. This Sector is of particular important to India because of various reasons. Firstly, It affords large scale employment of mech forces for which adequate transfroniter communication infrastructure has been developed. Secondly the effects of a major effort in this sector can be combined with other efforts in the NE as well as to the Se. Thirdly, a major success across River Sutlej would directly threaten Central Punjab. Fourthly, in this sector, Pakistan cannot threaten any worth while strategic objective to nutralise the Indian offensive quickly. For the above mentioned reasons, this sector is likely to be the avenue of Indian Main effort in any future war.

105. Strategic Objectives.

a. Transfrontier.

(1) Fazilka.

(3) Ganganagar.

(4) Suratgarh.

(5) Lines of Gang Canal and Rajistan Canal.

b. Cisfrontier.

(1) Sulamianki Headworks.

(2) Islam Headworks and Mailsi Syphon.

(3) Crossing sites/bridges on River Sutlej.

(4) Bahawalpur and Panjnab.

(5) Okara/Sahiwal.

106. Strategic Approaches. This zone has the capacity to take 6/7 infantry divisions and at least two armoured/mech divisions. Considering the capacity of the approches, the trafficability and the friction of the terrain, the approaches in order of priority are :-

a. From India.

(1) Fort Abbas/Marot Approach. Originating from the base at Suratgarh , this approach leads to Anupgarh/Rojri Fort Abbos/Marot - Mailsi Syphon/Islam Headworks/Chishtian Mandi. From Marot it has the option of going towords Bahawalpur/Panjnab via Yazman. However, for this strategic orientation, securing of Fort Abbas and Marot ewill be essential besides improving cisfrontiercommunication infra-structure west of Marot. This would result into delay and loss of momentum of the offensive. The approach is ideally suited for integrated infantry/armour operations as it avoids the obstacles south of River Sutlej. Its capsacity is two to thre infantry divisions and an equivalent of two armoured divisions.

(2) Harunabad Chishtian Mandi Approach. Having its base at Suratgarh, this approach strikes at Harunabad/Wallar via Raisingh Nagar. It proceeds to line Chishtian – Hasilpur and then onwords to Mailsi Syphon,Islam. Headworks and Lakha/Sahuka crossings on R iver Sutlej threatening Vihari – Burewala. This approach is suitable for combiuned infantry – armour operaions and can take approximately two infantry

division and an armoured division. However,traficability of area around Harunabad is not good.

(3) Sulaimanki Approach. Originating from Malaut this approach leads to Sulaimanki Headworks from fazilka,straightaway threatening our strategic depth. Once a bridge head has been established at Sulaimanki the approach has multiple options of swinging north to Dipalpur/Ballokiu or going west to Pakpatton – Sahiwal/Chichawatni or Burewala Vihari – Mailsi thus turning the flanks of defence based on River Sutlej or any line across it further south. Armour/mech forces can only be inducted once bridge head has been secured at Sulaimanki as the going is difficult till the crossing of River Sutlej. Therefore, initially the capacity of approach is limited to an infantry division with some armour. This approach can be combined with Jalalabad Kanganpur Approach in Ravi – Sutlej Corridor.

(4) Bahawalnagar – Minchinabad Approach. This Approach leads from Ganganagar towords Bahawalnagar – Minchinabad/Mandi Saddiq Ganj. Having crossed the most difficult canal network and bog in the area, the approach crosses River Sutlej at Tibbi Lal Beg and Pir Ghulam Qadir/Pir Ghani crossings to threaten Burewala – Arifwala – Pakpatton.Initially, can take an infantry division plus.Upto River Sutlej, operations will be predominantly infantry based. Once across River Sutlej, the approach can take two infantry divisions alongwith armour.

b. From Pakistan.

(1) Fort Abbas – Anupgarh – Suratgarh Approach. Leads to enemy's base of operations at Surategarh. The area is open with capacity to take 2/3 infantry division and an armoured division.

(2) harunabad- Raisingnagar –Sarupsar/Ganganagar Approach. It threatens both Suratgarh and Ganganagar. Line of Gang Canal provides a food intermediate line of defence to rest the offensive. It has the capcity to take an infantry division plus and an armoured brigade and mutually support with For Abbas –Surategarh Approach.

(3) Mandi Saddiq Ganj Abohar Approach. Originating from Mandi Saddiq Ganj it has the option of either going to Ganganagar or Abohar. This appraoch cuts across difficult canal network and is not suited to large

scale mech coperations. Can take an infantry division plus with some armour. It may be used in conjuction with Sulaimanki or Harunabad approaches.

(4) sulaimanki Fazilka Approach. A direct and short Approach that threatens Fazilka and other population centre. It can take an infantry divison with some armour. It is a compulsion of pakistan either to defend Sulaimanki in strength or lauch a liited offensive for gaining depth for the vulnerable area.

107. From of Strategic Manoeuvre. Pakistan is on the exterior lines while Indians are operating on interior lines in this sector. India can either employ frontal rupture of own defences at Sulaimanki and Harunabad/ Chishtian Mandi and then once across river sutlej aim at closing the pincers at Sahiwal/Okara, or a combination of frontal rupture at Harunabad- Chistain mandi and a turning move from the direction of Marot joining pincers at mailsi Syphon Islam headworks/Lakha initially, and later developing enveloping manoeuvres north of River Sutlej. Pakistan, on the other hand can opt for enveloping manoures from the south alongwith frontalfixation in the centre and north aimed at absorbing area west of Gang Canal.

108. Strategic Posture. Adequate depth, except in Sulaimanki area, is abaliable allowing a comparatively rearward posture aimed at causing maximum attrition and then launching the counter offensive to restore the integrity of our borders. Difficult nature of terrain in the north and availability of successive lines of defence favours a defence posture iitially. However, and offensive posture in Sulaimanki at the outset will pay dividends by enhancing our defence security in the north. India, on the other hand, can adopt both the destruction or space oriented strategy in the southern part of this sector. This creates major dilemma for the defender who will be forced to defend line Marot fort Abbas strongly to deny the space oriented option of absorbing territory south of River Sutlej inclduing Bahawalpur Yazman and Panjand. Thus overall, a combination of forward and rearward posture is inicated for Pakistan. Because of the extended frontages only the main penetrants need to be defended in strength. Salamsar area may e just kept under observation. India is likely to adopt a forward defensive posture to protect the base of his offensive manoeuvre and to prevent a initial setback to his offensive designs by a pre emption from Pakistan in this sector.

109. Strategic Depth. Sulaimanki Headwors lying precariously close to international border forms the nodal points controlling the flow fo water into river sutlej and the canal system north and south of it. A thrust in sulaimanki area takes the enemy stright into our

strategic depth turning the flanks of defence based on river sutlej or line south of it.forcing a battle of reversed fronts. In the south our strategic depth rests along line Bahawalnagar Chishtian Mandi hasilpur Khairpur.

110. Critical Space. On the cisfrontier side, suleimanki Headworks and denial of triangle chistain mandi Hasilpur Dharanwala/Murad Distributry is critical to the defence of this sector. For launching of the counter offensive, retention of general area chishtian hasilpur Islam headworks Lakha Tibbi Lal Beg is necesasry for the induction of own strategic reserve south of river sutlej. Strategic reserve can also be inducted from the direction of Bahawalpur for which retention of Yazman/Kudwala will be essential. On the transfrontier side, area Fazilka, Ganganagar and Triangle Raisingh Nagar Sarupsar Anupgarh is critical.

111. Pivots of Manoeuvre.

a. Transfrontier. Sri Karanpur, Raisingh nagar and Anupgarh in forward areas, and Ganganagar and Surategarh in depth would serve as piots of enemy manoeuvre.

b. Cisfrontier. Yazman, marot fort Abbas , Yatimwala and Dharanwal/Chhonnawala in forwarde areas, and Arifwala and bunga Hayat in dept can serve as pivots of manoeuvre.

112. Offensive Options

a. Enmy. Simultaneous attack across sulaimanki and Fort Abbas can create dilemma for the employment of own strategic reserve. A wide turning move around Marot can also cause dispersal of own forces due to a possible threat to Bahawalpur via Yazman.

b. Own. Limited offensive against Fazilka can improve own defensive posture pre emption directed against triangle Anupgarh- Raisingh Nagar Sarupsar can forclose Indian large scale offensive designs in this sector.

113. Time and Space Implications

a. Communication/mutual support between sulaimanki and southern approaches due to the alignment of River Sutlej and other water obstacles is rather tenuos and lengthy. In case of forward defensive posture the imbalance gets fruther accentuated necessitating of reserve. Security and control of crossing sites across river sutlej is eseential requirement for the conduct of defence battle.

b. In area west of Line Chishtian Mandi Harunabad, the terrain affords advantage to attacker vis-avis the defender.

c. For remaining areas, the terrain favours the defender by slowing down the attacker. However, own reaction time in sulaimanki area is dangerously short.

114. Communcation Imbalance

a. Crossing places for tanks and heavy vehicles over river sutlej are lited to Sulaimanki, islam headworks Tibbi lal Beg and Bahawalpur. This can prove to be a serious handicap for the nove of own mech forces north and south of the river.

b. There are no lateral links between the three parallel railway lines astride rivers sutlej and raavi. Switching from one to the other is possible through lodhran and Sama Satta which is cicuitous and time consuming.

c. Indian have also the problem of shifting of forces by rail from Ganganagar southwards to raisingh Nagar because only the meter guage railway track si available in this sector.

115. Effects of Water Regulation on Operations

a. Indian Operations

(1) Indian offensive south of sutlej will cut across water obstacles Eastern Sadiqia/Hakra cnal, Fordwah canal, River Sutlej, khadir Branch and Pakpattan canal.

(2) All these obstacles are regulated at sulemanki heaworks, Although river sutlej is fully regulated in India, yet Pakistan can keep all the afore mentioned canlas at full supply level though BSl link canals. Control of Sulemanki Headworks figures out prominently in Indian operation south of Sutlej.

(3) To facilitate their offensive, indian would control the flow of River Sutlej, limiting the span well within their bridging capbility. Nevertheless, span of the river south of sulemanki headworks can be maintained at 1000-1200 feet by diverting 18500 cusecs of water being received fromBSL canals thus complicating the bridging operations for the Indian. Any damage to BSL Canals will dendude Sulemanki Headworks of this precions quantity of water rendering the obstacle system inffective thus facilitating Indian operations.

(4) In the event of enmy limiting her operatons to areas south or east of river sutlej (expanding toward Bahawalpur, India can create flood condition inriver sutlej right at the outset by discharging upto 3.5 lac cusecs for 2-3

days. This situation will preclude crossing of sutlej except through permanent bridges only.

b. Own Operations

(1) For an offensive into India in Ganganagar sector from the area south of sulemanki headworks, we shall have to cross River Sutlej in own area. TO avoid cirecuitous rotues, equipment bridge crossing will have to be provided at sutable places in case permanent bridge at Tibbi Lal Beg (near Bahwalnagr) is knocked out by enemy action. The Indian have the capability to hinder our bridging capability by releasing large quantities of water or totally disruping communication by large scale flooding. Alternatively, India can rsort to fluctuations in the water creating bridging problems warranting versatility in requirement of road expendients.

(2) On the india side, for an offensive extending upto Rajastthan Canal, no worthwhile water obstacle except Bikaner Canal, is encountered. Bikaner canal being at tail end, would have lost its effectiveness as an effective obstacle.

CHAPTER IV

DESERT ZONE

116. General Description (Sketch at annex E). This **zone extends from Salamsar in the north to the River Indus Delta in the south, a total stretch of approx 1000 kms. The international boundary runs through the Thar and Cholistan desert of which only one third lies in Pakistan. On the transfrontier side it comprises Indian districts of Bikaner, Jaisalmer and Barmer and the cisfrontier include Sukkur Division, Hyderabad Division and Rahim Yar Khan district.** Its vastness and extremely extended frontages characterize the area. Astride the border and for most part of transfrontier, it is covered by stitches of Sand with shifting and stables dunes. They lend themselves favourabley to operations by armoured and mech forces. Salient characteristics of cisfrontier and transfrontier tarriance:-

a. Cisfrontier. The area can be longitudinally divided into two distinct portions the desert belt and **green belt**. The dividing line between the two is running along Jarewala Rajarwali Gabbar Khipro Chhor Umarkot Nabisar Naukot Kalai and Mara/Rahim ki Bazar. The desert belt is thinly populated. Lack cover is scarce of water sources and is devoid of meaningful communication infra structure necessary for large-scale operations. It is interspersed with series of longitudinal dunes called Bhits spread at intervals varying from two to five kms between successive line of Bhits. Flat valley called Dhars connects the dunes. The Green Belt, on the contrary is thickly populated has ample cover and adequate communication infrastructure to sustain large scale operations. It is loaded between 20 to 150 KMs in depth from the border. Important sectors are :-

(1) **Reti-Rahim Yar Khan.** The d**epth of desert in this vital area is merely 40 KM. An Indian offn in the sector poses a direct threat to our main L of L (National Highway).**

(2) **Chhor.** The **mixnmum depth of desert, in Chhor area is 50 KMs. The strategic objectives are located well to the rear in green belt.** (Tank Going Sketch at Appendix –1)

b. Transfrontier. On the transfrontier side the area is all desert stretching upto a considerable distance in depth. However, inspire of the desert their communication infrastructure is reasonably well laid out and is being

thoughtfully developed together with water sources through tube wells and the Rajistan Canal. Indian Ramgarh Salient treatens own L of C in Reti Rahim Yar Khan area.

117. Salient. There are a number of salient created by the configuration of the international border which exert significant influence on operation in each sector :-

a. Islamgarh Salient. This salient jutting into the base of Ramgarh Salient from the north places Pakistan in position of advantage as it threatens Kishangarh Salient as well as Indian base of operation against Reti Rahim Yar Khan Sector at Ramgarh.

b. Kishangarh Salient. With its combined base at Ramgarh, this salient provides an ideal jump off base of operation to India against Rahim Yar Khan.

c. Khokhropar Salient. Indian Salient in Chhor Sector which reduces the distance to green belt at Chhor and Umarkot.

d. Gardra Salient. This Salient dominates and drectly threatens enemy L of C to Khokhropar Salient. As long as it is held by own troops no offensive can be developed by the enemy on Khokhropar Axis.

f. Nagarparkar Salient. Located in the extreme SE, its distance and difficulty in access, makes it rather problematic for Pakistan to protect.

118. Communication infra –Structures

a. Roads

(1) Transfrontier

(a) Penetrants

i.	Jaisamir Munda-Bhutewala	-	9A1/9F1
ii.	Jaisalmir-Ramgarh-Tanot	-	18A1
iii.	Ramgarh Sadhewala.	-	18A1
iv.	Ramgarh-Langanewala	-	9A1
v.	Jaisalir Miajlar Sundra	-	9A1
vi.	Jaisalmir/Bikaner Sheo Harsani Munabao	-	40A1/80A2
vii.	Barmer –Ramser-Munabao	-	40A1/80A2
viii.	Barmer-Chohtan Kelnor	-	24A2
ix.	Bhuj-Dharamsala-Wajokot	-	80A2/9F1

(b) Laterals

i.	Anupgarh-Barsilpur-Ranjit pura	-9A1

ii. Tanot-Shahgarh-Miajlar -9A1

iii. Suratgarh (along Indra Canal)- 30A1
Sri mohangarh-Jaisalmer

iv. Bikaner-Phalodi-Jaisalmir - 70A2

(2) Cisfrontier

(a) Penetrants

i. Yazman-Dingarh-Rehnal -70A1/12F1

ii. Ahmedpur East Derawar Fort -9A1/12F1
Nawakot Binjnot –Slamsar

iii. Khanpur-Gulmarg -24A1

iv. Rahim Yar Khan gulmarg -70A1

v. Gulmarg-Bhagla -24A1

vi. Bhagla Islamgarh -9F1

vii. Sadiqabad Manthar -50A2

viii. Reti Khinjo Sandh -9F1

ix. Hyderabad-Mirpur Khas -50A2
Umarkot Chhor

x. Umarkot/Chhor Khokrapar -50A2/9F1

xi. Umarkot Khinsar Gardra -9F1

xii. Umarkot Chachro-Riwatsar -9F1

xiii. Naukot Diplo Jatrai -9F1

xiv. Hyderabad talhar Badin Rahim -70A2/9F1
Ka Bazar

(b) Laterals

i. National Highway -70A2

ii. Nawab Shah Sanghar -30A2/50A2

iii. Naya Chhor Umarkot Nabisar–Badin -50A2/9F1

b. Railway

(1) Transfrontier

(a) Jodhpur-Phalodi-Jaisalmir - (Meter guage)

(b) Jodhpur –Barmer-Munabao- - “

(c) Surat garh-Bikaner - (Board guage)

(d) Bikaner Phalodi (Broad Guage under construction)

(2) Cisfronter

(a) Lahore Karachi - (Broad Guage)
(b) Hyderabad-Mirpur Khas - "
(c) Hyderabad Badin - "
(d) Mirpur Khas Khokropar - (Meter guage)
(e) Mirpur Khas Naukot loop - "
(f) Mirpur Khas Nawab Shah - "

c. Airfields

(1) Transfrontier

(a) Jadhpon
(b) Bkaner.
(c) Barmer.
(d) Jaisalmir.
(e) Phalodi (Under construction)
(f) Nalyia.
(g) Bhuj.
(h) Jamanagar.
(j) Ahmedabad.

(2) Cisfrontier

(a) Nawab Shah - (Jet capable)
(b) Hyderabad - (Non jet capable)
(c) Mirpur Khan - (Non jet capable)
(d) Bahawalpur - (Non jet capable)
(e) Karachi - (Jet capable).
(f) Badin - (Not jet capable)

119. Obstacles. The desert itself is the bigest obstacle. Main obstacles are :-

a. Transfrontier

(1) Who zone is a prime desert. Sand dune scarcity of water, extremely hot summers and shifting nature of sand make it highly inhospitable in summers. The rains improve the going.

(2) Indra Canal. It takes off from Harike Headworks. Presently, it has been completed upto Ramgarh but is being extended upto Barmer. Whole canal is brick lined to save water losses. It is an obstacle with following data.

		Near Rawatsar 7834 (44 K) Near Ramgarh	
		(feet)	(feet)
(a)	Width	120	50
(b)	Depth	21	18

b. Cisfrontier. (Appendix 1 to Annex E). Non existance of roads in the desert belt and loose sand dunes impose serious restriction on movements. Details about main drains and SCARP VI project is as under :-

		Origin	Width (feet)	Depth (feet)
(1)	Rahim Yar Khan Sector			
(a)	Nara Canal	Sukkur Barrage	350	16

i. It runs 48 KM –96 KM away from border.

ii. 161. 6 KM long.

iii. Used for irrigation ahead of Jamrao HW

iv. Discharge –7888 cusecs

(b)	Sadiq Branch	Panjnad	21.5	7-6

i. Length from Rahim Yar Khan to Manthar 27 KM

ii. Partial obstacle.

(2) Scarp VI (Appendix 2). It is a salinity control and reclamation Project mainly in Rahim Yar Khan district Main features are as under :-

(a) It has three main drains :-

		Length (KM)	Width (feet)	Depth (feet)
i.	Manthar Drain	135.68	51	6
ii.	Pattan Manara Drain	59.45	44	6
iii.	Khan Pur Drain	109.38	104	8

(b) The collected saline water would be drained natural depressions in the desert from Jarewala the NE to the mouth of Reni Nullah in SW 85KMs long.

(c) There will be five pondage areas with irregular geometery –3.4 to 7.3 miles wide and 6-18 feet deep.

(d) Likely to be fully operative by December 1992.

(3) Hyderabad Sector

	Origin	Width	Depth

			(feet)	(feet)
(a)	Mithrao Canal	Jamrao Headworks	92	9
	i. Total length 135 KM			
	ii. High bank on both sides			
	iii. Effective obstacles			
	iv. Discharge –2378 cusecs			
(b)	Jamrao Canal	Jamrao Headworks	118	7
	i. Total length 107 KM			
	ii. High banks on both sides			
	iii. Effective obstacles			
	iv. Discharge 3400 cusecs			
(c)	LBOD	Nawabshah	150-200	12-15
	i. Designed to control water logging and salinity in districts of Badin, Mirpur khas, sanghar and Nawabshah.			
	ii. It is sub ground level drain consisting of spinal drains and branch drains.			
	iii. It starts from Nawabshah and falls into Dhoro Puran Drain in south total length 264 KMs.			

(4) **Nara Gap.** The general area between line Saida Post Samrajo Kadan Wari border in the north to line Khipro Baseer Ka Tar Sk Tar border in the south is called Nara Gap. There are no defined track in the area. Few track taking off from Nara canal soon dis appear in the desert. Area 25 to 30 KM from border consist of virgin dunes and has no vegetation and no habitation.

(a) The area is generally sandy with the Bhits (sand dunes) ranging in height from 50 –150 feet in countless parallel series from NE to SE at an interval of about 4000 to 500 m . The bhits are generally covered with wild grass roots and bushes except the virgin dunes. The growth normally consist of open shrubs and bushes varying in heights from 2 -10 feet and scattered trees. Virgin dunes are difficult cross even by camels.

(b) Dhars (Valleys) are mostly hard clayey soils having varying growth of vegetation. The pattern of vegetation permits vehicles

to get off the tracks in the Dhar. The tracks in Dhars though firm are likely to become dusty under sustained traffic.

(c) The move across the Dhars, over the dunes is extremely difficult without engineer effort. Tracked vehicles can move across the sand dunes with prior reconnaissance except in the aea of virgin sand dunes.

(d) Were ever there is water, habitation exists in form of hamlets. However water is generally scarce particularly in the northern half with water table varying from 29 to 70 feet. The wells found in the area are mostly brackish with about 4 feet dia yielding about 400 t0o 500 gallons/day. Sweet water wells also exist particularly in southern half in general area Baseer Ka Tar, SK Tar and Sanahu. Nara Canal emanating from Sikkur Barage marks the limit of green belt.

(e) The tracks marked on the map no longer exist nor the names of the Villages shown on the map make any sense. The defined desert tracks existing on ground are :-

i. Northern Half

aa. Track Sanewari – Mithran – Nande Waro Sorogot – Gotki (104 KM). Can take battalion group with engineer effort.

bb. Track Tor – Bajriwari – Kandla (61 KM). From border upto Tor there is a camel track over virgin dunes. Rest is a desert track which can take a company size force on camels.

cc. Lateral Samrajo – Salehpat. It is 59 KM long and can take brigade size force if water problem is solved.

dd. Track Bajriwaro – Salephat (61 KM). It is not a defined track but passes over firm ground. It can sustain a brigade size force. In combination with Samrajo – Salephat, it acquires greater significance as it bypasses Nara Canal on way to Sukkur but the area is marshy north of Salephat.

ii. Southern Half

aa. Track Border – SK Tar – Malka Tar – Sabaju – Khipro (112 KM). Desert depth is 96 KM whereas Green belt is 16 KM. There is no track between border and Baseer Ka Tar. This stretch of about 8 – 9 KM consists of barren difficult soft dunes, negotiable by camels with difficulty. Baseer Ka Tar to Khipro is then the easiest track in whole of desert which runs through narrow Dhars. Off the track movement is possible but with engineer effort. Water is not a problem. About 10 KM from Baseer Ka Tar, there are saltish lakes for 18 KMs. Around these lakes, sweet water is also found. The track can sustain upto a brigade size force with little engineer effort provided track from border to Baseer Ka Tar is constructed.

bb. Track Sanahu – Jamo Jo Tar – Hathingo. From border to Sanahu, a distance of about 2/3 KM, there is only a camel track over loose sand. Form Sanahu to Samrahu Tar, a distance of about 14 KM is over soft and difficult terrain requiring heavy engineer treatment. Beyond Samrahu Tar, track runs through narrow Dhars (600 – 1800 wide) which is surrounded by virgin sand dunes. By passing is thus difficult. From Jamo Jo Tar one can approach Hathingo directly or through Sargilio – Ranahu – Mehrwari. On both these tracks civilian traffic ply. The tracks can sustain a brigade minus force from Jamo Jo Tar onwards to Hathingo.

120. Population and Communication Centres.The population in the desert, on both sides is sparce, Cisfrontier side has considerable Hindu prpulation specially in the desert belt. Important towns are :-

a. Transfrontier.Ramgarh, Jaisalmir, Sheo, Barmer, and Bhuj.

b. Cisfrontier. Rahim Yar Khan, Sukur, Mirpur Khas, Badin, Hyderabad and Thatta.

121. **Strategic Importance.** Major portion of the area is suitable for the employment of large mech formations. India has made deliberate efforts to improve communication infra-structure to support large scale operations. However, logistic will remain the single most important factor for successful conduct of operation in this zone. Strategic importance of this zone for Pakistan is purely from a defensive angle. Own main strategic L of C runs perilously close to border in Rahim Yar Khan Sector where Guddu Barrage is also located closeby. The problem is further compounded due to the fact that substantial Hindu population inhabits our desert belt making it susceptible to ingress by India. Operations in the south can also be combined with naval operations as well as amphibious operations along the Indus Delta and coast areas. A major Indian thrust in this zone coupled with situation of insurgency in Sind can create a serious situation for Pakistan. On the other hand, Pakistan has to look elsewhere to neutralise India's strategic efects in this zone because no worthwhile stragegic objective is located within striking distance on the transforntier side.

122. Strategic Objectives

a. For India. India enjoys superior stragegic orientation in the entire zone :-

(1) Rahim Yar Khan Secotor. Main L of C and Guddu Barrage are the obvious objectives. It would required ¾ infantry division and an armoured division to caputre these. Ramgarh Rahim Yar Khan will be the main direction of offensive.

(2) Chhor Sector. Hyderaabad is the strategic objective located far to the depth. A force of 4/5 infantry division and equivalent of two armoured/mech divisions would be required to capture it. However, the existing communication infrastructure precludes sustainance of such large forces. Barmer Chhor Mirpur Khas is the best direction available to enemy for operation against hyderabad.

(3) Kutch Sector. Indians have enhanced their offensive capability in this Sector tremendously by constructing a jet airfield at Naliya and improving road network to Dharmsala. A meter guage railway line has been constructed from Bhuj to Naliya. Navigation in Gulf of Kutch and improvement of Kandla Port has created base for amphibious

operations. Hovever, besides Badin, there is no other worthwhile objective within reach from this direction. Lack of cover, logistic problems and the fact that the foreces cannot be sustained throughout the year, major operations are neither possible nor likely in this sector.

b. For Pakistan. Capture of Ramgarh is our strategic compulsion to forestall Indian offensive from Ramgarh Salient directed at our main L of C in Reti Rahimyar Khan Sector. Even limited offensive from Islamgarh to Kishangarh, though tactical in nature, will considerably improve own defensive posture. Similarly, limited from Gardra can cause a setback to Indian offensive in Chhor Sector.

123. Strategic Approaches. Desert zone has the capacity to absorb a force of approx 5x infantry division support by an armoured and a mech division. Approaches in priority are :-

a. From India

(1) Reti/Rahim Yar Khan Approach. With its base at Ramgarh utilising all available pentrants, this approach aims at cutting line Reti Saddiqabad Rahim Yar Khan and on to River Indus at Guddu. It can take 2/3 infantry division and an armoured division.

(2) Chhor/Umarkot Approach. This approach ahs its base at Barmer and leads to the green belt at Chhor, Umarkot and Nabisar from Munabao/Gadra/Kelnor and then goes onto Mirpur Khas and Hyderabad.It It can take 2/3 inf Divisions and an armoured division.

(3) Badin Approach. This approach originates from Bhuj, crosses Rann of Kutch and leads to Badin via Mara/Rahim Ki Bazar/Jattari. From Badin operations can be developed in Multiple directions twoards Sajawal or Hyearabad or Mirpur Khas. It has a maximum capacity of an infantry divisions with some armour.

(4) Bikaner Rugal Berewala Bahawalapur Approach. Approach is through the desert suitable only for mech forces. A variation could be Bikaner Birsilpur Darawar Fort Ahmedpur East. Its capacity is a mech division and an armoured brigade.

b. From Pakistan. Communication infra structure on cisfrontier side beyond the green belt consists of desert tracks and will require considerable improvement and maintenance for launching any worth while offensive.

(1) Rahim Yar Khan Ramgarh Jaisalmir Approach. utilizing various penetrants and multiple axes from north, NE and NW, this approach converges at Ramgarh and then leads to Jaisalmir. It can sp 2/3 Infantry divisions and an armoured brigade.

(2) Mirpur Khas Chhor Barmer Approach. From Gadra it leads frontally to Barmer and can take upto two infantry divisions and an armoured brigade.

124. Forms of Strategic Manoeuvre. In the Chhor and Badin Sectors combined, Pakistan is operating interior lines while India is on exterior lines. In Reti Rahim Yark Khan Sector the situation is reverse. But when this zone is viewed as a whole, India is on interior lines and we are forced to operate on the exterior lines. India has developed the necessary communication infra structure to launch two strong simultaneous thrusts from Reti Rahim Yar Khan and Chhor Sectors. This creates serious dilema for the employment of own corps and strategic reserve . Best defence for us lies in resorting to limited offensive at outset in one of the sectors and placing our reserve in the other to meet the Indian design over there. In Chhor Sector the desert belt provides the necessary depth while we are more vulnerable at Reti Rahim Yar Khan. An enveloping manoeure against Ramgarh Salient can pay better dividends.

125. Pre Requisites for Operations. In this zone, large scale operations are not possible without :-

a. Favourable air situations.

b. Mobile forces capable of switching quirkily from one area to the other.

c. Elaborate logistic support, supply of water.

d. Special communication arrangements to exercise command and control.

e. Adequate engineer resources.

126. Critical Space. Forward edge of the green belt makes the critical space in each sector.In the Reti Rahim Yar Khan Sector the critical space is close to border as compared to Chhor and Kutch Secs.

127. Strategic Posture. A forward defence posture is indicated in Reti Rahim Yar Khan Sector. In fact, an offensive posture here would be better. The Chhor Sector dictates a rearward defence posture which will force the enemy to extend his L of C and thereby lose the advantage of interior lines. In view of the extended frontage and limited approaches available, defence will be based on holding important nodal points as self contained strong points.

128. Offensive Options

a. Enemy. In the Kutch Sector, enemy can employ only an infantry division size force which is inadequate to pose a serious threat even to Badin. Chhor Sector can sustain large forces of about 3 x infantry divisions and an armoured division. However, the depth of strategic objectives preclude the possibility of posing any meaningful threat to them. This leaves only Rahim Yar Khan Sector where enemy can penetrate our strategic

depth with the size of that he is capable of sustaining there Thus enemy will initially launch strong auxiliary effort in Chhor Sector, and once he has reached closer to the green belt he is likely to launch his main thrust in Reti Rahim Yar Khan sector, creating a serious dilemma for us for the employment of resrve.

b. Own offensive options are also limited to Reti Rahim Yar Khan Sector which is ideally suited to pre emption aimed at capture of Ramgarh Salient.

130. Time and Spec Impace Implications. The exterior lines of Pakistan vis –a- vis Rahim Yar Khan and Chhor Sectors pose the problem of initial pacing of reserve and the execution of variants. The grouping of forces and the concentratd or spilt deployment of reseve has been created by laci of lateral communications between the sectors. Meter guage railway line feeding the Chhor Sector and absence of an eastward direct rail link to Rahim Yar Khan Sector which is ideally suited to pre emption aimed at capture of Ramgarh Salient.

131. Communication Imbalances.

a. Transfrontier. The primary communication imbalance lies is the railway network in in form of meter gauge railway beyoned Kolyat and Jodhpur. Upgradation of meter guage to broad guages is under way as under which is not likely to be completed in next 5 to 6 years :-

(1)	Suratgarh Gangangar Hanumangarh Lop	Surveyed.
(2)	Bikaner to Kolyat	-Completed.
(3)	Jodhpur to Jaisalmer via Pokran	-Jodhpur to Lohat Jasilmir to Hamer completed.
(4)	Jodhpur to Bikaner	-Under Construction.

(5) Jodhpur to Barmer -135 KM stretch competed, remaining under construction.

(6) Kota to Chittorgarh - Under construction.

c. Cisfrontier

(1) Rahim Yar Khan and Chhor Sectors are separated by Nara Gap where communication facilities are altogeather absent.

(2) In Rahim Yar Khan Sector, National Highway and main Railway line runs perilously close to border. There is no direct link between Indus Highway and National Highway Construction of a bridge around Mithankot will link the two highways.

(3) Railway line section Mirpur Khas Chhor is meter gauge. There is a need to convert the meter gauge to broad gauge .

132. Nature of Strategy. India would follow space oriented strategy Rahim Yar Khan Sector and destruction oriented strategy in Chhor and Kutch Sectors. Keeping in view the psycho political environments Sind, a space oriented strategy even in Chhor and Kutch Sectors can work in favour of India by compelling us to adopt a forward defence posture. Pakistan should follow an attrition oriented strategy aimed at holding the enemy at bay in one sector, allowing him to extend, progressively get weakened and ultimately destroyed by successful counter offensive in other sector.

CHAPTER –V

COASTAL AREA

133. General Description (Annex F). The **coast of Pakistan extends upto over 800 km, from Sir Creek in the east to Jiwani and Iran on the west.** The shore of two of the four provinces of Pakistan the Baluchistan and Sind touch the Arabian Sea on the south. The west coast of Pakistan which is known as Makran Coast extends from Somiani to Iranian border. The coastal area can be divided into two parts as under :-

a. Coast of Indus Delta.

b. Coast of Baluchistan.

Coast of Indus Delta

134. The delta of the River Indus extends from Sir Mouth to Karchi, about 160 km. It covers an area of 3000 Square miles. It is mostly marshy and mangroved land which is thinly populated. The coast formed by the delta of the Indus comprises naumerous creeks and remains partially flooded at high water for a considerable distance inland. For many KMd there is nothing to be seen but the swamp, and and the land is hardly discernable more than 3 KM off shore though, here and there bushes may be seen at about 5 KM at low water. Thus it is difficult to distinguish the various mouths of the Indus Delta there are no beacons and coastline changes constantly.

135. The sea face of the delta is formed mostly by a narrow belt of low sand hills fronted by drying sand banks and backed by mangrove swamps intersected by mud bank tidal creeks.

136. In heat of the day, especially during the dry season, with the wind off the land, a heavy dust haze blow over the coast line makes coastal features unrecogniaeable even at short distance seaward.

137. Climate. The climate of the delta is cool in winter, hot in summer and unhealthy during the floods (July to September). Amphibious landing in summer months is thus very hazardous. During winter, because of the terrain and laci of communication infrastructure the amphibious operations of some measureable size remain difficult and risky. Having landed on the coast, the wet mud provides poor conditions for trafficability.

138. Tidal Streams. The tidal steams are strong in the entrances to the principal mouths of River Indus attaining at the Sir Mouth a rate of 3 to 4 Kts at springs and at Keti Bandar a rate of 5 Kts at ebb stream. To the north of Keti Bandar, the flood streams sets NW, paralled with the coast, and ebb stream SE and South. The ebb stream, issuing

strongly from the delta mouths silt Ladden water far to the seaward, at times the lines of demarcation between this muddy water and the clean sea water is most marked.

139. Currents. Currents off the Indus Delta are of monsoon origin and run predominatly parallel with the coast NW in December and January and SE for rest of the year. The current normally attains a rate of about 1KT but from February until the end of SW monsoon rates upto 2 Kts may be expected.

140. Sir Mouth. The boundary between India and Pakistan has not been demarcated for a length of about 112 km short of the coast. However according to 1914 Resolution Map regarding detachment of Sind Government from Bombay, the boundary runs along the eastern edge of the Sir creek. The Sir Creek has a minimum depth of 10 feet. After crossing this bar which runs over a distance of nearly 5 KM the deep water of 18 feet depth strats. The width of the Creek then is about 500 meters. It is difficult for the vessels to approach the mouth of Sir Creek as there are numerous shallow patchs which dry at low water, In the absence of navigational marks in the area, it is dangerous for even shallow draught vessels to negotiate the mouth to enter into deep waters inside. Thus, only planned and low scale amphibious operations with thorough local knowledge of the creeks is possible but hazardous due to wet mud. Having entered the creek the shallow draught vessels (upto 4 feet draught) can navigate even upto port Qasim with obstacles at certain creeks where the vessels will have to wait for high water. The amphibious operation along the Indus Delta re therefore, risky and personnel and vehicles landed ashore will be subjected to exposure to air attacks for a very long period and the element of surprise cannot be achieved. The amphibious operations along Indus Delta cannot therefore, be fruitful for the enemy, in which case, the landing in the Indus Delta will be of no use to the enemy as he could easily plan amphibious operations close to Karachi.

141. Wari Creek. Lies 32 KM NW of Sir Creek and is bordered by low narrow sandy ridges which cover at high weater spring tides. It is backed by extensive magrove swamp. The mouth is 3 km wide, small craft with local knowledge can enter this creek.

142. Khojar Creek. Another mouth of Indus stands on large sand dune one the south side of creek. Keti Bandar, the principal village in the delta, lies 11 km within entrance of Khojar Creek on the east bank. It is connected with Karchi by telegraph.

143. Port Qasim. It is situated towars the head of Phitti Creek, 32 km east of Karchi. It is Pakistan’s second deep draught port. It serves steel mill and also handles containgers and general cargo, vessels of 50,000 cwt can be accommodated in this port. There are in all 8 berths along side.

144. Possible Landing Sites

a. Keti Bunder

(1) Topography. Keti Bunder is one of the old sea ports of the river Indus, which is located about 96 km South East of Karachi. It is a smally village now and has post office and police outpost. Entrance to Keti Bunder from Seaward side is through Turshian Creek. Survey of the Creek has not been carried out, but with the informations available, it is belived that approach upto Keti Bunder during flood tide is available for crafts with a draught of 6-8 feet. Keti Bunder is located 9 km inland. There was scarcity of fresh water but is now understood that the Government has made some arrangements. Anchorage 5-6 km off the mouth of turshian Creek is safe in fair weather. Landing inside the creek is easy as the ground is hard and provides easy trafficability. Keti Bunder is connected by single road to Thatta, Mirpur Sakro, Gharo. Surrounding area of Keti Bunder is connected by numerous creeks and is marshy with mangroves.

(2) Quantum of Forces it Can Take. The beaches are inside a number of iddicult creeks. A force may be landed in packets but navigation is difficult and access to roads and railway system is through marshes and guagmires.

(3) Objective Towards which it leads. It provides lateral access to Karachi and a penetrate along river Indus towards Thatta.

(4) Sustenance for The Landed Force. Initially by sea and through air. After progress towards population centres some sustenance would be available in the form of food and water.

b. Clfton Beach

(1) Topography. Clifton Beach is almost part of Karchi. It is located 5 km south east of Karachi Port. In the recent development of Clifton area as posh housing colony, metalled roads are available right upto the sea front. Anchorage for the ships is available south of Korangi Creek. It is a straight 5 km sandy beach, with hard beaten sand, and has an excellent trafficability. Landing can be carried out in fair weather at all stages of tides Railway line is available in vicinity of Keamari.

(2) Quantum of Forces it Can Take. Considerable built up area has come up in the immediate vicinity which restrict use of armour.

(3) Objective to Which it Leads. It threatens Karachi directly. It can however materialise only after total collapse of Pakistan Navy and virtually no opposition from the PAF.

(4) Sustenance for the Landed Force. Initially through sea and later through air sea and locally.

c. Gadani-Sonmiani

(1) Topography. Gadani Bay is located about 64 km by sea and about 40 km by road from Karachi. It has a small population of Fishermen. South of Gadani is phauri Bay, which is a ship breaking yard. Gadanl is a sheltered bay with deep waters close to the shore. Fresh water is brough from Lake Bidak which is about 5 ½ km North of Gadani. Some Government of Pakistan is developing this village as a trourist resort. It provides one of the best beaches of Pakistan. It is sandy with hard coast line. The bay is also sheltered by a hillock which is 286 feet high. This hillock provides a complete visual picture at sea front. Landing at all stages of tides can be carried out.

(2) Quantum of Forces it Can Take. The beach length being 35 km, a division plus force with some armour can land.

(3) Objective to which it Leads. It threatens Karachi from flank and provides access to the RCD highway leading towards Bela. It can materialise only after total collapse of Pakistan Navy and virtually no opposition from the PAF.

(4) Sustenance for the Landed Force. Initially through sea and air.

Makran Coast

145. It is 700 km long and extends generally in wstern direction with arid climate. The entire area in general is hilly and broken with dry patches of valleys between the mountain ranges varying in height from 1000 to 2000 feet. The area in the north and east is bounded by Pab Range, in the west by central Makran Range and in the south by coast of Arabian sea. There are many dry seasonal Nullahs which turn into rivers during torrential rains. The main river/nullah are, Porali (which forms the main valley of uthal and Bela), River Nal which Joins river Mash Kai in SW part of Jhal Jhao and becomes a big river called Hingol, Kach Kaur and river Dasht. All these rivers join Arabian sea in the South.

146. Climatic Condition. Form temperature, point of view, the are can be divided into two portions :-

a. N/NE Sector. This sector encompasses the areas of Uthal, Bela, Turbat and Mand. The valley of turbat which is bounded by central Makran Range in the north, Makran coast Range in the South has extreme temperatures reaching 120 F during summer and drop almost to freezing point during winter nights.

b. Coastal Sector. Jiwani, Gwadar, Passni – Nilant, Ormara and Khor Kalmat have the same temperature as coastal areas of Arabian sea. It is not extreme as neither very hot days are experienced nor very cold nights are encountered.

147. Wind

a. N/NE Sector. In Bela and Uthal valley the wind is NE to SW in winter to NE in summer with speed varying from 10 to 30 Kts. In Turbat valley the wind is normally from East to West between 10 to 20 Kts.

b. Coastal Sector. The wind direction in winter is from North to South with speed 5 to 10 Kts and from South to North in summer with speed 10 to 15 Kts. During the shamal in Gulf, dust and cold wind storms are severe.

148. Visibility. Early morning dust haze during winter is common on the coast. Also dust storm during afternoon adversely affect the visibility sometimes. Otherwise there is no problem of visibility in the entire area.

149. Rain. The rain in the entire area is scarce. Once or twice it rains in the area during the year generally once during monsoon and once/twice during winter. During the month of February and March it may pour down with intensity. The water so accumulated is thus the source for the population. At the same time the rain makes the move in the valleys impossible for vehicles.

150. Topography. There are three main valleys :-

a. Uthal Bela. Approximately 300 Kms from Karachi and continues towards north. The width is about 8 to 10 Kms. The valley is bounded on eastern side by Pab Ranges and on Western side by Hala Range. A class 50 A2 road (RCD highway) runs is this valley and goes further north towards Khuzdar. Main towns are Uthal and Bela. Uthal being district Headquarters.

b. Bela – Turbat Valley. After crossing Bela range towards east, the valley of Turbat starts. It extends upto Iran border till Mand. The length of this valley

is approximately 400 Kms and width varies from 1 to 10 Kms. It is served with one class 9F2 track. The goint from Bela upto Awaran is extremely rough with loose debris onit. Numerous smaller nullahs have to be negotiated and sharp turns/bends are encountered. Drinking water is only available at Jhal Jhao, Awaran, Turbat, Tump and Mand. Apart from these locations, the water after the rains is available in limited quantities in main nullah beds also.

c. The Coastal Belt. The coastal belt is running from east to west from Karachi to Jiwani. The length of the coast is 990 Kms. The width varies from 15 Kms to 20 Kms. The soil contains more of clay with small pebbles and the water table is high. Generally brackish water is found under the surface. The area becomes marshy/slushy during rain thereby hindering movements. The entire area is devoid of vegetation in a classical sense. Dates trees are found near population centres. Some shurbs could be found in nullah beds. The moves on the coast side after the rains is extremely difficult and even the lighter vehicles bog down.

151. Telephone Lines

a. Karachi-Uthal-Bela. It is linked with Karachi both by line as well as by micro wave system.

b. Turbat pasni, Gwadar and Jiwani. Linked by micro wave system with Karachi and within the localities. No military link is available.

152. Air Fields. Turbat, Pasni, Gwadar and Jiwani have air fields where light aircraft including C-130 can operate Pasni runway has been lengthened and strengthened for Mirage and Boeing 737.

152. Landing Sites

a. Ormara

(1) Topography. Ormara is located about 248 km from Karachi by sea. It is basically a fishing town. Comparatively having a large population. A wireless station of Telephone and Telegraph Department is also situated here. The bays (east and west) are sheltered and provide protection to fishing crafts even during monsoons. The bay provides excellent anchorage. Coast is sandy and hard. Trafficability is good, and landing is easy at all stages of tides. About 24 KM north of Ormara there are high mountains, some of which are over 4,500 feet. Ormara is not connected by road and the only link with the main towns of

Northern Baluchistan is through tracks which pass through the drainage system of the mountains. The only easy and accessible track is upto Pasni west of Ormara.

(2) Quantum of forces it Can Take. The beach is about 13 km in length but has no hinterland. Limited use of armour is possible.

(3) Objective to Which it Leads. There are no worth-while strategic objective to which is particularly leads.

(4) Sustenance for the Landed Force. Virtually nothing is available locally. From rations to petrol and ammunition every-thing will have to be supplied through sea or air.

b. Pasni

(1) Topgraphy. Pasni, a fishing town is located about 368 km West of Karachi. Wireless station of T and T Department also exists. The bay is sheltered and provides good anchorage. The beach is sandy with good landing ground. Amphibious landing can be carried out at all stages of tides. Drinking water is brought through a pipe line from Shadu Kaur. Water pumping station is located 8 km north of the town. Pasni has a jet capable runway. It is connected by a fair weather motorable, shingled road with the northern towns of Baluchistan and with Gwadar in the West.

(2) Quantum of Forces it Can Take. The beach length from Pasni to Jabel Sur is about 32 km. Ground provides limited scope for use of armour in deptch.

(3) Objective to Which it Leads. Possession of Pasni provides a direct penetrant to Turbat and lateral access to Gwadar is better as compared to the ones that lead towars Ormara. By itself Pasni provides some airport facilities and anchorage for naval crafts.

(4) Sustenance For the Landed Force. There are no appreciable sustance means available at Pasni. The landed force will have to be supplied from the sea or the air.

c. Gwadar

(1) Topography. Gwadar is one of the biggest towns on the Mekran Coast, and located about 480 km from Karachi. It provides shelter even during the months or monsoons. Beach is sandy and hard. Ships can anchor

close to the shore. It is connected by motorable road with Northern Baluchistan and some other towns in East and West. Fresh drinking water is available, through a de-salination plant and also through a dam located on the hammer of Gwadar. Arrangements have also been made for the supply of fresh water from Dasht River located over 64 km inland. It is connected by telephone lines. Air strip is also available. Pakistan Navy has constructed a Navel Jetty for affording refuelling and supply facilities to its small Naval craft like Gun Boats and Mine Sweepers. Presently a fish harbour is also under construction.

(2) Quantum of Forces It can Take. The beach length is 8 km. Trafficability is poor but a limited use of armour in depth can be made.

(3) Objective to Which it Leads. Gwadar provide lateral access to Pasni and Jiwani and a penetrant towards Turbat. Karachi is too far away from here and Turbat is too deep. A weak force will fritter away due to ground frictions and even nominal combat resistance.

(4) Sustenance for the Landed Force. Gwadar is a relatively larger population centre but can not provide appreciable sustenance to a landed force except a few facilities like a runway and a Naval Jetty. All other things needed for upkeep of the force will have to be supplied through air or sea.

d. Jiwani

(1) Topography. Jiwani is located about 536 km west of Karachi. It is almost on the border of Pakistan and Iran in Gwadar Bay. It is connected by telephone and wireless. Pakistan Navy also has a small unit at Jiwani. It was a Marine Base during the Second World War. The bay is sheltered by it does not provide protection during monsoons. The beach is sandy and hard; anchorage is close vicinity is available. Trafficability is good; landing can be carried out at all stages of tides. Jiwani is connected by other towns of Baluchistan through a motorable road. Fresh water is available.

(2) Quantum of Forces it Can Take. The beach length is 32 km. Limited use of armour is possible.

(3) Objectives to Which Leads. No worthwhile objective.

(4) Sustenance for the Landed Forces. The force landed will have to be maintained through air and sea except perhaps fresh water.

153. Amphibious Threat

a. Indus Delta. Due to marshes, creeks, problematic navigation and non existance of inland communication infrastructure Indus Delta is unsuitable for landing of a sizeable force. This coast is, however, suitable for lading Comandos/saboteures.

c. Makran Coast

(1) There are several suitable sites where lading is possible in non-monsoon periods. During monsoon generally the breakers height is over 12 feet, wave length 500 feet with a period of 10 sectors. This creates high percentage damage to the landing craft. Obvious sites are :-

(a) Jiwani.

(b) Pasni.

(c) Gawadar.

(d) Ormara.

(e) Sonmiani/Godani.

(2) For military purposes Gadani/Sonmiani beaches are considered most suitable.

(3) Other that Karachi there is no wrothwhile objective of strategic consequences but the Indians may attack smaller population centres/fishing harbours in a hit and run manner to achieve psychological ascendancy.

(4) Landing by any force undertaken farther than Karachi will have to be logistically supported from seaward.

(5) Due to defensible nature of terrain all along the coast, a comparatively smaller force can effectively take on larger force landing ashore.

CHAPTER VI

CONCLUSIONS EASTERN FRONT

155. Northern Area and Kashmir

a. Strategic Objectives

(1) Transfrontier. Kargil/Dras, Bara-Mula, Srinagar, Akhnur and Road Akhnur – Rajouri.

(2) Cisfrontier. GT Road, Mirpur, Mangla, Muzaffarabad, Skardu, Gilgit, Marala Headworks.

b. Priority of Strategic Approaches. Based on the terrain friction capacity and access to strategic objectives, the priority of approaches are :-

(1) Into Pakistan/AK

(a) Kharian – Gujrat Approach. This approach mainly depends on the Saddabad and Munawar Gaps. Having secured the line of Bhimber – Iftikharabad, the approach leads on to Kharian – Gujrat. It cant take upto two to three infantry divisions and an armoured brigade.

(b) Jhangar – Mirpur Approach. This approach feeds all the penetrants coming from Mendhar Enclave via Kotli and Jhanger Enclave via Pir Gali. It has a total capacity of approx 2 to 3 infantry divisions.

(c) Jhelum Valley (Muzaffarabad) Approach. This approach uses the Baramula – Uri – Chakoti – Muzaffarabad as the main axis and also combines the several subsidiary penetrants from north through Jura and south through Bagh. The Bedori Bulge has to be reduced for development of operations towards Muzaffarabad. It has a total capacity of about 2x infantry divisions.

(d) Gilgit/Skardu Approach. Purely infantry approach using all penetrants leading to Skardu and Astor and converges on to Gilgit/KKH. Its capacity is about an infantry division plus, using all the penetrants.

(e) Total Capacity. The overall capacity of the entire zone of operation is approximately 4 to 5 infantry divisions and 1x armoured brigade spread over the whole zone.

(2) Into IHK

(a) Iftikharabad – Akhnur Approach. Its capacity is 2 to 3 infantry divisions and an armoured brigade.

(b) Bagh - Punch/Kotli Mendhar Approach. Its capacity is 2 to 3 infantry divisions on animal/limited mechanical transport basis.

(c) Kotli – Rajouri/Bhimber – Naushera Approach. Its capacity is 2 to 3 infantry divisions on animal/limited mechanical transport basis.

c. Strategic Posture

(1) India. India is faced with the problem of limited space for assembly, time consuming built up over a tenuous L of C which is vulnerable. The strategic offensive poster is this zone is unlikely. The violable nature of terrain dicatates a forward defensive posture with offensive at tactical level. Elimination of certain saliengts/bulges will not attribute to any strategic gains. However tactical gains will have strategic effects at certain places, like Bedori Buldge.

(2) Pakistan. Holding shallow part of Kashmir in central/southern sectors and violable nature of LOC dictate forward efensive posture. Stragegic offensive posture in Eftikharabad and Gurez – Kargil sector to sever Indian L of C can be adopted.

d. Forms of Strategic Manoeuvre. Taking the entire zone of operation, Pakistan is on exterior lines, while India on interior line having Srinagar and Jammu as the pivots of manoeuvre. They will have the time ascendeney of shifting troops from one sector to other before we can execute variants. The situation gets further accentuated in Northern sector because the KKH lateral is extremely lengthy. Holding of this sector strongly with inbuilt reserve capability is therefore warranted.

e. Offensive Options and Scale of Offensive

(1) India. Cant threaten GT Rd with 3-4 x infantry divisions and an armoured brigade using Munawar and Saadabad gap. From Mendhar – Jhangar, can threaten Mirpur/Mangla using 3-4 x infantry divisions (in

echelon). There are restrictred penetrants entering Kashmir i.e, through the Madhopur Choke point and via Basoli – Udhampur which is extremely arduous. The mountainous terrain is devoid of extremely ardous. The mountainous terrain is devoid of space to allow concentrated assembly of 4 to 5 infantry divisions and an armoured brigade. By implications therefore :-

(a) If a major offensive is launched, it will per force have to be spread and distributed on various approaches.

(b) The force will get in extricably involved all over the zone foreclosing the option of readjustment at later stage.

(c) Time for assembly will be more and the progress of operations will be rather slow thereby threatening the strategic objective in a much greater time frame. Superiority of strategic orientation might then be conceded to Pakistan.

(d) The operation will be very difficult to maintain logistically over vulnerable and tenuous Ls of C.

(2) Pakistan. Can cut L of C at Akhnur employing 2 to 3 infantry divisions and an armoured brigade. Similarly in Kargil sector, L of C can be cut employing 1 to 2 infantry divisions.

f. Balance in Defence.Excluding the narrow strip of plains in the southern sector, the laterals connecting various sectors (and within the sectors), are very tenuous and traverse difficult mountainous terrain. Coupled with it is the pattern of defence based on inaccessible hill features. By implication therefore, inter sector move and even inter sector mutual support, will be hazardous, difficult and extremely time consuming. To ensure adequate balance in defence, the answer lies in making each sector reasonably self contained allowing retention of strong reserve down to the lowest echelon that is down to brigade.

g. Critical Spaces

(1) Cisfrontier

(a) Bhring – Phagla Ridge – Tanda – Jalalpur for security of Harian/Gujrat/GT Road.

(b) Kotli – Samani Valley – Pir Gali for security of Mangla.

(c) Bagh – Dhanni/Chikar – Kahala for security of Muzaffarabad.

(d) Skarudi – Astor – Ratu – Chilam for security of Gilgit.

(2) Transfrontier

(a) Bucheke Mandi – Palanwala – Dalpat for security of Akhnur.

(b) Chhuroi valley – Naushara.

(c) Shoulders of Punch and Mendhar valleys.

h. Pivots of Maneeuvre

(1) Cisfrontier. Jalalpur, Bhimber, Kotli, Bagh and Muzaffarabad.

(2) Transfrontier. Akhnur, Naushara, Punch and Dras/Kargil.

j. Salien Features of Oprations

(1) Entire sector is suitable for infantry predominant operation except in Iftikharabad sector where use of armour is possible.

(2) Operations will be space oriented due to violable nature of LOC.

(3) Terain affods immense strength to defence and hence high relative strength is required for offensive.

(4) Command and heliborne operations if executed boldy can pay rich dividends.

(5) Logistic and weather will be limiting factors on the intensity and duration of operations particularly north of Pir Panjal and northern Kashmir.

k. Communication Imbalances

(1) Road link beteen Muzaffarabad and Kel is vulnerable to enemy action near Nauseri and Keran. Kel should be linked with Deolian via Kundal Shahi and Sarsangar Gali. The cost of construction of class 9 F1 (73.6 km) road is about Rs 130.00 million.

(2) Kel should be linked with Rattu via Shanttar Pass. Estimated cost of class 9F1 track is about Rs 160 million.

156. Central Zone

a. Priority of Strategic Objectives

(1) Cisfrontier

(a) GT Raod Gujranwala – Wazirabad.

(b) Sahiwal – Okara.

(c) Lahore – Shahdara Bridges – Balloki Headworks.

(d) Bahawalpur – Panjnad.

(2) Transfrontier

(a) Line of River Beas from Harike Headworks to Madhopur Headworks.

(b) Line of Parmandal Range including Madhupur – Kathua – Samba.

(c) Line of Gang Canal including areas Anupgarh – Sri Ganga Nagar.

b. Priority of Strategic /approaches

(1) Into Pakistan

(a) South f Sutlej Corridor. Total capacity of this corridor according to the local formation estimate is 7-8 infantry divisions an armoured division and a mech division. (MI Directorate estimate is about 2x strike corps).

(b) Chenab – Ravi Corridor. Notwithstanding the difficulties of assembly of force south of Paramandal, the total capacity of the corridor according to the local formation estimates is 6-7 infantry divisions, an armoured division and 1-2 armoured brigade. (MI Directorate estimate is about two corps size effort).

(c) Ravi – Beas Corridor. Capacity of this corridor taking into account Ferozepur – Kasur, Amritsar – Lahore and Kanganpur approaches according to local formation is 5 to 6 infantry divisions, an armoured division and upto 2 armoured brigades. (MI Directorate estimate is about a corps supported by an armoured brigade employed on either side of River Beas).

(2) Into India

(a) Chenab – Ravi Corridor. Capacity is 5 to 6 infantry divisions, an armoured division and 1 to 2 armoured brigades.

(b) Ravi – Beas Corridor. Taking into account all penetrants, capacity is 7-8 infantry divisons, an armoured division and 2 to 3 armoured brigades.

(c) South of Sutlej. Capacity is 4 to 5 infantry divisions, an armoured division and 1 to 2 armoured brigades.

c. Critical Spaces

(1) Cisfrontier

(a) Space east of MRL in the area of Badiana – Chawinda – Dhamthal – Pasrur – Qila Soba Singh in the Chenab – Ravi Corridor.

(b) Lahore – Raiwind – Kasur triangle.

(c) Space south of Sutleg River bounded by Islam Headworks – Hasilpur – Dharanwala – Chishtian Mandi – Lakha/Sahuka.

(2) Transfrontier

(a) Madhopur Headworks – Kathua – Samba.

(b) Gurdaspur – Madhopur headworks/Pathankot – Mirthal/Mukerian bridges to keep L of C to IHK open.

(c) Tarn Taran – Batala – Raya Bridges.

(d) Raisingnagar – Sri Karanpur – Padampur.

d. Pivots of Manoeuvre

(1) Cisrontier. Pasrur, Raiwind, Chishtian Mandi, Bahawalnagar and Marot.

(2) Transfrontier. Madhopur, Amritsar and Hanumangarh.

e. Srategic Posture

(1) India. Indian are likely to adopt a strategically offensive posture in these corridors with the offensive converging onto the core areas of Gujranwala – Sheikhupura – Sahiwal.

(a) Chenab – Ravi corridor has the capacity for being used for either main or secondary efforts since it is an Indian compulsion to launch an offensive to gain space for security of their L of C with IHK. However owing to limited space for assembly in Chenab – Ravi corridor, forces will have to be echeloned/inducted piecemeal.

(b) The fact that India has not developed its obstacle system in area south of Sutlej to the level found in the other sectors, can be considered an indication of their offensive design particularly viewed in the context of improvement in rail/road communication infrastructure. Further, to achieve any worth while objective in this sector, River Sutlej must be crossed hence necessity of main effort.

(c) Restriction of space because of urbanization in Lahore – Amritsar Sector makes it suitable only for an auxiliary effort.

(d) India can adopt a forward defensive posture in the Chenab – Ravi and Ravi – Beas Corridors along ditches/bunds constructed along the border. A rearward defensive posture along Gang Canal in area South of Sutlej is more likely.

(2) Pakistan. The proximity of politico-economic objectives to the border dictates a forward defensive posture in this sector in necessitated. We can adopt a strategic offensive posture in Ravi – Beas Corridors in view of the importance and Indian vulnerabilities in these sectors. Rearward defensive posture can also be adopted in area south of Sutlej.

f. Offensive Options and Scale of Offensive

(1) India

(a) Shakargarh salient offers an opportunity to the enemy to force a battle of encirclement with pincers of 3-4 infantry divisions and an armoured division plus from the north and 2-3 infantry divisions and an armoured brigade from the south meeting in area Pasrur and then developing operations towards GT Road in conjunction with threat from Maqbolpur sector.

(b) Area south of Sutlej may be absorbed by employing 5-6 infantry divisions, an armoured division plus and a mech division. Thereafter with another 2-3 infantry divisions, operations may be developed towards Okara/Sahiwal or Bahawalpur/Panjnad.

(c) Develop threat towards Lahore/Shahdara bridges, Balloki Headworks with 4-5 infantry division and 1-2 armoured brigades.

(2) Pakistan

(a) Capture of Ravi – Beas/Sutlej Corridor to defensible line of River Beas with 7-8 infantry divisions, an armoured divisoin and 1-2 armoured brigades will isolate IHK besides absorbing politically sensitive area.

(b) Capture area upto Paramandel Ranges including Madhopur Headworks, Kathua – Samba L of C with 4-5 Infantry divisions,

and an armoured division plus will islolate enemy forces in IHK and induce strategic effects.

g. Balance in Defence.Balance in defence can be created by having reserves in Chenab – Ravi Corridor looking after threats from Chenab – Ravi and Beas – Ravi Corridors, and another in Ravi – Sutlej Corridor which should cater for threats from Ravi – Beas and South of Sutlej.

h. Salient Features of Operations

(1) The terrain lends itself to large scale integrated infantry armour operations.

(2) Operations in NE-SW direction along the corridor and sub-corridors will be easier/quicker with water obstacles providing flank protection. Operations in east west direction will be slower being against the grain of the country.

(3) High density of water obstacles will place exorbitant demand on engineer resources.

(4) Bridges will be required to facilitate speed of operations, for inter-corridor support and movement of strategic reserves. These will be important objectives/interdiction targets.

j. Communication Imbalances

(1) Cisrontier

(a) Choke Points

i. Busy level crossing and irrossing sprawling of Wazirabad town along road Wazirabad -Sialkot has created a serious bottleneck . Construction of overhead bridge will coat about Rs 75 million .

iii. Present rout through Mailsi town is another bottleneck for which a bypass is required.

(b) Rail Links

i. Sheikhupura – Gujranwala – Pasrur. The rail link should be developed to facilitate speedy movemente of troops in Ravi – Chenab Corridor.

iii. Chiatian – Arifwal – Chichawatni. The rail link, on construction will enhance the speed of movement of

troops from Ravi- Sutlej to south of Sutlej and vice versa. Lakha Bridge alone will cost about Rs 250 million.

(c) Placing of Equipment Bridges. In case permanent bridges over Sutlej and Ravi are destroyed, equipment bridges are required to be placed at Islam Headworks, Tibbi Lal Beg Balloki and Shahdara.

(2) Transfrontier

(a) Gangangar – Raisinnagar Rail Link. Presently meter gauge rail link exists because of which moving of forces by rail has problems.

(b) Fazilka-Kotkapura. Presently meter gauge link exists.

(c) Destruction of Bridges. Major bridges over water obstacles if destroyed will pose major problem in movement of forces.

k. Implications of Water Regulation

(1) Effects of Salal Dam

(a) The minimum required water may not be available for MRL in Sialkot sector for more than two days.

(b) UCC and BRBL system will be without water for 8 to 28 days, depending upon in-flow at Marala.

(c) No alternate arrangement is readily available to off set the disadvantage accruing from Indian water manipulation of Chenab River.

(2) Ravi Syphon.Damage to Ravi syphon will drain away BRBL water (whatever water is flowing) into Ravi. If captured by enemy, BRBL in Lahore sector will be without water.

(3) Vulnerability of Sulemanki Headworks. Its location right on the border makes it very vulnerable to enemy action. Damage/capture of Sulemanki Headworks will facilitate Indian operations while its control resting with us will make their operation in Bahawal Nagar – Fort Abbas that much difficult.

(3) Problems to Own Offensive

(a) Chenab – Ravi Corridor. Water regulation in no way effect our offensive options within the corridor.

(b) Ravi – Beas Corridor

i. Presently India has limited capability (for about 8 to 12 hours) to disrupt our operations across Ravi. After completion of Thein Dam (post 1995), operations across Ravi will become much more difficult if not impossible, creating serious problems/limitations on use of equipment bridges.

ii. Offensive in Ravi – Beas Corridor from the direction of Kasur will be equally hampered by the existing numerous canals/distributaries in transfrontier area because of :-

aa. Flooding of area assisted by the lay of ground (NE to SW gradient) and ready made dyes formed by the cross channels; all to the advantage of India.

bb. Restriction on the maneuverability of the armoured/mech formations within the sub-compartments of water channels.

(c) Ravi-Sutlej Corridor

i. Our crossing of River Sutlej between Hussainiwala and Sulemanki stands disrupted.

ii. Time lag between Pong Dam (on Beas) and Sulemanki is about 4 to 5 days and from Bhakra (on Sutlej) to Sulemanki is about 5 to 6 days which can be utilized to affect Sutlej crossing. Subsequent maintenance o forces across the river will however be restricted to existing permanent bridges.

(d) Present holding of engineer equipment and resources aimed at providing operational mobility across rivers is inadequate.

157. Desert Zone

a. Priority of Strategic Objectives

(1) Cisfrontier. National Highway – Gadu Barrage, Hyderabad, Thatta.

(2) Transfrontier.Jaisalmir.

b. Priority of Strategic Approaches. By 1996/97, when India would have developed her communication infrastructure in south and completed here planned mechanization of most of her army, the desert sector will assume priority I for offensive followed by Ravi – Chenab Corridor, Ravi – Beas

corridor and Azad Kashmir Area. Till then the priority of corridors of invasion will remain South of Sutlej, Ravi-Chenab, Ravi-Beas and Azad Kashmir. Within Desert Sector, the priority of strategic approaches are :-

(1) Into Pakistan

(a) Jaisalmir-Rahim Yar Khan Approach. Capacity is 2 to 3 infantry divisions and a mech division / armoured division.

(b) Barmer – Mirpur Khas Approach. Capacity is 3 to 4 infantry divisions and an armoured divison/mech division.

(c) Bhuj-Badin. Capacity is about a division minus with some armour in winter only.

(2) Into India. Approaches for strategic offensive are not available. Approaches for limited offensive are :-

(a) Reti/Rahim Yar Khan-Ramgarh – Jaisalmic. Capacity is about two infantry divisions plus and an armoured brigade.

(b) Mirpur Khas – Barmer. Capacity is about two infantry divisions and an armoured brigade.

c. Critical Spaces. Area ahead of the green belt :-

(1) In Rahim Yar Khan Sector, Jarewala – Bhagla Gulmerg and Khinju – Chanesar – Dad Laghari.

(2) Khipro – Chhor – Nabisar – Kantio in Chhor Sector.

(3) Badin – Rahim Ki Bazar – Naukot in Kutch Sector.

d. Pivots of anoeuvre

(1) Dad Laghari and Manthar in Reti – Rahim Yar Khan Sector.

(2) Mirpur Khas in Chhor Sector.

(3) Badin in the Kutch Sector.

(4) Jaisalmir on transfrontier.

e. Offensive Options and Scale of Offensive

(1) In Reti – Rahim Yar Khan Sector strategic gains can be made by the enemy with ¾ infantry divisions and an armoured division which can be sustained. However, lack of communication infrastructure and water on cisfrontier, will pose severe limitations and place heavy demand on engineer resources. SCARP VI (post 1992) will pose added problem to indian offensive.

(2) In Chhor Sector the depth of strategic objectives preclude the possibility of a meaningful threat with the force that can be sustained presently.

(3) Terrain friction and administrative difficulties inhibit employment of large size forces in Kutch sector. However, any threat developed towards Badin from Rann will dislocate defences in Chhor Sector.

f. Strategic Posture

(1) Enemy. Enemy enjoys superiority of strategic orientation and is likely to adopt an offensive posture in this zone because fo vulnerability of our L of C. The pattern of communication development and logistic infrastructure indicate their offensive design.

(2) Own

(a) Depth of strategic objective on transfrontier and lack of adequate communication and logistic infrastructure on cisfrontier militate against our large scale offensive in this zone.

(b) Lack of depth in Reti – Rahim Yar Khan sector and lay of sand dunes in Kutch Sector dictate our forward defensive posture in both areas. Chhor Sector has more depth and allows a rearward posture which will extend enemy's Ls of C.

g. Balance in Defence

(1) The frontage is large but approaches are few and widely separated. Poor communications, acute logistic problems limit choice of areas for attacker. Defence can be based on communication nodal points as self-contained strong points.

(2) Owing to extended frontages, and Pakistan being on the exterior lines, reserves may have to be split to provide balance in the entire zone. The grouping of force and the concentrated or split deployment of reserves has to be carefully balanced against the notion of time and space.

h. Salient Features of Operations

(1) Terrain is well suited for employment of large armour formations. Assembly of forces at Jaisalmir poses multidirectional threat; thus a dilemma for placing of reserve.

(2) Lack of cover emphasizes dominant role of air.

(3) Inadequate communication and logistic infrastructure will pose immense logistic problems and limit the speed and scale of offensive. Tracks and water sources being few will gain immense operational significance. Control of these will be contested.

(4) Mobile infiltration, and heliborne operations can be employed to maximum advantage.

(5) Operations cannot be undertaken in Kutch in summers because of high tide.

j. Communication Imbalances

(1) Cisfrontier

(a) Major imbalance is created by the large lateral distances and poor communication in the desert belt.

(b) Meter gauge rail link between Hyderabad and Chhor sector creates transportation problems.

(c) Absence of eastward rail link in Rahim Yar Khan Sector.

(2) Transfrontier.Road network has been improved considerably by India particularly in Barmer Sector. However, movement by railway will be time consuming because of meter gauge from Jodhpur to Barmer and Jaisalmer/Munabao. This imbalance is however being redressed by India.

158. Coastal Zone

a. Strategic Objectives. Karachi is the only strategic objective being a major commercial and naval port (Entrance to Port Qasim is only 13 nautical miles from Karachi harbour and as the approach is the same, it is not considered a separate port).

b. Strategic Approaches

(1) Karachi port is vulnerable to blockade.

(2) Priority of Amphibious Landing Sites

(a) Gadani/Sonmiani beaches for operations towards Karachi.

(b) Pasni/Gwadar beaches fr political purposes.

(3) Indus Delta is unsuitable for landing of a sizeable force. This coast is however suitable for landing commandos coast saboteurs.

c. Scale of Offensive. Scale of offensive will depend upon the size of enemy a amphibious forces and her capability to sustain such a force from the sea. Presently, India has raised a brigade size amphibious force.

d. Strategic Posture. Defence of Karachi against naval, air and land threat is essential.

e. Offensive Options

(1) Enemy. India can employ the amphibious brigade conjunction with air assault forces to pose a threat to Karachi. Over land link up from east will be difficult.

(2) Own. Own offensive options in this zone depend on our naval strategy.

f. Salient Features of Operations

(1) Amphibious landings from June to September will be hazardous all along the coast.

(2) Waters less than 30 fathoms are mineable; likely landing beaches can also be mined.

(3) Landing by any force undertaken farther than Karachi will have to be logistically supported from seaward.

g. Communication Imbalances

(1) Only a single road connects Keti to Thatta, Mirpur Sakro and Gharo on coast of Indus Delta.

(2) A coastal road (24 F2) linking Ormara with Liari onwards to Sonmiani is under development on Mekran Coast at a cost of Rs. 250 million. Ormara and Jiwani are linked with a jeepable track.

Strength and Weaknesses

159. India

a. Strength

(1) Geographical Location and Size. Geographically India is militarily placed at a great advantage in South Asia. She is surrounded by relatively small and weak countries except China from whom she is protected by huge mass of Himalayas. She has a long coastline which provides added strength and security.

(2) Superior Strategic Orientation. Owing to the great strategic depth her heartland and core areas are located out of reach vis-à-vis Pakistan. This provides her the possibility of manipulating the elements

of time and space to improve her relative strength ratio except in Ravi – Chenab Corridor and Akhnur. This affords her an overall superior strategic orientation in all Zones/Sectors as compared to Pakistan who enjoys this advantage at only two of the aforementioned areas.

(3) Communication Infra-structure. Except in Ravi – Chenab Corridor and Kashmir she has developed better communication infra-structure which provides her the flexibility to shift and assemble her forces at the point of decision. Even in Kashmir various penetrants have been developed but here the imbalance resides in the absence of laterals.

(4) Water Regulation. Her ability to regulate the waters of Rivers Chenab, Ravi and Sutleg affords the flexibility of alternating the obstacles value of canals and rivers to her advantage. This aspect seems to have received special attention in the recent past and may have far reaching consequence for future operations in Punjab Zone.

(5) Air Fields. With the shift of emphasis towards mechanisation, a number of airfields have been developed close to the border which provide her security, flexibility and deep strike capability.

b. Weaknesses

(1) Assembly of Forces. The peace time located of her offensive formations increase the time for the forward assembly which results in loss of strategic surprise.

(2) Vulnerability L of C to Kashmir. The L of C to Kashmir run perilously close to international border in Ravi – Chenab cooridor which makes here extremely sensitive to this area. The need of its defences the size of her forces for offensive initially.

(3) Operation on Exterior Lines. Overall, India has the constraint to operate on exterior lines vis-à-vis Pakistan. Switching of forces from one Zone to the other would be problematic and time extensive.

(4) Logistic Build Up in the South. Due to under developed communication infra-structure on the cisrontier, India will have to estend here logistic base forward for operation against the Green Belt, which, despite the terrain facility to ideally exploit the potential of her mech forces precludes, to some extent, the possibility of launching her main effort in the Desert Zone.

(5) Hostile Attitude of Sikhs/Kashmiri Muslims. Sikh insurgency in East Punjab and Jammu as well as the sympathatic feelings of Kashmiri muslims towards Pakistan are the constant sources of concern for India. This has not only weakened the central authority of Indian Government in these areas but has also created immense rear area security problem.

160. Pakistan

a. Strength

(1) Operations on Interior Lines. Better Communication infrastructure particularly the laterals facilitate Pakistani forces operate on interior lines in Punjab Zone. This afords Pakistan to generate greater combat potential with comparatively smaller forces.

(2) Assembly of Forces. Location of cantonments in close proximity of eatern border enhances our abilit to assemble the forces for offensive in relatively short time.

(3) Natural Barrieers Prime desert in the south, river sutlej in the centre and lofty mountains in the north coupled and enhance our security.

b. Weaknesses

(1) Lack of Strategic Depth. Lack of strategic depth and location of political and economic centre close to the border makes us vunerable against and Indian aggression. It also limits the possibility of successfully concluding a defence operational cycle.

(2) L of C. It runs perilously close all along the Punjab Zone. It is highly vulnerable at Reti Rahim Yar Khan.

(3) Single Sea Port. Total dependence on single sea port at Karchi, the denial of which by India can be highly deterimental to the national security especially in long drawn out war scenerio.

(4) Hindu Population. Pro India Hindu population in desert belt is a weak link in our defence effort in this sector.

Mobility Problems

161. Mobility Problems of Pakistan Army. Mobility problems can be generalized as under :-

a. Absence of edequate numbers of 4x 4 vehicles with infantry formations likely to operate with armoured formations.

b. Inadequate dedicated transport to make infantry units mobile.

c. Absence of adequate inventory of versatile bridging equipment which could accommodate reasonable fluctuation of water in canals and reivers. Mobile ramps are not held which could save time in preparing approaches and exits.

d. Lack of compatible mechanical mine breaching and laying equipment, not-withstanding efforts being made to redress this aspect.

e. Lack of adequate quantity of expendients, aiming at improving trafficablity in varied terrain conditions.

162. Desert Area Problems. Specific conditions regarding desert area of Thar and Cholistan are as under :-

a. Roads and tracks are scarce on the cisfrontier side of our deserts, specially that portion which is situated in province of Sind. Trafficability ranges from good to very poor, depending upon the gradient of dunes and texture of sand. Heavy engineer support will be required in support of meaningful military operations.

b. Lack of fresh water and incapability of these areas to support normal life. Logistics demand extensive effort.

c. Due to featureless nature of terrain, navigation will pose major problem specially during night operations.

d. Capacity of vehicles to carry loads will be less with heavy demand on POL and maintenance.

e. Day and night temperature differential (as much as 70 F) will impose a strain on personnel and will also affect equipment at times.

CHAPTER VII

WESTERN FRONT

FRONTIER ZONE (Annex G)

163. Wakhan – Chitral Sector

a. General

(1) This Sector extends from Kilik Pass to Dorah Pass.

(2) The Wakhan Corridor, a district of Badakhshan Province, touches the Sinking Province of China in the east and is sandwiched between the Soviet Union in the north and Pakistan in the south. Wakhan is a long and narrow valley which runs east to west. The length of the valley could be taen as roughly 240 kilometers with width ranging from 13 to 64 kilometers. It has only one metalled road and a few fair weather tracks. The area is very sparsely populated with no major towns.

(3) On the cisfrontier lies our district of Chitral. The area is dominated by the Nindu Kush Range that run north-east to south-west. The area has high mountains, deep, narrow valleys and fast flowing streams. Heights range from 1100 to 7600 meters. The temperature during the night in winters fall as 5-30 degrees below zero, while the day temperature generally remains at about minus 15c. The area is thinly populated and the valleys are fertile, with few roads. Vegetation below the snow line ie, upto 3700 meters is in abundance.

(4) Passes. In all there are about 17 passes on the Pak-Afghan border in this Sector. The important Passes are :-

(a) In all situated at an elevation of 5855 meters. It gets snow bound in winters and opens from June till October. It has been a traditional caravan route between Hunza and Wakhan. It has now assumed added importance on account of the Karakoram Highway.

(b) Broghil Pass. It leads from Sarhad-e-Wakhan to Yarkhun and Mastuj. It is situated at an elevation of 3890 meters. Infact, it is a wide gap of about 8 kilometers in the Range which divide the Wakhan and Yarkhun Valleys. It remains open all the year round except in April when the snow is too soft for movement.

(c) Dorah Pass. This pas is situated at an elevation of 4055 meters on route Zabak Chitral. It is passable from June till October and is a much used caravean rote. Descend from its western side into Afghanistan is steep and stony. It is linked to Chitral by a class 12A1 road from Garam Chashma which is under constructuction.

(5) Some of the less significant passes are :-

(a) Wakhjir Pass. Altitude is 3940 meters above sea level. Situated on the northern bank of Ab-e-Wakhjir. Remains open from June till October.

(b) Khora Bohrt Pass. Altitude is 4600 meters. The route from Gilgit to Wakhan, on which it is situated, is only open, for few weeks in spring and autumn. In sumers, even men of the country carrying light loads find it extremely difficult to cross.

(c) Ochili Pass. Altitude is 5258 meters. This pass has no military importance. It is very dangerous and difficult to cross because of the crevasses. The safest time to negotiate the Pass is I the early part of the year (December –January) when snow become hard.

(d) Mach Pass. The pass lies on route from Garam Chashma to Zebak. Altitude is 5033 meters. Impassable for animals. But open to men on foot from June till October. At the end of summer, the Chitral side of the pass is free of snow, but on the northern side, the side, thesnow is dep and descend very steep, with many crevasses. It can be used as an alternatives to the Dorah Pass, if the objective is Zebak.

b. Communications. All roads in the area are confined to the valleys and these are :-

(1) Roads

(a) Transfrontier. Few roads and tracks exist in Wakhan area. Significant roads in the area are :-

i. Road Faizabad-Zebak Sarhad –e-Wakhan. Class 50 A2 all weather road.

ii. Road Zebak-Sanglich-Dorah Pass. It is Class 9

A 1 all weather road.

iii. Road Zebak Mach Pass. Class 9 F1.

iv. Track Sarhad-I-Wakhan-Broghil Pass. Class 9 F1.

v. Track Bozai Gumbad-Irshad Pass. Class 9 F1.

vi. Track Bozai Gumbad-Wahjir Pass. Class 9 F1.

vii. Road Khorog Murghah Kyzlrabot. This road is in Russain territory and is class 60 A1. It runs prallel to Waken area and is strategically important for the Soviet forces.

(b) Cisfrontier. Chitral which is contiguous to Wakhan, is connected through various valleys with the districts of Mardan, Swat, Dir and Gilgit Agency However, Lowari Pass is an obstacle and remains closed for about six months. Important roads and tracks are :-

i. Lowari Pass Drosh -24 Ar upto Chitral.
Chitral Mastuj -Class 3 to Class 9 F1
-From Chitral to Mastuj

ii. Road Drosh Arandu Pass. Class 9 F1.

iii. Road Chitral Garam Chashma-Dorah Pass First 35 kilometers 12 Al. Further construction is in progress.

iv. Road Mastuj-Broghil Pass Class 5 F1

v. Road Broghil Pass Gupiis Class 3 F1

vi. Road Chillinij Gakuch i-Limit Class 3 F1

vii. Kilik Pass-Misgar Sost Foot track

viii. Gilgit Matuj via Shandur Pass Gilgit gupis-class 24 F2 under construction. Gupis Shandur Mastuj Class 3 F1.

(2) Railways. No rail link exists on either side of the Druand Line.

(3) Arifields

(a) Transfrontier

i.	Faizabad	-	Non jet capable airfield.
ii.	Baharak	-	Non jet capable airfield.
iii.	Zebak	-	Non jet capable airfield.
iv.	Langar Kisht	-	Landing ground and helipad.
v.	Chihil Qand	-	Landing ground and helipad.

(b) Cisfrontier

i.	Chitral	-	Non jet capable.
ii.	Gilgit	-	Non jet capable.
iii.	Umetalled airstrip exists at Drosh.		

(c) All rivers and streams in Wakhan are fordable at many places, except where they pass through gorges. No rivers except Yarkhun near Mastuj lie across the routes penetrating into our territory from Wakhan. In fact best routes are along the rivers. Whereas the routes coming into Pakistan fan out into open spaces, the routes into Wakhan become more confined and end up at Oxus River, which flows across all these routes except the one over Dorah Pass.

(d) Pentrants. Lack of communication infra-structure, height and extreme cold preclude the employment of large size force. There are however, five penetrants in this sector which hold true for both the sides :-

(1) Bozai Gumbad-Irshad Pass Sost (Karakoram Highway. This penetrant leads to the most important town of gilgit, which controls the strategic Karakoram highway. It has the capacity of a battalion stength upto Sost. Thereafter upto Gilgit, its capacity increases to a division.

(2) Bozai Gumbad –Khuraburt Pass-Chillinge Lmit Gakuch Gilgit. Khorabohrt Pass which has a height of 4603 meters opens only few weeks in March/April. This panentrant has a capacity of one battalion on pack basis.

(3) Sarhad-e-Wakhan-Broghil Pass Darkot Yasin Gupis Gilgit. It leads to the strategic town of Gilgit. There is no

major obstacle for infantry or animal transport. It has the capacity of a battalion on pack basis.

(4) Sarhad-e-Wakhan –Groghil Pass –Mastuj-Chitral. It leads to the important town of Chitral. It has the capacity of a battalion size force.

(5) Zebak-Dorah Pass-Chitral. This penetrant is also seved by a class 9 F1 from Zebak upto mach pass. Therefore, it is linked with Garam Chashma by a mule track. It can take a battalion size force.

e. Likely Objectives

(1) Cisfrontier. Karakoram Highway, Gilgit and Chitral.

(2) Transfrontier. Zebak and Faizabad.

f. Effects of Terrain on Military Operations

(1) Move of force will be restricted existing roads and tracks.

(2) Because of difficult terrain, operations will be slow. Objective will therefore have to be limited.

(3) Administrative support by air will be an essential pre-requisite.

(4) The time of year when operations can be undertaken is limited due to closure of passes. The operations can generally be undertaken during the period fromMay to November.

(5) Severe climatic conditions necessitate special clothing and equipment.

(6) The enemy operations will be primarily based on heliborne forces. Link up operations through the passes will have to follow.

164. Jalalabad –Peshawar Sector (Khyber Sector)

a. General Description

(1) The sector extends from the Dorah to Gomal river, with a length of about 275 kilometers while width varies from 60 kilometers (across Paiwar Kotal Pass) to 135 kilometers (across Khyber Pass).

(2) This sector is predominantly mountainous. The mountains are generally the western off shoots of Hindu Kush and run from north east south west. The area is barren, rocky and devoid of vegetation. Routes available lead either over the passes or along the river beds. As the altitude decreases, the area opens and given rise to population

centes. Important towns like Kabul, Jalalabad, Ghazni, Gardez and Matun are located this sector. Numerous rivers drain the area.

(3) On the Cisfrontier, the area is mountainous. Up north, due to heavy snowfall the mountains remain snow bound while in the middle around Khyber the mountains are dry and barren. The northern slopes of the mountains are steep, rugged and usually wooded, while the southern except the Chakdara and Kharlachi are narrow, In these two valleys armour can be employed.

(4) Passes. The sector is studded with passes. Some of these passes have seen very famous invaders, like. Alexander, Changiz Khan Tamerlane, Mehmood of Ghazi Babur and Nadir Shah. In all 42 invasions of India via NWFP have been recorded. These passes have acted as historical avenues of invasion, which remain generally open throughout the year. Some of the famous and important passes are :-

(a)	Areandu	-	1090 Meter
(b)	Binshai	-	2424 Meter
(c)	Nawa	-	1818 Meter
(d)	Silala	-	909 Meter
(e)	Hhyber	-	909 Meter
(f)	Kalachi	-	1515 Meter

b. Communications. Unlike the Wakhan Sector, this Sector is fairly well populated and has a good network of roads.

(1) Roads

(a) Transfrontier

i.	Afghanistan Circular Highway (Mazar Sharif Jabal-us-Saraj Kabul-Ghazni)	70A2
ii.	Sangar Saria-Kunar (left bank of Kunar River)	50F2
iii.	Jalalabad Chiga Sarai Chigail Sarai –Birkot (Right bank of Kunar River	60 A2
iv.	Jalalabad Mirza Khel –Goshta Lalpura	9 F1
v.	Darunta-Kargai-Laghman	80 A2
vi.	Dasht –I-Rawat Ruka-Gulbahar Sarobi	20 F2
vii.	Kabul Kulangar Hissarak	50 F2
viii.	Azhidabad-Ali Khel Ali Khel-Paiwar Kotal	20 F1/9F1

	ix.	Hissarak Gardez	50 F2
	x.	Ghazni –Gardez Ahmed Khel	50 A2
	xi.	Ahmed Khel Pir Sarai Kharlachi	35 F2
	xii.	Jalalabad Gandamak	50 F2
	xiii.	Mada Khel Yaqubi	35 F2
	xiv.	Yaqubi Matun	50 F1
	xv.	Yaqubi Lakka Tigga	35 F2
	xvi.	Gardez Matun	60 A2
	xvii.	Matun Spinwam	9 F1
	xviii.	Matun-Daragai Rezi Senkai	50 F1
	xix.	Daragai –Spin Khawar	20 F2

(b) Cisfrontier

i.	Nowshera-Malakand Chakdara	70A2
ii.	Timur Qila Nawagai	70 A1
iii.	Peshawar Warsak Pir Kala	50 A2
	Pir Kala Karappa Kandao	12 A1
	Karappa Kandao Nawagai	50 A2
iv.	Nowshera Peshawar Jamrud	70 A2
v.	Jamrud Torkham	50 A1
vi.	Peshawar Kohat	50 A2
vii.	Kohat Thal Parachinar	50 A2
viii.	Parachinar-Paiwar Kotal	9 F1
ix.	Parchinar Kharlachi	9 F1
x.	Arawali Lakka Tigga	9 F1
xi.	Thal Mir Ali	50 A1
xii.	Spinwar Kaitu	9 F1
xiii.	Miranshah-Ghulam Khan Killi	9 F1
xiv.	Wana-Razmak	18 F1
	Pazmak-Miranshah-Bannu	50 A1
xv.	Kohat Bannu-Miran Shah	50 A2

(2) Railwaye. The rail links in this sector on our side are as under :-

(a)	Nwshera-Mardan-Dargai	Broad Gauge
(b)	Attock Nowshera Peshawar	“
(c)	Khushalgarh Kohat	“

(d)	Kohat Thal	Narrow Gauge
(e)	Kalagah –Bannu	"
(f)	Lakki Pezu-Tank	"

(3) Airfields

(a)	Transfrontier (Jet Capable)	-	Jalalabad, Baghram Kabul, Matun
(b)	Cisfrontier	"	Risalpur, Peshawar, Kohat, Bannu

c. Obstacles. Major obstacles in the area are Kunar River leading towards Chitral in the north east, Kabul leading to Peshawar, Kurram River leading to Thal, the Kaitu and Tochi Rivers leading to Bannu. As is apparent, the pattern of all these rivers is such that they lead to, rather than obstruct from reaching, important communication centres in Pakistan.

d. Penetrants

(1) Birkot Arandu-Drosh. It lead from Kunar Valley, over Arandu, to Chirtal/Dir Has class 9 fair weather road remain open throughout the year.

(2) Asmar-Bin Shahi Dir. Leads from Asmar (Kunar Valley) to Binshahi –Barwa-Monda Qila/Dir. Served by Class 5 fair weather road. Can taken an infantry Brigade.

(3) Chiga Sarai-Nawa Pass. This leads from Narang (Kunar valley) to Nawagai and Yousaf Khel over Nawa and Shaunkarai Passes. Together, these Passes can take a division size force.

(4) Through Silala Complex of Passes. Leads from Kunar valley to Gat Warsak Yousaf Khel. The complex of Passes include Ghorsal Pass, Silala Sar and Shaunkarai Pass. Good tracks through the passes lead to Gat Warsak. With capture of Nahakki Defile, Operations towards Peshawar can be developed. It can take upto an infantry division supported by an armoured brigade.

(5) Jalalabad Khyber Peshawar. (It includes Shilman, Khyber and Chra Bazar) It leads form Jalalabad over the Khyber Pass to Peshawar. The penetrant generally descends toward Peshawar. The penetrant generally descends toward astride River Kabul. The River

does not obstruct the advance as it flows parallel to the axis of advance, however lateral movement and mutual support of forces, north and south of the River will be obstructed. It can take upto two infantry divisions and an armoured brigade.

(6) Ali Khel Paiwar Kotal Parachinar. It can take an infantry brigade It can be used in conjunction with Kharlachi penetrant.

(7) Gardez Ahmed Khel Kharlachi Arwali Thal Pentrant. It can take an infantry division and an armoured brigade.

(8) Gardez Matun Lakka Tigga Arawali Thal. It can take an infantry division suported by some armour. As terrain is hilly, initial battles will have to be fought by infantry, until kurram River is reached.

(9) Gardez Matun Batai Pass Thal. It can take an infantry brigade group. Initially operation will be on Animal Trasport basis as there is no road link. This penetrant can be used in conjunctions with Lakka Tigga Penetrant.

(10) Gardez Matun Kaitu Spinwam- Thal. It can leads from Landar/Dabagai through Kaitu valley, to Spinwam. It can take upto an infantry division supported by some armour.

(11) Matun Daragai Ghulam Khan Killi/Saidgai-Miranshah. It can take upto an infantry division. Once border defences are reduced, upto an armoured brigade could be inducted for employment in the relatively pain area of Miranshah.

(12) Urgun Tochi Valley Datta Khel Miranshah. It can take one mountain/Infantry brigade group on Animal Transport basis.

e. Likely Objectives

(1) Transfroniter. Road along Kunar River, Jalalabad, Kabul, Paiwar Kotal and Matun.

(2) Cisfroniter. Dir, Nawa Pass, Jamrud, Peshawar, Parachinar, Thal and Miranshah.

f. Effects of Terrain on Military Operations

(1) Major operations will be restricted to valleys and passes.

(2) The restriction of space will limit the size of force for offensive.

(3) Passes are key to communication, therefore their control will have to be retained.

(4) The border mostly runs on crestline and in some cases we are holding the entire mountain pass. Thus the terrain lends a tremendous tactical advantage to us.

(5) Switching of armour between Khyber and Kurram is difficult due to absence of rail link.

(6) Major obstacles (rivers Lead towards the borders.

Baluchistan Zone. (Annex H)

165. Chilzai Zhob Sector

a. General Description

(1) Extends from river gomal to domandi with a length of approximately 224 kilometers and depth varying from 112 to 176 kilometers.

(2) The transfrontier area is a vast expanse of arid plateau averaging in height from about 2000 to 3030 meters. It is surrounded all around by barren mountain ranges. Arghandab is the only major river flowing in the area. The area receives relatively less rainfall bout the higher mountains receive lot of snow which account for the water in river arghandab. Afghanistan's Circular Highway linking Kabul with other major cities runs along the Arghandab.

(3) The cisfroniter side is again mountainous where heights rise upto 400 meters. There are only two valleys of importance namely, Zhob and Kunar. Some rivers of inconsequence also flow through the area.

(4) Passes. The only pass of consequence is Tochi which is actually a fairly wide gap carved out y River Tochi. The River is fairly swift.

b. Communication. Life line on the transfrontier is the Afghanistan Central Highway that runs along the Tranak River and feeds important town like Ghazni, Mukur and Kalat-e-Ghilzai. On the cisfrontier the main road is Zhob Quetta.

(1) Roads

(a) Transfrontier. Important roads are :-

i. Ghazni Kalat-I-Ghilzai - 70 A2

ii. Ghazni-Pattana-urgun-Border - 9 F1

iii. Ghazni –Zarghun Shahr-Domandi - 40 F1

iv. Ghazni-Adin Khel Shinki-Do Chino Qala 50 F1

v.	Ghazni-Diladin-Khadar Khel Ghulam Rasul Qila		50 F1	
vi.	Mukur Adin Khel Jani Khel	-	50 F1	
vii.	Kalat-I-Ghilzai-Drwazgai	-	50 F1	
ix.	Bara Khel –Darwazgai-Hawa China Maruf		50 F1	
x.	Hawa China-Rashid Qila	-	50 F1	
xi.	Lowargai-Darwazgai Ghulam Rasul Qila		50 F1	
xii.	Darwazgai-Rashid Qila		50 F1	
xiii.	Hawa China Khawajazai		50 F1	
xiv.	Dochina-Warsak		50 F1	

(b) Cisfroniter

i.	D.I.Khan D.G Khan Fort Munro Quetta		50 A1	Loralai
ii.	Quetta Qila Saifullah-Zhob		50 A1	
iii.	Zhob Gul Kach Wana		9 F1	
iv.	Wana Miranshah		18 A1/50 A1	
v.	Miranshah Datta Khel		70 A1	
vii.	Zhob-Shaighalu-Ashewar-Qamar UddinKarez		9 F1	
viii.	Qamar Uddin Karez Keshatu Ghazluna-Murgha Faqir Zai Zhob River		9F1	
ix.	Ananai Pishin		50 F1	
x.	Pishin Zhob		50/70 A1	

(2) Railways

(a)	Quetta Bostan	-	Broad Gauge
(b)	Bostan-Zhob	-	Narrow Gauge

(3) Airfields

(a)	Urgun and Quetta	-	Jet Capable
(b)	Kalat-I-Ghilzai, Maruf, Zhob	-	Non jet capable

c. Penetrants

(1) Into Pakistan

(a)	Ghazni/Gardez Tochi Pass Miran Shah-	Infantry brigade pack basis

(b) Ghazni Zarghu Shahr-Domandi Infantry Division with Gul Katch/Sambaza Wana some armour

(c) Mukur Khaddar Khel-Ghulam Infantry division Rasul Qila Qamar Uddin Karez some armour
Anshewat

(d) Kalat-I-Ghilzai-Lowargai Infantry divisions Rashid Qila-Ghazluna Murgha Faqir Zia

(2) Into Afghanistan

(a) Zhob sambaza Gulkach Domandi Infantry division Zarghum
Shahr Gardez

(b) Zhob Qamar Uddin Karez Khadar Infantry division Khel Mukur supported by some armour.

(c) Murgha Faqir Zai-Ghazluna Infantry brigade Rashid Qila Lowargai Group Kalat-I-Ghilzai.

(d) Zarban-Jilga-Domandi Kukal Infantry brigade Katch Maruf.

d. Objectives. Important objectives in this sector are :-

(1) Transfrontier. Urgun, Mukur, Domandi, Khadar Khel and Maruf.

(2) Cisfrontier. Tochi, Miranshah, Bannu, Wana, Qamar Uddin Karez Ashewat and Zhob.

e. Effects of Terrain on Military Operations

(1) Major operations will be restricted to valleys and passes.

(2) Area around Zhob valley is open and tankable.

(3) The few rivers do not pose any problem to the going.

(4) The passes are generally open all the year round.

166. Kandhar-Quetta Sector

a. General Description

(1) Length of this sector is approximately 640 kilometers and depth varies from 95 to 200 kilometers. The Afghan sector of Kandhar lies across our Quetta and chagai Districts of Baluchistan.

(2) On the transfroniter, the aea compirses o desert and semi desert country. It is surrounded on all sides by bareen mountain ranges. River Helmand is the only major river which flows through the middle of the

area. The water in various depressions known as Human. The water in these Humuns as well as in adjacent areas is invariably backish.

(3) On the cisfroniter, the terrain is generally plain and interspersed with few mountains and numberous nullahs which are non perenial. The plains sepcially of Nushki area are absoultely. Falt and ideal for tanks but soft vehicles absoutely flat and ideal for tanks but soft vehicles cannot ply except on the existing roads and tracks. This part of the sector is fit for

large scale armour operation upto Nushki defile. West of Chagai, the area is also restricted due to the mountain ranges of Koh-I-Naro and Kho-I-Sultan. The desert area poses many reestriction on move of soft vehicles but A vehicles can oerate with comparative ease.

(4) Passes. The main passes in this sector are boghra, Khojak, Spina Tizha, Spo China and Bolan.

b. Communication. The important communication centres like Kandhar, Grishik and Quetta lie in this sector. Major communication arteries lead to and emanate fromthese. However due to extreme heat, vast expenses of desert and absence of adequate drinking water, not very ma roads of importance link the two coountires.

(1) Roads

(a) Transfrontier

i.	Grishik-Kandhar-Kabul	-	70 A2
ii.	Grishik Safar	-	50 F2
iii.	Safar Chahar Burjak	-	50 F1
iv.	Mandi Hissar Maruf	-	50 F1
v.	Kandhar-Spin Baldak	-	70 A2
vi.	Kandhar-Tongi	-	50 F1
vii.	Tongi Karim Nawar	-	80 F1
viii.	Karim Nawar –Aziz Khan	-	50 F2
ix.	Aziz Khan Saiyud Bus and		18 F1 onwards to Salwatu Spochina and Inam Bostan.

x. Numberous class 3 tracks link the helmand Highway to Nuski and Dalbandin

(b) Cisfrontier

i.	Quetta Sibi	-	50 A1
ii.	Quetta Sibi	-	50 A1
iii.	Quetta Nushki Nokkundi	-	50 A1
iv.	Nokkundi Jazzak	-	50 F1
v.	Jazzak Jali Ribat	-	50 F1
vi.	Quetta Chaman	-	50 F1
vii.	Quettan Pishin	-	50 A1
viii.	Pishin Khojak	-	50 A1
ix.	Khojak-Domandi	-	9 F1
x.	Sheikh Wasil Spochina	-	9 F1
xi.	Nushki-Inam Bostan	-	50 F2
xii.	Dalbandin-Chagai Nilaf	-	50 F2
xiii.	Dalbandin Barab Chah	-	3 F1

(2) Railways. Rail links on Cisfroniter are :-

(a)	Quetta Chaman	-	Broad Gauge
(b)	Quetta Nushki-Dalbandin-Zahidan	-	" Nokkundi
(c)	Quetta Bostan	-	"
(d)	Quetta Sibi	-	"

(3) Airfields

(a) Transfroniter

i. Jet Capable -Kandhar Lashkargah
Chahaar Burjak Lashkargah
Chahaar Burjak Maruf

ii. Non Jet Capable –Grishak Nimroz Siyun
Bus

(b) Cisfrontier

i. Jet Capable - Quetta

ii. Non Jet Capable-Pishin Chaman Panjapai
Dalbandin Nokkundi Juzzak

c. Penetrants. As is evident from the lack of communication infra stucture, there are not many important objective in the area and thus the penetrants too are limited. The only importan pentrants are :-

(1) From Afghanistan

(a) Maruf-Domandi -Infantry division

(b) Kandhar-Chaman-Queta -Infantry division supported by an armoured division

(c) Karim Nawar Spochina -Infantry division Sheikh Wasil Quetta and/or Karim Nawar Inam Bostan Nushki

(d) Safar Shah Ismail Dalbandin -Infantry brigade with some armour

(e) Jail Ribat Saindak Nokkundi -Infantry brigade with some armour.

(2) From Pakistan

(a) Quetta Chaman Spin Badak -Infantary division Kandhar

(b) Quetta Panjapai Spochina Spin –Infantry division Baldak supported by an armorued brigade

(c) Sheikh Wasil Spochina Karim Infantry division Nawar

(d) Nushki-Inam Bostan-Karim Nawar -Infantry division

(e) Nusnki Bahram Chah Safar - Brigade size force

(f) Nokkundi Amir Chah Langar-I-Sultan-Brigade size force

(g) Juzzak Jali Ribat - Brigade size force

d. Effects of Terrain on Military Oeprations

(1) Durand line generally runs along the feet of the mountains with all dominating heights and important passes like Khojak Pass are on our side, giving us a marked tectical advantage.

(2) In the absence of local resources, supply will have to be carried over great distance. Water is scarce and its supply will be a major problem and may be a decisive factor in the selectio of routes for operations.

(3) Air support will be a pre requisite.

167. Pakistan –Iran Border. (Annex J)

a. General Description

(1) The area of study encompasses portion of Baluchistan and Sistan on the transfrontier while on the cisfroniter it covers part of Chagai, Kharan and Makran Districts. About the inhospitability of terrain which exists on either side of Pak Iran Border, Colonel Holdich, one of the British

Officer responsible for deliminting the perso Baluch froniter in 1886, had the following comments :-

(a) The longer portion of the line from the Maskel date groves to the Kohi-iMalik Siah passes through a country so inhospitable and s o destitute of water and supplies that the exact position of the boundary appears to be matter of no material concern to either persia or Kalat. The practical froniter for all this portion of the line is a strip of almost impassable desert."

(2) On the transfrontier side, although the whole of the region is arid, largely devoid of vegetation, and thinly populated, in its relief there are two constrasting areas the Jaz Murrain basin and the Makran coastal ranges. The Jaz Murrain basin an oval shaped depression is about 30 meters above the sea level. The There are snad dunes at places, especially in the east where they are often more than 30 meters in height. In winter the low central part is marshy, and after rainstorms which only rarely occur, a temporary lake is formed. The Halil Rund and the Bampur are the pirincipal rivers, feeding the lake.

(4) One the cisfrontier , in the plain of Chagai the ae is restricted due to the mountain ranges of Koh-I-Maro and Koh-I-Sultan. Koh-I-Dalil, Juzzak and Saindak area is the continuation of deserts and hills. Hamun-I-Mashkel is a large swamp with an are aof 10,000 square kilometers. There is very little water in ti and that too is brackish. In the Kharan District, the area is partly hilly and Partly plain/desert. The Makran division, due to scanty rain fall, saline nture of the soil and physical conformation of the country is almost entrirely desert. The coastal plain is 15 to 25 kilometers wide and starts from th einland hill ranges which runs to a height of 350 meters. There are no large rivers in Changai and Kharan Districts. In makran division only two rivers of military districts. In Makran division only two rivers of military importnce exist and these are Dasht and Rasht and Rakshan. Dasht is not a continous stream and only fills after rain.

b. <u>Communcation Infrastructure</u>

(1) <u>Roads</u>

(a) <u>Transfroniter</u>

i. Birjand Zajidan Mirjawa. Class 70 all weathe two way metalled road total length, is 570 kilometers

ii. Kerman-Zahidan Mirjawa. Class 70 all wather, two way metalled road from Kerman to Mirjawa except for some portion which is Class 35 A2. Total distance is 624 kilmeters.

iii. Kerman-Bazman-Khash Kuhak. The details of the road are as under :-

aa. Kerman to Nimabad. Class 70 all wather two way metalled road. Length 272 kilometers.

bb. Naimabad-Bazman. Class 50 all weather two way road. Length is 189 kilometers.

cc. Bazman-Khash. Class 35 all weather one way metalled road. Length is 160 kilometers.

iv. Kerman-Bazman-Iranshaher-Zaboli-Kuhak. The details are as under :-

aa. Kerman-Iranshahar. Class 70 all wather two way metalled road. Length is 550 kilimeters, except Naimabad to Bazman which is Class 50A2 road.

bb. Iranshahar-Kuhak. A class 20A2, 218 KM.

cc. Hovar-Pishin. Class 35 fair weather one way road. Length is 136 kilometrs.

v. Zahidan-Khash. Class 70 all wather two way metalled road. Length is 195 kilometrs.

vi. Ladis Khash. Class 35, all weather one way metalled road. Length is 160 kilimeters.

viii. Khash-Bazman. It is a class 35 all wather on way metalled road. Length is 160 kilometers.

xi. Khash Iranshahar. Class 70, all wather two way metalled road. Length is 176 kilometrs.

x. Khash Zarbaz Via Pashuh and Zaboli. Class 35 all weather one way metalled road upto Paskuh and than Class 20 F1 utp Zaboli. Length is 227 kilometers.

xi. Hovar Chah Bahar. Class 50 all wather two way metalled road.Length is 180 kilometers.

xii. Bampur Chah Bahar Via Nikshahr. Class 35 all weather one way metalled road. Length is 371 kilometers.

xiii. Tracks. There are numerous tracks in thearea which are mostly Class 9 one way, fair weather.

(b) Cisfrontier

i. Quetta-Dalbandin Nokkundi Jazzak. Class 50, A2 road upto Nokkundi and thereafter class 50 F1 upto the border. Length is 639 kilometers. It is supported by a broad gauge railway line all along.

ii. Nokkundi-Mashki Chah Saindak. Class 9 F1 track. Length is 132 KMs.

iii. Dalbandin Meru-Nokkundi. Class 35 F2 track.

iv. Kalat Kardi Panjgru Grawag. Class 35 F2/50 F1 track.

v. Karadi Washuk Plantak Grawag. Class 9 F1 track upto Washuk, thereafter upto Grawag it is class 5 F1 track.

vi. Bela Hoshab Turbat Mand.Class 9 F1 road upto Awaran thereafter till Mand it is class 50 F1 road.

vii. Ormara Pasni Gwadar Santsar. Class 9 F1 track. It is a coastal track moving along Makran coast and then turns north west from Gwadar towards Santsar.

viii. Panjgur Mand. Class 9 f1 Track.

ix. Juzzak Ribbat Qila. Class 50 F1 Track.

x. Nokkundi Gralish Top Qila Ladgasht. Class 50 F2 road which links with Panjgur.

xi. Dalbandin Panjgur. Class I F1 track.

xii. Panjgru Hshab. Class 9 F1 track. Length is 180 kilometers.

xiii. Turbat Pasni.Class 9 F1 track. Length is 137 kilometers.

xiv. Hoshab Pasni. Class 20 F1 track.

xv. turbat Santsar-Gwadar. Class 9 F1 track.

xvi. Mand Santsar Jiwani. Class 9 F1 track. Length is 166 kilometers.

(2) Railways. Zahidan is connceted with Quetta via Mir Jawa. The track is broad gauge and its total length is 525 kilometers. Zahidan is not lineked with Iranian interanl railway networsk.

(3) Airfields

(a) Transfroniter

i. Zahidan –Civil airport having two runways

ii. Chah Bahar -Jet capable

iii. mir Jawa -Abondoned/Disused airfield

(b) Cisfrontier

i. Dalbandin -Non jet capable

ii. Juzzak -Non jet capble

iii. Nokkndi -Non jet capable

iv. Turbat -Fit for Fokker

v. Panjgur -Fit for Fokker

vi. Jiwani -Fit for Fokker

vii. Pasni -Jet capable

ix. Ormara -Under construction for Jet aircrafts

c. Obstacles. In the north, near the border astride the main road between Nokkundi and Juzzak, the plains are undulating. From the tri junction of th three countries to witin 30 kilometers of nuski, ther is a barrier of alternating mountains and shifting sand dunes along the Pak Afghan Border. Secrcity of water ill also affect the operations. In the central portion, Hamun-e-Mashkel and the Karan sandy desert pse considerable difficulty on the movment of the forces.In the southern portion mountains though running east to west impose restriction on the movement. Due to the grain of the country, all roads and track tend to be

deflected, in the central portion, towardsnorth east of Nuski. Successive ranges of mountain tend to canalize the routes and make trasverse movement difficult.

d. Penetrants

(1) Quetta-Dalbandin Nokkundi-Zahidan. Upto Nokkundi Class 50 Al; then upto border Class 50 F1. Can take a corps of two infantry division or an infantry divison and an armoured brigade.

(2) Sorab Panjgur Saravan –Iran Shahbr. Class 24 f1 upto Panjgur and Class 9 F1 to sarvan. Can take brigad plus force supported by some armour.

(3) Bela –Awarn Turabat Mand-Iran Shahbr Class 50 F2 upto Awarn: upto Turbat 9 F1.

(The last two appraoches combined can take a divion minus initailly and then a division with some armour west of the border).

e. Strategic Objectives. Neither Pakistan nor Iran has any core area close to the borders. Thus strategic objectives for a total war will be tooo far in the rea.

f. Effects of Terrain on Military Operations

(1) Geographic Deterrence. The poor communication infrastructure, inhopitable waste land and lack of strategic objectives within reach would deter any major ofensiv. Chah Bahar and Gwadar though poorly linked with theinterior can be efectively used to dominate the Persion Gulf.

(2) Surprise. The assembly of forces in an unobtrusive manner and hence achievement of surpise to gain an upper edge for any major offensive in convetional sense woudlbe a remote possibility. Should it be desired. Notwinthstanding the heavy drain on lgiistic stamina, the summers afford the best opprotunity for surprise on commencement of 120 days wind. The forward assembly can be masked to a sufficient degree. However, initiation of hostilities during this perod would suit a contestan with weak airforce while the other with efective air cever would be a t disadvantage.

(3) Speed and Logistic Implications. The operations in the area would be slow and prolonged. It would cause an immense drain on logistic stocks because the terrain does not offer any opportunity to live off the land. The supply of water if not catered for can alon prevent operational sutenance. Unless the operations are initiated with forethought and due preparation, it would amount to opeate in an area of secorched earth.

(4) Strategic/Tectical Interdication. Considering the border demographyand the links available trhough roads/railwy which are very few, interdiction operation would become easy. It may include both tactical as well as strategic interdication along the main supply routes.

(5) Grouping nad Forward Planning. The combination of hilly, plain and desert terrain would not only warrant excellence of professional training in the relveant type of warfare but also the use of suitable equipment and armanent. It would call for balanced grouping of the foces and precise forward planning by the logistic staff.

(6) Terrain Dictates. The analysis of the terrain reveals that it offers tremendous strength to a defender on successive lines of defence, to the west of the international border. Offensive towards that driection would be difficult and costly. Conversely, operations twoads the east would be comparatively easy.

(7) An Initial Disadvantage. Kacha Kuh and Kohi-e-Taftan exclusivly dominate Mashkel basin. This allows improved obsevation from the Iranian territory over the battle field area in Kharan sector. Even if the deployment and adjustment of troops are carried out in the hours of darkness during pre hostilities phase, the subsequent movents/locations will beunder direct observation and hence a serious disadvantage.

(8) From of Manoevure. Iran will be operating on Interior lines.

(9) Laterals. Good laterals on Iranian side would facilitate their shifting of troops.

CHAPTER VIII
CONCLUSIONS WESTERN FRON

168. Frontier Zone

a. Priority of Strategic Objectives

(1) Cisfrontier. Peshawar, Kohat, Bannu and Chitral.

(2) Transfrontier.Kabul, Jalalabad, Gardez and Kunar Valley.

b. Priority of Strategic Approaches

(1) Into Pakistan

(a) Khyber Approach. Using the comination of Nawa, Silala and Khyber penetrants the capacity in terms of Pakistani formations is 3-4 infantry divisions and an armoured brigade initially which can be increased to an armoured division east of Jamrud. (local formation estimate is four infantry divisons and two armoured brigades). After capture of Pshawar, threat can be developed towards Attock/line of River Indus in the east or Kohat – Bannu in the South.

(b) Khurrum Approach. Combination of 6-7 penetrants in this area, gives it the capacity of 4-5 infantry division and an armoured division minus. After capture of Kohat/Bannu operations can be developed towards Kushalgarh/Mari Indus on Indus River or towards Peshawar in the North.

(c) Dir/Chitral Approach. The combination of Arandu, Binshahi, Ghakai and Nawagai penetrants give it the capacity of about one divison. (Local formation estimate is about one divison plus). Leads to Dir and Chitral which can be served from the south. Operations will be purely onmule/man pack basis and or by heliborne forces.

(2) Into Afghanistan

(a) Khyber Approach. Leads to Jalabad after the capture of which, threat can be developed towards Kabul. The capacity of

approach using all the penetrants is about 3 infantry divisons and an armoured brigade.

(b) Kurram Approach. Leads to Matun and Gardez. Capture of Gardez will sever Kabul-Kandhar link. The capacity of this approach is about 2-3 infantry divisions.

(c) Dir/Chitral Corridor. Leads to upper reaches of Kunar valley, capure of which will sever the southern link with Wakhan corridor. Masimum about a division (-) size force can be employed.

c. Critical Spaces

(1) Cisfrontier

(a) Ali Masjid – Michni Fort – Peshawar.

(b) Miran Shah – Thal – Nagu – Bannu.

(c) Lowari Pass – Drosh.

(2) Transfrontier. Jalalabad Salient, Matun Salient and Kunar Valley.

d. Pivots of Manoeuvre

(1) Cisfrontier. Peshawar, Thal, Bannu and Kohat.

(2) Transfrontier. Jalabaad and Gardez.

e. Offensive Options and Scale of offensive

(1) Afghan Options. Minimum 4-5 infantry divisons and an aroured divison inducted inechelons would be required for the capture of Peshawar and about the same quantum will be required for the capture of Kohat/Bannu. Alternatively, Afghans can go for tactical gains, eg, Parachinar, Landi Kotal, Nawagai etc.

(2) Own Options

(a) Jalalabad Salient. Absorption of Jalalabad salient with 2-3 infantry divisions and an armoured brigade from the direction of Khyber Corridor will increase the depth to our strategic area of Peshawar. It will deny Afghanistan's access to Kunar Valley and Wakhan corridor form the south and assist us in developing operations towards Kabul.

(b) Matun Salient. Absorption of Matun salient from direction of Kurrum Corridor with about two infantry divisions and an armoured brigade will improve our defensive posture by

reducing the vulnerability of Parachinar and increasing depth to strategic objectives of Bannu/Kohat. It will assist us in developing operations towards Gardez and severing Kabul – Kandhar link.

(c) Kunar Valley. Capture of Kunar valley with about a division from the direction of Dir/Chitral Corridor will deny entry into Wakhan corridor from the south.

f. Strategic Posture

(1) Afghan. The depth of cisfrontier strategic objectives, inherent friction of the intervening terrain and domination of their borders areas by heights in Pakistan, make a strategic offensive from Afghanistan cost probhibitive and unlikely. Likerly alternative is defensive sgtrategically and offensive gtactically.

(2) Pakistan. The terrain provides oppoirtunities for strategic as well as tactical offensive. The strength afforded by dominating terrain features along the Durand Line dictate a forward defensive posture. The rugged terrain and lack of communication infrastructure north of Arandu Pass and south of Miran Shah upto Gomal preclude likelihood of major operations. These areas can be held lightly. The importance of Jalalabad – Pehsawar and Matun – Bannu/Kohat approaches dictate that these be held in strength.

g. Balance in Defence. Absence of lateral rail link and the circuitous single road linking Peshawar-Kohat/Bannu and Dir/Chitral passing through a number of defiles, poses a dilemma for placing of reseves. Shifting of forces from one sector to another will take 48 to 72 hours. The defences in the important sectors and concentration or split deployment of the reserves needs to be carefully balanced against the notion of time and space.

h. Significant Features of Operations

(1) Terrain dictates infantry blased operations while limited armour can be used in valleys after croosing bottle-necks.

(2) Inherent strength of terrain reduces requireent of troops for defence. Control of passes along the Durand Line gives us an immense advantage, which must be utilised.

(3) Logistic support will be a major favtor in deciding the scale and speed ofoffensive.

(4) The terrain is susitable for unconventional operatrions using SSG.

(5) Difficult nature of terrain will pose serious limitations for air support to land operations.

(6) In the Wakhan/Chitral sectors :-

(a) Terrain is unsuited for large scale operations. Severe climatic conditions necessitate proper training, acclimtization, special clothing and equipment.

(b) Chitral remains cut off from rest of the country during winter months. Forward dumping and logistic support by air will therefore be an essential pre-requisite.

j. Communication Imbalances

(1) Raod Dir – Chitral. The onlyroad link between Chitral and Dir isover lLowari Pass (11,000 feet) which remains closed from December to May/June. Work on the tunnel, which was to provide an all weather link between Dir – Chitral, was abondoned in 1978 owing to resource constraints. Cost estimate of tnnel isabout Rs. 1620 millions.

(2) Peshawar – Kohat Rail/Road Link. There is no rail link between Peshawar and Kohat. All movements are confined to a winding road passing through Adam Khel defile where it is vulnerable to disruption. Cost of link through tunnel is about Rs 615 millions.

(3) Kohat – Bannu – Thal Rail Link. There is no rail link between Kohat – Bannu and Bannu – Thal. All movements take place through road links which are vulnerable to discruption.

(4) Difference in Railway Gauges. The narrow guage rail links between Koht – Thal cannot be used for transportation of vehicles, guns and tanks.

169. Baluchistan Zone

a. Priority of Strategic Objectives

(1) Cisfrontier. Quetta, Bolan Pass and Zhob.

(2) Transfrontier.Kandhar.

b. Priority of Strategic Approaches

(1) Into Pakistan

(a) Panjpai Approach. Combining the penetrants of Spo China-Panjpai and Inam Bostan-Nushki, the capacity is of about 3 infantry divisions and an armoured division. This is the most dangerous approach as it leads the enemy to Bolan Pass in our strategic depth. However, lack of communication infrestructure on transfrontier and absence of water will make move and logistics extremely difficult.

(b) Chaman Approach. The combination of Boghra, Khojak and Spina Tizha Passes gives it the capacity of about 3 infantry divisons and an armoured divison, all closing onto Quetta after securing the line Ghazabund Pass – Pishin.

(c) Zhob approach. Formed by combintion of Domandi-Gul Katch-Zhob and Khadarkel, Qmarud-din Karez-Zhob. Kalat-I-Ghilzai-Rashid Qila-Murgha Faqirzai – Muslimbagh penetrant may also be combined, with effort closing onto Zhob. Total capacity of the approach is 2 to 3 infantry divisons with some armour. Sustaining a large force in this area will pose problems.

(2) Into Afghanistan. Quetta – Kandhar approach has the capacity of 3-4 infantry divisions and an armoured division.

c. Critical Space

(1) Cisfrontier. Area Gulistan/Qila Abdullah-Panjpai-Sheikh Wasil Ghazabad – Gadda.

(2) Transfrontier. Area Takhten Pol-Khadayad Kalay – Narghal.

d. Pivots of manoeuvre

(1) Cisfrontier. Quetta, Nushki.

(2) Transfrontier. Kandhar.

e. Offensive Options and Scale of Offensive

(1) Cisfrontier. Capture of Quetta/Bolan with 4-5 infantry divisions, an armoured divison and 1-2 armoured brigades from the direction of Kandhar-Chaman Quetta or Kandhar – Sayyid Bus-Sheikh Wasil.

(2) Transfrontier. Capture of Kandhar with 2-3 infantry divisions and an aroured divison fromn the direction of Quetta-Spin Baldak will deny to Afghans the only communication centre and base of operations in the southern Afghanistan.

f. Strategic Posture

(1) Afghanistan. The depth of cisfrontier strategic objective, the arid nature of terrain posing tremendou logistic probvlems for a large scale offensive make strategic offensive from Afthanistan unlikely.

(2) Pakistan.

(a) Strategic offensive is possible towards Kandhar. However logistic problems for a large size force will have to be overcome. Natue of terrain would allow Afghans to fight guerilla war and threaten our lines of communications. Depth of strategic objectives and indifferent communication infrestructure precludes a strategic offensive posture against Iran.

(b) Possession of dominating heights along the border north of Panjpai dictates a forward defensive posture. In Panjpai the heights being somewhat in depth dictate a rearward posture.

g. Balance in Defence.Because of the large distance between Chaman and Panjpai sectors, shifting of forces from one sector to another will take 36 to 72 hours. The grouping of forces on each approach and the deployment of concentrated or split reserves will have to take into account the time and space factor.

h. Significant Features of Operations

(1) North of Boghra Pass, terrain is suited for infantry operations. Southwest of Nuski development of large scale offensive is precluded due to scarcity of water, extreme climatic conditons and underdeveloped communication network.

(2) Valleys and open lspaces between successive mountain ranges proivide room for employment of armour/mechanised forces.

(3) Terrain provides strength to defence thereby reducing the requirement of troops.

(4) Peculiar nature of terrain favours unconventional warfare.

j. Communication Imbalances

(1) Bostan-Zhob Rail Link. There is (presently) a narrow gauge link between Bostan and Zhob which cannot be utilised for carriage of vehicles guns and tanks.

(2) Road Link Khuzdar-Punjgur-Turbat-Gwadar. Presently only fair-weather tracks exist. This road if developed will connect far flung towns at the south western extremities of country with logisticla bass at Khuzdar. Cost of construction of class 9A1 link will be about Rs. 240 millions.

(3) Road Quetta – Skeikh Wasil-Nushki. Passes near the border in Panjpai sector and is vulnerable.

(4) Road Link Khuzdar-Surab-Kharan-Dalbandin. Present class varies from foot track to class 3. This road will not only provide an alternate route to RCD Highway but also avoid vulnerable area of Punjabi-Nushki. Cost of class 50A2 road is Rs 250 millions.

(5) Road Shahdad Kot – Khuzdar. This road on development as 50A2 will link RCD Highway, directly with the internal communication system of Pakistan. About 37 KM of road in Sind has been metalled. Remaining road class varies between foot track to class 24F2.

169. Strength and Weaknesses

a. Afghanistan

(1) Weaknesses

(a) Landlocked Country. Dependent on Pakistan for its outlet to the sea.

(b) Wakhan out on a limb connected by a narrow neck with the rest of the country.

(c) Under – developed communication infrastructur off-setting advantage of perating on interior lines.

(d) Geographical vulnerability along Durand Line.

(e) Lack of natural resources.

(f) Prochialism and ethnic disunity.

(2) Strength

(a) Poor communication infrastructure which will pose problems for attacker.

(b) Rugged terrain which favours guerilla operations; mostsuited to the physche of the Afghan fighter.

(c) Operation on interior lines against Pakistan.

(d) Contiguity of land mass with friendly super-power.

(e) Indomitable spirit of the Afghan people.

b. Iran

(1) Weaknesses

(a) Iran bordr dominated by heights in Pakistan.

(b) Lack of communication infrasture on Iran border which can support an invasion from Iran.

(2) Strength

(a) Strategic ovbjective located in sufficient depth.

(b) Lack of comunication infrastructure along the border which could be used by an invading force.

(c) Configuration of border gives Iran the advantage of operation on interior lines.

CHAPTER IX
RECOMMENDATIONS

171. Roads. To overcome interzone and interfront communication problems, roads construction should be under taken under a phased programme as under :-

			Estimated Cost (Rs million)
a.	Phase I	(1990-1993)	
	(1)	Improvement of N-55 (Kotri - DG Khan) Section as 70A2 – 711 KM	1500
	(2)	Road ormana – Gawadar – Jiwani (24F2)	450
	(3)	Ravi Bridge around sheraqpur preferably underground.	375
	(4)	Road Dalbandin – Kharan – Surab (50 A2)	250
			2575
b.	Phase 2 (1993 – 1995)		
	(1)	Improvement of N-55 as 70A2 (DG Khan – DI Khan)	1500
	(2)	Road Shahdad Kot – Khuzdar (50A2)	200
	(3)	Bridge over Indus at Mithan Kot	460
			2160
c.	Phase 3 (1995 – 1997)		
	(1)	Improvement of remaining Sector of N55	1300
	(2)	Road Liari – Ormara (24A2)	215
			1515
d.	Phase 4 (1997 – 2000)		
	(1)	Road Omara – Jiwani (24A2)	625
	(2)	Bela – Arwan – Turbat – Pishin (Iran) (573 KM) as cl 24 AI	550
			1175

172. Railway Links. Since railway authorities are unable to finance the rail link of strategic importance, special allocations should be made to the defence by the Government for construction of railways under phased programme as under :-

a. New Rail Links. Broad Gauge

Cost Estimates

Rs Million

(1) During 7th Five Year Plan
Chistian – Chichawatni (98 KM)

(2) During 8th Five Year Plan 1188
Sheikhupura – Gujranwala – Pasrur (99 KM)

b. Coversion of Mirpur Khas – Chhor Metergauge into broad gauge by 1998.

173. Development of Gawadar Port. The ongoing project of developing Gawadar as "Fish harbour" should be expanded so as to cater for the needs of Navy. By the year 2000, it should be developed as fullfledged Naval Base. Cost estimate about Rs 1065 million.

174. Development of Turbat Airfield. As a backup support for Pasni airfield along Mekran coast. Turbat Airfield (LCN 85) should be constructed during the 7th Five year plan. Cost estimate Rs 212 million.

175. Rail/Road Links with Iran

a. Nokkundi – Mirjana section of RCD highway should be metalled without delay.

b. Mekran coastal road should be linked with Chah Bahar Port (in Iran)

c. Capacity of existing broad gauge strategic railway line Quetta – Zahidan should be up-graded to the status of full time usable mainline.

d. Iranian Government should be persuaded to link Zahidan with Kerman; terminal of its interal railway network.

175. Enhancement of Mobility

a. Plains of Punjab

(1) An engineer assault brigade should be dedicated to each stricke corps which should essentially consist of two engineer battalions, existing corps bridge battalion and necessary supporting elements. As a short term measure, one engineer brigade adequately supported by theatre reserve should be raised. Second brigade for the other strike corps could be raised subsequently. Proposed time frame for raising of one engineer brigade is as under :-

(a) By 1993

		Initial Cost (Million Rs)
i.	1x Brigade Headquarters	1.45
ii.	1x engineer Battalion	85.00
iii.	1x Signal Coy	13.974
		100.424

(b) By 1995

i.	1 x Engineer Battalion	85.00
ii.	1x EME Coy	28.33
		113.33

(2) Improvised short span brs (15' – 20') should be authorised to each infantry brigade and armoured brigade at the scale of 2 and 4 brs respectively.

b. Desert Area

(1) Each engineer battalion deployed in desert area should be authorised road expedients as under :-

(a) Tank Access - 2 KM

(b) Assault Trackway - 4 KM

(2) Selected difficult patches of following laterals should be given prior treatment to save upon engineer effort during war:-

(a) Track Bhagla – Islam garh.

(b) Track Diplo – Mithi – Chachro.

(c) Track Chachro – Mohendojo Par.

(d) Track Vasarba – Ranak Dhar.

(3) Selective mechanisation of logistic support vehicles.

c. Mountain Areas

(1) Heavy lift helicopter squadron should be provided to the Corps deployed in Azad Kashmir and FCNA. Porvision of such a squadron will cost around $ 100 million.

(2) Combat load ofweapons should be reduced.

(3) Light weight suspension foot bridges should be developed.

176. Counter Mobility Measures

a. Plan of Punjab and Semi Desert Area

(1) Target oriented obstacle laying capability should be acquired. One suggested system is Nitromethane Anti Armour Ditch (NAAD) which costs $ 120,000 per KM. If produced indigenously, its cost will be much less. The system can also be used for speedy denial of roads.

(2) To save upon time and labour, mechanical mine laying capability should be developed.

(3) To ensure effectiveness of Marala Headworks based defence oriented canals, adequate quantity of water should be ensured. Following are suggested in this regard:-

(a) Transferring of Jhelum water through a link canal from Mangla, or

Construction of storage dame on Bhandar and Bhimber Nallah and transferring their water to Marala.

(b) Increasing pondage capacity of the Marala Headworks, through desiliting and remodelling.

(c) Heading up arrangements in MRL and BRBL.

b. <u>Desert Terrain</u>

(1) Provision of “Rapid Mine Delivery system” to the engineer units of desert formations.

(2) Defeating enemy’s mechanical mine breaching capability through:-

(a) Induction of modern mines.

(b) Using anti plough and anti trawl ditches.

(c) Using chemical mines.

(3) Non development of communication infrastruture in selected desert areas like Chachro sector, Nagar parkar sector etc.

(4) Existing roads should be denied to enemy for its use as MSR as long as possible.

CHAPTER –XI

1. Strat Posture Recommended for Each Z/Sec

   a. NA Sec. Violable nature of LOC and mountainous nature of terrain comple both sides to adopt an exaggereted fwds def posture.

   b. Kashmir Sec. Violable nture of LOC, mountanious terrain and lack of strat depth in Muzaffarabad, Hirpur/Mangla and Kharian/Gujrat areas, dictate a fwd def posture. Offensive posture against Akhnur is favoured by terrain.

   c. Ravi Chenab Corridor. In gen area north of line sialkot Zafarwal and in Narowal, a fwd def posture is indicated in the east, in shakargarh salient, aval of adequate depth an successive water obs permit a compritively rearward def posture However and offensive posture inShakargarh Salient provide immense dividends where Pakistan enjoys superiority orientation by threatening India's L of C to IHK and hope HWs.

   d. Rvi Beas /Sutlej Corridors. Lack of depth and vuln of the str objs dictate an overall fwd def posture. A strate offensive posture can also be adopted here in veiw of Indian vulns. Purel from terrain ravi Chenab corridors are not suitable for large scale emp of our mech/armd forces. An in predomient and engr sp extensive force would be more sutiab for offensive in these corridors.Therefore the composn structure of offensive forces should be reconsidered to make them task eff.

   e. South of Sutlej. Adequate depth, except in Sulemanki area, is alval allowig a comparitively rearward posture aimed at causing max attrition and then launcing the ctr offensvie to restrore inteqrity of our borders. Difficult nature of terrain I the north and aval of successive line of def favours a def our security in this area. India on the other hand can adopt both the destruction or space oriented strate in the southern part of this sec. This creates maj dilema for the defender who would be forced to deflineMarot fort Abbas strongly to deny en the space oriented option of absorbing teritory south of sutlej incl Bahwalpur, yaman and Pajnad. Thus overall, a comb of fwd and rearward posture is indicated for Pakistan. Because of the extended frontages, only the main penstrants need to be defended in str Salmasar area may just kept under obsn. India is likely to adopt a fwd def posture to protect the base of her

offensive mnvr and to prevent an intital set back to her offensive design by a pre emptive from Pakistanin this sec.

f. Desert Z. A fwd def posture is inciated in Reti Rahim yar Khan sec rather an offensive posture here is better. The chhor sec dictates a reaward def posture which will force he en to extedn his L fo C and thereby lose the advantage of op on interior lines. In view of the extended frontage and ltd apchs aval., def will be based on holding nodal pts as self contained str pts.

g. Coastal Z. Def of Karchi against naval,air and land threat essential.

2. Recommendations to Redress Comm. Infrastructure imbalances incl mob ctr mob measures.

a. Air Infrastructure

(1) While exisitng air infrastructure not being very far from iIndian border, gives us the capability to ctr Indian air threat in time and also to strike Indian bases loc close to the border, it is equally vuln to Indian raids. Therefore there is a req of loacating bases west of Indus for security of our high value assets.

(2) An addl airfd at turbat is also recommended as a back up to Pasni Airfd on Mekran Coast. East cost is Rs 215 millions.

b. Rail Linkds. To overcome inter zone and inter front comm problems fol broad gauge rail links must be dve on pri :-

(1) Chichawatni –Burewal-Chishtai Mandi (98 km) in rail/rd br over lakha.

(2) Sheikhupura Gujranwal –Pasrur (99 km) cost around rs, 1200 million.

(3) Conversion of Mirpur Khas-Chhormeter guage rly line broad guage.

(4) Ne rail link between Mithankot chachran incl rail/rd over mithankot.

c. Rd. Fol rds need be const on pri :-

(1) Cl 9A1 bypass in Tithwal and Keran secs. Est cost Rs 1700 million.

(2) Kel Rattu cl 9AI rd. Est cost Rs 150 million.

(3) Rd Dalbandin –kharan-Surab (50A2). Est cost Rs 250 million (3) rd Mailsi –Khairpur Tamewali (Cl 70A2). Est cost Rs 250 million.

(4) bypass in Tithwal and Keran secs. Est cost Rs 1700 million.

(5) Kel Rattu cl 9AI rd. Est cost Rs 150 million.

(6) Rd Dalbandin –kharan-Surab (50A2). Est cost Rs 250 million (3) rd Mailsi –Khairpur Tamewali (Cl 70A2). Est cost Rs 250 million.

d. Rd Brs. To provide strat mob to res fmns, brs at fol locs are indi cated :-

(1) Br over Chenab at Shahbazpur with cl 70 A1 rd Est cost Rs 150 million

(2) Br over River Ravi south of Shahdara Brs. East cost Rs 250 million.

(3) Br over sutlej at lakha.

(4) Br over Indus at ithankot. Cost Rs 460 million.

(5) Standby br eqpt near maj brs on MRL BRBl UCC BSLs, Ravi and Sutlej.

3. Mesures to Enhance Potential of Res Zs.

a. Rel Z Toward China

(1) Regular maint and security of KKH.

(2) Cost of Rd chilas Babusar –kaghan and Rd gilgit Chitral.

b. Rel Z toward Iran.

(1) Metalling and upcl of Nokkundi –mir Jawa sec of RCD Highway to cl 70A2. East cost Rs 120 million.

(2) Cost of cl 24 Rd Khuzdar- shahdakot to link up interior with RCD Highway. Est cost Rs 200 million

(3) Upcl of Rd Chah Bahar –jiwani.

(4) Cost of coastal rd linking Jiwani and Karachi.

(5) Cost of rd between turbat and pishin (Iran.

(6) Upgradation of Quetta – Zahid an rail Link to take 60 whs at 90 kms/hr.

c. Rel Z Towards Sea

(1) Karachi being the only naval base accomoding all trg estbs, surface battle ships and sub marines besides the naval air arm, runs the risk of blockade by India during war. Miani Khor and khor Kalmat have ntural hrbours and both have the potential of develping into large commercial ports and naval bases. Of the two Miani Khor has the disadvantage of being too close to Karchi (barely 50 miles away) wheresas khor Kalmat is at a safe distance of about 220 miles from karchi half way along the Mekran Coast to the Iranian border.

(2) Another choice could be Gwadar which is the largest fishing har and also has a small naval anchorage and is connected to Karchi by air. It is suitable also because of nearness to Turbat which is now being connected through a 376 km long highway from Bela (Agremment

signed at islamabad on 9 Aug 90 with US Aid linking Mekran Div to the National Highway network cost approx $ 86 million and will cut the travel time between karchi and Turbat by almost half.

(3) Still another choice could be Ormara. Any one of these three could be dev into a naval base.

4. Enhanceement of Mob

a. Plains of Punjab

(1) An engr aslt bde should be dedicated to each strike corps which should essentially consist of two engr bns, existing corps br bn and nec sp elms. As a short term measure, one engr bde adequately supported by threatre reserve should be raised subsequently. Proposed time frame for rainsing of one engr bde is as under :-

(a)	By 1993		Initial Cost
	i. 1x bde HQ		1.45
	ii. 1x engr Bn		85.00
	iii. 1x sig coy		13.974
		Total :	100.424
(b)	By 1995		
	i. 1x engr bn		85.00
	ii. 1x EME coy		28.33
		Total	113.33

(2) Improvised short span brs (15-20) should be auth to each inf bde and amrd bde at the scale of 2 and 4 brs respectively.

b. Desert Area

(1) Each engr bn depl in desert area should be auth rd expendients as under :-

(2) Selected difficult patches of fol trs/laterals should be given prior treatement to save upon engr effort during war :-

(a) Tr Bhagla - Islamgarh.

(b) Tr Diplo - Mithi Chachro

(c) Tr Chachro-Mohendorjo Par.

(d) Tr Vasarb-Ranak Dhar.

(3) Selective mech of log sp vehs.

c. Mtn Area

(1) Hy lift hel sqn should be provided to the corps deployed in AK and FCNA. Provision of such a sqn will cost around $ 100 million.

(2) Cbt load of wpns should be reduced.

(3) Light weight suspension ft brs should be dev.

5. Ctr Mob Measurce

a. Plains of Punjab and Semi Desert Area

(1) Tgt oriented obs laying capacility should be acquired.

6. Measures Against Indian Water Reg Capablity

a. Improvement of Obs Value of Our Front Line Canals. The best course to ensure regular sup of water in MRL, UCC/BRBL is to tfr Jhelm waters to the Chenab at Marala HWs through a link canal (Mangal – Marala). But the proj is cost prohibitive requiring over 600 billion ruppes. Hence the possiblity of combining fol sources to ensure 5000 cusecs flow in these canals, as recently decided by the Ministry of Def, be vigorously pursued :-

(1) Inc pondage at Marala HWs through desilting and modifications.

(2) Storage dams on Bhimber and Bhandar Nullah and connecting them with Marala HWs.

(3) Heading up arrangement in MRL and BRBL canals and tube – well supplemented sup.

b. Egpt Brs. Our present floating br capability rests on Ribbon and Hollow Plate Bs which are not very suitable as these cannot accommodate too much of fluctuation in water level. The answer lies in having sufficient no of Hy Mech Brs (Trestle Brs) which can be manufactured indigenously with Chiness assistance. (B sets have been procured so far giving a total capability of br 400 M gap).

c. A tk Ditches/Minefds. To offset disadvantage of denial of water to our obs :-

(1) A comb of variety of ctr mob measures be undertaken in most threatened secs.

(2) A tk double ditches and laying of minefds n both side of obs be planned.

(3) Enough expedients be arranged for ctr offensive.

(4) SCARO VI, VII and Hakra Right Projs be made def oriented as far as possible and their completion be expedited through WAPDA.

d. Protection and Security of HWs

(1) Marala HWs. Pre-emption for domination/con of sizeable territory to ensure security of Marala HWs, be made essential part of Army plan. Phuklian Salient provides ready-made jum off pt. Also adequate security measure against its capture would be req.

(2) Blloki HWs. Con flow in Sutlej between Sulemanki HW Islam HWs. Its protection is essential.

(3) Sulemanki HWs. Its capture features most prominently Indian plans in area South of Sutlej, as it will facilitiy their ops. Its con with us will make their ops that difficult. Hence securing of space through offensive action to provide depth to Sulemanki HWs is essential.

e. Capture of Madhopur , Harike and Hussainiwala HWs. Will provide distinct advantages than if destroyed.

f. Scenario After Competion of Thein Dam. Our offensive/riposte across Ravi would be a difficult proposition after 1992/93. Hence :-

(1) Sufficient qty of rd expendients (2-3 km) and br eqpt to 300-500 M wet gap per crossing site be procured to sp offensive across Ravi.

(2) Continuous flood protection bund from Nainakot to Syphon be const through civ auths.