

# Infrastructural Development by China in Tibet Autonomous Region & Military Implications for India

Colonel Kulbhushan Bhardwaj@

## General

In the 21st Century, wars will be won not merely on the fighting prowess of the armies on the battlefield but also on the infrastructural capability of the two antagonists in the area of operations. Thus, having a strong force capability coupled with infrastructural capability is an essential element in winning wars. The development of infrastructure along the Indo-Chinese Border leaves much to be desired. The lack of infrastructure including roads, railways, ammunition and housing shelters, communications, telephone/mobile connectivity, etc. is likely to hamper the logistics sustenance of own military operations against the Peoples' Liberation Army (PLA), thereby impacting successful culmination of own operations.

On the other hand, China has embarked upon the path of infrastructure development in a methodical way, especially in Tibet Autonomous Region (TAR). In the 2008 Chinese White Paper, focus on logistics reforms including upgradation and deepening of logistics support were the key objectives.<sup>1</sup>

In 2007 AK Antony the Hon'ble Raksha Mantri (RM) stepped up to a border post at Nathu La in East Sikkim to look across. Jolted by what he saw, he candidly described it as "an eye-opener". He realised that China had highways and metalled roads leading right up to their border posts to bolster rapid mobilisation of PLA along most stretches of the unresolved 4,057-km Line of Actual Control (LAC). In contrast, Indian soldiers often had to trek for miles to reach their border posts, which would be a logistics nightmare in times of conflicts.<sup>2</sup>

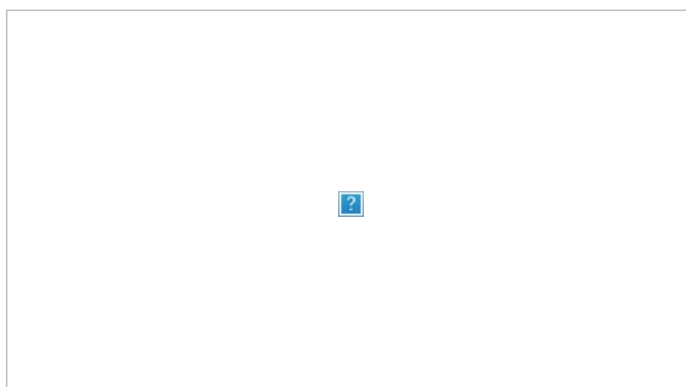
This article will analyse the infrastructural developments in TAR and the military implications on India thereof, especially in the Eastern Sector. Having assessed the latest infrastructural developments, this article will then recommend suitable measures to counter this challenge including steps to be initiated at various levels to build an edifice through which potential threats could be mitigated.

## Road Network in TAR: North of River Tsang Po

In the initial decades ensuing the founding of the Peoples' Republic of China (PRC) in 1949, undivided attention was given to coastal China. In fact, Deng Xiaoping declared to the people of Western China, "Let them (coastal China) get rich first, you can get rich later."<sup>3</sup> Since the time China established its sovereignty over Tibet followed by the establishment of TAR in September 1965, the Chinese Government has paid special heed to the importance of this region vis-à-vis enhancing security on its Western frontier.<sup>4</sup> TAR, including the overlooking interspersed China-India locations along the Western crest wall of the Chumbi Valley and North Sikkim which are disputed, has excellent infrastructure including roads and tracks developed by the PLA in the 1990s.<sup>5</sup>

The Western, Central and Eastern Highways have leveraged greater connectivity between Western and mainland China. The total length of roads in TAR presently is 51,000 kilometres (km) & all major highways have been upgraded to class 50, two-way traffic capability.<sup>6</sup> These highways are as shown in Map 1. The details of these highways are as under:-

- (a) **Western Highway.** It connects Xinjiang to TAR, by linking Kashgar and Lhasa (3,105 km). This highway is also called Lhasa - Kashgar / Aksai Chin Highway.<sup>7</sup> This class 50, two-way, black top highway, has a capacity of 3,200 tons per day and has no closure period.
- (b) **Central Highway.** It is also known as Qinghai-Tibet Highway and is referred to as the 'lifeline' of TAR. The 2,122 km class 50, four-lane, black top highway, with a capacity of 5,100 tons per day, connects Gormo to Lhasa. Vehicles can travel at an average speed of 35-40 km per hour and can cover a distance of approximately 200-250 km in a single day.<sup>8</sup>
- (c) **Eastern Highway.** It is also known as Sichuan-Tibet Highway and is the highway between Chengdu (Sichuan) and Linzhi (Ngiti). It is 1,715 km long (2,413 km up to Lhasa), class 50, four-lane, black top, all weather highway, with a capacity of 3,200 tons per day. This highway is primarily aimed at improving lateral mobility between the Central and Eastern TAR.<sup>9</sup>



Map 1 - Highways in TAR

## Road Network in TAR: South of River Tsang Po

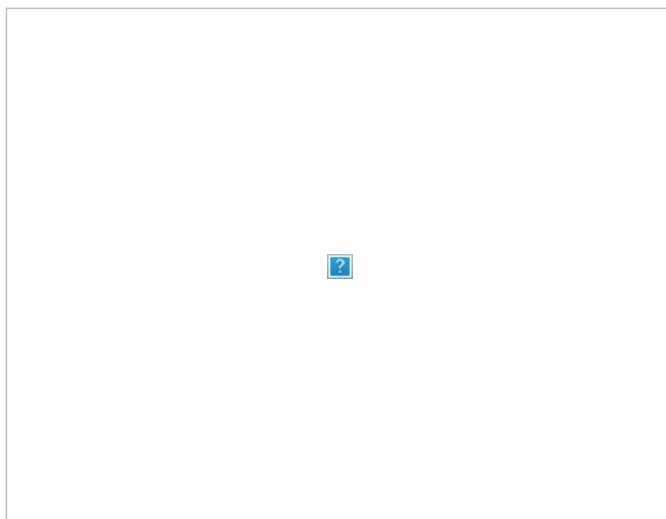
With the opening of border trade via Nathu La, additional border trade venues and plans for border trade at Bumla, Demchok and the old Stilvel Route, TAR appears well poised for 'fast-track' development.<sup>10</sup> Other roads are as under:-

- (a) **Eastern Feeder.** It is a 250 km long, class 40 road running from Gyantse to Yatung through Tang La. It can facilitate movement of 600 tons per day.
- (b) **Western Feeder.** It is a 395 km long, class 18 road running from Shigatse to Yatung. It can carry approximately 300 tons per day.
- (c) **Yatung Artery.** This is a class 40 road upto Asam (western Bhutan), thereafter class 9 upto Sinche La running almost parallel to Amo Chho River. All roads leading to the watershed along the Indo-China border in Chumbi Valley emanate from this road.

## Railway Networks

The following are the important railway lines existing/planned in TAR which have a critical bearing on military operations against India:-

- (a) **Qinghai - Tibet Railway (QTR).** The railways arrived in Gormo in 1979 and were used exclusively by the military up to 1984. It was extended to Xining in 1980.<sup>11</sup> China's State Council in February 2001 gave approval to begin work on QTR.<sup>12</sup> Becoming fully operational on 1 July 2006, the 1,142 km QTR line from Golmud in the Qinghai province to Lhasa in Tibet became Tibet's maiden railway line connecting and integrating the Tibetan plateau with the rest of China at the cost of a staggering \$4.2 billion. The highest point of the QTR comes in at 5,072 m (16,640 feet) high Tanggula Pass in the Kunlun mountain range.<sup>13</sup> The Tibetans have termed it as "the Second Invasion of Tibet". The railway network in TAR including QTR is shown in Map 2.



**Map 2 - Rail Network In TAR Including QTR. <sup>15</sup>**

- (b) **Railway Line Planned Opposite Arunachal Pradesh.** The planned rail link will head eastwards from Lhasa along the Tsangpo River (Brahmaputra) to Nyingchi (Kongpo). According to the Chinese claims, the Nyingchi Prefecture also includes part of Arunachal Pradesh. From Nyingchi, this rail link is further scheduled to link up to Dali in Yunnan province. It is also connected to Chengdu via Guangtong & Xichang.<sup>16</sup>
- (c) **Railway Line Planned Opposite Sikkim.** In its "long term railway network plan" Chinese Railway Ministry is all set to extend its network till Chumbi Valley, very close to Sikkim.<sup>17</sup> The expected time of completion of this project is set to be 2017. This proposed link is a recent addition to China's existing plans of constructing a railway line from Lhasa to Zangmu on the Nepal border.<sup>18</sup> Another line will branch out midway from this link at a place called Shigatse. This line will move East and go right up to Yatung, on the mouth of the Chumbi Valley.<sup>19</sup>

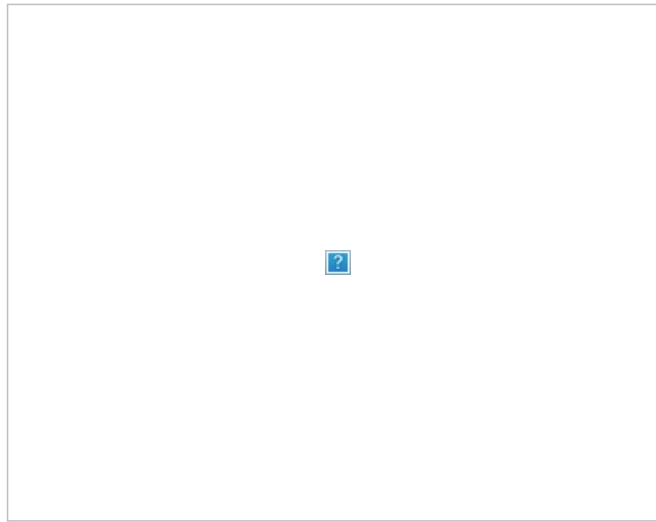
## Air Fields in TAR

There are 15 airfields in and around TAR out of which only three are open for civilian activity.<sup>20</sup> The airfield of Naqu is under upgradation. Gonga and Bangda airfields are being upgraded to cater to 1.1 million and 1.0 million transients respectively i.e.,

2.1 million transients per year.<sup>21</sup> Further, ten new airports are planned to be constructed in the next five years.<sup>22</sup> China is also opening another airport at Nyingchi. Further, Su-27s have recently been deployed in the Chengdu Military Region (MR) and they might, in the future, also be deployed in Tibet.<sup>23</sup> The airfields in TAR are as shown in Map 3.

## Other Infrastructural Developments

**Optical Fibre Cable (OFC) Connectivity.** All 55 counties of TAR have OFC connectivity. Chengdu and Lanzhou MRs are interconnected with one another and both these MRs to Beijing, through secure communications, thus ensuring secure and real-time communications. OFC is also steadily being extended towards military installations along the



**Map 3 - Airfields in TAR**

**Naqu Logistics Base.** TAR's biggest logistics centre in Naqu in South West China was completed in June 2009 at a cost of US \$ 220 million. It is located next to a railway station at an altitude of 4,500 m in the Naqu county, in Northern TAR, about 300 km North East of the regional capital, Lhasa.<sup>26</sup> The centre is expected to handle 2.23 million tonnes of cargo by 2015 and 3.1 million tonnes by 2020.<sup>27</sup>

### **Infrastructural Development: Military Implications**

**Military Implications of QTR.** The operationalising of QTR implies the following:-

- (a) **Troops For Unrest in Tibet.** The completion of QTR has clearly tightened China's grip on Tibet, which is much prone to unrest due to various restrictive policies of the Chinese hierarchy. Further extensions of QTR may permit the PLA troops in TAR to handover the Internal Security (IS) tasks completely to Peoples' Armed Police Forces (PAPF) and focus their attention on India.<sup>28</sup> In this case, the following are highlighted:-
  - (i) **Pre QTR.** In 1989, when a major unrest occurred in Tibet and the curfew was imposed in Lhasa, the 149 Special Mechanised Mountain Division (SMMD) (Unit 56016) of 13 Group Army (GA) of Chengdu MR located at Leshan/Emei in Sichuan province, was the first PLA combat unit to arrive on the scene, in about a week's time. The 149 SMMD troops entered Tibet via the Sichuan-Tibet highway which imposed considerable delay.
  - (ii) **Post QTR.** However in March 2008, within 48 hours of the start of the riots in Lhasa, T-90/89 APCs and T-92 wheeled Infantry Fighting Vehicles (IFVs) of the 149 SMMD appeared on the streets. This rapid arrival of the division using QTR relieved pressure from the troops of the 52 and 53 Mountain Brigades, which are located comparatively closer to Lhasa at Linzhi and Milin respectively in Chengdu MR. The Armoured Personal Carriers (APCs) of SMMD were transported first from Chongqing to Xining by rail/road, and then to Golmud and Lhasa by train on the QTR. This deployment reportedly took only about 48 hours and the 1956 km distance between Xining and Lhasa was covered on QTR.<sup>29</sup>
- (b) **Improved Mobilisation Timings Against India.** Presently, the travel time for troops from Golmud to Lhasa is approximately 72 hours (including night halts and restrictions). QTR has reduced this to 16 hours, implying a complete turnaround time of about three days from Golmud to Lhasa.<sup>30</sup> The average load capacity of one Chinese train car is normally 60 tonnes, with about 20 cars in each cargo train implying that each train could transport 1,200 tonnes. In times of war, the actual number of trains running on the railroad could double to roughly 20 trains both ways, each day. Assuming that the total weight of the equipment and combat material needed for one Rapid Reaction Force (RRF) division is around 15,000 tonnes, the QTR could transport a whole RRF division on one average day. In other words, within every one-and-a-half to two days, China could move one RRF division from Chengdu MR or one RRF division from Lanzhou MR to TAR.<sup>31</sup> This implies that PLA would be able to transport approximately 10 light mechanised divisions and some heavy mechanised divisions through QTR to TAR from the Lanzhou and Chengdu MRs within 30 days.<sup>32</sup>
- (c) **Trans Regional Support Operations (TRSO).** QTR has facilitated faster induction of trans-regional support from Guangzhou, Jinan, Beijing and Shenyang MRs to the Indian war zone. It has considerably reduced the time frame for inducting 13 GA from its locations in the Sichuan province or the 14 GA from Kunming into TAR, enhancing the threat to Arunachal Pradesh, Western Bhutan and Sikkim.
- (d) **Logistics Sustenance.** Besides, "The Chinese Armed Forces Today" published by the US Defence Intelligence Agency (DIA), had revealed that the daily re-supply requirement of a standard Chinese division would be about 300 tonnes short for moderate combat and an average of 200 tonnes short for a protracted per day of combat.<sup>33</sup> QTR thus cuts down induction timings and aids in build-up and logistics sustenance in TAR.
- (e) **Alternate Induction Route.** QTR also provides an alternate to road convoys for induction of offensive formations, reducing their build-up time.

(f) **Effect of Weather.** Logistics build-up and maintenance is easier and more economical via QTR and sustenance of PLA during prolonged operations can be carried out with minimum impact of adverse weather conditions.

**Military Implications of Road Network.** The key implications of road communications are as under:-

- (a) **Military Use of Highways.** Most of the key civil highway projects have been constructed to military specifications and can be turned over to the PLA in the event of war.
- (b) **Switching of Forces.** The Western, Central and Eastern highways are laterally connected and facilitate smooth switching over of forces, both in operational and strategic depth, within and across the MRs. This has serious strategic implications for India.
- (c) **Reduction in Warning Period.** Speedy mobilisation coupled with acclimatised troops in hinterland reduces the warning period available for mobilisation of own forces.
- (d) **Laterals.** A number of laterals ensure unhindered connectivity even in the eventuality of closure due to natural or manmade blockades.
- (e) **Multiple Options.** Multiple options are available to PLA wherein they can disperse their forces and concentrate them in time and space to launch offensives across Sikkim, Arunachal Pradesh, as per their operational plan(s).
- (f) **Battle Space - South of Yatung.** Construction of feeder roads upto perceived claim lines in Western Bhutan enables better options for employment of forces. To increase the battle space South of Yatung, PLA is also creating a loop in the claimed areas from Rubinkha to Asam via Zena Lake in Western Bhutan.
- (g) **Pre-Emptive Actions.** The availability of feeders upto perceived claim lines provides an option to the PLA to carry out pre-emptive grab actions.

**Military Implications of Airfields.** Following are the military implications of airfields:-

- (a) **Dual Use.** The air fields serve dual purpose and may be used for both military and civil traffic. Presently all airfields have limited military infrastructure. However, the runway length of all airfields is adequate and suitable for all types of aircraft.
- (b) **Altitude and Acclimatisation.** The airfields are located in high altitude areas which have their own disadvantages, which have been obviated to a large extent by extending the length of the runway and by employing the Air-to-Air Refuelling (AAR). The high altitude of airfields also facilitates acclimatisation of Special Operations Forces (SOF) and Air Borne (AB) forces in the vicinity.
- (c) **Additional Airfields.** Additional airfields along Nepal and Myanmar border provide additional options to the PLA Air Force (PLAAF) for air operations against India.

**Military Implications of OFC Network.** PLA has a very secure and fool proof all weather communication system designed for offensive / defensive operations. PLA has also linked all its Forward Defended Localities (FDLs) with secure OFC communication. This gives PLA a marked communication and cyberspace advantage.

**Military Implications of Logistics Infrastructure.** It is appreciated that the existing logistics infrastructure south of line Shigatse - Gyantse can hold a stock level of up to 90,000 tons which can sustain operations of 5 to 7 divisions for about 30 days @ approximately 600 tons per division per day.

## Recommendations

Keeping in view the foregoing analysis, certain quintessential points emerge which if addressed on priority will reduce/negate the minor advantages accrued by PLA vis-à-vis IA. These are given in the succeeding paras.

**Refining Operational Plans: Two-Front War.** The now routine Chinese posturing in Arunachal Pradesh and Sikkim may either turn out to be merely pressure tactics or Chinese gauging of our response - an ominous precursor of conflict. It is, therefore, operationally imperative for the IA to refine its operational plans for various contingencies.

**Augmenting Organisational Incisiveness.** Enhancing the organisational battle readiness of the IA as a whole and formations bordering China in particular is an operational imperative. However, certain critical requirements are reiterated below:-

- (a) **Aerial Surveillance Assets.** There is a need to have aerial surveillance assets (read Unmanned Aerial Vehicles (UAVs)) to be integral to the formations on the LAC. This will ensure real time detection of the PLA mobilisation and battle dispositions, thereby indicating their likely intentions..
- (b) **Long Range Vectors.** In order to shape the battlefield and interdict the enemy from building-up to its requisite force levels for attack and to prevent the enemy subsequent force application on our defences, there is a requirement of having long range vectors integral to the formations responsible for operations against China.
- (c) **Increase in Firepower Destructiveness.** The current scaling will not suffice in the next war in the mountains and therefore must be increased. Alternatively, new and more effective ammunition may be developed and scaled to the formations to increase their destructive power.

**Enhanced Intelligence, Surveillance and Reconnaissance (ISR) Capabilities.** India should enhance its ISR capability to maintain all-round vigil on the border. The IA must also upgrade the firepower capabilities by an order of magnitude so as to be able to engage and destroy intruding forces at a distance.

**Framework of Calibrated Response.** It is de rigueur to put in place the framework of calibrated response. This implies certain dissuasive and/or punitive actions triggered by enemy actions. For example if an enemy formation crosses say a particular bridge on River Tsang Po (South of Lhasa), then enhanced readiness posture be adopted; if the enemy concentrates in a given general area opposite our border, a particular sequence of degradation be adopted, etc. This framework must be cleared at the highest levels and plans made for its implementation accordingly.

**Infrastructure Build-Up.** For over four decades after the 1962 war, the Indian security establishment kept a firm lid on the development of any infrastructure along the LAC in the fear that it would actually help PLA make swift inroads into India during a conflict. It was in early-2006 that the UPA-I government finally gave the go-ahead for the creation of infrastructure in all the three sectors -Western (Ladakh), Middle (Uttarakhand and Himachal) & Eastern (Sikkim and Arunachal) - along the LAC.<sup>34</sup> Asked if he was satisfied with infrastructure development along the “northern borders” facing China, Chief of Army Staff General Bikram Singh said, “Several projects are underway... But yeh dil maange more.” It is in the Indian interest to upgrade the logistics infrastructure in the states bordering TAR to facilitate the rapid reinforcement of sectors threatened by the Chinese during any future conflict.

**Speedier Construction of Roads.** All the roads pending construction should be constructed/developed at the earliest. As of now, just 17 of the 73 strategic roads which add up to 3,808 km identified for construction along the LAC have been fully completed, which were to be completed by end-2012. Similar slow progress dogs the 413 other roads identified for construction under the “General Staff Long-Term Perspective Plan” for borders with China and Myanmar.<sup>35</sup> Better connectivity will not only serve India’s own interest but also develop these regions economically and integrate them emotionally with rest of the Country.

**Construction of Railways.** IA’s demand for 14 strategic railway lines along the western and eastern fronts, too, is still hanging fire. The Government, however, says “work on a majority of all these roads is underway”.<sup>36</sup>

**Environmental Clearances.** Infrastructure build-up within 50 km of the LAC should be exempted from requisite environment and other clearances. Ecological concerns are important but national security needs cannot be simply brushed aside.<sup>37</sup>

## Conclusion

It is beyond doubt that India is far behind China in its development of border areas. The question is whether there is any political will to counter China’s herculean efforts.

China’s massive infrastructure build-up in TAR is causing concern to the Government of India. Speaking during the question hour of the Lok Sabha in the Budget session of Parliament in March 2011, RM AK Antony highlighted the rapid development of rail, road, airfield and telecom infrastructure and military camps being undertaken by the Chinese in TAR. Effectively controlling the TAR is crucial for China’s security as TAR comprises approximately one-fourth of China’s landmass.

Our northern borders with China are for the most part unsettled, undemarcated and disputed. Notwithstanding all the confidence building measures along the LAC that are in place, it would be prudent to take note of the infrastructural developments taking place in Tibet and take measures on own side to be able to respond to any contingencies that may arise in future. As infrastructure development takes long time to fructify it is imperative that long term plans are prepared and implemented in a determined manner.

## End Notes

1. China’s National Defence in 2008, Information Office of the State Council of the PRC, Beijing, January 2009.
2. From <http://www.china-mor.gov.cn/>, accessed on 5 May 2013.
3. Monika Chansoria, “Consolidating Control: Chinese Infrastructure Devpin Tibet”, Scholar Warrior, Spring 2011, published by CLAWS.
4. Ibid.
5. Pravin Sawhney, “Chinese Whispers”, <http://www.ForceIndia.Net> accessed on 5 May 2013.
6. SB Asthana, “Infrastructural Development by China in Immediate Neighbourhood of India including Tibetan Autonomous Region: Military Implications for India,” Centre for Strategic Studies & Simulation, United Service Institution for India, January 2008, pp. 23-24.
7. Monika Chansoria, op. cit.
8. Monika Chansoria, op. cit.
9. Monika Chansoria, op. cit.
10. Monika Chansoria, op. cit.
11. Monika Chansoria, op. cit.
12. Monika Chansoria, op. cit.

13. Monika Chansoria, op. cit.
14. Major S Arya, "Train to Lhasa", Journal of Defence Studies, Winter 2008, Volume 2, Number 2.
15. Monika Chansoria, "China's Infrastructure Development in Tibet: Evaluating Trend lines", Manekshaw Paper No 32, 2011, published by CLAWS, pp 12.
16. Major S Arya, op. cit.
17. Monika Chansoria, op. cit. For more details, see Note 6.
18. Monika Chansoria, op. cit. For more details, see Note 6.
19. Monika Chansoria, op. cit. For more details, see Note 6.
20. Monika Chansoria, op. cit. For more details, see Note 6.
21. Monika Chansoria, op. cit. For more details, see Note 6.
22. Monika Chansoria, op. cit. For more details, see Note 6.
23. Monika Chansoria, op. cit. For more details, see Note 6.
24. Op. cit., 1. For more details on these statistics see, China Internet Information Centre at [www.china.org.cn/china/tibetfactsandfigures](http://www.china.org.cn/china/tibetfactsandfigures).
25. Op. cit., 1. For more details on these statistics see, China Internet Information Centre at [www.china.org.cn/china/tibetfactsandfigures](http://www.china.org.cn/china/tibetfactsandfigures).
26. Monika Chansoria, op. cit. For more details on these statistics see, China Internet Information Centre, [www.china.org.cn/china/tibetfactsandfigures](http://www.china.org.cn/china/tibetfactsandfigures), accessed on 10 July 2008.
27. Pravin Sawhney, op. cit.
28. Op. cit., 1.
29. Op. cit., 1.
30. Op. cit., 1.
31. Op. cit., 1.
32. Monika Chansoria, op. cit., 15. For more details on this subject see, Andrei Chang, "PLA's Rapid Reaction Capability in Tibet," UPI Asia Online, Hong Kong, 27 June 2008.
33. From "PLA Army as an Org, Ref Volume, Version 1", edited by James C Mulvenon & Andrew N D Yang, Rand Publications, 2002, pp 311, 312.
34. Monika Chansoria, op. cit., 3.
35. Monika Chansoria, op. cit., 3.
36. Monika Chansoria, op. cit., 3.
37. Monika Chansoria, op. cit., 3.

**@Colonel Kulbhushan Bhardwaj** was commissioned into the Regiment of Artillery in June 1995. Presently, he is commanding a Field Regiment in J&K.

Journal of the United Service Institution of India, Vol. CXLIV, No. 596, April-June 2014.