



**Joint Fact-Finding Group Report**  
**on**  
**The Rocket Firing Incident in the upper Kodori valley on 11 March 2007**

## **INTRODUCTION**

This is the final report of the Joint Fact Finding Group's (JFFG) investigation into the rocket firing incident in the upper Kodori valley on 11 March 2007. All timings referred to in this document, unless specified otherwise, are based on UNOMIG time (GMT +3 hours for the period 29 October 2006 to 24 March 2007 and GMT +4 hours for the period 25 March to 28 October 2007). Georgian time is GMT+4 throughout the year.

## **REFERENCE**

19 January 2000 Tbilisi Protocol on the Joint Group for the Identification and Investigation of Violations of the Moscow Agreement of 14 May 1994 and Politically Motivated Illegal Actions (JFFG Protocol).

JFFG Interim Report dated 2 April 2007.

JFFG Supplementary Report dated 13 June 2007.

## **ANNEXES**

- A General map.
- B Map indicating impacts, back-bearings and suspected launch sites as designated by the sides.
- C Map indicating ground patrol routes in relation to suspected launch sites as designated by the sides.
- D Photo gallery of craters, evidences, locations and terrain features during ground patrols.
- E Satellite imagery of the Tkvarcheli region in the month of February.

F Satellite imagery of the Kodori valley in relation to surrounding areas.

### **JFFG TERMS OF REFERENCE**

1. The Joint Fact-Finding Group (JFFG) was established by Reference above to deal with the investigation of facts relating to violations of the Moscow Agreement of 14 May 1994, acts of sabotage and terrorism and politically-motivated illegal acts directed against the civilian population and statements regarding the preparations for such acts and actions (paragraph 3.1).
2. The JFFG is to determine, by consensus, the existence of any political motivation for acts of sabotage, terrorism or illegal actions directed against the civilian population (paragraph 3.1).
3. The JFFG is also to submit recommendations on possible means of preventing such incidents in the future.

### **CONVENING OF THE INVESTIGATION**

4. Following reports of bombardment of villages and presence of helicopters in the upper Kodori valley on the morning 12 March 2007, the JFFG was convened with the consent of the sides by the Chief Military Observer to investigate a rocket firing incident in the upper Kodori valley on the eve of 11 March 2007.

### **SUMMARY OF THE INCIDENT**

5. On 11 March 2007, an alleged incident involving the use of helicopters and firing of rockets occurred during the period 2110 hours to 2300 hours:
  - a. At approximately 2110 hours, the presence of one or more helicopters was reported at Omarishava, Gentsvish and Ptysh by locals and a Georgian Border Guard post. Helicopters were reported to have moved in the direction of Chkhalta and Adjara.
  - b. From approximately 2130 hours until 2245 hours there were numerous reports of ground-to-ground fire impacts (17 sites have been documented), first in the area around Adjara and Zima, and then Chkhalta.
  - c. The final rocket firing incident reportedly took place around 2247 hours when an Anti-Tank Guided Missile (ATGM) impacted on the Chkhalta Regional Administration Building and an explosion was reported in the vicinity of Mramba Bridge.
  - d. Reports stated that helicopter activity ceased around 2300 hours, thereby proposing that helicopters flew in the upper Kodori valley region for a total period of 1 hour and 50 minutes. There were no reports of casualties and only one building was damaged substantially.

## **JOINT FACT FINDING GROUP**

6. The JFFG comprised its standard composition duly reinforced by technical experts and Working Groups which supported the work of the JFFG. The following composition functioned during the investigation:

a. **Permanent Members**

- (i) **Chairman:** Major General N M K Khattak, CMO UNOMIG.
- (ii) **Georgian Side**
  - (a) Mr M M Shengelia.
  - (b) Mr K T Andriadze.
  - (c) Mr. I. Karchaidze
  - (d) Col G I Dzumukadze (replaced Mr I Karchaidze)
- (iii) **Abkhaz Side**
  - (a) Col Z V Namba.
  - (b) Col A N Ankvab.
  - (c) Lt Col D V Shamba.
- (iv) **Commonwealth of Independent States Peace Keeping Force (CIS PKF)**
  - (a) Col A A Pavlushko.
  - (b) Lt Col U F Lesnikov.
  - (c) Lt Col A Berchenko.
  - (d) Maj A N Stulov.
- (v) **UNOMIG Side**
  - (a) Lt Col M HASSAN (JFFG Coordinator)
  - (b) Sqn Ldr D M Norman. (Head of UNOMIG Fact Finding Team)
  - (c) Lt Cdr E Nielsen. (Departed due to End of UNOMIG Mission)
  - (d) Maj T Marzeda.
  - (e) Maj W Frik.
  - (f) Maj M Purcell.
  - (g) Maj Y Volkov.

b. **Working Groups and Experts**

- (i) UNOMIG Artillery Working Group
  - (a) Capt L Muranski.
  - (b) Maj Z Z Butt.

- (c) Maj S A Zubair.
- (ii) UNOMIG Aviation Working Group
  - (a) Capt N De Silva.
  - (b) Maj J Petrovic.
- (iii) Ammunition Examination Group
  - (a) Col G J Azmuhadze (GEO).
  - (b) Lt Col G U Bedeuashvili (GEO).
  - (c) Col A Z Amaba (ABK).
  - (d) Lt Col A A Tarasov (CIS PKF).
  - (e) Maj Y Volkov (UNOMIG).
- (iv) Russian Federation Munitions Experts
  - (a) Lt Col V V Portnov.
  - (b) Lt Col S A Malishiv.
- (v) Georgian Munitions Experts
  - (a) Lt Col G S Muthidze.
  - (b) Maj K G Gelashvili.

## 7. **Chronology of Events and JFFG activities**

- a. 11 March 2007 upper Kodori valley Rocket Firing Incident reported.
- b. 13-15 March 2007 JFFG Patrol 1 to upper Kodori valley.
- c. 19 March 2007 1<sup>st</sup> JFFG Meeting.
- d. 19 March 2007 JFFG Evidence Examination.
- e. 19 March 2007 UNOMIG Artillery Working Group Presentation.
- f. 21 March 2007 2<sup>nd</sup> JFFG Meeting.
- g. 23-25 March 2007 JFFG Patrol 2 to upper Kodori valley.
- h. 27 March 2007 3<sup>rd</sup> JFFG Meeting.
- i. 2 April 2007 4<sup>th</sup> JFFG Meeting.
- j. 2 April 2007 JFFG Interim Report discussed
- k. 5 April 2007 UNOMIG request for assistance from Russian Federation.
- l. 18 April 2007 5<sup>th</sup> JFFG Meeting and the duly signed JFFG Interim Report distributed.

- m. 4 May 2007 Interim response received from Russian Federation.
- n. 10 May 2007 6<sup>th</sup> JFFG Meeting.
- o. 10 May 2007 UNOMIG Aviation Working Group Presentation.
- p. 11-15 May 2007 JFFG Patrol 3 to Tkvarcheli, Lower Kodori Valley and upper Kodori valley.
- q. 23 May 2007 Final Response received from Russian Federation.
- r. 31 May 2007 Russian Federation Evidence Examination.
- s. 1 June 2007 7<sup>th</sup> JFFG Meeting.
- t. 7 June 2007 Draft JFFG Supplementary Report distributed (English version).
- u. 9 June 2007 Draft JFFG Supplementary Report distributed (Russian version).
- v. 13 June 2007 8<sup>th</sup> JFFG Meeting and signing of Supplementary Report.

8. The JFFG has conducted 3 patrols starting from Sukhumi through Lata to the upper Kodori valley by road in the periods 13-15 March, 23-25 March, and 14-15 May 2007, and one patrol from Sukhumi to Tkvarcheli and Akarmara on 11 May 2007.

9. Locations visited include CIS PKF Check Point (CP) 106 and 107, Ptysh, Zima, Mramba, Budzgur, Khetskvara, Adjara, Chkhalta, Gentsvish, Saken, Gvandra Border Guard Post, Omarishara, Tkvarcheli, Akarmara. Numerous interviews were conducted with locals, Georgian Ministry of Internal Affairs personnel, and CIS PKF soldiers.

## ARTILLERY/AMMUNITION ASPECTS

10. **Summary of Incident.** The initial JFFG investigation patrol reached the vicinity of the upper Kodori valley at approximately 1200 hours on the 13 March 2007, thus a lapse of some 39 hours after the incident allegedly commenced<sup>1</sup>. At Zima, Chkhalta and Adjara, a total of 17 ground impacts were identified<sup>2</sup>; 16 ground level craters and one first-floor impact on the Chkhalta Regional Administration Building. The JFFG established, after examining 45 separate fragments, that 12 craters were created by 122 mm rockets. Specifically, the rockets appear to be the 9M22 variant with high-explosive fragmentation warheads designed for the BM-21 launcher and related systems, which have a maximum range of approximately 20 km. In 4 craters it was not possible to determine the exact type of ordnance, despite the presence of small shrapnel fragments and similarity to the other craters. No 'brake rings' (used for short range firing) were

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<sup>1</sup> A significant period of this time had been used to obtain adequate security guarantees to facilitate the safe passage of JFFG personnel to the area concerned.

<sup>2</sup> Crater sites had been primarily identified by the Georgian forces on the ground and local population and then presented to the JFFG investigation personnel on arrival.

found and there were no traces of residual fuel. The JFFG established, after gathering<sup>3</sup> and examining 137 fragments from the Chkhaltva Regional Administration building impact, that the ordnance used was either an AT-6 'SHTURM' or AT-9 'ATAKA' ATGM. These are 130 mm ATGMs of Russian production, the ATAKA being a modernized SHTURM. An internal device for radio-guidance and optical sighting from this missile was recovered intact. Both the ATAKA and SHTURM can be fired from both helicopter (Mi-24V, Mi-28, Mi-8 AMTSh) and ground platforms (9P149/MTLB ATGM Launcher Vehicle, BMPT), but neither version is known to the JFFG to be available for man-portable systems.

## 11. **Witness Statements.**

a. From 2130 hours until 2250 hours across the whole valley, explosions were heard at intervals. Excluding those interviewees at CIS PKF CP 106 (Lata), all had heard a number of explosions. Generally, the witnesses that were located farthest away from the Chkhaltva Regional Administration building reported fewer explosions. A witness in northern Omarishara reported hearing only one explosion. Intervals between explosions seemed to be of various lengths, but usually only single impacts were heard (not part of a 'volley fire' typical of BM-21 systems). The Adjara Police logbook recorded only one possible instance of 2 simultaneous explosions.

b. Prior to the explosions, witnesses heard the sound of helicopters disappearing. After the explosions, the helicopter sounds reoccurred. This happened repeatedly until the latest reported explosion shortly before 2250 hours.

c. A sentry from CIS PKF CP 107 (Zemo Lata) reported hearing tracked vehicle noise from the northerly direction up to the time of the bombardment. The sentry also reported sighting 2 or 3 flashes from the northerly direction, followed by the same number of explosions. The time elapsed from flash to sound was not counted. No other witnesses in the upper Kodori valley reported sounds of tracked vehicles.

d. With the possible exception of one witness in Mramba whose statement was unclear, no-one reported having seen the actual launch of ground launched rockets or having seen the burning exhaust gasses indicative of the 'active motor phase' of a missile flight during and immediately following launch. This would indicate that none of the missiles were fired at very close range.

e. There are conflicting witness reports regarding the degree to which the upper Kodori valley was illuminated by artificial light sources. Electricity is supplied from various sources throughout the vicinity, including numerous individual generators. Therefore, any assertion regarding an exact time that 'lights' were turned off is prone to error.

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<sup>3</sup> When referring to evidence, it should be noted that some articles were recovered from the impact locations, some articles had been grouped together and some articles were handed over to the JFFG.

12. **Artillery Working Group Report.** The UNOMIG Artillery Working Group was able to determine the grid reference, altitude and ‘back-bearing’ of the majority of the crater sites. Where they could not gain this information, it was due to the character of the crater or a mid-air projectile explosion. The group analysis yielded the following findings:

a. **Impact Sites/ Craters.** The impacts were found to be in 3 separate ‘groupings’: Chkhaltva, Adjara and Zima. In Chkhaltva, the ‘dispersion’ (distance from one crater to another) was no greater than 400-500 meters, at Adjara 500-600 meters, and at Zima 200-300 meters. The dispersion of impacts (“Zone of Gun”) at the clusters around Chkhaltva and Adjara were approximately 500 meters by 200 meters. These are relatively compact groupings by the standards of BM 21 accuracy and may indicate that firing did not take place from maximum ranges.

b. **Direction of Fire.** Most of the craters were circular in shape and yielded few fragments. Round craters generally indicate a high angle of fire, typically indicating short to mid-range firing, but yield less accurate back-bearings. Additionally, the similar character of the craters in Chkhaltva and Adjara suggest that all the missiles were launched from either a single firing point (not possible if deployed at close line-of-sight range) or from a few relatively close locations (in both bearing and range). The magnetic back-bearings from the craters to firing points were estimated to be between 150-220 degrees (from the south). Unfortunately, establishing likely specific firing points from the intersection of ‘back-bearings’ is unlikely because the craters are too round to give an exact back-bearing. Additionally, even a minor change in the bearings for a weapon system with a range up to 20 km would cause a great variation in the location of likely firing positions.

c. **Range/ Likely launch sites.** The lack of residual fuel (fuel unused during short flights that then burns after impact) and ‘brake rings’ at the craters indicates that the launch range was not less than 3-4km from the target locations. However, it was also discussed and agreed, with the exception of the Georgian side, that the rockets were not launched from the potential maximum range of 20km for the following reasons:

(i) High mountain crests, like those found in the Kodori region, pose considerable obstacles for indirect fire weapons such as the BM21 when firing on targets at maximum range.

(ii) The round shape of the craters typically indicate short to mid range firing.

(iii) The dispersion of impacts at the crater clusters in Chkhaltva and Adjara form relatively compact groupings. Compact groupings denote accurate firing and the BM21 is unlikely to achieve such accuracy when fired at maximum range.

13. **JFFG Ground Patrol to locate suspected launch sites (11-15 May 2007).** Given the refusal by the Georgian Ministry of Internal Affairs to allow participation in a proposed JFFG aerial reconnaissance patrol of the Kodori Valley<sup>4</sup>, the JFFG alternatively proceeded with a 3<sup>rd</sup> ground patrol. The patrol was executed in 2 phases in order to attempt to locate suspected launch sites identified by the sides and to promote transparency and confidence amongst the sides.

(a) **Conduct of the patrol**

(i) Phase 1 started from Sukhumi to Tkvarcheli by road, on 11 May 2007. The potential launching site suspected by the Georgian side was encompassed by Grid References 180 620, 190 620, 190 610 and 180 610. Once the vehicles could proceed no further, the JFFG proceeded on foot but the patrol was terminated, by consensus, at Grid Reference 13550, 57400. This decision was taken because of high water level in the river, and it was not possible to follow along the river or to cross it from any other point. This point was 10 km short of the designated sites.

(ii) Following the termination of the Phase 1 patrol, the Georgian side requested an 'ad hoc' patrol to the vicinity of Akarmara; this was never discussed in the JFFG as a suspected launch site. The Head of the JFFG gave due permissions with the consent of the relevant Abkhaz authorities. The patrol reached Grid Reference 30400, 55425. The Georgian side was content to cease patrolling at this location and a JFFG consensus to terminate patrolling was reached. The reason for not proceeding further was because the road had come to a dead end and the Georgian side was content in not continuing the patrol by another road.

(iii) Phase 2 of the patrol covered the period 14-15 May 2007, starting from Sukhumi and proceeding to the following locations: lower Kodori valley Grid References 1365, 1366, 1367, 1368, 1465, 1466, 1467 and 1468 (Georgian nomination); upper Kodori valley Grid References 1874, 1875, 1974, 1975 (CIS PKF nomination) and 1771, 1772, 1871 and 1872 (Abkhaz nomination).

(iv) Each location in the Phase 2 Patrol was terminated, by consensus, without having reached the actual final destination for reasons of inaccessibility by vehicle and by foot patrol.

(v) One suspected launch site found in a clearing of the forest on the way to CIS PKF designated area in upper Kodori valley at Grid Reference 180 759, is subject to further forensic investigation of the burnt foliage found there. Forensic test is to determine presence of propellant or explosive residue. Georgian competent authorities conducted tests of parts

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<sup>4</sup> On behalf of the JFFG sides, UNOMIG officially requested Georgian participation in an aerial reconnaissance patrol of the upper Kodori. The Georgian Ministry of Internal Affairs responded negatively (letter dated 7 April 2007) citing the inability to provide the necessary security guarantees.



of samples provided to the sides for custody and scrutiny and declared these free of any rocket propellant or explosive material. The Georgian report can only be substantiated by the test being currently done by the agreed neutral agency. If the report is found positive, the JFFG will re-open to consider the fact and derive further conclusions.

b. **Conclusions from the patrol**

(i) The Georgian delegation opined that a Ural type vehicle could gain limited access in the Tkvarcheli region (at least further than United Nations vehicles were able to proceed at this time of year) and sufficient access in the Akarmara region (as it was evident that heavy vehicles were transiting this area at the time of the patrol). However, it would have been extremely difficult in early March due to heavy snow.

(ii) It was further agreed that the Georgian designated location in Lower Lata within the lower Kodori valley would have been difficult to reach at the time of the incident on 11 March 2007. Given the terrain and geographic features typical of the time of the incident, it was feasible to denote that even a Ural type vehicle would not have been able to reach the designated locations.

(iii) Furthermore, given the terrain and geographic features typical of the time of the incident it was agreed that it would also be unlikely for a vehicle-mounted BM21 system to have been capable of reaching the Abkhaz or CIS PKF designated locations in the upper Kodori valley. Therefore, it made no sense to proceed further, on foot, into the mountains.

**Deductions from Artillery aspects, Tactical Inconsistencies and Qualified Agreements**

14. There are various means of launching the 9M22 rocket. The first one is the standard platform of the BM-21 GRAD multi-barrel rocket launcher mounted on a Ural truck (nomenclature 375D (1963) or 4320 (1973) with 40 launchers). There are also other variants with lesser number of launchers. The second one is the standard single launcher system known as the 9K132 Grad-P which is man-portable. The third one is the improvised launch system which can be simply a fabricated tube with some power source from a dry battery to initiate the propellant. Since this is an unguided rocket, such improvisations are workable but perhaps with lesser accuracy or consistency in accuracy. The use of the single tube standard or improvised launcher is more practicable in mountains thus its use can not be precluded. However, given the volume of fire, carriage of single tube would entail a large group of able-bodied men and load-carrying animals to difficult places on the high ridges astride upper Kodori valley.

15. There were **no casualties** anywhere in the valley during the entire period of rocketing as, except for the Regional Administration building in Chkhalta, no structure or

living accommodation was hit. This could be considered unusual, as the BM 21 is known to be a very powerful weapon system. Drawing deductions, one possible reason for the lack of casualties is that at the time of the incident, most inhabitants were indoors. A second possible reason is that the impact clusters are generally located on the northern side of the centre of the valley, where habitation is more dispersed. A third possibility is selective targeting to avoid human casualties, also borne out by the fact that the firing was not conducted in salvos as should have been the case with a GRAD multi-barrel system, and the fact that the craters were very compact in each cluster. However, there were impact sites very close to houses which question this possibility as such precise avoidance is also difficult. Various possibilities were discussed but the JFFG has not been able to arrive at a consensus opinion on this.

16. As was witnessed in the incident, there was **single round artillery fire after noticeable pauses as opposed to a salvo**. Artillery fire is normally conducted for a short and intense period. The standard use of a multi-barrel launcher on its conventional platform should have involved firing salvos at all the sites in as short period of time as possible and then displacement if possible to avoid detection or counterstrikes. Single round artillery fire indicates possibly single tube launch or deliberate firing from even a multi-barrel launcher after necessary observation and adjustment. In the former case, a single tube launch from one launch site from mid or short distance could not have reached all the sites or created a symmetrical pattern of craters. In the latter case, the launch site should either be within line of sight range or there should have been an artillery spotter observing the vicinity of the target area and communicating with the launch site in order to adjust precise fire. These are the possibilities deduced from the pattern of craters and their locations. The JFFG has not reached any consensus opinion on this aspect.

17. **Dispersion of the craters in each cluster was compact**. UNOMIG expert group precludes use of maximum range (propounded by the Georgian side), as greater range causes more dispersion. In the case of the Kodori attack, the accuracy obtained can be derived from good target registration and observation. Good target registration implies precise grid coordinates obtained from a GPS located at the target and, or use of range finders. Registration may be done in advance of the attack or during it. Observation implies visual observation by artillery 'Observation Post' of the impacts and then communicating the necessary adjustments to the gun position. UNOMIG also precludes extremely short range (propounded by Abkhaz side) as no witness observed the launch (prominent burning rocket fuel) nor was any impact site indicating burning rocket fuel; There has thus been divergent opinion on this aspect in the JFFG, hence no definite conclusion can be derived.

## AVIATION ASPECTS

18. **Summary of Incident**. Witnesses state that from approximately 2110 hours until approximately 2250 hours one or more helicopters operated in the upper Kodori valley. The spent ATGM (SHTURM or ATAKA), typically but not exclusively a helicopter delivered missile, discovered at Chkhalta also indicates the presence of helicopters during the rocket firing incident. Unfortunately no further evidence positively and conclusively

denies or affirms the presence of helicopters during the incident. Thus, the JFFG discussed possible aviation operations in the upper Kodori valley during the rocket firing incident by considering the technical assessments of experienced pilots and air defense officers, specially prepared meteorological reports, and radar records made available by Georgian authorities.

19. **Witness Statements.**

a. Witnesses in the upper Kodori valley with few exceptions heard helicopters moving in the air above them from a little after 2100 hours until just before 2300 hours. The exceptions are witnesses from the CIS PKF CP 106 and CP 107 and the witnesses from Saken, who either heard no helicopters or heard helicopter sounds in the general direction of the central upper Kodori valley, far from their own locations in the northwest or east respectively.

b. The earliest recorded helicopter sounds in the western part of the upper Kodori valley was of one or more helicopters flying low above the Ptysh area at approximately 2110 hours, coming from a north-western direction, heading south-east. It was also reported in this vicinity that sounds were heard from 2 helicopters from a north-northeast direction. In the Chkhalta area, helicopter sounds were heard from approximately 2130 hours until 2245 hours. Helicopter sounds were last heard in the area approximately 2 hours after the first detection, passing in a northerly direction.

c. The earliest reports of helicopters in the eastern part of the upper Kodori valley were of one or more helicopters passing Omarishara at the fork between the valleys, leading to the Klukhorski Pass and the Mindri Glacier. It was reported that the helicopter sounds came from the Klukhorski Pass (from the north) and disappeared in the area of Gentsvish (to the south) shortly after 2100 hours. A witness at Gvandra Border Guard Post reported that one or more helicopters passed west of the Post, a report that she had immediately passed to her superior that night (who was located in Chkhalta). From there, possibly after hovering a bit, it disappeared in the Adjara direction. In Adjara, witnesses first heard helicopter sounds at approximately 2130 hours. They disappeared after 2245 hours. One witness here reported having heard 2 helicopters at the same time from different directions above a hill. Helicopter sounds were heard again in Omarishara at approximately 2300 hours, moving north in the direction of the Klukhorski Pass

d. No witnesses reported a fully visible helicopter in the darkness. Some, however, reported seeing the outline of a helicopter, and one identified the outline with certainty as that of an MI-24, based on his experience in the war in Afghanistan (1979-1989).

e. Two witnesses, one at each end of the valley, reported having seen a green, blinking light in the general direction of the helicopter sound. No-one else had seen any lights. Eight witnesses stated that they saw a lightening streak and/

or flares from presumably a projectile launched from a helicopter. However, the statement of witnesses does not lead to the conclusion that the crater sites, some of which bore indications of a 122mm BM21 GRAD rocket system, were fired from helicopters.

f. The JFFG interviewed the 3 members of the Georgian Ministry of Internal Affairs helicopter crew that had been present in the upper Kodori valley on the night of the rocket firing incident. The crew flies an MI-8 helicopter stationed at the heli-pad in Gentsvish and transports Ministry of Internal Affairs personnel and supplies. They reported having seen a missile launched at 2245 hours in the direction of Adjara-Chkhaltá from a helicopter approximately 2km northwest of the crew's quarters, with an approximate flight time of 3 to 4 seconds before impact (heard only). The pilot reported with certainty that one of the helicopters was an MI-24. The helicopter took off in the direction of Gentsvish after the launch. After it disappeared, he could still hear at least one helicopter working in the area, and would not exclude it being an MI-24. The crew reported that they never fly at night.

g. A resident of Chkhaltá, living opposite the Regional Administration building and Border Guard Commander of the Gvandra Post, reported having seen the launch, flight and impact of the missile hitting the building at approximately 2245 hours. He reported that the missile was launched from a helicopter which was heard hovering before the launch, but not seen. He estimated the flight time to be 2 to 3 seconds, and the distance covered to be less than 2km. He reported that the helicopter took off in the direction of Adjara after the launch.

h. Weather conditions in the upper Kodori valley that night were reported to be initially clear but then turning gradually misty beginning at 2300 hours. Conversely, the lower Kodori valley was reported by personnel at CIS PKF CP 107 to have been foggy from 1900 hours onwards. No moonlight was seen as moonrise was at 0207 hours on 12 March 2007. However, some witnesses reported that the weather conditions on the evening of 11 March 2007 allowed them to see stars.

**20. UNOMIG Aviation Working Group Analysis of Terrain and MI-24 Capabilities.** A Working Group of UNOMIG comprising an MI-24 pilot with approximately 20 years of flying MI-24, a transport helicopter pilot and a commercial pilot were assigned the task of apprising the JFFG with relevant information of terrain implications for flying and the capabilities of an MI-24 helicopter, assuming that a combat attack helicopter was used. The Working Group made a number of presentations to the JFFG. Salient aspects of the assessment and factual position are as follows:-

a. **Overview.** Expert statements confirm the possibility of an incursion by helicopters of types MI-24, MI-28, and/or MI-8 through mountain passes as high as 3000 meters. Several mountain passes below that height exist for entry into the Kodori valley from almost all directions. Nonetheless, to fly at this altitude for

extended periods the helicopter would have to lighten itself by sacrificing weapons or fuel loads. Also, the existence of night vision equipment for said helicopters since 1999 has been confirmed. Extensive training is imperative for using night vision equipment for flying helicopters. These helicopters have been used extensively in mountain operations since the Soviet-Afghan war.

b. **Terrain.** The Working Group analyzed the terrain in the upper Kodori valley and assessed it to be quite difficult for any pilot because of the constricted space of the valley; high ridge lines on the northern and southern sides with elevations of approximately 2700 meters in the south, and approximately 3500 meters and above in the north. Combat missions are do-able with hi-tech state of the art aircraft (Mi24, Mi28) flown by highly skilled pilots with experience of flying in mountainous terrain and currency in night flying. Familiarity with the terrain would certainly be an enabling factor. There are 4 suitable approaches to the valley; from the east along the lower Kodori valley; from the north along the Ptysh and Gvandra valleys; and from the east from the usual route used by the Georgian side from the Khida Pass direction. Of these approaches, the northern approaches are the most difficult as these have to also negotiate through the North Caucasus range. The North Caucasus range has a height ranging up to approximately 3800 meters but is cut through with a number of passes to include the Marukhis Pass (northwest) at 2800 meters; the Amtkel Pass (northwest) at 1900 meters; Ambange Pass (northwest) at 2300 meters and the Klukhorski Pass (northeast) at 2800 meters. These passes can be used for approaching the upper Kodori valley.

c. **MI-24 Characteristics.** Assuming that an attack helicopter was used, the MI-24V, the most common variant, was considered by the Working Group. The JFFG members did not arrive at a consensus on the specific endurance of the helicopter as it is still not definite that a MI-24 was used in the incident and endurance figures are highly debatable in many respects. Moreover, even one variant can be configured differently to meet mission-specific requirements thus different endurance limits. Some conclusions of the Working Group are appended below:

(i) **Technical Characteristics of the MI 24V.** A modern MI 24V is likely to have the following equipment or capabilities.

- Digital PNK Avionics
- Multifunctional LCD Displays
- GEOFIZIKA ONV 1 Night Vision Goggles
- Night Vision Goggles compatible Cockpit lighting
- URAL Optical and Mechanical Plant GEOS 342 TV FLIR Sighting System and Laser Rangefinder
- Countermeasures

- 2 external fuel tanks allows 1 ATGM only
- Max T/O weight: 11500kg
- Weight 1 ATGM AT6 STURM: 45kg
- Weight 1 ATGM AT9 ATAKA: 50kg
- Fuel cap: 2645 litres (with reserve 4001(=30 min VFR day))
- Max range: 780km (average fuel consumption per min [14 litres] multiplied by average range per hour [240-280km]).
- Max time: 3:09 hours (Med. Fuel Consumption 141/minute)
- Max service ceiling: 5750 meters
- Max hovering ceiling: 3000 meters
- Crew: 3

(ii) **Endurance.** The MI-24V has a maximum endurance of approximately 4 hours depending on its payload and weapon configuration. Given the terrain conditions, if the helicopters flew simultaneously for the entire duration of the incident, it would leave minimal endurance for the turn-round time and distance, thus significantly reducing the range of action from its base. This leads to the consideration of 2 possibilities. Firstly, helicopters may have entered the upper Kodori valley sequentially and remained for only a portion of the attack. Secondly, helicopters may have been refueled at an improvised refueling point.

(iii) **Tactical factors.** It is not possible for helicopters or aircraft at low level to fly simultaneously with artillery fire in the same area. It is also extremely dangerous for a number of helicopters to be flying near each other at night and in a valley with mountain ridges in close proximity. Any military operation combining the use of ground fires (BM-21) and aviation fires (ATGM) is a sophisticated operation and must be carefully planned and requires reliable command and control during execution.

21. **Georgian Radar Report.** On request of the JFFG, the competent Georgian authorities provided radar report covering the period 0819 hours 11 March 2007 to 0100 hours 12 March 2007 (Georgian time), of areas covering the entire territory of Abkhazia and beyond to include the Black Sea, Sochi and Adler; all areas immediately south of the Kodori valley. This report has been shared with the JFFG sides. It indicates no flight at all during the entire period from these areas, less commercial flights along the international flight corridors on the Black Sea and from Adler towards the north. It is, therefore, concluded that no Abkhaz or CIS PKF helicopter took off from these areas towards the upper Kodori valley before and during the incident.

22. **UNOMIG Aviation Working Group Report on meteorological conditions prevailing in the region and upper Kodori valley around the time of the incident of the rocket firing in the valley.** The UNOMIG Aviation Working Group was further tasked to obtain factual meteorological information prevailing in the region, particularly in the upper Kodori valley on night 11/12 March 2007. This report was presented to the JFFG in the 6<sup>th</sup> JFFG meeting. The report is based on authentic sources obtained from the German Armed Forces Combat Command Headquarters. Meteorological reports are sourced from stations located at Kutaisi, Sochi, Vladikavkaz, Nalchik, Adler and Tuapse. Data obtained was interpolated to calculate specific conditions in the upper Kodori valley. All sides were provided with a copy of the report and given time to scrutinize it. The report was not challenged by any of the sides except the Georgian side in that the witnesses stated that they could see the stars in the sky. The Working Group report clarified that partial cloud coverage does not mean that all observation is affected, ie, it is quite possible that some witnesses were able to see stars in the sky and others were not, depending on their location. Salient aspects and conclusion of the report are:

a. **Report.**

- (i) The decrease of the influence of a high pressure system prevailed the general weather conditions in the Kodori valley
- (ii) The cloud coverage increased in the evening above 2500 meters MSL. Along with the beginning of light rain (from midnight onward) the ceiling of the clouds dropped down to mid valley elevations.
- (iii) From sunset onward (approximately 1520 UTC) low stratus clouds with cloud ceilings of 250-350 meters MSL in the western area due to increasing mixing processes.
- (iv) Snow level dropped from 2000 meters MSL to 1600 meters MSL.
- (v) Surface wind was weak. Luv and Lee effects in the orographical structured terrain were weak.
- (vi) The second half of the night the snow level dropped from 2000 meters to 1600 meters MSL. Precipitation started to fall.

b. **Conclusion.**

- (i) The weather conditions for an approach to the upper Kodori valley from the west were very bad.
- (ii) The weather conditions for an approach to the upper Kodori valley from the north, east and southeast were flyable.
- (iii) All in all, the weather conditions in the upper Kodori valley were very poor for a flight by Visual Flight Rules (VFR) or Night Visual Flight Rules (NVFR) into the lower valley levels.

- (iv) In this military context VFR is not meant legally but doable.
- (v) The conditions were not unflyable but very difficult including a high risk of Controlled Flight Into Terrain (CFIT) and disorientation due to poor sight. Also low clouds and fog would have made the use of Night Vision Goggles (NVG) obsolete.

**Relevance to the 11 March 2007 upper Kodori valley incident of the Georgian MI-24 helicopter that crashed 38 km north of Tbilisi at 02:11 hours (Georgian time).**

23. On request of the JFFG and to address the speculation that a Georgian helicopter that crashed at 02:11 on 12 March 2007 north of Tbilisi, may have been involved in the firing incident in the upper Kodori valley, competent Georgian authorities provided explanation and a radar report of the area of the crashed helicopter and its flight path. The radar report covered the period from 01:55:05 hours to 02:19:54 hours 12 March 2007. It indicated that 2 MI-24 helicopters, transponder squawk 0060 and 0061, actually took off from Tbilisi at approximately 01:54 hours flying due north. At approximately 02:19 hours while flying over the area of Chantali, the 2 helicopters turned around with the leading helicopter (transponder squawk 0060) turning left while the other (transponder squawk 0061) turned right. The helicopter that turned right crashed at 02:11:25 hours while the second helicopter returned to base at Tbilisi. The explanation provided by the Georgian authorities for the flight of these 2 helicopters was that immediately after the incident in the upper Kodori valley, all units of Georgian armed forces were put on high state of alert with all assets ordered to report to their parent bases. These 2 helicopters stationed at Tbilisi for base repair were ordered to fly back to Senaki immediately, using land navigational aids as they were not equipped with night navigation capability. Confronting bad weather immediately after take-off, the helicopters flew due north and decided to turn back due to poor visibility when one of them crashed due to pilot error.

24. The Georgian explanation was questioned in the JFFG and further evidence in the form of the black box was sought to determine the veracity of the radar report and cause of crash. The Georgian Ministry of Internal Affairs responded in their letter dated 6 June 2007 that 'The flight of Georgian MI24 helicopters which crashed near Dusheti on March 12 early morning was recorded partly by civilian (high altitude) and military (lower altitude) radars. The civilian radars are accredited by ICAO (International Civil Aviation Organization) and participate in international data exchange. Georgian helicopters do not have night vision capabilities, at night time they can only fly from designated airport to designated airport'.

25. While a need was expressed by CIS PKF to further authenticate the radar reports through other sources, on the basis of (1) official Georgian notification of accreditation of their radars by ICAO and participation in international data exchange; (2) the assumed correctness of the first negative radar report; and (3) assurances/ readiness of the Georgian side to share further information; it was finally agreed to assume authenticity of both the radar reports.

**Deductions, Tactical Inconsistencies and Qualified Agreements on Aviation Aspects**



26. It has been stated by competent Georgian<sup>5</sup> and Abkhaz authorities that their helicopters do not possess a visual night flying capability. (Such a capability would require specialist equipment and training). The CIS PKF also stated that it does not possess such a night flying capability in their fleet of helicopters. UNOMIG has also not observed any night flying activity of the CIS PKF helicopters in the zone of conflict. However, the JFFG is not in a position to carry out a complete verification of this on ground.

27. It is not possible for the JFFG to dispel completely the notion that the ATGM may have been fired from the ground. It is theoretically possible, as both the SHTURM and the ATAKA can be fired from certain armored vehicles (9P149/MTLB ATGM Launcher Vehicle, BMPT). Nonetheless, the missile appears to have entered the building from a relatively high angle (likely precluding the use of an actual armored vehicle) and was seemingly very accurate (hitting an office space window in the administrative building.) Likewise, it would be technically very difficult to accurately fire a SHTURM or ATAKA from an improvised ground platform. Additionally, the expert provided by the Russian Federation stated that the ATAKA cannot be fired from a ground or improvised platform.

28. **The presence of helicopters during firing of artillery at the same location or in the line of fire is not possible.** The helicopters must be separated from the artillery fire by either ‘time’ or ‘space’. If separated by ‘time’, the helicopter must utilize very good air-ground communications to ensure it does not fly in the vicinity during the time of firing. If the helicopter is separated by ‘space’, it will simply never fly in the direct path of the intended artillery fire, but this also requires extensive coordination and effective air – ground communication. Witness statements do indicate separation by ‘time’, but the differing locations of witnesses, the low visibility at night with inability to spot the helicopter(s), and a general state of alarm amongst the civilian population are factors that prevent a definite conclusion.

29. The fact that **helicopters remained in the area for the entire duration of the incident but apparently fired only one missile** (the Anti-Tank Guided Missile directed at the Chkhalta Regional Administration building), as no other attack helicopter munitions was found in any other impact site, is unusual. Deductions from standard military practice indicate a possibility of helicopters acting as ‘artillery observers’ to direct and adjust artillery fire or for the purpose of observation and command and control. This again, requires very good ground-air coordination and communication as well as effective Night Vision capability. Operating at night time is also very difficult, especially in mountains; and in the prevailing environment of bad weather and poor visibility is a highly risky and uneconomical tactics. In such conditions, use of either rocket fire or helicopter fire alone would have been enough to create the same effect, if not more. These deductions being an academic assessment and in the absence of adequate evidence or indications, JFFG has not been able to arrive at a definite conclusion.

30. There was **no response from the Georgian forces on the ground** in upper Kodori valley despite the sustained presence of helicopters and hostile actions thereof,

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<sup>5</sup> Georgian Ministry of Internal Affairs letter dated 6 June 2007.

although not visible due to poor weather conditions and darkness. Log books of the duty room of the Ministry of Internal Affairs in upper Kodori valley indicate an element of restraint from higher echelons. There was no consensus on this explanation in the JFFG. The JFFG has received official “rules of engagement” of the Ministry of Internal Affairs in the 8<sup>th</sup> JFFG meeting.

## **RUSSIAN FEDERATION RESPONSE TO UNOMIG REQUEST FOR ASSISTANCE OF THE JFFG**

31. **UNOMIG Request.** UNOMIG on behalf of the JFFG requested the Russian Federation assistance on the following aspects:

- a. The cooperation of competent Russian authorities in providing relevant aviation or air traffic control records for flights of any origin north and south of the Caucasus Mountains in and out of the upper Kodori valley from 0800 hours (all times Moscow Local) on the 11 March 2007 until 2000 hours on the 12 March 2007.
- b. The provision of a munitions expert in Anti-Tank Guided Missiles of the types ‘ATAKA’ and ‘SHTURM’ from the Russian Federation, preferably from the manufacturers or the Ministry of Defence, in order to facilitate the determination of the make and type of missile employed in the upper Kodori valley and provide information about the platforms from which such missiles can be launched.
- c. The tracing of recovered munitions as of the production point, including origin and end-user. For reference, photographs, including on a CD of fragments recovered from the impact site were enclosed. A serial number or lot number is visible on each of the fragments, which the JFFG believes are from an anti-tank guided missile’.

32. **Russian Federation response.** After an interim reply dated 4 May 2007 that the request is under process and would require further time, the Russian Federation responded in their Ministry of Defense letter number 205/19479 dated 23 May 2007. Salient aspects of the report are:

- a. In addressing the issue of relevant aviation records, the Russian Federation provided a negative report, in that it stated that since recordings are done by the control services of the Armed Forces of the Russian Federation in the Caucasus region only when Russian Air Force undertakes flights in the area; and since there was no Russian Air Force flights on 11-12 March in the mentioned zone, there are no recordings of such flights.
- b. The Russian Federation agreed to send munitions experts to assist in determining the make and type of the Anti-Tank Guided Missile.
- c. The tracing of lot numbers, production origin and supply of ammunition was not addressed in the Russian Federation response.

33. **Result of Russian Federation missile experts' examination of the ATGM fragments.** On 31 May 2007, in the presence of the JFFG the Russian Federation experts physically examined the fragments of the ATGM collected from the Chkhalta Regional Administration building impact. They reported that because of the presence of inscriptions denoting both the SHTURM (9M114) and ATAKA (9M120), the experts were not confident in giving a definite opinion. They instead recommended that various parts be sent for laboratory analysis in the Russian Federation.

34. The results of the examination were discussed at the 7<sup>th</sup> JFFG on 1 June 2007 and, in response to questions raised by the Head of JFFG, the munitions experts further reported that:

a. They had not seen the photographs of the fragments that UNOMIG had supplied to the Russian Federation.

b. It would have been difficult to identify the make and type of munitions from photographs in advance of the physical examination since numerous factories produce such munitions. As such, a laboratory analysis would still be required despite photographs and physical examination.

c. The basic difference between an 'ATAKA' and 'SHTURM' missile is the guidance system and warhead.

d. Both types of missile use the 'Radio Guided, Optically Sighted' guidance system. The Russian Federation does not use the ground launching device BMPT tank support combat vehicle to launch the 'ATAKA' missile. The 'ATAKA' missile is only launched from an aerial platform. This latter statement was questioned in the JFFG since information is widely available that the ATAKA missile can be launched from a ground platform.

e. Small technical parts of both types of missile are inter-changeable but the munitions experts do not have access to the Design Bureau to be able to offer a clear decision on this matter.

35. The JFFG discussed the proposal to send the evidence for laboratory analysis in the Russian Federation. It was met by a qualified yet negative response from the Georgian delegation. In the absence of consensus or recommendation on any further action, the JFFG considers it expedient not to pursue this matter any further.

### **PROPOSALS IN COMPLIANCE WITH ARTICLE 3.3 OF THE JFFG PROTOCOL REGARDING STEPS FOR PREVENTION OF SUCH INCIDENTS**

36. In compliance of Article 3.3 of the JFFG Protocol of 19 January 2000, recommendations of the Head of the JFFG proposed in the 7<sup>th</sup> JFFG meeting was considered by the sides for implementation. These are:

- a. Full support from all sides for the reactivation of a UNOMIG Team Base in Adjara, upper Kodori valley: providing a permanent presence and patrolling both lower and upper Kodori on a daily basis. Verbal consent of the sides is in place but requires practical implementation, and thus the support from all parties. The relevant Ministry of Internal Affairs, CIS PKF and Abkhaz authorities have been contacted and a letter sent on 31 May 2007 requesting a formal response to the proposal. The Sukhumi Protocol of 29 March 2000 permits joint UNOMIG-CIS PKF patrolling to continue during the UNOMIG Kodori rotation periods. This will assist in ensuring that the situation in the Kodori valley exists in accordance with the Moscow Agreement and allows for appropriate action concerning any further incidents.
- b. UNOMIG to access two areas currently outside the conflict zone which are a source of concern for both Georgian and Abkhaz, namely, Tkvarcheli and lower Kodori region (Georgian concern), and Khida Pass to CP302 region (Abkhaz concern). UNOMIG is permitted access to the Tkvarcheli region under the Sukhumi Protocol of 29 March 2000, and to the remaining regions under Article 2g of the Moscow Agreement. UNOMIG would like to access these regions on an occasional or required basis with the consent of all parties.
- c. Deployment of artillery radar in the Kodori valley by UNOMIG which would be able to identify the direction and signature of any projectile fired into or from the Kodori Valley. The equipment would be manned by the UNOMIG Kodori team and would facilitate any subsequent investigations into further incidents. This recommendation is subject to a technical field study.
- d. Employment of an enhanced surveillance capability by UNOMIG, affording UNOMIG and incidentally the JFFG, information on previously inaccessible areas. The concept of an Unmanned Aerial Vehicle (UAV) allows for real-time down loading of information to a ground station. There are many different capabilities and ranges of UAV. Despite the political implications and sensitivities, this is a genuine recommendation that will allow for adequate transparency and would prove a very effective tool for the JFFG. Various modalities for making such employment transparent can be worked out such as presence of the representative of the concerned side at the ground station to witness the information down-load.
37. In the 8<sup>th</sup> JFFG meeting the sides were asked to discuss the above recommendations as well as propose their own.
- a. The Georgian side agreed to all recommendations proposed by the Head of JFFG/ Chief Military Observer UNOMIG; and had no further recommendations to propose.
- b. The Abkhaz side did not agree to the consideration of any of the recommendations till the first recommendation is resolved as patrolling in the Kodori valley should be joint CIS PKF-UNOMIG. On clarification by the Head

of JFFG that the matter of re-activation UNOMIG team base in the upper Kodori valley is not an issue as all sides have provided their concurrence and the Georgian side has provided standing security guarantees for the permanent presence of UNOMIG team base in Adjara. This is also without prejudice to regular joint patrolling of CIS PKF-UNOMIG in the Kodori valley, which will be conducted during the regular rotation of UNOMIG team base. Concurring to UNOMIG re-activation of its team base in the upper Kodori valley, the Abkhaz side reiterated its position that until the complete demilitarization of the upper Kodori valley, it will not consider any other recommendation.

c. The CIS PKF concurred with the UNOMIG team base in the upper Kodori valley and emphasized on the importance of UNOMIG presence which can prevent such incidents there. It principally agreed to the recommendations but questioned the operational modalities of artillery radar in the Kodori valley and expressed its reservation if manned by one of the sides; that there can be other acoustic devices that can be used instead of an artillery radar. It was clarified by Head of JFFG that it had been proposed as an asset of UNOMIG and would be operated by UNOMIG. Concurrence was being sought in principle and its type and deployment would be subject to technical feasibility.

d. In addition, CIS PKF proposed that since the upper Kodori valley is occupied by armed formations in contravention to the Moscow Agreement, CIS PKF presence along with UNOMIG in the upper Kodori valley should be considered for effective monitoring and transparency. Aerial patrolling with manned or UAV should also be done there.

## **JFFG FINDINGS**

38. Physical evidence from 12 out of 16 ground craters examined by the JFFG after approximately 48 hours of commencement of firing are remnants of the 9M22 rocket typically fired from the 122mm BM 21 launching system. Hence, the use of 9M22 rockets of the BM 21 system is confirmed.

39. The JFFG established, after examining 137 fragments from the CKHKALTA Regional Administration building impact, that the munitions used was either an AT-6 'SHTURM' or AT-9 'ATAKA' Anti-Tank Guided Missile (ATGM). These are 130 mm ATGM of Russian production, the ATAKA being a modernized SHTURM. An internal device for radio-guidance and optical sighting from this missile was recovered intact.

40. The craters being symmetrical and roundish, do not give good indications of direction except that a high angle of fire is a possibility. General estimation has led to a consensus of the JFFG to conclude that the direction of fire is from the south ranging between 150 to 220 degrees.

41. The use of the GRAD system mounted on a Ural truck is precluded from the areas designated by the CIS PKF and Abkhaz side in the upper Kodori valley as well as the

Georgian designated areas in lower Lata (lower Kodori valley) because of extremely difficult terrain and inaccessibility.

42. In the areas north of Tkvarcheli and Akarmara (Abkhaz side) visited by the JFFG ground patrol in May 2007, there were tracks (used by heavy timber trucks) that can possibly take a BM 21 GRAD system mounted on a Ural truck to some extent of the high watershed between the Tkvarcheli region and upper Kodori valley. Considering the area being heavily covered by snow in early March, such an employment of BM 21 GRAD is extremely difficult, especially if it has to be taken to positions which are in desirable range of upper Kodori valley.

43. While accuracy of witnesses' statements regarding helicopter activities varies, there is considerable degree of corroboration on the following aspects:

a. Appearance of more than one helicopter which remained in the upper Kodori valley for total duration of the incident; using the same flight route for return which was used for the approach.

b. Helicopters used multiple approaches from the north, to include the Gwandra and Ptysh valleys. The lower Kodori valley approach was not used.

c. The make and type of helicopter could not be ascertained and altitudes were certainly not low level, which means that helicopters maintained a reasonable relative height from the ground.

d. The timeframe of the incident, especially the commencement of presence of helicopter over-flights and firing, can be considered as accurate as most local population at that time were tuned to a popular Georgian TV program.

e. Visibility from ground was fair in the upper Kodori valley while it was foggy in the lower Kodori valley. Visibility deteriorated in the later part of the night. (Information ascertained by the UNOMIG Aviation Working Group report concerning meteorological condition in the Kodori region).

44. Two Georgian radar reports covering the period of 11-12 March and 12 March indicate the following:

a. No Abkhaz or CIS PKF aircraft flew from the period 0819 hours (Georgian time) on 11 March 07 to 0100 hours (Georgian time) on 12 March 07.

b. There was one Georgian MI-8 helicopter at Gentsvish in the upper Kodori valley which was stationed there for emergency evacuation.

c. The Georgian MI-24 attack helicopter that crashed at 0215 hours (Georgian time) north of Tbilisi over the area of Chantali, along with the second helicopter flying the same mission, took off from Tbilisi.

45. Study of terrain conditions indicates that the upper Kodori valley is restrictive in maneuverability for aircrafts. Of the four approaches, the northern approaches are relatively more difficult. Poor weather conditions and night time will further compound the difficulties to fly without risks.

46. The meteorological conditions in the region, especially in upper Kodori valley were extremely unfavorable for any flying by Visual Flying Rules or Visual Night Flying Rules. Approaches west of upper Kodori valley were extremely unfavorable while approaches from the north, northeast and south were relatively less difficult. However, for combat missions, it was doable with considerable risks. Only state-of-the-art combat helicopters with skilled pilots possessing high level of currency in night flying and, as an added advantage, familiarity with the terrain, would make such a mission possible but with grave risks. Statements of witnesses that they could see the stars can be correct as there was 50% cloud coverage. Moreover, perceived visibility conditions from the ground cannot be assumed to equate similar conditions for aircraft attempting to fly by 'Visual Flight Rules'. This is especially the case for aircraft attempting to fly with the aid of night vision equipment and in mountainous terrain.

47. Considering the constraints of terrain and meteorological conditions prevailing in and around the upper Kodori valley at the time of the incident and the required turn-round flying time and distance, the presence of the same aircraft or aircrafts for the sustained period of the incident would have created a critical risk for their safe return and is thus close to impracticable. The protracted presence of helicopters over the valley is only possible if a number of different aircrafts equipped with modern night navigation systems and proficient pilots were employed in series or an intermediary re-fuelling point in close vicinity of the upper Kodori valley was used.

48. Employment of more than one helicopter and artillery rocket firing simultaneously in the upper Kodori valley under adverse environments of weather and terrain is impracticable. The helicopters must be separated from the artillery fire by either 'time' or 'space'. If separated by 'time', the helicopter must utilize very good air-ground communications to ensure it does not fly in the vicinity during the time of firing. If the helicopter is separated by 'space', it will simply never fly in the direct path of the intended artillery fire, but this also requires extensive coordination and effective air – ground communication. In both cases, highly skilled pilots who have currency in night flying and flying in mountains; very detailed planning and coordination between air and ground elements; and state-of-the-art aircraft with modern night vision and, or navigation capability is necessary.

49. Although considered and discussed in the proceedings, the JFFG remains inconclusive on the following aspects due to want of adequate evidence, information and or explanation:

- a. Range of firing of the BM 21 rockets and location of launch sites.
- b. Aerial activity north of the upper Kodori valley.

- c. Trail of munitions recovered from the impact sites from the production point to the users.
- d. Identification of the Anti-Tank Guided Missile that impacted the administrative building at Chakhalta, upper Kodori valley.
- e. Number and type of helicopters and its sustained endurance and employment in the presence of artillery firing.
- f. Reasons for absence of casualties and lack of response against presumably hostile aircrafts from the ground elements in upper Kodori valley.
- g. Reasons for burnt foliage en route to the CIS PKF designated suspected launch site in the upper Kodori valley.

### **HEAD OF THE JFFG'S COMMENTS**

50. The rocket firing and helicopter activity reported on 11 March 2007 in the upper Kodori valley is highly complex because of a number of tactical inconsistencies and an extremely difficult operating environment.

51. Investigation under the JFFG was agreed by all sides. It functioned with autonomy and freedom afforded through the cooperation of both sides. It has gathered and compiled maximum available evidence and information as a basis of its work. The process of elimination of possibilities enabled the JFFG to establish some basic findings.

52. Despite a very cordial and cooperative atmosphere, the JFFG came across limitations which mitigated the desired ends of the investigation. Working through consensus made it difficult to agree on several matters, especially in those areas where there was no adequate evidence. Weather conditions immediately after the incident restricted JFFG movement. Movement was also restricted by specific constraints and objections of the sides. Despite specialized efforts like artillery crater analysis and ballistics, inadequate evidence led to divergent conclusions on certain aspects like the range of the firing. Regarding issues of capability, the JFFG was not in a position to come to any conclusion as complete verification of the assets of the sides cannot be done.

53. Despite its own limitations and some shortfalls in input, the strength of the JFFG lies in its efforts to collate factual information and commonality of analysis in this regard. The JFFG report thus contains factual substance that can be used meaningfully to arrive at the conclusions presented in paragraphs 38 to 49.

### **RECOMMENDATIONS OF THE JFFG**

54. Taking into account the unlikelihood of additional inputs that could fill some of the voids of the investigation and explain various tactical inconsistencies, the JFFG recommends closure of the case with the available information and evidence. However, **all the sides should continue their efforts to find more evidence and information in order to supplement the current investigation. In case new material evidence and**



**information should become available, the JFFG should re-convene and the case re-opened to deliberate on the findings.**

55. Efforts should also continue to seek international assistance to meet the shortfalls of the investigation; and upon materialization, re-convene the JFFG.

56. The JFFG has proven a valuable forum and mechanism despite its inherent limitations. The sides should continue to support it in the future by allowing its quick convening, full freedom of movement and prompt support.

57. As per Article 3.3 of the JFFG Protocol, the proposals recommended by the sides in the proceedings should be considered at the next Coordinating Council meeting or by the competent authorities of the sides, with due cognizance of the reservations and disagreements expressed by any of the side(s) to these recommendations.

58. This report should be made public to serve the purpose of transparency and confidence building.

For the Georgian Side

**Mr. M. Shengelia**

For the CIS PKF

**Gen. S. Chaban**

For the Abkhaz Side

**Colonel V.Z.  
Namba**

For the UNOMIG

**Lt Col. M. Hassan**

Counter signed

**Major General N M K Khattak,**  
Chief Military Observer, UNOMIG  
Head of the JFFG