

## KILIMANJARO NATIONAL PARK

---



### **CLOSING, INVESTIGATION AND THE OUTCOME OF WESTERN BREACH ROUTE.**

#### **1.0: BACKGROUND**

Western Breach route was closed due the fatal rock-fall accident that occurred On 4<sup>th</sup> January, 2006 and killed 3 America tourists of which one tourists was from Zara International and the rest two were tourists of African Environment and seriously injured 5 other climbers. Soon after the accident TANAPA in collaboration with other stakeholders jointly rescued the survivors. After the accident TANAPA took an immediate action of closing the route allowing for investigation of what were the causes of the rock-fall.

#### **2.0: STEPS TAKEN BY TANAPA SOON AFTER THE ROCK-FALL.**

After the fatal rock-fall accident of 4<sup>th</sup> January, 2006, TANAPA called an urgent meeting with tour Operators. The aim of the meeting was to discuss the causes of the rock fall and what should be done. They both agreed together that, the route should be closed to give room for TANAPA to carry out an investigation and finally present its report to the tour operators.

TANAPA implemented some immediate measures to address the problem, of these are, different teams where made to visit the Western Breach, hiring Janam Wildeness Explorer to give professional advices on the short and long term measures to address the problem. All these team where supposed to visit the Western Breach at different seasons of the year so as to get the actual picture of the Western Breach for the whole year.

## **2.1: AIM OF ARROW GLACIER ROUTE TRIPS**

- The main objective of Arrow Glacier trips was to find out causes for the rock falls that led to accidents and death of three tourists that occurred on 4<sup>th</sup> January 2006.
- Another objective was to find the safest alternative route on the Arrow Glacier area that will be safe to tourists, guides and porters.

## **3.0: The first team to visit Arrow Glacier**

The first team went to Arrow Glacier area from 25<sup>th</sup>-27<sup>th</sup> January, 2006. This team comprised the following members:

- |                         |                             |
|-------------------------|-----------------------------|
| 1. Iman Kikoti          | KINAPA                      |
| 2. Joseph Paul Ncheremi | Team Kilimanjaro            |
| 3. Ambros Mlay          | KINAPA                      |
| 4. George Lyimo         | Guide Zara Tours            |
| 5. Elias Msemu          | Guide African Environment   |
| 6. John Rees-Evans      | Director, Team Kilimanjaro. |

## **3.1: Objectives of the first team**

The main objective of Arrow Glacier trips was to find out causes for the rock falls that led to accidents and death of three tourists that occurred on 4<sup>th</sup> January 2006, and to give recommendation to TANAPA on what to be done. This team visited Arrow Glacier while there were no rains and there were very little ice cover.

## **3.2: Observations of the first team**

- The melting of ice that bound rocks together and left rocks unstable were observed to be the main reason of rock fall. Moreover, the presence of strong wind on the day of accident prejudiced the event of rock fall.
- At Arrow Glacier area, rocks at the crater rim were seen to have a lot of cracks and pose danger of falling any time.
- At Arrow Glacier area near the crater rim there seen an ice block that was melting leaving rocks un-covered.
- Also, there were free standing rocks on the area showing that they have been moved from the crater wall by the act of rock-fall.

## **3.3: Recommendations of the first team.**

- To divert the route from near the top of the red rock band to the base of prominent rock feature known as the “Stone Train”, this will reduce the exposure time for the climbers to pass the rock fall zone.
- To put the signboard at Arrow Glacier camp warning the climbers, that they are on the dangerous rock fall area, and climbers should be advised to leave the camp at 5.30 before the morning sunrise that seems to melt the ice within rocks.
- TANAPA to find independent consultancies (geologists, glaciologists, meteorologists, and seismologists) that will visit the Arrow Glacier area and

assess the long term future risks associated with climatic change and Kilimanjaro's altering geology and glaciology.

- To conduct a survey of visitors in order to ascertain the general feeling of the tourist community towards the prospects of closing or continuing re-use of the western breach.

#### **4.0: The second team**

Based on the recommendations of the first team that asked TANAPA to find special independent consultant, an independent consultant from Janam Wilderness Explorers (JWE) was hired. He visited Arrow Glacier together with staff from Mount Kilimanjaro National Park and tour operators. They went to the site from 5<sup>th</sup> – 11<sup>th</sup> June, 2006.

The team comprised the following:

- |                     |   |
|---------------------|---|
| 1. Shikuku Ooko     | JWE, Kenya                              |
| 2. Restus Mnjari    | Guide, The African Walking Company      |
| 3. Lawrence Masawe  | Guide, African Environment              |
| 4. George Lyimo     | Guide, Zara International Travel Agency |
| 5. John Evans- Rees | Director, Team Kilimanjaro              |
| 6. Imani Kikoti     | Park Warden, KINAPA                     |
| 7. Richard Shilunga | Park Warden, KINAPA                     |
| 8. Flavian Kalinga  | Rescue Ranger, KINAPA                   |

#### **4.1: The Objective of the second team**

- The main objective of this team was to find out causes for the rock falls that led to accidents and death of three tourists that occurred on 4<sup>th</sup> January 2006, and to give recommendation to TANAPA on what to be done.
- To assess the passability of the two divergence routes (Left or Right of the 'Stone Train') recommended by the first team.

#### **4.2: The observations of the Second team**

- The route right from Arrow glacier camp ascending up towards crater rim contains loose rock that pose potential for rock fall though at different degree at different points. While the team was at the site experienced three incidences of rock falls (2.00 am, 6.00 am and 9.00 am). This indicates that the route is not safe.
- The cliff above Arrow glacier North West of the 'Stone Train' rock outcrop exhibits signs of continued weathering possibly due to freeze
- Some of the terrain traveled past the red rock especially south east of 'Stone Train' rock out crop is very steep and if covered especially with icy snow could pose seriously injury on a falling visitor due to slippery nature and steep gradient.

### 4.3: Recommendations of the second team

- Generally the external consultant recommended TANAPA on the re-opening the route , but with the following conditions:
  - The diversion route should start near the top of the red rock band to the base of the prominent rock (The ‘Stone Train’) and go to the right side of the ‘Stone Train’.
  - This new route with diversion should be marked with natural stone piles for obviously navigation. At the diversion and leading towards the old trail going to the base of cliff band, TANAPA should erect a big sign warning parties not to follow it and indicating that it is a black spot with active rock fall and have an arrow showing diversion towards gully crossing.
  - At this new divergence proposed route, a fixed line rope should be put and have clients who opt to follow the right side of the train to tie into prussic self belay to reduce consequences of fall to Baranco gorge.
  - All the climbing parties should be well equipped with proper mountain gears (Ice axes, Helmets and Rope climbing accessories).
  - All the climbing parties should depart Arrow Glacier camp no later than 5.00 am so as to be able to cross the gulley and area of most exposure within the first hour of sun rise (7:00 am). It should take at most 2 hours to travel slowly from Arrow Glacier camp to the crossing point. This is to avoid exposure to rock fall during thaw period (mid morning). Rocks are known to start dislodging due to thaw effects as early as 8:00 am.
  - All the climbers should be briefed on the danger of using walking sticks on rocky terrain increasing possibility of tripping and dislodging loose rocks on others.
  - Tour companies must ensure that the guides/leaders leading the trip on this route must be trained on rock fall protocols and be able to brief clients and porters before they embark on crater summit attempt on this route. Also KINAPA should provide the same training to its rescue team.
  - During crater summit attempt, tour companies should consider reducing the number of support staff to accompany the clients so as to reduce risks of dislodging rocks on others during climb.
- TANAPA and tour companies should consider developing a post traumatic stress redress for their staff as part of emergency response plan to help with healing support of those exposed to extreme trauma.
- TANAPA should consider rating this route as wilderness trail and make it clear their ability to respond to call of distress will be a couple of hours away. TANAPA should then only allow those companies with capacity to self evacuate themselves to road head use of this route.
- TANAPA should consider developing an Emergence Response Management Plan for Kilimanjaro and include in it what to do in event of emergence and

what to expect of both their rescue staff in the field and at the base as well as what to expect of tour companies with regards to responsibility of patient care and transport so as to manage transition periods especially at road head.

### **5.0: The third team**

The third team to visit Arrow glacier involved Park Wardens and Rangers from Kilimanjaro and Arusha National Parks and three instructors from Janam Wilderness Explorers (JWE). The team visited the Western Breach area from 9<sup>th</sup> to 12<sup>th</sup> of July 2006.

Team participants:

1. Fidelis. I Kapalata	Park Warden KINAPA
2. Imani A. Kikoti	Park Warden KINAPA
3. Thedeus Matto	Park Ranger KINAPA
4. Ambros Mlay	Park Ranger KINAPA
5. David Kayego	Park Ranger KINAPA
6. Fred Kivuyo	Park Ranger KINAPA
7. Yusufu Athuman	Park Ranger KINAPA
8. Gabriel Lyamuya	Park Ranger KINAPA
9. Denis Ngonyani	Park Ranger KINAPA
10. Duke Elly Mwanguku	Park Ranger KINAPA
11. Boniphase George	Park Ranger MOMELA
12. Dominic Shekiangio	Park Ranger MOMELA
13. Shirima Lema	Park Ranger MOMELA
14. Oswald Shekao	Park Ranger MOMELA
15. Alnavas Amlan	Instructor (JWE, KENYA)
16. Gichuru Muchane	Instructor (JWE, KENYA)
17. Shikuku Ooko	Instructor and Director (JWE, KENYA).

### **5.1: Objective of the third team**

This team was conducting high altitude mountain rescue training course and visited Western Breach with aim of assessing the possibilities of implementing recommendations of previous team. These include:

- To assess the diversion route near the top of the red rock band to the base of the prominent rock (The ‘Stone Train’) and go to the right side of the ‘Stone Train’.
- To mark the diversion route with natural stone piles for obviously navigation. At the diversion and leading towards the old trail going to the base of cliff band, and to identify the site where TANAPA should erect a big sign warning parties not to follow it and indicating that it is a black spot with active rock fall and have an arrow showing diversion towards gully crossing.

- To assess the possibilities of putting a fixed line rope those clients who opt to follow the right side of the train to tie into prussic self belay to reduce consequences of fall to Baranco gorge.

### **5.2: Observation of the third team**

- From the Red rock band towards ‘Stone Train’ the entire area was full of ice that was very slippery and solid. This icy condition forced the group not to proceed further up and ended 30 m before reaching the ‘Stone Train’.

### **5.3: Recommendation of the third team**

- The proposed diversion route right side of the ‘Stone Train’ is not passable for a tourist who is not a professional mountaineer with proper mountain and ice gears (Recommendation from KINAPA and ANAPA staff)
- The proposed diversion from red rock to ‘Stone Train’ rock out crop to be monitored to evaluate if icy condition is melted away or if there is fleshy snow cover to aid stable foot hold and reduce possibility and consequences of a fall while avoiding active rock fall zone on the old western breach route. We propose that TANAPA consider closing this diversion during the cold season of July and August and only open on September if and when there is fleshy snowfall or the icy condition has melted away (Recommendation from Instructors from JWE, Kenya).

### **6.0: The fourth team**

The fourth team visited Arrow Glacier from 16<sup>th</sup> – 18<sup>th</sup> January, 2007. The team comprised of:

- |                     |                                       |
|---------------------|---------------------------------------|
| 1. Fidelis Kapalata | Park Warden KINAPA                    |
| 2. Richard Kessy    | Park Ranger KINAPA                    |
| 3. Duke Mwanguku    | Park Ranger KINAPA                    |
| 4. Richard Beatty   | Director African Environment,         |
| 5. Raymond Silikwa  | Guide African Environment,            |
| 6. Thomas Holden    | General Manager, Nature Discovery,    |
| 7. Wilfred Cyril    | Guide Nature Discovery,               |
| 8. Charles Lyimo    | Guide Marangu Hotel,                  |
| 9. Juma Ayadi       | Guide Zara International,             |
| 10. Nelson Mongi    | Guide, Marangu Hotel,                 |
| 11. Joo Anderson    | Contractor African Outdoors Adventure |

The fourth team visited Arrow Glacier while there was rain with heavy snowfall which started at Lava Tower, Arrow Glacier, ‘Stone Train’ and all the way up to the crater rim. After the end of the trip, the team prepared two different reports with the same observations but different recommendations (One report from KINAPA representative and the other was from Tour Operators).

### 6.1: Objectives of the fourth team

The main objective the fourth team was to find out the passability of the divergence route, on the right and left sides of the 'Stone Train' as recommended by the previously teams.

### 6.2: Observation of the Fourth team

- From Arrow Glacier camp all the way to the 'Stone Train', there was heavy snowfall which poses difficult in climbing without proper ice gears.



- The ice was very thick and slippery
- Between the Red rock band and 'Stone Train' there is a trench which has steep slope and had a lot of snow which pose difficult during crossing it.
- On the Right side of 'Stone Train' there were sightings of piles of stones indicating that there is active rock fall.
- From the 'Stone Train' to the 'Pop Tall', on the right side of the 'Stone Train' the path is very narrow forcing a climber to climb while his/her left hand hugging the wall of 'Stone Train' in order to avoid falling to the Baranco gorge which just one meter away of the wall.



- The team failed to reach 'Pop Tall' point due to above observation, ended up only 15 m above the 'Stone Train'.
- Due to steepness and slippery icy condition, it very difficult and dangerous for a climber to descend.

### **6.3: Recommendations**

#### **6.3.1: From KINAPA representatives**

- Western Breach route should continue to be closed, to provide room for more investigation that will assure climbers safety (tourists, tour leaders and porters)
- If Western Breach is to be re- opened by re- routing it, it should be for technical climbing only with a set of conditions. Also, guides be adequately and appropriately trained. Porters be excluded all together from Arrow Glacier camp to top of the Crater rim.

#### **6.3.2: From Tour Operators**

- Guides leading groups up this particular route must be trained in specific skills and be proficient in the use of certain safety equipments. Specific training include:
  1. Cutting suitable steps in snow
  2. Self arrest an ice axe on snow
  3. Selection of appropriate line of ascent
  4. Selection of belay points
  5. Setting up of one and two points belays
  6. Belay on an Italian hitch and a stitch plate
  7. Sitting and setting up a fixed hand line
  8. Familiarization with the route
- It is proposed that any guide wishing to lead a group up the Western Breach must receive further training and must pass an additional examination to become a qualified as a 'Western Breach Guide' (WBG).
- WB guides must have the following ice – climbing equipments:
  1. Suitable Ice Axe with Strop
  2. 7mm + UIAA approved dynamic climbing rope X 25m +3 X 2500 kg screw gate karabiners
  3. 2 X 2 m webbing sling
  4. Stitch plate
- The ratio of WB guides to clients should not exceed 1:7
- All porters must be properly equipped for the conditions of the Western Breach
- Loads must be well balanced and must be capable of being carried leaving both hands free to assist with climbing.
- Loads must not extend excessively to the side or up as this would hamper ascent along the right hand side of the train.



## **7.0: Conclusion**

- The Western Breach remains the challenging section of the mountain which by the nature of its location is a more committing climb than many of other routes.
- In the case of closing or re – opening the Western Breach, the issue of climber’s safety should be given proper weight. Reports from different teams that visited the Western Breach have cautioned the dangers of rock fall and icy slippery to climbers. During the dry season when there is little ice, rocks are very unstable hence climbers are susceptible to encounter rock fall hazards. On the other hand, during rainy season when there is heavy snowfall, climbers are susceptible to slippery hazards. There fore western breach should continue be closed until when good and right infrastructures will prove safety to tourists.

## **8.0: Recommendations**

- TANAPA should consider putting in place a continuous geological surveillance and monitoring programs in this and other active rock fall sites to advice on future use or discontinued use of areas by visitors.
- If Western Breach is to be re – opened by re – routing it, it should be for technical climbing only with a set of conditions. Also guides be adequately and appropriately trained. Porters be excluded all together from Arrow Glacier camp to top of the Crater rim.