

**Geological Society of Hong Kong - Summer Trip 2010 to Tibet**  
**12<sup>th</sup> August 2010 – 28<sup>th</sup> August 2010**

I was excited to learn that the Geological Society of Hong Kong (GSHK) determined to organize a field trip to Tibet. This was the third trip to Tibet organized by the GSHK since its establishment in 1982. I would never let myself miss this opportunity going to Tibet that I have always dreamt of.

It was a trip of seventeen days (from 12<sup>th</sup> to 28<sup>th</sup> August 2010) travelled from Hong Kong via Guangzhou to Tibet by train. I had done some reading before the trip on subjects like history, the geography, geology and some well-known monasteries of the regions. I learnt that the origin of Yang Tse River is Tuo Tuo River (沱沱河); however, there had been a new theory recently that some scientists thought that the origin of Yang Tse River would be “當曲” with the help of GPS, GIS and remote sensing methods. “Kekexili Nature Reserve (可可西里)” is a remote area with plenty of wild animals and no signs of man-made structures; Lhasa was called the “City of sunshine” with the famous Potala Palace, Jokhang Temple, Norbulingka Monastery and many other places which were worth visiting. Most of us, I believed, had checked what “high altitude sickness” was; its cause and prevention before booking the trip. Medicine, energy bars, clothes, snacks and the like were on my list of “Must-bring”. I was counting the day to come and set off.

Preparation for the trip

I had prepared to live in the Tibetan way of life one month before departing for Tibet and carried out information search on all aspects of Tibet including the following:

- a). A few topographic maps of major cities of Tibet showing major roads, historical information of major monasteries, lakes with details of size & altitude etc. It was not easy to browse geological maps of Tibet regions from the web sites for initial knowledge on the geology of Tibet. The most important information I could get from web sites was the details of “High Altitude Sickness”:
  - What is High Altitude Sickness
  - What would we feel when suffer from High Altitude Sickness
  - What preventive medicine we should take before and after we suffer from High Altitude Sickness
  - What we should do to help others who suffer from High Altitude Sickness
  
- b). I brought glucose candies, high-energy bars (for recovering from fatigue in

very short time), panadol for curing sore throat / headaches and pills (Acetaminophen) for prevention of high altitude sickness. Drink plenty of water if situation permits (one will need a toilet in the middle of the journey if he drinks too much). The simplest way but most effective way to prevent from suffering “High Altitude Sickness” is try not to be excessively excited when one sees beautiful scenery, folded mountains, snowy peaks of Mt. Qomolangma etc.; not to respond too quick for everything. We had a good lively example which will be mentioned later in this report. I had sufficient psychological preparation as if I were to climb the Mt. Qomolangma.

However, I had brought excessive clothes (summer & winter) in fear of the extreme temperatures at high altitude regions. Due to the extra-strong ultra-violet rays at high altitude regions, sun-tan preventive items including my lovely hat with 270-degree coverage were the pre-requisites. The newly bought reliable camera with convenient zoomed lenses was one of my good companions in the trip which recorded every bits and pieces in our ample experience of traveling in Tibet.

### **12<sup>th</sup> August 2010 – 14<sup>th</sup> August 2010 (On Train from Guangzhou to Lhasa)**

We met everyone at the “meeting point” at Shenzhen train station early in the morning on 12<sup>th</sup> August 2010. It was out of our expedition that we were distributed some good quality material including the itinerary and details of the trip, colour geological map details and geological information of Tibet when we met Margie. I believed that we all appreciated the efforts that Margie had contributed. We travelled from Shenzhen to Guangzhou by high-speed train and connected another train to Lhasa at Guangzhou Train Station at noon (12:20). We had to sleep for 2 nights on the train which sounded tiring. There was a restaurant compartment which served reasonably good food with “traditional service”.



*Arriving Guangzhou Railing Station*



*Everyone was working at the congested corridor*

There were no facilities for taking bath on the train and the toilets were always choked. Pitch-black at 10:00 p.m. because electricity on train was not provided for it was the sleeping time. Whether you had good sleep or not depended on whether there were any people came in and out of your compartment.

The train passed places like Lanzhou, Xi Ning (西寧), en route at Gulmud (格爾木), Wu Duo Leung (五道梁), Kekexili Nature Reserve (可可西里), Tuo Tuo River (沱沱河), Tanglhashan Pass (唐古拉山口), Nagqu (那曲), Damxung (當紅), Namtso (納木措), Yangbajain (羊八井), Lhasa (拉薩).



*Loess forming plateau*

Loess could be seen along the way in the next morning on 13<sup>th</sup> August when the train was approaching Lanzhou (loess plateau). There were many caves in the loess. In this mountainous region, there were lots of tunnels. Arrived at Lanzhou, some people got on the train and occupied the other 3 beds in our compartment, the train departed

Lanzhou at 4:45 a.m. We therefore had little sleep.

Changes were observed in terms of houses and people all the way from the south to the north regions of the country (i.e. Guangzhou, Xi Ning, Lanzhou, Gulmud and finally to Lhasa). We came from low altitude ground to high altitude orogenic belt of the Himalayas, therefore the temperature, atmospheric pressure, oxygen content changed to great extent, so we had to regulate ourselves and adapt as far as possible.

Due to less oxygen content in the air at high altitude, we sometimes suffered from headache, asthma etc. on the train. However, we recovered from it very soon when we saw the magnificent snow mountains, glaciers, lakes, cattle, sheep etc. Our train arrived in Lhasa at dawn (around 5:30 p.m.) which took us totally 56 hours from Guangzhou to Lhasa. We were so excited when we arrived at Lhasa. We did not feel tired at all because we could walk in the city at high altitude (3647 mPD). We were strongly advised not to take photographs on the army and had to move away from the train station promptly. I then regretted not having taken a single photograph in front of the Lhasa train station. We had dinner and were officially welcome by our tour escort (Jian-yang) and the driver (Chi-yan) at the restaurant, each of us was gifted with a hatha.



*Arrival in Tibet - group photo at restaurant (Photo by Peter)*

The condition of hotel (拉薩凱拉斯賓館) was acceptable except the undesirable water pressure for taking bath. Despite the advice of many people not to take shower at arrival in Tibet due to high altitude, I could not wait but took a shower which was the most enjoyable moment since we had not washed for three days. Not until we experienced the Tibetan culture, we then realized that there were many differences between ours.

### **15<sup>th</sup> August 2010**

The place for breakfast in the hotel was furnished in Tibetan style with colours generally in red, yellow and blue. The food provided was of western style with Tibetan tea (蘇油茶). We then visited Norbulingka (羅布林卡) and the Mining Resources Museum (地礦博物館).



*Group photo at Norbulingka Palace (photo by Peter)*

Norbulingka was the summer Palace of Daila Lama. The Palace was big with lots of paintings of flowers and traditional Tibetan decorations. Visitors were not allowed to take photographs inside the Palace. It was the last day for celebration of the Shouton Festival (雪頓節) which lasted for 7 days. Many local people gathered with



relatives and friends in Norbulingka Palace to celebrate the festival. They dressed in Tibetan costumes, erected tents on grass in the garden of Norbulingka Palace and some children danced. Their tents were very colourful.

The walls of the Norbulingka Palace were so refreshing that it was painted yellow. People like her in the photograph would like the wall very much!

We were anxious to go to the Mining Resources Museum (地礦博物館) since we were fond of rocks and minerals. The officer of the Museum looked very professional who briefed us details of the mined products in the Tibetan regions especially the three rare elements of Buddhism (佛教三寶) namely “Tin Chu (天珠)”, Turquoise (綠松石) and Red Coral (紅珊瑚). He introduced us how to identify the real and fake “Tin Chu”. We were surprised that he brought us upstairs to a large concord where we could purchase the treasures of Tibet - “Tin Chu”. Apart from these treasures, there were no signs of rocks or minerals to our geological interest, such as ophiolite suite, peridotite or chert etc. collected from the suture zone. It was just a superstore selling “Tin Chu”.

We had lunch at Da Lin Restaurant (大連小海鮮), there were plenty of fresh vegetable as if they were just un-rooted from the fields. We all liked the deep-fried fish. Near the end of the lunch, we discovered a modern “mah-jong” table with new technology which was able to mix the mah-jong tiles. It was interesting to see our fellow members to play mah-jong for fun near the roof of the world, God won!

Jokhang Temple (大昭寺) was our next stop. Jokhang Temple had a memorable story of “Princess Wen Cheng” (文成公主). In the vicinity of Jokhang Temple was a Square where there were small stalls selling souvenirs and it was a good place for bargaining. Since it was our first day of arrival in Tibet, we finished the day early (3:00 p.m.) in the afternoon and returned to the hotel for some rest. However, we did not feel comfortable by only staying in the hotel and we went out in several groups to see the city in the evening. Our group of five went to see the night scene of the Potala Palace and took some nice photographs with Felix’s tripod. The Potala Palace turned to be a nice painting at night.



*Potala Palace at night*

### **16<sup>th</sup> August 2010**

Mr. Ba Zhong (Chief Ba), the renowned geologist in Tibet, joined us for 3 days and he brought us to some geologically interested places. Chief Ba not only briefed us the geology of Tibet but also the Tibetan culture and its religion. The first most impressive scenic spot in my memory were the Potala Palace and the television tower on a small hill where a fault ran through. Along the route, we saw Mt. Nyainqentangilha (念青唐古拉山) at a distance (5231 mPD), the suspension bridges crossing Lhasa River and at Dagze (near 大昭古鎮) and the big rock in the middle of turbulent river (中流抵柱), we saw some glacial deposits and sericitic slate along the way. Our bus also passed by the monastery where it was the birth place of 松贊干布, the first king of Tibet.



*Warm greeting by Tibetan worshippers*



*中流抵柱*

Chief Ba explained the geological features on the way including the glacial denudation features of funnel shaped depressions (冰斗); the “Iron hats (鐵帽)” which featured red-coloured iron-rich rock at the top of hills which were rich in haematite.



Our bus reached Mila Pass (5030 mPD) where there were plenty of streamers (經幡) hanging across the road. Margie led us to shout out “Soh Soh” which meant safe arrival to the top of mountain and this became our designated action whenever we arrived at high grounds with streamers (經幡).

We met some Tibetan people who were worshipping their God in Tibetan way in the middle of the road and they were very nice and greeted us with friendly smile. At last, we arrived at Basum Lake (巴松措), which was an ancient “quake-lake”, before dark. We did not take long to see the island around the lake where an old monastery was built on it.



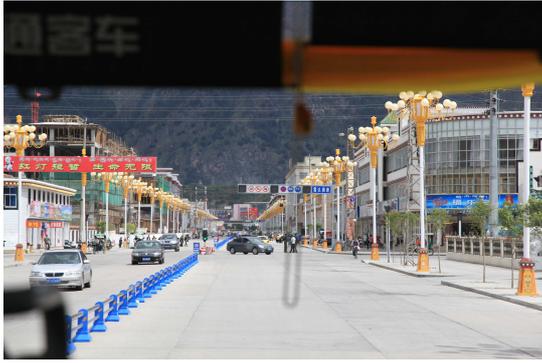
“sabu sabu” in stone utensil from 墨脫, (photo by Nau)

We rushed to Bayi Town (八一鎮) and stopped at check points for inspection of identity documents because we were entering Nyingchi (林芝) region. We arrived at a local restaurant for dinner at around 9:00 p.m. and had the so-called “sabu sabu” chicken soup in large stone utensil (made of stone from 墨脫).

The streets were pitch-black but the headlamps of our bus lit up the road. Arrived at the hotel, it was time to labour ourselves by carrying our baggage upstairs from the ground floor lobby, no lifts were provided in this hotel. My little articulated backbone suffered pain for the following days.

### **17<sup>th</sup> August 2010**

Dripping of rain was heard outside the hotel. After the simple breakfast, our bus brought us on the road in the regions near Nyingchi (林芝) town where most of the



Nyingchi Street

roads were newly built and straight with a familiar style to us – Canton / Fu Jiang. According to Jian Yang (our Tibetan escort), part of the funding for building the city (Nyingchi) was provided by the provincial governments of Guangzhou and Fu Jiang. The bus went up to Mila Pass from Bayi Town to

Lamaling Monastery (喇嘛岭寺). Lamaling Monastery was beautiful, like all other monasteries in Tibet that they were colourful and unique, surrounded by forests on three sides overlooking a large piece of green land on the valley below. It was impressive to see Tibetan writings everywhere, although we had no idea of the meaning, which at least reminded us that we were in Tibet – the roof of the world.

We were also lucky that we saw some women carrying building materials on her back which were used for the building a new monastery nearby. They were very nice and living happily as could be seen from their faces. Leaving the Lamaling Monastery, Chief Ba brought us to another smaller but prominent monastery (色根



巴) not far away where he showed us the model of 壇城 in the monastery including the four mountains (四大神山), four most supreme rivers (四大名江) and the principle of their belief. (It was not easy to be allowed to see the 壇城).



All along the way, we could see different vegetation at different altitudes on the hill slopes that symbolized the lifting of ground with respect to sedimentation in this region (e.g. river sand, silt and gravel, glacial deposits of gravel and cobbles).

When we arrived at Lulang Forest (鲁朗林海) at about 2200 mPD, we knew that we could be easier to breathe in air with higher oxygen content because there were a lot of trees and grassland. We naturally forgot the risk of having high altitude sickness. We had a feeling to “wash our lungs (洗肺)” here at Lulang Forest.



Tibetan map 西藏鎮魔圖



Inspection of geological structure by the side of road



Folding in layered rock

We inspected a section of rock slope by the road-side, there were large-scale boudinage structure in probably migmatite and some tight folding of layered rock. On the way to Nyingchi (林芝), we could see the Namche Mawa Peak (南迦巴瓦山) in the cloud from a distance vaguely.

## 18<sup>th</sup> August 2010

This was a long day that we had to make our way from Bayi Town (八一鎮) to Tsedang (澤當) on the Provincial Road S306 climbing up Mila Pass at 5020 mPD where we saw the magnificent view and lots of “streamers (經幡)” across the road near the high points. There was always strong wind that we felt very cold at that height. We then shouted out “Soh Soh” which meant “safe arrival at high point” in Tibetan language. On the way, we saw volcanic breccias, glacial deposits (glacial lake deposits and glacial funnels).

A new road was constructed not long ago (only rubbles and aggregates) from this point in the direction to Tsedang (澤當).



*Unfavourable road condition to Tsedang*



*Mountains with glacial landscape*



*Gangdese Batholith*

The condition of the road was certainly not satisfactory for our bus that we alighted the bus in order to reduce the weight for the bus passing through the most unfavourable section of the road; that was the time we looked for our place of convenience. It took at least three to four hours to get through this horrible road, and then we reached snow mountain (Wo Tak Guan Kit) at 5996 mPD – the father of snow mountains. “Glacial tongue” and terraced deposits were also observed in this unique landscape. We stopped at Gungdeling Grassland (貢德林草原) for some rest and enjoyed the atmosphere of nature where a large piece of barley field was found at the foothill. We were excited to see the barley field which was so close to us and we could actually touch them. The people of this small village survived with their barley fields. Barley was the main food for the Tibetan people. “Gangdese Batholith (崗底斯花崗岩)” was another famous rock in Tibet which existed along the Yarlung Zangpo River.

After riding the bus on the long winding and sloping road, the brakes of the bus were overheated. The driver (Chi-yan) stopped the bus by the roadside and some of our enthusiastic members help collect water from the nearby stream to cool down the brakes. From a distance, we could see the “Wo Ka Spring and power station” where

there used to be a place for spring-water bathing. The power station was a type of hydroelectric power generating electricity for the nearby villages and towns.

We arrived at the important town in Shan Nam (山南) region of Tibet, Tsedang (澤當), along the Yarlung Tsangpo River in the afternoon at around 2:00 p.m. and we were anxious to see the town and do our shopping. We went in groups to hunt for souvenirs and things that were in our long lists. We visited the largest book store (Sun Hwa Book Store) in town that we bought a book and some maps of Tibet. Some of us bought Tibetan cloth for making curtains and table cloth and bovine bags, leather belts etc. In the side street, some local people used “solar energy” for heating water in a kettle that I believed it would work probably due to lower boiling point at high altitudes.



*Heating water using “solar energy” (photo by Nau)*



Back to the hotel after dinner, Chief Ba gave us a brief summary on the geology of the regions that we visited during these past three days and he left us for his work.

## **19<sup>th</sup> August 2010**

It was mainly arranged for sightseeing today. The first spot we visited in the morning was Tombs of Tibetan kings at Qonggyai (藏王墓) where we climbed up to the top of a hill overlooking the group of tombs of the ancient kings.



*Tombs of Tibetan Kings*



*Tombs of Tibetan Kings*

About a kilometer or so to the mid-level of a mountain on the opposite side, there were the ruins of the empire and their people nowadays settled at the foothill where

lots of loose boulders were observed on the slopes above their village.



After our professional discussions, boulder survey or some preventive measures would be required to prevent boulders from falling on the village at the foothill. Our fellow members bought some “stones” (pieces of serpentine which were dark green in colour) from an old woman who was about 80 years of age. Back to the bus, some kids asked us to buy their treasures, the cubic limonite minerals, for 10 dollars each.

Yungbulakang Palace (雍布拉康) was our next stop before noon. It was said to be the first monastery built in Tibet according to a tale. The monastery was built at the top of a hill that we had climbed up for almost an hour from the very bottom. Some people chose an easier way by riding horses or camels. It was a good experience though. As usual, there was plenty of streamers (經幡) at the top of the hill which enlightened the cultural atmosphere of Tibet. Felix bought some large quartz crystals for very good price (RMB75).



We visited Tradruk Temple (昌珠寺) in the afternoon where there were plenty of treasures with historic value: the most valuable one was the famous “TongKa (唐卡)” comprising 29,000 pearls that Princess Wen Cheng (文成公主) had involved in making it. We were lucky that it was a clear blue sky while we were there. We then arrived at Tsedang (澤當) and had our first Tibetan dinner since arriving in Tibet and had plenty of “tibetan tea (蘇油茶)”



Tradruk Temple (昌珠寺)



Tradruk Temple (昌珠寺)



Tibetan dinner

The restaurant was renovated nicely in Tibetan style. The food was spectacularly nice and colourful. Yummy.

### 20<sup>th</sup> August 2010

It was a long day travelling from Tsedang (澤當) to Gyangtse (江孜) along Yarlung Tsangpo River. We had simple breakfast “Cup Noodle” and set off at 7:00 a.m. The first stop in the morning was the ferry pier to Samye Monastery (桑耶寺) which



was built on the opposite side of the river. The rocks cropped out in front of the ferry pier were ophiolite. We had a quick inspection on the rock

before boarding the boat to Samye Monastery. We were excited to see the extra-ordinary scenery of high mountains with its shadow in the peaceful water which was incised by our boat. The boat took all of us on board with a few local people. Amongst the passengers, there was a lovely lady member wearing a mask indicated that she was different from us – sick. She then visited the Tibetan doctor next to Samye Monastery.



Another bus was waiting on the opposite river bank to pick us to the Samye Monastery. Hundreds of sheep/goats were our companions using the road together. The deposition of sand was observed at least at the mid-level of the mountains, it was formed when loose sand was blown in the air by strong wind. We could imagine the strength of the Mother Nature.



*Samye Monastery (桑耶寺)*

Samye Monastery was the monastery that was important in the history of Tibetan religion. People with Buddhism as their religion believed that Samye Monastery was located in the middle of the universe.

On the way to Yamdrok Lake (羊卓雍措), we passed by the Yarlung Tsangpo suture zone along the river, folded Upper Cretaceous strata, mullion structure on the road side, Jiaangsanglamu Glacier (羌桑拉姆 川) and Karo La Glacier (卡若拉冰川).



*Pay the decorated dog for taking photo*

The scenery was magnificent and you would be able to take more beautiful photographs at the landmark of these scenic spots if you prepared to pay a few dollars to the “local people” who occupied the place. No doubt that Yamdrok Lake was so impressive due to its natural scenery with clear water and blue sky, we wish that it would not be polluted by our modern

shoe-prints on the earth of this unique place as well as the value of life led by the local people in future. I would not imagine or reluctant to see that Yamdrok Lake would become a place with country clubs, villas and lots of shops.



*Yamdrok Lake owns its blue sky and clear water*



*Karo La Glacier (卡若拉冰川)*

We had a long discussion at the restaurant after dinner on the fossils that were collected by some of our members during the day. We stayed at the Hotel (崗堅飯店) at Gyangtse for one night.

**21<sup>st</sup> August 2010**

The restaurant at the hotel was small but cosy and decorated in Tibetan way. The young girl who served us was very friendly and she was always bearing a smiling face. With a little chat to the hotel owner before breakfast at the lobby, we realized that he



*Breakfast at 江孜建藏賓館 (Photo by Nau)*



was a retired doctor in Tibet. He started running the hotel since his retirement and his hotel had won some prizes for their hospitalization. Of course, he served us some Tibetan tea while we talked. Our first destination in the morning was to Parlkor Monastery (白居寺) and the Castle at the other end of the road (not far though).

We climbed to the highest point of the castle and imagined the ancient brutal battles of the Tibetan army against the English army from India (seven Tibetan soldiers jumped from the cliff and died for their country).



*江孜宗山抗英遺址 (photo by Nau)*



*Parlkor Monastery (白居寺)*

There were gorgeous views from the Castle where we could see Parlkor Monastery from a distance. Parlkor Monastery was the only monastery bounded by a wall all over. During the walk, we observed some geological features like en-echelon structures, cross-bedding of sandstone and with a small fault cutting through it. Some slate pieces, used as building stones, were also observed along the path, the ruins of the ancient toilets by the side of the path were also the convenience place for some of us.



*Dyke & displacement*



*En-echelon structure*



*Displacement cutting through sandstone*

We went to inspect the red coloured radiolarian chert at Bainang (白朗) next to a secondary school. We found no signs of chert but some serpentinized basalt and minor intrusion. The bus driver brought us to Shigatse (3900 mPD) near dawn. We grasped the free time and went shopping along the streets before dinner started. The hotel (崗堅飯店) was believed to be rated best so far since we arrived in Tibet.

### **22<sup>nd</sup> August 2010**

As usual, we set out early in the morning to visit “Na Dong” Printing House (那當印書館). There were thousands of wooden plates carved in Tibetan characters placed in neatly organized shelves inside the printing house. Properly we arrived a little early in the morning that not much activity in the printing house area could be seen.



There were plenty of geological structures observed at both sides of the cut sections along the highway, such as the Cretaceous recumbent folds, a minor fault displacing the kink-folded sedimentary rocks and many large scale alluvial fans.



*Plenty of geological structures observed along the highway*

We had panorama views of scenery along the highway with no man-made structures observed but plenty of yellow flowers. We also visited GangJan Monastery (崗欽寺) at an altitude of 3860 mPD. Our driver (Chi-yan) strongly advised us not to go inside the monastery nor collect any rock samples from there as he believed that they would bear bad luck. The religious belief of this monastery was obviously different from others generally in Tibet.



After lunch at the restaurant (旭川), we headed to Sakya Monastery (薩迦寺). About 30 minutes walk on rubble path from where the bus stopped; we arrived at the edge of rock slope instead of visiting Sakya Monastery. We were anxious to see if there were any signs of significant geological features on the rock slopes; we observed a few open folds with a large anticline, some quartz veins intruded the fold limbs.



Unfortunately, one of our members, Mrs.Mak, was injured due to falling from loose rocks. She suffered from back pain and bruise. A monk dressed in deep red robe, rushed down from a monastery, tried to give her some relief from pain by practicing his way “Chi Gong” (I guessed) and she instantly felt better. She was then carried

to the hospital near the entrance of the village called 薩迦縣人民醫院.



*Mrs. Mak was carried to 薩迦縣人民醫院 for examination.*

We headed back to the hotel at Tingri at 18:00 before dark. During this short trip, Mrs. Mak was very calm and brave. She could not sit on the bus as it would hurt her back, so she stood all the way leaning on the escort stand for an hour or so. In the next few hours, she had a better arrangement by lying on the bus floor with an air-filled mat and that was the only way she could feel easier. We arrived at the hotel (日定協格爾白垩賓館) at around mid-night. Fortunately, she recovered from the pain after taking rest at Tingri for two days and joined us on 25<sup>th</sup> August 2010. We all applauded for her quick recovery.

### **23<sup>rd</sup> August 2010**

We had early breakfast at 6:30 a.m. when the sky was still dark. The bus was heading in the direction of Mt. Qomolangma and we were all excited when the bus passed the directional sign “102 km away from the base camp of the Mt. Qomolangma”. Right after the bus passed the “Qomolangma Nature Preserve Check Point”, we could not restrain ourselves from taking pictures through the windows; we could see distinct bedding of rock (most of them were steeply inclined well-bedded rock in simple large scale folds, some of them were dragged folds; others were folded for more than once or even overturned (i.e. “younging” downwards). Che-Yan (driver) inevitably stopped the bus for us to take photographs on this magnificent and unforgettable scene and recorded this remarkable moment.



*Magnificent folding of layered rock*



*Our bus was moving on the glacial deposits*

The road was built on glacial deposits winding up to the lookout area for Mt. Qomolangma as if the road was also folded. The road led us to a height that we could see the peak of many mountains out of the bus window. Local people near the lookout area erected some tents made of yak's leather. Obviously, they were the mobile shops that the local people led their living in summer by selling their home-made strings of cheese, handcrafts, collection of fossils etc. As usual, there were "streamers (經幡)" at the highest point across the road and we reckoned nicely



bedded black slate laminated between the possible sandstone. Mt. Qomolangma was hiding in the cloud again. Many of us grasped the chance to take as many photographs as they could through the bus windows.

Rebecca, our lovely young lady however, suffered from high altitude symptom at approximately 4000 mPD. She had difficulty in breathing, headache, cramps etc. After she consumed a bottle of oxygen and our heartfelt comfort, she got it through eventually. She missed the great scenery of Mt. Qomolangma, sadly she cried.



*Consumed the 1<sup>st</sup> bottle of oxygen*

However, Mt. Qomolangma did not let her down. Our driver brought us to the base-camp of Mt. Qomolangma through the winding road again for us to have a closer look at Mt. Qomolangma. Rebecca's high altitude symptom resumed at about 4,000 mPD. Apart from headache, numbed fingers, arms gradually up to her neck and face turned blue

and her hands also cramped. She consumed the 2<sup>nd</sup> bottle of oxygen and some slices of pear from our tour escort (Jian-yang). She also took a tablet of Acetaminophen at her critical moment. Rebecca definitely was delighted and gradually became better because of the old love songs from our cell-phone.



*Reaching the base camp of Mt. Qomolangma*



*Winding road leading to base camp*

When the bus reached the base-camp at approximately 5,124 mPD, toilets were our first place to visit (I tried not to call it washroom because there was no water). We tested our cell phones if they worked at such high altitude (5124 mPD) and the results were amazing. We then had lunch at “Bai Ma Everest Love Friend Hotel” in tents, we all had egg fried rice. I would not think the egg fried rice had cured Rebecca from the high altitude sickness right away.

At times, Mt. Qomolangma greeted us with its snowy white peak for a few minutes, we all grasped this precious moment for taking pictures with the Mt. Qomolangma. It was amazing that the weather changed every few minutes at high altitude. We were disappointed that the post office at the base-camp was closed because the only postman was said to be sick. We could only keep our postcards in our bags. Sai-lam however requested the hostel owner to send his postcard when the postman had recovered.



*Tents made of yak & leather*



*Tents at the base camp to serve lunch/accommodation*

The two young girls working in the “Bai Ma Everest Love Friend Hotel” were beautiful and nice. They communicated with us in Potunghwa. Their tent would be dismantled and they would move back home at a lower altitude in October because the weather at the base-camp would be very severe.



*Base camp at Mt. Qomolangma*



*Farewell to the girls*

From their eyes and their expressions, they wished to see large cities. We left Mt. Qomolangma and the girls with a feeling that we would miss them. We said farewell to Mt. Qomolangma silently and slipped downhill. We did not visit Rongbuk Monastery (絨布寺) because it was closed on that day.



Cool down engine (photo by Peter)



哈達變身成爲汽車風扇帶動皮帶 (photo by Peter)

On the way back from Mt. Qomolangma to Tingri, the bus broke down twice in the afternoon. The leather belt of the bus was broken and the water tank was overheated. Every one of us had a serious meeting at the local restaurant and we decided to stay in a small local Tibetan styled hostel for a night at the Cho Mo Lang Ma Ben Ba Guest – House Restaurant (珠峰班巴旅館) rather than taking the risk of travelling to the hotel at Tingri in fear of the bus would break down again in the dark, cold night at high altitude (over 5000 mPD).



珠峰班巴旅館 (photo by Fion)



The lady's room at 珠峰班巴旅館

The hostel was simple at local standard with one light bulb in a room of ten beds for gentlemen. There were other smaller rooms for lady (they had candles instead of light bulb). Electricity went off at around ten and never lighted up in the morning. Water that provided for tooth brushing seemed not reliable. I wondered if the dogs barked over the night only because of our stay in the hostel or they did for every night. It was a long night for all of us.

## 24<sup>th</sup> August 2010

After Margie's negotiation with the tour agent for arrangement of providing proper transportation for the remaining journey (with some difficulties though), the touring company eventually only provided a relatively small bus (17 seats to accommodate our 23 members) which brought us to the hotel at Tingri (定日) before noon. Her great efforts should be recorded for appreciation.



*Waited with patience*



*Got on smaller bus to Tingri, (photo by Fion)*



*Bigger bus from Shigatse to Lhasa (photo by Nau)*

We had only 30 minutes to pack our baggage and loaded them onto another bigger bus, which could accommodate 37 persons. The bus brought us to Shigatse and Lhasa for the next two days. We definitely could not manage to take a shower or shave in just 30 minutes before departing in order to make up our time that had been wasted in waiting for the bus in the morning. We were pleased to see Mr. & Mrs. Mak again and they looked well after resting for two days at the hotel in Tingri. We briefed them what we had experienced in the previous two days particularly in the journey to see Mt. Qomolangma.



*Beautiful folding of rock observed along the highway*

Apparently, the bus followed the similar route where we came from Gyangtse (江孜) and we re-visited Yamdrok Lake on the way (羊卓雍措). Finally we arrived at Shigatse (日喀则) at dinner time. Our original bus driver (Chi-yan) had to stay in Tingri (日定) and look after his bus and fix it.

Surprisingly, we saw him at Shigatse (崗堅飯店) the next day. He told us that he used the powerful “Hatha (哈達)” in the form of braided ribbons replacing the damaged leather belt as a contingency. The bus had unbelievably travelled several hundred kilometers through the hilly and bumpy roads with maximum altitude of over 5000 mPD and arrived safely in Shigatse. He drove the bus to Lhasa on the other day for thorough examination. We visited Tashilhunpo Monastery (紫什倫布寺) in the afternoon before arriving the hotel (崗堅飯店).



*Winding road built due to topography*



*Tour escort (Jian-yang) help repair the broken leather belt*

## **25<sup>th</sup> August 2010**

The first place to visit in the morning was at Shalu Monastery (夏魯寺) which was built at 3849 mPD. We were welcome by cows and dogs, some kids were sitting aside with their shy faces staring at us as if we were the strangers to them. We made a long walk in the direction towards the mountains to look for the cherty rock.



*Looking for outcrops of the micro-organism (radiolaria) bearing chert near Shalu Monastery (夏魯寺)*

It took more than 45 minutes walk along the narrow road with rice fields on both sides but it seemed that the rock outcrops were still miles away. Luckily we were allowed to get on a lorry of which the driver took us to the outcrops of cherty rock within minutes to save our energy.

The cherty rocks were reddish brown in colour, individual grains were too fine to be identified by naked eyes or even with the help of hand lens. The micro-organism (radiolaria) bearing chert from the sea floor was pushed up by tectonic process to the present altitude through the process of orogeny. At least, we were pleased to witness the evidence of the building of the “roof of the Earth”.



*Collecting chert samples*



*Micro-organism (radiolaria) bearing chert*

Our next stop was to look at pillow lava at the road cutting near a Village at 羣襄 which was located from a milestone, namely 24 km. The oval shaped pillow lava (dark grey with some greens, was formed when lava flowed into sea water at around 1200 degrees Centigrade. Flow rims/growth lines could also be observed in some pillow lava outcrops. The mineral of pillow lava contains augite, pyroxene, hornblende, plagioclase feldspar and olivine but no quartz. Sometimes, pillow lava might contain several “egg/pearl sized outcrops”.



*Pillow lava outcrops at road side near 羣襄 (photo by Fion)*

A village woman carrying her child was curious on our topics and she greeted us with a friendly smile. Our replacement bus driver did not allow us waste a minute and



he dashed the bus to Lhasa before the sky turned dark in the evening. We had “window scenery” on bus for the rest of the day which included folded mountains (kink fold); alluvial fans were common with scree / debris flow; traces of “glacial cap” at the mountain tops. We stayed in the same hotel (拉薩凱拉斯賓館) when we first arrived in Lhasa for the next three days.

**26<sup>th</sup> August 2010**

Most of us had the same thought early in the morning that we anxiously went for a walk in Barkhor Street (八廓街). There were already crowds of people (worshippers) walking in an orderly manner generally in a clockwise direction around Potala Palace. They were not only the local people who lived there but also people from other cities of Tibet and tourists from other parts of the country.



Many people were turning the “pray wheel” (經輪) and “praying” while they were walking. The people we saw in the streets seemed to be doing the same thing. Occasionally there were a few “army people” wearing camouflage uniform marching among the crowds of people in the streets. The buildings were not tall, they were only two to three storeys high. There were plenty of attractive souvenirs in the shopping stalls by both sides of the Barkhor Street, they were so colourful and unique Tibetan style that tourists generally adored. Not all of the shopping stalls were opened so early in the morning though.



*Group photo at Potala Palace (photo of Peter)*

At ten minutes to eleven, we gathered at the car park and anxiously waiting to enter the Potala Palace. We had a touring walk along the outskirts of the Potala Palace which led us to the entry point.



*Ready to tour Potala Palace*

To our surprise, Potala Palace was built on a low mountain in the centre of Lhasa. We were a little disappointed to learn that we could only stay in the Palace (the red building) for one hour due to our escort's arrangement. That meant we had to walk fast enough to complete the tour inside the Palace.

We had therefore inevitably to visit the points of interest selectively. Nevertheless, Potala Palace is a place for respect, one of the great wonders in the world.



After lunch at (大連小海鮮) restaurant, we visited Sera Monastery (色拉寺) which was well known to tourists and there were monk debate shows every day.



We had free time in the evening to go shopping and try local food in groups. We were delighted to have dinner in a Tibetan restaurant in the city that we loved the food and Tibetan tea (蘇油茶)". We treasured the atmosphere that we talked and laughed freely in this restaurant because we were the only customers for the whole evening.

**27<sup>th</sup> August 2010**

We had an early breakfast (simply with an egg, bread and preserved vegetable) and set out at 6:00 a.m. when the sky was still pitch-black with only the lonely moon shining on the mountains. We could vaguely identify the landscape along the way such as alluvial fans, glacial channels between mountains. Chief Ba and Mrs. Ba were with us today. Down the road, we stopped at Tak Hing (德興) for a release where there was limestone terrain. Further ahead, we passed Yangbajain (羊八井) where we could see granite outcrops, but we were not allowed to get in the place.



*Way to Namtso via Giasiduo Peninsula (扎西多半島)*

We could see Mount Nyainqentanglha (念青唐古拉山) (7162 mPD) at a distance. There were glacial deposits over Namtso (納木措) region at approximately 4,700 mPD. The cost for a person to enter this region was \$120. We could see the Tertiary red conglomerate and lithium bearing slate around this region, karstic scenery of the Jurassic limestone underlying conglomerate was also observed.

Our bus was moving along the straight road towards the Giasiduo Peninsula (扎西多半島) built on the land which once was the bottom of lake. The sides of the road became places for herding of sheep and yaks, a few tents were seen on the grassland. The lake in the past was much wider and the water was deeper. Water had been regressed to the present level leaving a few palaeo-traces of ancient lake banks due to uplift of the Tibetan region.



*Karstic scenery at Namtso, its clear water and blue sky are unforgettable*

Namtso is the most beautiful place which looks as if we were going to touch the blue sky. It is the highest salt-water lake in the world. I had tasted the water and found that it was not very salty. The water was so clear that we could see every single pebble on the lake bed. We had a walk along the “Giasiduo” peninsula and inspected the karstic scenery and found that there were many caves and according to Chief Ba that every cave had a story (tale) but I could hardly remember all. A reverse fault was observed on an outcrop facing the lake that the rock had been under compressional stress.



*Fossils on boulder of limestone*

Fragments of fossils were also discovered in some boulders, such as shells, fragments of crinoid stems, coral sections (solitary type) etc. We were so delighted to see such gorgeous natural scenery and geological features that we forgot the time for lunch, we had lunch at Damxung (當雄) at about 3:30 p.m.

## **28<sup>th</sup> August 2010**

Being the last day of the trip in Tibet, we were brought to the Museum of Tibet at 10:00 a.m. after breakfast and spent an hour or so there before we were sent to the airport. On the way to Lhasa Gonggar airport, Mr. Lai made a brief summary on the geology at places when had been during the trip.



*(photo by Peter)*

Luckily our scheduled flight from Lhasa back to Guangzhou was only delayed for three hours. Soon after taking off from

Lhasa Gonggar airport (approximately 10 minutes), we were able to see some lakes and snow caps at mountain tops. We could still recognize some places that we had visited, such as Basum Lake and the sand blown deposits. We could see the “orogenic” scenery arranged in an orderly and oriented alignment; the mountain alignments had however generally changed in another orientation when the plane passed Sichuen Province.



Apparently, we were getting farther away from Tibet (one of the world's three extremes). We returned from Lhasa to Guangzhou by plane which stopped at Chongqing for an hour (more or less in the middle of the journey), it only required totally five hours flight to reach Guangzhou Baiyun International airport. Our chartered bus delivered us from Guangzhou at 11:30 p.m. (approaching mid-night on



28<sup>th</sup> August 2010) to Shenzhen/Hong Kong SAR border arriving in the early morning (2:00 a.m.) of 29<sup>th</sup> August 2010. This ended our trip in Tibet. We were dragging our legs and baggage home to have hot shower and good sleep, not to border the baggage for a day or two.

## **Conclusion**

This was a trip that we visited many places which were “must-go” as geologists or people interested in nature topics. We actually had not spent much in respect of money but we had rewarded much in life experience, Tibetan landscape, culture and people's life style, religion with many monasteries, the beautiful and breath-taking high altitude scenery.

We visited many monasteries en-route to geological spots including the Potala Palace, Jokhang Temple, Barkhor Street, Basum Lake, Yungbulakang Palace, Tradruk Temple, Samye Temple, Yamdrok Monastery, glaciers, Namtso Lake and a glance at Mt. Qomolangma at a distance. Some of us went straight to Potala Palace in the first evening since arriving Tibet and got some snap-shots in the attractive night scene of

the Palace which was like a famous painting by the road. We also enjoyed shopping by the streets and experienced the local culture.

It was amazing that our Tibetan driver (Chi-yan) manoeuvred his huge bus in the narrow drive-way of the first hotel that there was no spare room for turning around, not even a couple of inches though. He insisted picking us up every day at the hotel. He looked special because he had his curly hair, tanned skin and strong voice. He was great. Sometimes he was reluctant to let us alight the bus at some scenic spots because we took more time than he scheduled. His familiar voice (“Go lah, Go lah”) and the hound of the bus refreshed our memory of him.



*Mt. Qomolangma at a distance (photo by Fion)*

We had seen the radiolarian bearing chert, pillow lava, large and small scale folded structures, ophiolite, migmatite, slate, limestone, mineralization, fossils, rare ore minerals.

We had been to the base camp of Mt. Qomolangma at about 5200 mPD looking over the ice-capped mountain top of the Mt. Qomolangma; the famous salt-water lake, Namtso, at the highest altitude in the world. By driving along the Yarlung Tsangpo River, the important geological features in Tibetan regions had been unveiled which included the Yarlung Tsangpo suture zone. We also

We also encountered some exciting and unforgettable moments during the trip:

1. The bus broke down after travelling for 12 days due to damaged leather belt for the engine. We ended up staying in a local hostel for a night (near Tingri) and we all squashed in a smaller bus back to Tingri the next morning. Miracly, we met our original bus at Shigatse again. It survived by using three braided “Hatha”. The bus (with Chi-yan as our driver) continued to serve us in Lhasa for the remaining three days.
2. Every one of us was excited but worried about suffering the high altitude sickness from the beginning of the trip. Unfortunately, Rebecca had suffered it when we went up Mt. Qomolangma in the bus at an altitude around 4000 mPD. It was difficult to describe how painful she felt. We used all methods that we could think of at that critical moment; we fed her the slices of juicy pear, one

Acetaminophen pill, water, massaged her hands because they were suffering from serious clamping. Her hands, neck, even the head became numbed and turning blue gradually. She was scared, so did we.



However, she had overcome the height eventually at the base camp. We thought it might be the love songs and the music from our cell phone that cured her. She was our “representative” to suffer from high altitude sickness.

3. An incident occurred when we were climbing a slope to trace the geological features on rock outcrops adjacent to Sakya Monastery. Mrs. Mak slid down from the slope when she was climbing and suffered from “minor” injury. We were frightened because nobody knew how bad she was injured. A Lama came down from a nearby monastery and used his way to alleviate her pain. We appreciated his assistance and gratitude.
4. Lastly, our gratitude to those members who arranged the trip with success, particularly to Dr. Margie Chen (President), Mr. Felix Lee; Mr. K. W. Lai, Mr. P. S. Nau and Mr. Ba Zhong who provided comprehensive geological information of Tibet and briefing during the trip. After all, thanks to all the members who provided assistance and entertained each other during the trip.

Apart from using my own photographs in this report, I have selected some photographs taken by Mr. Nau, Peter, Felix and Fion to produce a comprehensive report together with a series of photographs appended. I express my appreciations to them. At the time of writing this report, I did not intend to treat it as an anniversary report to the Members of the Geological Society. Actually, there are many bits and pieces worth recording during the trip that I do not want to leave behind my memory, I may have missed out some of them though. I have to post this report as soon as possible because I am probably running against the “Alzheimer’s disease” that will come soon.

{ Looking forward to the next trip }