

**(figure 1)****(figure 2)****(figure 3)**

BOLIVIAN JUNGLE TO THE PACIFIC OCEAN WITH BBC'S TOP GEAR

As a safety and production coordinator for the TV and film industry, I seem to find myself in the most remote and inhospitable places on earth. In October 2009, having received a call from the BBC Top Gear productions team, I headed off to Bolivia to drive the 1000 mile route from the Bolivian jungle to the coast of Chile to see if the route was viable. It was an amazing experience with mind blowing scenery and dramatic changes in environments.

The roads of Bolivia are infamous for their horrendous conditions with tarmac roads outside of La Paz being rare and roads inside the city being questionable. The dusty, rutted roads vibrate cars, people and equipment to pieces. Holes appear in roads for no apparent reason, as we found out to our cost. **(figure 1)**

The extreme cold sucks the life from batteries and the midday sun bakes equipment. Electrical items just give up. The mixture of altitude and cold contracts and expands sealed containers and metal objects. While dust covers every inch of the equipment.

Sadly to say, this led to the demise of my previous laptop. The constant ingress of dust, the extremes of temperature, constant vibration and ever present humidity caused the laptop on that reconnaissance trip to die. Seeing as on the second visit to Bolivia, I would need to plan routes and write reports while living out of a 4x4, I needed to have a serious rethink with regards to my laptop options.

After meeting James Munger-Styles from Blazepoint Limited at DSEi '09 and telling him of the dilemmas experienced during the previous reconnaissance trip in South America, he convinced me with his infectious enthusiasm that the ndura RUGGED range of products would be ideal for the task at hand. With its rugged design,

swivel touch screen, highest possible dust ingress code and water resistant protection, I was confident that this rugged laptop would allow me to successfully complete my filming trip in Bolivia with Top Gear. **(figure 2)**

After returning to Bolivia to start our epic adventure we finalised our route using Garmin GPS software; we quickly downloaded our route onto the crews GPS's, turned the laptop into a touch screen tablet and headed west.

The town of Rurrenabaque which is a days hard driving from La Paz, stands alone on the River Beni in lush jungle. The rushing torrents of water that flow down from the mountains, standing above the remote one horse town, feed the river which runs all through Brazil and eventually into the Amazon. This was the start point of our amazing adventure to drive three 1970's 4x4 vehicles from the jungle of Bolivia to the Pacific Ocean.

The River Beni gives a false impression of solace and calm. The underlying danger of strong currents and fast running rip tides leaves the non sea farer something to think about, especially when traveling up stream in a local dugout canoe that constantly needs bailing out as water sloshes around your ankles. Despite the water, mud and grime, the ndura RUGGED laptop allowed me, even with dirty hands and bow waves breaking into the canoe, to type notes on the move with the touch screen keyboard. **(figure 3)**

This mode of transport was precarious, however not as dangerous as our first choice which was using a Bolivian Air Force helicopter to abseil with the presenters into the jungle. Sadly, just before we arrived in Bolivia the helicopter crashed killing everyone on board and forcing us to rethink our method of insertion.

Having to cross the fast flowing tributaries of the River Beni in our 4 x 4s meant that sometimes we and our equipment took early baths. An unnamed person within the film crew who's lack of route judgment and boyish eagerness left something to be desired when trying to cross the river. To see personal bags and equipment floating around in the back of cars is not the best start to the day. (figure 4) Much to my amazement the ndura RUGGED laptop powered up and continued as normal, despite having sat in a submerged bag.

The Bolivian jungle is an unforgiving environment to film in. (figure 5) The humidity increases as soon as you step from the sunlight and walk under the canopy of lush trees. The incessant noise from insects and regular down pours of rain can really test the film crew's metal. (figure 6)

Normally we ended up erecting tents in the dark after our long filming day, never too sure what we might find living in our boots the next morning. Poisonous spiders, biting millipedes and venomous snakes were common visitors.

Having left the ndura RUGGED laptop happily sitting by the tent one morning and disappearing for breakfast, I returned to see an 8-10ft anaconda happily warming itself on the keyboard of the laptop. (figure 7) Not the normal clientele for Blazepoint! We soon found the anaconda a new home in the jungle. All part of being a safety adviser to the BBC. (figure 8)

As we headed South West away from the slow moving jungle tracks and onto the dusty main roads, the temperature increased, the jungle canopy thinned out and tracks became bone shaker roads yet the laptop continued to work well with tasks such as downloading Garmin hand held GPS coordinates and updating the cars GPSs, taking every bump and jolt in our mobile office in its stride. (figure 9 / figure 10)

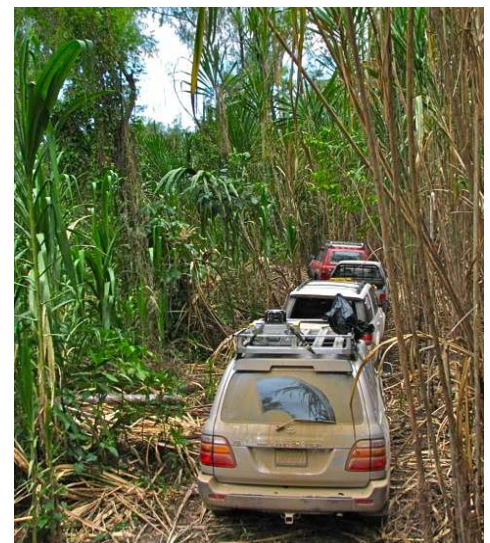
“The ndura RUGGED® Laptop is the Challenger Tank of the laptop world, solid reliable and definitely tough”.
Gary Humphrey 2009.



(figure 4)



(figure 7)



(figure 5)



(figure 8)

The constant vibration and large holes in the roads gave us cause for concern. Would the cars, let alone the filming equipment, stand this massive test. Surely this could not last - little did we know!!!



(figure 6)



(figure 9)



(figure 10)



(figure 11)

After hundreds of kilometers of horrendous roads driving became a test of nerves and bottle. We were constantly passed by logging trucks that left us covered in dust as well as local taxis driving at break neck speeds. It was evident from the crashed vehicles we came across that some of the locals had not been so lucky. (figure 11)

Anticipation mixed with excitement filled the crew vehicles as we started the drive up the infamous Death Road towards La Paz.

Having gained its name from the countless travelers lost over the cliffs edge due to a combination of bad driving, mechanical failure and mudslides, we cautiously navigated the roads narrow and winding paths. (figure 12) Even though we were cautious, there were 18 wheelers and large coaches who would insist on passing us at terrifying speeds. (figure 13) We came across hundreds of wooden crosses alongside the cliff edge which served as a timely reminders of our possible fate should we make a mistake.

As we drove higher up the valley, the scenery became mind blowing. Clouds formed like cotton balls below, rainbows struck the mountain tops as isolated showers crossed the valleys. (figure 14) Huge birds of prey rode the thermals level with our convoy and cameras clicked constantly as around every corner the views became more and more dramatic. Day turned to dusk, the sunset we saw will never be forgotten, a blanket of the most intense reds and crimsons enveloped the mountainside. As darkness closed around us, the mountains became a spectacular living monster.

As we looked into the darkness of the valley floor we watched the mountain side burn. Whole swathes of jungle burnt as farmers applied the slash and burn technique to the jungle sides, clearing the jungle for the ever popular Coca plant, which is the raw material for cocaine. Quite spectacular to see until you thought of the death and destruction that was occurring to all the animals and vegetation that lay below.

Eventually we summit the mountain pass in the intense darkness and left Death Road behind. We had driven the infamous road and filmed amazing scenery as our old 1970s 4x4's safely navigated the treacherous stretch of road.

The week long journey so far had played havoc on the presenter's cars. A 36 hour modification session awaited us in La Paz. The Range Rover driven by JC was having lift kits fitted to its suspension, Richard's Land Cruiser was having winches and extra lights fitted and the Suzuki driven by James May was being left in its original condition.

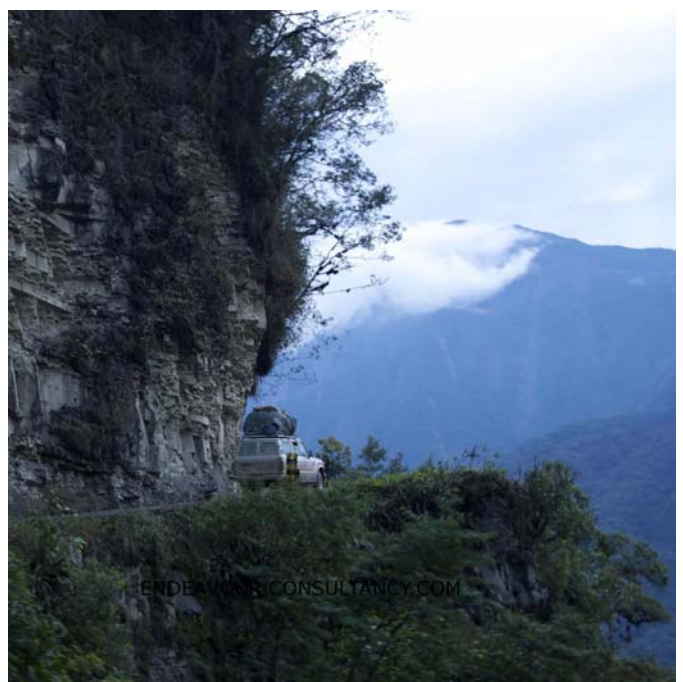
With a blink of an eye we left La Paz the highest city in the world at 3600m. The altitude could be felt with every breath. This was a major concern as the majority of our journey was still to unfold at altitudes up to 5200m.



(figure 12)



(figure 13)



(figure 14)



(figure 15)

As we ascended the Altiplano (the high plain) that runs towards the Chilean border, massive mountains over 6000m high looked down on our convoy. Covered in ice capped glaciers and pumping out white gases these volcanoes shadowed our every move.

We enjoyed the domestic bliss of asphalt for 6 hours on leaving La Paz, before the producer led us off road yet again. The thermal valley of the Sajama Volcano lay in front of us, the land of gods and giants told in local folk lore. (figure 15)

This massive volcano stands at 6542m and dominates the Bolivian Chilean boarder which is the Andes. Hot springs cover the low land, running rivers of warm water deposit white salt along their length. Dams allow indigenous people to wallow in the therapeutic waters of this mysterious land. We camped at the sheltered base of Mount Sajama, building stone walls around the tents to add protection against the strengthening winds.

As the sun dropped away, the temperature crashed from 15 Celsius to minus 12 Celsius at its lowest point with wind chill of minus 20. The water bottles froze and the engines wouldn't start as the first light of dawn peaked over the mountains. The laptop had been left in the car over night with one of the local guides sleeping in the back; the interior was like the inside of a freezer with the door left open. Ice crystals covered all that they touched. Once plugged into the cars 12v power supply the screen opened and the ruggedised laptop came alive.

After getting stuck in no man's land between the Bolivian and the Chilean boarder for a very uncomfortable night, we headed for the summit of the Guallatiri volcano or as high as the off road track would allow us. This summit sits at 6063m. We aimed for, but doubted if the presenters' cars would make 5000m. All seemed on their last legs every day, but after 5 hours of difficult driving, the cars not

only made the altitude but surpassed themselves with 5209m. An amazing feat of mechanical wizardry by the roving engineers that kept the cars on the road.

The ndura RUGGED laptop really showed its true colours over the next 24 hours: it had mysteriously evolved a boot print on the top of the screen. (figure 16) It wasn't until I booted up the laptop later that day, to hear Toby the 90kg cameraman say, "I'm glad it's working as I have been stood on it for the last hour while filming from the sun roof". (figure 17) Not many laptops would have survived that.



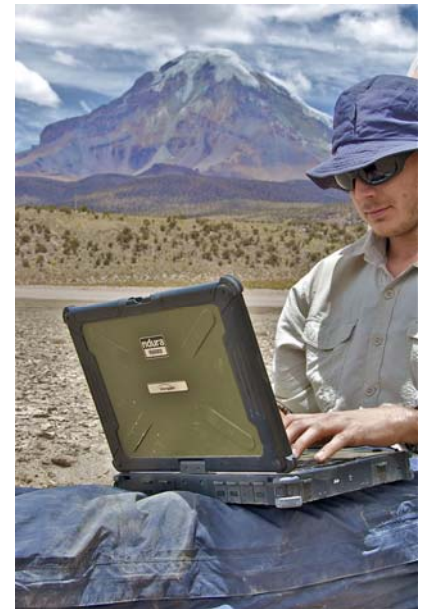
(figure 16)



(figure 17)



(figure 18)



(figure 19)

The Chilean Atacama desert lay in front of us from the foot of the volcano all the way to the Pacific Ocean and our final destination. (figure 18) All we had to conquer was the mighty sand dunes running off the Atacama down to the coast and that would complete our amazing journey.

The fine sand of the driest desert in the world holds very little life. Sand runs for hundreds of miles through Chile. Sand Devils (mini tornadoes) dance across the land and away into the distance. The sand particles lash against exposed legs, arms and face acting like little pin pricking needles. Paint on cars is worn down to bare metal and dust gets into the car even with the air conditioning on and the windows sealed. Sudden gusts of wind would pick up handfuls of sand and cover the laptop, blanketing the screen and keyboard in grit which buried itself under the keys. Once filming became unbearable we hide in the vehicles waiting for the storms to subside. Opening the laptop up, we would shake the laptop upside down to get ride of grit and finish off dusting down with a paint brush before firing it up again.(figure 19)

The sand dunes south of Iquique on the Chilean coast are magnificent, standing 1400m above the sea, with a 45 degree exit point that runs straight down hill. One false move and the cars would roll and roll, not stopping until the bottom. (figure 20)

Unfortunately the Toyota meets its sudden death just miles from the coast. (figure 21) As we ploughed through dune after dune, the sand eventually won. The wheel nuts sheared off and a tragic end met the Toyota Land Cruiser as it over turned going down a sand dune. We were down to two vehicles with only 5km to go. The Pacific was in sight, but the sand dunes would not let us pass without a fight. The steepness of the dunes threw the crew. Was it possible to navigate these dunes? (figure 22) With vehicles swerving in the sand fighting gravity's pull and brakes grinding from the build up of sand, we cautiously made our way down the sand dunes.

The cool waters of the crashing Pacific waves were in sight. Our amazing adventure was complete.



(figure 20)



(figure 21)



(figure 22)



The ndura RUGGED laptop had been treated roughly, not intentionally, but due to the pace of filming, harsh environment and changeable weather conditions it would be fair to say it had been treated very roughly. Though battered and bruised, it continued to successfully perform all the necessary tasks. I think the ndura RUGGED Laptop could be at home in any London office or on the side of a volcano in Chile.

“The ndura RUGGED Laptop is the Challenger Tank of the laptop world, solid, reliable and definitely tough.”

Climatic Conditions

Temperature Range: 26° Celsius to -15° Celsius

Altitude in meters: 208m - 5012m

Humidity: 80% - nil

Water Resistant: Submerged in 150 mm of water for 5 mins

Authors' profile

Gary Humphrey is an Ex British Special Forces soldier. He currently runs Endeavour Consultancy, a leading supplier of photography to the defence industry, also providing highly focused consulting services and subject matter expertise to the UK/ US defence market. Gary is also a Safety/Security Consultant to the TV and Film Industry.

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ndura RUGGED® IP65 Convertible Laptop

Meeting the requirements of MIL-STD-810F for drop, vibration and temperature, as well as MIL-STD-461E for EMC requirements and an IP65 rating, the ndura RUGGED® Convertible Laptop provides reliable computing anywhere, anytime. Running Windows® XP Professional for Embedded Systems, which is technically and almost functionally identical to the standard version of Windows® XP Professional used for general purpose computing devices, offers continuity of service for today's field based professionals.

About BlazePoint

BlazePoint is a privately owned UK based engineering company with over 20 years experience in the supply, installation and support of rugged computer hardware. It has provided rugged IT hardware into Army, Navy and Air Force programmes, including to N.A.T.O and to the UK's BOWMAN, FALCON and TYPHOON programmes. Today, through a substantial investment in its engineering and technical facilities, BlazePoint boasts an impressive in-house product engineering capability with extensive experience in the areas of design, development, testing and manufacture of rugged computers and peripherals. Its products are controlled by UK export regulations, and are free of US export control regulations (ITAR).

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