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A day in the life of a satcom engineer in Nigeria

Andy Hope

The day began early, like all African days.

First the roosters, then the inevitable driver revving his car engine in the low tech belief that excess revolutions would clear its breathing passages. In my creaky Hotel room in Abuja, capital of Nigeria, West Africa, I could hear cooks shouting downstairs and maids taking their revenge on the guests by using hi tech things like vacuum cleaners in the corridors. Didn't we know it was time to be awake? No matter that my delayed plane had arrived at 1am the night before.

Today was the big day - move a satellite antenna! The powers that be had decided to take over a building owned by the former leader and strong man and our antenna was in danger of being seized. I had one chance to get this 4.5M Andrew off the rooftop and away before losing a valuable asset to gleeful Government Officials.



Antenna farm in Nigeria

The Digital Divide that separates the life of African citizens goes both ways - while they have a love affair with the toys and the benefits that hi tech gadgetry like satellite Communications, cell phones, electricity, brings - few understand the principles of operation and many cant or don't want to pay.

The antenna was located on the flat roof of a single story building in an outer suburb. The job had looked easy - a large flat courtyard below seemed an easy place to move the antenna to before dismantling and trucking. A crane would be needed, and a willing set of hands and some correct sized spanners.

The mood for the day was set by the breakfast restaurant staff and their sleepy, slow, take all day, manner - the scrambled eggs congealing on my plate did not bode well! Time to take a hand - make a move!



So, after paying the hotel bill and settling the usual argument over the telephone bill added to my account which was made from the room before I had checked in and to someone in Congo (I don't know anyone in Congo!) we found ourselves outside the hotel waiting at 9am for the 8.30am arranged transport.

Oh dear! At last he arrived, smiles, apologies, but at least a car! But wait - how did the air conditioned Land Cruiser I had ordered, turn into a beat up Peugeot 405 with open window air conditioning? - Ah well, yes (smile) seems there was no fuel and a mix up and the broken crankshaft and so on, and so on. At least the price was the same!

First stop - a mistake - was to go to buy some large, correct sized spanners. The tools that were available were low grade and wrong sized - no such thing as Wal-Mart here - the tools area is a series of little shacks with open fronts making a rough street which is mostly mud where it is not stagnant rubbish filled pools.

Strolling down this street, every store seemed to offer promise but few held required objects. So it was settled that our hi-tech tools for the day would be two of the biggest pipe wrenches available and four "iron bull" brand adjustable spanners - along with a selection of screwdrivers, chisels, hammers and 10MM socket wrenches with amazingly good chromium plating but dubious metal underneath! Not a "name brand" to be had!

So to the mobile crane hire area of the town - time was running out! 10am already! First rule when negotiating in such places, - never be in a hurry! It shows, and the price goes up accordingly! And my bank of Naira was dwindling, and I still had to get labour, a truck and the numerous amounts of "dash" - gift money to ease the way!

An assistant was dispatched to organize the labour and I started to get cunning. I figured that the best price for the mobile crane would be if I was not apparent during negotiations. But the area where the cranes were waiting was a wide flat red earth place where the crane drivers with eyesight like that of desert camel drivers were watching for signs that a money rainstorm was coming their way. Thank goodness for our ancient wheezing Peugeot - a perfect disguise! The

trusted lieutenant was dispatched and I slouched in the rear seat of the Peugeot enjoying the 90 degree temperature, following his progress with my eye.

The driver was in on the joke and remained sitting upright in the front seat. Slowly the progress of the negotiator was followed and one crane after another was questioned and passed. Finally the decision was made and a wave called me into the fray.

Shock and disbelief registered on the owners face as the trick was uncovered. This was followed by immediate re-negotiation attempts. Finally a price was settled which in the end was only about 30% above the going, "local" rate. A bargain - I thought.

The old crane groaned to life after cash deposit was handed over, and we were off to the antenna site.

Arriving at the antenna site there was a short pause while the gateman suggested that the permission was not yet received to enter let alone remove such an obviously valuable asset. This was countered by one of my trusted lieutenants who wore flowing robes with deep deep pockets.

While the crane and the waiting labour moved into position I paid a visit to the Big Man - the new head of the building. Now this large man, had a large office inside this large building, protected by a large secretary. Observing due humility I entered The Presence and was greeted in a cordial manner.

My first thought was "what a nice man" - not so - he then practiced his oratory on me, for a good fifteen minutes. He cursed the ground that my lackey boss walked on, denigrated the underdog Nigerian boot licker Chairman of my Company and rounded on the entire hi-tech community, for not supporting his high aims (at low or no cost) to bring instruction, wealth and happiness to his long suffering people. The removal of the antenna was tantamount to treachery - and I was its instrument, he said.

At first I was a bit shocked, and then I realized he was practicing for Parliament, and my experience at dealing with similar situations came to the rescue. Assuming a meek attitude, I said that I sympathized with everything he said, and I would convey his message in the same terms as he put it to my Chiefs, and added "that I hoped that this would not sour a budding but new friendship between us"

All smiles at last he granted with a wave of his bejeweled right hand permission to remove the offending antenna. At last, I had the permission! Bounding down the stairs I raced for the rooftop - and just in time! The sacred midday hour had been almost reached and the workers were about to disappear for their customary 1 to 5 hour break.

Using some very recently learned phrases and tactics I exhorted the team to get the spanners and follow me! Ascending the homebuilt shaky ladder I began to show what to do - first stow the antenna in the up right position then loosen the hub securing nuts and bolts. Much chatter and laughter as the 10 red safety hats were handed out and the team set to work. It was getting hot and I didn't want the dangerous beams of the sun falling and injuring some head! The "safety shoes" of the workers - mere beach sandals would have to do.

The crane was invited to get in position with the slings and eye bolts to lift the reflector with the four newly mounted lifting tabs. Oh Dear! No slings! Puzzled (as a fox) the crane owner said that we had hired a crane, not lifting slings or anything - he had a hook, he said, now where could we fasten it?

Clambering down to the crane, negotiations followed between owner and my robed assistant while I took a close look at the crane. It was very old - all the cable was fractured and peeling. Little broken wires from the outer surface of the lifting cable made a fuzzy halo around the main wire. Now I understood why our "bargain" was not a bargain!

Looking underneath the crane I spied some loose loops of wire - slings!

Returning to the negotiators who had got to the stage where it was going to take half a day to find some slings, I gently called into question the owners stated honesty and suggested even more gently, that perhaps he was trying to get other days hire of his low down rotten crane out of me? As he spluttered his denials I suggested that perhaps he had forgotten the slings under his crane?

- And bold faced he replied that no, he had not forgotten them, but those slings were indeed the property of his brother and he could not use them without permission.

After the robed one had found another deep pocket, and the brother's permission immediately was obtained (I think that the man must have been schizoid because I didn't see any brother appear) the slings were unfurled and we began the lift.

But Oh Dear again, only two slings were found! There really were no others - it was now 2pm and the heat was tremendous. I dismissed some of the workers to get their rest and return later with the others to follow when the first lot returned.

There were doubtful faces, would this work - yes - I was prepared to risk lifting the reflector with just two slings and several sturdy people on ropes to center the reflector.

A 4.5M antenna reflector is not very heavy, I reasoned, and the slings, if they held and the two lifting points if they also held, would at least achieve the job.

But forces of chaos usually rule, and after rope was purchased at a local shanty and people were found to hold the ends, (of course no one carried any rope) the crane driver delicately started winding up. On the antenna all the hold down bolts had been removed and the tension came on the reflector. With the touch of great gentleness on the "up" lever the entire reflector leapt off its mounting and whizzed four feet into the air!

Hmmm - curses, foiled again! - Low tech hydraulic controls lifting a hi tech product equals unpredictable results!

As a result of the unpredictable action of the crane and the resulting wondrous confusion of shouting between the rope holders, the reflector now began a wide swing towards a brick wall, turning as it did so, neatly on its side.

The sub-reflector and feed horn had been removed before the lift, but the accuracy of the antenna should be within + and - 3mm over the entire parabolic shape (at C band) to function within designers limits.

A collision with a wall could have distorted the antenna frame and placed it outside the specifications. The collision was averted by the crane driver's quick thinking. With a loud, unhealthy metallic grating noise he swerved the crane (with the same jerky motion) in the horizontal plane.

The antenna lurched 15 feet in the opposite direction, away from the wall. The crane driver raised the jib at the same time so that the lower lip of the antenna just missed the pedestal.

I wondered how the two lifting plates on the antenna could survive the stresses, and when examined afterwards they had taken the brunt of the jerking and bent nicely almost thirty degrees.

The reflector was now swinging wildly but safely in space over the rooftop. The shouting reached fever pitch as the rope men tried to stabilise it - but finally when the oscillations were damped, the lowering proceeded without further hitch.

But another problem was imminent - time - it was now getting late and although the sun still beat hot, I could see the gleam of more money in the eyes of everyone who could sense that it might be necessary to continue the next day (tomorrow is a favorite phrase here and covers a variety of ills).

The truck waiting outside the gate that was to take the dismantled antenna to the safe storage place was called into the courtyard. A huddle convened - what to do? It was decided to transport the antenna in one piece - if it would fit into the truck, I was told.

The truck was a sad, old affair - bigger than a pick-up truck but smaller than a full sized lorry. Around its edges were steel pipe grids used for tying loads inside. One could see that this truck, had carried many large loads and was about at the end of its days - but at least you could see the truck through the clouds of exhaust smoke - so the engine might run a few more hours.

More chatter followed and the crane started to lift. Much hand waving and shouting followed. I thought, if they could place the antenna hub on a support block 2.3 metres off the truck floor, with suitable wedges, the antenna could be transported on its side. Not so.

The antenna was lowered hub

downwards, reflector facing the sky, onto the flimsy pipe side support rails of the truck - with about one metre hanging over each side!

As they took the load the pipe rails bent...but did not break - they distorted outwards creating a nice cradle bearing the support arms of the reflector.

Oh no, I thought, its all going to collapse, but the truck owner must have carried such outsize loads before. He smiled his confidence. Now, I thought, they will surely tie that load in place with much rope. Also not so...to hold the weight of the reflector into the back of truck two or three assistants of the truck owner climbed bare foot onto the reflector and sat down grinning happily!

Everyone knows that the weight of the load will hold it in place - there is no such thing as inertia or a load trying to continue to move in the direction that it was traveling if the direction of motive force is changed!

By now the Time Bank was getting nearly empty, so with no more sage advice from me, we set off to the safe haven. The streets seemed to be filled more than usual with peak hour commuters, but were there any unusual stares at the unusual load being carried in the back of the truck as well as the two grinning heads peeping out from within?

Not at all! If we had been carrying the Statue of Liberty feet first on a roof of a car, people couldn't have cared less!

Here was one benefit of a low tech society - anything carried in a truck is OK as long as it fits. The fact that the antenna was hanging over the road and threatening to decapitate street lighting fittings and traffic lights didn't matter in the least.

Today was our lucky day - the traffic lights were not working (again) and the traffic policemen waved us happily on our way. More grins solve a host of problems.

The last hurdle was in sight - the gateway to the storage place had a low and narrow arch over the top - but my knowledgeable helpers had planned!

Charging through the traffic behind us came the crane, looking like a modern Roman siege breaking machine coming to ram the castle walls.

Again the slings were fastened - again much shouting and gesticulating, and again the crane whisked the reflector briskly over the archway and held it dangling while the truck moved forward. As dusk fell, the hi tech antenna reflector without a chip on its gleaming paint was deposited gently on wooden bearers inside the safe area.

At this stage I hastily withdrew from the scene and watched as much arm waving and even a little angry shouting ensued with my Robe Man, as a last, desperate attempt was made by the crane man and the truck man to extract even more money.

It was well I did so, because the entire sum I had set aside had been used... The report was that at least 50% more was asked for. I am not sure how much went to Robe Man, but he earned it, and I had the receipts to prove wise expenditure.

A later note - the antenna was carefully dismantled, shipped to another city and re-assembled. The same trusted workers with only the manuals, correct tools and a little expert help re-assembled it, and it met all specification tests as laid out by the organization whose tests are the toughest of them all; Intelsat.

The fact that the antenna survived the ordeal is a monument to the US designers; the "different" engineering methods adopted by this West Coast African nation and to an extent the powers of chance, and the depth of pockets.