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Joe Bell (G4PMY) operates from what must be the most unusual shack in the UK. The shack in question is a Russian Army (R161A-2M) Mobile Communications Centre mounted on a Zil-131 truck.

The trucks radio equipments are still officially classified as SECRET by the British MoD and the German Bundeswehr who took over many of the former Soviet NVA equipments when Germany re-unified.



The truck was released from our ministry of defence who are non committal about where it came from, how they got it, and why. The truck and radio operating controls are of course in Russian .

### **Some Statistics**

Length 24' Width 8' Height 11' Axles 3

Engine 7.5 Litre V8 Petrol, *MPG 4*

Top Speed 40mph , Weight 9.5T

Gears 4 Hi , 4 Lo , 2R

Permanent 4 wheel drive, 6wheel drive selectable

Electricity Generator No1 driven directly from the engine via a Power Take Off (PTO) generating 6Kw watts of electricity.

Generator No2 is driven by a separate engine mounted in the rear of the vehicle and generates 15Kw watts of electricity.

### **Modifications**

In the year 2000, we removed the existing petrol engine, and fitted a Cummins B series engine complete with a Heath 6 speed box. This modification was done primarily for economy reasons, but it also provided much greater torque which makes the vehicle less sluggish for safer operation in modern traffic conditions.



The 15Kw generator located in the rear of the truck can be seen left.

The generator provides power to the main High Frequency (HF) transmitters built into the truck, which are capable of 3Kw of transmit power. 1.5Mhz~60Mhz

To the right can be seen the main control console for the VHF and HF Communication systems, . The labels which have been stuck onto the various consoles are just the beginning of the translation process.



To the left can be seen the main receiver, and secure radio net scramblers. The truck and its equipment was designed to operate over a wide temperature range -50oC to 55oC. The main operating cabin may be heated by either the exhaust from the P.A. blowers, or from the warm air central heating unit (petrol burning of course)

The operating cabin is maintained at a positive air pressure, and fed air via a biological warfare filter system. Providing you do not open the door, the occupants will remain safe should biological weapons be used. But there does not appear to be a toilet !

The air filtration and warm air central heating systems can be seen right, built over the driving cab of the vehicle.

The drivers cab is un-protected, and in the event of a biological attack, the driver would need to wear special clothing.





**Top Right**

The centre room of the truck is fitted with HF and VHF coupling units which can be seen at the end of the console. The power levels are such that the coupling units need a turbo blower. The coupling units are not motorised, they consist of vacuum switches , inductors and capacitors. The working frequency range of the truck is 1.5Mhz to 60Mhz.

**Top Left**

The twin Power Amplifiers can be seen with their screening doors open. The left box if the HF PA and the right the VHF PA. These units unfortunately are 3 phase input which is a stumbling block when wishing to connect them to the mains supply at home.

**Bottom Left and Right**

Internal views of the HF and VHF couplers. Note the vacuum relays.







Internal view of the H.F. Power Amplifier. The turret tuning assembly can be seen in the centre of the photograph, and the final amplifier can be seen bottom right.

**Photograph right** shows one of the turret segments removed.



**Photograph right** is the RTTY / speed morse work station

**Photograph left** is the view through to the generator room. The petrol driven 15Kw generator can be seen in the foreground



**Photograph left.** The truck operating at low power using one of the log periodics. Seen prior to being painted NATO green

**Picture right** : The truck roof showing left to right the aerial storage lockers, The new VHF 2m collinear on top of the log-periodic (in green bags) and the flexible exhaust extension for the generator.



The Exciter is known as “Lazure” and outputs around 100mW into the main power amplifiers. The input to the power amplifier has an electronic attenuator which is controlled by feedback from the high power output stages (ALC). The valve line up consists of three tetrodes in parallel 6Z6s which feed an RG74 forced air cooled tetrode, which feed the final amp which is an RG78 forced air cooled tetrode.

The manual for the power amplifiers quotes the following HTs and currents for the PA unit.

6Z6 stage is 150v at 180mA, The RG74 is 600v at 750mA, and the RG78 is 2000v at 1800mA for full power output.

Operational modes include AM, FM, SSB, ISB, FSK, FFSK.



Photo left shows the aerial tuning control unit. The aerials are tuned at low power to prevent giving the vehicle position away during periods of receive only activity. To do this the receiver, aerial and exciter form a balanced bridge, and resonance is indicated by a dip on the main rx meter.

Photo right shows the second rx unit which is an R326M. The main receiver is an R160P and is tuned to frequency by decimal switches. The use of decimal switches makes search tuning difficult, and so the R326M which is continuously tuneable is used when a net has to be searched for,



Photo left is the R016 frequency hopping modem and control unit. This radio station is equipped for frequency hopping, which is an anti ECM function.



Photo left, the truck deployed with awning and tent ready for a week-ends operation.

Photo right, three generations prepare the truck for weekend camp. From left to right, yours truly Joe Bell, grandson Harry, and son Michael.



### 2002 venue

In 2001 we visited mainly military vehicle shows, and at most shows we were unable to operate the radio equipments due to space restrictions.

In 2002 we aim to visit shows with a radio theme as well as our usual school and club visits. The shows will include War & peace held at Beltring, Kent on July 17th to 21st, The National 4x4 show held at Trentham Gardens on 30th August, and a number of visits to the Secret Bunker, Nantwich.

Keep your eye on this site for further details/