

■ **White Paper**

**Communications at the battle of  
Arnhem: A modern day technical  
analysis**

**John Berry BSc MBA CEng FIEE MCM**

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## Introduction

It is well documented that communications during the Battle of Arnhem were difficult. From experience during previous campaigns using the proposed equipment, they were predicted to be difficult. They did however appear more problematic than expected with some commentators claiming an almost total communications breakdown. The reasons for this claimed failure are the subject of significant myth and supposition documented in many books. This paper reports on a project that aimed to quantify one area not yet covered – radio propagation – and asked (and answered) the question “should they have been able to communicate?” Once this is known, others can comment on whether they were able and hence comment on the difference between plan and execution.

The approach taken was simulation. Both command and artillery nets on Day 1 (17 September 1944) and Day 2 at Arnhem were modelled and compared one with the other. A conclusion of the work showing the likelihood of communications success is reported here for each path from Division to Brigade and between Brigades.

## Equipment

Two equipments were in use at Arnhem – the vehicle mounted or trek cart carried Wireless Set No. 22 and the man-portable Wireless Set 68. Technical parameters for these two main radios were obtained<sup>1</sup>. Both used 12 foot long vertical rod antennas. They differed principally in RF output power – the 22 Set gave 1 Watt and the 68 Set, 0.25 Watt – resulting in a 6dB advantage wherever the 22 Set was used.

## Signals Plan

The signals plan<sup>2</sup> showed several nets with associated frequencies. Initially the Divisional command net provided communications between the 1 Airborne Division dropping zone Zulu where the Division initially set up HQ and 1 Parachute Brigade on the bridge over one arm of the Rhine at Arnhem (Figure 1)<sup>3</sup> The path length here is 9.35km or just over 6 miles. On the second day the Div HQ moved to the Hartenstein Hotel near Oosterbeek (Figure 2). The main path dropped to about 6.6km or just over 4

miles. 1 Para were joined by 4 Para at dropping zone Yankee to the north west of the town. The path from Div HQ to 4 Para Brigade is shown and is around 8.6km or 5.7 miles.

The Battalion nets from Brigade HQ on the bridge have been omitted from the study since the path lengths were somewhat less than that to Div HQ – and therefore assumed to have had reliable communications on 2.692MHz using No. 68 Sets.

The artillery were reported to have communications both during Day 1 and Day 2 and these nets were used to pass some Divisional command traffic in the supposed absence of their own links. To complete the picture these additional nets are also shown. In the artillery nets the main link is from the Forward Observation Officer on the bridge co-located with the Brigade to Div HQ initially at the drop zone and then the next day co-located with Div HQ at Hartenstein Hotel. The path lengths of these artillery links were 9.35km and 6.6km respectively as noted above. The artillery HQ was in the grounds of the hotel in a dug-out. The net diagram also shows the

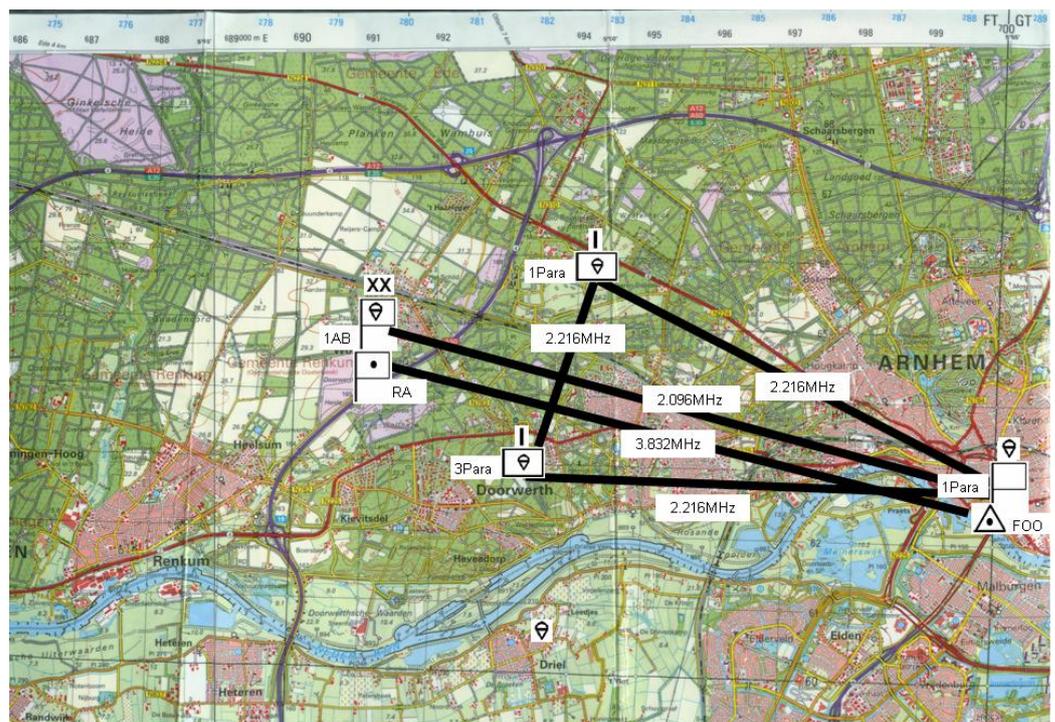


Figure 1: Command and Artillery Nets, Day 1, September 17<sup>th</sup> 1944

battery net between Light Regt. HQ and two of the three artillery batteries. Radios used for all artillery links were No.22 Sets. The addition of the lower link back to No. 3 Battery from the Officer Commanding 3 Battery who was located on the bridge should also be noted. This was a ‘private’ link and was reported to have supported significant command traffic.







**ATDI Ltd**

**Kingsland Court - Three Bridges Road**

**Crawley - West Sussex - RH10 1HL - UK**

**Tel. +44 (0)1293 522052 / Fax. +44 (0)1293 522521**

**World wide web page: <http://www.atdi.co.uk>**

**E-mail: [enquiries@atdi.co.uk](mailto:enquiries@atdi.co.uk)**

**Advanced Topographic Development and Images Limited**

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