



Combat Net Radio Bearer (MIL-STD-188-220)

Dates: 20–21 August 2009

Presenters: Mr Tony Castle and Mr Graham Priestnall
SyntheSys Systems Engineers

Venue: Parkview Hotel
562 St Kilda Rd, Melbourne VIC

Teaching Arrangements

The course will be conducted from 9.00am to 5.00pm. Morning tea will be available at approximately 10.00am to 10.30am, lunch from 12.30pm to 1.30pm and afternoon tea at approximately 3.00pm to 3.30pm.

Attendees will also receive a copy of the manual 'Combat Net Radio Bearer (MIL-STD-188-220)' plus a CD containing the course presentations.

Registration Fee:
AU\$1430 (including GST)

Group and PhD student discounts available. Please enquire.

How to Register

To register fill out the registration form (overleaf) and

- fax it to +61-8-8343-8711
- or
- scan and email it to industryeducation@nicta.com.au

Cancellation Policy

At least **4 weeks** notice is required for cancellation of a place in a short course for full reimbursement. If cancellation is later than 4 weeks then the place can either be given to another person or the registrant can be provided with a credit towards other NICTA training.

For details of further courses please see our web site:

www.nicta.com.au/short_courses

or contact the NICTA Industry Education Manager.

About this course

Based on the newly published MIL-STD-188-220D change 1, the course covers in detail all areas of the bearer protocols and introduces the associated MIL-STDs to ensure a complete understanding of the overall system. The course is designed as a follow on to the Introduction to VMF course and will provide the delegate with in depth information about the CNR bearer protocols.

Target Audience

The MIL-STD-188-220 training course is a natural progression for those who already have a good overall understanding of VMF systems, but wish to expand their knowledge in this challenging area. The course is ideally suited for engineers and operators involved in the implementation, integration or operational use of CNR systems.

Brief Course Outline

- **Introduction:** MIL-STD-188-220D; CNR Definition; CNR/VMF Association; CNR Basic Principles; Data Frame; Network Access; Types of Service.
- **OSI 7 Layer Model:** Introduction/ISO Standards; 7 Layer Model as used for CNR; Data Frame Compilation.

Each of the layers utilised for CNR will be explained in detail.

- **Physical Layer:** COMSEC; Transmission Modes; Transmission Frame; Primitives; Modulation; Physical Layer Concatenation.
- **Transmission Header: Header Format.**
- **Data Link Layer:** Frames; U, I and S PDUs; Addressing; Control Field; Data Link Concatenation; Primitives.
- **Types of Service (TOS):** TOS 1-4; Flow Control; Duplicate Detection; Station Class; TOS Determination; Quiet Mode.
- **Network Access Delay (NAD):** Network Access Control Requirements; P-NAD; H-NAD; RE-NAD; R-NAD; DAP-NAD; DAV-NAD; FOAR.
- **Timing and Associated Parameters:** Explanation of timing parameters.
- **Exchange Network Parameters (XNP):** Network Control Station; Dynamic and Static Stations; XNP Messages.
- **Network Layer:** Intranet Header; Address Resolution Protocol; Neighbour Discovery; Topology Update; Primitives; Internet Protocol.
- **Transport Layer:** Transmission Control Protocol (TCP); User Datagram Protocol (UDP); Segmentation Reassembly.
- **Hardware:** Radios and Modems; A brief description of some commonly used CNR and associated modems.

About SyntheSys

SyntheSys Systems Engineers is a specialist training and consultancy company working in the field of military tactical data links (TDLs). With over 20 years of TDL experience, SyntheSys provides independent, up to date and operationally relevant TDL training. SyntheSys consultants are either highly qualified systems engineers, or former military operational experts with many years of TDL experience. SyntheSys is recognised as a leader in the field of Link 16 training and consultancy both in the UK and Europe.

About NICTA and Short Course Program

National ICT Australia (NICTA) is Australia's ICT Centre of Excellence and was established to drive innovation through high quality research, research training and technology transfer. As a world-class research institute NICTA uniquely combines excellence in research, education, commercialisation and collaboration. We are working to ensure that Australia is well placed to benefit from the significant opportunities that ICT research delivers.

NICTA is funded by the Australian Government as represented by the Department of Communications, Information Technology and the Arts and the Australian Research Council through *Backing Australia's Ability* and the ICT Centre of Excellence program. NICTA members are the Australian Capital Territory Government, the New South Wales Government, the University of New South Wales and the Australian National University.

NICTA short courses offer scientists, engineers and managers technical training with a leading edge in areas such as telecommunications, transport, security, defence, logistics, e-government, mining, finance and biotechnology.

There will be ample opportunities for discussion and questions and answers. Morning and afternoon tea/coffee and a light lunch will be provided. Extensive workshop materials will be made available to participants.

How to register

Please complete the registration form below and

- Fax it to +61-8-8343-8711 or
- Scan and email it to industryeducation@nicta.com.au

Send the form as soon as possible to secure your place.

For further information please contact
Anne-Marie Eliseo
Industry Education Manager
Telephone: +61-8-8343-8710
Email: anne-marie.eliseo@nicta.com.au

Registration Form and Tax Invoice* ABN 62 102 206 173

*Upon completion of this form, including the relevant payment, this form will become a Tax Invoice.

Please register me for Combat Net Radio Bearer (MIL-STD-188-220) on 20-21 August 2009.

PLEASE PRINT

Date: _____

Title: _____ First Name: _____ Surname: _____

Position: _____ Organisation/Division: _____

Postal Address: _____

Telephone No: _____ Facsimile No: _____ Email: _____

Dietary preference: _____

Course Fees: Full fee: AU\$1430 (incl. GST)
(Register before **Aug 6th, 2009.**)

Method of Payment (please tick below):

Cheque (payable to National ICT Australia Ltd)
Forward the cheque and a copy of THIS registration form to:
Anne-Marie Eliseo, Industry Education Manager, NICTA, Innovation House, First Ave, Mawson Lakes SA 5095, Australia.

Credit Card: Credit Card No.: _____ Expiry Date: _____

Visa Master Card Name on card: _____

Amount: AU\$ _____ Signature: _____ Tick if receipt required

Email address of card holder: _____

Electronic Funds Transfer
Please advise by email to Annette Van Bramer
annette.vanbramer@nicta.com.au
when payment is made

BANK	Commonwealth Bank of Australia
ACCOUNT NAME	National ICT Australia Limited
BSB	062 900
ACCOUNT NUMBER	1032 4576
REFERENCE NUMBER	200809

FAX the form to +61-8-8343 8711 or EMAIL it to industryeducation@nicta.com.au

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- Send an email to comments@nicta.com.au or
- Phone NICTA's Industry Education Manager on +61 8 8343 8710.