

## Tactical Data Link (TDL) Standards

Digital tactical communications, their associated technologies and their application are as deep and complex as they are diverse. Few, if any, of us understand them in their entirety. This is the second in a series of articles that aims to cast light on the entire range of technologies and applications, providing an insight into some of those areas that we often gloss over.

This article discusses the class of tactical communications systems referred to as Tactical Data Links (TDLs) and the standards that define them and their operation. These standards define how the TDL works, the structure and content of messages, operating procedures for each TDL and operating procedures for systems using particular TDLs. The technical specification documents are normally North Atlantic Treaty Organisation (NATO) Standardisation Agreements (STANAGs) or United States (US) Military Standards (MIL-STDs). TDL STANAGs are in the process of being rebadged as Allied TDL Publications (ATDLPs). The term ATDLP is used in the rest of this article, although some TDL standards have not yet been converted to ATDLPs. Operating procedures are defined in NATO document ATDLP-7.33 and the US Joint Multi-TADIL Operating Procedures (JMTOP).

### ATDLPs

These documents are intended to "enhance NATO's operational effectiveness and efficiency" by ensuring that TDLs built for and operated by any NATO force are compatible, interoperable, and interchangeable. In practice despite the best efforts and intentions of the countries involved, it is rare for these aims to be realised.

The documents themselves are not always complete, consistent, and unambiguous. Even when they are, requirements may even be overridden during implementation due to cost limitations or the need to support national industries.

### MIL-STDs

MIL-STDs are the United States' equivalent to NATO ATDLPs. As most TDLs were originally built to US specifications, the MIL-STD is usually the original document. Where NATO has then determined a similar requirement, an ATDLP has been produced. As a general rule, US systems are specified to MIL-STDs, whereas NATO systems are specified to ATDLPs. While both documents are generally alike, there are some differences that may give rise to interoperability issues.

### ATDLP-7.33 and US JMTOP

These documents define operational procedures that should be used for each TDL to standardise actions to be taken by TDL operating units and commanders.

### Standard

In the context of this article, we are referring to technical standards. The technical standard is "an established norm or requirement regarding technical systems. It is usually a formal document that establishes uniform engineering or technical criteria, methods, processes and practices."

The types of technical standards referred to in this article are:

- Standard specification: an explicit set of requirements for an item, material, component, system, or service.
- Standard practice or procedure: a set of instructions for performing operations or functions (e.g. standard operating procedures).

*From Wikipedia.*

### STANAG

In NATO, a STANdardization AGreement (STANAG) defines processes, procedures, terms, and conditions for common military or technical procedures or equipment between the member countries of the alliance.

Formerly, all the ATDLPs were referred to as STANAGs with their own unique number.

*From Wikipedia.*

For example:

- Establishing and terminating TDL operations.
- Entry into, and exit from, operating TDL structures.
- Altering the structure of an operating TDL.
- Operation of associated voice coordination circuits.

In addition, ATDLP-7.33 provides information about how to plan Multi-TDL networks and other information, such as the level of implementation of TDL-equipped units and definitions of terms and codewords (including net control codewords) applicable to each TDL.

### OPTASK Link

In addition to the above documents, there is a range of operational documents that either expand on procedures within the ATDLP-7.33 and US JMTOP, define TDL procedures that are system-specific, or that give details of procedures for TDL tasking. Of these, the most significant is the NATO Operational Tasking (OPTASK) Link. The OPTASK Link is a long and detailed NATO message (also used by the USN and USAF) that covers all TDLs and is published by a commander to task units with TDL operations. It is a set of instructions to all units that are tasked to take part in TDL operations during a particular exercise, operation, or over a stated period of operations. The only problem with the OPTASK Link is that the US Army does not tend to use it - they prefer to use a communications annex to their Operations Orders.

### TDL Standards and Responsibility

Within NATO, the organisation responsible for the development, maintenance, and configuration management of NATO Procedural Interoperability Standards (NPIS) for NATO TDL is the TDL Capability Team (CaT). The TDL CaT is a multi-national working group with representatives from NATO nations.

The TDL CaT is responsible for the standards shown in the table on the right (*latest versions shown*).

**Interoperability**

The ability to act together coherently, effectively, and efficiently to achieve Allied tactical, operational and strategic objectives.

*From the NATO Glossary of Terms and Definitions (AAP-06 Edition 2018).*

Standard Title	Publication Number
Interface Control Definition for the International Exchange of MIDS/JTIDS Network (NETMAN T/1)	ATDLP-7.03(A)(1)
NATO Improved Link Eleven (NILE) - Link 22	ATDLP-5.22(B)
Multi-Link Standard Operating Procedures for Tactical Data Systems Employing Link 11, Link 11B, Link 16, IJMS, Link 22 and JREAP	ATDLP-7.33(A)(1)
NATO Bit-Oriented Message (BOM) Tactical Data Exchange - Link 16	ATDLP-5.16(B)
NATO Implementation Codes and Rules (NICR T/1)	ATDLP-7.02(A)(1)
NATO Qualification Levels for Tactical Data Link Personnel	STANAG 5555 Ed 1
NATO TDL Implementation Plan (NTDLIP T/1)	NTDLIP Rev.3
Standard for Joint Range Extension Application Protocol (JREAP)	ATDLP-5.18(B)
Standard Interface for Multiple Platform Link Evaluation (SIMPLE)	ATDLP-6.02 Edition A
Standard Operating Procedures for Link 1	ATDLP-7.31(A)(1)
Standard Operating Procedures for the Ship-Shore-Ship Buffer (SSSB) and the CRC-SAM Interface - VOL I & II	ATDLP-7.12(A)(1)
Standards for Data Forwarding between Tactical Data Systems	STANAG 5616 Ed 7
Standards for Interface of Data Links 1, 11, and 11B Through a Buffer	ATDLP-6.01 Edition A
Tactical Data Exchange - Link 1 (Point-to-Point)	ATDLP-5.01 Edition A
Tactical Data Exchange - Link 11/11B	ATDLP-5.11(B)
Technical Characteristics of the Multifunctional Information Distribution System (MIDS) - VOL I & VOL II	ATDLP-1.75 Edition A
xTDL Framework Document [for Representation of TDL in eXtensible Markup Language (XML)]	ATDLP-7.04(A)(1)

From <https://nhqc3s.hq.nato.int> under 'NISPViewer'

Policy and instructions for tactical data link standardisation and interoperability in the United States are set out in the Chairman of the Joint Chiefs of Staff Instruction (Ref. CJCSI 6610.01E) dated 10 April 2014.

This instruction cites the standards in the table below.

TDL	Associated Publications
Link 4A	MIL-STD-6004
Link 11 /11B	MIL-STD-6011
Link 16	MIL-STD-6016 and STANAG 5516 [now ATDLP-5.16]
Link 16 Terminal (MIDS)	STANAG 4175 [now ATDLP-1.75] - no US MIL-STD equivalent)
VMF	MIL-STD-6017
IBS CMF	MIL-STD-6018
JREAP	MIL-STD-3011 and STANAG 5518 [now ATDLP-5.18]
Link 22	STANAG 5522 [now ATDLP-5.22] - no US MIL-STD equivalent)
TDL Data Forwarding	MIL-STD-6020
MADL	Technical Interface Design Plan / Test Edition (TIDP/TE) in development
CoT	TIDP/TE in development

Acronyms:

CRC = Control & Reporting Centre

SAM = Surface to Air Missile

JTIDS/MIDS = Joint Tactical Information Distribution System/  
Multifunctional Information Distribution System

VMF = Variable Message Format

IBS = Integrated Broadcast Service

CMF = Common Message Format

JREAP = Joint Range Extension Application Protocol

MADL = Multifunction Advanced Data Link

TIDP/TE = Technical Interface Design Plan/Test Edition

CoT = Cursor on Target

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