User Guide for MINTACS SeeTrack Exchange (MINSTE)

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ABSTRACT

The computer program MINTACS SeeTrack Exchange (MINSTE) interface was developed to support the automated data transfer to the RAN Mine Warfare Tactical Decision Aid MINTACS from SeeTrack, a post-mission analysis tool for data collected by towed or self-propelled (unmanned) side-scan sonar systems in support of military operations such as reconnaissance of sea routes for detection of mine-like objects. This document is a detailed technical user manual for the MINSTE software program. For a general overview of MINSTE design principles and objectives, the reader is referred to DSTO-GD-0574, "Design and Evaluation of the MINTACS SeeTrack Exchange (MINSTE) Concept Demonstrator.

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Executive Summary

The Royal Australian Navy (RAN) currently uses the Mine Warfare Tactical Command Software (MINTACS) Release 12 for Mine Countermeasures (MCM) mission planning and assessment. Recent MCM exercises are investigating the deployment of underwater unmanned vehicles (UUV) for route surveys. The route survey process has a post-processing stage in which the unmanned system’s side scan sonar records are reviewed for contacts of interest. SeeTrack is one software application currently used for this post-processing stage. SeeTrack is a ‘generic’ UUV mission planning and battle space visualisation tool that acts as a viewer and software analysis tool for side scan sonar imagery. Mine-like contacts detected during post-mission analysis conducted with SeeTrack or similar applications can be imported into MINTACS for force-level mission assessments and battle-space visualisation. However, the current release of MINTACS only allows manual entry of contact data by the operator, much of which must first be converted into compatible dimensional units, chart datum and date/time formats. This tedious, time-consuming process is prone to error, and can ultimately prove unworkable in light of current concepts of operation for unmanned systems, which dictate the reporting of all suspicious contacts; in previous exercises, these reports are known to be in the hundreds. Clearly, in this circumstance, operator overheads can be substantially reduced by automating some aspects of contact reporting.

The software program MINTACS SeeTrack Exchange (MINSTE) was developed as a concept demonstrator to test and evaluate requirements for automation of data exchange between MCM mission planners.

MINSTE is designed to transfer contact data from SeeTrack to MINTACS in a sequence of three steps:

- Step 1: Selected mission and associated contact data from the SeeTrack database is converted to an XML document.
- Step 2: Contact data from the XML document is then imported into the MINTACS Route Survey Database (RSDB) and displayed as an Unclassified Sonar Contact (USC\(^1\)) type in the MINTACS Operational Area Manager.

\(^1\) USC classification is assigned as contact type so to align with MINTACS R13 Additional Military Layer (AML) import procedure. MINTACS R13 imports AML Small Bottom Object products and assigns these contacts with USC contact classification.
Step 3: Contacts stored in the RSDB may be promoted to actual or suspected mines – features that are stored as mine objects in the MINTACS Tactical Display Manager. MINTACS Release 12 requires tactical features to be entered manually. MINSTE automates transfer between the RSDB and tactical database, and provides data filtering functionality to assist with proper selection of contacts.

This report is the operator’s guide for MINSTE. It is intended that the MINSTE application and this guide should be used together. The guide provides detailed descriptions of all the features of MINSTE, including description of how the data is used within MINTACS once it has been imported.

An accompanying CDROM is attached to end of this report containing the described software and DSTO-GD-0574: Design and Evaluation of the MINTACS SeeTrack Exchange (MINSTE) Concept Demonstrator.
7.2.2.1 MINTACS Display of Promoted Mine Object

7.2.3 Filter MINTACS RSDB Contacts by MINTACS Functionality:
   Track Area of Interest or Track Operational Area

APPENDIX A: XML SCHEMA

APPENDIX B: DEVELOPER NOTES
   B.1 Workaround for MINSTE and MS SQL Server 7 Connection
      B.1.1 Source Code Changes
      B.1.2 Create ODBC Bridge to Connect MINSTE and MINTACS using MS SQL Server 7
   B.2 MINSTE Source Packages

APPENDIX C: MINSTE CLASS DIAGRAM
   C.1 MINSTE Class Diagram: Section C1
   C.2 MINSTE Class Diagram: Section C2
   C.3 MINSTE Class Diagram: Section C3
   C.4 MINSTE Class Diagram: Section C4
   C.5 MINSTE Class Diagram: Section C5
   C.6 MINSTE Class Diagram: Section C6
   C.7 MINSTE Class Diagram: Section C7
   C.8 MINSTE Class Diagram: Section C8
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AML</td>
<td>Additional Military Layer</td>
</tr>
<tr>
<td>DSN</td>
<td>Defence Secret Network</td>
</tr>
<tr>
<td>ESRI</td>
<td>Environmental Systems Research Institute</td>
</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
</tr>
<tr>
<td>HTML</td>
<td>Hyper-Text Mark-up Language</td>
</tr>
<tr>
<td>JAR</td>
<td>Java ARchive</td>
</tr>
<tr>
<td>JAXB</td>
<td>Java Architecture for XML Binding</td>
</tr>
<tr>
<td>JRE</td>
<td>Java Runtime Environment</td>
</tr>
<tr>
<td>MCD</td>
<td>Mine warfare Clearance Diving</td>
</tr>
<tr>
<td>MHC</td>
<td>Mine Hunter Coastal</td>
</tr>
<tr>
<td>MINSTE</td>
<td>MINtacs SeeTrack Exchange</td>
</tr>
<tr>
<td>MINTACS</td>
<td>MINe warfare TAtical Command Software</td>
</tr>
<tr>
<td>MS</td>
<td>MicroSoft</td>
</tr>
<tr>
<td>MWCSS</td>
<td>Mine Warfare Command Support System</td>
</tr>
<tr>
<td>PMA</td>
<td>Post-Mission Analysis</td>
</tr>
<tr>
<td>RAN</td>
<td>Royal Australian Navy</td>
</tr>
<tr>
<td>RSDB</td>
<td>Route Survey DataBase</td>
</tr>
<tr>
<td>SQL</td>
<td>Structured Query Language</td>
</tr>
<tr>
<td>TDS</td>
<td>Tactical Data System</td>
</tr>
<tr>
<td>USC</td>
<td>Unclassified Sonar Contact</td>
</tr>
<tr>
<td>UUV</td>
<td>Unmanned Underwater Vehicle</td>
</tr>
<tr>
<td>XML</td>
<td>eXtensible Mark-up Language</td>
</tr>
</tbody>
</table>
1. Introduction

The MINTACS SeeTrack Exchange (MINSTE) assists in the automatic transfer of contact data between software used for post mission analysis (PMA) of side scan imagery and the tactical decision aid MINTACS. This release of MINSTE supports data transfer between SeeByte’s SeeTrack software and MINTACS only.

The data transfer is conducted in two steps. The software exports a selected mission and its contacts from the SeeTrack database and saves this data to an XML file. This XML file can then be imported into the MINTACS Route Survey Database (RSDB) and so appear as a contact feature in the MINTACS Operational Area Manager.

In addition, the MINSTE tool also supports the selection of a contact from the MINTACS RSDB and its promotion to a mine object in the MINTACS Tactical Display (and therefore, importation into the MINTACS database).

Developer notes for the MINSTE application are attached as Appendix B.
2. Context

2.1 MINTACS

MINSTE is compatible with Release 12 of the \textit{Mine Warfare Tactical Command Software (MINTACS)}\textsuperscript{2}, developed under Project SEA 1297 – The Mine Warfare Command Support System (MWCSS) for Mine Countermeasures mission planning and assessment. MINTACS Release 12 is currently in use by the Royal Australian Navy (RAN). The next release of MINTACS will provide some support for the automatic transfer of contact data by the importation of Additional Military Layer (AML)\textsuperscript{3} files. It is anticipated that MINTACS Release 13 will be rolled out on the Defence Secret Network (DSN) during the first quarter of 2009.

2.2 SeeTrack Military

\textit{SeeTrack}\textsuperscript{4} is a “generic” Unmanned Underwater Vehicle (UUV) mission planning and battle space visualisation tool. It acts as a viewer and analysis software for side scan sonar imagery (*.mst, *.jsf and *.xtf files) and allows data to be exported in HTML, AML and ESRI shapefiles.

2.3 XML

The \textit{Extensible Markup Language (XML)}\textsuperscript{5} is a general-purpose \textit{specification} for creating a custom markup language. It is classified as an extensible language because it allows users to define their own elements. Its primary purpose is to facilitate the sharing of structured data across different information systems. It is a fee-free open standard.

\textsuperscript{2} MINTACS brochure can be downloaded from URL - http://www.sfs.com.au/mintacs.html
\textsuperscript{3} AML products have been developed by the UK Hydrographic Office as a unified range of digital geospatial data sets to be used as layers on top of charts. Further information can be obtained from URL - http://www.ukho.gov.uk/add/services.asp.
\textsuperscript{4} SeeTrack brochure can be downloaded from URL - http://www.seebyte.com/Military/
\textsuperscript{5} XML standard can be downloaded from URL - http://www.w3.org/XML/
3. MINSTE Overview

3.1 MINSTE Concept

The MINSTE application is a means of moving data from the SeeTrack database to and between the MINTACS databases. MINSTE only communicates with the SeeTrack application database and / or the MINTACS application databases.

![Diagram of MINSTE application and databases](image)

*Figure 1: A high-level view of the MINSTE application and the databases with which it communicates*

3.2 Functionality

MINSTE Release 1 provides functionality to:

1. Export contact data from the SeeTrack database to a XML file.
2. Import the XML file into the MINTACS Route Survey Database.
3. Promote a contact in MINTACS to a tactical mine object.
Figures 2 and 3 detail how MINSTE interacts with the databases to provide its current functionality.

Figure 2: Diagram detailing MINSTE functionality. MINSTE communicates with the SeeTrack database to export Mission and Contact data to an XML file. MINSTE reads the XML file and creates the appropriate data format to then import into the MINTACS Route Survey Database (RSDB), named MINTACS_MWDS. The contact data imported into MINTACS_MWDS will then be displayed in the MINTACS Operation Area Manager.

Figure 3: Diagram detailing MINSTE functionality. MINSTE communicates with the MINTACS RSDB, named MINTACS_MWDS, to retrieve contact data to display to the user. The user is then able to select the contact to promote to be a Tactical Mine Object. MINSTE will format contact data into the correct data format to be imported into the MINTACS database, and be displayed as a mine object in the MINTACS Tactical Display.
3.3 Graphical User Interface (GUI)

MINSTE was designed with a simple Graphical User Interface (GUI) with each function and database configuration available from a main window. The GUI provides self-explanatory directions and requirements. This is achieved by controlling user input or selection by enabling/disabling functionality as the user proceeds with its use. Each function is managed through a series of windows displayed to the user as they proceed through the selected task.

![Figure 4: The main window of the MINSTE application. This window controls access to the program's functionality. Each function is only enabled when the database configuration has been established correctly. To set-up the database configuration the user selects the 'Configure SeeTrack Database' or 'Configure MINTACS Database' button (refer to Section 6.6: Configure Database Connection). In this window only the SeeTrack database has been configured, thus enabling the SeeTrack Interface function.](image)

Once the databases are configured correctly the functionality will be enabled.
3.4 Data

3.4.1 MINTACS Databases

MINTACS uses Microsoft (MS) SQL Server 2000 / MSSQL Server 7 to store its persistent data.

The SQL Server used by MINTACS contains four databases for its persistent data:

- MINTACS: primary database and stores the elements relating to the main functions of the MINTACS Tactical Display Manager.
- MINTACS_MWDS: is the information repository for all route survey related data and supports capabilities within the MINTACS Operation Area Manager.
- MCD_GAMING: contains the information about the games generated by the Mine Warfare and Clearance Diving (MCD) Gaming components of MINTACS.
- MHCDATA: the Mine Hunter Coastal (MHC) Data database contains the raw information coming from the Australian Huon-class Tactical Data System (TDS)\(^6\).

The MINTACS databases are separated into four databases for the following reasons:\(^7\)

- A separate MINTACS_RSDB provides the capability to install a potentially large database of environment and contact data on a separate database disk and / or server. As well, it provides the ability to build a separate environmental data management application without the need for the associated MINTACS operational capability.
- A separate MHCDATA database allows for configuration capability and maintenance of a potentially large database.
- A separate MCD_GAMING database was a user requirement to enable the building of other applications using the gaming capability without the need for a full installation of MINTACS databases.

MINSTE uses only the MINTACS and MINTACS_MWDS databases.

3.4.2 SeeTrack Database

SeeTrack uses a Microsoft Access database to store its persistent data.

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\(^6\) The TDS name is NAUTIS.

\(^7\) Mine Warfare Tactical Command Software Release 12 Database Design Description, SfS-004-010.
3.4.3 XML Schema

The XML schema used for this version of MINSTE is provided as Appendix A. The schema elements are in the following format:

- Mission
  - Mission Name (string)
  - Mission Description (string)
  - Contact (object list)
    - Contact Id (integer)
    - Latitude (double)
    - Longitude (double)
    - Width (double)
    - Length (double)
    - Height (double)
    - Data/Time Find Time (date/time)

3.4.4 Properties File

Database settings are stored in a properties file (MINSTE.properties). This properties file is stored in the same directory as the MINSTE application (MINSTE.jar). Program run-time errors will occur if the properties file location and content are changed.

3.4.5 Hard-coded Data

The following data is currently hard-coded into the source code. Future release of MINSTE will allow for the values to be entered by the user.

Contact Label: - the label format for a contact that is imported into MINTACS is:
  - Unique generated sequence number_SeeTrack Contact Id_SeeTrack Mission Name

Mine Reference Number: - when promoting a contact to a mine object the user defined reference number is appended with the selected asset call sign.

Error Ellipse: - the default values of the error ellipse assigned to each contact when imported into MINTACS are as follows:
  - Bearing = 350
  - Major Axis = 10
  - Minor Axis = 10

Contact Classification: - the default value of the contact classification is Unclassified Sonar Contact (USC).

Once the data has been imported into the MINTACS databases some values for the hard-coded data may be changed within the MINTACS application. All the contacts are displayed by the Operational Area Manager: Manage Environmental Data functionality (accessed by
MWDCM -> Manage Environmental Data). Each contact’s property can be accessed by selecting the contact and clicking Modify.

The following contact data can be changed:

- **Contact Classification**: - this value can be modified in MINTACS through the Contact Feature Properties dialog box and selecting contact classification from the values available in the drop-down box.

- **Error Ellipse**: - select the Error Ellipse tab in the Contact Feature Properties dialog box and change the values for the error ellipse as required.

The Contact Label and Mine Reference Number cannot be changed.
MINSTE is a Java based software tool that writes out and reads in data in XML format. The interface was developed using the Java Architecture for XML Binding (JAXB) and so allows for highly portable XML data to be joined to a highly portable Java application resulting in a lightweight flexible application.

The XML schema used in a JAXB implementation uses XML syntax to describe the relationships that must be adhered to, a set of structural rules and data constraints. The XML schema used by MINSTE defines a ‘Mission’ with its attributes and a collection of ‘Contacts’.

The MINSTE application is a concept demonstrator application developed only to enable the transfer of data, using XML, between the MINTACS database and SeeTrack database. The purpose of its development is not to duplicate any functionality of MINTACS and SeeTrack, rather, it is a way of moving data between the databases that these applications use.

Provided as attached appendices are the following software developer notes:
- Appendix A contains the XML schema used by MINSTE,
- Appendix B provides supporting software developer notes,
- Appendix C includes a schematic class diagram for the MINSTE application.

9 URL - http://java.sun.com/
10 URL - https://jaxb.dev.java.net/
5. Using this Manual

5.1 Reference to Computer Terminology

All computer terminology referred to in this manual, unless otherwise stated, is based on the conventions used in the standard Window environment as used in MS Windows environments. This includes all references to window controls and a virtual desktop as viewed on a computer screen.

Reference to a click or select, unless qualified, refers to the press and release of the left mouse button.

5.2 Typographic Conventions

Directories and file names are distinguished by display in the Arial 10pt bold font.

Directory paths (Microsoft file environment) always end in backslash e.g dsto\MINSTE\documents\ 

File names always contain file name extension e.g Mission.xml

Options or selections are distinguished by display in Arial 12pt bold font.

Italics are used to emphasis a word or phrase: to distinguish a name, title of an object or document from the body of text. This includes references to words used to identify objects such as dialog buttons.

5.3 Maintaining this Manual

This document is designed as a User Guide and Reference Manual, to be added to and updated as MINSTE is developed.
6. Installing and Running MINSTE

6.1 Security Considerations

MINSTE is unclassified, however, it is important to realise that the data used or the XML files handled by the MINSTE application may have a security classification associated with it.

6.2 System Requirements

MINSTE can be installed on any desktop computer that is capable of supporting the Java run-time environment (JRE). The application was developed for use on MS Windows platforms.

MINSTE does not need to be installed where the SeeTrack application is installed. It only requires access to the SeeTrack MS Access database.

MINSTE does not need to be installed where the MINTACS application is installed. It only requires access to the MS SQL Server 2000 used by the MINTACS R12 application.

Installing and running MINTSE requires:
  a. The installation of the JRE by running `jre-6u5-windows-j586-p.exe`
  b. The installation of MINSTE by running `MINSTEsetup.exe`
  c. Configure the database connection for MS SQL Server 2000 and / or MS Access.

6.3 Installing Java Run-time Environment

As for all Java based applications, MINSTE requires the JRE to run. In particular, it requires version 6 to execute.

If version 6 of the JRE is not installed run `jre-6u5-windows-j586-p.exe`, this is included with the MINSTE installation CD-ROM. It is also possible to download JRE version 6 from [http://www.java.com/en/download/manual.jsp](http://www.java.com/en/download/manual.jsp).

Installation of the JRE is as follows:
1. Insert the MINTACS_interface installation CD into the CD ROM drive.
2. Locate the file `jre\jre-6u5-windows-j586-p.exe`.
3. Open the file `jre-6u5-windows-j586-p.exe`.
4. Follow the prompts.
   a. Accept the license agreement
   b. Installation will be conducted automatically. A message dialog appears to inform when the installation is complete.

6.4 Installing MINSTE

The MINSTE application needs to be installed so that it can access the SeeTrack MS Access database and / or the MINTACS databases. Installation configurations can be as follows:
One instance of MINSTE can be installed on a local computer or workstation and access the databases stored on a separate disk and / or server.

One instance of MINSTE can be installed on a local computer and access the SeeTrack database stored locally.

One instance of MINSTE can be installed on a local computer and access the MINTACS databases stored locally on the SQL Server.

One instance of MINSTE can be installed on a local computer and access both the SeeTrack and MINTACS databases stored locally.

MINSTE is usually installed on a PC from a CD-ROM.

1. Insert the MINSTE CD-ROM into the CD drive
2. Select **MINSTESetup.exe** on the CD drive
3. Follow the prompts.
   a. Accept default destination folder by selecting **Next** or enter new folder and select **Next**
   b. Accept default Start Menu folder by selecting **Next** or enter new Start Menu folder and select **Next**
   c. Choose to create a desktop icon and select **Next** or ignore and select **Next**
   d. Confirm installation selections by clicking **Install** or to change select **Back**

### 6.5 Starting MINSTE

Once MINSTE is installed, the directory produced will contain a Java Archive (JAR) file, MINSTE.jar used to start the MINSTE program.

![MINSTE](MINSTE.png)

Double-click on **MINSTE.jar**.

The installer does allow the user to install a short-cut on the desktop and in the Start Menu to run the application.
6.6 Configure Database Connection

MINSTE interfaces with the MINTACS database MS SQL Server 2000 and the SeeTrack database MS Access.

6.6.1 MINTACS Interface

MINTACS Release 12 uses MS SQL Server 7 / SQL Server 2000 as its database. **Release 1 of MINSTE will only run with MINTACS Release 12 using MS SQL Server 2000.**

Developer notes are included as Appendix B describing a workaround to create a connection between MINSTE and MS SQL Server 7.

1. Select the button **Configure MINTACS Database** from the main window.
To configure MS SQL Server 2000 settings, the following is required:

a. **Local Host**: this can be accessed by opening the SQL Server Service Manager:
   - Program Files -> Microsoft SQL Server -> Service Manager

b. **Port**: the port setting in MINSTE will be set to the default port value for SQL Server, namely, 1433. To check this or change the port setting access to the default port value can be done in one of two ways:
   - Open the SQL Server Enterprise Manager:
     - Program Files -> Microsoft SQL Server -> SQL Server Enterprise Manager
     - Select **Tools** -> SQL Server Configuration Properties
     - **General tab**
     - Select **Network Configuration**
     - Select **Enabled protocols: TCP/IP**
     - Select **Properties**

   OR

   - If the Client Network Utility has been installed (available on the SQL Server installation CD) open this by:
     - Program Files -> Microsoft SQL Server -> Client Network Utility
     - **General tab**
     - Select **Network Configuration**
     - Select **Enabled protocols: TCP/IP**
     - Select **Properties**

   c. **User Name**: A SQL Server default username will be set. If this default does not work or a new separate login is required then create a new login as per instructions below.
d. **Password**: The corresponding default user name’s password will be set to this value. If this default does not work or a new separate login is required then create a new login as per instructions below.

The user name and password setting in MINTSE will be set to the default username and password for the SQL Server. If this needs to be changed create a new login and set the MINTSE settings to this new login username and password.

To create a new login:
- Open the SQL Server Enterprise Manager: **Program Files -> Microsoft SQL Server -> SQL Server Enterprise Manager**
- Select Security folder in the appropriate SQL Server Group
- Right-click Logins and select **New Login**
- **General tab**
- Create a user name in the Name text field
- Select **SQL Server Authentication**
- Enter a password
- Default database = master
- Default Language = English
- **Database Access tab**
- Select **Permit** (green tick) for the MINTACS and MINTACS_MWDS databases
- Database roles selected for the MINTACS and MINTACS_MWDS databases are public and db_owner

3. Select **OK** to configure database settings
4. The MINTACS Interface functionality will then be enabled.

### 6.6.2 SeeTrack Interface

SeeTrack uses Microsoft Access as its database. MINSTE will interface with MS Access when the MS Access file used by SeeTrack is configured in MINSTE.

1. Select the button **Configure SeeTrack Database** from the main window
2. **Select SeeTrack Database**: Enter in the text field the file location for the SeeTrack database or select Browse to find the database file.
3. Select the radio button next to the file location text field. This will enable the OK button.

4. Select **OK** to configure the SeeTrack database.
5. The SeeTrack Interface functionality with then be enabled.
7. Using MINSTE

This section provides an overview of using MINSTE.

MINSTE is divided up into two sections. One section is the SeeTrack INTERFACE. This provides the functionality to interface with the SeeTrack database. The second section, MINTACS INTERFACE, provides the functionality available to interface with MINTACS R12.

MINSTE is used to interface with the SeeTrack MS Access database and the MINTACS R12 MS SQL Server 2000 databases. However, a user may need to use only one part of the interface, to either use the SeeTrack Interface functionality or the MINTACS Interface functionality. It is therefore possible to set-up the main window to filter out unnecessary functionality.

To display all the functionality, select Display both interfaces.
By selecting Display MINTACS INTERFACE only, the user can set up the main display with the MINTACS Interface functions.

By selecting Display SEETRACK INTERFACE only, the user can set up the main display with the SeeTrack Interface functions.

On start-up of a newly installed MINSTE application both interfaces will be displayed. The user can set up the display of the main window to their preferred setting and this setting will then be saved.
To enable MINSTE functionality to be available each database used by MINSTE must be configured correctly. The settings are saved so this configuration needs only to be done once. Refer to 6.6 Configure Database Connections.

The most likely situation for the use of this software is that it will be run on two computers and used for two differing functions.

PMA will be conducted by the SeeTrack software and so MINSTE will need to be installed on the computer which is running SeeTrack. To transfer the contact data identified and stored in the SeeTrack database the user will select **Export XML from SeeTrack Database** to export the required data to an XML file.

Another instance of MINSTE will also need to be installed on the computer running MINTACS R12. To continue the data exchange the XML file exported from the SeeTrack database (or one previously exported from the SeeTrack database by MINSTE) will then be imported into the MINTACS RSDB by selecting **Import XML Contact Data to MINTACS**. The contacts will then be displayed by the MINTACS Operational Area Manager (OAM).

To further assist in the management of the data being stored in MINTACS an additional feature was developed to promote a contact currently stored in the MINTACS RSDB and displayed in the OAM to being a mine object in the Tactical Display and stored as a new entity in the MINTACS database. This function is activated by selecting **Promote Contact to Tactical Mine Object**.

7.1 PMA Software Interface

7.1.1 Export XML from SeeTrack Database

1. Select the radio button to choose Export XML from SeeTrack Database. This will enable the OK button.
2. Select the OK button.

3. All the missions and their descriptions stored in the configured SeeTrack database will be displayed.
4. Highlight the mission to export.
5. Select the **Export Mission to XML** button.
6. A dialog message box will be displayed detailing a default directory location where the selected mission output file can be saved. This is in the format `c:\MINSTE\output\MISSION_NAME.xml`. It is possible to select a user preferred location for the file to be saved to by selecting the Browse button.

7. Select Export XML for the file to be saved.
8. On completion a dialog box will be display detailing the output files location.

![Dialog box showing export to XML complete. Output file: c:\MINSTE\output\REMUS_1195006116.xml](image)
7.2 MINTACS INTERFACE

7.2.1 Import XML Contact Data to MINTACS

1. Select the radio button to choose Import XML Contact Data to MINTACS (MINTacs Operation Area Manager). This will enable the OK button.
2. Select the OK button.

3. Enter the file to import and its location in the text field or select Browse to choose the file to import.
4. Select **Import XML to MINTACS**

5. On completion of the import process a message dialog box will appear to notify the user.

7.2.1.1 **MINTACS Display of Imported Contact Data**

To review the contact data in MINTACS Operational Area Manager:

1. From the **MWDCM** menu, select **Manage Environmental Data**.
2. Select **Contact Feature**
3. All the contacts within the area of interest track will be displayed.
To display the contact data in MINTACS Operational Area Manager:

1. From the **MWDCM** menu, select **Visualise**
2. Select **Contact Feature**
3. Select **OK**
4. All the contacts within the area of interest track will be displayed on the map.
7.2.2 Promote Contact to Tactical Mine Object

1. Select the radio button to choose *Promote Contact to Tactical Mine Object (MINTacs Tactical Display)*. This will enable the OK button.
2. Select the **OK** button.

3. All the contacts currently stored in the MINTACS RSDB will be displayed. It is possible to filter the contacts on the Operation Area and Area Extent Type: Area of Interest or Operational Area.
4. Highlight the contact to promote and select **Promote Selected Contact**.
5. The MINTACS database will require the following information:

   a. Operation: select the operation from a list of currently available operations for the selected Operational Area.

   b. Asset: select the asset from a list of currently available assets for the operation.

   c. Enter a mine reference number. The mine object will then be identified in the MINTACS database and the Tactical Display as ASSETCALLSIGN_MINEREFERENCE NUMBER.
6. Select **Create Mine Object**
7. On completion of the promotion process a message dialog box will appear to notify the user.
7.2.2.1 MINTACS Display of Promoted Mine Object

The promoted contact will be displayed as a mine object in the MINTACS Tactical Display. The mine object will be displayed by opening the operation in for which it was created. If the operation is currently open in the MINTACS Tactical Display then select the **Reload** button.
7.2.3 Filter MINTACS RSDB Contacts by MINTACS Functionality: Track Area of Interest or Track Operational Area

It is possible to filter the list of contacts by drawing the area of interest or operational area track around one contact or a select few contacts in MINTACS.

Contacts will be displayed in the MINTACS Operational Area Manager within the Area of Interest Track.
To filter the contacts within the MINTACS_interface:

1. Re-draw the track for the Area of Interest or Operational Area within MINTACS.
2. **Reset Contact List** button will call the database and display the contacts based on the new settings created in MINTACS.
3. Select the Operation Area and Area Extent to filter the contacts based on the MINTACS settings.
Appendix A: XML Schema

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
    targetNamespace="http://xml.netbeans.org/schema/MissionReport"
    elementFormDefault="qualified">

    <xsd:element name="exportmission">
        <xsd:complexType>
            <xsd:sequence>
                <xsd:element name="missionName" type="xsd:string"/>
                <xsd:element name="missionDescription" type="xsd:string"/>
                <xsd:element name="object" minOccurs="0" maxOccurs="unbounded">
                    <xsd:complexType>
                        <xsd:sequence>
                            <xsd:element name="contactID" type="xsd:integer"/>
                            <xsd:element name="latitude" type="xsd:double"/>
                            <xsd:element name="longitude" type="xsd:double"/>
                            <xsd:element name="width" type="xsd:double"/>
                            <xsd:element name="length" type="xsd:double"/>
                            <xsd:element name="height" type="xsd:double"/>
                            <xsd:element name="timeDate" type="xsd:dateTime"/>
                        </xsd:sequence>
                    </xsd:complexType>
                    <xsd:attribute name="missionID" type="xsd:int" />
                </xsd:element>
            </xsd:sequence>
        </xsd:complexType>
    </xsd:element>
</xsd:schema>
```
Appendix B: Developer Notes

B.1. Workaround for MINSTE and MS SQL Server 7 Connection

If MINSTE is required to connect to an instance of MINTACS using MS SQL Server 7 then changes to the source code are needed and a connection to the database established by creating an ODBC Bridge to a MS Access database where the tables from the MS SQL Server 7 databases have been imported into.

B.1.1 Source Code Changes

The following source code changes are required:

- Change MINTacsRSDataHandler to extend MSAccessDataHandler
- Change MINTacsDataHandler to extend MSAccessDataHandler
- Remove local initConnection() method in MINTacsRSDataHandler and MINTacsDataHandler and invoke the parent initConnection() method in MSAccessDataHandler.
- Add new constructors:

```java
public MINTacsRSDataHandler(Properties properties) {
    super();
    dbq = properties.getProperty("MINTACS_RSDB.filePath");
    URL = URL1 + dbq + URL2;
}

public MINTacsDataHandler(Properties properties) {
    super();
    dbq = properties.getProperty("MINTACS_DB.filePath");
    URL = URL1 + dbq + URL2;
}
```

- Change all the table names in the SQL queries from TABLENAME to dbo_TABLENAME. This change needs to be implemented in:
  - MINSTE.datahandler.mintacsDB.MINTacsDataHandler
  - MINSTE.function.mintacs_xml_xt.MINTacsRSD_XML_Import
  - MINSTE.function.mintacs_contact_promote.MINTacsDBContact.Export

- Ensure the following property file configuration is implemented in the MINTACS.properties file:
  - MINTACS_DB.filepath=
  - MINTACS_DB.configured=false
  - MINTACS_RSDB.filepath=
  - MINTACS_RSDB.configure=false
- In `MINSTE.function.control.FunctionSelectionPanel` remove the following source code:

```java
public void actionPerformed(ActionEvent e) {
    ...
    ...
    else if (e.getActionCommand().equalsIgnoreCase(configureMINTACSAction)) {
        new ConfigureSQLServerSettings(this,properties);
    }
    ...
    ...
```

And implement the source code below:

```java
public void actionPerformed(ActionEvent e) {
    ...
    ...
    else if (e.getActionCommand().equalsIgnoreCase(configureMINTACSAction)) {
        new ConfigureMINTACSDatabasePanel(this,properties);
    }
    ...
    ...
```

B.1.2 Create ODBC Bridge to Connect MINSTE and MINTACS using MS SQL Server 7.

For MINSTE to connect to the MINTACS database MS SQL Server 7 an ODBC bridge needs to be established between MS Access database and MS SQL Server 7.

The user must establish two bridges one for MINTACS Tactical database, named MINTACS, and the other to the MINTACS Route Survey database, named MINTAC_MWDS. Once the bridge is established a new MS Access database must be created for the database MINTACS and MINTACS_MWDS. The MS Access database can then import the tables; any changes then made to the data in MS Access is automatically updated to the databases stored in MS SQL Server 7.
The instructions are as follows\textsuperscript{11}:

Create an ODBC
1. Go to the system’s \textbf{Control Panel}
2. Select \textbf{Administrative Tools}
3. Select \textbf{Data Sources (ODBC)}
4. Select tab \textbf{System DSN}
5. Select \textbf{Add}
6. Select \textbf{SQL Server} as the driver in which a data source is required
7. Select \textbf{Finish}

This will generate a wizard for creating a new data source to SQL Server.

Create a New Data Source to SQL Server (to MINTACS database)
8. Enter \textit{MINTACS} in the Name text field
9. Enter \textit{Bridge to MINTACS database} in the Description text field
10. Enter ’.’ in the Server text field
11. Select \textbf{Next}
12. SQL Server should verify the authenticity of the login ID; select \textbf{With Windows NT authentication using the network login ID}.
13. Select \textbf{Connect to SQL Server to obtain default settings for the additional configuration options}.
14. Select \textbf{Next}
15. Select \textbf{Change the default database to:}
16. Select \textit{MINTACS}
17. Select \textbf{Use ANSI quoted identifiers}
18. Select use \textbf{ANSI nulls, paddings and warnings}
19. Select \textbf{Next}
20. Accept default setting for this panel.
21. Select \textbf{Finish}
22. A window with the SQL Server configuration will be displayed. Select \textbf{Test Data Source} to ensure configuration is correct. If test is completed successfully select \textbf{OK}. If test is not successful revisit configuration setup by selecting \textbf{Back}.

Follow step 5 through to step 7 to create a new data source to SQL Server.

Create a New Data Source to SQL Server (to MINTACS_MWDS database)
23. Enter \textit{MINTACS RSDB} in the Name text field
24. Enter \textit{Bridge to MINTACS RSDB} in the Description text field
25. Enter ’.’ in the Server text field
26. Select \textbf{Next}

\textsuperscript{11} The instructions are based on the operator using a MS Windows XP Professional operating system and MS Access 2003. While it is not anticipated for the operator to have any difficulty implementing the given procedure if using other MS versions there is instruction on the internet to create ODBC bridges and MS Access functionality.
27. SQL Server should verify the authenticity of the login ID; select ‘With Windows NT authentication using the network login ID’. 
28. Select Connect to SQL Server to obtain default settings for the additional configuration options.
29. Select Next
30. Select Change the default database to:
31. Select MINTACS_MWDS
32. Select Use ANSI quoted identifiers
33. Select use ANSI nulls, paddings and warnings
34. Select Next
35. Accept default setting for this panel.
36. Select Finish
37. A window with the SQL Server configuration will be displayed. Select Test Data Source to ensure configuration is correct. If test is completed successfully select OK. If test is not successful revisit configuration setup by selecting Back.

For the ODBC Data Source Administrator; create a new MS Access database for each database an ODBC bridge was created for.
38. Open MS Access
39. Select File and New Blank Database
40. Name the database and save to user defined directory. It is suggested that the databases should be named after the databases stored on MS SQL Server. That is, the new databases saved as MINTACS.mdb and MINTAC_MWDS.mdb.

Import MINTACS tables into MS Access database:
41. Select File
42. Select Get External Data
43. Select Link Tables
44. Scroll down Files of type and select ODBC Databases ()
45. Select Machine Data Source
46. Select MINTACS
47. Select OK
48. Select ALL. The tables will be named dbo.TABLENAME.
49. Select OK
50. A table’s unique record identifier may be requested. Select the first column name in the list (would usually be identified with ID in the column name) OR ignore by selecting OK.
51. The tables in MS Access need to be labelled dbo_TABLENAME, for example, dbo_WAYPTLEG or dbo_CONTACT. This should be done automatically as part of this procedure.

Import MINTACS_MWDS tables into MS Access database:
52. Select File
53. Select Get External Data
54. Select Link Tables
55. Scroll down Files of type and select **ODBC Databases ()**
56. Select **Machine Data Source**
57. Select **MINTACS RSDB**
58. Select **OK**
59. **Select ALL.** The tables will be named dbo.TABLENAME.
60. Select **OK**
61. A table’s unique record identifier may be requested. Select the first column name in the list (would usually be identified with ID in the column name) OR ignore by selecting **OK**.
62. The tables in MS Access need to be labelled dbo_TABLENAME, for example, dbo_CONTACT. This should be done automatically as part of this procedure.

If any of the MS Access databases created are deleted the ODBC bridge does not need to be re-established.

When configuring the MINTACS databases within MINSTE select the two MS Access databases created during this process.

**B.2. MINSTE Source Packages**

The source packages for the MINSTE application are organised as follows:

- **MINSTE.datahandler:** all the code to handle the database connections and configuration is available from this package.
  - MINSTE.datahandler.mintacsDB: data handler functionality specific to the MINTACS database.
  - MINSTE.datahandler.mintacsRSDB: data handler functionality specific to the MINTACS_MWDS (RSDB) database.

- **MINSTE.function:** all the code to provide functionality for the MINSTE application.
  - MINSTE.function.configure: GUI panel to configure the database setting for connection to the MINTACS databases and SeeTrack database.
  - MINSTE.function.control: main panel providing access to all the functionality for MINSTE.
  - MINSTE.function.mintacs_contact_promote: provides the GUI panels, functionality and objects required to promote a contact from the database MINTACS_MWDS to the MINTACS database as a tactical mine object.
  - MINSTE.function.mintacs_xml_xt: provides the GUI panels, functionality and objects required to import an XML document into the MINTACS_MWDS database.
  - MINSTE.function.pma_xml_xt.SeeTrack: provides the GUI panels, data handler, functionality and objects required to export a mission and its contact data from the SeeTrack database to an XML document.
- MINSTE.gui: all the code for the parent class used for the GUI.
- MINSTE.util: contains the utility code.
Appendix C: MINSTE Class Diagram
C.1. MINSTE Class Diagram: Section C1
C.2. MINSTE Class Diagram: Section C2
C.3. MINSTE Class Diagram: Section C3
C.4. MINSTE Class Diagram: Section C4
C.5.  MINSTE Class Diagram: Section C5
C.6. MINSTE Class Diagram: Section C6
C.7. MINSTE Class Diagram: Section C7

DSTO-TN-0887

OpAreaExtent
  (From mintacs_contact_promote)
  package int extentID
  package String opArea
  package double topLeftLon
  package double topLeftLat
  package double bottomRightLon
  package double bottomRightLat
  package int AREA_OF_INTEREST = 0
  package int OPERATION_AREA = 1
  package String extentType

  Operations:
  public OpAreaExtent()
  public void setExtentID(int extentID)
  public int getExtentID()
  public void setOpArea(String opArea)
  public String getOpArea()
  public void setTopLeftLon(double topLeftLon)
  public double getTopLeftLon()
  public void setTopLeftLat(double topLeftLat)
  public double getTopLeftLat()
  public void setBottomRightLon(double bottomRightLon)
  public double getBottomRightLon()
  public void setBottomRightLat(double bottomRightLat)
  public double getBottomRightLat()
  public void setExtentType(String extentType)
  public String getExtentType()

Asset
  (From mintacs_contact_promote)
  package String assetName
  package String assetID
  package String assetCallSign

  Operations:
  public Asset(String assetName, String assetID, String assetCallSign)
  public String getAssetName()
  public String getAssetID()
  public String getAssetCallSign()

ContactTableModel
  (From mintacs_contact_promote)
  package Vector contactVector

  Operations:
  public ContactTableModel(Vector contactVector)
  public int getColumnCount()
  public int getRowCount()
  public Object getVertical(int row, int col)
  public Object getHorizontal(int row)
  public void setValueAt(Object value, int row, int col)
  public String getColumnName(int col)
C.8. MINSTE Class Diagram: Section C8
DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION

USER GUIDE FOR MINTACS SEETRACK EXCHANGE (MINSTE)

The computer program MINTACS SeeTrack Exchange (MINSTE) interface was developed to support the automated data transfer to the RAN Mine Warfare Tactical Decision Aid MINTACS from SeeTrack, a post-mission analysis tool for data collected by towed or self-propelled (unmanned) side-scan sonar systems in support of military operations such as reconnaissance of sea routes for detection of mine-like objects. This document is a detailed technical user manual for the MINSTE software program. For a general overview of MINSTE design principles and objectives, the reader is referred to DSTO-GD-0574, "Design and Evaluation of the MINTACS SeeTrack Exchange (MINSTE) Concept Demonstrator".

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MINTACS
XML
Automatic data exchange