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**Pacific Northwest  
National Laboratory**

Operated by Battelle for the  
U.S. Department of Energy

**WebOSB™ – Operational  
Status Boards**

**PC Server Installation Guide**

**for**

**WebOSB Version 1.5.4**

**May 18, 2005**



**Battelle – Pacific Northwest Division  
Richland, Washington 99352**

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## Acknowledgment

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# **WebOSB – Operational Status Boards**

## **WebOSB PC Server Installation Guide**

**for**

### **WebOSB Version 1.5.4**

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# Preface

The **WebOSB™** – Operational Status Boards<sup>©(a)</sup> is an operations planning and response tool. The following documents were developed to support system users.

The **WebOSB Bill of Materials** defines the hardware, software, and communication requirements.

The **OSB PC Client Software Installation Guide** provides instructions for installing and configuring the OSB PC-client application. The OSB client software is used to design and administer the **WebOSB** system.

The **WebOSB UNIX Server Installation Guide** provides instructions for installing and configuring the UNIX server component of the **WebOSB**.

The **WebOSB PC Server Installation Guide** provides instructions for installing and configuring the OSB PC server component of the OSB client/server software package.

This **WebOSB Data Management Guide** provides the information needed to manage the data used to support the administrative, user-environment, database management, and operational capabilities of OSB.

The **WebOSB System Administration Guide** provides information on Notification Service, database security, and backup strategies for OSB.

The **OSB Online Help System** explains how to use the OSB application, which is designed to help operations personnel design and apply operational status boards.

The **WebOSB Help System** explains how to use the web-based WebOSB application of the **WebOSB**.

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# Acronyms and Definitions

DBMS	Database Management System
EOC	Emergency Operations Center
OSB	operational status boards PC-client application
PNWD	Battelle – Pacific Northwest Division
UNIX	Generic name for the server operating system
WebOSB	operational status boards web-based application
Web <b>OSB</b>	comprised of WebOSB and OSB

## 1.0 WebOSB PC Server Installation

This document includes the Web**OSB** PC server installation instructions required for the Web**OSB**<sup>™</sup> – Operational Status Boards<sup>®(a)</sup> released by Battelle – Pacific Northwest Division (PNWD).

Web**OSB** allows users to simultaneously add, edit, and view dynamic information via electronic status boards and shared reports. Web**OSB** allows a single status board to be updated by multiple users at multiple locations to support multiple hazards. New records and updates are immediately stored in a central database making all of the highly dynamic decisions and information available in real time to all of the users. An internal notification mechanism is used to apply a visual indicator on open status boards and shared reports to make users aware that new information or decisions have been made. Web**OSB** allows information to be automatically distributed across emergency operations centers (EOCs) and hazards – increasing the availability of information at an extended site. Web**OSB** consists of two operational status board applications: web-based WebOSB and PC-client based OSB.

The WebOSB application allows users to edit and view the contents of pre-defined status boards. WebOSB also allows users to add, edit, and view shared reports via the Internet Explorer. Using a secure ID, WebOSB enables multiple users to add and update highly dynamic information to assist decision makers during an emergency. WebOSB allows users in the field to be a part of an extended, virtual EOC. The WebOSB application resides on the web server.

OSB is a client/server administrative application that is physically located on a client PC. OSB includes the status board Designer feature which allows a local administrator to add new status boards and update the design of existing status boards. Newly created or updated status boards are immediately available to the extended user group via WebOSB. OSB not only includes the ability to add, edit, and view status boards and shared reports – it also includes extended query, reporting, and administrative functions.

For more information, see the Web**OSB** website (<http://webosb.pnl.gov>). If you have questions or need additional copies of this document, please contact

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For the Windows PC server installation, the PC server is the primary data and information storage and distribution component. Its primary software elements consist of the Oracle database management system (DBMS) and the Notification Service. The programs discussed require a PC environment on a Windows compatible PC running Windows 2000 or Windows XP.

The PC server installation release media is distributed on the **WebOSB** PC Server CD. The release media contains the necessary scripts and data to perform an initial installation or to upgrade an existing OSB application to the current version.

In addition, you will need Oracle media if you are installing Oracle 8.1.7.

**WebOSB** on a PC server has the following components:

1. An Oracle database to store the highly dynamic status board information
2. WebOSB web service that allows users to add, view, and edit dynamic to status board information via Internet Explorer.
3. A notification service that makes WebOSB users aware that changes have been made to status boards and / or shared reports.
4. The OSB client software that allows a local administrator to design and configure site specific operations status boards. Additionally the OSB client allows the administrator to manage user accounts and control privileges for access to specific status boards within WebOSB.

The following sections provide the steps and activities to be performed to install and configure each of the first three components of **WebOSB**. A separate CD and installation guide, *OSB PC Client Software Installation Guide for WebOSB v1.5.4*, is provided for the OSB administration tool.

The typical installation takes 2-4 hours to complete on a new PC server.

<b>Activity</b>	<b>Sections</b>	<b>Time/Minutes</b>
Installing Oracle 8.1.7	2.1 – 2.3	20 – 30
Building the Oracle Database	2.4 – 2.5	30 – 60
Creating Oracle database schemas and importing the OSB1 <b>WebOSB</b> database	2.4 – 2.9	30 – 60
Installing Tomcat and WebOSB services	3.0	10 – 20
Installing WebOSB Notification Service	4.0	5 – 15
Validation / Troubleshooting	5.0	10 – 60

## 2.0 Installation of WebOSB v1.5.4 Database

The following section contains instructions on the installation of an Oracle database and the configuration of the WebOSB v1.5.4 database on the system. Items that will be required to complete this installation are as follows:

- Oracle8i v8.1.7 Server or Personal Oracle Edition
- WebOSB v1.5.4 PC Server Installation CD
- WebOSB v1.5.4 PC Server *SITE* Database CD (optional).

### 2.1 Disk Space Required

The database requires that Oracle8i v8.1.7 database software be installed on the PC. The amount of disk space required for a minimal installation of these products is

- ~586 MB for Oracle8i or Personal Oracle8i
- ~500 MB-900 MB for WebOSB data files.

### 2.2 Installing Oracle8i Server or Personal Oracle Edition 8.1.7 and Patches

Complete the following the steps to Install Oracle8i Server or Personal Oracle Edition 8.1.7:

1. Insert the Oracle installation CD into the CD drive.
2. Select `Install/Deinstall Products` on the window that appears.

**Note:** If window does not start automatically upon inserting the CD, click `Start` → `Run`, and enter `<CD DRIVE>:\SETUP.EXE`.

3. Click `Next` in the Oracle Universal Installer – Welcome window.
4. Verify the destination `Name` and `Path` of the Oracle Home directory (typically `C:\ORACLE\ORA81`), and click `Next`.
5. Select Oracle8i or Personal Oracle8i Edition, and click `Next`.
6. Select `Custom` in Installation Types window, and click `Next`.
7. Select/deselect the following recommended components for the WebOSB database in the Available Product Components window.

- Oracle8i Server 8.1.7.0.0
- +  Oracle HTTP Server 1.3.12.0.1a
- +  Oracle Product Options 8.1.7.0.0
- +  Net 8 Products 8.1.7.0.0
- +  Oracle Utilities 8.1.7.0.0
- +  Oracle Java Products 8.1.7.0.0
- +  Oracle Enterprise Manager Products 8.1.7.0.0
- +  Oracle Configuration Assistants 8.1.7.0.0
- +  Oracle Development Tools 8.1.7.0.0
- Oracle Installation Products 8.1.7.0.0
  - Oracle Universal Installer 1.7.1.9.0
- +  Oracle Migration Workbench 1.3.0.0.0
- +  Oracle Services for Microsoft Transaction Server 8.1.7.0.0
- +  Oracle Administration Assistant for Windows NT 8.1.7.0.0
- +  Oracle8i Windows Documentation 8.1.7.0.0

Click `Next`.

8. Click `Next` in the Component Locations window.
9. Select `No` in the Create Database window, and click `Next`.
10. Click `Install` in the Summary window.
11. Click `Cancel` on the Net8 Configuration Assistant Welcome window that displays after the installation is complete.
12. Click `OK` on the Error window that follows.
13. Click `Next` on the Configuration Tools window.
14. Click `Exit` on the End of Installation window.

### **Installing Oracle8i Patch Set 8.1.7.4**

The Oracle8i patch set 8.1.7.4 must be installed after Oracle8i Server or Personal Oracle Edition 8.1.7.0.0 has been installed.

1. Click `Start`→`Run`, and enter `services.msc`
2. Stop all Oracle services that may be running. Oracle services start with `OracleOra`.
3. Insert the **WebOSB** PC Server Installation CD.

4. Click `Start` → `Programs` → `Oracle Installation Products` → `Universal Installer`.
5. Click `Next` on the `Welcome` window.
6. Browse to `<CD drive>:\Oracle8174\Disk1\stage\products.jar` for the `Source...Path`. Click `Next`.
7. Click `Install` on the `Summary` window.

**Note:** You may receive the following error message, if you did not stop the Oracle services that were running prior to this step.

Certain files which need to be reinstalled by Oracle Universal Installer are being used by one or more running services.

The following running services need to be shutdown:

OracleOraHome8iAgent  
OracleOraHome8iDataGatherer

\*Press "Help" for more information  
Press "Retry" to try again  
Press "Cancel" to stop this installation

8. Click `Exit` on the `End of Installation` window.

## 2.3 Configuring Oracle Network Components

Before the database instance can be installed, the Net8 components and Listener need to be configured. Complete the following steps to configure these.

### 2.3.1 Configuring SQLNet

1. Click `Start` → `Programs` → `Oracle Oracle-OraHome81` → `Network Administration` → `Net8 Assistant`.
2. Go to `Net8 Configuration` → `Local`, and select `Profile`.
3. Go to the `Naming` section, and select the `Methods` tab. Use only `TNSNAMES` as Selected `Methods`. To add or remove selected items, use the `<` and `>` buttons.
4. Click the `Oracle Names` tab, and enter `world` as the `Default Domain`.
5. Click `File` on the menu bar, and select `Save Network Configuration`.
6. Click on `File`, and select `Exit`.

## 2.3.2 Setting up Oracle Listener

1. Click `Start` → `Programs` → `Oracle Oracle-OraHome81` → `Network Administration` → `Net8 Configuration Assistant`.
2. Select `Listener Configuration` in the `Net8 Configuration Assistant: Welcome` window, and click `Next`.
3. Select `Add`, and click `Next`.
4. Use the default `Listener name`, `LISTENER`, and click `Next`.
5. Verify `TCP` is the only item in the `Selected Protocols` field on the `Select Protocols` window. Use the `<` and `>` buttons to add or remove `Selected Protocols`. Click `Next`.
6. Use the standard port number of `1521` for the `TCP/IP` port number. Click `Next`.
7. Select `No` for `Would you like to configure another listener?` Click `Next`.
8. Click `Next` for `Listener configuration complete!` You will be returned to the `Net8 Configuration Assistant: Welcome` window.
9. Click `Finish`.

## 2.3.3 Enabling NT Authentication

To enable NT Authentication, complete the following steps.

1. Use a text file editor (such as `WordPad`) to edit the `C:\Oracle\ora81\network\ADMIN\sqlnet.ora` file.
2. Add the following parameter: `SQLNET.AUTHENTICATION_SERVICES = (NTS)` to the list of parameters.
3. Save and close the file.

## 2.4 Building the Oracle Database

Complete the following steps to build the database for **WebOSB v1.5.4**.

1. Verify the user account you will use to build and administer the database is a member of the `ORA_DBA` group account. The user account that installed Oracle is added to this group automatically.

**Note:** If you are using domain authenticated accounts, the PC will need to be connected to the network for NT authentication to work.

2. Click `Start` → `Programs` → `Oracle Oracle-OraHome81` → `Database Administration` → `Database Configuration Assistant`.
3. Select `Create a database`, and click `Next`.
4. Select `Custom` for type of database to create, and click `Next`.
5. Select `Multipurpose for Primary` type of application that will be used. Click `Next`.
6. Enter a number for `concurrently connected users`, and click `Next`.

**Note:** Base this number on the number of PCs you expect to be using to the OSB application. The number needs to be at least 1 for the server itself.

7. Select `Dedicated Server Mode` for mode in which you want your database to operate by default. Click `Next`.
8. Deselect the `Oracle JServer`, and verify that only the following items are checked for the `Select Options` that will be configured for use in your database window.

`Advanced Replication`  
`SQL*Plus Help`

Click `Next`.

9. Enter `fi0.world` for the `Global Database Name`. `fi0` will be automatically entered for the `SID`. Accept the default `Initialization Filename` location. For `Compatible Parameter`, select `8.1.0`. **Do not select** “`Change Character Set`”. Click `Next`.

**Note:** If you are prompted to enter a password for the `Internal` privileged account, cancel the database creation, and verify Section 1.3.3, `Enabling NT Authentication`, was completed successfully. Restart this section at Step 1 after changes have been made.

10. Accept the default locations and parameters for the `Control Files` if you are installing on a system that has only one physical disk. If you have multiple disks, locate the control files on separate disks, whenever possible. To change the drive location, only change the drive letter and leave the file location path intact. Click `Next`.
11. Change each to the following for the `Size` parameter of the tablespaces. Each tablespace that is going to be created by the `Oracle Database Configuration Assistant` is represented by a tab in this window. Use the default `Name`, `File`, `Extent`, and `Storage` parameters for all tablespaces.

System - 100MB  
Tools - 3MB  
User - 3MB  
Rollback - 50MB  
Index - 3MB  
Temporary - 20MB

Click **Next**.

12. Accept the default location and parameters for the `Redo Logs`. If you have multiple disks, locate the `Redo Logs` on the separate disks, whenever possible. To change the drive location, only change the drive letter, and leave the file location path intact. Click **Next**.
13. Accept the defaults `Checkpoint Interval`, `Checkpoint Timeout`, and `Archive Log`. Click **Next**.
14. Accept the default `SGA` parameter information, and click **Next**.
15. Accept the default `Trace File Directory` locations, and click **Next**.
16. Check `Create database now`. Click **Finish**.
17. Click **Yes** on the Message box that follows to create the instance.

**Note:** The database creation process will take some time.

18. Click **OK** in the Oracle Database Configuration Assistant Alert window.

## 2.5 Creating the Database Schemas

**WebOSB** requires the creation of additional tables, schemas, and public rollback segments in the Oracle database. Complete the following steps to create the database schemas:

1. Copy the `osb` directory on the **WebOSB** v1.5.4 PC Server CD to a new directory on the server called `C:\osb`.

**Note:** `C:\osb` must be the installation directory otherwise the configuration would need to be drastically modified.

2. Copy the directories in the `OSB1 Database` directory on the **WebOSB** v1.5.4 PC Server CD. If you have a *SITE* database, copy the directories on your **WebOSB** v1.5.4 PC Server *SITE* Database CD to the `C:\osb` directory.
3. Locate the `C:\osb` directory using Windows Explorer, right-click on it with your mouse, and then select `Properties`.

4. Uncheck the Read-only in the Attribute section, and click Apply.
5. Select Apply changes to the folder, subfolders and files on the Confirm Attribute Changes window, and click OK to apply the changes.
6. Click OK to close the osb folder Properties window.
7. Browse to the C:\osb\eocdba directory.
8. Edit the cr\_db\_ts.sql file as necessary to ensure that the file names are in the correct locations, and modify, if necessary, the path locations for the FMAIN, FINDEX, and FLOB DATAFILES to be located in the ORADATA folders created by the instance installation. If you have multiple hard drives on which to install, preferably locate them on drives other than the drive where Oracle was installed. If you had three drives, for example:

Oracle installed drive	C:\ORACLE\ORA81
FMAIN	D:\ORACLE\ORADATA\FI0\FMAIN01.DBF
FLOB	D:\ORACLE\ORADATA\FI0\FLOB01.DBF
FINDEX	E:\ORACLE\ORADATA\FI0\FINDEX01.DBF

**Note:** If you changed the location of the datafiles, ensure the paths specified in the cr\_db\_ts.sql exist. If not, create them.

9. Change directory (cd) to the C:\osb\eocdba directory from the Command Prompt window.
10. Run the Master Create Database script by entering the following:

```
C:\osb\eocdba>sqlplus /nolog
SQL> @master_cr_db.sql
```

When prompted, enter <Sys Password>.

**Note:** The default sys password is change\_on\_install.

**Note:** This script creates the new tablespaces and schemas. You may have error messages stating that a table or sequence being dropped do not exist. Disregard these messages.

## 2.6 Importing User Data

The master\_cr\_db.sql script created the tables and users needed to operate the WebOSB database. The OSB1 user needs to be populated with data from an export in the eocdba directory. Perform this by entering the following:

1. Change to the `C:\osb\exports` directory from a command prompt window.

```
C:>cd c:\osb\exports
```

2. Import the data from the database export.

```
C:\osb\exports>imp osb1/osb1 file=osb1_data.dmp log=osb1_data_import.log
```

**Note:** If you received a custom Web**OSB** Data CD, this directory may contain multiple user data exports. Import each user database export as above substituting `osb1` with the name of the user on the export file. (Example: If the exports directory has a file called `abcd_data.dmp`, use the command `imp abcd/abcd file=abcd_data.dmp log=abcd_data_import.log`, and repeat this for each export.)

## 2.7 Enabling Rollback Segments

The database rollback segments which are created with the database are not enabled when the database starts. To ensure these will be enabled when the database is restarted complete the following.

1. Locate the Instance initialization file, `initfi0.ora`, which is located in the `<INSTALL DRIVE>:\oracle\admin\fi0\pfile`.
2. Edit the `initfi0.ora` with a text editor (such as WordPad). Enable private rollback segments by removing the `#` from the beginning of the `rollback_segments` parameter, and modify it to match the following:

```
rollback_segments = (RBS0, RBS1, RBS2, RBS3, RBS4, RBS5)
```

## 2.8 Creating WebOSB Database Objects

From a command prompt in the `eocdba` directory, enter the following:

```
C:\osb\eocdba>sqlplus /nolog @master_cr.sql
```

You will need to watch its progress and occasionally press `Enter` when prompted. If errors occur, use `Ctrl-C` to stop the script so you can determine what caused the errors. Ignore the “Warning: Procedure created with compilation errors” messages.

## 2.9 Fixing EOC Table

Run the following script to correct the notification information and the server name in the database:

```
C:\osb\eocdba>fixeoc.bat
```

**Note:** If the system password is other than the default password (`manager`), modify `fixeoc.bat` to use the correct password.



## 3.0 WebOSB Installation

### 3.1 Installing Java 2 SE SDK

WebOSB requires the J2SDK be installed. Use the java installation program located on the WebOSB PC Server Installation CD-ROM to ensure WebOSB runs correctly.

#### 3.1.1 Running the Setup Program

1. Insert the WebOSB PC Server Installation CD into the CD-ROM drive.
2. Run the Java installation program `<CD drive>:\j2sdk-1_4_2_03-windows-i586-p.exe`.
3. Install the product in the default location `C:\j2sdk1.4.2_03`.
4. Register the Plug-in with Internet Explorer.
5. Copy the files `classes12.zip` and `nls_charset12.zip` located on the OSB Server CD `<CD-ROM>:/ext` directory to the `C:\j2sdk1.4.2_03\jre\lib\ext` directory.

#### 3.1.2 Configuring the Environment

1. Click `Start`→`Control Panel`→`System`.
2. Select the `Advanced` tab, and click on `Environment Variables`.
3. Click on `PATH` in the `System variables` section, and click the `Edit` button below. Add `C:\j2sdk1.4.2_03\bin;` to the beginning of the `Variable value`, and click `OK`.

**Note:** Directories need be separated by semicolons (;)

4. Click `New` under `System variables`. In `Variable name`, enter `JAVA_HOME` and in `Variable value`, enter `C:\j2sdk1.4.2_03`. Click `OK`.
5. Click `OK` to close the `Environment Variables` widow.

### 3.2 Generating Secure Certificate

The website needs a secure certificate generated to allow secure connections. To generate a certificate for your web server, complete the following steps.

1. Click `Start`→`Run`, and enter the following in the `Open` box:

```
%JAVA_HOME%\bin\keytool -genkey -alias tomcat -keyalg RSA -keystore  
C:\WINDOWS\system32\config\systemprofile\.keystore
```

2. Enter the password `changeit`, when prompted for the keystore password.
3. Enter the name of the server and fully qualified domain (i.e., `acme.com`) you are installing on when prompted for “What is your first and last name?”.
4. Answer the remaining questions as asked.
5. Press `Enter` at the `Enter key password for <tomcat>` prompt.

### **3.3 Installing and Restarting Jakarta-Tomcat Web Server**

1. Insert the **WebOSB** Server Installation CD into the CD-ROM drive.
2. Run the Jakarta-Tomcat installation program `<CD drive>:\jakarta-tomcat-4.1.30.exe`.
3. Click `OK` as the Apache Tomcat should use the Java Installed in `C:\j2sdk1.4.2_03`.
4. Check the `NT Service` option in the optional components, and click `Next`.
5. Select an installation directory or use the default, and click `Install`.
6. Click `skip` in the Testing Installer Options.
7. Click `close` when setup has completed.
8. Copy the `<CD drive>:\conf\server.xml` to the Tomcat 4.1 installation `conf` directory. The default location is `C:\Program Files\Apache Group\Tomcat 4.1\conf`.

### **Restarting Apache Tomcat 4.1 Service**

1. Click `Start`→`Run`, and enter `services.msc`.
2. Click on the Apache Tomcat 4.1 service, the `Action` menu item, and click `Restart`.

## 4.0 WebOSB Event Notification Service

The WebOSB application uses FEMIS Event Notification application to notify a client when data has been modified. The web service requires a Java application which communicates with FEMIS Event Notification and notifies web users of data changes. The FEMIS Event application and WebOSB Java application run as services on the WebOSB PC Server.

**Note:** If you are installing using the OSB1 database, the service names installed will be FemisEvent9021 and OSB1WebNotify. If you have a *SITE* database CD, a FemisEvent and WebOSB Notification service is installed for each data owner.

### 4.1 FemisEvent Service Installation

The FemisEvent service executes the `srvany.exe` program in the `C:\osb\bin` directory. The `srvany.exe` file is distributed by Microsoft with the Windows NT Resource Kit. The `srvany.exe` program executes the `femis_event.exe` applications with custom parameters allowing it to run as a service.

1. Run the `C:\osb\etc\femis_event.bat`. This will open a Command Prompt window to execute the batch command.
2. Verify the service started at the end of the batch script's execution; press any key to close the Command Prompt window.

### 4.2 WebOSB Notification Service Installation

The WebNotify service is installed using the Java Service Wrapper program distributed by <http://wrapper.tanukisoftware.org>.

1. Open the folder `C:\osb\webnotify` using Windows Explorer.
2. Use a text file editor (such as WordPad) to edit the `OSB1wrapper.conf` file.

**Note:** If you are using a custom data CD, there will be a `NAMEwrapper.conf` for each data owner installed. Modify each file as stated in Step 3, and start each service when doing Step 6.

3. Modify the `wrapper.app.parameter.4=https://localhost`, and change `localhost` to be your `computername.domain` (i.e., `osb1server.acme.com`).
4. Install the Service by running the `InstallClientInfo-NT.bat` batch file.

5. Click `Start`→`Run`, and enter `services.msc`.
6. Click on the `WebOSB OSB1 Notification` service, the `Action` menu item, and click `Start`.

## 4.3 Connecting to the URL

Verify you can connect to the website.

1. Open Internet Explorer by selecting `Start`→`Programs`→`Internet Explorer`.
2. Enter `https://<server.domain>/webosb` in the address menu. **Be sure to substitute** your server and domain in the address. Click `Go`.

If you get a security alert indicating the URL is not from a trusted authority, click `Yes` to proceed.

**Note:** To avoid this message in the future, when the Alert appears, click `View Certificate`, and then click `Install Certificate`. Follow the prompts in the Certificate Import Wizard to add the certificate to your system.

3. Use the OSB1 database default user name of `admin` with the password `femis` to enter the website. If you have a custom database, this account may not exist.

## 5.0 Checking the WebOSB Installation

The OSB1 Web**OSB** database comes with a default user and sample status boards that can be used to validate the installation of Web**OSB** on your PC server. These sample status boards also allow you to get a hands-on feel for the functionality and use of Web**OSB**.

### 5.1 Validating the WebOSB Installation

1. Open Internet Explorer.
2. Access the Web**OSB** web-based services on the PC server by entering the name of the server and WebOSB service. The default access path for Web**OSB** is provided below:

```
https:// <server.domain>/webosb
```

This will bring up the Web**OSB** login screen.

3. Login to Web**OSB** using the demonstration user code and password.

```
rjc / femis
```

This will place you in the Select Mode window.

4. Click the `Get List` button to see the two demonstration status boards provided in the OSB1 Web**OSB** database.

### 5.2 Troubleshooting Web Page Error

If you receive a web page error after attempting to log in (`java.lang.NoClassDefFoundError: oracle/jdbc/driver/OracleDriver`), verify the files on the Web**OSB** Server CD `ext` directory were copied to the `C:\j2sdk1.4.2_03\jre\lib\ext` directory and the `JAVA_HOME` environment variable is correct. If `JAVA_HOME` environment was not correct during the Apache-Tomcat installation, you will need to reinstall the Apache-Tomcat software after this variable is correct (see Section 3.3, Installing and Restarting Jakarta –Tomcat Service).