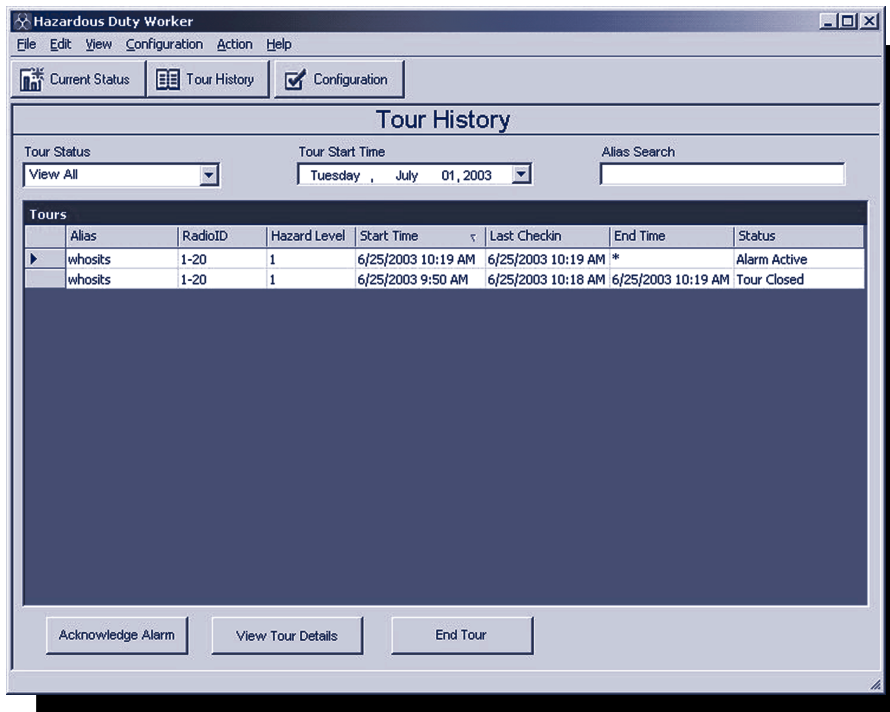


Lone Worker Monitoring for Zetron MPT 1327 Trunking Systems



GENERAL SYSTEM FEATURES

- Personnel accountability via MPT 1327 trunked radio system communications
- Microsoft Windows® Client/Server interface architecture
- Single or multiple personnel monitoring throughout a user's assigned work 'tour-of-duty'
- Compatible with other Zetron PC based dispatcher solutions*
- User friendly logon and logoff procedures simplifies monitoring operation
- Voice message prompts provides step-by-step guidance and verification of monitoring status
- Seamless operation with normal trunked communications activity
- User definable alarm messages
- Alarm notifications can be directed dispatcher or designated radio subscriber
- Alarm message identifies user in danger and alarm condition

*including ZIMPT, Zetron Integrated MPT 1327

Line Dispatcher, and Model 227 Desktop Dispatcher

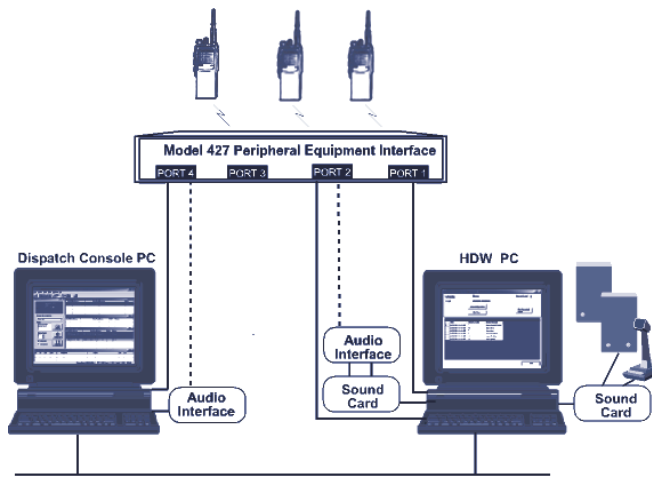
INTRODUCTION

The Hazardous Duty Worker (HDW) is a software/hardware solution for monitoring the status of workers in unattended or dangerous job situations. Typical applications include roaming security patrols, fuel tank and void inspections, and other situations where there may be life safety issues and a peer or supervisor cannot be present.

The software provides automated, periodic query by radio of the remote workers and automated responses to alarm indications. HDW supports up to 50 simultaneously logged-on radio users, and there is no limit to the duration of monitoring.

HDW is designed to support a distributed client/server architecture. The server portion of the system runs as a background service while the client provides an intuitive Microsoft Windows based GUI.

PRODUCT OVERVIEW



HDW Hardware Implementation

OPERATION

There are three distinct phases that HDW operation can be divided into, from a radio user's standpoint:

Tour Logon — The radio user checks in via HDW. The radio user and HDW confirm that two-way communication is established.

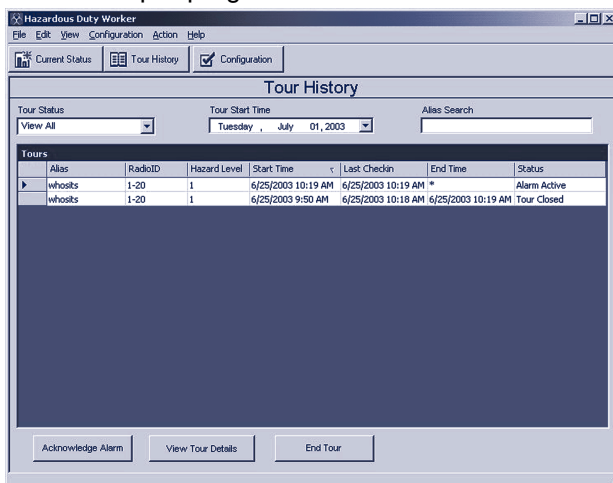
Tour In Progress — HDW monitors the radio user by transmitting a “status request” message at specified intervals and waiting a certain amount of time for the radio user to respond. Both of these time parameters are customer-definable.

Tour Logoff — The radio user notifies HDW of safe completion of the tour, and HDW ceases monitoring that radio user.

Logs of all activity and communications, plus all voice messages, are archived in a database and can be viewed through the client interface.

Tour Logon

The radio user who requires monitoring by HDW begins the process by initiating a validation sequence that verifies their radio equipment integrity, identity, and intention. This is done by sending a “logon” advisory code (SDM-2 text message) using the radio’s keypad and PTT or a pre-programmed button.



The radio user's identity is derived from the Radio ID received with the transmission. The message contains the tour type, which implies the hazard level and contact interval. Tour types are customer-definable.

HDW replies automatically with a voice message, using FOACS (Full Off-Air Call Setup). The message is chosen and recorded by the customer. The maximum length of the message is 15 seconds.

The radio user's radio rings, and the radio user must PTT to receive the call and hear the recorded message.

The radio user responds by recording a voice message briefly describing the intended tour. This message is stored in the database. The maximum length of the message is 30 seconds. The radio user must manually clear down the voice call at the end of the message to stop recording; otherwise HDW will automatically record for the full 30 seconds.

HDW, upon the logon attempt, replies by sending a “Logged on” text message. The message text includes the tour logon message and informs the radio user that their logon request has been received, processed, and accepted.

Response Advisory Codes

Advisory Code	Title	Description
Logged Off	Logoff Ack	Logoff request has been acknowledged.
Logged On	Logon Ack	Logon request has been acknowledged.
Logon Denied	Logon Denied	The radio user was not registered with the system.
Standby	Logon Standby	Another user is currently leaving a voice message.
No response	No response	No response was received from radio user.
No radio	Radio Unavailable	No response from was received from the Radio.
Send Status	Status Request	The HDW is requesting an update on the status.

HDW will fail to reply under any of the following conditions, resulting in no call acknowledgement and therefore no go-ahead for the tour:

- radio availability failure
- radio engaged in call (busy)
- no-answer timeout (rings with no answer)
- queue timeout (system places call in queue and queue hold timer expires)
- system overload (no resources available to process call)

Tour In Progress

After completing the tour logon phase, HDW periodically and automatically polls the radio user with a FOACS (Full Off-Air Call Setup) voice call requesting the user to report his status. The user must respond with an “all is well” advisory code using the radio’s keypad and PTT or a preprogrammed button.

Lack of response within a certain amount of time causes HDW to ring the radio. If the radio user does not answer within a certain amount of time, HDW tries again to make contact. The number of retries and the interval between them are determined by the tour type.

Tour Setup

Title	Hazard Level	Contact Interval	Retry Attempts
▶ Default Tour	1	10	3
*			

Save Delete Cancel

The HDW timers are reset every time an “all is well” advisory code is received. Failure of the radio user to respond in accordance with the parameters specified in the tour type generates an alarm condition.

Tour Logoff

At the end of the tour, the monitored radio user transmits a “log off” text message.

HDW acknowledges with a “logged off” message, changes the tour status to Closed, and stops monitoring.

Alarm Notifications

User-defined HDW alarm messages are sent in SDM-2 format to the dispatch console or to a designated mobile radio and include the ID and the alarm condition of the worker.

The dispatcher needs to log on to the HDW client at the HDW PC and manually acknowledge the alarm, in order to stop further notifications of the same alarm. This action resets the HDW timers.

If the dispatcher does not acknowledge the alarm within a certain time, HDW sends a second alarm notification and plays an audible siren alert from the HDW PC.

Hazardous Duty Worker – Tour Details

whosits Status Hazard Level 1

1-20 Alarm Active

Acknowledge Alarm Play Recorded Logon

End Tour

Tour Details

Time	Advisory Code	Status Message
▶ 6/25/2003 10:20 AM	*	Alarm Dispatch Failed
6/25/2003 10:20 AM	911	Alarm Active
6/25/2003 10:19 AM	*	Tour Active
6/25/2003 10:19 AM	*	Voice Recorded
6/25/2003 10:19 AM	111	Logon Pending
6/25/2003 10:19 AM	111	Tour Opened

Exit

The alarm notification will be repeated as necessary until there is some human interaction to acknowledge the alarm. There is no timeout on this process.

GRAPHICAL USER INTERFACE

The Alarming Tours window lists tours that are currently in an alarm condition. **Alias** and **Radio ID** are those of the radio user who is in the alarm condition. **Hazard Level** is that indicated by the tour type. **Last Checkin** is the time that HDW last received a condition update from the radio user. **Status** is that of the tour. Aliases, radio IDs, hazard level codes, and statuses are customer-definable.

Hazardous Duty Worker

File Edit View Configuration Action Help

Current Status Tour History Configuration

Current Status

Active Alarms

Active Tours 1 Active Alarms 1

Alias Search

Alarming Tours	Alias	RadioID	Hazard Level	Tour Start	Last Checkin	Status
▶ whosits	whosits	1-20	1	6/25/2003 10:19 AM	6/25/2003 10:19 AM	Alarm Active

Acknowledge Alarm View Tour Details Play Recorded Logon

The Tour Details screen displays details about the tour selected on either the Current Status screen or the Tour History screen. The details include all transactions that have occurred up to this point in the tour (if you are viewing details about an active alarm on the Current Status screen), or while the tour was active (if you are viewing details about a closed tour on the Tour History screen). Advisory Codes and their corresponding Status Messages indicate the status reported by the radio user or HDW at the given Time and can be customized by the user.

SPECIFICATIONS

Note: Computer configured to below specifications is supplied by Zetron

Computer	PC dedicated to running the HDW Program	CD Drive	Required for installation only
Processor	Intel Pentium or equivalent, x86-class, 500-MHz CPU minimum. Pentium 4, 2-GHz CPU recommended	User Input	Keyboard and mouse
Operating System	Windows 2000 with Service Pack 3 minimum, Windows XP Professional with Service Pack 1a recommended	Disk Space	Up to 350 MB for installation (including the software listed under Other below), plus 2 MB per day for each radio user being monitored (for logs and sound files), plus space for log and message archiving as desired. A 40-GB hard disk should suffice.
RAM	128 MB minimum, 256 MB recommended	Network	TCP/IP over Ethernet. An Ethernet card is required even if the HDW PC is not connected to a network
Monitor	1024 x 768 x 16-bit color minimum	Ports	Access to two MAP27 ports on the Model 427 Peripheral Equipment Interface.
Audio	The Sound Recorder program (which ships with Windows), to be used for recording and playing voice messages. Messages will be stored as Wave Sound files (*.wav) Two "SoundBlaster Live!" or compatible sound cards, one as the default sound card for general Windows use and one dedicated to the radio interface. Both must support Full Duplex mode. Microphone for recording outgoing messages	Other	Two available serial ports on the PC to connect to the two M427 ports Microsoft SQL Server Desktop Engine (MSDE) 2000. Microsoft DirectX 9.0a. Microsoft .NET Framework 1.1. If not already installed, these are installed automatically by the HDW setup program. They are included in the Disk Space recommendation.