Electronic Mustering
Enhancing Work Force Protection

White Paper
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For
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Electronic Mustering – Enhancing Work Force Protection

Introduction

Accounting for people during an Industrial emergency is foremost in the minds of safety officers and company principles. It is considered a fiduciary duty. Lives can be saved through rapid implementation of a search for missing personnel. Furthermore, instantly knowing that everybody is safe provides “peace of mind” and frees resources to mitigate the emergency.

In the past, counting people during and after an emergency was typically carried out by a rollcall at a central assembly location or muster station. If a person did not say “here” a search was started. To ensure accuracy someone had to keep track of who should be there; a complicated task on industrial sites where employees, contractors and visitors enter and exit indiscriminately. Also, there is further complexity when personnel can report to multiple muster stations.

Electronic mustering provides significant advantages. It is accomplished by automatically monitoring who is on a site or in a facility. And then upon an emergency, all personnel swipe a card at any available muster station. Some benefits of electronic mustering are as follows:

1) Immediately obtain muster reports of “who is missing” (who did not report to a muster station)
   a. One click at any computer terminal or mobile device (from anywhere in the world) will indicate “who is missing” and “who is safe”.
   b. Muster reports can be designated by specific supervisors.
2) A time stamp of the emergency alarm and when personnel report is provided.
3) At any time, reports of “who is on site” and the total number of employees or contractors on site is available.
4) Muster Reports can be accessed centrally via a web browser. (out of arms way)
5) One centralized system can support multiple sites
6) Easily scalable to protect a few personnel or thousands

A Typical Scenario Using Electronic Mustering

Entry and exit of employees, contractors and visitors is monitored on an on-going basis. This is accomplished by use of turnstiles or other methods that ensure personnel use their access / identification cards for entry and exit. (this can parallel a company’s security requirements).

A simple daily check is executed to ensure that the “IN” / “OUT” status tables are accurate. This will identify personnel who did not present a card to exit the premises. The location (“IN” / “OUT” status) of these individuals is then reset and typically a follow-up ensues to ensure future compliance with the safety procedures. (and compliance with security procedures)

Upon an emergency, personnel are directed to muster stations where they scan their access / identification card. (typically, emergency procedures are printed on the card)
Supervisors (those responsible for specific people during an emergency) run reports; hard copy or on mobile devices.

The first section of the report shows “who is missing” (Not Accounted For), and provides information on the missing person’s last known location and their mobile telephone number. The second section indicates “who is safe” (Accounted For)

Action is then taken based upon the results of the report.

A typical muster report showing “who is missing”

**Versatility in the Software Set-up is Important**

Effectiveness of electronic mustering relies on the ability to provide flexible parameters that will match a company’s structure and mustering requirements. The following is required:

**Site**

The site where必须ering is required. There could be multiple sites around the world.

**Report Type**

There are Three report types for effective muster control.

1) Upon an emergency, “Who is Missing” and “Who is Safe”, by supervisor
2) “Who is IN”, or “Who is OUT” at a specific time, by location. (includes counts)
3) Where is a person or group of people at a specific time.
<table>
<thead>
<tr>
<th><strong>Zone Group</strong></th>
<th>Definitions of areas or zones within a site where monitoring of location status is required. This will define the muster station or multiple muster stations and areas where a periodic count is required.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Zone Group Exclusions</strong></td>
<td>Further refinement of definitions of areas or zones within a site where monitoring of location status is required. For example, you can exclude people from a report that are OUT of a specific area and have left the site. But you may not want to exclude those that are OUT of a specific area but have not left the site.</td>
</tr>
<tr>
<td><strong>Access Groups</strong></td>
<td>Groups of people that are analyzed (for IN or OUT status) in a specific report. These groups are usually based upon similarities in the authorization to enter a zones or areas.</td>
</tr>
<tr>
<td><strong>User Categories</strong></td>
<td>Further definition of people that will be analyzed in a specific report. This list would often be used to define types of people such as a contractor or employee. Categories can also define positions of people, such as trades people or management.</td>
</tr>
</tbody>
</table>
The following is an example of how an electronic muster report is easily designed for a specific muster station and for a specific supervisor. Once designed, the report is named and implemented as required. In this example, the Access Group chosen is Muster-Ops. When an individual is registered on the system, they will be assigned to one or more access groups. By assigning a person to Muster-Ops, their “Accounted For” “Not Accounted For” status will be shown to anyone running the Operations Supervisor report.

Design of a muster report
The following is an example of how a report is easily configured to show “Who is IN” at a specific time. In this example, the Zone Group defines the Maintenance Area. All Access Groups are chosen which means all personnel in the system’s database will be analyzed. By excluding the D&D property, and those that have left the site, only those that are in the Maintenance Area will be reported. Any person who runs the “Who is in Maintenance” report will see a total count and the names of those in maintenance.

**Design of a “Who is in an Area” Report**

**Versatility in the Physical Set-up is Important**

Physical set-up of muster stations must be versatile to allow placement of a station in safe areas across a complete enterprise.

The following are characteristics of electronic mustering that provides the necessary flexibility.

- The existing IP network can be utilized to support the scanning locations.
- The hardware must withstand extreme temperatures.
- The muster station must be able to operate wirelessly and without grid power.
- Addition of future muster stations is easy - consider both physical and software set-up.
- Access / Identification cards must withstand extreme temperatures.
- Design and print capabilities on access/identification cards is available
Advanced Features for Electronic Mustering

Due to the nature of electronic mustering various features are available that provides enhanced usability and reliability. The following are some of these features:

Location of Personnel

Sometimes it is important to provide the location of one person or a group of people. Electronic mustering provides extreme flexibility by allowing a search using the following search parameters.

<table>
<thead>
<tr>
<th>Search Parameter</th>
<th>Provide Location Status of</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name</td>
<td>an individual or multiple people based upon their first name</td>
</tr>
<tr>
<td>Last Name</td>
<td>an individual or multiple people based upon their last name</td>
</tr>
<tr>
<td>User Category</td>
<td>a type of person</td>
</tr>
<tr>
<td>Access Group</td>
<td>a group based upon their authorization level</td>
</tr>
<tr>
<td>Zone Group</td>
<td>a group based upon an area</td>
</tr>
<tr>
<td>Specific Door</td>
<td>a group based upon a specific door</td>
</tr>
<tr>
<td>In / Out Status</td>
<td>a group based upon their “IN” or “Out” status</td>
</tr>
<tr>
<td>Time / Date</td>
<td>a group based upon the time and date</td>
</tr>
<tr>
<td>Telephone Number</td>
<td>an individual based upon their phone number</td>
</tr>
<tr>
<td>Email Address</td>
<td>an individual based upon their email address</td>
</tr>
<tr>
<td>Custom Fields</td>
<td>an individual or group based upon a user created field</td>
</tr>
</tbody>
</table>

A report showing where personnel are located
Multiple Muster Stations

Often there is more than one location that is safe. Electronic mustering allows people to congregate in numerous locations, assuring they get to safety as fast as possible. A supervisor has rapid visibility into the safety of each person. Unlike manual systems, there is absolutely no extra complexity in managing a muster event when there are multiple muster stations. The electronic mustering system will not only indicate that a person is “Accounted For” or “Unaccounted For” but it will provide the location of each person and the total counts at each muster station.

System Redundancy (high availability)

Electronic mustering is based upon communication between end devices (card readers / scanners) and a server (a master / primary server). The server will keep track of the “IN” and “OUT” status of personnel. Should this server ever fail, secondary servers that are fully synchronized with the main server will register the necessary status. Once the master server returns to normal operation then all status information will be restored to the master server.

Remote Mustering (out of arms way)

A Web Browser is utilized to operate all functions of the electronic mustering system. Upon an emergency event alarm messages can be sent to appropriate parties to instruct them to immediately run muster reports. These people can be located anywhere. It is also possible to physically locate the master server and back-up servers away from the industrial site where mustering is necessary.

Mustering of Multiple Sites from a central location

Electronic mustering can effectively be monitored at a central location for numerous facilities. A operation that has multiple facilities can mitigate costs of operating a system to safe guard their workforce.

Adjacent Features

Once installed, the hardware and software for electronic mustering is the same set of components that provides features that will enhance operations and security. The following are some of these features.

Attendance

Reports are available that show the total time of attendance per day (or per any period) of each person. These reports can be run per Category (contractor for example) or Access Group and can be refined as to the attendance in specific areas. Detail of the “IN” and “Out” times of individuals or a summary of the total “IN” or “OUT” is available. This feature is often used to verify contractor billing.
Access Control
The card readers and supporting hardware that perform the mustering function, also have built in capability to lock and unlock doors, either through the presentation of an authorized card or through a schedule. Thousands of doors in one facility or across multiple facilities can be controlled. By use of the sophisticated alarm monitoring functions and reporting features security of an enterprise can be greatly enhanced.

Summary
Upon an industrial emergency event, electronic mustering enhances an enterprise’s ability to know “who is missing” and “who is safe” and to quickly initiate lifesaving procedures if necessary.

The Freedom Mustering and Access Control System by Viscount Systems Inc. provides electronic mustering for small localized sites to multiple sites across an enterprise.

The following two pages provides information on the superiority of the Freedom electronic muster solution.
Small Number of Muster Location – Multiple Sites

**Freedom Mustering & Access Control**

- **Typical Application**
  - Fenced Construction Sites
  - Remote Oil and Gas Sites

- **Remote Management**
  - Cloud or hosted at head office
  - Multiple Sites
  - Outdoor equipment rated at -35°C

- **Networking**
  - IP

- **Micro Server**
  - Wired or Wireless Connectivity

- **Entry**
  - Card Readers, Local or Remote Management

- **Exit**
  - Muster Reader 1
  - Muster Reader 2

**Electronics Mustering**

- One integrated system for access control, security and mustering
  - Alternative solutions rely on 3rd party integration – version compatibility is a challenge

- Outdoor components are fixed and do not require supervision (mobile is available)
  - Alternative solutions utilize 3rd party handheld readers held by supervisors

- Cost effective expandability to multiple muster locations
  - Alternative solutions must implement very expensive hardware

- Outdoor equipment is rated for harsh climates
  - Alternative solutions require heated cabinets for outdoor applications.

- Expansion to 1000s of readers, 100s of muster points and locations is supported

- Built-in method to keep muster tables (who is on a site) current
  - Man traps and turnstiles are not always necessary

- Attendance records by group

- Total count of people on site

- “Who is on Site” reports

- Personnel locator
  - (note: requires access control implementation)

- Comprehensive Emergency Mustering
  - Who is missing
  - Last location reported
  - Telephone number of those missing
  - Time of Emergency Alarm & time of reporting to station after alarm
  - used for emergency mustering drills
  - Who is present
  - Hardened solutions available using well thought-out failure recovery plans.
Complex Musterling—Multiple Large Sites

Freedom Musterling & Access Control

Typical Application
- Industrial Facilities

- One integrated system for access control, security and mustering
  Alternative solutions rely on 3rd party integration – version compatibility is a challenge

- Outdoor components are fixed and do not require supervision (mobile is available)
  Alternative solutions utilize 3rd party handheld readers held by supervisors

- Cost effective expandability to multiple muster locations
  Alternative solutions must implement very expensive hardware

- Outdoor equipment is rated for harsh climates
  Alternative solutions require heated cabinets for outdoor applications.

- Expansion to 1000s of users, 100s of muster points and locations is supported

- Nested areas is supported.

- Built-in method to keep muster tables (who is on a site) current
  Man traps and turnstiles are not always necessary

- Attendance records per area by group

- Total count of people on site or in an area

- “Who is on Site” or “Who is in an area” reports

- Personnel locator. (note: requires access control implementation)

- Comprehensive Emergency Mustering
  Who is missing
  Last location reported
  Telephone number of those missing
  Time of Emergency Alarm & time of reporting to station after alarm
  used for emergency musterling drills

- Who is present
  Utilize an entry reader as a muster reader upon an emergency
  Hardened solutions available using well thought-out failure recovery plans.

Electronic Mustering

Viscount Systems Inc