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|  | **I-ISMS Implementation Revision** 1 |

**NP Factory, Ltd.**

**Factory Floor**

**Industrial Information Security Management System**

Business Continuity Plan - <<Focus Area>>

Nathan Pocock

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| **I-ISMS Implementation Revision** 1 (102) | **Industrial Information Security Management System**  Business Continuity Plan - <<Focus Area>>  Editor: *Editor Name (custom)*  Authors: *Nathan Pocock* |

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|  | **NP Factory, Ltd.**  [Company Address]  Factory Floor  I-ISMS Implementation  704-491-5840  Manager Pocock |

Executive Summary

Provides a framework for the rapid generation of a business continuity plan in the event of a catastrophic failure that completely disrupts the industrial automation and production capabilities.

Revision History

|  |  |  |
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| Revision | Author | Date |
| Initial creation | Nathan Pocock | 14-Sep-16 |
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# 

# Instructions

Please complete the following steps to expedite the development of your business continuity plan:

1. Determine your needs first.  
   *For example, if you have multiple production lines then you might consider creating one of these documents for each, e.g. production line #1 = paint production; production line #2 = paint can production; production line #3 = canning & labeling etc*.
2. Open the Document Properties and modify the Title; click the “Custom Properties” tab and then modify all settings. Click Ok to close properties.
3. Read and revise the remainder of the document, as necessary.
4. Complete ALL of the tables in the *Appendices* starting on page 18
5. Press CTRL+A and then hit F9 to update the document references and page numbering.

Lastly, delete this page and then save the document.

# Introduction

This business continuity / disaster recovery plan was developed to minimize the losses incurred in the event that a critical system/process becomes offline, unresponsive, or critically damaged, etc.; and to expedite the restoration of normal production capabilities as soon and efficiently as possible.

[Is this BCP/DRP specific to a production line, department, or process? If so, briefly describe it here]

## Emergency Contact Information

In the event of an emergency, contact these **PRIMARY CONTACTS** immediately:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Rank | Name | Role | Cell Phone | Email |
| 1 | Nathan Pocock | Primary Contact | 704-491-5840 | nathanpocck@hotmail.com |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |
| 5 |  |  |  |  |

Significant disasters may require notifying other employees. See *Employee Telephone Lists*, on page 18.

## Emergency Services Contact Information

The following resources may be needed in the event of a disaster.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Organization | Contact | Phone | Email | Reason |
| Police |  | 911 |  | Criminal activity only |
| Fire |  | 911 |  | Fire / explosion  Chemical exposure  Medical |
| FBI |  |  |  | Cyber-attack |
|  |  |  |  |  |

# Overview

## Objectives

The primary objectives are:

* **Establish safety** to prevent physical harm to personnel, equipment, or property.
* **Prevent further issues** from occurring, such as spread of fire, flooding, chemical spill, etc.
* **Salvage** as muchas possible, i.e. equipment, raw materials, etc.
* **Restore production** as quickly, safely, and as efficiently as possible.

## Loss of Technology Tolerances

Some downtime is inevitable and must be corrected immediately. The company can expect to weather some losses during periods of non-productivity. The following sub-sections describe the maximum extent to what can be tolerated.

### Computing/Networking Systems

The following table describes the maximum tolerances on the computing/networking systems before significant losses are too significant to recover from.

**Tip**: when completing this table think primarily of control (SCADA) and other such applications.

|  |  |  |
| --- | --- | --- |
| System | Tolerable Outage | Tolerable Data Loss |
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### Industrial Equipment

The following table describes the maximum tolerances of the industrial equipment/machines before significant losses are too significant to recover from:

| Machine/Device | Tolerable Downtime | Tolerable Production Loss |
| --- | --- | --- |
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## Scope

This document is specific to the Factory Floor department only; specifically, the recovery of industrial equipment, localized network infrastructure, computer equipment and software systems (SCADA, databases, custom-interfaces, etc.) required for monitoring and control of production processes.

This document contains all phases of a business continuity / disaster recovery of production floor facilities in response the strategy (on page 13).

This document does not address temporary disruptions that are shorter in duration than those specified in *Loss of Technology* , on page 9.

## Assumptions

* This test-plan was carefully designed, reviewed, approved by a panel of experts, and is tested and verified as workable.
* This plan is periodically reviewed, maintained, validated, and tested.
* The functions and roles defined herein may only exist for the duration of the disaster recovery.

This document does not include, or take into consideration the following:

* Office/factory relocation
* Other aspects of the business, such as accounting, HR, sales, IT, shipping & receiving, etc.

## Roles and Responsibilities

The following list describes the roles and associated responsibilities:

| Role | Purpose | Responsibilities |
| --- | --- | --- |
| Principal Engineer | Leader, responsible for the Factory Floor department | * Assemble other groups * Lead |
| BC/DR Committee | Peers of experts whose knowledge and experience carry the most value | * Set the vision and direction of the plan * Review and approve this document * Assure plan accuracy and efficiency * Assure the safety of employees and business |
| BC/DR Manager | Responsible for the BC/DR management for the given department/process | * Assure employees receive awareness training * Assure BC/DR plan properly reflects needs of the department/process |
|  |  |  |

## Approval and Execution Authority

All revisions of this document must be reviewed and approved by the BC/DR Committee, who may approve/reject or require alternative plans prior to acceptance.

## Changes to the plan/responsibilities (Maintenance)

The ongoing maintenance of the Factory Floor department business continuity / disaster recovery plan is the responsibility of the department managers (see *Roles and Responsibilities*, on page 10).

Changes to this document must occur when:

* Review process identifies weaknesses that require correction
* To adapt to changes in equipment, configuration, or processes
* To re-align with corporate strategy

When changes occur, the revised document must be reviewed and approved, and distributed to all relevant locations and people.

## Plan testing procedures and responsibilities

The BC/DC Manager is responsible for conducting frequent simulation testing of this plan, which includes assembling a team of employees to conduct the test.

The execution of such testing should not impact the real production lines, or negatively impact employees that actively working and not involved in the testing.

The results of the testing must be documented and provided to the BC/DC Committee for review.

## Plan training procedures and responsibilities

The BC/DC Manager is responsible for ensuring the appropriate resources are trained and prepared to respond to a disaster using this plan. This may include any or all of the following:

* Simulation exercises
* Experimentation
* Training programs

## Distribution Record

This plan will be distributed to the following departments, locations, and/or individuals:

| Copy # | Location | Contact Responsible |
| --- | --- | --- |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
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# Strategy

## Process Recovery Priorities

The following table outlines the priorities for restoring processes in a production system.

Tip: In this table, think of the processes that would need to be restored, not the equipment! E.g. in-feed of raw materials first, followed by the next process, ending with out-feed or packaging, etc.

| Process Name | Equipment ID/Description | Priority (Hi, Med, Lo) | Max. Allowed Downtime |
| --- | --- | --- | --- |
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## Recovery Plan Phases:

The process of recovering the production abilities of NP Factory, Ltd. is split into 4 categories which should be conducted in sequential order.

### Disaster Occurrence

A disaster occurs that significantly impacts production. If, upon analysis, a decision is made to conduct disaster recovery, then this plan will be utilized, initial contact will be made with those individuals listed in *Emergency Contact Information*, on page 8.

Suppliers, vendors, customers, and strategic partners may require notification. See *Vendor Lists*, on page 19.

Once complete, the next phase will begin.

### Plan Activation

This plan is put into effect. The appropriate teams will form, enact any interim procedures/processes, and begin the process of restoring production capabilities. This phase may require a new production line to be spawned in the same location, or the relocation of production facilities to an alternate location[[1]](#footnote-1).

### Alternate Site/Line Operations

If production capabilities are moved to a new line (in the same or an alternate location) then work in this phase will be in the restoration of the final location of production facilities.

### Transition to Primary Site/Line

The final transition to the new/permanent production line/location.

## Restoration of Equipment, Configuration, Control, and Monitoring

The recovery of production floor capabilities requires multiple processes to occur, i.e.:

1. Restore industrial machinery
2. Restore control of industrial processes (PLCs, SCADA, and the network infrastructure)

See *Recovery Plan* on page 16.

# Recovery Teams

The recovery of production capabilities will be the result of the efforts from the teams defined herein.

## Recovery Team Descriptions

See *Recovery Teams List* (on page 23) for a list of recovery teams and their members and responsibilities.

## Personnel Notification

In the event of a disaster, employees must be notified as soon as possible via phone call. See *Employee Contact Table* on page 18.

Additional information can be provided to employees via the company intranet or website. Instructions will be provided to all employees.

# Recovery Plan

## Communications plan, priorities, and processes

Successful communications will expedite the recovery process ensuring:

* Overall status and progress is reported to the BCP/DRP primary contact (see *Roles and Responsibilities*, on page 10 )
* Stakeholders remain informed of progress
* Employees remain informed of progress and when they can expect to resume normal working operations.

The communications plan is on page 20.

## Restore Industrial Automation

The successful restoration of industrial machinery and processes requires:

* Careful provisioning of the machinery/device
* Restoring the configuration settings
* Ensuring safety of personnel
* Ensuring production efficiency

Restoration priorities and instructions available in section *Critical Industrial Hardware Resources* on page 21.

## Restore Network Infrastructure

The successful restoration of the network infrastructure is paramount to facilitate the operational control over the production processes, and requires:

* Restoring the network infrastructure: switches, cabling, routers, firewalls, etc.
* Restoring the network infrastructure configuration settings
* Assuring all connectivity between devices
* Ensuring safety of personnel and equipment.

Restoration priorities and instructions available in section *Critical Industrial Hardware Resources* on page 21.

## Restore Control/Monitoring Systems

Lastly, the successful restoration of the control systems and monitoring systems will:

* enable the production machinery to start its processes and commence production
* provide a safe working environment for personnel
* maintain the same level (or better) efficiency of production

Restoration priorities and instructions available in section *Critical Industrial Hardware Resources* on page 21

# Appendices [[2]](#endnote-1)

## Employee Telephone Lists

Figure 1 Employee Contact Table

| Name | Title | Office Phone | Home Phone | Cell | Email | Time Called | Comments |
| --- | --- | --- | --- | --- | --- | --- | --- |
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## Vendor Lists

Figure 2 Vendor Lists

| Vendor | Goods/Services Provided | Contact Name | Address | Phone | Email |
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## Communications Plan

Figure 3 Communications Plan

| Who | When | Step | Action | Who/completed |
| --- | --- | --- | --- | --- |
| Primary Contacts (See *Emergency Contact Information* on page 8) | Immediately | 1 | Obtain confirmation to enace business recovery and any further instructions |  |
|  |  | 2 | Provide regular updates on significant progress milestones or issues occur. |  |
|  | Daily | 3 | Provide status report |  |
|  | As required | 4 | When authorization is required to conduct a task |  |
|  |  |  |  |  |
| Employees | Immediately | 1 | Notify of the situation and what they need to do |  |
|  |  |  |  |  |
| Suppliers |  |  |  |  |
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| Distributors / Customers |  |  |  |  |
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## Critical Industrial Hardware Resources

Provide a list of the critical hardware required for monitoring and controlling the factory automation production.

Figure 4 Critical Hardware Resources

| Priority | Machine/Device/Appliance | Vendor | Settings Location | Instructions Location |
| --- | --- | --- | --- | --- |
|  | Network switches, cabling, etc. |  | [\\network\share\path\to\settings.cfg](file:///\\network\share\path\to\settings.cfg) | [\\network\share\path\to\recovery.docx](file:///\\network\share\path\to\recovery.docx) |
|  | SCADA PCs |  |  |  |
|  | Printers, Scanners, periphery |  |  |  |
|  | Industrial equipment #1 |  |  |  |
|  | Industrial equipment #2 |  |  |  |
|  | Industrial equipment #3 |  |  |  |
|  | PLC #1 |  |  |  |
|  | PLC #2 |  |  |  |
|  | Flow meter #1 |  |  |  |
|  | Etc. |  |  |  |
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## Critical Software Resources

Provide a list of the critical software products that are required for factory operations. This is not a list of all software for all PCs or per PC.

Figure 5 Critical Software Resources

| Priority | Software Application | Vendor | Platform | Media Location | Settings Location |
| --- | --- | --- | --- | --- | --- |
| 1 | SCADA #1 |  | Windows | [\\network\share\path\to\file.docx](file:///\\network\share\path\to\file.docx) | [\\network\share\path\to\settings.cfg](file:///\\network\share\path\to\settings.cfg) |
| 2 | OCP Server #1 |  | Windows | [\\network\share\path\to\file.docx](file:///\\network\share\path\to\file.docx) | [\\network\share\path\to\settings.cfg](file:///\\network\share\path\to\settings.cfg) |
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## Recovery Teams List

Figure 6 Recovery Teams List

| Team | Description | Process | Leader(s) | Responsibilities | Members |
| --- | --- | --- | --- | --- | --- |
| Team #1 | Containment | Paint production | Manager | Halt worsening Start clean-up | Person 1, person 2, person 3, etc. |
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## Recovery Tasks List

Figure 7 Recovery Tasks List

| Priority | Task | Estimate Time | Actual Time | Assignned To/at | Completed by/at | Comments |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | Communicate situation to primary contacts first, then key stakeholders, then suppliers, then employees, and finally distributors and customers.  See:   * Emergency Contact Information on page 8 * Employee Telephone Lists, 18 * Vendor Lists on page 19 |  |  |  |  |  |
| 2 | Contain disaster |  |  |  |  |  |
| 3 | Identify restoration location |  |  |  |  |  |
| 4 | Retrieve BCP/DRP |  |  |  |  |  |
| 5 | Assemble response teams  See Recovery Teams List on page 23 |  |  |  |  |  |
| 6 | Salvage and/or obtain required equipment, software, and all materials.  See:   * Critical Industrial Hardware Resources on page 21 * Critical Software Resources on page 22 |  |  |  |  |  |
| 7 | Restore machinery |  |  |  |  |  |
| 8 | Restore network communications |  |  |  |  |  |
| 9 | Restore computer systems for control and monitoring |  |  |  |  |  |
| 10 | … |  |  |  |  |  |
| 11 | … |  |  |  |  |  |
| 12 | Finalize new/full restored production line |  |  |  |  |  |

1. Alternate site locations would be covered in the primary organization’s business continuity planning. [↑](#footnote-ref-1)
2. Appendices based on BCP Template 2012 provided by Oklahoma Department of Human Services [↑](#endnote-ref-1)