

December 4, 2009

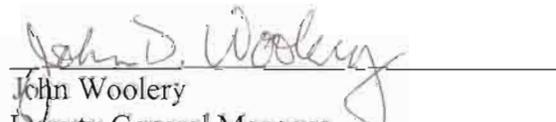
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Regarding: Memorandum of Understanding for the Deployment of CASTLE-PX 1.0

This Memorandum of Understanding (MOU) sets forth the terms and understanding between Lawrence Livermore National Laboratory and B&W Pantex associated with the deployment of CASTLE-PX 1.0. The signatures below represent agreement with the roles and responsibilities described herein and commitment to provide the resources necessary to fulfill these responsibilities. Any modifications to this MOU shall require concurrence from both parties with reissuance of signatures.


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Memorandum of Understanding for the Deployment of CASTLE-PX 1.0

Between:

Lawrence Livermore National Laboratory



and

B&W Pantex



December 4, 2009

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Table of Contents

1	PURPOSE AND OBJECTIVE	1
1.1	PARTIES TO THE AGREEMENT	1
1.2	COMMENCEMENT DATE	1
1.3	DURATION	1
1.4	REVIEW CYCLE	1
1.5	CASTLE-PX POINTS OF CONTACT	1
2	IT SUPPORT	2
2.1	ONGOING OPERATION AND MANAGEMENT OF CASTLE-PX	2
2.2	CASTLE-PX SYSTEM DATA SUPPORT	2
2.3	DEPLOYING CASTLE-PX APPLICATION UPDATES	3
2.3.1	<i>Deployment Testing</i>	4
2.3.2	<i>User Acceptance Testing</i>	4
2.4	DEPLOYING CASTLE-PX TECHNOLOGY STACK UPDATES	5
2.5	CASTLE-PX LAPTOPS AND LAPTOP MAINTENANCE	5
2.6	SET-UP OF A NEW CASTLE-PX LAPTOP	6
2.7	END USER SUPPORT	6
2.8	ACCESS TO TEAMFORGE	7
3	BACKUP AND RECOVERY	7
3.1	BACKUP OF CASTLE-PX SOURCE CODE	7
3.2	BACKUP OF CASTLE-PX SYSTEM DATA	7
3.3	RECOVERY	8
4	CASTLE-PX USER TRAINING	8
5	COORDINATION OF SQA DOCUMENTATION	8
6	METRICS	8
6.1	CUSTOMER REPORTED BUGS	8
6.2	CUSTOMER USAGE	9
	APPENDIX A: DEFINITIONS	10
	APPENDIX B: SUPPORT ASSUMPTIONS	11
B.1.	LLNL CASTLE-PX O&M TEAM	11
B.2.	PANTEX DESIGNATED IT RESOURCE	11
B.3.	PANTEX CASTLE-PX OWNER	11
B.4.	PANTEX CCB PARTICIPANTS	12
	APPENDIX C: CASTLE-PX ENVIRONMENT STANDARDS	13

1 Purpose and Objective

This document describes the activities associated with the deployment and ongoing maintenance of the CASTLE-PX software system at B&W Pantex. The activities described in this document provide the general conditions and expectations for services that shall be provided by B&W Pantex (PX) and the Lawrence Livermore National Laboratory (LLNL) to support the CASTLE-PX production deployment and all future releases of the software. This document is intended to clearly define the roles and responsibilities of the interested parties in the following areas:

- IT support
- Backup and recovery
- Training
- Maintenance of SQA documentation
- Metrics

1.1 Parties to the Agreement

This Memorandum of Understanding (MOU) is agreed to by LLNL, as represented by the Nuclear Weapon Engineering Program Director and Pantex, as represented by the Deputy General Manager for Operations.

1.2 Commencement Date

This MOU is effective upon receipt of CASTLE-PX 1.0 by the Pantex Plant and signatures of the parties to the agreement listed in Section 1.1 have been obtained.

1.3 Duration

This MOU remains in effect as long as CASTLE-PX is in use at Pantex and is being maintained by LLNL. This agreement assumes continued and sufficient Operations and Management funding from the Product Realization Integrated Digital Enterprise (PRIDE), or similar organization, to support relevant maintenance activities for CASTLE-PX.

1.4 Review Cycle

This MOU shall be reviewed annually or more frequently as needed due to project or funding changes. Subsequent reviews of the MOU shall be coordinated through the CASTLE-PX Point of Contact (POC) for each site (see Section 1.5).

1.5 CASTLE-PX Points of Contact

The following personnel shall serve as the CASTLE-PX POCs for each site:

LLNL: Associate Program Director, Stockpile Management for the Nuclear Weapon Engineering Program
Currently: Ron Streit, 925-422-7045

PX: Pantex CASTLE-PX owner¹
Currently: Marka Pepper, 806-477-4045

2 IT Support

The following sections define the IT-related support activities that shall be provided by LLNL and Pantex. These policies seek to encourage partnering and facilitation of communication between LLNL and Pantex when performing both system- and application-level maintenance functions of CASTLE-PX. These policies address both LLNL and Pantex responsibilities for supporting the application and the communication required to carry out these activities.

2.1 *Ongoing Operation and Management of CASTLE-PX*

LLNL: LLNL shall be responsible for the operation and management (O&M) of CASTLE-PX per the CASTLE-PX Operations and Management Plan including all changes to the source code and the database. Changes to the application shall only be made under the following conditions: CASTLE-Change Control Board (CCB) approved enhancements/code refactoring, bug fixes, and necessary policy-driven changes to the application.

PX: Pantex users shall be expected to inform the CASTLE-PX O&M team² of any bugs encountered while using the application. Users are also encouraged to request enhancements as needed to increase efficiency or better facilitate work practices. Change requests shall be done through the CASTLE-CCB, with representatives from both LLNL and Pantex. Pantex is responsible for providing CCB representatives³ from both Process Engineering and AB to participate in ongoing CCB meetings (see LLNL's Software Configuration Management Plan, LLNL-SM-411625 for details on the CCB process). Bug reporting shall be done through the CASTLE-PX HELP Desk (see Section 2.7).

2.2 *CASTLE-PX System Data Support*

LLNL: LLNL shall be responsible for performing all data exchange between CASTLE-PX and SNL's Weapon Response Bases (WRB) application. When needed to support a request for Weapon Response, LLNL shall generate the hazard scenarios from CASTLE-PX and submit the hazard scenarios to SNL for incorporation into the WRB. LLNL shall import into CASTLE-PX the resulting Weapon Response and hazard mappings generated by WRB and return the updated database to Pantex via classified email (or on a CREM CD if the database becomes too large to email). Pantex shall allow at least two business days for LLNL to complete each data exchange activity. LLNL shall maintain copies of all database export files sent from Pantex to LLNL and from LLNL to Pantex. As the data managed by CASTLE-PX is classified, each

¹ See Appendix B for CASTLE-PX owner description

² See Appendix B for CASTLE-PX O&M Team description

³ See Appendix B for CCB representative description

system's data file shall be catalogued and version controlled on a classified LLNL server.

PX: When making a request for Weapon Response, Pantex shall provide LLNL with the latest database export for the subject weapon system. The database export may be performed by a system user and then emailed to LLNL via classified email (or on a CREM CD if the database becomes too large to email). Pantex shall not make any changes to the data until the updated database is returned and imported. The data import shall be performed by the Pantex designated IT resource.

Pantex users shall be expected to periodically export the data for each respective weapon system and write it to a CREM CD for backup purposes (see Section 3.2 for backup requirements).

2.3 Deploying CASTLE-PX Application Updates

LLNL: LLNL shall be responsible for providing Pantex with a complete release package concurrent with each product update. The release package shall include the updated software, any database update scripts, release notes, and a ReadMe file, which provides release-specific installation instructions. The release package shall be available for download in the following location within TeamForge:

File Releases > CastlePX Releases

LLNL shall notify the Pantex CASTLE-PX owner and the Pantex designated IT resource⁴ when a new release package is available for installation. LLNL shall also notify users via group email (castle-news@llnl.gov) when an update is being deployed. As part of the notification, users shall be provided with a copy of the current release notes. These notes will inform users of key changes or additions to functionality and shall be used to perform user acceptance testing (see Section 2.3.2).

LLNL shall provide up-to-date deployment instructions to the Pantex designated IT resource. These instructions shall be available for download in the following location within TeamForge:

Documents > Root Folder > CASTLE Shared > Infrastructure > CASTLE-PX Deployment Instructions for PX

The deployment instructions shall be maintained and updated by LLNL, with input from Pantex as needed.

LLNL shall be responsible for performing any required data migration that may result from updates to the application/database. Depending on the nature of the changes, migration of data may require input from the system representatives.

⁴ See Appendix B for IT resource description

PX: The CASTLE-PX owner shall notify the designated IT resource when the Pantex SQA Program Office has approved a new release for deployment. Upon approval to deploy, the IT resource shall download the release package and write the package to a CD for deployment on each instance of CASTLE-PX (including the unclassified training laptop and all backup laptops). All upgrade deployments shall be performed using Pantex's IT Change Management process and shall be coordinated with each of the CASTLE-PX system owners. An LLNL-provided log sheet shall be completed with deployment results and uploaded into the appropriate File Release folder. The log sheet can be found in the following location within TeamForge:

Documents > Root Folder > CASTLE Shared > Infrastructure > CASTLE-PX Deployment Worksheet for Pantex

The IT resource shall log any errors encountered during the deployment and immediately notify the CASTLE-PX O&M team using the CASTLE-PX HELP line (see Section 2.7).

If a data migration is required as a part of the deployment, LLNL may assist in or perform the update installation. Pantex shall be notified and special arrangements made in this case.

2.3.1 Deployment Testing

LLNL: LLNL shall provide a set of post-deployment tests for the Pantex designated IT resource to perform upon the completion of each update deployment. These tests shall be described in a post-deployment test specification, which can be found in the following location within TeamForge:

Documents > Root Folder > CASTLE Shared > Infrastructure > CASTLE-PX Post-Deployment Test Specification

PX: Pantex shall be responsible for performing a minimum set of tests once the installation of the update has been completed for each instance of CASTLE-PX. These tests shall ensure the update was successfully deployed. Pantex shall use an LLNL-provided post-deployment test specification to perform the test and log the results.

2.3.2 User Acceptance Testing

LLNL: LLNL shall provide a set of release notes with each product update, which shall be used to perform user acceptance testing. A copy of the release notes with an additional column to report user acceptance test results shall be uploaded into TeamForge. The CASTLE-PX O&M team shall be available via the HELP line to answer any questions (see Section 2.7).

PX: The CASLTE-PX owner shall be responsible for validating that the new/modified capabilities provided in each release are implemented as expected by the end user. The Pantex CASTLE-PX owner shall coordinate with the end users to verify the acceptance of each release. The version of the release notes that shall be used for

validation shall be available for download from the following location within TeamForge:

File Releases > CastlePX Releases > Current Release Folder > CASTLE-PX Release Notes X.X Current Release.doc

Users shall reference the emailed version of the release notes to validate each new/modified capability included in the latest release and report their feedback to the Pantex CASTLE-PX owner. The final set of user acceptance feedback shall be documented and uploaded within two weeks of the first system deployment. The file name shall be appended with the word 'result' and uploaded into TeamForge within the same File Release folder.

2.4 Deploying CASTLE-PX Technology Stack Updates

LLNL: LLNL, in coordination with Pantex, shall be responsible for determining when updates to the technology stack⁵ need to be deployed. This decision shall be coordinated with Pantex to ensure all updates meet Pantex computer security or system life-cycle requirements. Depending on the technology being updated, an LLNL CASTLE-PX team member may need to deploy the update. Each update shall be evaluated and coordinated with Pantex to determine who will perform the deployment.

PX: The Pantex laptop owner shall be responsible for notifying the CASTLE-PX O&M team if there are changes to the computer security or life-cycle policies that affect any part of the technology stack⁵.

2.5 CASTLE-PX Laptops and Laptop Maintenance

The deployment platforms for CASTLE-PX are standalone, classified laptop PCs; one deployed for each weapon system using CASTLE-PX, an unclassified training laptop PC, and at least one backup laptop PC.

LLNL: LLNL shall maintain a laptop that mirrors as closely as possible the environment maintained on the Pantex-imaged laptops. Maintaining a duplicate environment will help expedite troubleshooting and reduce product deployment issues. As changes to the environment are made at Pantex, the LLNL laptop shall be updated accordingly as long as the update does not violate LLNL computer security requirements.

PX: Pantex shall be responsible for the procurement and maintenance of all Pantex-housed laptops. All hardware maintenance, O/S updates, supplemental application installations/updates (e.g., MS Office), and application of mandated patches to maintain computer security compliance shall be performed by Pantex. Pantex shall be responsible for informing the CASTLE-PX O&M team as O/S updates and patches necessary for installation on the Pantex laptops.

⁵ See Appendix C: CASTLE-PX Platform Standards for a complete list of technologies used to support CASTLE-PX

2.6 Set-up of a New CASTLE-PX Laptop

LLNL: LLNL shall be responsible for installing CASTLE-PX on all newly purchased Pantex-owned laptops including the technology stack, source code, and current version of the database with all necessary reference data. LLNL shall return the laptop to Pantex once successful installation of CASTLE-PX has been verified.

PX: The Pantex laptop owner shall be responsible for shipping all new Pantex-imaged, unclassified laptops to LLNL for installation of the application.

2.7 End User Support

LLNL: LLNL shall be responsible for providing ongoing end user support. This includes staffing a CASTLE-PX HELP line, maintaining a current User's Manual, notification of software updates and bugs, and facilitating a multi-site CCB, which will provide the forum for Pantex users to request application enhancements.

A portion of the LLNL CASTLE-PX O&M Team will support Pantex operational usage of CASTLE-PX through the use of a HELP Desk function. User help calls shall be directed to LLNL at 925-42C-ASTL (925-422-2785). An LLNL representative will log the request into a TeamForge tracker, evaluate it, and determine whether the issue can be addressed at Pantex. If a user help request is not related to software development and can be resolved by the designated Pantex IT resource, they will be contacted and responsibility for addressing the issue will be negotiated between Pantex and LLNL. The CASTLE-PX team shall maintain the following schedule for HELP desk assistance (excluding LLNL holidays):

8:00 a.m.–12:00 p.m. PST
1:00 p.m.–4:00 p.m. PST, M–F

Users and other key stakeholders will be notified of software updates and bugs via an e-mail list (castle-news@llnl.gov), which shall be managed at LLNL.

PX: Pantex shall be responsible for reporting any bugs through the CASTLE-PX HELP line or by sending an email to castle-helpdesk@lists.llnl.gov. End users shall also utilize the HELP line/email for questions regarding application use or to request system production data support.

The Pantex CASTLE-PX owner shall inform LLNL as new users are given access to CASTLE-PX so they may be added to the [castle-news](mailto:castle-news@llnl.gov) group distribution. Contact information shall be sent to castle-pm-team@llnl.gov and shall include:

- User Name
- Weapon system supported
- Role (i.e., Process Engineer or AB Analyst)
- Phone number
- Unclassified email address

2.8 Access to TeamForge

LLNL: LLNL shall be responsible for ensuring all documentation that is required by Pantex is accessible through TeamForge. LLNL is also responsible for facilitating Pantex access to TeamForge through the creation of user accounts and assignment of user roles.

LLNL is responsible for providing all necessary forms and information for Pantex personnel to obtain an LLNL, VPN-C account.

PX: Designated Pantex users (e.g., the IT resource and CASTLE-PX owner) shall be responsible for obtaining a VPN-C account with LLNL including completion of all LLNL-required documentation and training. Pantex is also responsible for obtaining access to TeamForge using the LLNL-sponsored, VPN-C account.

The CASTLE-PX owner shall provide notification through the CASTLE-PX HELP desk if a user no longer requires access to TeamForge so their account can be disabled.

3 Backup and Recovery

Both LLNL and Pantex are responsible for providing support services to execute the backup and recovery responsibilities defined below.

3.1 Backup of CASTLE-PX Source Code

LLNL: LLNL shall be responsible for backing up the CASTLE-PX source code. The CASTLE-PX application source code is configuration managed and version controlled using Subversion in conjunction with TeamForge.

PX: Pantex shall always have access to the latest deployed release package, which includes the source code.

3.2 Backup of CASTLE-PX System Data

LLNL: LLNL shall maintain a copy of all system databases that are received from Pantex. LLNL shall also maintain a copy of all system databases that are sent to Pantex, usually following the incorporation of weapon response. The system databases shall be stored and configuration managed on a classified server that is routinely backed up. A log shall be maintained for all database transmissions to include the weapon system, the date transmitted, and the file name. File names shall use the following convention where XX is the weapon system reference:

castleXXexp_yyyymmdd_optional_descriptive_text.dmp.

LLNL shall provide to Pantex with each release package a current export script for users to create export/backup database files (.DMP).

PX: Pantex shall be responsible for the ongoing backups of system data. Backups shall be performed on a weekly basis when system data is being updated frequently and as needed when system data is only encountering occasional changes. The backup file shall be written to a CREM CD and retained as long as the system remains active. A backup to the laptop's hard drive is also recommended after every work session. These backups may be done by the system owner using an LLNL-provided export script. This script shall be updated as needed by LLNL and provided to Pantex as part of the release deployment.

3.3 Recovery

LLNL: LLNL shall be responsible for recovery of the CASTLE-PX source code. LLNL shall also be responsible for the recovery of the system data when the active database is currently in LLNL's possession.

PX: Pantex shall be responsible for providing a replacement laptop if a hardware failure or unrecoverable system crash were to occur. Pantex shall also be responsible for the recovery of the system data when the active database is in Pantex's possession.

4 CASTLE-PX User Training

LLNL: LLNL shall maintain a current User's Manual to support CASTLE-PX user training. The CASTLE project team shall be available to provide information and answer questions as needed to support the development of training materials at Pantex.

PX: The CASTLE-PX owner shall be responsible for determining the appropriate user training for Pantex users of CASTLE-PX and shall be responsible for the development and maintenance of any such training program required for Pantex personnel.

5 Coordination of SQA Documentation

LLNL: LLNL shall be responsible for notifying the Pantex CASTLE-PX owner when changes are made to LLNL SQA documents that are referenced in the Pantex SQA Plan.

PX: Pantex shall be responsible for notifying LLNL when changes are made to the Pantex SQA Plan.

6 Metrics

6.1 Customer Reported Bugs

LLNL: LLNL shall be responsible for maintaining a record of all customer-reported bugs, which shall be used to track software quality metrics.

PX: Pantex is only responsible for reporting bugs to LLNL, but is not responsible for maintaining any associated metric information.

6.2 Customer Usage

LLNL: LLNL shall be responsible for maintaining customer usage metrics. LLNL will use information provided by Pantex to track this metric.

PX: The CASTLE-PX owner shall be responsible for reporting to LLNL any new CASTLE-PX users (see Section 2.7) and to inform LLNL of personnel no longer using the application. Pantex is not responsible for tracking customer usage metrics.

Appendix A: Definitions

Term	Expansion	Description
AB	Authorization Basis	
CASTLE	Collaborative Authorization Safety-basis Total Lifecycle Environment	
CASTLE-PX		Software application for supporting SS-21 processes and data management at Pantex
CCB	Change Control Board	
CREM	Classified Removable Electronic Media	
FTE	Full Time Equivalent	
FY	Fiscal Year	
IT	Information Technology	
Java		A software development language
LLNL	Lawrence Livermore National Laboratory	
NNSA	National Nuclear Security Administration	
NSE	NNSA National Security Enterprise	
O&M	Operations and Management	
OC4J	Oracle Containers for Java	
PC	Personal Computer	
PRIDE	Product Realization and Integration Digital Enterprise	
PX	Pantex	
TeamForge		Project collaboration and document and source code version management environment, commercially marketed by Collabnet
SQA	Software Quality Assurance	
USQ	Unreviewed Safety Question	
VPN-C	Virtual Private Network-Collaborator	

Appendix B: Support Assumptions

This MOU assumes the following support personnel shall be provided by both LLNL and Pantex:

- LLNL CASTLE-PX O&M Team
- Pantex Designated IT Resource(s)
- Pantex CASTLE-PX Owner
- Pantex CCB participants from AB and Process Engineering

B.1. LLNL CASTLE-PX O&M Team

This MOU assumes a CASTLE-PX O&M Team throughout the CASTLE-PX lifecycle. The LLNL CASTLE-PX O&M Team is responsible for developing updates and bug fixes for the CASTLE-PX Software System. The LLNL CASTLE-PX O&M Team will work with the weapon system points of contact and the Pantex IT Department to manage, document, validate, install, and deploy updates to the CASTLE-PX Software System

B.2. Pantex Designated IT Resource

This MOU assumes designated Pantex IT resources throughout the CASTLE-PX lifecycle. To ensure successful deployment of each release package, an onsite IT resource shall be provided to perform the deployments as well as other critical IT maintenance activities. As personnel changes occur, Pantex shall provide a sufficient transition period to ensure new personnel are adequately trained. Any person performing this function will require the following skills:

Necessary Skills:

Proficiency in Oracle including database administration and SQL

Experience with enterprise application administration (web applications)

Familiarity with Windows XP environment

Preferred Skills:

Experience with application server administration

Experience in Java programming

This level of effort is estimated to be about 0.25 FTEs per year, but is not limited to a specific effort level.

B.3. Pantex CASTLE-PX Owner

This MOU also assumes a Pantex CASTLE-PX owner, which is required for all software included on the Pantex software inventory list. This person shall serve as the liaison between the Pantex SQA Program Office and the CASTLE Project Management Team. The CASTLE-PX owner shall be responsible for coordinating changes as needed to the Pantex SQA Plan, working

with LLNL CASTLE Project Management to maintain the CASTLE-PX SQA qualification with subsequent product releases, and coordinating/reporting the results of user acceptance testing.

This level of effort is estimated to be about 0.15 FTEs per year.

B.4. Pantex CCB Participants

The CASTLE-CCB is required to have end user representation to make recommendations for enhancements and help set priorities from the user's perspective. This agreement assumes appropriate Pantex representation for CCB participation.

This level of effort is estimated to be about 0.20 FTEs per year (combined total for all Pantex representatives).

Appendix C: CASTLE-PX Environment Standards

Laptop System O/S and CASTLE-PX Standard Software

The table below lists the operating systems, core operating environment, and application requirements:

Release	Product Description	Developer
XP	Windows	Microsoft
6.0	Internet Explorer	Microsoft
v10.1.3	Oracle 10g Database	Oracle
v10.1.3.1	OC4J Application Server	Oracle
v1.6.0_05	Java JRE	Sun Microsystems
v1.7.2	IceFaces	IceSoft
v10.1.3	Oracle Toplink	Oracle
v3.5	Jasper Reports	JasperSoft