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Your ref: Project Number 740  
Our ref: DCP/NRC1922

June 6, 2007

Subject: AP1000 COL Standard Technical Report Submittal of APP-GW-GLR-130, Revision 0, TR 130

In support of Combined License application pre-application activities, Westinghouse is submitting Revision 0 of AP1000 Standard Combined License Technical Report Number 130. This report provides the explanation for editorial format changes related to "Combined License applicant" and Combined License Information Items that have been included in Revision 16 of the AP1000 Design Control Document. This report is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in this report is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

The purpose for submittal of this report was explained in a March 8, 2006 letter from NuStart to the U.S. Nuclear Regulatory Commission.

Pursuant to 10 CFR 50.30(b), APP-GW-GLR-130, Revision 0, "Editorial Format Changes Related to "Combined License applicant" and "Combined License Information Items," Technical Report Number 130, is submitted as Enclosure 1 under the attached Oath of Affirmation.

Questions or requests for additional information related to the content and preparation of this report should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Westinghouse requests the NRC to provide a schedule for review of this Technical Report within two weeks of its submittal.

Very truly yours,

A handwritten signature in black ink that reads "D. J. Hutchings for".

A. Sterdis, Manager  
Licensing and Customer Interface  
Regulatory Affairs and Standardization

DOT9  
NRC/NRO

/Attachment

1. "Oath of Affirmation," dated June 6, 2007

/Enclosure

1. APP-GW-GLR-130, Revision 0, "Editorial Format Changes Related to "Combined License applicant" and "Combined License Information Items," Technical Report Number 130, dated June 2007.

cc:	D. Jaffe	- U.S. NRC	1E	1A
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	D. Hutchings	- Westinghouse	1E	1A

ATTACHMENT 1

“Oath of Affirmation”

ATTACHMENT 1

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of: )  
NuStart Bellefonte COL Project )  
NRC Project Number 740 )

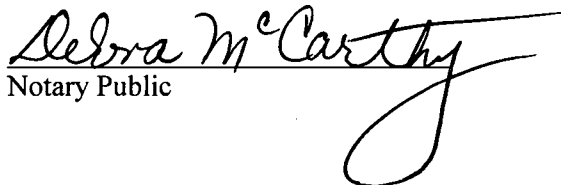
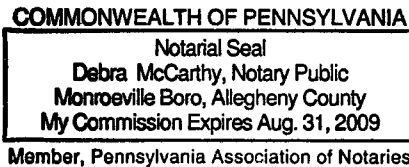
APPLICATION FOR REVIEW OF  
"AP1000 GENERAL COMBINED LICENSE INFORMATION"  
FOR COL APPLICATION PRE-APPLICATION REVIEW

W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.



W. E. Cummins  
Vice President  
Regulatory Affairs & Standardization

Subscribed and sworn to  
before me this 6<sup>th</sup> day  
of June 2007.



Notary Public

ENCLOSURE 1

APP-GW-GLR-130, Revision 0

“Editorial Format Changes Related to “Combined License applicant” and “Combined License  
Information Items”

Technical Report Number 130

# AP1000 DOCUMENT COVER SHEET

TDC: \_\_\_\_\_ Permanent File: \_\_\_\_\_ APY: \_\_\_\_\_

RFS#: \_\_\_\_\_ RFS ITEM #: \_\_\_\_\_

AP1000 DOCUMENT NO. APP-GW-GLR-130	REVISION NO. 0	Page 1 of 14	ASSIGNED TO W-Sterdis
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ALTERNATE DOCUMENT NUMBER: TR130

WORK BREAKDOWN #:

ORIGINATING ORGANIZATION: WEC-NPP

TITLE: **Editorial Format Changes Related to "Combined License applicant" and "Combined License Information Items"**

ATTACHMENTS:

N/A

DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION:

N/A

CALCULATION/ANALYSIS REFERENCE:

N/A

ELECTRONIC FILENAME	ELECTRONIC FILE FORMAT	ELECTRONIC FILE DESCRIPTION
APPGWGLR-130R0.doc/.pdf	MS Word & Adobe Acrobat	Report is MS Word. DCD changes are Adobe Acrobat.

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PATENT REVIEW <i>M.M. CORLETT I</i>	SIGNATURE/DATE <i>[Signature]</i> 6/5/07

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ORIGINATOR D. F. Hutchings	SIGNATURE/DATE <i>[Signature]</i> 6/1/07
REVIEWERS D. A. Lindgren	SIGNATURE/DATE <i>[Signature]</i> 6/4/07

VERIFIER D. F. Hutchings → <i>S.L. Adams II</i> 038 6/4/07	SIGNATURE/DATE <i>[Signature]</i> 6/5/07	VERIFICATION METHOD Page by Page
AP1000 RESPONSIBLE MANAGER A. Sterdis <i>[Signature]</i>	SIGNATURE*	APPROVAL DATE 04 Jun 07

\* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

# **AP1000 Standard Combined License Technical Report**

## **Editorial Format Changes Related to “Combined License applicant” and “Combined License Information Items”**

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## 1.0 INTRODUCTION

The purpose of this technical report (TR) is to explain two types of editorial changes that have been incorporated into the AP1000 Design Control Document (DCD), Rev. 16, (Reference 1) both of which deal with Combined License Information items.

Editorial Change 1: Change in DCD text format related to, "...the Combined License applicant will..."

Editorial Change 2: Change in DCD text format related to Combined License Information items that have been addressed in Rev. 16.

## 2.0 DISCUSSION

In previous revisions of the AP1000 Design Control Document (DCD), no work was performed to address Combined License Information items. Until now, the changes to the DCD were limited to the addition of technical detail relative to the existing scope of the DCD Certification. With Rev. 16, Westinghouse has continued to progress the design detail of the AP1000, but has also performed work to address approximately 60 Combined License Information items related to AP1000 design so that Combined License applicants will not have to address these same Combined License Information items in each of their Combined License applications. This is consistent with the NRC/Industry Design Center Working Group approach to new plant builds, which is intended to reduce the burden of work on both the NRC and the Industry by addressing information that is standard for all AP1000s one time via the DCD rather than through multiple individual licensing actions.

It is important to note that the two editorial format changes discussed in this TR were performed after the submittal of most TRs and thus inconsistencies do exist between the DCD information provided in the TR and the actual information provided in the DCD Rev. 16.

### **Editorial Change 1:**

**Change in DCD text format related to, "...the Combined License applicant will..."**

Up through Rev. 15 of the DCD, there were many instances where the text states, "...the Combined License applicant will..." or words exist stating something similar. Westinghouse has taken the position that in the "Combined License Information" sections in Tier 2 of the DCD, these words are appropriate. Having the words appear in other sections of the DCD, however, leads to confusion, especially when the Combined License applicant is attempting to incorporate by reference the DCD section (or subsection) into their individual Combined License application. As a result, Westinghouse has reviewed the DCD and has removed these types of phrases from Tier 2. In addition to the Combined License Information sections, there are a few exceptions to this. For example, as Chapter 2 of the DCD contains work that is almost all Combined License related, Westinghouse has not changed the format. Also some of the introduction sections of the DCD contain words that describe at a high level how the DCD and Combined License application



work interrelate, as does DCD Tier 2 section 14.3, “Certified Material.” In those sections to, Westinghouse has not attempted to revise the wording. In no case, is it the intent of Westinghouse to change the commitment that exists in DCD, as the changes are intended to be editorial. If the wording in DCD Rev. 16 does result in a commitment change, there is a separate Technical Report (TR) explaining the reason as to why that the commitment is satisfied or has been removed. A few typical examples of this type of change are included as attachments to this report.

#### **Editorial Change 2:**

#### **Change in DCD text format related to Combined License Information items that have been addressed in Rev. 16**

In an attempt to minimize confusion when reading the DCD as a standalone document, Westinghouse has changed the formatting associated with how a given Combined License Information item has been addressed in the DCD from that described in technical reports (TRs) that have already been submitted. In many TRs, the proposed DCD mark-ups include words like “Completed. ...” when closing Combined License Information items. While the concept of what Westinghouse is trying to communicate is clear when reviewed in the context of the TR, those same words are generally not clear when viewing them in out of context of the TR and in the DCD. As a result, for each Combined License Information item that Westinghouse has addressed (either partially or completely) in DCD Rev. 16, Westinghouse has adopted a format, which makes clear what has been accomplished by Westinghouse and what remains to be accomplished by the Combined License applicant or holder. In no case, has Westinghouse changed the intent of what it has previously declared in a given TR. The changes in format are intended to be editorial.

There are a few exceptions to this universal editorial change. Generally those exceptions exist because two criteria are satisfied. The first criterion is that the NRC has already reviewed the words via a submitted TR and has already notified Westinghouse that the changes are acceptable. The second criterion is that Westinghouse believes the agreed to words are clear even when viewed without access to the TR. A few typical examples of this type of change are also included as attachments to this report.

In association with the CASE 2 change, Westinghouse also has updated the format of DCD Tier 2, Table 1.8-2, “Summary of AP1000 Standard Plant Combined License Information Items” to include three additional columns. The headings of the three new columns are, “Addressed by Westinghouse Document,” “Action Required by Combined License Applicant,” and “Action Required by Combined License Holder.” In the table, Westinghouse has provided status of the Combined License Information items consistent with information in each Combined License Information section. This change is viewed as an improved method of communicating the status of each Combined License Information item to the NRC and applicants. The additional information helps to clearly identify whether or not Westinghouse has addressed the item; whether or not the Combined License applicant has work that is yet to be completed at the time of application; and/or whether or not the Combined License holder has work to complete after receiving a license. In the table a hyphen “-” is used to communicate that Westinghouse has made no judgment as to whether or not additional information needs to be provided by the Combined License holder. That judgment is left to the NRC and the Combined License applicant and the NRC.

### 3.0 REGULATORY IMPACT

1. Does the proposed departure result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD?  YES  NO

There is no change to the design of the plant. Therefore there is no increase the frequency of occurrence of an accident.

2. Does the proposed departure result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD?  YES  NO

There is no change to the design of the plant. Therefore there is no increase in the probability of an occurrence of a malfunction of any SSC important to the safety and previously evaluated in the plant specific DCD.

3. Does the proposed departure Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD?  YES  NO

There is no change to the design of the plant. Therefore there is no increase in the calculated release of radioactive material during postulated accident conditions.

4. Does the proposed departure result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD?  YES  NO

There is no change to the design of the plant. Therefore there is no increase in the calculated release of radioactive material due to a malfunction of an SSC.

5. Does the proposed departure create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD?  YES  NO

There is no change to the design of the plant. Therefore there is no accident of a type different than what has already been evaluated in the DCD.

6. Does the proposed departure create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD?  YES  NO

There is no change to the plant. Therefore, there are no additional failure modes or the possibility for a malfunction of an SSC important to safety with a different result than evaluated previously.

7. Does the proposed departure result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered?  YES  NO

There is no change to the design of the plant. Therefore, the proposed departure result does not result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded.

8. Does the proposed departure result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses?  
 YES  NO

There is no change to the design of the plant. Therefore there is no the methods of evaluation for the SSCs described in the plant-specific DCD are not altered by the proposed departure.

#### **4.0 REFERENCES**

1. APP-GW-GL-700, AP1000 Design Control Document, Revision 16

#### **5.0 DCD MARK UP**

The following DCD mark-ups are examples of changes that have been made to the DCD Revision 16 in support of the editorial changes discussed in this report. The DCD includes many more changes, which are similar in nature to the provided examples. The specific locations of those changes can be quickly identified by utilizing the Tier 2 Revision 16 Change Roadmap that is included with DCD Rev. 16. Search the roadmap for references to this TR (APP-GW-GLR-130).

**The following pages provide examples of Editorial Change 1:  
Change in DCD text format related to, "...the Combined  
License applicant will..."**

the equipment are supplied from the turbine building. See subsection 9.5.1 for a discussion of fire protection associated with plant transformers.

One feeder connects the transformer area with the switchyard to supply power to/from the main stepup transformers for the unit. An arrangement is shown in Figure 8.3.1-1.

### 8.2.2 Grid Stability

The AP1000 is designed with passive safety-related systems for core cooling and containment integrity and, therefore, does not depend on the electric power grid for safe operation. This feature of the AP1000 significantly reduces the importance of the grid connection and the requirement for grid stability. The AP1000 safety analyses assume that the reactor coolant pumps can receive power from either the main generator or the grid for a minimum of 3 seconds following a turbine trip.

The AP1000 main generator is connected to the generator bus through the generator circuit breaker. The grid is connected to the generator bus through the main step-up transformers and the grid breakers. The reactor coolant pumps are connected to the generator bus through the reactor coolant pump breakers, the 6.9 kV switchgear, and the unit auxiliary transformers. During normal plant operation the main generator supplies power to the generator bus. Some of this power is used by the plant auxiliary systems (including the reactor coolant pumps); the rest of the power is supplied to the grid.

If, during power operation of the plant, a turbine trip occurs, the motive power (steam) to the turbine will be removed. The generator will attempt to keep the shaft rotating at synchronous speed (governed by the grid frequency) by acting like a synchronous motor. The reverse-power relay monitoring generator power will sense this condition and, after a time delay of at least 15 seconds, open the generator breaker. During this delay time the generator will be able to provide voltage support to the grid if needed. The reactor coolant pumps will receive power from the grid for at least 3 seconds following the turbine trip. ~~The Combined License applicant will perform a~~ A grid stability analysis to show that, with no electrical system failures, the grid will remain stable and the reactor coolant pump bus voltage will remain above the voltage required to maintain the flow assumed in the Chapter 15 analyses for a minimum of 3 seconds following a turbine trip is as addressed in section 8.2.5. In the Chapter 15 analyses, if the initiating event is an electrical system failure (such as failure of the isophase bus), the analyses do not assume operation of the reactor coolant pumps following the turbine trip. ~~The Combined License applicant will set~~ Section 8.2.5 addresses the protective devices controlling the switchyard breakers with consideration given to preserving the plant grid connection following a turbine trip.

If the turbine trip occurs when the grid is not connected (generator supplying plant house loads only), the main turbine-generator shaft will begin to slow down as the energy stored in the rotational inertia of the shaft is used to supply the house loads (including reactor coolant pumps). The system will coast down until the generator exciter can no longer maintain generator terminal voltage and the generator breaker is tripped on either generator under-voltage or exciter over-current. This coast down will last at least 3 seconds before the generator breaker trips.

The sequence of events following a loss-of-offsite-power event is the same as those described for grid-disconnected operation.

### 9.5.2.2.3 Private Automatic Branch Exchange System

The private automatic branch exchange (PABX) system provides communications between the system stations, with capability for transferring calls and providing conference calls at up to five stations.

A portion of the PABX, specifically in the main control room and technical support center area, has additional capability. The telephones in these areas are programmable. Buttons on the phone can be dedicated and color coded to specific telephone numbers.

The PABX system also interfaces with the following communication systems:

- The wireless telephone system
- Hotlines to ~~Combined License applicant~~-specified locations; for example, dedicated communication lines with the ~~Combined License applicant~~-load dispatcher to support and coordinate the system grid is as described in section 9.5.2.5
- Local area telephone system lines
- Access to the page circuit in the telephone page system
- Direct extensions from the PABX locations exterior to the plant as dictated by the ~~Combined License applicant~~ in section 9.5.2.5

The hotline circuits are dedicated channels that provide direct communication between the main control room and the ~~Combined License applicant~~ headquarters or other facilities are as required in section 9.5.2.5.

Commercial telephone lines are provided by the local area telephone company. Telephone lines may not terminate at the PABX. There are private lines that bypass the switch and ring directly at a telephone set. These numbers are located in the main control room, the alarm stations and at specific management offices located throughout the site. The local telephone company lines that terminate at the switch are programmed to reserve part of the lines for outgoing calls only. Others are programmed for incoming only so that some lines are available for calling onto and offsite. The number of lines will be defined by the ~~Combined License applicant~~ as required in section 9.5.2.5.

Power to the PABX is provided from the non-Class 1E dc and uninterruptible power supply system sized to supply power for 120 minutes after a loss of ac power.

### 9.5.2.2.4 Sound-Powered System

Two unitized systems are provided as follows:

- A loop sound-powered system for refueling
- A multiloop system throughout the plant for startup and maintenance testing

**18.9 Procedure Development**

WCAP-14690, "Designer's Input to Procedure Development for the AP600" (Reference 1), provides input to the Combined License applicant for the development of plant operating procedures, including information on the development and design of the AP600 emergency response guidelines and emergency operating procedures. ~~This WCAP is provided as input for the Combined Licensed applicant. It applies directly to AP1000 since AP1000 is operated in the same manner as AP600. The WCAP also includes information on the computerized procedure system, which is the human system interface through which operators execute the plant procedures.~~

**18.9.1 Combined License Information**

See Section 13.5 for a discussion of the responsibility for procedure development.

**18.9.2 References**

1. WCAP-14690, "Designer's Input to Procedure Development for the AP600," Revision 1, June 1997.

**The following pages provide examples of Editorial Change 2:  
Change in DCD text format related to Combined License  
Information items that have been addressed in DCD Rev. 16**



**3.10.4 Documentation**

The results of tests and analyses verifying that the criteria established in subsection 3.10.1 are satisfied, employing the qualification methods described in subsections 3.10.2 and 3.10.3, are included in the individual equipment qualification data packages and test reports. The upkeep of Combined License applicant is responsible for maintaining the equipment qualification file is maintained during the equipment selection and procurement phase is discussed in (see subsection 3.11.5).

Seismic qualification of equipment is documented in equipment qualification data packages, test reports, analysis reports, and calculation notes. Appendix 3D provides guidance in this area.

**3.10.5 Standard Review Plan Evaluation**

A summary describing the Standard Review Plan differences in regard to seismic and dynamic qualification of mechanical and electrical equipment is provided subsection 1.9.2.

**3.10.6 Combined License Information Item on Experienced-Based Qualification**

The Combined License information requested in this subsection has been totally addressed in APP-GW-GLN-006 (Reference 3) and APP-GW-GLR-031(Reference 4). No additional work is required by the Combined License applicant to address the Combined License information requested in this subsection.

The following words represent the original Combined License Information item commitment, which has been addressed as discussed above:

*[The Combined License applicant will address, as part of the Combined License application, identification of the equipment qualified based on experience and include details of the methodology and the corresponding experience data. The corresponding experience data for each piece of equipment will be included in the equipment qualification file.]\**

**3.10.7 References**

1. IEEE 344-1987, "Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations."
2. IEEE 382-1996, "IEEE Standard for Qualification of Actuators for Power-Operated Valve Assemblies with Safety-Related Functions for Nuclear Power Plants."
3. APP-GW-GLN-006, "Methodology for Qualifying AP1000 Safety Related Electrical and Mechanical Equipment," Westinghouse Electric Company LLC.
4. APP-GW-GLR-031, "Seismic Qualification Using Test Experience-Based Method for AP1000 Safety Related Equipment," Westinghouse Electric Company LLC.

\*NRC Staff approval is required prior to implementing a change in this material; see DCD Introduction Section 3.5.

### 7.2.3 Combined License Information

The Combined License information requested in this subsection has been completely addressed in WCAP-16438-P (Reference 1) and WCAP-16592-P (Reference 4), and the applicable changes are incorporated into the DCD. No additional work is required by the Combined Operating License applicant.

The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above:

Combined License applicants referencing the AP1000 certified design will provide an FMEA for the protection and safety monitoring system. The FMEA will include a Software Hazards Analysis. This FMEA will provide the basis for those Technical Specification Completion Times that rely on an FMEA for their basis.

### 7.2.4 References

1. ~~WCAP-13594(P), WCAP-13662 (NP), "FMEA of Advanced Passive Plant Protection System," Revision 1, June 1998~~ WCAP-16438-P, WCAP-16438-NP, "FMEA of AP1000 Protection and Safety Monitoring System," Revision 1, June 2006.
2. WCAP-15776, "Safety Criteria for the AP1000 Instrument and Control Systems," April 2002.
3. ~~CENPD-396-P~~ WCAP-16097-P-A (Proprietary) and WCAP-16097-NP-A (Non-Proprietary), Appendix 3, Rev. 40, "Common Qualified Platform, Digital Plant Protection System," May 2000 2003.
4. WCAP-16592-P, WCAP-16592-NP, "Software Hazards Analysis of AP1000 Protection and Safety Monitoring System," Revision 0, June 2006.

The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above:

Combined License applicants referencing the AP1000 certified design will address the site-specific need for cathodic protection in accordance with NACE Standard RP-01-69 for external metal surfaces of metal tanks in contact with the ground.

9.5.4.7.2 The Combined License information requested in this subsection has been partially addressed in APP-GW-GLR-120 (Reference 24), and the applicable changes are incorporated into the DCD. No additional work is required to address the information requested in this subsection as delineated in the following paragraph:

The epoxy-urethane paint color selected for the exterior of the standby diesel fuel oil storage tanks shall be selected to minimize radiant sunlight heat transmission to the tank oil stored fuel volume.

The following activities are to be addressed by the Combined License applicant:

Address the diesel fuel specifications grade and the fuel properties consistent with manufacturers' recommendations and the measures to protect against fuel degradation by a program of fuel degradation by a program of fuel sampling and testing.

The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above:

Combined License applicants referencing the AP1000 certified design will address site-specific factors in the fuel oil storage tank installation specification to reduce the effects of sun heat input into the stored fuel, the diesel fuel specifications grade and the fuel properties consistent with manufacturers' recommendations, and will address measures to protect against fuel degradation by a program of fuel sampling and testing.

## 9.5.5 References

1. NUREG-0800, U. S. Nuclear Regulatory Commission Standard Review Plan, Section 9.5.1, "Fire Protection Program," Revision 3, July 1981, including Branch Technical Position (BTP) CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," Revision 2, July 1981.
2. National Fire Protection Association Codes and Standards:

NFPA 10, 1998: Standard for Portable Fire Extinguishers; NFPA 13, 1999: Standard for the Installation of Sprinkler Systems; NFPA 14, 2000: Standard for the Installation of Standpipe, Private Hydrants, and Hose Systems; NFPA 15, 2001: Standard for Water Spray Fixed Systems for Fire Protection; NFPA 20, 1999: Standard for the Installation of Stationary Pumps for Fire Protection; NFPA 22, 1998: Standard for Water Tanks for Private Fire Protection; NFPA 24, 1995: Standard for Installation of Private Fire Service Mains and Their Appurtenances; NFPA 30, 2000: Flammable and Combustible Liquids Code; NFPA 50A, 1999: Standard for Gaseous Hydrogen Systems at Consumer Sites; NFPA 50B,