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NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 11, 1996

52-003

Mr. Nicholas J. Liparulo  
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Westinghouse Electric Corporation  
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SUBJECT: COMMENTS ON THE AP600 DRAFT STANDARD SAFETY ANALYSIS REPORT (SSAR)  
SECTION ON PLANT PROCEDURE DEVELOPMENT

Dear Mr. Liparulo:

The Nuclear Regulatory Commission (NRC) staff has recently completed review of a Westinghouse draft SSAR revision to the AP600 operator training program. The proposed changes were provided by Westinghouse letter NTD-NRC-95-4532 dated August 18, 1995, and involve the procedure development program description in the human factors chapter of the SSAR (Section 18.9.8). The SSAR currently describes how major procedures for the AP600 would be developed in relation to human factors engineering design principles (Element 8 of the Human Factors Engineering Program Review Model (HFEPRM)). In the draft safety evaluation report (DSER), the NRC staff considered the procedure development program to be within the scope of the design certification and reviewed the SSAR description at an implementation plan level.

Subsequent to the DSER issuance, Westinghouse has clarified their position that procedure development is the COL applicant's responsibility and submitted a draft revision to the SSAR to support this claim. The staff is in general agreement that procedure development should be a COL action item. However, the draft SSAR revision states that "the AP600 is designed to provide computer-based operating procedures for the presentation of plant procedures", and that "the mission of the computerized procedures system is to assist power plant operators in monitoring and controlling the execution of plant procedures." These statements indicate that procedures (specifically, computer-based procedures) are an integral part of the AP600 design process. With computer-based procedures proposed as an integral part of the AP600 design, the staff believes that procedures are within the scope of design certification and that Westinghouse should provide a rationale for why a complete functional and detailed design of the AP600 computerized procedures system and design review of the computer-based system are beyond the scope of design certification. Further details of the staff's assessment of this issue are contained in the results of staff's review of all the Element 8 criteria.

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Mr. Nicholas J. Liparulo

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March 11, 1996

Detailed discussions on Section 18.9 DSER open items resolution are provided in the enclosure to this letter. If you have any questions regarding this matter, you can contact me at (301) 415-1141.

Sincerely,

original signed by:

William C. Huffman, Project Manager  
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Office of Nuclear Reactor Regulation

Docket No. 52-003

Enclosure: AP600 DSER Open  
Item Resolution  
Element 8 -  
Procedure Development

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Docket No. 52-003  
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**AP600 DSER Open Item Resolution  
Element 8 - Procedures**

To address the Element 8, Procedure Development, DSER open items, Westinghouse submitted a draft revision to SSAR Section 18.9.8, Design of Plant Procedures, August 18, 1995. The revision deletes most of the detail regarding the computerized procedure system (CPS) and provides two significant changes in approach from earlier material which are outlined in the following.

At the time the DSER review was prepared, procedure development was within the scope of design certification and the staff reviewed Westinghouse's procedures development at an implementation plan level. Subsequent to the publication of the DSER, Westinghouse has decided that procedures are a COL responsibility and has identified their development as a Combined License Information Item in SSAR Section 13.5.3. In addition, Westinghouse has indicated the AP600 will rely solely on computerized plant procedures and will not utilize paper procedures as a backup in the event of loss of the computerized system.

These decisions have raised new concerns. These concerns are expressed in the new open item identified and in the discussions of existing items as described in the following review of the draft SSAR section on procedure development for all Element 8 open items. For issue resolution purposes, the new open item will be referred to as the "Appropriateness as a COL Item".

**OVERVIEW OF THE STATUS OF ELEMENT 8**

New Open Items

Appropriateness as a COL Item

Current Status

Action W

Open Item (OITS Number, DSER Number)

Current Status

1363	18.9.3-1:	Procedure Scope	Action W
1364	18.9.3-2:	Procedure Basis	Action W
1365	18.9.3-3:	Writer's Guide	Action W
1366	18.9.3-4:	Procedure Content	Action W
1367	18.9.3-5:	Symptom-based EOPs	Action W
1368	18.9.3-6:	Procedure V&V	Action W
1369	18.9.3-7:	Computer-based Procedures	Action W
1370	18.9.3-8:	Procedure Maintenance	Action W
1371	18.9.3-9:	Procedure Use	Action W
1372	18.9.3-10:	Procedure Development Source Material	Action W

General Note: The DSER evaluations make reference to SSAR sections. These are sometimes incorrect based on the revised SSAR which changes section numbers. In the FSER we need to provide the SSAR date and/or attempt to match quotes and discussion to the new numbering scheme (not always possible since much of the material from the old version of the SSAR has been deleted).

Enclosure



### Appropriateness as a COL Item

In the August 18, 1995, draft revision to SSAR section 18.9.8, Westinghouse has decided that procedures are a COL responsibility and has identified their development as a Combined License Information Item in SSAR Section 13.5.3. The staff has concerns about the appropriateness of making procedure development a COL Item in the specific case of the AP600 because of the following reasons. The computerized procedure system (CPS) is a central part of the MMIS design and the CPS is not typically used in commercial NPP design and operations. These concerns are discussed in the following.

The AP600 procedure system will be computer-based and will be an integral part of the M-MIS design. Procedure displays will likely be focal points in the workstation displays for handling abnormal and emergency situations. These displays will provide the context for accessing and integrating process data and supporting information. While Westinghouse has been a leader in the development of computerized procedures, utilities (potential COLs) have little experience with the design and implementation of such systems. Given the importance of the CPS, its interfaces, and its integration with other displays and controls, to the M-MIS design and plant operations, it is difficult to see how CPS design can be identified as a COL Item. With consideration of the staff's concerns identified previously, Westinghouse should provide rationale as to why CPS design has been identified as a COL Item.

While the SSAR identifies the procedure design and writers guide as outside the scope of design certification, it contains considerable information on the role of the guide and the functional design of the CPS, including reference to WCAP-14389, Functional Design of the AP600 Computerized Plant Procedure System (1995). It is unclear how this discussion and the requirements set forth in these discussions will be incorporated into the COL Item. As identified in revised SSAR Section 18.9.8.4, the COL Item is inadequately described.

Westinghouse will need to identify: (1) the specific technical information that is required as a basis for detailed procedure design and development, including procedure implementation in computerized form, and (2) how this information will be provided to the COL applicant.

**STATUS OF OPEN ITEM:** Action W

### Open Item 18.9.3-1: Procedure Scope

1. *Criterion:* The procedures covered in this element are:

- Generic technical guidelines (GTGs) or ERGs
- Plant and system operations (including start-up, power, and shutdown operations),
- Abnormal and emergency operations,

- Preoperational, start-up, and surveillance tests, and
- Alarm response.

*DSER Evaluation:* The plant-specific technical guidance on which the emergency operating procedures (EOPs) are based will be developed from Westinghouse Owners Group (WOG) generic ERGs. The generic ERGs are "modified and adapted to the specific plant configuration of the AP600" by a process described in SSAR Section 18.9.8.1.1.

SSAR Section 18.9.8 states that the following types of procedures will be developed for the AP600:

- Normal Operating Procedures
- Abnormal Operating Procedures
- Emergency Procedures
- Alarm Response Procedures
- Maintenance Procedures

Normal operating procedures describe actions to be taken to "start up the plant, operate the plant at power, shut down the plant, operate individual plant systems, perform surveillance testing and remove equipment from service for maintenance activities." SSAR Sections 13.5.1 and 13.5.2, addressing administrative, operating, and maintenance procedures, state that these procedures are "Combined License applicant specific" and "outside the AP600 design certification scope."

*Proposed Resolution:*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

**STATUS OF OPEN ITEM:** Action W

Open Item 18.9.3-2: Procedure Basis

2. *Criterion:* The basis for procedure development should include:

- Plant design bases
- System-based technical requirements and specifications
- The task analyses results
- Critical human actions identified in the HRA/PRA

- Initiating events to be considered in the EOPs should include those events present in the design bases.
- GTGs (ERGs)

*DSER Evaluation:* According to SSAR Section 18.9.8.1, the AP600 EOPs are based on the WOG generic ERGs. The development of EOPs uses "the same accepted and established process used by utilities with Westinghouse pressurized water reactors." The process used to develop plant-specific emergency operating procedures is described in detail in SSAR Section 18.9.8.1 (and summarized in Westinghouse's response to RAI 620.87). Development begins with ERGs for low-pressure reference plant which has "major functional similarities" (SSAR Section 18.9.8.1.1) to AP600; details are provided in Westinghouse's response to RAI 620.89. A comparison is made between the low pressure (LP) reference plant and the AP600 design to determine the applicability of the LP ERGs for development of AP600 high-level operator action strategies. These strategies are listed in SSAR Section 18.9.8.1.1.2 (and in SSAR Tables 18.9.8-1 through 18.9.8-37). The means are not described by which methods specified in the criterion, in addition to applying the LP ERGs, are used for procedure development.

It should be noted that statements about the operator's role in WCAP 14075 appear somewhat contradictory. The document states that "A design goal is to eliminate operator actions required to maintain core cooling following design basis accidents for an indefinite time" (p. 2). It is then stated that "The ERGs do not restrict the operator to using only safety-related systems to mitigate accidents. Nor do they restrict the time in which the operator is allowed to act. Alternatively, the ERGs are structured to use available plant equipment to mitigate transients and accidents in an optimal manner..." Thus, while the design goal is to eliminate operator actions, it appears that the ERGs have the operators using a large variety of equipment at any possible time.

The DSER Evaluation of this criterion is related to the Westinghouse response to RAI 440.32, which requested the submittal of a complete version of the AP600 ERGs.

*Proposed Resolution:*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

In draft revision to the SSAR Section 18.9.8, Design of Plant Procedures (August 18, 1995), Westinghouse indicates that AP600 emergency operating procedures are based on two primary sources. The technical content is developed from the AP600 ERGs with additional sources of information such as

design characteristics, transient and accident analysis, engineering judgment, and operating experience. Also, the EOPs follow the principles in the AP600 emergency operating procedures writer's guide. However, since the writer's guide is outside the scope of design certification (see discussion under Open Item 18.9.3-3), the principles cannot be reviewed. Westinghouse also indicates that the analysis of tasks to support development of the EOPs is provided, at an initial level, by the analysis done to support development of the AP600 ERGs.

**STATUS OF OPEN ITEM:** Action W

**Open Item 18.9.3-3: Writer's Guide**

3. *Criterion* A writer's guide should be developed to establish the process for developing technical procedures that are complete, accurate, consistent, and easy to understand and follow. The guide should contain sufficiently objective criteria so that procedures developed in accordance with the guide should be consistent in organization, style, and content. The guide should be used for all procedures within the scope of this element. The writer's guide should provide instructions for procedure content and format including the writing of action steps and the specification of acceptable acronym lists and acceptable terms to be used.

*DSER Evaluation:* SSAR Section 18.9.8.1.2, states that "the AP600 writer's guide addresses the goals, requirements and recommendations identified in the writer's guide section of NUREG-0899." A writer's guide which conforms to NUREG-0899 meets this criterion. However, the discussions of procedure content and format in NUREG-0899 do not explicitly address computer-based presentation of procedures. The writer's guide must reflect both hardcopy and computer-based procedures.

The methods and/or sources used in identifying the unique capabilities and limitations of computer-based presentation should be specified. The process for reflecting these unique aspects in the writer's guidance for such features as checkoffs, place-keeping, illustrations, verification steps, and support for recurrent or time dependent steps should be described.

***Proposed Resolution***

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

Westinghouse has identified some examples of what the writer's guide discusses, a more thorough and complete description of how the writer's guide will address unique features of the procedures proposed by Westinghouse. As



indicated previously, utilities have little experience with computer-based procedures. Westinghouse should identify the information necessary to design computerized procedures and the content of the writer's guide. In addition, the staff finds it unclear in the revision to the SSAR whether Westinghouse has developed the writer's guide or whether the COL will develop it. Though Westinghouse indicates that the writer's guide is beyond design certification and is the COL's responsibility, the SSAR is written in the present tense which indicates that the guide currently exists, adding confusion to this item.

**STATUS OF OPEN ITEM:** Action W

Open Item 18.9.3-4: Procedure Content

4. *Criterion:* The content of the procedures should incorporate the following elements:

- Title
- Statement of applicability
- References
- Prerequisites
- Precautions (including warnings, cautions, and notes)
- Limitations and actions
- Required human actions
- Acceptance criteria
- Checkoff lists

*DSER Evaluation:* SSAR Section 18.9.8.1.2, states that "the AP600 writer's guide addresses the goals, requirements and recommendations identified in the writer's guide section of NUREG-0899." The basic organization for procedures provided in NUREG-0899 specifies content items similar to those in the criterion. The functional requirements for the computer-based procedures (SSAR Section 18.9.8.6) call for the display of many of the elements in the criterion. The contents of paper-based procedures is not explicitly discussed in the SSAR.

Differences are not discussed in the manner of presentation of the items in the criterion (or in NUREG-0899) on paper as compared a computer-based system.

*Proposed Resolution:*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that the content for EOPs will be determined by the technical information contained in the ERGs and the writer's guide which is based on the guidance contained in NUREG-0899. Format for the content of planned computerized plant procedures is described as receiving a systems engineering approach wherein high-level requirements for the system are first defined followed by more detailed requirements and review by experts in plant procedures and man-machine interface design and operations personnel. Westinghouse indicates that the computer-based presentation of procedures encompasses the format of procedures identified in the writer's guide(s) and, in relevant instances makes explicit items, such as direct monitoring of parameters which need to be continuously monitored during procedure execution. However, as indicated under Open Item 18.9.3-7: Writer's Guide, it is not available for review. No paper-based procedures are proposed as back-up (see discussion under Open Item 18.9.3-7: Computer-Based Procedures).

**STATUS OF OPEN ITEM:** Action W

Open Item 18.9.3-5: Symptom-based EOPs

5. *Criterion:* In addition to the general procedure elements identified in Criterion 4 previously, GTGs should be symptom-based with clearly specified entry conditions.

*DSER Evaluation:* Insofar as the WOG reference plant ERGs are function-oriented, the AP600 EPGs derived from the WOG ERGs can also be expected to be function-oriented, and therefore symptom- rather than event-based. Further, the AP600 EOPs, which are based on the ERGs, are described as "symptom-based" in SSAR Section 18.9.8.1.

A definitive determination will require review of the ERGs themselves.

*Proposed Resolution*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

New information regarding this open item was not provided in draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995).

**STATUS OF OPEN ITEM:** Action W

Open Item 18.9.3-6: Procedure V&V

6. *Criterion:* All procedures should be verified and validated. A review should be conducted to assure procedures are correct and can be performed. Final validation of procedures should be performed in a simulation of the integrated system as part of V&V activities.

*DSER Evaluation:* SSAR Section 18.9.8.1.2, states that EOPs "are subjected to a verification and validation on the AP600 simulator." According to the SSAR, the V&V process addresses the objectives specified in NUREG-0899. It is not clear whether the simulator V&V referred to is a part of the proposed M-MIS DSER Evaluations (see the following discussion), part of the validation of the integrated M-MIS, or a separate activity.

SSAR Section 18.8.2.3.5.5 states that, during validation of integrated M-MIS, "subjects use the simulator to execute operating procedures for design-basis events." Computer-based and/or paper procedures are among the relevant M-MIS resources associated with many of the DSER Evaluation Issues (see DSER Evaluation Issues 7,8,9,10,11,13,14,15) described in SSAR Section 18.8.2.3.5 which addresses the M-MIS V&V process. The coordination of procedures with workstation displays is a specific concern in DSER Evaluation Issues 11 and 14. The design of procedure display interfaces and the coordination of procedure display with physical and functional displays are specific concerns in DSER Evaluation Issue 13. The results of these DSER Evaluations are expected to have implications for the design of the computer-based procedures.

The circumstances and locations are not described in which hardcopy procedures are expected to be used.

*Proposed Resolution:*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has provided additional discussion of the relationship of computerized procedures V&V to the M-MIS evaluation issues. Westinghouse indicates that further information addressing features and capabilities of computer-based procedures also is contained in WCAP-14388 and WCAP-14401. At the time of this review, the staff had reviewed only a draft copy WCAP-14401 and had not reviewed the proprietary WCAP-14388. The Westinghouse response remains unclear on the relationship between EOP V&V to the M-MIS evaluation issues.

In addition, HFE PRM Element 10, Verification and Validation, addresses validation of the entire integrated HSI. Final procedures and their interactions with the remaining HSI is an essential aspect of integrated system validation. Procedure related V&V open items were:

- Open Item 18.11.3.1-1 addressing PRM General V&V Scope, Criterion 1 (includes procedures within the scope of V&V)
- Open Item 18.11.3.4-1: Integrated System Validation Methodology, addressing PRM Criterion 3 (The integrated system validation evaluations should address... Adequacy of procedures)
- Open Item 18.11.3.4-1: Integrated System Validation Methodology, addressing PRM Criterion 5 (Regulatory Guide 1.33 categories of procedures).

WCAP-14401, Programmatic Level Description of HFE V&V, addressed these open item acceptably. The WCAP indicated that procedures were within the scope of integrated system validation and that paper-backup will be provided and will be evaluated in validation scenarios (see WCAP-14401, p. 4). The Westinghouse position not to utilize paper backup is in contradiction to the plan and needs to be resolved.

In addition, if procedures will not be developed until a COL designs them, how will integrated system validation be performed unless as a unique activity by each COL? The relationship between Element 10 integrated system validation activities and procedure development needs to be clarified.

STATUS OF OPEN ITEM:      Action W

#### Open Item 18.9.3-7: Computer-Based Procedures

7. *Criterion:* An analysis should be conducted to determine the impact of providing computer-based procedures (either partial or complete) and to specify where such an approach would improve procedure utilization and reduce operating crew errors related to procedure use.

*DSER Evaluation:* The introductory material to the description of the computer-based plant procedures (SSAR Section 18.9.8.6.1) states that selection of rule-based responses is amenable to computerization and that this may be preferable to conventional presentations (for reasons of reduced likelihood of error, reduced operator workload, and the possibility of independent verification of operator actions). However, Westinghouse does not discuss the possibility that the particular implementation of computer-based procedures planned for the AP600 might not mitigate problems associated with hardcopy procedures (e.g., limited space for explanatory material, difficulties associated with the use of multiple procedures, poor integration of procedure use into the ongoing task) and that the computer-based implementation itself



could introduce other problems (see Barnes et al., 1994). There is no discussion of analyses that address human engineering issues related to computer-based procedures, e.g.,

- Whether computer-based procedures support performance at least as good as that obtained with conventional procedures.
- Whether loss or degradation of the computer-based procedures system can be adequately mitigated by back-up measures.
- Whether computer-based procedures can foster undue dependence at the expense of situation awareness.

*Proposed Resolution:*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that WCAP-14388, Functional Design of the AP600 Computerized Plant Procedures System, describes an analysis of the requirements of the computer-based procedures system showing that the system provides a clear-cut advantage over a paper version of procedures implementation. At the time of this review, the staff had not reviewed this proprietary WCAP and the response provided by Westinghouse in their draft SSAR revision did completely address the staff concerns identified in the DSER.

Westinghouse has indicated that "There is no paper backup of the plant procedures in the AP600 control room" (Revised SSAR, p. 18.9-53). Since the staff has not yet found the application of computer-based procedures in AP600 acceptable, it is premature to rule out the use of paper-based procedures.

In addition, as per the Revised SSAR, Westinghouse is examining backup options in the event of CPS loss. The staff believes it is equally premature to rule out the use of paper procedures as a back-up when a clear backup has yet to be identified and explained by Westinghouse.

**STATUS OF OPEN ITEM:** Action W

Open Item 18.9.3-8: Procedure Maintenance

8. *Criterion:* A plan for procedure maintenance and control of updates should be developed.

*DSER Evaluation:* The performance requirements for the computerized procedures system (SSAR Section 18.9.8.6.4) include "the capability to modify or edit the procedures in a straightforward manner. This is accomplished by using a relational data base management system." The system is also expected to provide "for the security of the procedural data base so that only authorized personnel make changes." However, it will be necessary to establish a means for applying administrative document control and quality assurance policies to both paper- and computer-based procedures. For example, there is no discussion of the need to ensure that hardcopy procedures (e.g., backups) remain current and consistent with the computer-based procedures.

#### *Proposed Resolution*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

In draft revision to SSAR Section 18.9.8.4, Combined License Information Item, Westinghouse indicated that it is the COL who is responsible for "developing administrative procedures to ensure that the computer-based procedures database is available only to authorized personnel."

**STATUS OF OPEN ITEM:** Action W

#### Open Item 18.9.3-9: Procedure Use

9. *Criterion:* The physical means by which operators access and use procedures, especially during operational events, should be evaluated as part of the HFE design process. This criterion generally applies to both hardcopy and computer-based procedures although the nature of the issues differ somewhat depending on the implementation. For example, the process should address where procedures are stored, how operators easily access the correct procedures, and hardcopy procedure laydown for use in the control room, remote shutdown facility, and local control stations.

*DSER Evaluation:* Methods by which computerized procedures are accessed are discussed in SSAR Section 18.9.8.6.5.1. Computerized procedures can be accessed either manually or automatically. Manual access is by opening "the computerized procedures icon, or equivalent." The particular procedure accessed may be either "a default procedure...selected by the system" or a procedure selected by the user from a menu. Automatic access is initiated "in response to events such as reactor trip, safety injection, or station black-out" and occurs "independently of whether the computerized procedures display is activated." Precautions taken to avoid automatically accessed procedures from disrupting ongoing operator use of procedures are not discussed.

The performance requirements for the computerized procedures system (SSAR Section 18.9.8.6.4) call for redundancy "so as to provide for a backup if one of the user stations fails." Degradation or failure of the computer-based procedures system is not addressed. Physical access to hardcopy procedures which would serve as backup to the computer-based procedures is not explicitly discussed in the SSAR.

#### *Proposed Resolution*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

As discussed as part of Open Item 18.9.3-7: Computer-Based Procedures, the draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), indicated that there is no paper backup of the plant procedures and that it is the responsibility of the Combined Licensee for developing administrative procedures to ensure that computerized database is accessed by authorized personnel only (see Open Item 18.9.3-8: Procedure Maintenance). Issues regarding the COL Item, acceptability of computer-based procedures, backup in the event of loss of computer-based procedures, and their administrative control need to be resolved before procedure use considerations can be adequately reviewed by the staff.

**STATUS OF OPEN ITEM:** Action W

#### Open Item 18.9.3-10: Procedure Development Source Material

10. *Criterion:* The applicant's procedure development effort should be developed using accepted industry standards, guidelines, and practices. A list of documents which may be used as guidance is provided in the HFE PRM.

*DSER Evaluation:* SSAR Section 18.9.8, states that "the operating and maintenance procedures for the AP600 design implement the recommendations of Regulatory Guide 1.33." It is further stated (in SSAR Section 18.9.8.1.2) that the development of AP600 EOPs follows a process meeting the guidelines in the NUREG-0899, NUREG-0737 Supplement 1, and NUREG-1358. Thus the procedure development process references most of the documents cited in the criterion. These documents, however, do not adequately support the development of computer-based procedures. Insofar as guidance for the design of computer-based procedures is not readily available and relevant research is very limited (Barnes et al., 1994), additional material will need to be developed.

In addition, SSAR Figure 18.8.2-1 lists guidance documents to be developed but no procedure guideline document is identified.

*Proposed Resolution*

In draft revision to SSAR Section 18.9.8, Design of Plant Procedures, (August 18, 1995), Westinghouse has indicated that procedure development is the responsibility of the Combined License applicant. This position created a new open item, "Appropriateness as a COL Item." Resolution of the open item presently under discussion is linked to resolution of the new item.

The design of computer-based procedures will require special HFE considerations. Westinghouse should identify what information is necessary to design computerized procedures.

**STATUS OF OPEN ITEM:**      Action W