10CFR50.59 Safety Evaluation

for the

Addition of Three Manual Isolation Valves within the RCGVS Process Vent Lines

Florida Power & Light Company

St. Lucie Units 1 and 2

JPN-PSL-SEMS-96-007

Revision 0

SAFETY RELATED

DESIGN INTERFACE REVIEW AND APPROVAL RECORD

FPL PLANT: St. Lucie Units 1 and 2

TITLE: Addition of Three Manual Isolation Valves within the RCGVS Process Vent Lines

ENGRG. ORGANIZATION: JPN/PSL

LEAD DISCIPLINE: Mechanical

REVIEW/APPROVAL:

GROUP	INTERFACE TYPE			PREPARED	VERIFIED	APPROVED	FPL APPROVED*
	INPUT	REVIEW	N/A				
MECH	X						N/A
ELECT			X	N/A	N/A	N/A	N/A
I&C			X	N/A	N/A	N/A	N/A
CIVIL			X	N/A	N/A	N/A	N/A
LIC**		X		N/A	N/A		N/A
CSI			X	N/A	N/A	N/A	N/A
NUC FUEL			X	N/A	N/A	N/A	N/A

* For Contractor Eval's As Determined By Projects ** Review Interface As A Minimum On All 10CFR50.59 Eval's and PLA's

FPL PROJECTS APPROVAL: AHWest **DATE:** 3/29/96

EXTERNAL INTERFACES: None **DATE:** _____

TABLE OF CONTENTS

Section No.	Section Description	Page
---	COVERSHEET	1
---	DESIGN INTERFACE REVIEW AND APPROVAL RECORD	2
---	TABLE OF CONTENTS	3
---	ABSTRACT	4
1.0	PURPOSE OF CHANGE AND TECHNICAL DESCRIPTION	5
2.0	REVIEW OF EXISTING LICENSING REQUIREMENTS	7
3.0	TECHNICAL ANALYSIS OF EFFECTS ON SAFETY	9
4.0	EFFECTS ON TECHNICAL SPECIFICATIONS	13
5.0	FAILURE MODES AND EFFECTS ANALYSIS/ HUMAN FACTORS ANALYSIS	13
6.0	UNREVIEWED SAFETY QUESTION DETERMINATION	14
7.0	PLANT RESTRICTIONS	17
8.0	REQUIRED ACTIONS	17
9.0	CONCLUSIONS	18
10.0	REFERENCES	19
11.0	ATTACHMENTS	20

St. Lucie - Units 1 and 2
10CFR50.59 Safety Evaluation
Addition of Three Manual Isolation Valves within the RCGVS Process Vent Lines

ABSTRACT

During the 1995 Fall refueling outage for St. Lucie Unit 2, three 1" manual valves were installed in the Reactor Coolant Gas Vent System (RCGVS) process lines (two manual valves on the Reactor head vent line and one on the Pressurizer vent line). These locked-open globe valves were added to enhance maintenance and/or test efforts associated with the primary solenoid-actuated vent valves and secondary solenoid-actuated block valves in that system. Should solenoid valve rework become necessary at elevated Reactor Coolant System (RCS) pressure and temperature, manual isolation of the RCGVS from the RCS could be performed by closing these manual valves. A Minor Engineering Package (MEP) screened from 10CFR50.59 was used to justify their inclusion into the system. A similar plant change is being planned for Unit 1 during the 1996 Spring Refueling Outage. Valves will be identically located just upstream of the primary solenoid valves.

A Company Nuclear Review Board Subcommittee review of the Unit 2 change package questioned the need for a 50.59 evaluation and a St. Lucie Action Report (STAR) was generated (see Reference 10.1). This safety evaluation is written in response to this STAR. This evaluation will more formally assess the safety significance of adding these three manual valves to the RCGVS and provide a generic review for their installation. This safety evaluation will be applicable to both St. Lucie nuclear units and will supplement the engineering justification for each unit's plant change/modification package.

For this evaluation, a review of the FSAR, the Technical Specifications and the Design Basis Documents (DBD) was again performed to determine any possible impact. The review demonstrates that the proposed activity for installing manual valves in the Unit 1 RCGVS (and the previous related activity for Unit 2) does not involve an unreviewed safety question or require a change to the Technical Specifications. Since each concern posed by the 10CFR50.59 can be appropriately answered, prior NRC approval is not required.

It is concluded that the installation of these isolation valves will have no affect on plant safety or operation. The permanent valve additions to the RCGVS are acceptable from the standpoint of nuclear safety in that it does not affect the original design basis nor impact the safe operation of the Plant. This evaluation has indicated that these new valves provide a backup to the existing line valves and actually offer additional system isolation capability. These modifications are considered to be a maintenance aid in the event that RCGVS solenoid vent valves need replacement, refurbishment or additional testing at elevated RCS pressure and temperature. Hence, these changes do not affect the primary safety-related function of the RCGVS during post-accident situations or other secondary functions of the system.

The subject valves are located within a Quality Group B, Seismic Category I portion of the piping system and are designed to ASME Section III, Class 2. Therefore, this evaluation is classified as Safety-Related.

1.0 PURPOSE OF CHANGE AND TECHNICAL DESCRIPTION

1.1 Purpose of Change

The MEP's given by References 10.8, 10.9 and 10.10 were developed in support of St. Lucie Plant maintenance activities to facilitate the procedures for replacement, refurbishment or testing of the RCGVS solenoid vent valves at hot operating conditions. As part of these plant changes, manual locked-open isolation valves were added to the process vent lines and similarly located within each St. Lucie unit (implemented via Reference 10.9 for Unit 2 and proposed in Reference 10.10 for Unit 1). These manual valves were located just upstream of the primary solenoid-actuated vent control valves (two manual valves on the Reactor head vent line and one on the Pressurizer vent line - see the sketches within Attachments 11.1 and 11.2). The purpose of this safety evaluation is to more formally assess the safety significance for adding these manual isolation valves to the RCGVS process lines and provide a generic review for the acceptability of their installation. As such, this safety evaluation will be applicable to both St. Lucie nuclear units and will supplement the engineering justification for each unit's plant change/modification package.

1.2 Technical Description

1.2.1 *Solenoid-Actuated Control Valve Replacements*

Small-bore piping is provided from the top of the Reactor and Pressurizer heads to enable various vent functions. The RCGVS solenoid valves are configured with four upstream vent valves in parallel and three downstream block valves in parallel for venting to either the Quench Tank, Containment atmosphere or to the Containment Sump. The primary and secondary solenoid vent valves within the RCGVS for both St. Lucie units are defined as the following (see Attachments 11.1 and 11.2 for seven system locations per unit):

St Lucie Unit No.	Primary Solenoid Valve Tag Nos.	Secondary Solenoid Valve Tag Nos.
1	V1441, V1442, V1443 and V1444	V1445, V1446 and V1449
2	V1460, V1461, V1462 and V1463	V1464, V1465 and V1466

These safety-related control valves are required to open after an accident to vent non-condensible gases from the RCS. They may also operate during normal plant startup and shutdown to provide a vent path when filling or draining the RCS. The original valves in both Units were installed with a seal-welded body-to-bonnet joint. The MEP's of References 10.8 and 10.10 evaluate the installation of replacement valves with a bolted bonnet in each of the seven locations for Units 1 and 2, respectively. A change-out to the bolted bonnet design was highly desirable as it will simplify maintenance efforts, reduce related costs, increase valve life, and reduce the spare parts inventory requirements.

1.2 Technical Description (continued)

1.2.1 *Solenoid-Actuated Control Valve Replacements (continued)*

During the Fall 1995 Unit 2 refueling outage, bolted bonnet valves were installed in the primary solenoid valve locations. Other system design modifications were also incorporated to achieve ease in maintaining the solenoid valves through procedure. One such feature was the addition of manual isolation valves upstream of the primary solenoid valves for positive system isolation should valve maintenance be required at elevated RCS pressure and temperature. The primary maintenance goal associated with the improvement items was to facilitate both the solenoid valve removal/replacement and the remote test efforts under those RCS conditions.

The Unit 1 MEP of Reference 10.10 addresses the long term design improvements that evolved from the Unit 2 solenoid valve replacement effort (based on the problem report of Reference 10.13). On this basis together with the lessons learned from the Fall 1995 Unit 2 outage work, the identical design improvements were incorporated into the Unit 1 MEP for improved maintenance practices.

1.2.2 *Manual Isolation Valve Additions*

Should solenoid valve maintenance/testing become necessary at elevated RCS pressure and temperature, the provision for adequate manual isolation of either the Unit 1 or Unit 2 RCGVS was not originally considered as part of the system design. Hence, the RCGVS solenoid-operated valves could only be worked with the RCS depressurized or if the upstream isolation valve did not leak. To facilitate maintenance under elevated RCS pressure and temperature, the addition of manual valves in the RCGVS provides the capability for dual, localized isolation of the Reactor and Pressurizer head vent lines for personnel safety and ALARA purposes.

Currently on Unit 1, only one manual isolation valve (V1450) exists on the Reactor head vent line and it is located just above the Reactor Cooling Shroud making access difficult. Previous to the implementation of Reference 10.9 for Unit 2, two manual valves (V1212 and V1470) were installed but their location was near the Reactor head area. For the RCGVS redesign effort which requires the dual isolation feature for each St. Lucie unit, the scheme maintains two new manual valves (V1650 and V1651) to be located on the process line just upstream of the primary solenoid vent valves along the west sidewall of the Pressurizer.

Single valve isolation previously existed within the vent line from the Pressurizer on both St. Lucie units (via V1239). Since this valve is located within the Pressurizer cubicle and approximately 5 feet above the head, it is considered to be fairly accessible to an operator. Therefore, only one new valve is required to provide the desired dual isolation upstream of the solenoid vent valves. This new manual valve (V1652) has been identified as part of the RCGVS redesign and shall be located on the Pressurizer vent line adjacent to the same west sidewall only at a higher elevation.

Per the redesign, all three 1" manual valves in each unit will be in a normally locked-open position to preclude inadvertent positioning during power operation.

1.2 Technical Description (continued)

1.2.2 *Manual Isolation Valve Additions (continued)*

Under current programmatic guidelines for small-size replacement valves, the Anchor/Darling valve design will be used for the three new isolation valves. The manual valves and associated piping are safety-grade and meet the same requirements as the RCS. All piping is designated as Quality Group B, Seismic Class I, and designed to ASME Section III, Class 2. As such, this evaluation is classified as Safety-Related.

2.0 REVIEW OF LICENSING REQUIREMENTS

References 10.2 through 10.5 present the licensing documents, i.e. FSAR and Technical Specification, for the Unit 1 and Unit 2 RCGVS designs, and the applicable sections for review. The discussions for each St. Lucie unit are identical. The major difference is the presentation of the FSAR flow diagram; Unit 1 shows the RCGVS integrated onto the RCS flow diagram (see U1 FSAR Figure 5.1-3 referenced from U1 FSAR Section 5.7) while Unit 2 depicts the RCGVS in the RCS section as FSAR Figure 5.1-4b as well as on its own separate diagram (see U2 FSAR Figure 9.3-7 from U2 FSAR Section 9.3.7). Redundancy is not required and one RCGVS figure will be eliminated within the Unit 2 FSAR change package to avoid confusion with respect to future FSAR updates. Figure 5.1-4b addresses an FPL referenced drawing and Figure 9.3-7 does not show any reference drawing. Therefore, from a control standpoint, Figure 9.3-7 shall be eliminated from the Unit 2 FSAR.

For simplicity and clarity, the remainder of this evaluation will address the manual valve additions generically for the Unit 1/Unit 2 RCGVS design. All statements, actions and conclusions shall apply to both units.

2.1 FSAR Requirements

The basic purpose of the RCGVS is to remove the non-condensibles (primarily hydrogen) from the RCS in a reasonable time period over a wide range of reactor coolant pressure and temperature during post-accident conditions. The affected RCGVS vent lines containing these three manual valves are connected off the Reactor and Pressurizer heads. A technical review must be made to ensure that these manual valves do not affect the original design function. Per the discussions in FSAR, the RCGVS performs a safety-related function under post-accident conditions. This system is designed to perform the following:

1. The primary safety-related function of the RCGVS is to allow for remote venting of the RCS via the Reactor Vessel head vent or the Pressurizer steam space during post-accident situations when large quantities of non-condensible gases may collect in these high points. [Aside: A quality-related function appearing in the DBD's of References 10.6 and 10.7 is to maintain the integrity of the RCGVS pressure boundary.]

2. As a secondary (not-nuclear safety) function, the RCGVS may also be used in normal RCS venting procedures required for a plant outage.

2.1 FSAR Requirements (continued)

The FSAR figure which depicts the RCGVS flow diagram shows all existing, normally-open, manual valves on the process vent path to be locked-open to effect these design bases.

Pertinent design criteria has been established with respect to the system flowrates, controls and piping. The RCGVS parallel piping configuration assures redundancy for the RCS vent path and flow restricting orifices in each vent path limit excessive RCS mass loss in event of a line break. Active components such as the solenoid valves are supplied with emergency power and are designed for a single active failure; this active failure will not prevent venting to the Containment. Vent controllability is available in the Control Room and all controls are designed to allow venting under accident conditions. This system must be operable following all design basis events except those requiring evacuation from the Control Room.

The RCGVS is not intended for use during normal power operation and administrative controls are provided to minimize the possibility of inadvertent operation. Power is removed from all solenoid control valves during normal plant conditions. During accident conditions, the RCGVS will be operated as an on-off system to remove gas from the RCS. The volume of gas to be removed is determined by Reactor Vessel or Pressurizer monitoring and the venting time is dependent upon this volume, RCS pressure and RCS temperature.

2.2 Technical Specification Requirements

The Technical Specification identifies the vent paths and necessary valving for ensuring the ability to vent the RCS. At least one vent path consisting of two vent valves and one block valve powered from emergency sources shall be operable and closed at locations from the Reactor Vessel head and the Pressurizer steam space. The applicability is during plant operating Modes 1 thru 4.

If one of these vent paths is inoperable, it must be restored to the operable status within 30 days, or be in Hot Standby (HSB) within 6 hours and in Cold Shutdown (CSD) within the following 30 hours. If both RCS vent paths are inoperable, at least one path must be restored to the operable status within 72 hours, or be in HSB within 6 hours and in CSD within the following 30 hours.

3.0 TECHNICAL ANALYSIS OF EFFECTS ON SAFETY

In order to justify the use of the three new manual valves within the process vent lines of the RCGVS, a reconciliation of the system and valve designs as well as the normal and post-accident operative capabilities will be necessary.

3.1 RCGVS System Design Analysis

Key system design interfaces are presented below for review and analysis.

3.1.1 *RCS Pressure Boundary*

The RCGVS piping between both the Reactor and Pressurizer heads and the RCS pressure boundary barrier valve, i.e. the primary solenoid vent valves, is rated for full RCS design pressure and temperature (2485 psig and 700 °F - see References 10.14 and 10.15). The manual valves will be located in between these components and will have design rating in excess of these parameters (see Section 3.2.3 below). The RCS pressure boundary will not be affected by the installation of the three manual valves. Hence, the piping/valving configuration given by this evaluation does not alter the RCS pressure boundary and is compatible with the system requirements.

3.1.2 *Seismic Qualification*

The affected piping and supports have been evaluated and found acceptable for the additional weight of the valves (see Reference 10.16 and 10.17).

3.1.3 *Leakage Control*

To control leakage from fluid systems inside Containment, it is good practice to normally weld the components of the RCGVS into the piping system and minimize the use of flanged connections where practical. It follows that all installed valves should be the packless-type to minimize leakage. However, there are many flanged connections within the RCGVS to provide ease for routine maintenance efforts. Additionally, the three new manual valves will be welded into the system and they will not be packless. Furthermore, all RCGVS valves which have been installed as process, vent and drain valves are not the packless type. This conflicts with the information that exists within the FSAR's of St. Lucie Unit 1 and Unit 2 (see Sections 5.7.3.3 and 9.3.7.3.3).

The concepts of welded components and packless valves are system design features and used where practical but they are not bona-fide system requirements. Sufficient equipment exists within the Plant to monitor and detect leakage from the RCS and connecting auxiliary fluid systems. Additionally, the ASME Code (see Reference 10.19) allows the usage of flanged connections and non-packless type valves. As such, the FSAR will be changed to reflect the current St Lucie installations. FSAR change packages are given as Attachments 11.3 and 11.4.

3.1 RCGVS System Design Analysis (continued)

3.1.4 *Design Integration*

A review of both the St. Lucie PASSPORT Active Safety Evaluations List and DCTS did not locate any safety evaluations or outstanding change documents which would affect the scope of this safety evaluation.

3.2 Manual Valve Design Analysis

Critical design parameters associated with the three new 1" manual globe valves have been reconciled and are addressed below.

3.2.1 ***Code Requirements (including year and addenda)***

Reference 10.18 specified ASME Section III, 1977 Edition, Winter 1978 Addenda (Reference 10.19) or any later code year/addenda up to and including that approved by 10CFR50.55a (Reference 10.20). These valves are designed/manufactured to ASME Section III, 1986 Edition, No Addenda. This code year is approved by 10CFR50.55a, Edition January 1, 1992.

3.2.2 *Code/Safety Classification*

The valves are located within a Quality Group B (USAS B31.7) Class 2 portion of the piping system (see References 10.14 thru 10.15 and 10.21 thru 10.24). The Anchor/Darling valves being supplied are ASME Class 1 valves. In accordance with ASME Section III, Subsection NCA-2134, valves classified as Class 2 or 3 in their Design Specifications (original construction) may be constructed and stamped in accordance with the rules of Subsection NB (Class 1). The ASME Safety Class will be shown as Class 2 in TEDB (or other drawings such as the P&ID, isometric, etc.) since the new installed valves are of a higher ASME Safety Class. The ASME Safety Class shown in these documents will be retained to indicate the minimum ASME Safety Class requirement of the piping system.

3.2.3 *Design Pressure and Temperature*

The ANSI pressure class of the Anchor Darling valves is ANSI 1878 standard interpolated pressure class (see Reference 10.28). Review of the TEDB and the piping isometrics of References 10.14 and 10.15 indicates that the system design pressure and temperature are 2485 psig @ 700 °F. These valves are designed to operate at 2705 psig @ 700 °F. Therefore, the pressure class of the manual valves bounds the design and is acceptable.

3.2 Manual Valve Design Analysis (continued)

3.2.4 *Material*

Reference 10.18 specifies acceptable materials for both St. Lucie nuclear units. Due to ALARA concerns associated with wear products of cobalt based materials in contact with reactor coolant fluid, cobalt hard-facing has been restricted by FPL (unless no other hard-facing is available). The Anchor/Darling valves do not employ cobalt hard-facing and the materials of construction meet the requirements of Reference 10.18.

3.2.5 *Pressure Drop*

The C_v , or flow coefficient for the Anchor/Darling valve is 8 (see Reference 10.28). This C_v value imposes a negligible line loss with respect to the entire system resistance. Review of the Reference 10.6 and 10.7 design basis documents indicate that the vent rate is limited by the class break restricting orifices, and addition of these valves will have no impact on the vent rate.

3.2.6 *Spatial Envelope*

These manual valves will be located in an area on the west side of the pressurizer that is open faced and have an end-to-end dimension of 5-1/2" (see Reference 10.28). Based on a review of the piping drawings of Reference 10.14 thru 10.15 as well as 10.25 thru 10.27, there is sufficient room for installation and operation of these valves.

3.2.7 *Procurement Level*

The correct procurement classification for these manual globe valves in their ASME Class 2 application is Procurement Class PC-1 and they have been purchased accordingly to that requirement (see Reference 10.33).

3.3 RCGVS Operative Capability

Operation of these new manual valves will be in accordance with the Technical Specifications for RCS vents. As stated in Section 2.2 of this evaluation, at least one Reactor Coolant vent path consisting of two vent valves and one block valve powered from emergency buses shall be operable and closed from both the Reactor Vessel head and the Pressurizer steam space, while in Modes 1 through 4. The physical closing of a new manual valve will isolate this RCS vent path. Thus, the requirements of Technical Specifications must be evoked whenever one or more of these valves is to be closed. Therefore, a system requirement exists whereby these manual valves shall not be closed except for the performance of approved RCGVS maintenance, surveillance or testing activities. Furthermore, these manual valves shall be administratively locked open to preclude inadvertent positioning during normal power operation.

3.3 RCGVS Operative Capability (continued)

The ability of the RCGVS to perform its intended quality-related or not-nuclear safety functions as discussed in the above Section 2.1 is not affected by the installation of three new manual globe valves. The intermediate pressure instrument, PI-1117 for Unit 1 (on Attachment 11.1) and PI-1140 for Unit 2 (on Attachment 11.2), remains unchanged and provides control room indication as well as an alarm to assure that the primary solenoid vent valves are not leaking. As discussed above, the new manual valves will be locked-open in order to provide the necessary vent path. Section 3.2.5 (above) has shown that the modified RCGVS vent paths will remain unrestricted and the vent flowrate through both vent lines will not be affected. Also, these new valves provide a backup function to the existing line valves by offering additional RCGVS System isolation capability.

Accordingly, the installation of these valves will not affect the RCGVS design basis or operative functions.

1.2 Technical Description (continued)

1.2.2 *Manual Isolation Valve Additions (continued)*

Under current programmatic guidelines for small-size replacement valves, the Anchor/Darling valve design will be used for the three new isolation valves. The manual valves and associated piping are safety-grade and meet the same requirements as the RCS. All piping is designated as Quality Group B, Seismic Class I, and designed to ASME Section III, Class 2. As such, this evaluation is classified as Safety-Related.

2.0 REVIEW OF LICENSING REQUIREMENTS

References 10.2 through 10.5 present the licensing documents, i.e. FSAR and Technical Specification, for the Unit 1 and Unit 2 RCGVS designs, and the applicable sections for review. The discussions for each St. Lucie unit are identical. The major difference is the presentation of the FSAR flow diagram; Unit 1 shows the RCGVS integrated onto the RCS flow diagram (see U1 FSAR Figure 5.1-3 referenced from U1 FSAR Section 5.7) while Unit 2 depicts the RCGVS in the RCS section as FSAR Figure 5.1-4b as well as on its own separate diagram (see U2 FSAR Figure 9.3-7 from U2 FSAR Section 9.3.7). Redundancy is not required and one RCGVS figure will be eliminated within the Unit 2 FSAR change package to avoid confusion with respect to future FSAR updates. Figure 5.1-4b addresses an FPL referenced drawing and Figure 9.3-7 does not show any reference drawing. Therefore, from a control standpoint, Figure 9.3-7 shall be eliminated from the Unit 2 FSAR.

For simplicity and clarity, the remainder of this evaluation will address the manual valve additions generically for the Unit 1/Unit 2 RCGVS design. All statements, actions and conclusions shall apply to both units.

2.1 FSAR Requirements

The basic purpose of the RCGVS is to remove the non-condensibles (primarily hydrogen) from the RCS in a reasonable time period over a wide range of reactor coolant pressure and temperature during post-accident conditions. The affected RCGVS vent lines containing these three manual valves are connected off the Reactor and Pressurizer heads. A technical review must be made to ensure that these manual valves do not affect the original design function. Per the discussions in FSAR, the RCGVS performs a safety-related function under post-accident conditions. This system is designed to perform the following:

1. The primary safety-related function of the RCGVS is to allow for remote venting of the RCS via the Reactor Vessel head vent or the Pressurizer steam space during post-accident situations when large quantities of non-condensible gases may collect in these high points. [Aside: A quality-related function appearing in the DBD's of References 10.6 and 10.7 is to maintain the integrity of the RCGVS pressure boundary.]

2. As a secondary (not-nuclear safety) function, the RCGVS may also be used in normal RCS venting procedures required for a plant outage.

2.1 FSAR Requirements (continued)

The FSAR figure which depicts the RCGVS flow diagram shows all existing, normally-open, manual valves on the process vent path to be locked-open to effect these design bases.

Pertinent design criteria has been established with respect to the system flowrates, controls and piping. The RCGVS parallel piping configuration assures redundancy for the RCS vent path and flow restricting orifices in each vent path limit excessive RCS mass loss in event of a line break. Active components such as the solenoid valves are supplied with emergency power and are designed for a single active failure; this active failure will not prevent venting to the Containment. Vent controllability is available in the Control Room and all controls are designed to allow venting under accident conditions. This system must be operable following all design basis events except those requiring evacuation from the Control Room.

The RCGVS is not intended for use during normal power operation and administrative controls are provided to minimize the possibility of inadvertent operation. Power is removed from all solenoid control valves during normal plant conditions. During accident conditions, the RCGVS will be operated as an on-off system to remove gas from the RCS. The volume of gas to be removed is determined by Reactor Vessel or Pressurizer monitoring and the venting time is dependent upon this volume, RCS pressure and RCS temperature.

2.2 Technical Specification Requirements

The Technical Specification identifies the vent paths and necessary valving for ensuring the ability to vent the RCS. At least one vent path consisting of two vent valves and one block valve powered from emergency sources shall be operable and closed at locations from the Reactor Vessel head and the Pressurizer steam space. The applicability is during plant operating Modes 1 thru 4.

If one of these vent paths is inoperable, it must be restored to the operable status within 30 days, or be in Hot Standby (HSB) within 6 hours and in Cold Shutdown (CSD) within the following 30 hours. If both RCS vent paths are inoperable, at least one path must be restored to the operable status within 72 hours, or be in HSB within 6 hours and in CSD within the following 30 hours.

3.0 TECHNICAL ANALYSIS OF EFFECTS ON SAFETY

In order to justify the use of the three new manual valves within the process vent lines of the RCGVS, a reconciliation of the system and valve designs as well as the normal and post-accident operative capabilities will be necessary.

3.1 RCGVS System Design Analysis

Key system design interfaces are presented below for review and analysis.

3.1.1 *RCS Pressure Boundary*

The RCGVS piping between both the Reactor and Pressurizer heads and the RCS pressure boundary barrier valve, i.e. the primary solenoid vent valves, is rated for full RCS design pressure and temperature (2485 psig and 700 °F - see References 10.14 and 10.15). The manual valves will be located in between these components and will have design rating in excess of these parameters (see Section 3.2.3 below). The RCS pressure boundary will not be affected by the installation of the three manual valves. Hence, the piping/valving configuration given by this evaluation does not alter the RCS pressure boundary and is compatible with the system requirements.

3.1.2 *Seismic Qualification*

The affected piping and supports have been evaluated and found acceptable for the additional weight of the valves (see Reference 10.16 and 10.17).

3.1.3 *Leakage Control*

To control leakage from fluid systems inside Containment, it is good practice to normally weld the components of the RCGVS into the piping system and minimize the use of flanged connections where practical. It follows that all installed valves should be the packless-type to minimize leakage. However, there are many flanged connections within the RCGVS to provide ease for routine maintenance efforts. Additionally, the three new manual valves will be welded into the system and they will not be packless. Furthermore, all RCGVS valves which have been installed as process, vent and drain valves are not the packless type. This conflicts with the information that exists within the FSAR's of St. Lucie Unit 1 and Unit 2 (see Sections 5.7.3.3 and 9.3.7.3.3).

The concepts of welded components and packless valves are system design features and used where practical but they are not bona-fide system requirements. Sufficient equipment exists within the Plant to monitor and detect leakage from the RCS and connecting auxiliary fluid systems. Additionally, the ASME Code (see Reference 10.19) allows the usage of flanged connections and non-packless type valves. As such, the FSAR will be changed to reflect the current St Lucie installations. FSAR change packages are given as Attachments 11.3 and 11.4.

3.1 RCGVS System Design Analysis (continued)

3.1.4 *Design Integration*

A review of both the St. Lucie PASSPORT Active Safety Evaluations List and DCTS did not locate any safety evaluations or outstanding change documents which would affect the scope of this safety evaluation.

3.2 Manual Valve Design Analysis

Critical design parameters associated with the three new 1" manual globe valves have been reconciled and are addressed below.

3.2.1 ***Code Requirements (including year and addenda)***

Reference 10.18 specified ASME Section III, 1977 Edition, Winter 1978 Addenda (Reference 10.19) or any later code year/addenda up to and including that approved by 10CFR50.55a (Reference 10.20). These valves are designed/manufactured to ASME Section III, 1986 Edition, No Addenda. This code year is approved by 10CFR50.55a, Edition January 1, 1992.

3.2.2 *Code/Safety Classification*

The valves are located within a Quality Group B (USAS B31.7) Class 2 portion of the piping system (see References 10.14 thru 10.15 and 10.21 thru 10.24). The Anchor/Darling valves being supplied are ASME Class 1 valves. In accordance with ASME Section III, Subsection NCA-2134, valves classified as Class 2 or 3 in their Design Specifications (original construction) may be constructed and stamped in accordance with the rules of Subsection NB (Class 1). The ASME Safety Class will be shown as Class 2 in TEDB (or other drawings such as the P&ID, isometric, etc.) since the new installed valves are of a higher ASME Safety Class. The ASME Safety Class shown in these documents will be retained to indicate the minimum ASME Safety Class requirement of the piping system.

3.2.3 *Design Pressure and Temperature*

The ANSI pressure class of the Anchor Darling valves is ANSI 1878 standard interpolated pressure class (see Reference 10.28). Review of the TEDB and the piping isometrics of References 10.14 and 10.15 indicates that the system design pressure and temperature are 2485 psig @ 700 °F. These valves are designed to operate at 2705 psig @ 700 °F. Therefore, the pressure class of the manual valves bounds the design and is acceptable.

3.2 Manual Valve Design Analysis (continued)

3.2.4 *Material*

Reference 10.18 specifies acceptable materials for both St. Lucie nuclear units. Due to ALARA concerns associated with wear products of cobalt based materials in contact with reactor coolant fluid, cobalt hard-facing has been restricted by FPL (unless no other hard-facing is available). The Anchor/Darling valves do not employ cobalt hard-facing and the materials of construction meet the requirements of Reference 10.18.

3.2.5 *Pressure Drop*

The C_v , or flow coefficient for the Anchor/Darling valve is 8 (see Reference 10.28). This C_v value imposes a negligible line loss with respect to the entire system resistance. Review of the Reference 10.6 and 10.7 design basis documents indicate that the vent rate is limited by the class break restricting orifices, and addition of these valves will have no impact on the vent rate.

3.2.6 *Spatial Envelope*

These manual valves will be located in an area on the west side of the pressurizer that is open faced and have an end-to-end dimension of 5-1/2" (see Reference 10.28). Based on a review of the piping drawings of Reference 10.14 thru 10.15 as well as 10.25 thru 10.27, there is sufficient room for installation and operation of these valves.

3.2.7 *Procurement Level*

The correct procurement classification for these manual globe valves in their ASME Class 2 application is Procurement Class PC-1 and they have been purchased accordingly to that requirement (see Reference 10.33).

3.3 RCGVS Operative Capability

Operation of these new manual valves will be in accordance with the Technical Specifications for RCS vents. As stated in Section 2.2 of this evaluation, at least one Reactor Coolant vent path consisting of two vent valves and one block valve powered from emergency buses shall be operable and closed from both the Reactor Vessel head and the Pressurizer steam space, while in Modes 1 through 4. The physical closing of a new manual valve will isolate this RCS vent path. Thus, the requirements of Technical Specifications must be evoked whenever one or more of these valves is to be closed. Therefore, a system requirement exists whereby these manual valves shall not be closed except for the performance of approved RCGVS maintenance, surveillance or testing activities. Furthermore, these manual valves shall be administratively locked open to preclude inadvertent positioning during normal power operation.

3.3 RCGVS Operative Capability (continued)

The ability of the RCGVS to perform its intended quality-related or not-nuclear safety functions as discussed in the above Section 2.1 is not affected by the installation of three new manual globe valves. The intermediate pressure instrument, PI-1117 for Unit 1 (on Attachment 11.1) and PI-1140 for Unit 2 (on Attachment 11.2), remains unchanged and provides control room indication as well as an alarm to assure that the primary solenoid vent valves are not leaking. As discussed above, the new manual valves will be locked-open in order to provide the necessary vent path. Section 3.2.5 (above) has shown that the modified RCGVS vent paths will remain unrestricted and the vent flowrate through both vent lines will not be affected. Also, these new valves provide a backup function to the existing line valves by offering additional RCGVS System isolation capability.

Accordingly, the installation of these valves will not affect the RCGVS design basis or operative functions.

4.0 EFFECT ON TECHNICAL SPECIFICATIONS

Since the new manual valves have been designated as having a locked-open requirement during normal plant operating modes, there will be no impact on the ability to meet the Technical Specification denoted above. It is noted that prior to implementing the aforementioned plant changes associated with these new manual valves, locked-open valves (V1450 and V1239 for Unit 1; V1212, V1470 and V1239 on Unit 2) *already* exist in each of the Reactor and Pressurizer process vent paths just upstream of the primary solenoid vent valves.

Other St. Lucie operating, off-normal and emergency plant procedures must be revised per this safety evaluation and per the MEP that installs the three manual isolation valves. As a minimum, this includes the FPL procedures of References 10.31 and 10.32. These plant procedures provide the instructions for placing valves, locks and switches under administrative control when that component is critical to the safety of personnel or equipment. Administrative control means that the component shall not be operated without specific authorization. The device for all locked valves shall be such that it prevents significant rotation of the handwheel. The new manual valves will be placed within Appendix E of Reference 10.31 and 10.32 entitled "Containment and Shield Building Integrity Valve List" where the locked-open valves (mentioned in the previous paragraph) currently exist.

With the planned documentation changes and associated valve lock put in place, no changes are required within the Plant Technical Specifications.

5.0 FAILURE MODES AND EFFECTS ANALYSIS/HUMAN FACTORS ANALYSIS

A physical plant modification is required as a result of the need for additional system isolation valves. Also, these desired changes require the updating of the FSAR drawing which depicts the system configuration. However, based on the conclusions of Section 3.0 above, there are no new failure modes or system interactions as a result of this evaluation. This safety evaluation justifies the acceptability of modifying the RCGVS vent path valve arrangement.

This safety evaluation does not involve any changes to the Control Room or Alternate Shutdown Panels nor impose any new operator actions other than verifying that the locked-open feature exists per administrative procedures. Hence, a human factors review is not required.

6.0 UNREVIEWED SAFETY QUESTION DETERMINATION

The Code of Federal Regulations, Title 10, Chapter 50.59, allows holders of a license authorizing operation of a utilization facility to make changes in the facility and procedures as described in the Safety Analysis Report (SAR) and to conduct tests or experiments not described in the SAR without prior NRC approval provided the proposed changes, tests or experiments involve neither a change to the Technical Specifications (incorporated in the license) nor an unreviewed safety question.

As defined in 10CFR50.59, an unreviewed safety question exists if: (i) the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the SAR may be increased, or (ii) a possibility for an accident or malfunction of a different type than any previously evaluated in the SAR may be created, or (iii) the margin of safety as defined in the basis for any Technical Specification is reduced.

In accordance with 10CFR50.59, the following evaluation serves to determine whether the permanent installation of the three RCGVS manual valves as evaluated in this safety evaluation constitutes an unreviewed safety question or requires a change to the Technical Specifications. ***Based on the comparison review of licensing documents in the above Section 2.0, all statements, actions and conclusions shall apply to both units.***

6.1 Does the proposed change increase the probability of occurrence of an accident previously evaluated in the SAR?

The primary purpose of the subject manual valves is to isolate the RCS from the RCGVS solenoid vent valves to allow maintenance under elevated RCS pressure and temperature. The addition of manual valves in the RCGVS provides the capability for dual, localized isolation of the Reactor and Pressurizer head vent lines for personnel safety and ALARA purposes during this maintenance effort. Each manual valve will have a *lock-open* system requirement to assure that the vent path cannot be isolated during plant operating modes. As stated in Section 3.0 above, manual valves are seismically-qualified and will not inhibit the operative capabilities of the RCGVS. Thus, the performance ability of downstream solenoid valve vent valves (which are required after an accident) will not be affected by the placement of manual valves in the two vent lines.

These manual valves are considered as passive devices and are not relied upon to perform any safety-related, active function. The installation of new valves into the system is further accepted since they are designed to the same codes and standards as the existing RCGVS piping. Accordingly, these new valves are designed to maintain the RCS pressure boundary and ensures that the probability of an accident is not increased. Since the proposed valving configuration does not affect any accident mitigating components of the RCGVS, the probability of occurrence of an accident previously evaluated in the SAR will not be increased.

6.2 Does the proposed change increase the consequences of an accident previously evaluated in the SAR?

The addition of manual valves in the RCGVS process vent lines has been evaluated without any negative effects on the system. The design of the manual valves is satisfactory with respect to the service requirements. RCGVS venting operations will not be impacted in the post-accident situation. As long as the valves are locked open during normal plant operating modes, their presence in the lines cannot impair the ability to vent off the high-point gases in the RCS following an accident. Based on the above and the analysis presented in Section 3.0 of this safety evaluation, the addition of the three subject manual valves will not increase the consequence of an accident previously evaluated in the SAR

6.3 Does the proposed change increase the probability of an occurrence of a malfunction of equipment important to safety previously evaluated in the SAR?

There is no change to the process line function, length, routing or supports. Therefore, the original design basis for the two RCS vent lines is maintained. System operation and component functionality will not be affected by the addition of three manual valves. No new failure modes for active equipment are introduced by the new valving configuration. RCGVS active equipment, which includes the primary and secondary solenoid vent valves, will remain operable and be capable of RCS post-accident venting in accordance with Technical Specification requirements. No other existing RCGVS equipment that is important to safety has been affected by the addition of these three manual valves. These manual valves will not alter the function of this equipment and will not increase the probability of their failure. With respect to a malfunction of the manual valves themselves, it is highly unlikely since they are passive devices in the line.

The affected piping and new manual valves within the RCGVS have been specified at the RCS design pressure and temperature; hence, the RCS pressure boundary integrity will continue to remain intact. The installation of three valves in this portion of the RCS vent lines will actually enhance the ability to manually isolate the RCS in the event of a vent line break further downstream. Thus, based on all the above, the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR will not be increased.

6.4 Does the proposed change increase the consequences of a malfunction of equipment important to safety previously evaluated in the SAR?

The manual valve additions will not change the design, safety class or safety functions of the system and no new failure modes have been created. Since the ability to vent the RCS high spots during a post-accident event is maintained via the solenoid control valves, the potential for worsening the consequences of equipment malfunctions due to manual valve additions will be held in check.

The only other accident consequences that could be affected by this new valve scheme are those from a pipe rupture or seismic event. However, these valves are designed to Seismic Class I and the piping system remains seismically-qualified per the statement in Section 3.1.2 above. Pipe stress calculations were performed due to the weight increases and have shown that the structures, systems and components will continue to meet original design criteria and limits in compliance with the FSAR.

6.4 Continued

These new valves are designed to maintain the RCS pressure boundary. Should a failure of a subject manual valve be postulated, it could lead to a small-break LOCA inside Containment. However, this failure cannot produce a consequence that is not bounded by existing accident analysis since the system's flow restricting orifices (which limits blowdown flow from the break) are located upstream of the new valves. As such, the RCGVS will continue to maintain its critical function as given in the Technical Specifications and no changes to the Technical Specifications will be necessary.

It is concluded that the new manual valves will neither affect nor change to the condition of the RCS or RCGVS and equipment within these systems can still be used in mitigating the consequences of an accident. As a result, the safety analysis will not be affected. Therefore, the consequences of a malfunction of equipment important to safety previously evaluated in the SAR are not increased.

6.5 Does the proposed change create the possibility of an accident of a different type than any previously evaluated in the SAR?

The addition of new manual valves in the RCS vent lines does not change the operation of the RCGVS. Furthermore, no new hazards or failure modes have been identified that could be postulated to cause an accident different from any previously analyzed in the FSAR. The valving configuration does not add or affect any equipment capable of initiating an accident. Since no RCGVS design basis changes have resulted from the valve additions and system integrity will not change, the possibility of an accident of a different type than any previously evaluated in the SAR will not be created.

6.6 Does the proposed change create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR?

These new 1" valves are seismically-designed, passive components. Section 3.1.2 demonstrates that the RCGVS piping system with the newly installed manual valves is seismically adequate. Additionally, the new valving and affected piping are designed to full RCS pressure and temperature to ensure that the RCS pressure boundary remains intact. Once installed, the new manual valves meet the same original RCGVS design basis requirements and design criteria of the RCGVS and perform the same design isolation function of similar adjacent manual valves. A postulated failure of a new locked-open valve is not likely and, if it did occur, would be probabiliscally no different than a failure of the connecting pipe to which it is installed. Also, based on the FMEA discussions within Section 5.0 of this safety evaluation, no new failure modes or new system interactions are introduced. As a result, the manual valve additions do not create the possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the SAR.

6.7 Does the proposed change reduce the margin of safety as defined in the basis for any Technical Specification?

As a result of the new valve installations and the information presented above within this safety evaluation, the original design basis, design criteria and operability of RCGVS System imposed by the FSAR are unaffected. Additionally, no changes are required in any safety analysis, accident analysis, assumptions or Plant Technical Specifications. Consequently, the margin of safety as defined in the basis for any Technical Specification are preserved and will not be reduced.

7.0 PLANT RESTRICTIONS

With three new manual isolation valves installed on the RCGVS process vent lines, the intent of the existing plant design and licensing commitments has not been altered for either St. Lucie unit. Since these changes have been previously shown to not impact the Plant, no additional restrictions on the plant operating modes are required as a result of this evaluation. No new operator actions or periodic surveillance need to be implemented due to the Plant or FSAR documentation changes. However, see Section 8.0 below for necessary actions.

8.0 REQUIRED ACTIONS

The following actions are required as a consequence of this safety evaluation and apply to both St. Lucie units:

8.1 The three new RCGVS manual valves (V1650, V1651 and V1652) to be installed on each St. Lucie unit shall be locked in the open position in accordance with Anchor/Darling recommendations.

8.2 The St. Lucie administrative procedures for "Administrative Control of Valves, Locks and Switches" (see References 10.31 and 10.32 for Units 1 and 2, respectively) shall be reviewed and appropriately revised to include the three new locked open valves. As a minimum, Appendix E to these administrative procedures will need to be revised.

8.3 Various operating, off-normal and emergency plant procedures for St. Lucie Units 1 and 2 require review and, if necessary, revision to ensure compliance with this safety evaluation.

8.4 Provide appropriate guidance to St. Lucie Plant operators regarding the new installation of the three locked-open valves in the RCGVS vent lines (two manual valves on the Reactor head vent line and one on the Pressurizer vent line).

8.5 A revision to the FSAR's for St. Lucie Unit 1 and Unit 2 is presented within Attachments 11.3 and 11.4. These change packages eliminate both the discussion on leakage control and a duplicate figure for the Unit 2 RCGVS (and provides appropriate references to the RCS diagram given as Figure 5.1-4b within Section 5.1.2).

9.0 CONCLUSIONS

This evaluation provides a stand-alone 50.59 safety evaluation which provides the bases for the desired RCGVS manual valve additions within St. Lucie Units 1 and 2. Based on the inferences given by the effects analysis on safety within the above Section 3.0, the Technical Specification review in the above Section 4.0 and the 10CFR50.59 safety evaluation presented in the above Section 6.0, the following conclusions can be made with regard to the addition of three new locked-open manual isolation valves on the RCGVS process vent lines.

The permanent valve additions to the RCGVS are acceptable from the standpoint of nuclear safety in that it does not affect the original design basis nor impact the safe operation of the Plant. This evaluation has indicated that these new valves are a backup to the existing line valves and actually offer additional system isolation capability. This plant modification is considered to be a maintenance aid in the event that RCGVS solenoid vent valves need replacement, refurbishment or additional testing at elevated RCS pressure and temperature. This change does not affect the primary safety-related function of the RCGVS during post-accident situations or other secondary functions of the system.

This safety evaluation confirms that the RCGVS manual valve additions as given by the MEP's within References 10.9 and 10.10 will not pose an unreviewed safety question, nor require a change to the Plant Technical Specifications for St. Lucie Units 1 and 2. Therefore, prior NRC approval for this plant change is not required.

6.7 Does the proposed change reduce the margin of safety as defined in the basis for any Technical Specification?

As a result of the new valve installations and the information presented above within this safety evaluation, the original design basis, design criteria and operability of RCGVS System imposed by the FSAR are unaffected. Additionally, no changes are required in any safety analysis, accident analysis assumptions or Plant Technical Specifications. Consequently, the margin of safety as defined in the basis for any Technical Specification are preserved and will not be reduced.

7.0 PLANT RESTRICTIONS

With three new manual isolation valves installed on the RCGVS process vent lines, the intent of the existing plant design and licensing commitments has not been altered for either St. Lucie unit. Since these changes have been previously shown to not impact the Plant, no additional restrictions on the plant operating modes are required as a result of this evaluation. No new operator actions or periodic surveillance need to be implemented due to the Plant or FSAR documentation changes. However, see Section 8.0 below for necessary actions.

8.0 REQUIRED ACTIONS

The following actions are required as a consequence of this safety evaluation and apply to both St. Lucie units:

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9.0 CONCLUSIONS

This evaluation provides a stand-alone 50.59 safety evaluation which provides the bases for the desired RCGVS manual valve additions within St. Lucie Units 1 and 2. Based on the inferences given by the effects analysis on safety within the above Section 3.0, the Technical Specification review in the above Section 4.0 and the 10CFR50.59 safety evaluation presented in the above Section 6.0, the following conclusions can be made with regard to the addition of three new locked-open manual isolation valves on the RCGVS process vent lines.

The permanent valve additions to the RCGVS are acceptable from the standpoint of nuclear safety in that it does not affect the original design basis nor impact the safe operation of the Plant. This evaluation has indicated that these new valves are a backup to the existing line valves and actually offer additional system isolation capability. This plant modification is considered to be a maintenance aid in the event that RCGVS solenoid vent valves need replacement, refurbishment or additional testing at elevated RCS pressure and temperature. This change does not affect the primary safety-related function of the RCGVS during post-accident situations or other secondary functions of the system.

This safety evaluation confirms that the RCGVS manual valve additions as given by the MEP's within References 10.9 and 10.10 will not pose an unreviewed safety question, nor require a change to the Plant Technical Specifications for St. Lucie Units 1 and 2. Therefore, prior NRC approval for this plant change is not required.

10.0 REFERENCES

10.1 St. Lucie Action Report for Unit 2, STAR No. 9600331 dated February 22, 1996 entitled "CNRB Committee Review of PC/M 247-295 - 10CFR50.59 Screening"
10.2 FSAR for St. Lucie Unit No. 1, Amendment 14 dated June, 1995, Section 5.7 entitled "Reactor Coolant Gas Vent System"
10.3 FSAR for St. Lucie Unit No. 2, Amendment 9 dated October 20, 1994 Section 9.3.7 entitled "Reactor Coolant Gas Vent System"
10.4 Technical Specifications for St. Lucie Unit No. 1, Amendment 141, dated October 27, 1995, Section 3/4.4.15 entitled "Reactor Coolant System Vents"
10.5 Technical Specifications for St. Lucie Unit No. 2, Amendment 80, dated October 25, 1995, Section 3/4.4.10 entitled "Reactor Coolant System Vents"
10.6 Design Basis Document DBD-RCS-1, Rev. 0, "Reactor Coolant System", Section 7.11
10.7 Design Basis Document DBD-RCS-2, Rev. 0, "Reactor Coolant System", Section 7.11
10.8 PC/M for St. Lucie Unit 2, PC/M No. 043-295, Suppl. 3 dated December 22, 1995 entitled "Replacement of Reactor Coolant Gas Vent System Solenoid Valves (V1460, V1461, V1462, V1463, V1464, V1465 and V1466)"
10.9 PC/M for St. Lucie Unit 2, PC/M No. 247-295, Rev. 0, dated December 22, 1995 entitled "Addition of Reactor Coolant Gas Vent System Isolation Valves"
10.10 PC/M for St. Lucie Unit 1, PC/M No. 034-196, Rev. 0 dated February 28, 1996 entitled "RCGVS Solenoid Valve Replacements, Addition of Flanged Valve/Spool Assemblies and Manual Valve Additions"
10.11 Code of Federal Regulations, Title 10, Chapter 50.59, Part 10CFR50.59b
10.12 St. Lucie Report from MMEG/JPN entitled "Root Cause Analysis for PSL Unit 2 Reactor Head Vent Gas System (RHVGS) Inservice Seat Leakage", 1995, by Tom Sanders, Joel Kagan, and Mike Little
10.13 St. Lucie Plant Problem Report for Unit 2, Report No. 95-108 dated December 3, 1995 entitled "Unit 2 Reactor Gas Vent System Reliability Problems During Unit Startup"
10.14 Piping Isometric Drawings for St. Lucie Unit 1, Drawing Nos. 8770-B-124, Sheets RC-225 and RC-226, Rev. 3 and 1 respectively, both entitled "Reactor Coolant Vent"
10.15 Piping Isometric Drawings for St. Lucie Unit 2, Drawing Nos. 2998-C-124, Sheet RC-99, Rev. 9 entitled "Reactor Coolant Vent"
10.16 Stress Calculation for St. Lucie Unit 1, Calc. No. RCV-1000C, Rev. 4
10.17 Stress Calculation for St. Lucie Unit 2, Calc. No. RCV-4700C, Rev. 2
10.18 Mechanical Design Specification for the FPL Nuclear Engineering Department, Document No. MN 3.08, Rev. 2, dated October 14, 1993 entitled "Steel Station Valves 2 Inch or Smaller - Nuclear Safety Classes 1, 2, and 3"
10.19 ASME Boiler and Pressure Vessel Code, Section III, 1977 Edition, Winter 1978
10.20 Code of Federal Regulations, Title 10, Chapter 50.50, Part 10CFR50.55a, Edition: January 1, 1992
10.21 Piping and Instrumentation Diagram for St. Lucie Unit 1, Drawing No. 8770-G-078, Sheet 110, Rev. 18 entitled "Flow Diagram - Reactor Coolant System"
10.22 Piping and Instrumentation Diagram for St. Lucie Unit 2, Drawing No. 2998-G-078, Sheet 107, Rev. 4 entitled "Flow Diagram - Reactor Coolant System"
10.23 Piping and Instrumentation Diagram for St. Lucie Unit 2, Drawing No. 2998-G-078, Sheet 108, Rev. 2 entitled "Flow Diagram - Reactor Coolant System"

10.0 REFERENCES (continued)

10.24 Piping and Instrumentation Diagram for St. Lucie Unit 2, Drawing No. 2998-G-078, Sheet 110, Rev. 4 entitled "Flow Diagram - Reactor Coolant System"

10.25 Piping Drawing for St. Lucie Unit 1, Drawing No. 8770-G-215, Sheet 8, Rev. 2 entitled "Reactor Containment Building - 2" and Under Piping - Reactor Coolant Gas Vent System"

10.26 Piping Drawing for St. Lucie Unit 2, Drawing No. 2998-G-215, Sheet 6, Rev. 9 entitled "Reactor Containment Building - 2" and Under Piping - Reactor Coolant Gas Vent System"

10.27 Piping Drawing for St. Lucie Unit 2, Drawing No. 2998-G-215, Sheet 8, Rev. 2 entitled "Reactor Containment Building - 2" and Under Piping Sections - Reactor Coolant Gas Vent System"

10.28 Anchor/Darling Valve Drawing for St. Lucie Unit 1, EMDRAC Drawing No. 8770-12705 Rev. 0 entitled "1"-1875 Socket Ends Stainless Steel Globe Valve"

10.29 FPL Request for Purchase Authorization with Target Rock Corp., Req. No. 00020757 for Solenoid-Operated Bolted Bonnet Globe Valves, Stock Code No. 0053084-1

10.30 FPL Purchase Order with Target Rock Corporation, P.O. No. C 95934-90377 dated June 30, 1995 for Solenoid-Operated Bolted Bonnet Globe Valves

10.31 Administrative Procedure for Unit 1, Procedure No. 1-0010123, Revision 100 entitled "Administrative Control of Valves, Locks and Switches"

10.32 Administrative Procedure for Unit 2, Procedure No. 2-0010123, Revision 69 entitled "Administrative Control of Valves, Locks and Switches"

10.33 FPL St. Lucie Electronic Catalog, Listing for Stock Code No. 0052472, Anchor /Darling Valves

11.0 ATTACHMENTS

11.1 Simplified Flow Diagram for the Unit 1 Reactor Coolant Gas Vent System (manually enhanced version) - 1 page

11.2 Simplified Flow Diagram for the Unit 2 Reactor Coolant Gas Vent System (manually enhanced version) - 1 page

11.3 FSAR Change Package for St. Lucie Unit 1 - 2 pages

11.4 FSAR Change Package for St. Lucie Unit 2 - 5 pages

Attachment 11.1 to
JPN-PSL-SEMS-96-007
Revision 0
Page 1 of 1

SIMPLIFIED FLOW DIAGRAM FOR THE UNIT 1
REACTOR COOLANT GAS VENT SYSTEM
(manually enhanced version)

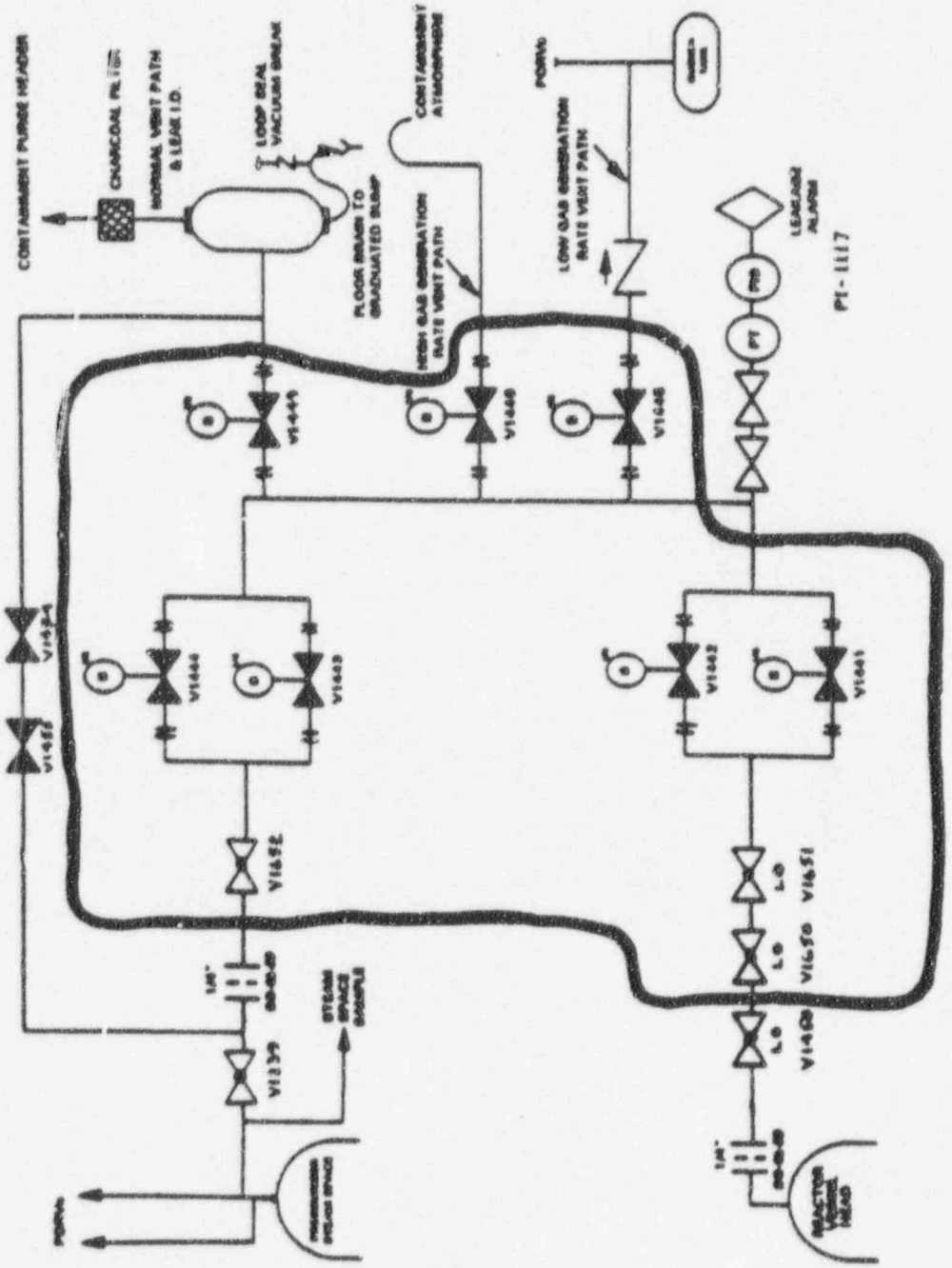

Figure 2

SIMPLIFIED FLOW DIAGRAM FOR THE UNIT 2
REACTOR COOLANT GAS VENT SYSTEM
(manually enhanced version)

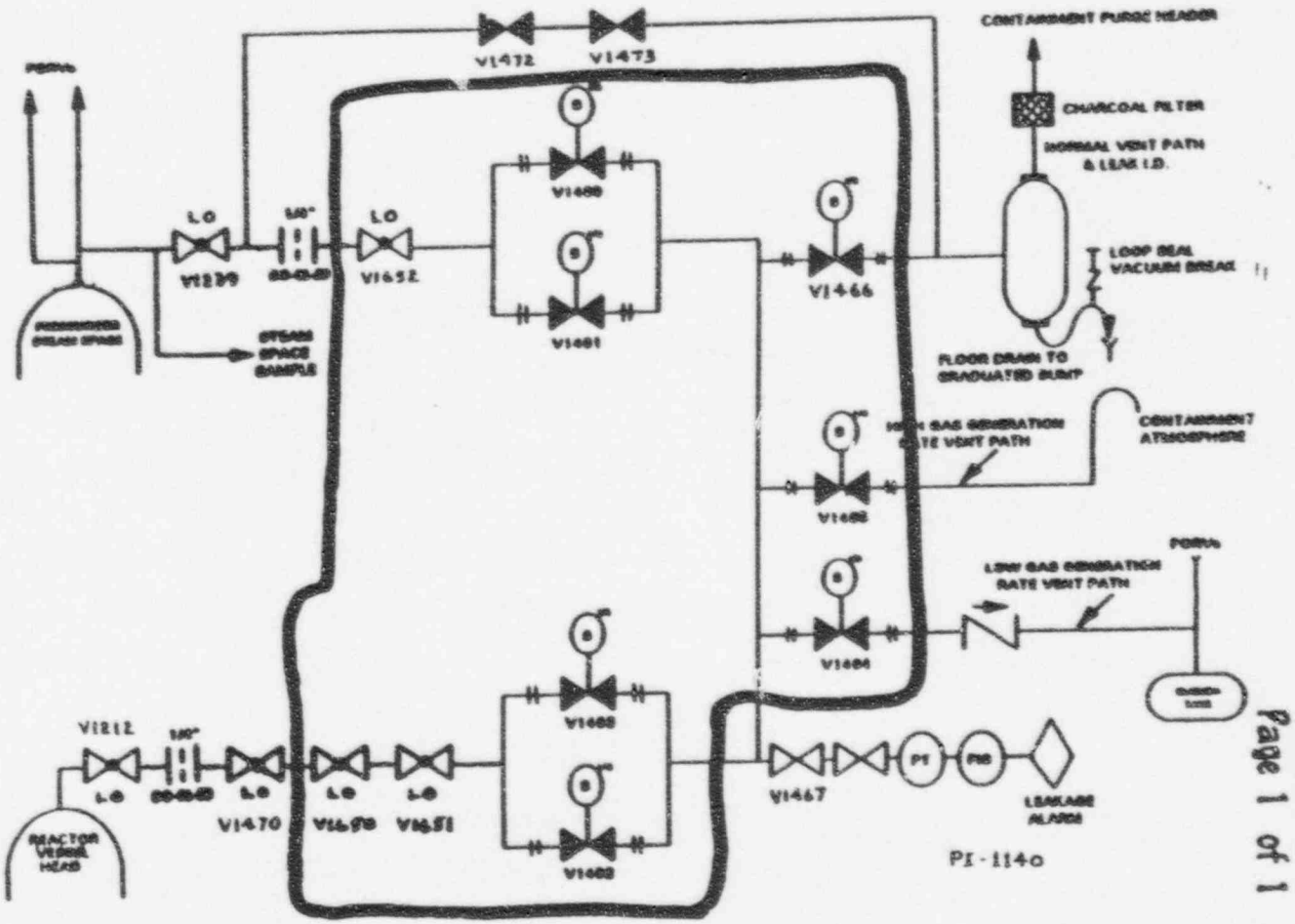

Figure 2

Attachment 11.2 to
JPN-PSL-SEMS-96-007
Revision 0
Page 1 of 1

FSAR CHANGE PACKAGE (FCP)

Plant St. Lucie Unit 1

FSAR Page(s) Affected

Page 5.7-5

FSAR Figure(s) Affected

None

Comments

The justification for this change is provided within 10CFR50.59 safety evaluation given as JPN-PSL-SEMS-96-007.

Approvals

Prepared by: Larry S. Listman Date 3-29-96

Verified by: Jose Pardo Date 3-22-96

Approved by: Jack Summa Date 3/29/96

vent and reactor vessel head vent, both sized to meet the flow requirements of system design criteria.

5.7.3 SAFETY EVALUATION

5.7.3.1 Performance Requirements, Capabilities, and Reliabilities

The ability to vent the RCS - either reactor vessel or pressurizer - under accident conditions is assured by providing redundant flow paths from each venting source, redundant discharge paths, and emergency power to all power operated valves. A single active failure of either a power operated valve or power supply will not prevent venting to containment (either directly or through the quench tank dependent upon failure mode) from either source.

5.7.3.2 Pipe Break Analysis

Consistent with NRC requirements, the RCGVS is designed to limit mass loss to less than a LOCA as defined in 10CFR50, Appendix A and thus a separate analysis of inadvertent system operation or pipe breakage is not required to meet 10CFR50.46.

The pressure boundary of the normally pressurized portion of the head vent system is protected from the effects of postulated pipe breaks in the main loop cold leg piping, or branch lines to the cold legs, or non-RCPB piping. The pressure boundary of the normally unpressurized portion of the vent system is protected from the effects of postulated pipe breaks in non-RCPB lines for which venting would be required.

The flow function of the vent system is protected from the effects of failures for which venting would be required.

5.7.3.3 Leakage Detection and Control

The components of the RCGVS are provided with welded connections wherever possible to minimize leakage to the atmosphere. However, flanged connections are provided on the reactor vessel vent line to allow disassembly for refueling maintenance. System valves are of the packless type to minimize leakage. Leakage past the system isolation valves into the normally unpressurized portion of the system is detected by pressure instrumentation.

5.7.3.4 Natural Phenomena

RCGVS components are located in containment and, therefore, are not subjected to the natural phenomena described in Chapter 3 other than seismic. Piping has been analyzed and supported in accordance with St Lucie Unit 1 seismic criteria. All valves have been analyzed and tested for operability during a seismic event by manufacturers.

Delete

FSAR CHANGE PACKAGE (FCP)

Plant St. Lucie Unit 2

FSAR Page(s) Affected

Page 9.3-45f, Page 9.3-45g and Page 9.3-45h

FSAR Figure(s) Affected

Figure 9.3.7

Comments

The justification for the all FSAR changes are provided within the 10CFR50.59 safety evaluation given as JPN-PSL-SEMS-96-007.

NOTE: Duplicate RCGVS figures appear in the Unit 2 FSAR (see Figure 5.1-4b and Figure 9.3-7). This is unnecessary and can lead to possible confusion regarding future FSAR updates. Figure 5.1-4b addresses an FPL referenced drawing and Figure 9.3-7 does not show any reference drawing. Therefore, from a control standpoint, Figure 9.3-7 shall be eliminated from the Unit 2 FSAR. Text changes will provide appropriate reference to the RCS Piping and Instrumentation Diagram given as Figure 5.1-4b (within Section 5.1.2).

Approvals

Prepared by: Larry D. Lahm Date 3-29-96

Verified by: Jon S Pauley Date 3-29-96

Approved by: [signature] Date 3/29/96

active failure proof with active components powered form emergency power sources. Parallel valves powered off alternate power sources are provided at both vent sources to assure a vent path exists in the event of a single failure of either a valve or the power source. The system provides a redundant vent path either to the containment directly or to the quench tank. The quench tank route allows removal of the gas from the RCS without the need to release the highly radioactive fluid into containment. Use of the quench tank provides a discharge location which can be used to store small quantities of gas without influencing containment hydrogen concentration levels. However, venting large quantities of gas to the quench tank will result in rupture of the quench tank rupture disc providing a second path to containment for vented gas.

Cooling of gas vented to the quench tank is provided by introducing the gas below the quench volume. The direct vent path is located to take advantage of mixing and cooling in the containment. The system is designed with a flow limiting orifice to limit flow such that the mass flow rate of reactor coolant system fluid out of the vent is less than the makeup capacity of a single coolant charging pump. This effectively limits the flow to less than the LOCA definition of 10CFR50, Appendix A. The vent rate limitation also assures that RCS pressure control is not compromised by venting operation. The system has the capability to vent large quantities of hydrogen gas from the RCS.

Although designed for accident conditions, the system may be used to aid in the pre or post-refueling venting of the Reactor Coolant System. Venting of the individual CEDMs and RCPs will still be necessary, however, pressurizer and reactor vessel venting can be accomplished with the system if desired. Vent flow can be directed to the quench tank or through a charcoal filter to the containment purge header for this operation to prevent inadvertent release of radioactive fluid to the containment.

Change to 5.1-4b

As shown on Figure 9.3-7 non-condensible gases are removed from either the pressurizer or reactor vessel through the flow restricting orifice and one of the parallel isolation valves and delivered to the quench tank or containment via their isolation valves. Venting under accident conditions would be accomplished using only one source (reactor vessel or pressurizer) and one sink (quench tank or containment atmosphere) at a given time.

9.3.7.2.1.1 Normal Operation

This system is not intended for use during normal power operation and administrative controls are provided to minimize the possibility of inadvertent operation. Additionally, power is removed from all valves during normal plant conditions.

During normal operation, leakage detection is maintained by use of the pressure instrument. A rise in pressure will indicate leakage past any of the system isolation valves. Small leakage rates can be determined by conducting RCS leak rate calculations. Larger leakage rates can be determined by directing leakage to the quench tank and monitoring tank level change or to the accumulator and monitoring sump instrumentation.

0907W-4

9.3.7.2.1.2 Accident Operation

Operation of the RCGVS during accident conditions will vary depending on the rate of gas generation. For low gas generation rates, gas from within the reactor vessel or pressurizer is vented to the quench tank. Reactor and/or pressurizer vent valves are lined up and the gas released to the quench tank. Monitoring of quench tank pressure is necessary during this mode of operation. From this point the gas could be discharged to the gaseous waste management system if it is available for use.

For high gas generation rates, gases may be vented to the containment atmosphere. Should this valve fail, vent to containment atmosphere can still be accomplished through the quench tank rupture disc.

When venting to either the quench tank or containment, the system operating procedures will require that the operator open the pressurizer or reactor vessel solenoid valve which is powered from the alternate emergency bus (i.e, two valves in series will be open, one powered from bus A, and the other from the bus B). This will allow termination of venting for the unlikely situation where one of the valves should electrically fail open.

The RCGVS will be operated as an on-off system to remove gas from the RCS. The volume of gas to be removed is determined by reactor vessel or pressurizer instrumentation and then the venting time is determined dependent upon this volume and system temperature and pressure.

9.3.7.2.2 Component Description

Change to 5.1-4b

There are no major components in the RCGVS. The entire system consists of piping, valves, and pipe fittings. All piping and valves are constructed of austenitic stainless steels and are Nuclear Safety qualified according to the Class as indicated on Figure 9.3-7. Piping system supports and valves are seismically qualified as shown on Figure 9.3-7. Power operated valves are solenoid operated type designed to fail close to minimize inadvertent operation. The solenoid valves control circuitry and position indicator switches are class IE qualified to IEEE-382-1972 for inside containment, IEEE-344-1975 for seismic and IEEE-323-1974 for environmental qualification. Redundancy in valve arrangement and power supply is designed to meet the single failure criterion. Part of the piping system includes orifices at the pressurizer vent and reactor vessel head vent, both sized to meet the flow requirements of the system design criteria.

9.3.7.3 Safety Evaluation

9.3.7.3.1 Performance Requirements, Capabilities, and Reliabilities

The ability to vent the RCS - either reactor vessel or pressurizer - under accident conditions is assured by providing redundant flow paths from each venting source, redundant discharge paths, and emergency power to all power operated valves. A single active failure of either a power operated valve or power supply will not prevent venting to containment (either directly or through the quench tank dependent upon failure mode) from either source.

09071-5

9.3.7.3.2 Pipe Break Analysis

Consistent with NRC requirements, the RCGVS is designed to limit mass loss to less than a LOCA as defined in 10CFR50, Appendix A and thus a separate analysis of inadvertent system operation or pipe breakage is not required to meet 10CFR50.46.

The pressure boundary of the normally pressurized portion of the head vent system is protected from the effects of postulated pipe breaks in the main loop cold leg piping, or branch lines to the cold legs, or non-RCPB piping. The pressure boundary of the normally unpressurized portion of the vent system is protected form the effects of postulated pipe breaks in non-RCPB lines for which venting would be required.

The flow function of the vent system is protected from the effects of failures for which venting would be required.

9.3.7.3.3 Leakage Detection and Control

The components of the RCGVS are provided with welded connections wherever possible to minimize leakage to the atmosphere. However, flanged connections are provided on the reactor vessel vent line to allow disassembly for refueling maintenance. System valves are of the packless type to minimize leakage. Leakage past the system isolation valves into the normally unpressurized portion of the system is detected by pressure instrumentation.

9.3.7.3.4 Natural Phenomena

RCGVS components are located in containment and, therefore, are not subject to the natural phenomena described in Chapter 3 other than seismic. Piping has been analyzed and supported in accordance with St. Lucie 2 seismic criteria. All valves have been analyzed and tested for operability during a seismic event by manufacturers. Table 9.3-11 provides a tabulation of seismic Category 1 valves whose operation is relied upon to mitigate the consequences of an accident.

9.3.7.3.5 Failure Modes and Effects Analysis

Table 9.3-12 shows a failure mode and effects analysis for the RCGVS. At least one failure is postulated for each safety-related component of the RCGVS. In each case the possible cause of such a failure is presented as well as the local effects, detection methods, and compensating provisions.

9.3.7.4 Inspection Testing Requirements

Each component is inspected and cleaned prior to installation into the RCGVS. The instrument will be calibrated during pre-operational testing. The valves and controls will be tested for operability following installation.

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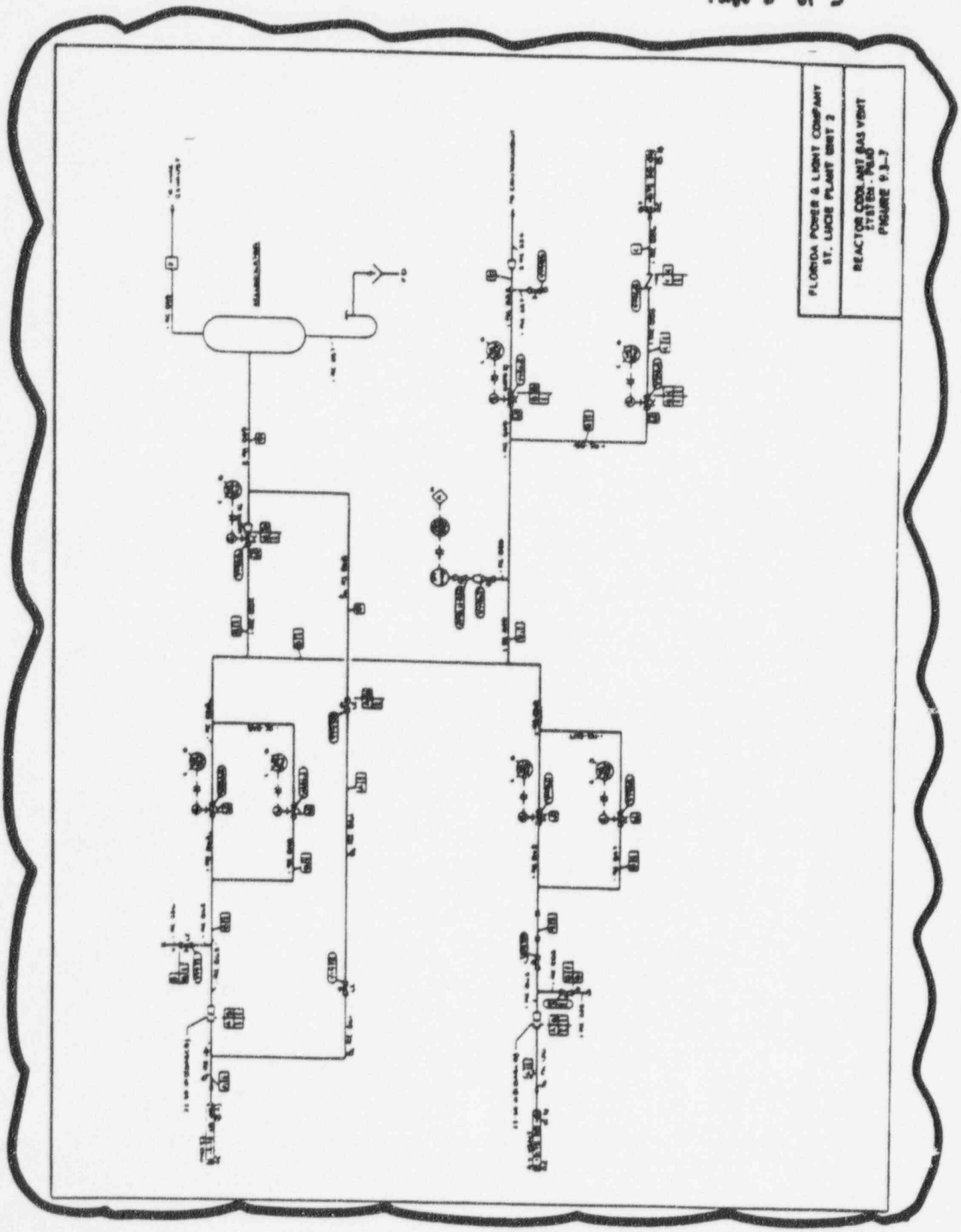


FPL

Inter-Office Correspondence

JPN-SPSL-96-0084

To: S. A. Valdes
St. Lucie Plant

Date: MAR 29 1996

AHWood FOR

From: D. J, Denver
Nuclear Engineering

Department: JPN/PSL

Subject: **ST. LUCIE UNIT 1**
DOCUMENT: **JPN-PSL-SEMS-96-007**
TITLE: **Transmittal of a Unit 1/Unit 2 Safety Evaluation for the Addition of Three Manual Isolation Valves within the RCGVS Process Vent Lines**
REFERENCE: **STAR 2-960331**
FILE: **PC/M 247-295, PC/M 034-196 and SE File**

References: (A) PC/M for St. Lucie Unit 2, PC/M No. 247-295, Rev. 0, dated December 22, 1995 entitled "Addition of Reactor Coolant Gas Vent System Isolation Valves"

(B) PC/M for St. Lucie Unit 1, PC/M No. 034-196, Rev. 0 dated Feb. 28, 1996 entitled "RCGVS Solenoid Valve Replacements, Addition of Flanged Valve/Spool Assemblies and Manual Valve Additions"

(C) FPL St. Lucie Action Report for Unit 2, STAR 2-96-0331 dated February 22,1996 entitled "CNRB Committee Review of PC/M 247-295 - 10CFR50.59 Screening"

References (A) was developed in support of St. Lucie Unit 2 maintenance activities to facilitate procedures for replacement, refurbishment or testing of the RCGVS solenoid vent valves at hot operating conditions. As part of these plant changes, manual locked-open isolation valves were added to the process vent lines.

Following the installation of the three Unit 2 manual valves, a CNRB Subcommittee review of Reference (A) questioned the need for a 10CFR50.59 evaluation and the STAR report of Reference (C) was generated. Enclosure (1) is the 10CFR50.59 safety evaluation which was written in response to this STAR.

A similar plant change is being planned for Unit 1 RCGVS during the 1996 Spring Outage also through the use of the MEP (see Reference (B). Manual valves will be identically located just upstream of the primary solenoid-actuated vent control valves. Therefore, the purpose of this safety evaluation is to assess the safety significance of adding these manual isolation valves to the RCGVS process lines and to provide a generic review for the acceptability of their installation. As such, this safety evaluation will be applicable to both St. Lucie nuclear units and will supplement the engineering justification for each unit's PC/M.

BBB/97

This evaluation demonstrates that the installation of manual valves in the Unit 2 RCGVS (and as proposed for Unit 1) does not involve an unreviewed safety question or requires a change to the Technical Specifications. Since each concern posed by the 10CFR50.59 can be appropriately answered, prior NRC approval is not required. The permanent valve additions to the RCGVS are acceptable from the standpoint of nuclear safety in that it does not affect the original design basis nor impact the safe operation of the Plant. It is concluded that the installation of these isolation valves will have no affect on plant safety or operation.

Action items have been identified in Section 8.0 of this evaluation and apply to both St. Lucie units.

Should you have any further questions, please contact Larry Lostocco at PSL extension 7137.

Enclosures: (1) FPL Safety Evaluation for St. Lucie Units 1 and 2, Evaluation No. JPN-PSL-SEMS-96-007, Rev. 0, dated March 29, 1996 entitled " Addition of Three Manual Isolation Valves within the RCGVS Process Vent Lines" - includes 4 attachments (29 total pages)

DJD/JK/LGL

Copies: H. L. Fagley/DCC - SLC/PSL (w/Original)
D. M. Stewart - SCE/PSL
L. G. Lostocco - ENG/PSL

FPL

Inter-Office Correspondence

To: All Plant Personnel Date: October 2, 1995

From: D. A. Sager Department: St. Lucie Plant Vice President

Subject: **PROCEDURE USAGE**

One root cause of our recent plant problems has been identified to be poor performance in the use of procedures.

Our administrative procedures and quality instructions which govern the usage of procedures have been revised to standardize our approach to procedure usage to be consistent with the one used at Turkey Point Plant. Changes include the adoption of a verbatim compliance expectation, and clarification of when procedure steps may be performed out of sequence or marked NA (Not Applicable).

In addition, it must be emphasized that it is the responsibility of the person using a procedure to ensure that the procedure is correct and adequate. If a procedure is found to be less than adequate in some manner, either a Temporary Change Request or a Procedure Change Request must be generated. This responsibility applies to all personnel on site who use procedures.

A Training Bulletin has been issued to each department head requesting a review of the revised procedure usage expectations with appropriate personnel. Your use of this new verbatim compliance philosophy is needed immediately to ensure evolutions are executed correctly.

Our procedures must be technically correct and consistently used in a verbatim compliance atmosphere. Our procedure inadequacies contributed to St. Lucie's recent problems. Our revised approach will become a cornerstone of our return to successful operation.

DAS kw
DAS/PSL #1270-95

BBB/98

Excess Boron Dilution Event - PSL Unit-1 1/22/96

1. Event Synopsis:

At approximately 0220 on January 22, 1996 with the unit at 100% power, no surveillances or evolutions in progress and RCS T-cold at 548.7°F, the board RCO decided to dilute the RCS in order to restore temperature to 549.0°F. He commenced manual dilution with Primary Makeup Water directed to the suction of the 1B charging pump via V2525 at approximately 0225. Moments after beginning the evolution, the board RCO left the controls and proceeded to the kitchen to prepare a meal. There was a turnover given to the desk RCO, but the turnover did NOT include the in progress RCS dilution.

The board RCO returned to the controls area after approximately 5 minutes and realized his error at which time annunciator M-16 "RCP CONT BLDOFF PRESS HIGH" alarmed due to a higher than normal VCT pressure caused by high VCT level. Indicated RCS cold leg temperature was 549.6°F.

The ANPS was immediately notified and the dilution was secured. The ANPS directed a boration to restore RCS cold leg temperature to less than or equal to 549 °F and entered the 2 hour Action Statement of LCO 3.2.5 . The RCO commenced borating to the suction of the 1B charging pump for a total initial addition of approximately 26 gallons.

At approximately 0242, ERDADS indicated RCS cold leg temperature reached its highest value of 549.9 °F, indicated plant MW reached 885 and indicated average reactor power was approximately 100.2% These levels were sustained for less than four minutes and then reduced as boration took effect. At 0314 indicated cold leg temperature was 549.0°F, and the LCO Action Statement was exited.

2. Deficiencies Noted:

A. The board RCO did not maintain cognizance of the evolution in progress;

- The licensed operator should not have left the area of the controls with a reactivity change in progress.

- The licensed operator did not provide a complete turnover to his short term relief.

B. Although dilution to the RCS is a routine activity, OP 1-0250020 "Boron Concentration Control - Normal Operation" does not contain specific instructions for routine boration / dilution for reactivity compensation while at power.

BBB 99

Excess Boron Dilution Event - PSL Unit-1 1/22/96 (continued)

3. Lessons learned:

   A. All operators must maintain a high level of awareness and responsibility while performing duties (even those considered routine).

   B. Short term turnovers should not be used while the unit reactivity is changing or other sensitive evolutions are in progress.

   C. On-shift supervision must be cognizant of all evolutions which take place on the unit and provide adequate oversight.

4. Corrective Actions:

   A. Immediate:

   - Secured diluting the RCS, initiated borating the RCS. Entered the Technical Specification Action Statement for DNB due to high RCS cold leg temperature. Closely monitored Reactor Power and RCS temperatures until all parameters were returned to normal values.

   B. Subsequent:

   1. The responsible licensed operator has been removed from licensed duties.

   2. Operations policies regarding reactivity changes and Short -Term shift turnover were revised as follows:

      - AP 0010120, "Conduct of Ops", Appendix B, Shift Operations Policy, now contains policies regarding reactivity manipulations.

      - AP 0010120, "Conduct of Ops", Appendix D, Crew Relief / Shift Turnover, now places more stringent requirements on the Short -Term relief.

   3. A Temporary Change and Revision to OP 1-0250020 "Boron Concentration Control - Normal Operation" has been implemented to include specific instructions for routine boration / dilution for reactivity compensation while at power.

   4. A Night Order has been issued by the Operations Supervisor regarding this event and all operating crews are required to attend a brief given by the NPS at their next shift meeting. Included in the brief will be the event summary, corrective actions, and management expectations.

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION:

Unit 1 Control Room	Unit 2 Control Room
OPS Support (D-13)	Work Control Group
System Specialists	Training
Simulator	

From: Operations Supervisor's Office **Date: April 4 1995**
To: All Operations Personnel

1. The ANPS should cover the latest changes to the Conduct of Operations procedure as highlighted in the attached memo.

2. There will be an NPS/ANPS meeting at 0700 on Tuesday April 11th in the Tech Support Center. NWE's need to arrange to cover the shift and the NPS should arrange someone to cover the morning meeting.

3. See attached list of monthly procedure review.

4. Please ensure that any item that could be considered a **"hot item"**at the morning meetings be transmitted to the respective discipline on the backshift. This should allow preplanning or repair work to begin.

5. Tomorrow is the E-Plan drill. The control room will be asked to sound alarms and make "drill message" announcements. Any disruption to the control rooms will be minimal.

CHW

Author: Bob Czachor at USFPL027
Date: 4/4/95 8:15 AM
Priority: Normal
Receipt Requested
TO: Chuck Wood
Subject: Recent Procedure Changes

---------- Message Contents ----------

The following changes were made to Conduct of OPS that should be brought to the attention of the Operating Crews:

1) Guidelines for the WCG SRCO to sign for permission to start on NPWO

2) Requirement for notification of OPS SUP for conditions that restrict unit load availability

3) Changes to appendix R (generic rounds), shiftly rounds (d s 4) and newly developed weekly generic rounds (d s 5)

Changes to the Equipment Out Of Service procedure:

1) Appendix A is now on one page

2) Appendix B now requires date, time, and breaker number and sequence of last two steps has been corrected

The TC form of QI 5-1 has been changed

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION: Unit 1 Control Room, OPS Support (D-13), System Specialists, Simulator, Unit 2 Control Room, Work Control Group, Training

From: Operations Supervisor's Office
To: All Operations Personnel

Date: Oct 04 1995

1. A T.C. to the conduct of operations is being put in the procedure today. This address two major items. One is the list the activities that can be performed by memory. These are the only activities that can be performed without a procedure in hand. This list may be expanded with the proper justification. The second item is a change in the way we have turnovers. I believe this change will improve our turnovers and thus improve our performance. The ANPS's are to go over these changes at their next crew brief. The turnover change is to implemented beginning on peak shift tomorrow. My expectations on the new turnover is as follows. The turnover shall be formal. Formal acknowledgement shall be made by the off-going ANPS that the shift has been turned over. Formal acknowledgement shall be made by the oncoming ANPS that the shift has been assumed. When the crews are gathered together in the control room there is to be no talking except by the ANPS running the meeting and those recognized by the ANPS to speak. This includes before the meeting and after the meeting. With this many people in the control room normal conversations become to loud. At the completion of the turnover meeting the off going shift is to exit the control room quickly and quietly. while we are on eight hour days the meeting shall start promptly at 0645, 1445, and 2245. When we are on 12 hour days the meeting shall start at 0645 and 1845. This means that for each case by 15 minutes prior to the hour all oncoming operators are to be assembled in the respective control room kitchens with their ANPS ready to receive turnover. 15 minutes overtime will be paid for this formalized turnover process. It is understood that the NPS/ANPS will make a determination if an on the job turnover is needed to support critical activities out in the plant.

2. It is apparent that the U-1 and U-2 outages will overlap. For this overlap period each unit will be assigned a unit specific NPS. The NWE shall look a day ahead during this period and divide the resources between the units as needed by the upcoming activities and inform the shift holders by posting this information so the operators know which unit to report to.

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION: **Unit 1 Control Room** **Unit 2 Control Room**
OPS Support (D-13) **Work Control Group**
System Specialists **Training**
Simulator

From: Operations Supervisor's Office **Date: Sept 19 1995**
To: All Operations Personnel

1. This morning a summit meeting was held between myself, Charlie, and the NPS's. We reviewed the Conduct of Operations procedure and the operations policy manual and made changes we felt were necessary to improve our performance. You may not agree with all these changes but I ask you to embrace them and pull together as a team. If we are to over come our problems it will require operations to take the lead and demonstrate the right ownership and attitude. This plant needs our leadership and our dedication to error free safe operation. I will hold the NPS's accountable for this performance and they in turn will hold you accountable for your performance. Please support them in this effort. They cannot succeed without your support. The NPS's will be briefing all operations personnel on the changes. Attached is a synopsis of the changes.

2. Unit 1 - We are beginning our transition to mode 1. Approach all evolutions with caution and conservatism. Ensure your procedural guidance is correct for the plant condition you are in. Do not entertain any thoughts of rushing or cutting corners. If you are not sure what to do, stop and seek guidance.

C. HW.

SYNOPSIS OF CHANGES TO "CONDUCT OF OPERATIONS" AP-0010120

OPERATOR AT THE CONTROLS- Clarifies the guidance for the operator at the controls to specify 2 licensed people inside the the solid lines of figure 3

ANPS COMMAND FUNCTION- Removes the distinction between modes for ANPS to be in the control room.

BRIEFINGS- Added operation of instrument inverters to list of evolutions requireing pre-evolution brief. Also adds "methods of communications" to list of topics for the brief.

OPERATOR WORK AROUNDS- Deletes examples of OWAs, possible change of definition to follow at later date.

OPERATIONS DEPT PROBLEM REPORT- Clarifies when a problem report should be completed (prior to end of the shift the event occurs). Also says it is for the crew not the NPS/ANPS.

MINIMUM SHIFT COMPLEMENT- Deltes guidance and just references Ops policy OPS-201.

TOUR OF STATION- Moved guidance on when to conduct initial tour of station to step 3 not 6. Group agreed to reinforce idea of immediately after shift meeting but we did not put it in procedure.

NOTIFICATIONS- Added all the stuff on the wall to Appendix E.

CHRONOLOGICAL LOGS- Added requirement for upper management to routinely review RCO log and document with an entry (NRC committment).

CONTROL ROOM PROFESSIONALISM- Changes as follows:

No hats (hardhats or ballcaps) inside solid lines
No shouting or yelling
No eating inside the solid lines except the RO s and the ANPS who can eat meals only .
Eating is to be away from the immediate vicinity of the RTGBs (behind the desk)
Non-business conversations should be limited in scope and duration.

PROCEDURE COMPLIANCE- Step allowing use of procedures by memory is DELETED.

OPS POLICY CHANGES- 1) Clean , neat uniforms SHALL be worn to work 2) Shirts SHALL be tucked in 3) Wearing of brightly colored and patterned T-shirts is inappropriate and they SHALL not be worn. 4) Sunglasses SHALL not be worn in offices,workstations, or control room

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION: **Unit 1 Control Room** **Unit 2 Control Room**
OPS Support (D-13) **Work Control Group**
System Specialists **Training**
Simulator

From: Operations Supervisor's Office **Date: Aug 29 1995**
To: All Operations Personnel

1. Unit 2 - Operations personnel performed well during the last few days. The maneuvering of the unit to support a HDP PCM modification and the problems with the CWP's was handled in a professional manner. The on shift management observers had a lot of positive comments on the operating crews performance. Keep up the good work.

2. Unit 1 - All preparations for mode 4 should be taking place now. Ensure all procedures are in order and lineups in progress. Roger Weller will be in on mids. I would like him to perform the post outage review containment and penetration room walkdown in my behalf. Any discrepancies shall be immediately brought to the shift directors attention. Critical path at this time is the back to back work on the Diesel Generators. Again, keep in mind the plant is in a configuration that we don't spend a lot of time in. Be cautious and ensure you fully understand the task at hand. During this heat up it is my expectation that the control room remains a calm, quiet working environment.

3. See attached letter on I&C organizational changes.

4. See attached information about problems at Crystal River and Hope Creek Nuclear Stations.

C HW.

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION: Unit 1 Control Room, Unit 2 Control Room, OPS Support (D-13), Work Control Group, System Specialists, Training, Simulator

From: Operations Supervisor's Office **Date:** Aug 10 1995
To: All Operations Personnel

1. Unit 1- The unit will be placed in cold shutdown and vented through a 1.75 sq. inch hole after the SDC discharge thermal relief is replaced. Once temperature is less than 281 degrees we will enter a 24 hour action statement to establish the vent path. The vent path will be one of the spray valves. Normal procedures are to be followed with out short cuts to meet or attempt to meet this action requirement. Proper procedure use and safe operation override the time limitation. Keep me informed and if it looks like we will exceed the time limit I will initiate dialogue with the NRC.

2. Again I want to remind everyone that Unit 1 is in a condition where we spend very little time. Therefor our experience level in these conditions is not as great as on line operation. Maintain a questioning approach to operation. If something does not seem right bring it to the crews attention.

C. H.W.

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION:

Unit 1 Control Room	**Unit 2 Control Room**
OPS Support (D-13)	**Work Control Group**
System Specialists	**Training**
Simulator	

From: Operations Supervisor's Office **Date: Aug 7 1995**
To: All Operations Personnel

1. Unit 1 - We will be filling and pressurizing the RCS tonight followed by RCP runs. We will not be venting the CEDM's. Do not allow yourselves to pressured by schedule. This is to be an efficient, controlled evolution. This plant condition is not one you are often in. Extra caution and good self checking practices are needed. See attached letter on CEDM venting and Management SRO shift schedule.

2. Unit 2 - The DO2 leak on the 2C condensate pump suction expansion joint will be painted in the morning.

C HW

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION:

Unit 1 Control Room	Unit 2 Control Room
OPS Support (D-13)	Work Control Group
System Specialists	Training
Simulator	

From: Operations Supervisor's Office **Date:** 07/17/95
To: All Operations Personnel

1. Following discussions with R.E.,when reducing power due to back pressure concerns the preferred method of plant operation would be to stay at the reduced load.

2. The ASI procedure is being revised. The changes involved slightly effect the way we dampen ASI. When ASI is moving to the top of the core and it is time to dampen, move the rods in as usual. When it is time to start pulling the rods back out, we need to work with the ASI and not be in a hurry to get the rods back out. This may take several hours to several days to get them back to the starting point. The key point here is to take your time and to not start an oscillation.

3. There have been several Operator errors recently that can be attributed to a lack of attention to detail and/or failure to use of STOP. We cannot afford to continue making these mistakes. Therefore, please become more diligent in your use of STOP and attention to detail efforts.

4. Based upon a Engineering Star resolution when the HVE 41A&B fans on Unit 2 are removed from service, the associated ICW train must be taken out of service. I will follow-up on the paperwork when it is issued.

Mayer

Operations Department

St. Lucie Nuclear Power Plant

Night Order

DISTRIBUTION: **Unit 1 Control Room** **Unit 2 Control Room**
OPS Support (D-13) **Work Control Group**
System Specialists **Training**
Simulator

From: Operations Supervisor's Office **Date: July 11 1995**
To: All Operations Personnel

1. See attached letter from Chris Burton on smoking privileges.

2. Today the discharge canal level nearly reached the spillway. This was due to the 12 foot discharge pipe gate valve being closed and 6 circulating water pumps running. All operations personnel need to be aware that the annunciator for high discharge canal level is jumpered out and not operational. The chart recorder indication is not reliable and shall not be used for discharge canal level indication. The only reliable method and the only method to be used is visual verification using the bottom of the A1A bridge as a reference point. If the discharge canal level reaches the bottom of the A1A bridge then actions must be taken to decrease level as per the off-normal procedure. A STAR is written to address this issue.

3. Attached is a letter on conservative plant operation from Chris Burton and attached to it a copy of plant policy 105. I very strongly endorse this message and the use of the policy. Each ANPS is to discuss this letter and policy with their crew and stress the importance of it.

C H W

FPL

Inter-Office Correspondence

CLB/PSL
Ltr. Bk. #95-017

To: Operations/Maintenance Personnel

Date: June 28, 1995

From: C. L. Burton

Department: Plant General Manager

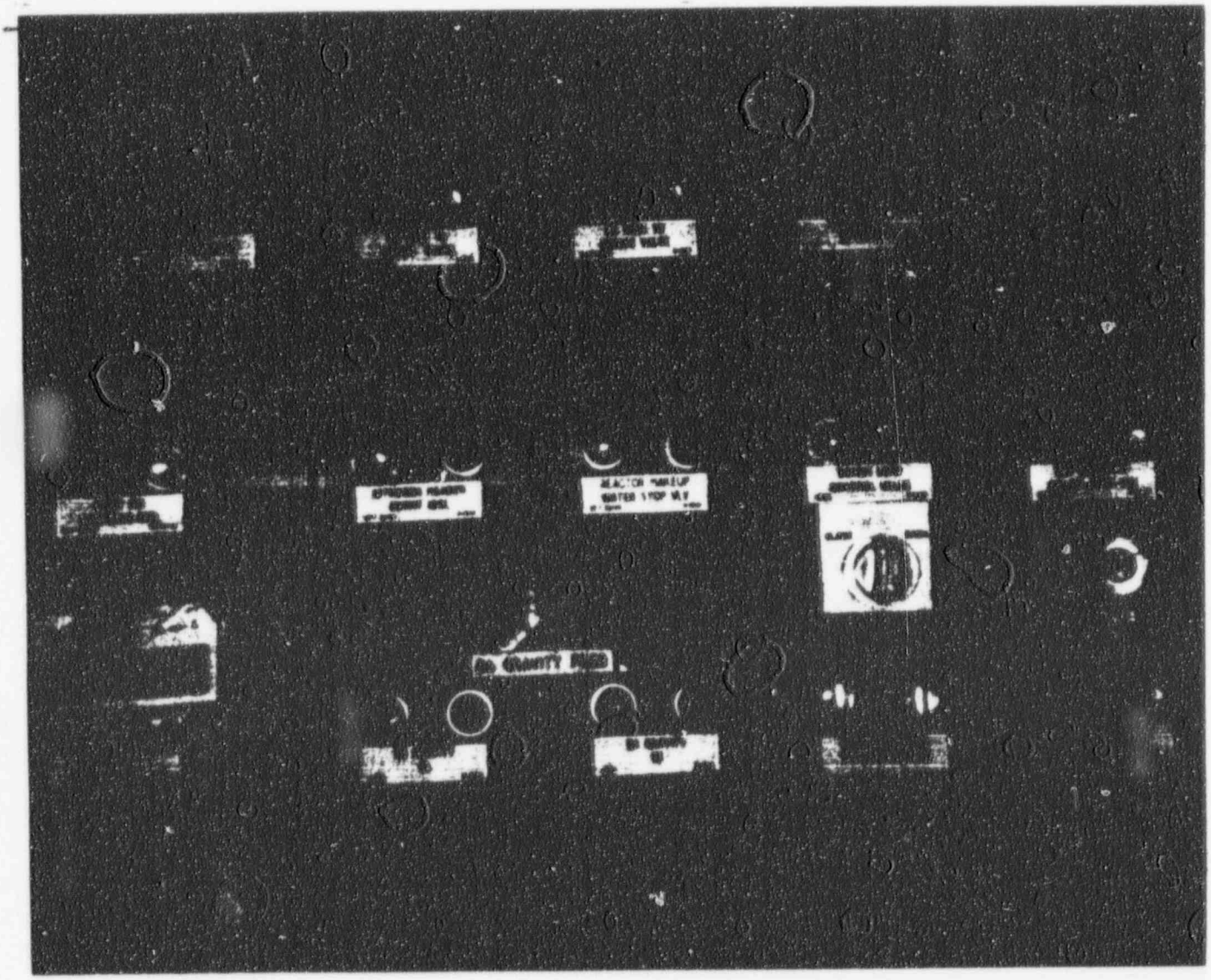
Subject: **Conservative Plant Operation**

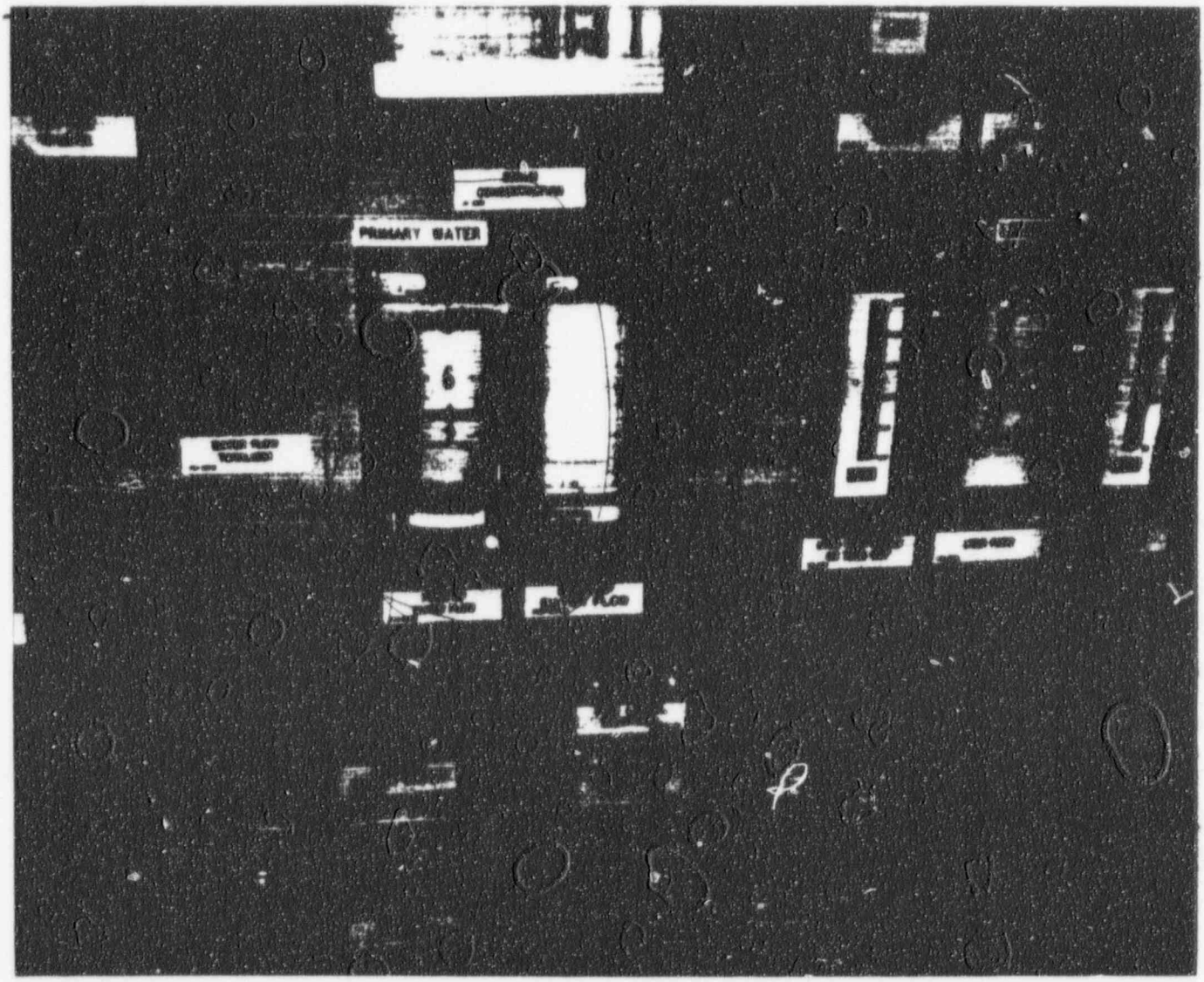
We are now halfway through 1995 and enjoying good performance on both Units. One element of this success is the return of emphasis to Operations' needs in operating the Units. The timely identification and resolution of Operator Work Arounds (OWAs) gives the operators confidence that they will be able to correctly and efficiently combat a plant transient.

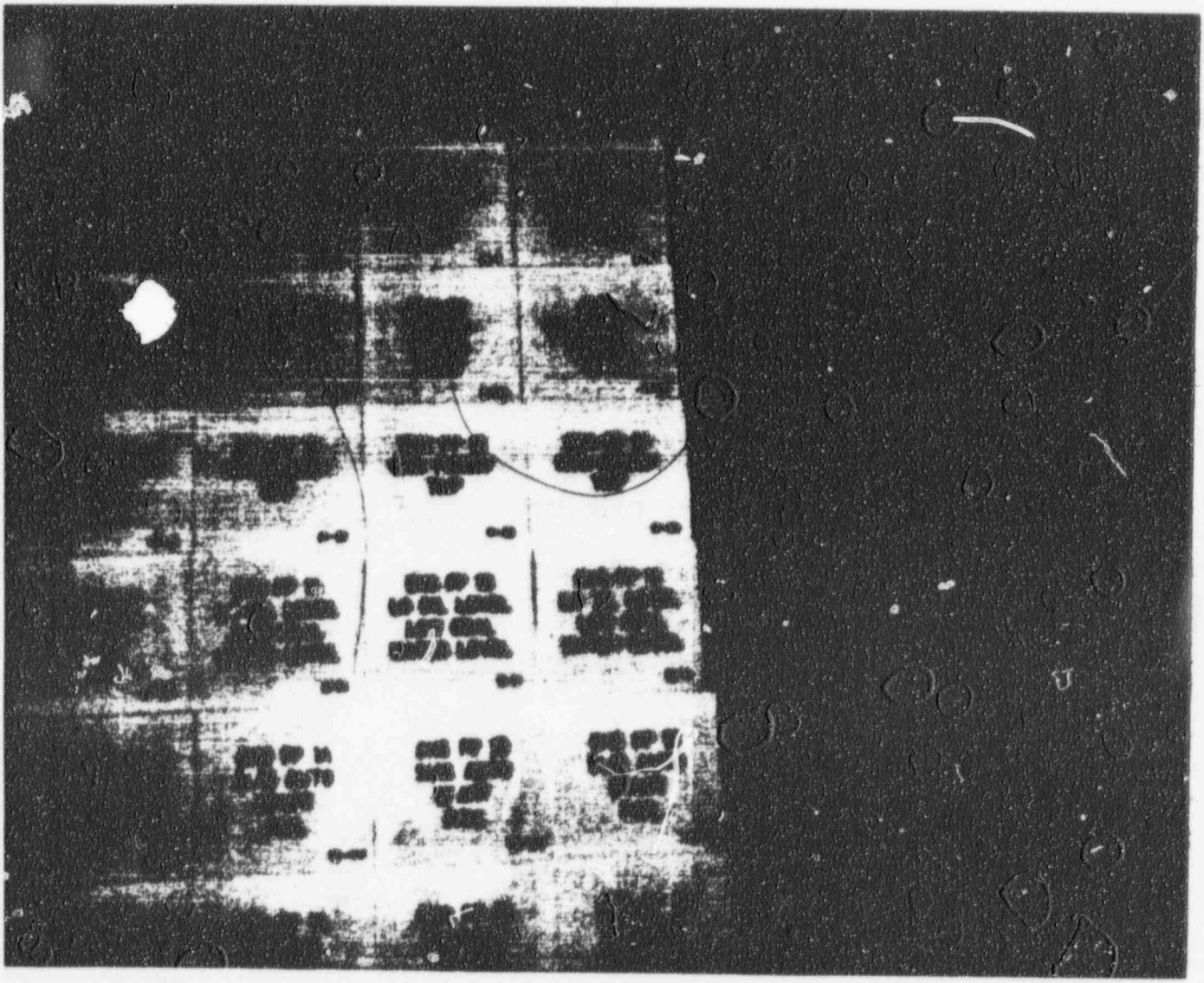
Another element of our 1995 success is the implementation of St. Lucie Policy 105, titled "Plant Operation Beyond the Envelope of Approved Plant Operating Procedures." This policy was generated following an event last year in which we failed to adequately evaluate the plant conditions and risks associated with de-energizing a vital 4160 bus while on line. Please recall that the electrical lineup caused the two MG sets to become unsynchronized and cause a trip. We have implemented this new policy twice in 1995, most recently when one of the two Unit 2 DEH power supplies failed and we chose to come off line to replace it. The risks were assessed by a technical review team and presented to management before the decision was made.

Even with these newly added tools, OWAs and Policy 105, the first line of defense for conservative operation remains the operations staff. Operators are expected to use their training and judgement in operational decisions, and are encouraged to get outside help whenever time permits. The entire plant staff stands ready to respond to the crew's needs in assessing a problem.

Personnel in Operations and Maintenance are reminded that they have an obligation to halt an evolution when a problem arises that is not covered by an approved operating procedure or work order. Asking for help is a virtue, not a sign of weakness. Please do your part in keeping the St. Lucie Units performing conservatively and safely.




PRIMARY WATER



FPL

Inter-Office Correspondence

JPN-SPSL-95-0339

To: S. A. Valdes
St. Lucie Plant

Date: AUG 3 1 1995

From: Carl D. Jamill for
D.J. Denver
Nuclear Engineering

Department: JPN/PSL

Subject: **ST. LUCIE PLANT UNIT 1**
PC/M #: 108-195 Supplement 1
TITLE: Modify Letdown Backpressure Control Loop Setpoints and Reduce V2345 Blowdown
REA: SPSL-95-030-10
FILE: PCM

Reference: N/A

Attached for use is the EP Revision for the subject PCM Supplement.

The original EP provided details necessary to lower of Letdown Backpressure Control set pressure to 430 psig and reduction of V2345 blowdown to 15%.

Based on further discussion with Operations, a need was identified to better coordinate the alarm and control setpoints of the P-2201 control loop in conjunction with the design and operating parameters of the Letdown System.

Accordingly, this EP revision provides additional details necessary to lower the low pressure alarm setting from 420 psig to 390 psig. The high pressure alarm set point will be maintained at 500 psig. *Note the change in the PCM title.*

This completes our efforts on this project. If you have any questions, please contact Gordon McKenzie at 465-3625 or Cal Ward at 465-3801.

DJD/JK/GMcK

Copies: H. L. Fagley - DCC-CS/PSL (w/original)
D. M. Stewart - TS/PSL
A. S. Suggs - JPN/JB (w/dwg list)
C. Wood - PSL/OPS
Cal Ward - PSL/JPN
Gordon McKenzie - PSL/JPN

BBB/10

Florida Power and Light
St. Lucie Plant
Facility Review Group Minutes
November 30, 1994
94-258

Chair	C. Burton
Members	J. Dyer D. West R. Ball D. Denver
Consultants	S. Valdes R. Gouldy D. Wolf
FRG Secretary	Jeff Potter

Item 1 Engineering Evaluation JPN-PSL-SENP-94-079
Assessment of ECCS Suction Piping Crosstie Due To Design Of NaOH Spray Additive System

The FRG reviewed and approved this evaluation to assess the significance to plant operation and safety associated with emergency core cooling System (ECCS) suction piping crosstie due to the design of the Sodium Hydroxide (NaOH) spray additive system.

All reviewed items are considered acceptable unless specifically designated within the item description.

The FRG concluded that each of the above listed items did not constitute an unreviewed safety question as defined by 10 CFR 50.59, nor warrant 10 CFR 21 consideration.

C. L. Burton
Plant General Manager
St. Lucie Plant