EXHIBIT

Exhibit No.: ______________

Issue(s): Causes Of and Responsibility For the June 7, 2000 Incident
Witness/Type of Exhibit: Kumar/Rebuttal
Sponsoring Party: Public Counsel
Case No.: EO-2000-845

REBUTTAL TESTIMONY

OF

JATINDER KUMAR

Submitted on Behalf of the Office of the Public Counsel

ST. JOSEPH LIGHT & POWER COMPANY

Case No.: EO-2000-845

Exhibit No. 9 NP
Date 10-26-00 Case No. EO-2000-845
Reporter M

October 10, 2000

NP

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of St. Joseph Light & Power Company for the issuance of an accounting order relating to its electrical operations.	))))	Case No. EO-2000-845

<u>AFFIDAVIT OF JATINDER KUMAR</u>

STATE OF MARYLAND)
)ss
COUNTY OF MONTGOMERY)

Jatinder Kumar, of lawful age and being first duly sworn, deposes and states:

1. My name is Jatinder Kumar. I am a consultant retained by the Missouri Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony consisting of pages 1 through 25 and Schedules 1 through 11.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

J Kumar
Jatinder Kumar

Subscribed and sworn to me this 9th day of October, 2000.

Clara N. Magee
Notary Public

CLARA N. MaGEE
NOTARY PUBLIC STATE OF MARYLAND
My Commission Expires January 6, 2001

My commission expires 1/6/01.

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REBUTTAl TESTIMONY

OF

JATINDER KUMAR

ST. JOSEPH LIGHT & POWER

CASE NO. EO-2000-845

APPEARANCE AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, POSITION, AND ADDRESS.

A. My name is Jatinder Kumar. I am president of Economic and Technical Consultants, Inc. ("ETC"), a public utility and energy consulting firm with offices at 6241 Executive Boulevard, Rockville, Maryland 20852.

Q. ON WHOSE BEHALF ARE YOU FILING YOUR REBUTTAL TESTIMONY?

A. I am filing my rebuttal testimony on behalf of the Office of the Public Counsel ("Public Counsel").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL QUALIFICATIONS AND EXPERIENCE.

A. My educational qualifications and experience are appended to my rebuttal testimony.

Q. HAVE YOU WORKED FOR A UTILITY?

A. Yes, I worked for Pacific Gas & Electric Company in San Francisco for three years during 1969-1972 as a design engineer. Besides my other duties, I was involved with the development of control systems and a new electric dispatch center. I have also been involved with the design and operation of various types of cooling and pump systems.

Q. HAVE YOU BEEN INVOLVED WITH THE INSTALLATION OF GENERATING PLANTS?

A. Yes, I have been involved with the installation of a 45 MW gas based GE unit in Illinois that became operational on May 15, 2000. Currently, I am involved with the installation of another 45 MW dual fuel GE unit in Delaware and a 90 MW Clean Coal Technology unit in Illinois. My assignment in regard to all of these generating units is to provide consulting services on the overall project management including equipment procurement, contract negotiations and interface with contractors and vendors.

Q. HAVE YOU BEEN INVOLVED WITH THE ANALYSIS OF A FAILURE OF A GENERATING PLANT?

A. Yes, I have been involved with a number of such analyses with the most prominent being the analysis of the failure of Breyton Point No. 3, a 626 MW coal based unit owned by New England Power Co. This unit was severely damaged due to the design, installation and operating problems associated with the turbine.

PURPOSE

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. In my rebuttal testimony, I will comment on the Application filed by St. Joseph Light & Power Co. ("SJLP" or "Company") seeking an Accounting Authority Order ("AAO") from the Missouri Public Service Commission ("Commission") to defer the costs associated with the Incident that occurred with SJLP's Lake Road Generating Unit 4/6 on June 7, 2000. In my testimony, I will respond to SJLP witness Svuba and will also review and analyze the causes of the June 7, 2000 fire and explosion which required the repairs and determine whether the causes were within or beyond the SJLP's control.

SCOPE AND BASIS OF REVIEW AND ANALYSIS

Q. PLEASE EXPAND ON THE SCOPE OF YOUR REBUTTAL TESTIMONY.

A. The results of my review and analysis presented in my testimony focus on the main cause of the incident which occurred on June 7, 2000. The focal point of my investigation was to determine if the fire and explosion that occurred at Unit 4/6 on June 7, 2000 was caused by an act of God, unforeseen mechanical failure beyond the Company's control or whether the fire and explosion was caused by acts or omissions on the part of SJLP.

Q. WHAT DOCUMENTS DID YOU REVIEW FOR YOUR ANALYSIS.

A. For my analysis, I reviewed the direct testimony submitted by Mr. Dwight Svuba on behalf of SJLP, the documents provided by SJLP in response to various data requests and the deposition of Mr. John Modlin. References to Mr. Modlin's deposition will appear as "TR" followed by the appropriate page(s) of the deposition.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. BASED ON YOUR REVIEW OF THE DIRECT TESTIMONY AND THE DOCUMENTS IN THIS PROCEEDING, WHAT ARE YOUR CONCLUSIONS AND RECOMMENDATIONS?

A. My review of the results of various investigations conducted by or on behalf of SJLP indicates that there is a consensus that the damage at Unit 4/6 took place because of the failure of the DC oil pump to start operating when the Unit 4/6 tripped. There is also a consensus that this pump did not start operating because it had been placed in the "off" position. Thus the issue is whether the DC oil pump was in the off position because of an act of God, unforeseen mechanical failure, or because of an act or omission on the part of SJLP. My conclusion is that the repairs to Unit 4/6 were required because of an incident which would have been prevented if the Company acted reasonably according to good utility practices. In other words, the incident occurred due to causes which were not beyond the Company's control. Therefore, I recommend that the Commission deny SJLP's request for an AAO regarding the explosion and fire that occurred at Unit 4/6 on June 7, 2000.

BACKGROUND AND ANALYSIS OF JUNE 7 INCIDENT

Q. BEFORE YOU PRESENT YOUR REVIEW AND ANALYSIS, COULD YOU PROVIDE A BRIEF BACKGROUND OF THE LAKE ROAD PLANT AND THE INCIDENT YOU MENTIONED?

A. The Company owns and operates a generating plant known as the Lake Road Plant. This plant has a total net generating capability of 257 MW and the plant also supplies steam to six industrial customers. The plant consists of two separate systems - an 1800 pound system and a 900 pound system.

The 1800 pound system consists of a single generating unit known as Turbine-Generator No. 4 ("TG#4") manufactured by General Electric ("GE"). This unit also has a boiler known as Boiler

#6. TG #4 and Boiler #6 are jointly referred to as "Unit 4/6". This plant produces steam at 1800 psi and uses coal as a primary fuel.

The 900 pound system at the Lake Road Plant consists of five boilers, Boilers #1, #2, #3, #4 and #5. Boiler #5 uses coal and the other boilers use natural gas or No. 2 fuel oil. The 900 pound system supplies steam to three turbine generators and industrial steam customers. The Lake Road Plant also has three combustion turbines ("CTS"). One CT, CT No. 5, operates on natural gas or No.2 fuel oil and CT Nos. 6 and 7 can only use No. 2 fuel oil.

TG #4 was originally installed in 1966 and has a capacity of about 100 MW. During the Spring 2000, TG#4 was down for scheduled maintenance work. During this time, a number of major modifications were made to TG#4. One of the modifications related to the replacement of a part of the old turbine-generator control system with the GE Mark V control system. The Unit was returned to operation on June 2, 2000 and the incident which resulted in requiring extensive repair work at TG#4 occurred on June 7, 2000 ("June 7 Incident").

Q. PLEASE BRIEFLY DESCRIBE THE EXPLOSION AND FIRE THAT OCCURRED AT UNIT 4/6 ON JUNE 7, 2000.

A. At about 2:06 PM on June 7, 2000, the TG#4 unit "tripped". The term "tripping" means sudden stopping of a machine or operation of a switching device generally without operator intervention. The tripping can also be caused intentionally by an operator. On June 7, the turbine tripped first and then the generator tripped. The tripping of the generator resulted in switching off the power supplies to two AC oil pumps used for lubricating the bearings at the TG#4 turbine and generator. The emergency - DC oil pump, which was supposed to come on line after the tripping of TG#4, did not start working. The lack of lubrication resulted in excessive heat at the bearings which caused the explosion and fire at TG#4.

Q. BEFORE YOU PROCEED WITH THE DETAILS OF YOUR TESTIMONY, COULD YOU EXPLAIN THE FUNCTIONS OF GENERATOR AND TURBINE SUCH AS UNIT 4/6?

A. As I stated earlier, steam for this unit is produced at Boiler No. 6. This steam is fed into a turbine and steam flow is used to turn or rotate the turbine at high speed. The turbine is connected with the rotor of a generator and the rotation of this rotor results in generating electricity.

Q. COULD YOU EXPLAIN THE TURBINE LUBRICATION SYSTEM?

A. The lubrication system provides oil to lubricate the turbine and generator bearings. This lubrication is provided by force feed oil pumps. Sometimes lubrication is also used to supply low pressure seal oil for a hydrogen-cooled generator as is the case of TG#4. Lubrication of the turbine/generator bearings is essential. Generally three oil pumps are used to feed lubricating oil at high pressure to the bearings. The main pump receives AC power from the turbine/generator to which it provides the oil supplies. The second pump is an AC driven auxiliary oil pump which receives power from another source of AC power and not from the source for the first pump. This pump is used for start up and it also acts as an emergency pump if the oil pressure falls below the normal level. This pump is known as the second line of defense. The third line of defense or emergency back up is provided in the form of a DC motor driven oil pump which will start automatically in case of abnormally low oil pressure. This pump is driven by power supplied by the batteries. This pump is known as the third line of defense. Mr. John Modlin, SJLP's Director of Fuels and Projects also confirmed this three tier pump configuration in his deposition (TR 130, 131).

Q. AT THE TIME OF THE JUNE 7 INCIDENT, WERE THE TWO AC OIL PUMPS AND THE DC OIL PUMP CONFIGURED IN THIS MANNER AT UNIT 4/6?

A. Contrary to the general practice, both the AC oil pumps at TG#4 received their power from TG#4. Therefore, the second line of defense provided by the second AC oil pump was eliminated as both AC oil pumps could not operate with the tripping of the TG#4. In other words, at the time of the June 7 incident TG#4 had only two instead of three lines of defense.

When the TG#4 tripped, the two AC oil pumps stopped receiving power and they stopped operating. At that time, the DC oil pump was supposed to start operating. However, because of the operators' unfamiliarity with the change in the control system during the scheduled outage Spring 2000, the DC oil pump was not put in the "automatic" position and it also did not operate after the tripping of TG#4.

Q. HOW DID SJLP DESCRIBE THE JUNE 7 INCIDENT?

A. A report by Mr. W.J. White, the Shift Supervisor at the Lake Road Plant, about the incident which took place on June 7, 2000 is attached as Schedule JK-1. The incident can be summarized as below:

1. At about 2:06 PM on June 7, 2000, Mr. White and the next shift supervisor Scott Hinkle determined that the TG#4 had tripped.

2. At that time, they also heard an explosion.

3. At about the same time, they were advised by another SJLP employee Lance Brumbaugh that smoke was coming out of the Bearing #5 at TG#4.

4. Mr. White also saw the fire at the Bearing #5 and heard a second explosion.

5. They also saw a small fire at Bearing Nos. 3 and 4.

6. In spite of the tripping, TG#4 continued to run fast.

7. Mr. White also found that the stop and reheat valves were closed, however, as stated above, the TG#4 continued to run.

8. Mr. White stated that he did not believe, "the Unit was still rolling and not decelerating" and he instructed one of the SJLP employees to open the dump valve which resulted in abruptly stopping the TG#4 unit.

Q. WHAT WERE THE RESULTS OF LATER INVESTIGATION?

A. As explained by Mr. Dwight V. Svuba, in his direct testimony filed on behalf of SJLP, when the primary two AC oil pumps lost power with the tripping of the TG#4, the second line of defense - the third DC oil pump, which was supposed to start supplying oil to the TG#4 bearings, did not start.

Q. WHY DID THE DC OIL PUMP NOT START WHEN THE PRIMARY TWO AC OIL PUMPS LOST POWER WITH THE TRIPPING OF TG#4?

A. The DC oil pump had been placed in the "local" or "off" position. In that position the DC oil pump was not supposed to start.

Q. PLEASE DESCRIBE THE THREE OPERATING POSITIONS FOR THE DC OIL PUMP.

A. The DC oil pump has three positions. First is "start" and the operator has to put the pump in this position to start the pump. The second position is "auto" or automatic position. In this position, the DC oil pump would start automatically in the event of the failure of both AC oil pumps. The third position is the "local" or "off" position. The pump in this position will not start. As stated by Mr. Svuba on page 7 of his direct testimony, the DC oil pump control must be in automatic mode to start automatically on loss of oil pressure due to the failure of the two AC oil pumps. On page 7 of his direct testimony, Mr. Svuba further described, "Due to control changes that were completed during the GE turbine control replacement project, the operators failed to realize that the pump control did not return to automatic mode after a stop command." The failure on the part of SJLP operators to insure that the DC oil pump was in the "automatic mode" resulted in the DC oil pump's failure to operate when it was supposed to operate. This, in turn resulted in damages to the turbine.

Q. WHAT WAS THE CONSEQUENCE OF THE FAILURE OF AC&DC OIL PUMPS?

A. The failure of all three pumps resulted in no oil supplies to the bearings. Without the lubricating oil supplies, the bearings at TG#4 overheated which resulted in an explosion and fire and damage to the TG#4 turbine. This conclusion is also supported in a letter dated June 20, 2000 by Mr. Joseph G. Pisoni of Factory Mutual Insurance Co. to Mr. Gary Myers of SJLP. A copy of this letter is attached as Schedule JK-2.

In his deposition, Mr. Modlin also acknowledged that the DC oil pump failure on June 7 resulted in the lack of lubrication to the bearings and the increased friction caused the explosion and fire resulting in damage to TG#4(TR 171).

Q. WHY DID THE OPERATORS FAIL TO REALIZE THE PUMP DID NOT RETURN TO THE AUTOMATIC MODE?

A. As I will explain later, SJLP personnel were not properly trained and advised about the changes in the control system before TG#4 was placed in operation on June 2, 2000. The operators were not fully familiar with design changes made with respect to the new control system, especially with respect to the DC oil pump switch.

Q. WHAT WERE THE CHANGES MADE TO THE TG#4 CONTROL SYSTEM?

A. On pages 7 and 8 of his direct testimony, Mr. Svuba explains the changes to the TG#4 control system. These changes are also explained in a memo written by Mr. Joseph Byrd on June 15, 2000. A copy of this memo is attached as Schedule JK-3.

The original control system involved with the DC oil pump was a manual pistol grip control switch. Anytime the operator would turn the switch to stop position, it would spring return to the "auto" position. This pistol grip control switch had indicating lights on the north wall of the control room and was visible to the operator. In 1995, computer controlled logic relays were installed (Distributed Control System ("DCS")) which provided redundancy to the pistol grip switches. The manual pistol grip control switch was physically visible to the operator. However, the new interface was only visible on a computer screen. Further, the manual pistol grip switch provided a fail-safe system and the new system did not have a fail-safe logic. It seems that in spite of the installation of DCS, the operators continued to rely on and interface with the manual pistol grip switch..

During the Spring 2000 maintenance work, the wall switch and light were removed and replaced with the Mark V turbine control system cabinet. (TR 186) The DCS system continued to control all three oil pumps.

Q. WHAT WERE THE CONSEQUENCES OF REMOVING THE PISTOL GRIP CONTROL SWITCH?

A. With the removal of the manual pistol grip switches and light, the following things happened:

1. There was no redundant control system left and the DCS was the sole control system.

2. DCS logic was not changed to a fail-safe system.

3. Since 1966, operators were used to interface with the manual pistol grip switch system and light on the wall. This interface was removed and the operators were left with one single interface via the DCS screens.

4. The light indicating the off position of the switch was removed.

As stated above, after the wall pistol grip switch and light were removed, the operator had to use the DCS console display to determine the status of the DC oil pump. During the TG#4 testing procedure, the DC oil pump was stopped by the operator and the pump was never returned to automatic position and as stated earlier, the operator failed to realize that the pump was not in the automatic position.

Q. HAVE THE RISKS ASSOCIATED WITH THE NEW CONTROL SYSTEM BEEN RECOGNIZED?

A. Yes. First, in his June 15 memo (Schedule JK-3), Mr. Byrd reviewed the new GE control system and stated, ** ** However, as I stated earlier, the experience with the June 7 Incident proved the inadequacy of the new oil system.

A one page memo titled, "Turbine Generators June 7, 2000 Incident, Possible Contributing Factors" written by Mr. Modlin, dated July 13, 2000 states, "DC oil pump served both as 'normal' and 'emergency role,' and thus it did not provide any second line of defense." A copy of this memo is attached as Schedule JK-4.

Q. DID MR. MODLIN ACKNOWLEDGE DEFICIENCIES RESULTING FROM THE REMOVAL OF THE MANUAL PISTOL GRIP SWITCH?

A. Yes. In his deposition, Mr. Modlin acknowledged the following facts about the DC oil pump switch:

1. Some employee of SJLP put the pump switch into "local" or in an "off" position. (TR 98).

2. With the restart of the TG#4, the pump switch should have been in "automatic" position. (TR 98).

3. With changes made in the Spring 2000, SJLP lost reliability of its control system and GE which removed the pistol grip switch created a "trap" for SJLP. (TR 101).

4. SJLP went from a more reliable to a less reliable system with the changes made by GE, however, SJLP had no idea about it. (TR 102).

5. The operators were put into a situation with a new control logic and the engineers should have looked at the changed situation and advised the operators about these changes. (TR 103).

6. In spite of the removal of the manual pistol grip pump switch, the operators continued to believe that the pump switch would return to "automatic" if they stopped the pump. (TR 104).

7. GE failed to investigate the result of changes made to the control system. (TR 107).

8. The pistol grip switch was removed and the DCS logic was not reviewed to determine whether it would operate correctly. (TR 104).

9. No alarm or other device was installed to indicate to the operators that the DC oil pump switch was off. (TR 134)

Q. REFERRING BACK TO THE OPERATOR TRAINING, FIRST EXPLAIN WHY THE TRAINING IS ESSENTIAL.

A. Training is an essential part of operating any machine as a lack of training could result in the improper operation of the machine, and sometime in a catastrophe. Thus, the lack of training could result in expensive repair costs and possibly the need to replace the damaged machine. This concept is applicable to all machines, simple or complex, small or big. It is highly unreasonable to operate a 100 MW power plant without proper training or without insuring that the plant operators are completely familiar with the operation of the plant and control system, especially those related to an emergency situation. In his deposition, Mr. Modlin also realized the importance of appropriate training for the safe operation of the unit. (TR 154).

Q. DID SJLP ARRANGE FOR TRAINING OF ITS PERSONNEL PRIOR TO THE RESTART OF THE TG#4 ON JUNE 2, 2000?

A. Yes. SJLP had arranged a five day training program by GE for its personnel. This training took place on May 22-26, 2000.

Q. WAS SJLP SATISFIED WITH THE TRAINING?

A. No, it was not. On June 23, 2000 Mr. John T. Modlin, Director, Fuels and Project of SJLP wrote a letter to GE about GE's training program. A copy of this letter is attached as Schedule JK-5. Although, Mr. Modlin did not attend the training, he wrote the letter based on the input he received from those who attended the training. Some of the salient points from his letter are summarized below:

1. ** ________________ **
2. ** ________________ **
3. ** ________________ **

4. ** **

5. ** **

6. ** **

7. ** **

8. ** **

9. ** **

10. ** **

11. ** ** Evidently, no training was held for the SJLP instrument technicians prior to the June 7 Incident.

Q. IS THERE ANY DOCUMENT WRITTEN BY A SJLP EMPLOYEE WHO ATTENDED THE GE TRAINING WORKSHOP?

A. Yes. A memo was written on June 1, 2000 by Mr. Scott Hinkle, Shift Supervisor who came to relieve Mr. White after the June 7 Incident started. A copy of this memo is attached as Schedule JK-6. Some of the points from his memo are summarized below:

1. ** ________________ **

2. ** ________________ **

3. ** ________________ **

4. ** ________________ **

5. ** ________________ **

6. ** ________________ **

7. ** **

8. ** **

9. ** **

10. ** **

Q. DID MR. MODLIN ACKNOWLEDGE THE DEFICIENCIES IN GE'S TRAINING?

A. Yes. In his deposition, Mr. Modlin also acknowledged the following facts:

1. The operators did not know that on the DCS "local" means "off" position of the DC oil pump switch (TR 134)

2. The operators were not specifically advised that the manual switch was replaced and they had to rely on DCS control screens. (TR 142, 143)

3. SJLP assumed that the operators would have understood the obvious fact that the pistol grip control was not there. (TR 142, 143)

4. The GE training was not adequate. (TR 144)

5. The operators did not have the training which SJLP would have liked. (TR 145)

6. In May 2000, SJLP did not prepare the outline of the training which it had proposed for the training in September 2000. A copy of this outline is attached as Schedule JK-7. (TR 167-

168). The Company did not give any reason why it did not prepare such an outline in May 2000.

7. SJLP had realized that SJLP's operators had not received proper training prior to the unit start up date of June 2, 2000. (TR 155)

Q. BESIDES IMPROPER TRAINING, ARE THERE OTHER INDICATIONS ABOUT THE IMPROPER OPERATION OF THE UNIT?

A. Yes. A number of problems with the TG#4 operation and control are summarized in the previously referenced memo written on July 13, 2000. Schedule JK-4. Three of the highlights from this memo are presented below:

1. Improper design of the control system such as lack of alarms to indicate the loss of power to oil pumps and that the DC oil pump was in the "off" position.

2. SJLP operators were not properly trained by GE and familiar with the Mark V control system.

3. GE was several weeks behind in project engineering and the job of putting TG#4 back in operation was rushed.

Q. IS IT CORRECT MR. MODLIN REVISED HIS JULY 13 REPORT ATTACHED AS SCHEDULE JK-4 TO YOUR REBUTTAL TESTIMONY?

A. Yes. Mr. Modlin revised his report on September 29, 2000, a copy of which is attached as Schedule JK-8.

Q. COULD YOU PLEASE DESCRIBE THE CHANGES?

A. The changes are mostly cosmetic, however, there are three changes that are worth mentioning here which might have an effect of sanitizing the original report to some extent. These changes are described below:

1. Under Bullet No. 3, titled, "Mark V Installation Engineering (February-May 2000)." Originally the first sub bullet read, "GE several weeks behind in project engineering, rushed job". In the revised report, Mr. Modlin dropped the words "rushed job."

2. Under the sixth Bullet, titled, "Operation (May 25-June 7, 2000)," the original report had the first sub bullet, "DC pump breaker may not have been returned to normally closed position after opened for hydrogen seal work on about 5/25." In the revised report, Mr. Modlin deleted this sub bullet.

3. Under the sixth bullet, the original report had as its last sub bullet, "routine check of pump readiness not performed at shift changes." In the revised report, the last sub bullet reads, "Pump readiness less apparent to operators due to removal of manual switch."

Q. DO THE ABOVE CHANGES REDUCE THE SERIOUSNESS OF SJLP'S ERRORS?

A. No, they do not.

Q. DO YOU HAVE COMMENTS ON THE CHANGES?

A. Yes, I do. The first change involving the elimination of words "rushed job" does not obliterate the fact that GE was several weeks behind in project engineering and thus, it is obvious that the job had to be rushed.

The elimination of the first sub bullet under the sixth bullet does not change the fact that the DC pump was not returned to "automatic" mode after it was tested and this pump did not run when it was supposed to do so because it had been placed in the off position.

The change in the last sub bullet under the sixth bullet also does not change the fact that the DC oil pump was not tested on June 5, 2000, as mentioned in the third sub bullet of the original report. There is no proof that this pump was even tested until after the June 7 Incident.

Q. REFERRING TO THE DELAYS BY GE, DID MR. MODLIN MAKE OTHER COMMENTS?

A. Yes, his comments about delays and GE's performance are summarized below:

1. GE did not do a good job throughout the project. (TR 109)

2. GE had several project engineers whereas the normal practice is to have one. Multiple project engineers resulted in discontinuity and a number of project starts and stops. (TR 109 and 136)

3. Generally, drawings are received a couple of months in advance, however, SJLP received the drawings on May 5 or 6, 2000, i.e., less than one month in advance. (TR 112, 113)

4. Because of the delays, SJLP did not have time to review the drawings in advance. Had SJLP been given sufficient time, SJLP might have found the problem. (TR 111, 112)

Q. IS THERE ANY OTHER REPORT THAT DISCUSSES THE FINDINGS OF THE INVESTIGATION OF THE JUNE 7 INCIDENT?

A. Yes. Another SJLP report, "SJLP Lake Road Turbine Generator 4, June 7, 2000 Incident Investigation Notes" dated July 13, 2000 summarizes some of the results of the investigation of the June 7 incident. A copy of this report is attached as Schedule JK-9. Some of the findings of this report are summarized below:

1. The DC oil pump was not tested on June 5, 2000. First bullet under 6/12/00 on page 1 of Schedule JK-9.

2. GE's installation package was not timely delivered which resulted in insufficient time for proper review by SJLP. Second bullet under "6/23/00" on page 4 and 5 of Schedule JK-9.

Q. DID YOU FIND OTHER STATEMENTS IN THE RECORD THAT YOU REVIEWED RELATED TO THE TESTING OF THE PUMP?

A. Yes, I have. Not only was the DC oil pump not tested on June 5, 2000, it was also not tested on June 2, 2000. (TR 146). In his deposition, Mr. Modlin also acknowledged that the operator's schedule required the DC oil pump to be tested every Monday, however, the DC pump was not tested on June 5, 2000 as scheduled. (TR 85 - 87).

Q. DID GE ALSO PREPARE A REPORT ON ITS INVESTIGATION OF THE JUNE 7 INCIDENT?

A. Yes. During the deposition of Mr. Modlin on October 4, 2000, SJLP provided a copy of GE's report which is attached as Schedule JK-10.

Q. COULD YOU PLEASE SUMMARIZE THE RELEVANT POINTS OF THIS REPORT?

A. Some of the relevant points of the GE report are summarized below:

1. ** **

2. ** ** (I did not find any record which indicated that the operators took notice of this alarm). ** **

3. ** **

4. ** **

5. ** **

6. ** **

7. ** **

8. ** **

Q. DID YOU SEE ANY EVIDENCE OF SJLP'S EFFORTS TO CORRECT THE POOR TRAINING AND PERFORMANCE BY GE PRIOR TO THE JUNE 7 INCIDENT?

A. No, I did not. It seems that SJLP was fully aware of the poor training and performance by GE prior to the June 7 Incident, however, I did not see any evidence of efforts made by SJLP, save the June 23 letter, to either insure a proper training of its personnel or remedy the other deficiencies which might have been caused by poor GE performance. It was very evident that the pistol grip switch, which was mainly relied upon by the SJLP operators since 1966, was removed by GE. However, both SJLP and GE ignored the consequences caused by the removal especially in view of SJLP's reliance on the DC oil pump alone in case of an emergency.

Q. WHY SHOULD SJLP HAVE BEEN MORE CAREFUL ABOUT THE FUNCTIONING OF THE DC OIL PUMP?

A. As Mr. Modlin acknowledged in his deposition, although generator trips do not happen every day, these trips are not unusual. (TR 68-69) In the case of the generator trips, due to SJLP's configuration of its three oil pumps, SJLP had to rely solely on the DC oil pump for lubrication of the bearings and hydrogen seal of its TG#4.

In view of the importance of the DC oil pump, extra care and effort should have been devoted to the DC oil pump to make sure that this pump operates in case of a generator trip and the failure of the two AC oil pumps. The records indicate that SJLP failed to pay even cursory attention to the pump switch with the full knowledge that the pistol grip switch on which the operators relied since 1966 had been removed.

CONCLUSIONS

Q. WHAT ARE YOUR CONCLUSIONS?

A. It is very clear that SJLP restarted TG#4 on June 2, 2000 without proper training and without a full understanding of the design changes made when the Mark V was installed. SJLP failed to realize the impact of the removal of the pistol grip switch and it also failed to make sure that its operators clearly understood the impact of such removal and to concentrate more on the DCS. It is also clear that SJLP failed to oversee GE's performance and to control the project schedule.

To start with, the configuration of the lube oil pumps was not appropriate, and with the changes made in the Spring 2000, the redundancy of the pump control system by removing the manual pistol grip switch was completely eliminated. It is also evident that the operators were not properly advised to rely solely on the DCS which controlled the DC oil pump. For some unexplained reasons, it seems SJLP rushed to place TG#4 back into operation by the target date of June 2, 2000 without completely insuring of the reliability of the control system and operators' familiarity with the changes made to the control system. It was SJLP's responsibility to make sure that, before a generator with a new control system is started, all of the system were properly installed and tested and its operators were well trained and fully familiar with the operation of the refurbished TG#4 and the removal of redundant manual pistol grip control switches. Based on my review and analysis, it is my conclusion that SJLP failed in its responsibilities. One cannot claim an act of God as in the case of a plane crash if the plane is operated by a pilot who is untrained and not even familiar with the aircraft he is flying. This is the case involving the June 7 Incident which was not an act of God or unforeseen mechanical failure, as this incident could have been avoided by not prematurely placing the TG#4 in operation. In his deposition, Mr. Modlin acknowledged that had the DC oil pump switch been in automatic position, it would have started. (TR 169). The starting of the DC pump would have avoided the June 7 incident and all of the associated repair costs. The failure of not putting the DC oil pump in "Auto" was not an Act of God or the result of unforeseen mechanical failure. The June 7 incident was not beyond the Company's control, it was entirely within the Company's control. The June 7 incident occurred because of the Company's failure to take action within its control.

Q. IN YOUR TESTIMONY, A NUMBER OF TIMES YOU HAVE REFERRED TO MR. MODLIN'S DEPOSITION. HAVE YOU ATTACHED HIS DEPOSITION TO YOUR TESTIMONY?

A. Yes, I have attached Mr. Modlin's deposition as Schedule JK-11.

Q. MR. KUMAR, DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

The attached documents previously marked highly confidential were declassified during the deposition of John Modlin taken on October 4, 2000.

HIGHLY CONFIDENTIAL

00119

DATE/TIME OF OCCURRENCE: 6-7-00 1406 hours

SHIFT SUPERVISOR ON DUTY: W.White

EQUIPMENT INVOLVED: 4-6 UNIT

LOCATION: Lake Road

PERSONNEL INVOLVED: White, Hinkle, Rehm, Kukuc, Spratt

DAMAGE/PROBLEM CAUSED: Loss of unit availability

DESCRIPTION OF OCCURRENCE: Scott Hinkle and myself were in our office when we heard the safeties lift on #6 boiler. we immediately went to the units control panels and determined the unit had tripped at full load. Approximately 30 seconds had elapsed when Danny Kukuc came in the north-east control room door and told me the generator was on fire, at about that time we heard an explosion. I started toward the unit going through my office when I heard a second explosion. I went out our office door and saw flames all around #5 bearing, comutator area and all gratings in this area. I ran and got a

CAUSE OF OCCURRENCE: (continued next page)

under investigation

CORRECTIVE-PREVENTIVE ACTION:

REPORTED BY: W J White DATE: written on 6-14

COMMENTS:

REVIEWED BY: J Parker

Schedule JK-1

HIGHLY CONFIDENTIAL

fire extenguisher (halon) but was unable to put out or even control the fire. I went to the control room to tell them to call the fire dept. (they already were) I told Dave Rehm the fire was out of control and we started evacuating the plant, I told Danny Kukuc to secure the hydrogen to the unit. At this time I went back to the unit and noticed fire also at #4 bearing and seal. I went to #1 bearing, then #2 bearing which was starting to smoke. Scott Hink arrived at about that time and I told him we should shut down the lube oil and hydraulic's before we developed an oil fire. Scott and I went to the 480 MCC and opened the breakers on the lube oil and hydraulic pumps. We then we back to the control room to check on stat of equipment and personel. I then went back out to the unit and saw that the fire was slowly dissipating, I figured the hydrogen gas and oil supply had been shut off and we had the fire under control. I grabbed a dry chemical fire extenguisher and was able to put the fire out (most of it was at #5 bearing

Scott Hinkle arrived at this time again and was helping with another extingui
Immediately after putting out the fire my thoughts turned to the severe vibrati
I determined the unit was rolling extremely fast for the severe vibration and should have stopped, I ran to the control room and told Dave Rehm I thought the stop valve was still open. We looked on the control screen and it indicated the main stop and reheat stop had tripped and were closed. I didn't believe this as the unit was still rollin and not decelerating, I told Danny Kuk to go to the hydraulic set and open the "dump" valve. I was standing at the unit and watching it when Danny opened the hydraulic dump valve, the unit came to an abrupt stop. I looked for any signs of fire, found none, went to parking area to notify personal and fire dept. of the situatio

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The attached documents previously marked highly confidential were declassified during the deposition of John Modlin taken on October 4, 2000.

FM Global

Factory Mutual Insurance Company
540 Maryville Centre Drive, Suite 400
St. Louis, Missouri 63141-5819 USA
Telephone (314) 453-9660
Fax (314) 469-6140
E-Mail: Joseph.Pisoni@FMglobal.com

20 June 2000

Mr. Gary Myers
Vice President – General Council & Secretary
St. Joseph Light &Power Company
520 Francis Street
P.O. Box 998
St. Joseph, Missouri 64502-0998

Subject: St. Joseph Light & Power Company
St. Joseph, Missouri
FM No. 01828X-00-28-1; Incident Date: 7 June 2000
Index No. 69725.13; Account No. 1-31880

Dear Mr. Myers:

This acknowledges receipt of notice of loss and confirms the visit to the plant by our adjuster Mike Smith, and FM Global engineers Rick Scola and Ken Tate on 9 June, along with our generator consultant Ms. Kim Eiss with Generator Consulting Services. This also confirms our visit to the plant from 12 through 15 June 2000. During this visit, I introduced Mr. David Evinger with Robbins, Kaplan, Miller & Cerisi as our attorney investigating the potential for subrogation in regard to this loss, Mr. Phil Lamovec, P.E. and Mr. Joe Byrd , P.E., with Mechanical Dynamics & Analysis (MD&A). Mr. Lamovec is our turbine consultant and Mr. Byrd is a start up and controls specialist investigating the cause of the loss. I also introduced Mr. Randy Perkins, General Adjuster with FM Global as the supervising adjuster who will be assisting me with the adjustment of this loss.

We had originally thought that the loss originated in the generator. As a result, Mr. Paul Nippes, P.E. with Nippes, Bell & Associates, who was hired to investigate cause and origin with regard to the generator. Mr. Nippes also visited 12 through 14 June 2000.

Briefly, the loss involves damages to the no. 4/6 steam turbine-generator that tripped off line by high vibration readings on the no. 2,3 and 5 bearings at approximately 2:06 p.m. on 7 June 2000. This generator is rated at 100 MW at 30 psig hydrogen. After this trip, the back up lube and seal oil pumps did not activate immediately, causing damage to all five bearings and journals on this unit. The loss of oil pressure also caused the hydrogen seals to be breached, which resulted in an explosion and fire in at the collector ring assembly end of the generator. The back up AC lube oil pump was engaged, but by that time, the heat build up at bearing no. 2 caused the oil to ignite. The lube oil system was shut down and the turbine was allowed to stop spinning.

At this time, the turbine section of the unit and the collector ring assembly section have been completely disassembled and the generator field has been pulled. General Electric Field Services is on site and conducted the disassembly. GE also provided an initial evaluation of the damages, as did our turbine and generator consultants. These assessments were essentially the same on all the major aspects. At this time, the turbine and stationary blading have been sent to Preferred Machine & Tool Products Corp. in Cedar Hill (St. Louis), Missouri. Preferred Machine & Tool is owned by General Electric and works in conjunction with GE's Fenton, Missouri repair shop. All of the shipped parts will be blast cleaned and have a non-destructive examination conducted. It has also been arranged to have the rotor set up in a lathe and spun to check for warping. This will be done on Wednesday, 21 June 2000. For this test, Mr. Ceglenski will be present, as well as Mr. Blair Woody with MD&A in St. Louis.

The bearings have been sent to GE's Chicago repair shop for evaluation and to begin repair work.

The generator field has been sent to the General Electric repair shop in Minneapolis, where it will be tested, have the retaining rings removed, and have the aluminum particles cleaned from the field. As we discussed, these may be additional maintenance related work that you may wish to have conducted on the field at this time as well.

At this time, the length of time to make repairs is still not yet known. General Electric has indicated that once the amount of warping in the turbine rotor and condition of the no. 3 journal are known better, they should be able to provide a better indication of the time frame for repairs. We are also still waiting for delivery time on various parts from GE, and the completed evaluation of the generator field, once the end rings have been removed.

Mr. Ceglenski has indicated that he has already set up a cost code for all repair work related to this loss to be charged to. We will continue to follow the repair evaluations with the assistance of MD&A and will keep you informed of the progress. If you have any questions in the meantime, please call me at 314-317-2836.

Very truly yours,

JDP

Joseph G. Pisoni
Senior Adjuster
St. Louis Adjustment

cc: Mr. Dwight Svuba, Vice President – Energy Supply, St. Joseph Light & Power Company, 520 Francis Street. P.O. Box 998, St. Joseph, Missouri 64502-0998

cc: Ms. Jane Lanier, Marsh USA, Inc., 2405 Grand Blvd., P.O. Box 419105, Kansas City MO 64141-6105

Schedule JK-3 has been designated highly confidential by SJLP.

The attached documents previously marked highly confidential were declassified during the deposition of John Modlin taken on October 4, 2000.

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Turbine Generator 4 June 7, 2000 Incident
Possible Contributing Factors

- Original system (c. 1966): System was designed and built to rely on DC oil pump until AC power was transferred every time there was a generator trip. DC oil pump served both as "normal" and emergency role (no second line of defense).
- DCS design and installation (1995): DCS oil pump control logic was installed in parallel with manual control switch.
  - DCS control for DC pump did not "return to auto" after stop, as manual control switch did.
  - AC pumps DID return to auto in DCS, misleading plant personnel to believe DC pump operation was similar.
  - No alarm for DC pump in off position.
  - Control station shows "local" instead of "off," which was no longer meaningful.
  - No alarm for loss of pump control power.
  - DCS weaknesses since 1995 were not apparent due to continued use of manual switch.
- Mark V Installation Engineering (Feb – May 2000)
  - GE several weeks behind in project engineering, rushed job.
  - Multiple lead engineers involved in construction design, little continuity.
  - Manual switch removed in design without sufficient review.
  - Installation drawings delivered to SJLP after outage was underway.
  - Inadequate time for Company review.
- Mark V Installation (May 2000)
  - System installed and tested per GE drawings and other documents.
  - Company personnel did not recognize hazard.
- Mark V Training (May 2000)
  - Poor GE training, not specific to Lake Road Plant.
  - Change in DC pump control not explicitly pointed out to operators.
- Operation (May 25 – June 7, 2000)
  - DC pump breaker may not have been returned to normally closed position after opened for hydrogen seal work on about 5/25.
  - DC pump availability and operation not checked during start-up on 6/2/00.
  - Weekly DC oil pump test not performed on 6/5/00.
  - Routine check of pump readiness not performed at shift changes.
- Vibration Trip (June 7, 2000)
  - Source of high indicated vibration levels not found, possibly instrumentation problem.
  - Work on vibration equipment was underway by GE/Company personnel at time of trip.
  - Turbine trip caused 86G trip, which in turn shut off AC power to lube oil pumps.
- Roll Down (June 7, 2000)
  - DC oil pump did not start.
  - Loss of lubrication to bearings, subsequent vibration, oil fires.
  - Loss of hydrogen seals, subsequent explosions, hydrogen fire.
  - Apparent steam flow after turbine trip may have contributed to mechanical damage.
  - No injuries, fire damage contained.

Schedule JK-5 has been designated highly confidential by SJLP.

Schedule JK-6 has been designated highly confidential by SJLP.

The attached documents previously marked highly confidential were declassified during the deposition of John Modlin taken on October 4, 2000.

ST. JOSEPH LIGHT & POWER COMPANY
CASE NO. EO-2000-845

FILE COPY

Requested By: Kim Bolin

Requested From: Tim Rush

Date of Request: August 30, 2000

Request: HIGHLY CONFIDENTIAL
RE: Office of the Public Counsel Data Request No. 6
Did GE provide any additional or supplemental training after being notified of the Company's training complaints. If so, please provide all documentation that shows who received the training, when and where the training occurred and what type of training was provided. Also, provide complete copies of any and all written documents supplied at such additional training.

This Response Includes:

_x_Printed Materials _4 (double-sided)_Total Pages __Magnetic Media __Number of disks or tapes

Please number each section of multiple pages as: File formats for data:____________

# of Total #

In response to Company's feedback on operator training provided in May 2000, General Electric has agreed to provide additional operator training sessions. These sessions are scheduled for the week of September 25, 2000 at Lake Road Plant.

In addition to the GE training scheduled for September, the Company provided in-house training to all shift supervisors and head operators during the week of July 24, 2000. Personnel included Bill White, Dave Rehm, Mark Phillips, Garlan Pinson, Dennis Fletcher, Gary House, Jim Hale, Marvin Bally, Scott Hinkle, J. C. Stone, and Mike Tullis. An outline of the material covered during this in-house training is attached. (Note that the information on the training outline was updated in August to reflect changes and additional information from the August start-up of the unit.)

The information provided to the Office of the Public Counsel in response to the above information request is accurate and complete, and contains no material misrepresentations or omissions based upon present facts known to the undersigned. The undersigned agrees to immediately inform the Office of the Public Counsel if any matters are discovered which would materially affect the accuracy or completeness of the information provided in response to the above information.

DATE RECEIVED:________________ SIGNED BY: [signature]

TITLE: ________________

LIGHT & POWER

INTEROFFICE MEMO
from the desk of
John Modlin
Fuels & Projects

August 31, 2000

To: Jim Parker
Shift Supervisors
Head Operators

Re: Final Mark V Training Outline

Attached for your reference is the final training outline for the "in-house" Mark V training. Please review the outline and contact me if there are any questions.

Larry Brehmer of General Electric is scheduled to provide training on the system during the week of September 25. The attached outline may be a good reference for that training. That also would be a good time to ask questions about items that may be unclear.

Thank you all for your cooperation and attention as we worked to get the Mark V installed and operational.

John Modlin

attachment

cc: file
MSS

F:\ZLRFP1\Projects\T4 Mark V EX2000\training outline cover memo.doc

1) Reset Turbine (*Aux/Trip Checks*)
   a) Trip checks - to make sure no trips present

2) Rotor Prewarm (*Control/Rotor Prewarm*)
   a) Permissives to prewarm
      i) Turbine reset (closes MSV, opens RH stops and intercepts)
      ii) Speed < 15 rpm
      iii) Speed setpoint = 0%
      iv) LP prewarm NOT complete
      v) Speed < 180 rpm
      vi) Need 2 hours on turning gear prior to prewarm
   b) Closes RH Intercept Valves
   c) Prewarm limits
      i) Sets HP prewarm time based on instruction manual Block 1
      ii) Reheat prewarm automatically set to 60 min (whether it needs it or not!)
         (1) Can stop prewarm when HP prewarm is satisfied.
      iii) MSV cannot exceed 10%
   d) Select rotor prewarm "ON"
   e) Manual Prewarm
      i) Open/close MSV with Raise/Lower pushbuttons (about 3-3.5% valve position appears about right)
      ii) Enter MSV set point (NOTE: Setpoint is NOT same as position!)
   f) Automatic Prewarm (Auto select becomes visible after prewarm selected)
      i) Select Auto Prewarm "ON"
      ii) Mark V slowly pulses MSV open/close, 0.5 sec pulse every 5 seconds
      iii) Controls first stage pressure (FSP) between 65 - 70 psi during prewarm
         (1) Likely to overshoot when first pressurizing turbine. We have made changes to correct, but have not had a cold start to test it.
      iv) If speed > 15 rpm: Alarm rotor warming on speed hold
      v) Time above 55 psi counts toward total prewarm time
      vi) If FSP drops below 30 psi, restart prewarm
      vii) Alarm if vacuum > 20.5" HG (20" recommended)
      viii) LP rotor prewarm = 60 min (fixed time)
      ix) Mark V closes MSV at end of timer
   g) After prewarm, select Auto Prewarm "OFF"
      i) "Release IV's" push button will appear; Don't release until ready to roll turbine

3) Start Permissives (*Aux/Start Perm*)
      i) Inlet pressure between 500 – 2000 psi
      ii) Inlet temperature difference less than 350°F
      iii) Inlet temperature between 500 – 1000 °F
      iv) Speed setpoint at zero
      v) Control Valve (V1) Open
      vi) Main Stop Valve (MSV) closed
      vii) DC lube oil system ready (based on DC pump status from DCS)

viii) Lube oil tank level okay
ix) Turbine reset

4) Roll Turbine (*Control/Startup*)
   a) Check Aux>Start permissives
   b) Start Modes
      i) Cold: First stage differential > 400°F
      ii) Warm: 200 °F < First stage differential < 400°F
      iii) Hot: First stage differential < 200°F
      iv) First stage differential is first stage steam temp (calculated) – first stage metal temp (lagged)
   c) Manual Mode
      i) Enter speed setpoint and ramp rate (% vs RPM)
   d) Automatic Mode
      i) Turbine will ramp up to 3600 following start-up curves/SJLP practice
      ii) See attached table
   e) Can select Speed Hold at any time (will alarm in criticals)
   f) Critical zone is 45% to 80% (1620 rpm to 2880 rpm)
      i) "Gun through criticals" increases ramp rate to 500 rpm/minute through critical zone
   g) If turbine trips, can reset during roll down and bring it back up (can't catch turbine speed in critical zone)
   h) Monitor/Turb Supervisory
      i) RPM
      ii) Vibration
      iii) Differential expansions
      iv) Shell/axial positions

5) Synchronize (*Control/synch*)
   a) Field flashes at 3420 rpm; drops out at 3240.
   b) Synch screen
   c) Select breaker
   d) Check Auto Permissives, etc
   e) Select Auto at control switch on panel
   f) Mark V auto-synchronizes
   g) Close second breaker from pistol-grip switch (not available in Mark V)
   h) Change targets on switches

6) Initial Loading (*Control/Startup*)
   a) If in Auto Start, turbine will automatically load to 5 MW or 10% load reference, whichever is less. Will hold at that point as follows:
      i) Hot start: 0 minutes
      ii) Warm start: 15 minutes
      iii) Cold start: 30 minutes
   b) After 5 MW/10% hold, will load up to 15% load reference for FA/PA transfer
   c) Further loading based on operator control actions

7) FA/PA Transfer (*Control/Startup*)

a) Displays first stage steam to metal temp for information to transfer
b) Manual
   i) Can transfer from full to partial arc anytime turbine speed is at 3600 rpm by selecting "Partial Arc"
c) Automatic
   i) Transfer at a preset load signal (15%), regardless of other conditions

8) Load Control (*Control/Unit control*)
   a) Turbine will automatically load to 10% hold point (if warm or cold start)
   b) Then load to 15% (FA/PA transfer point) and transfer if in auto
   c) After 15% operator has control
      i) Load control (%)
      ii) MW control (MW set point)
      iii) Inlet pressure control (adjusts control valve to maintain throttle pressure)
      iv) DCS control (button available after FA/PA transfer)
         (1) Select DCS control push button
         (2) DCS pulses Mark V to move control valve and vary load

9) Load Limiters
   a) Inlet Pressure (IP) Limiter
      i) Maintains inlet pressure above setpoint, will cut load if loss of steam pressure
   b) Inlet Pressure rate limiter
      i) Closes control valve if throttle pressure drops too fast
   c) Load limiter
      i) Limits maximum load reference (keeps control valve from "winding up")

10) Turning gear operation (*Control/Turning gear*)
   a) TG motor turns off above 45% (1620 rpm) speed increasing
   b) Manual
      i) TG motor and engage solenoid can both be controlled from Mark V.
      ii) Local control is still functional
   c) Automatic
      i) TG motor turns on at 45% speed decreasing
      ii) When Mark V senses zero speed (via speed probe, eccentricity, and reference probe (once per revolution)) it will engage turning gear.

11) Var Control (*Control/Unit Control*)
   a) Manual – Control from exciter interface
   b) Automatic Var Control
      i) Select Var Control Mode "ON"
      ii) Enter MVAR set point (bottom left corner of screen)

12) Off Line Tests
   a) Primary Overspeed (POST)
      i) To run test select "POST ON"
      ii) Actuates at 110% speed (3960 rpm)
   b) Emergency Overspeed (EOST)
      i) To run test select "EOST ON"

    - ii) Set at 111%, but resets to 5% for purpose of test
  - c) Mechanical Overspeed (MOST)
    - i) To run test select "MOST ON"
    - ii) Increases primary and emergency trips to 112% to allow mechanical trip
  - d) Off-line Electrical Trip Device (ETD)
    - i) The easiest way to test the ETD is to simply trip turbine with trip buttons on DCS console

13) On Line Tests
  - a) Reheat stops and intercepts
    - i) To run test select "TEST ON"
    - ii) Closes one side at a time
  - b) Main Stop Valve
    - i) To run test select "TEST ON"
    - ii) Strokes valve to 75% position then back open
  - c) Emergency governor
    - i) Test from front standard, as in past
    - ii) Mark V recognizes test in progress
  - d) On-line Overspeed Tests
    - i) This test checks the Mark V Primary and Overspeed trip circuits
    - ii) To run tests select "TEST ON" for each

14) Protective Relaying
  - a) A new protective relay for has been added for #4 Generator
  - b) Includes reverse power feature

15) Turbine Trips
  - a) Three trip devices
    - i) Bearing oil pressure relay
    - ii) ETD (electrical trip device)
    - iii) Mechanical trip
  - b) Bearing oil pressure relay is tripped by:
    - i) Loss of oil pressure releases hydraulic fluid, tripping turbine
  - c) ETD is tripped by energizing trip coil due to:
    - i) Primary overspeed (110%) from Mark V
    - ii) Secondary overspeed (111%) from Mark V
    - iii) Turbine Supervisory
      - (1) Vibration (Alarm 4 mils, trips at 7, 1 sec delay)
      - (2) Axial Position (Alarms at 12 mils, trips at 16, 1 sec delay)
      - (3) Differential Expansion (10 sec delay)
        - (a) Rotor long
        - (b) Rotor short
      - (4) High acceleration
      - (5) Zero speed
      - (6) High exhaust hood temperature (Alarms 175 F, trips 225 F)
      - (7) Loss of axial position probes
    - iv) Emergency trip feedback from front standard
    - v) Manual trip push buttons from DCS console

vi) Vacuum trip uses 2/3 trip logic from new transmitter and two existing pressure switches (any 2 of the three indicating trip will trip turbine). (Alarms 23" HG vacuum, trips at 20")
vii) Generator Lockout (86G relay)
d) Mechanical
i) Overspeed bolt (~110%+)
ii) Trip lever at front standard

16) Operating Data (*Monitor*)
a) Turbine Supervisory
i) Vibration
ii) Axial position
iii) Shell expansion
iv) Differential expansion
v) Eccentricity
b) Steam Path Temperatures
c) Turbine Bearing and Oil Temperatures
d) Generator Temperatures
e) Miscellaneous
i) Exhaust casing
ii) Water-detection thermocouples
f) Generator Curve (dynamic display)

17) DCS Changes
a) Mark V Interface
i) Alarm conditons
(1) General "Mark V Trouble" alarm
(2) "Mark V Trip" alarm
(3) "Silence" Mark V to clear DCS alarm
ii) Control actions
(1) DC pump ready permissive from DCS to Mark V prevents start-up if DC pump is running or not in a ready state.
(2) Transfer MW control from Mark V to DCS allows DCS to move valve to control load
b) Lube Oil Pumps
i) DC pump control removed from DCS
ii) DC pump alarms
(1) Control switch in locked out position
(2) Loss of control power
(3) Pump running
(4) Motor overload
(5) Motor tripped
(6) Repeating pump running alarm (to save batteries)
iii) All pumps will alarm loss of power, turn icon white
iv) Pull to Lock Position (PTL)
(1) Applies to lube oil and hydraulic oil pumps
(2) Middle position on MSDD
(3) Shows on display
(4) Must go through STOP position to engage or release PTL

(5) AC Lube Oil Pumps PTL
 (a) Can PTL one pump on line
 (b) Can PTL both pumps only when all of the following are true:
  (i) Turbine metal less than 300°F
  (ii) Hydrogen pressure less than 3 psig
  (iii) Turning gear is disengaged
(6) Hydraulic Oil Pumps
 (a) PTL any time

v) AC Oil Pump Standby Mode
 (1) DCS will start standby pump when neither pump is running (time delay on stop command to prevent both pumps from starting simultaneously – i.e. if operator stops a pump, the other pump will start as soon as both pumps show "not running")

18) AC Lube Oil Pumps
 a) No. 1 pump alternate feed from low side, MCC 3
 b) Transfer switch located 3rd floor, east end of Unit 4/6 MCC's
 c) Normal feed for No. 1 pump will be from low side, unless unavailable
 d) DCS will start standby pump when it senses that neither pump is running
 e) Standby pump will still start on loss of pressure
 f) Loss of both AC pumps will start DC pump

19) DC Lube Oil Pump
 a) Control of pump now ONLY at pistol grip switch
 b) DC pump will start on loss of both AC pumps (in addition to pressure switches)
 c) Otherwise, operation will be identical to previous arrangement
 d) DCS Alarms (listed above)

20) Turbine speed indication will be provided on DCS console

21) To control speed by changing speed reference command:
 a) Press F6.
 b) Use < > keys to select TNR_C (speed reference command) or TNRR_C (speed reference rate of change command).
 c) ">" in front of name is selected control variable.
 d) Press "Enter" to put variable into control mode, an asterisk (*) should appear in place of >.
 e) Press "Raise" or "Lower" to change command, or
 f) Press "Set" and enter set point.

22) To control load by changing load reference:
 a) Press F7.
 b) Use < > keys to select LDR_C (load reference command) or LDRR_C (load reference rate of change command).
 c) ">" in front of name is selected control variable.
 d) Press "Enter" to put variable into control mode, an asterisk (*) should appear in place of >.
 e) Press "Raise" or "Lower" to change command, or
 f) Press "Set" and enter set point.

The attached documents previously marked highly confidential were declassified during the deposition of John Modlin taken on October 4, 2000.

HIGHLY CONFIDENTIAL

SJLP Lake Road Turbine Generator 4
June 7, 2000 Incident Investigation Notes

6/7/00
- Turbine generator tripped at 14:06. See individual employee statements.
- Obtained Mark V (M5) turbine generator and INFI-90 DCS boiler alarm printouts.
- Obtained M5 trip log computer file from Steve Alexander of GE and printed.
- Asked TMN to print all pertinent trend screens from DCS.
- Provided statement to GLM re observations.
- Asked Steve Alexander to look for any other trip information, logs, trends, etc on M5. He reported that none were available.

6/8/00
- DVS assigned me to investigate cause of event.
- Obtained M5 CSP and cross-reference from Steve Alexander of GE and printed.
- Worked on retrieving data from DCS.
- Discussed operating steps with Dave Rehm.
- Reviewed M5 and DCS printouts in detail.
- Started sequence of events document.
- Checked DC oil pump test on 6/5 on operations schedule sheet. Not highlighted, which would indicate not performed.

6/9/00
- Worked with Steve Barton and Lance Brumbaugh to investigate DC oil pump starting logic and verify operation.
- Verified DCS wiring through auto start (NO), start (NO) and stop (NC) contacts. Checked fuses and continuity through DCS contacts from starter.
- Checked pressure switches, PS-101, PS-105.
- Checked relay coils in circuit (1A, 2A, M, MX).
- All circuit checks were okay.
- Obtained detailed event log from DCS.
- M5 showed reheat stops going closed but not main stop valve. Review of M5 logic indicates that M5 uses valve position feedback to determine if valve is closed, not a limit switch. This may be why M5 did not show valve closed on alarm printer. 86GOT trip indicates that main stop valve closed enough to make up limit switch and trip 86GOT.

6/12/00
- Mark Phillips confirmed that DC oil pump was not tested on 6/5.
- Wayne Matthews and Mike Tullis stated that DC oil pump breaker was already open when they isolated turbine on 6/8.
- Danny Kukuc showed me valve used to dump hydraulic fluid in final attempt to stop turbine.
- Reviewed event log and hydraulic oil pressure to tried to pinpoint time turbine stopped rolling.
- Lifted DC oil pump motor leads and closed breaker. Verified control logic through Infi-90. Pump "started" when put in automatic mode. Indication of pump starting and running printed on alarm printer. Did another test with breaker open: Put pump in auto and it did not start nor alarm due to failure to start (which makes sense).

6/13/00

- Obtained detailed Brg 5 vibration troubleshooting steps from Lance Brumbaugh.
- Met with Jim White of Bently Nevada regarding damage assessment. Asked him to look for any problems. Assigned Lance to work with him and keep me informed of any findings.
- Reviewed steam flow trend. Steam flow did not immediately go to zero, took several minutes to reach zero. (This makes sense, since steam flow is measured by first stage pressure. There will be period of time for pressure to decay, even when there is very little flow.)
- Reviewed hydraulic pressure trend. Did not see a sudden drop to indicate hydraulic oil bypass valve opening by operators.
- Reviewed lube oil pressure trend. Shows that unit had oil pressure during roll-down, after aux power was restored.
- Met with insurance team and discussed sequence of events. Provided alarm listings (Mark V alarms and trip log, operator log sheet, DCS events, DCS trends).
- DVS provided draft/preliminary sequence of events write-up to insurance team mid-afternoon.
- Danny Kukuc reports that DC oil pump breaker was already opened when he got to it after the unit trip.

6/14/00

- Met with Jim White, re Bently Nevada assessment. Discussed possibility of false trip due to putting signal from one probe back on common side of other probes. He said it could cause false readings.
- Contacted Sega re third party assistance on reviewing incident. Fred Tolman to be on-site tomorrow. Bob Tolman to email me a proposal.
- Typed up Lance's description of bearing 5 vibration equipment troubleshooting and had him review: ok.
- Started review of hydraulic trip system to understand how steam may have continued to be admitted to turbine after trip.
- Found HMI screen with trips did not show that vibration trip was "active".
- Confirmed that DCS console trip and manual trip on M5 printout were same event. Somebody pushed DCS console turbine trip push buttons.
- Met with Joe Byrd, turbine control engineer for MD&A, regarding the DC oil pump issue and false trip issue.
- Met with MDC, Terry Hedrick and Dave Kramer? (UCU) regarding sequence of events.
- Discussed DC oil pump breaker with Bill White. He thinks House or Pflugradt opened breaker after incident and before Danny went to open it.

6/15/00

- Scope of damage/repairs meetings all day.
- Fred Tolman of Sega came on-site and verified DC oil pump control logic (non-DCS).
- Met with insurance team to review scope of repairs (a.m.) and both insurance and GE to review same in the afternoon.
- Discussed cause of failure with Joe Byrd, MD&A.

6/16/00

- Lance checked vibration probe common to M5 cabinet ground; found 40 ohms resistance.

- Received request for root cause data from Bill Cissell, GE. MDC to respond.

6/19/00

- Worked on list of items for FM Global. Request event logs from DCS – very large. Submitted request for DC pump related tags at 5 pm, not successful.
- Asked Gary House and Joe Pflugradt about opening DC oil pump breaker. Both said that they did not open breaker on day of incident.

6/20/00

- Jim Parker verified with Dave Rehm that he pushed turbine trip on DCS console, as shown on Mark V printout. Also, Dave believes that DCS DC pump control station was in "local" at time of incident.
- Interviewed operators with insurance team and David Evenger all afternoon: Jim Parker, Dennis Fletcher, Gary House, Dave Rehm, Bill White. Rick Strasser was present with union employees.
- Between Dave and Bill, they believe that Dave pressed console pushbuttons less than a minute before Danny Kukuc dumped hydraulic fluid and turbine stopped.
- "Controversial" issue is that Bill White maintains that steam continued to enter turbine until the point in time when Danny dumped hydraulics. Scott and Danny's statements support Bill. This is my next area to research.

6/21/00

- Met with John Mitchell, GE Customer Training Specialist. He is gathering information for root cause analysis for GE. Provided John the following items and explained what each one was: Mark V trip log, Mark V alarm printout, DCS event log from 1300 to 1800, DCS trend packet, Unit 4/6 log sheet.

- John asked questions about sequence of events. He was already aware that work was being done on bearing #5 vibration instruments at the time of the trip, AC power was lost on trip, DC oil pump did not start, and that there was some concern that stop valve did not close. I confirmed the first three and told him I was looking into the latter.

- The following Q&A is summary of discussion.
- Q. He asked if we knew why the DC pump did not start. A. I responded that we were looking into it. Q. Related to the Mark V installation?, A. Yes. Q. Was functional testing done on pump before startup? A. Yes, I performed it and it operated as designed. However, it appears that it was not in a condition to run at the time of the incident. Q. (Indirectly) Did the Mark V control the motor? A. No.

- We discussed design philosophy of unit (that we rely on DC on every generator trip), the fact that the pump starts on pressure only (not on loss of AC), that the 86GOT operates when turbine valves show closed with generator breaker closed.

- We looked at Mark V trip log and discussed the bearing 5 trouble-shooting that was going on at the time of the event. We agreed that vibrations appeared to be false and that we need to take a hard look at Mark V as far as grounding. etc. Q. Prox cable shields properly grounded. A. I said yes, I believed so (grounded at M5 only). Q. Did Bently Nevada (BNC) do check-out and commissioning? A. I explained that GE had responsibility under our PO. BNC installed and tested instruments, but were not here when Mark V was powered up and unit was rolled. I did call Matt Mangus (BNC) and Steve Ritter (GE – pretty sure it was Steve that I called) the week of start-up to ask whether a BNC person should be present. They were comfortable with the fact that BNC's scope was complete and that GE field engineer could complete check-out and watch things satisfactorily via the M5 (there was not a BNC equipment panel/cabinet installed on project.)

- I explained the steps performed by Lance during the bearing #5 vibration trouble-shooting on the day of the event. It appeared that IF his work caused it, it would have happened earlier in the day. John mentioned that it look like something "hit" the M5 cabinet to cause so many probes to show high vibration.

- He asked specifically about speed indication and I explained that speed probes were damaged during the event, so speed indication was sketchy. However, it appeared that the unit did overspeed and returned to synch speed 48 seconds after the trip. John said he would expect the unit to reach peak speed about 3 seconds after the trip and return to synch speed at about 10 seconds. If the unit was actually above synch speed for 48 seconds, this is another clue that the unit may have been driven by steam after the trip.

<u>6/22/00</u>

- Continued to study hydraulic system and possibility of failure that would keep stop valve open. Five things should have tripped turbine: ETD should have seen a trip signal three times: vibration, 86GOT, console buttons; also low bearing pressure trip relay (on loss of pumps) and mechanical overspeed (caused by vibration?, indicated at 14:06:59, 33 seconds after initial trip). PS ETD-1 showed a tripped condition immediately after the trip was indicated.

- Plotted hydraulic oil pressure data from DCS to try to ascertain when pressure was dumped by opening bypass. It appears that it was closer to 14:14 than 14:13. Testing after hydraulic system is released on re-assembly could help pinpoint time.

- Had discussions with John Mitchell of GE re above. During course of conversation, he asked whether I knew of any fault on the part of GE that contributed to the accident. I said that yes, there appeared to be contributing factors. He asked for more information, but I said that I wasn't sure I had the okay to elaborate at this time.

<u>6/23/00</u>

- Lance checked calibration of two pressure switches and verified that they operated certain Mk V alarms.
    - ETD-1, "Emergency Trip Header Tripped," opens: 700 psi rising, closes: 320 psi falling
    - SFPA, "Hydraulic Oil Pressure Low," opens: 1450 psi rising, closes: 1250 psi falling

- Discussed with DVS the amount of information that I shared with John Mitchell. DVS told me there was to be a "free flow" of information, and that included telling John how GE's design and installation engineering contributed to the incident. Therefore, I gave John a summary review of GE's poor performance during the project and explained how they overlooked the impact of removing the oil pump control switch. I also explained that GE's installation package was not delivered until we were into the outage, and that resulted in insufficient time for proper SJLP engineering review.

- John Mitchell, Mike Ceglenski and I then met to discuss John's draft report. We made a few corrections and discussed some of his findings. His report and sequence of events generally agreed with mine. He does not believe the unit oversped for more than ten seconds, while I suggested there was evidence to support an overspeed lasting nearly a minute. This is related to the "alleged" stop valve failure, which I am still investigating. His draft report did not include any mention of GE's role in the failure, as I had just informed him of that.

6/26/00
- No investigative work today.

6/27/00
- Bryan Nold and Luke Hinkle started checking the turbine valve limit switch string that picks up 86GOT relay. Finished main and right stop/intercept valves (plan to continue on 6/29). All okay so far. Verified the external trip wires (console pushbuttons) wired into PTBA.

- Long phone call with Ray Heyd re incident and how M5 trip relay is picked up. Read through M5 applications manual (re tripping) and PTBA, TCTS cards, etc. Ray does not believe the "synchronous speed" indication from M5 is reliable, i.e. we don't know when unit returned to 3600 rpm after overspeed.

6/28/00
- Electrician unavailable today.

- Looked at stop valve disk and three bypass valves and how they are assembled and operate. Pat Bauer, GE reports that stop valve stem has 0.030" run-out, which "may" have caused a hang-up in the stop valve. Problem is that dumping hydraulic header pressure would not have freed stop valve and stopped steam flow.

- In discussion with DVS, new theory on steam flow. Stop valve could have hung up and control valves did not close all the way, thus allowing a small amount of steam into turbine. When hydraulic pressure dumped, stop valve didn't move (hydraulic pressure was already tripped), but control valves went closed because the hydraulic pressure was released and spring pushed valves closed. Need to see if this theory works (see 7/11).

6/29/00
- Bryan Nold/Luke Hinkle back on stop valve limit switches. Left side RH stop and intercept wired as shown on F-1.
- Discussed incident with Danny Kukuc, again. He is sure DC oil pump breaker was open prior to when he went to open it on the day of the incident. He also confirmed that he heard turbine rolling (rough) prior to opening hydraulic oil bypass valve. When he opened valve, "it got quiet."

- Tried to retrieve trends from DCS for 4/25/00, similar trip, to compare 1st stage and CRH pressures, looking for indication that there was a driving force in turbine. No luck getting trends off the optical disk. Later found out that trends were not archiving at that time due to a console problem.

<u>6/30-7/4/00</u>
No investigation activity.

<u>7/5/00</u>
- Joe Byrd (MD&A) called: He asked about DCS indication of DC pump operation after unit was on line. Told him I was unsuccessful at extracting "focused" data at this time. He also had a theory about turbine mechanically re-setting due to vibration in TFS. After some discussion however, he didn't think it was possible.
- Talked with Dave Evinger, re 6/29 meeting with Danny Kukuc. Confirmed that Danny found the breaker open. Dave asked if there was any documentation of start-up check of DC oil pump was performed. I left question with Jim Parker.
- Dave requested Equipment Isolation documents that show lock-out and release of DC pump. I requested copies from JLP.

<u>7/6/00</u>
- JLP answered that there was no documentation that the DC oil pump was checked at start-up.
- JLP provided Equipment Isolation sheets for Isolations 00-0501, 00-0522. Faxed to Dave Evinger.
- JLP provided Operations Schedule sheets for period of 4/24 – 6/11/00.

<u>7/7/00</u>
- Reviewed DCS printouts. Found that on June 1 at 09:38:28 the DC pump motor overloads were logged as okay and at 09:38:31 a STOP command was issued. These only make sense if the pump had control power, i.e. breaker was closed. Since this is after the last equipment isolation was cleared and during a period when we were actively starting up the unit (lighting boiler and rolling turbine), it appears that the breaker was closed when unit was started up. (See 7/12 for follow-up).
- Looked at drawing K-1 at the contact that shows status of pump overload. It doesn't make sense that this contact is changing state as often as it does on the DCS print-outs. Discussed with Homer Clark of Sega, Suspect an input problem. Will look at next week with electrician. Homer will visit on Wed, 7/12 to review DCS printouts and provide clearer interpretation of events. (See 7/12 for follow-up.)
- Spent considerable time trying to retrieve trends and filtered events from DCS.

<u>7/10/00</u>
- Contacted ABB-Automation regarding retrieving DCS data from optical disk. Worked with Bob Schworm at ABB over the phone, but no progress. Right now, there are two problems: 1) Trying to limit events to tags related to DC oil pump in order to review activity on this pump prior to incident, 2) Cannot load trends from the day of the incident; need this to look at differential between first stage and cold reheat and see if there is energy present to drive turbine.

- Met with Ray Heyd all afternoon re Mark V punch-list. Also discussed need for GE to follow up on Mark V/Bently Nevada instrumentation to assure that system is reliable and functioning properly when we re-start. As we discussed the vibration indicaiton trouble-shooting steps, we reviewed Steve Alexander's statement. Steve's statement indicates that he observed the turbine trip "about the time" of the first explosion, which would have been several seconds after we previously believed it tripped. It also changes the sequence of events: If Lance heard loss of hydrogen and observed no. 5 bearing "smoking," prior to the trip then it means that there was a loss of hydrogen seals prior to the loss of AC power. A hydrogen explosion before the trip would explain two things: 1) it could send a large sudden vibration down the shaft that would have then caused the unit trip; 2) the sound of the unit trip (that nobody heard) may have been lost in the explosion that immediately preceded it.

7/11/00

- DCS retrieval: Tried suggested changes to archive retrieve event request with no luck. Also, trends did not retrieve either. Faxed event retrieve results to Bob Schworm at ABB. Lance Brumbaugh started looking into trend retrieval problem. Lance changed trend retrieval from "sample" to "average" to match trend set-up. With this change, we were able to retrieve trends from day of event.
- Based on trends and differential between first stage and cold reheat pressures, the differential between the two had dissipated in less than two minutes, which does not support the observation that the turbine appeared to be powered several minutes after the trip. Unsure what level of differential would be required and how much of a first stage drop was present.... The data don't disprove the observation, they just doesn't support it.
- Talked to Bill Cissell re Steve Alexander's observations. Evidently, GE noted the timing "problem" with Steve's statement and he has rescinded it. Bill was on cell phone on way to Wolf Creek, so connection was bad.
- Talked to Lance re Steve's statement. Lance was not in a position to see HMI screen when he entered control room, so he could not say that turbine had already tripped. However, he did remember that operators were already responding to a boiler upset and Bill White was on the way into control room when Lance entered, which means safeties had already lifted, which would have followed turbine trip. Also discussed with Mike Ceglenski. He clearly remembered hearing explosion several seconds after safeties lifting. So, it seems, that Steve's statement must be incorrect. I left a message with Bill Cissell requesting any information regarding Steve's current position on his observations during the event.
- Discussed following theory with Ray Heyd: Both stop and control valves failed to close all the way on trip, allowing steam to enter turbine. Control valves closed under spring load when hydraulic pressure dumped, stopping steam flow and therefore turbine stopped. It seems this would be possible only if control valve calibration was way off. He didn't think that was likely based on operation prior to trip.

7/12/00

- DC PUMP STATUS Met with Homer Clark of Sega for most of day to interpret DCS alarms and events. Conclusions: DC pump ran in auto on 5/24, was stopped and returned to auto state. Pump was later turned off. Most likely breaker was opened to isolate oil for GE to repair collector-end hydrogen seal. No other "real" activity recorded for pump after 5/24. DC pump events on 5/26 and 6/1 were most likely due to resetting of OIS console. In any case, the events on 5/26 and 6/1 do not prove that the DC breaker was closed (one event is DCS powered, the other is an internal state, neither requires field power to operate). The pump overload OK alarm input was found to be okay by Homer and Steve Barton. It also was most likely being printed in response to the OIS console being reset.

7/13/00

- Informed JLP of DC pump findings from yesterday. He discussed with Scott Hinkle, who got back to me bel
- Most of day preparing OPC DR responses.

The attached documents previously marked highly confidential were declassified during the deposition of John Modlin taken on October 4, 2000.

DRAFT

Turbine Generator 4 June 7, 2000 Incident
Possible Contributing Factors

- Original system (c. 1966): System was designed and built to rely on DC oil pump until AC power was transferred every time there was a generator trip. DC oil pump served both as "normal" and emergency role (i.e. no second line of defense).
- DCS design and installation (1995): DCS oil pump control logic was installed in parallel with manual control switch.
  - DCS control for DC pump did not "return to auto" after stop, as manual control switch did.
  - AC pumps DID return to auto in DCS, misleading plant personnel to believe DC pump operation was similar.
  - No alarm for DC pump in off position.
  - Control station displayed "local" instead of "off," which was no longer meaningful after removal of the "local" (i.e. manual) control switch.
  - No alarm for loss of pump control power.
  - DCS weaknesses since 1995 were not apparent due to continued use of manual switch.
- Mark V Installation Engineering (Feb – May 2000)
  - GE several weeks behind in project engineering.
  - Multiple lead engineers involved in construction design, little continuity.
  - Manual switch removed in design without sufficient review.
  - Installation drawings delivered to SJLP after outage was underway.
  - Limited time for Company review.
- Mark V Installation (May 2000)
  - System installed and tested per GE drawings and other documents.
  - Company personnel did not recognize hazard.
- Mark V Training (May 2000)
  - Poor GE training, not specific to Lake Road Plant.
  - Change in DC pump control not explicitly pointed out to operators.
- Operation (May 25 – June 7, 2000)
  - DC pump availability and operation not checked during start-up on 6/2/00.
  - Weekly DC oil pump test not performed on 6/5/00.
  - Pump readiness less apparent to operators due to removal of manual switch.
- Vibration Trip (June 7, 2000)
  - Bently Nevada/GE testing in August 2000 indicates that high indicated vibration was likely a false indication caused by troubleshooting work, which was underway by GE/Company personnel at time of trip.
  - Turbine trip caused 86G trip, which in turn shut off AC power to lube oil pumps.
- Roll Down (June 7, 2000)
  - DC oil pump did not run.
  - Loss of lubrication to bearings, subsequent vibration, oil fires.
  - Loss of hydrogen seals, subsequent explosions, hydrogen fire.
  - Apparent steam flow after turbine trip may have contributed to mechanical damage.
  - No injuries, fire damage contained.

Schedule JK-9

Schedule JK-10 has been designated highly confidential by SJLP.

Schedule JK-11 has been bound separately.

Appendix 1

Qualifications and Experience
of
Jatinder Kumar

EDUCATION

B.S., Petroleum Technology, 1963, Indian School of Mines, Dhanbad, India

Diploma in French Language, 1965, Besancon University, France

Post Graduate Diploma, Petroleum Engineering, 1965, French Petroleum Institute, Paris, France

M.S., Mechanical Engineering, 1966, University of California, Berkeley

Advanced Studies toward Ph.D., Mechanical Engineering, 1969, University of California, Berkeley

Evening and correspondence courses: Business Management, Corporate Organization, Risk Analysis, Economics, Accounting, Management and Organization, Business Finance, Thermal Recovery of Petroleum, Technical Supervision, Operation Research, Waste Water Treatment, Corrosion, General Electric Time Share Computer Programming, Solid State Control, Instrumentation and Control, Log Interpretation, Properties and Application of Plastics, Supervisory Control, Spanish, German.

EXPERIENCE

President of Economic & Technical Consultants, Inc, December, 1980 to present

Vice President, Associated Regulatory Consultants, April 1973, to November 1980

Utility Consultant Engineer, Van Scoyoc & Wiskup, Inc., September 1972 to April 1973

Design and Project Engineer, Pacific Gas & Electric Company of California, San Francisco, December 1969 to September 1972.

Staff Petroleum Engineer, Standard Oil Company of California, Bakersfield, California, August 1967 to August 1969

Assistant Engineer, University of California, Berkeley, August 1969 to December 1969

Research Assistant, University of California, Berkeley, October 1966 to August 1967

Extra Assistant Director, Indian Standards Institution, New Delhi, India, April 1964 to May 1965

Drilling Engineer, Oil India Ltd., India, January 1963 to April 1964

Senior Technical Assistant, Oil & Natural Gas Commission, India, August 1963 to December 1963

Mr. Kumar has appeared in more than 200 proceedings before FERC, ICC, 21 retail jurisdictions and ten judicial proceedings before 25 separate State and Federal regulatory and judicial bodies as an expert witness in the matters relating to public utilities and energy matters; electric and gas restructuring, unbundling, competition, merger/acquisition, incentive rate making; gas and electric power acquisition and transmission; competition, anti-trust and "price-squeeze" issues; contracting and buyouts; ratemaking and operation issues; accounting, economic, regulatory and technical matters. Mr. Kumar has advised the White House as well as advised a member of the Senate Sub-Committee on Energy on energy-related matters. Besides his experience in the utility consulting business, Mr. Kumar served as an alternate member of the Pipeline Committee of the International Standards Organization. He has working knowledge in the areas of utility operations; oil and gas production and reserve estimation; drilling; underground gas storage; designing technical facilities; project engineering and evaluation; environmental control; supply and demand analysis of various fuel supplies; feasibility of alternative fuels; and management efficiency studies. He has authored more than 30 technical papers. Mr. Kumar is listed in the 1996 Edition of Marquis Who's Who in Finance and Industry.

MEMBERSHIPS

The National Association of Accountants

The American Society of Mechanical Engineers

Registered Professional Engineer in the States of Maryland and Virginia

Representative Publications and Program Appearances
Jatinder Kumar

I. Representative Publications

"Nuclear Magnetic Relaxation Time of Water in a Porous Medium with Heterogenous Surface Wettability", Journal of Applied Physics, Vol. 40, No. 10, September 1969, p.4165 (with Dr. I. Fatt and Dr. D.N. Saraf).

"Nuclear Magnetic Resonance Study of Porosity, Permeability and Surface Area of Unconsolidated Porous Materials", The Log Analyst, January-February 1970, p. 13 (with Dr. I. Fatt).

"Rating Alternatives to Chromates in Cooling Water Treatment", Chemical Engineering, April 26, 1976, p.111.

"Specified Surface of Porous Materials", Society of Petroleum Engineer Journal, March 1970, p.4 (with Dr. I. Fatt).

"Determination of Wettability of Porous Materials by the Nuclear Magnetic Resonance Techniques", Indian Journal of Technology, Vol. 8, April 1970, p. 125 (with Dr. D.N. Saraf and Dr. I. Fatt).

"Determination of Specific Permeability from Electric Logs", World Oil, February 1, 1971, p.38.

"Nuclear Magnetic Relaxation Time of Blood and Blood Velocity", Science, Vol. 175, February 18, 1972, p.794 (with V. Kumar, M.D.)

"Selecting and Installing Synthetic Pond Linings", Chemical Engineering, Vol. 1, No. 3, February 5, 1963, p. 67 (with Mr. J.A. Jedlicka).

"Quick Visual Comparison of Fuel Values", Chemical Engineering, February 18, 1974, p.156.

Comments on Cost Allocation, Public Utilities Fortnightly, February 17, 1977, Volume 99, No. 4, page 5.

Comments on Impact of Tax Reform Act, Public Utilities Fortnightly, June 25, 1987.

Natural Gas Transportation and Transportation Rates, Journal of Petroleum Technology, Vol. 40, No. 2, page 237.

II. Representative Program Appearances

"Synthetic Liners for Ponds", presented at 1976 Water and Wastewater Equipment Manufacturers Association Conference at Houston, April 1, 1976.

"Corrosion of Subsurfaces Equipment in Producing Oil and Gas Wells", presented at a Seminar, University of California, Berekely, February 1967.

"Problems of Steam Recovery", presented at a Seminar, University of California, Berkeley, February 1967.

"Role of Explosives in Petroleum Industry", presented at High Explosives Corporation of India Silver Jubilee Seminar, March 1965.

"Effects of Poisson's Ratio on Rock Properties", presented at the Society of Petroleum Engineers 51st Annual Fall Meeting, New Orleans, October 3-6, 1976.

"The Role of Anaerobic Digestion for the Production of Methane from Municipal Waste", presented at 1976 American Society of Mechanical Engineers Solid Waste Processing Conference at Boston, May 23, 26, 1976.

"Trends in Natural Gas Regulation" (with John W. Griggs), presented at the Society of Petroleum Engineers 59th Annual Technical Conference held in Houston, September 19, 1984.

Open Access for Alternate Gas Supplies (Orders 436 and 500). Presented a speech at the annual meeting of the National Association of Gas Consumers, Lake of the Ozarks, MO, October 29, 1987.

"Gas Market Restructuring through Regulation and Legislations". Presented at the Society of Petroleum Engineers 63rd Annual Conference held in Houston, Texas, on October 3-5, 1988.

Important Points for Gas Acquisition and Contract. A speech presented at the Annual Conference of National Association of Gas Consumers, October 19, 1988.

"Solution of Blasius Flow Equation by Electronic Analog Computers".

"Estimation of Thermal Conductivity of Porous Materials", Part I and Part II, American Petroleum Institute Project Report, 1970 (with Prof. W. H. Somerton).

Impact of FERC's Rate Design Policy Statement. Presented at NASUCA's meeting held in June 1990 at Santa Fe, New Mexico.

"Tax Implications of Utility Restructuring", presented at NASUCA's Semi Annual Conference, Charleston, SC, June, 1997.

"Gas Marketing Restructuring through Regulations and Legislations", presented at the Society of Petroleum Agencies meeting in New York, December 7, 1988.

"Engineering Aspects of Gas from Wellhead to Burnetip", presented at a conference arranged by the District of Columbia Office of People's Counsel, (1989)

"Natural Gas Contracting", presented at the International Power Conference, Tampa, Florida, February 1992.

"Tax Implications of Utility Deregulation", presented at Michigan State University's Annual Conference, Williamsburg, VA, December 3, 1997.

"Independent System Operators (ISO), Issues and Impact on Electric Market", presented at International Power Conference, Dallas, TX, December 10, 1997.

III. Other Reports and Studies Prepared

Offshore oil spills

"Summary and Explanation of FERC Order 436". Prepared for Department of Energy, March 1986.

Gas from Eastern U.S. Shale, prepared for Gulf Oil Company.

Summary of Court Order Remanding and Vacating FERC Order 436.

Summary of FERC Order 500.

"Alternatives in Permeability of Sandstones after Super-Cooling", Research Report, Indian School of Mines, Dahnbad, India, May 1963.

A comparative Study of Gas Pipeline Flow Equations.

Working Capital for Electric Utilities.
Correlations: Types and Applications in Public Utilities.

Future Gas Marketing Strategies.

Cost of Service Manual for Electric Utilities prepared for Bonneville Power Administration (with Edgar H. Bernstein and Ken Robertson).

Summary of Amendment to Clean Air Act.

Summary of FERC Order 636.

Cases in Which Analysis Was Performed
But No Testimony Was Submitted
Jatinder Kumar

Price Indexing in Gas Industry.

Evaluation of Formulae Used for Gas Flows Through Pipelines

Summary of FERC Orders 888, 888 A and 888 B.

Brief Description of Electric Utility Ratemaking Process.

How Electric Utilities Rates Can Be Made More Competitive Through Ratemaking

Problems with ISO Locational Marginal Pricing.

How ISO Can Perform "Balancing Only" Function?

Electric Price Forecast, Prepared for US Department of Energy

Cases in Which Analysis Was Performed
But No Testimony Was Submitted
Jatinder Kumar

Gulf States Utilities	U-16950	Louisiana
Delmarva Power & Light Co. (Complaint Filing)	EL86-11-000	FERC
Gas Rulemaking	844	District of Columbia
Panhandle Eastern Pipeline	CP86-232	FERC
Wisconsin Power & Light Co.	EL86-40-999	FERC
Gas Co. of New Mexico	1871	New Mexico
Potomac Electric Power Co. (Productivity Improvement Group)	766	District of Columbia
Delmarva Rate Reduction	ER82-751 (Revd)	FERC
Delmarva Power & Light Co.	CA84-1033	Court of Appeals
General Rulemaking (Phase II)	834	District of Columbia
Tennessee Gas Pipeline Co.	RP81-54 et al.	FERC
Mountain Fuel Supply (PGA)	87-057-01	Utah
Natural Gas Regulations for the District of Columbia	FC 844	District of Columbia
Potomac Electric Power Co. (Regulation of Cold Power Contract)	FC 766	District of Columbia
Commonwealth Edison Co.	ICC87-0427	Illinois
Kansas City Power & Light Co.	ER86-701	FERC
Union Electric Co. (Amendment to Transmission Service)	ER87-419-000	FERC
Delmarva Power & Light Co. (Rate Filing)	ER87-556-000	FERC
Delmarva Power & Light Co. (Complaint Re Fuel and Purchased Power Costs)	EL87-58-001	FERC
Mountain Fuel Supply (TRA)		Utah
Mountain Fuel Supply (Gas Transportation)		Utah
Mountain Fuel Resources	RP86-7	FERC
Union Electric Co. vs. FERC and WDG vs.FERC	88-1125	Court of Appeals
Williams Natural Gas Co.	RP86-325	FERC
Wisconsin Power & Light Co.		FERC
Washington Gas Light Co.	849	District of Columbia

Cases in Which Analysis Was Performed
But No Testimony Was Submitted
Jatinder Kumar

Delmarva Power & Light Co.	CA88-1557	D.C. Court of Appeals
KPL Gas Service Co.	GR89-62	Missouri
Potomac Electric Power Co.	FC 881	District of Columbia
Northern Natural Gas Co.	RP88-259	FERC
El Paso Natural Gas Co.	RP88-44	FERC
Delmarva Power & Light Co.	EL89-10	FERC
LaClede Gas Co.	GC89-85	Missouri
Delmarva Power & Light Co.	EL89-16	FERC
Gas Co. of New Mexico	2147	New Mexico
Washington Gas Light Co.	FC 849	District of Columbia
Potomac Electric Power Co. (Least Cost Planning)	FC 884	District of Columbia
El Paso Natural Gas Co.	RP89-132	FERC
Williams Natural Gas Co. (Take-or-Pay)	RP89-40 & RP89-142	FERC
Vesta Energy Co. vs. Williams Natural Gas Co.	RP89-152	FERC
Williams Natural Gas Co. (Rate Case)	RP89-183	FERC
Colorado Take-or-Pay Investigation	89I-288G	Colorado
Potomac Electric Power Co.	FC 889	District of Columbia
KPL Gas Service Co.	GR90-50	Missouri
Duquesne Light Company	ER90-152	FERC
Louisiana Power & Light Co.	EL90-12	FERC
Louisiana Power & Light Co.	EL90-15	FERC
Alleghany Power Service Corporation	ER90-174	FERC
KPL Gas Company	GR90-40	Missouri
KPL Gas Service Co.	GR91-149	Missouri
Gas Co. of New Mexico	2361	New Mexico
KPL Gas Service Co.	GR91-286	Missouri
KPL Gas Service Co.	GR91-291	Missouri
Gas Co. of New Mexico	2395	New Mexico
KPL Gas Service Co.	GR-91-296	Missouri
KPL Gas Service Co.	GR-91-337	Missouri
KPL Gas Service Co.	GR-92-9	Missouri
Delmarva Power & Light Co.	ER-92-236	FERC
West Gas Co. Colorado	CPUC	915-552G

Cases in Which Analysis Was Performed
But No Testimony Was Submitted
Jatinder Kumar

COMPANY	CASE NO.	JURISDICTION
Williams Natural Gas Co.	RP91-152	FERC
Southern Companies	EL 91-14 & ER 91-570	FERC
Gas Company of New Mexico Blanco Hub	04-07-016	New Mexico
Gulf States Utilities	ER 87-051-000	FERC
Gas Company of New Mexico Integrated Resource Planning	2449	New Mexico
Potomac Electric Power Company	8466	Maryland
West Virginia Power	92-0401-E 42T	W.Virginia
Questar Pipeline Company	RP93-18	FERC
Union Electric Company	ER93-267	FERC
Delmarva Power & Light and Baltimore Gas & Electric	ER93-340-000	FERC
Public Service Company of Colorado	93S-001EG	Colorado
Southwestern Electric Power Company	ER93-399-000	FERC
Delmarva Power & Light Company (Fuel Cost Waiver)	EL93-24-000	FERC
Union Electric Company	ER93-517-000	FERC
Productivity Improvement Analysis	FC 766	D.C.
KPL Gas Company	GR90-40	Missouri
Delmarva Power & Light Company	ER92-236 & EL92-113	FERC
Williams Natural Gas Company	RP92-152	FERC
Gas Company of New Mexico	2422	New Mexico
Public Service Co. of Colorado (West Gas Merger)	92A-352G-3	Colorado
New Mexico Transportation Rules	2472	New Mexico
Gas Co. of New Mexico Integrated Resource Planning	2449	New Mexico
Potomac Electric Power Co.	8466	Maryland
Western Resources, Inc	GR93-240	Missouri
Delmarva Power & Light Co. (Complaint Billing Selection)	EL93-47	FERC
Delmarva Power & Light Co. (Power Sale to LILCO)	ER93-731-000	FERC
Delmarva Power & Light Co. vs. FERC	93-1819	D.C. Court of Appeals

Cases in Which Analysis Was Performed
But No Testimony Was Submitted
Jatinder Kumar

Union Electric Co. (Remand)	ER84-560-036	FERC
Delmarva Power & Light Company (Network Transmission)	ER95-222-000	FERC
Gas Company of New Mexico/ Southern Union Gas Company	2639	New Mexico
Industrial Gas Sales, Inc. vs. GCNM	2649	New Mexico
Mega NOPR	RM95-8 andFERC RM94-7	
Union Electric Co.	ER95-1437	FERC
Delmarva Power & Light (Open Access Tariff)	ER95-1639	FERC
Questar Pipeline Co.	RP95-407-000	FERC
PECO Energy	ER96-641-000	FERC
Ameren Corp. (Open Access Tariff)	ER96-923-000	FERC
PJM Pool (Power Contract with Enron)	ER96-821-000	FERC
Delmarva Power & Light Co.	ER96-1360	FERC
Enron Power Marketing & PJM	ER96-821-000	FERC
Delmarva Power & Light Co.	ER96-852-000	FERC
PJM Interconnection Agreement	ER96-1433-000	FERC
Delmarva Power & Light Co. (Retail Wheeling)	96-83	Delaware
Delmarva Power & Light (Rate Increase)	ER96-1962-000	FERC
CRT NOPR	RM96-11-000	FERC
PECO Energy Co.	OA96-13-000	FERC
Delmarva Power & Light Co. (Order 888 Filing)	OA96-90 and OA96-165-000	FERC
PECO Energy (Pool Filing)	ER96-2668-000	FERC
PJM Pool, Inc. (Restructuring Filing)	EC96-28	FERC
Illinois Power Co.	OA96-66-000	FERC
CIPS Filing	OA96-154-000	FERC
Delmarva Power & Light Co. (Market Based Rates)	ER96-2571-000	FERC
Soyland Power (Wholesale Power)	ER96-2974	FERC
Power Cost Analysis		FERC
Soyland Power Short term Sale)	ER96-2969 & 2970	FERC

Cases in Which Analysis Was Performed
But No Testimony Was Submitted
Jatinder Kumar

Industrial Gas Sales vs. PNMGS	Case #2734	New Mexico
NMIEC vs. PNMGS	Case #2720	New Mexico
Delmarva Power & Light Sales to Marketers	ER97-440-000	FERC
Merger of Delmarva Power & Light Co. and Atlantic City Electric	EC97-7-000FERC	
Delmarva Power & Light Co. (Order 889 Filing)	ER97-912-000	FERC
PJM Interconnection (Open Access Filing)	ER97-881-000	FERC
Illinois Power/Soyland Power	NRC Docket # 50-461	NRC
Illinois Power Co. (Sale and Trans. Contracts)	ER97-1809,FERC et al	
PNM Gas Service (GAC Rule Making)	2670	New Mexico
Duke Power Co./ Pan Energy Merger	EC97-13-000	FERC
PNM Gas Service (Service Rate Case)	Case # 2762	New Mexico
DPL/ACE Merger (Transfer of Nuclear Plant)	50-354	NRC
PJM Interconnection Filing by PJM Companies (Restructuring)	ER97-3189 and EC97-38	FERC
IP/Soyland Contract	ER97-3090	FERC
ISO Filing by PECO	ER97-3273	FERC
PNM Gas Service (PGAC Rule)	2759 and 2772	New Mexico
PNM Gas Service (Levelized PGAC)	2777	New Mexico
PJM Companies (Market Based Rate)	ER97-3729-000	FERC
PJM Revised Tariffs	ER97-3385 and ER97-3415	FERC
PJM Open Access Tariffs	OA-97-678-000	FERC
Delaware Retail Electric Restructuring	97-229	FERC
RTO Transmission Rates	ER97-3189-003	FERC
PJM Interconnection	OA97-261-000	FERC
(Installed Capacity)	Et al	FERC

Cases in Which Analysis Was Performed But No Testimony Was Submitted
Jatinder Kumar

PJM Interconnection (FTR Auction)	ER98-1581-000	FERC
PNM Gas Service (Fuel and Losses)	2811 04-C-07/018	New Mexico
Shenandoah Gas Co.	98-0289-G-42T	W.Virginia
Southwestern vs. Soyland		FERC
Soyland Power Coop.	ES98-22-000	FERC
West Virginia American Water Co.	98-0246-W-42T	W. Va. Cons. Advocate
Chubu Electric		Japan - KRI

TESTIMONY SUBMITTED

JATINDER KUMAR

COMPANY	CASE NO.	JURISDICTION
Detroit Edison Co. (Steam)	U-4024	Michigan
Detroit Edison Co. (Electric)	U-4257	Michigan
Union Electric Co. (Direct)	E-8215	Federal Power Commission
Union Electric Co. (Rebuttal)	E-8215	Federal Power Commission
Washington Gas Light Co.	6738	Maryland
Boston Gas Co.	DPU 19885	Massachusetts
Columbia Gas Co.	6810	Maryland
Frederick Gas Co.	6839	Maryland
Union Electric Co.	E-9496	Federal Power Commission
Delmarva Power & Light Co.	6860	Maryland
Baltimore Gas & Electric Co.	7033	Maryland
Upper Peninsula Generating Co.	15852-C	Michigan (Court)
Upper Peninsula Generating Co.	18852-C	Michigan (Air Pollution Control Commission
Delmarva Power & Light Co. (Direct)	7065	Maryland
Delmarva Power & Light Co. (Surrebuttal)	7065	Maryland
Upper Peninsula Generating Co.	18852-C	Michigan (Water Pollution Control Commission)
Potomac Electric Power Co.	630	District of Columbia
Demarva Power & Light Co.	E-8947	Federal Power Commission
Washington Gas Light Co.	6977	Maryland
Illinois Power Co.	E-9520	Federal Power Commission
Delmarva Power & Light Co.	ER76-494	Federal Power Commission
Missouri Power & Light Co.	ER76-539	Federal Power Commission
Bridgeport Hydraulic Co.	7703301	Connecticut
Commonwealth Edison Co.	76-0698	Illinois
Purchased Gas Adjustment Investigation (Direct)	6865	Maryland
El Paso Electric Co.	522	Texas
Baltimore Gas & Electric Co.	7070	Maryland

Testimony Submitted
Jatinder Kumar

COMPANY	CASE NO.	JURISDICTION
Purchased Gas Adjustment Investigation (Rebuttal)	6865	Maryland
El Paso Electric Co.	1360	New Mexico
Potomac Electric Power Co.	7149	Maryland
Union Electric Co.	ER77-614	FERC
Indiana & Michigan Electric Co.	U-5608	Michigan
Missouri Utilities Co.	ER77-354	FERC
El Paso Electric Co.	1481	Texas
Union Electric Co. (Direct)	ER77-614	FERC
Union Electric Co. (Rebuttal)	ER77-614	FERC
Public Service Co. of New Mexico	1419	New Mexico
Illinois Power Co.	ER77-531	FERC
Delmarva Power & Light Co. (Cost of Service)	ER78-414	FERC
Michigan Consolidated Gas Co. (Interim)	U-5955	Michigan
Michigan Consolidated Gas Co. (Direct)	U-5955	Michigan
Columbia Gas of Ohio	771204-GA-CRC	Ohio
Delmarva Power & Light Co. (Price Squeeze)	ER78-414	FERC
Union Electric Co. (Surrebuttal)	ER77-614	FERC
Union Electric Co. (Rebuttal to Supplemental)	ER77-614	FERC
Michigan Consolidated Gas Co. (Rebuttal)	U-5955	FERC
Detroit Edison Co. (Direct)	U-6006	Michigan
Detroit Edison Co. (Rebuttal)	U-6006	Michigan
Detroit Edison Co. (Surrebuttal)	U-6006	Michigan
Detroit Edison Co. (Steam)	U-6103	Michigan
Delmarva Power & Light Co. (Fuel)	ER78-414	FERC
Delmarva Power & Light Co. (Rebuttal Price Squeeze)	ER78-414FERC	
Mobile Gas Service Corporation	17820	Alabama
Columbia Gas of Ohio (Supplemental)	77-1204-GA-CRC	Ohio
Potomac Electric Power Co.	7384	Maryland
Indiana-Michigan Electric Co.	U-6148	Michigan
Michigan Consolidated Gas Co. (Direct)	U-6372	Michigan
Consumers Power Co.	U-5732-R	Michigan

(Direct)		
UGI Corp. (Direct)	R-821899	Pennsylvania
Detroit Edison Co. (Rebuttal)	U-6949	Michigan
Union Electric Co. (Supplemental)	ER77-614	FERC
Delmarva Power & Light Co. (Supplemental)	ER81-504-000	FERC
Gas Co. of New Mexico	1710	New Mexico
Columbia Gas Transmission	RP75-105 & RP75-106	FERC
UGI Corp. (Rebuttal)	R-821899	Pennsylvania
Detroit Edison Co. (Steam)	U-7126	Michigan
Pennsylvania Gas & Water Co.	R-821961	Pennsylvania
Toledo Edison Co.	82165ELEFC	Ohio
New York State Electric & Gas Corp.	82-410-000	FERC
Consumers Power Co. (GCR Clause)	U-7487	Michigan
Michigan Consolidated Gas Co. (GCR Clause)	U-7479	Michigan
Consumers Power Co. (GCR Factor)	U-7488	Michigan
Consumers Power Co. (PSCR Clause)	U-7511	Michigan
Michigan Consolidated Gas Co. (GCR Factor)	U-7480	Michigan
Gas Co. of New Mexico	1787	New Mexico
Pennsylvania GCR Investigation (Direct)	M-78050055 D-79800192	Pennsylvania
Detroit Edison Co. (PSCR Clause)	U-7510	Michigan
Consumers Power Co. (PSCR Clause)	U-7512	Michigan
Pennsylvania GCR Investigation (Surrebuttal)	M-78050055 D-79800192	Pennsylvania
United Gas Pipe Line Co.	RP82-57	FERC
Detroit Edison Co. (PSCR Factor)	U-7550	Michigan
Gas Co. of New Mexico	1787	New Mexico
UGI Corp.	R-832331	Pennsylvania
Consumers Power Co.	U-7650	Michigan
Gas Co. of New Mexico (Gas Costs)	1796	New Mexico

East Ohio Gas Co.	83-19GAGCR	Ohio
Potomac Electric Power Co. (Phase III)	759	District of Columbia
Wisconsin Power & Light Co.	ER83-429-000	FERC
Commonwealth Edison Co.	830537	Illinois
Potomac Electric Power Co. (Direct)	813	District of Columbia
Potomac Electric Power Co. (Rebuttal)	813	District of Columbia
Gas Co. of New Mexico	1875	New Mexico
Detroit Edison Co. (Steam)	U-7906	Michigan
New England Power Co.	EL84-6000	FERC
Houston Light & Power Co.	5779	Texas
New England Power Co. (Rebuttal)	EL84-6000	FERC
Wisconsin Power & Light Co.	ER84-57-6000	FERC
Union Electric Co.	ER84-56-0000	FERC
Consumers Power Co.	U-5732	Ingham County Court, Michigan
Union Electric Co.	CA77-094-7(C)-2	Federal District Court
Southwestern Public Service Co.	6465	Texas
Utah Associated Municipal Power System	85201101	Utah
Mountain Fuel Resources	RP867000	FERC
Union Electric Co. (Rebuttal)	ER84-56-000	FERC
Commonwealth Edison Co.	84-0554	Illinois
National Fuel Gas Co.	29375	New York
Review of Gas Distribution Applications	86-057-03	Utah
Consumers Power Co.	U-7830	Michigan
Union Electric Co.	CA 83-2756C(C)	Federal District Court
Consumers Power Co. (Rebuttal)	U-7830	Michigan
Mountain Fuel Resources (436 Filing)	RP86-87-001	FERC
MichCon (Gas Transmission)	U-8635	Michigan
Consumers Power Co. (Gas Transmission)	U-8678	Michigan

Testimony Submitted
Jatinder Kumar

Shenandoah Gas Company

Soyland

Nova Scotia Power Inc.

Nova Scotia Power Inc.

New Brunswick

PNM

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August 24, 2000
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95-401-U

EC96-7-000

96-E-0132

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CP96-610-000

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OR96-1-000

P-00971168

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98-0246-W-42T

98-0289-G-42T

EL99-14-000

P-871

P-872

NBPUB299

2762 & 2662
New Mexico

Arkansas

FERC

New York

New Mexico

FERC

New Mexico

FERC

Pennsylvania

New Mexico

W. Virginia

W. Virginia

EXHIBIT

Schedule JK-11

To The

Rebuttal Testimony of

Jatinder Kumar

St. Joseph Light & Power Company
Case No. EO-2000-845

FILE COPY

STATE OF MISSOURI
PUBLIC SERVICE COMMISSION

In the Matter of the Application of St. Joseph Light & Power Company for the Issuance of an Accounting Authority Order Relating to its Electrical Operations.	) Case No. EO-2000-845)) October 4, 2000) Jefferson City, Mo.

DEPOSITION OF JOHN T. MODLIN,

a witness, produced, sworn and examined on the 4th day of October, 2000, between the hours of 8:00 a.m. and p.m. of that day at the law offices of Brydon, Swearengen & England, 312 East Capitol, in the City of Jefferson, County of Cole, State of Missouri, before

KELLENE FEDDERSEN, CSR, RPR
ASSOCIATED COURT REPORTERS, INC.
714 West High Street
P.O. Box 1308
JEFFERSON CITY, MO 65109
(573) 636-7551

and Notary Public within and for the State of Missouri, commissioned in Cole County, in the above-entitled cause, on the part of the Office of the Public Counsel, taken pursuant to agreement.

OCT 0 5 2000

APPEARANCES

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FOR THE STAFF OF THE MPSC:

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ALSO PRESENT: Mark Burdette
Dwight V. Svuba
Leon Bender
Allen Bax

SIGNATURE INSTRUCTIONS:
Presentment waived; signature requested.
EXHIBIT INSTRUCTIONS:
Attached to original.

INDEX

EXHIBITS INDEX

JOHN T. MODLIN, being sworn, testified as follows:
DIRECT EXAMINATION BY MR. MICHEEL:
Q. Mr. Modlin, my name is Doug Micheel. I'm with the Office of the Public Counsel. I'm here to ask you some questions today regarding commission docket EO-2000-845. Specifically I'm interested in the incident that occurred at the Lake Road unit, Unit 4/6 on June 7th.
If you have any -- if something's confusing, let me know. If you need a break, let me know.
A. Okay.
Q. Would you state your name.
A. John T. Modlin.
Q. And how are you employed?
A. I'm employed with St. Joseph Light & Power Company.
Q. And what's your position?
A. I'm Director of Fuels and Projects.
Q. What's your educational background?
A. I have a BS degree in mechanical engineering from the University of Missouri in Rolla. I have a master's degree in mechanical engineering from Purdue University.
Q. And how long have you been employed by St. Joe Light & Power?

A. About ten and a half years.
Q. And what are your duties as Director of Projects and Fuels?
A. In the fuels component, I am generally responsible for fuel supply for the Lake Road Power Plant and that includes coal, fuel oil and natural gas. And then for our north division gas LDC, I'm responsible for -- overall responsibility for gas procurement.
In the area of projects, I have responsibility for, I guess, overall reporting on capital projects conducted at the Lake Road Power Plant. I oversee many of those projects, not all of them, but many of the projects. Generally, it's directing contractors, working with consultants, procuring materials and labor for plant projects.
Q. And to whom do you report?
A. I report to Dwight Svuba, Vice President of Energy Supply, with regard to fuels area; and I report to Mike Ceglenski, C-e-g-l-e-n-s-k-i --
MR. DUFFY: You might want to spell Svuba.
THE WITNESS: Svuba. S-v-u-b-a is Svuba -- with regard to the project component.
BY MR. MICHEEL:
Q. And what are your responsibilities

specifically related to the Lake Road plant and the 6/4 unit?
A. Could you clarify what you --
Q. Let's just talk about the project that was conducted per the scheduled outage of the 6/4 unit. Can you tell me what your responsibilities were with regard to that project?
A. There were several projects that were conducted during that outage, and I oversaw the contractor work on some of those projects.
Q. Why don't you take me through each project that was related to that outage and describe for me each contractor and what their job was?
A. Well, I don't know if I can recall all of them at this time. Clearly the biggest project was the replacement of the turbine boiler control system, Mark V controls, and I was responsible for working with General Electric, coordinating their engineering on that project, working with their field service engineers to over -- working with their field service engineers to coordinate the work that was done on the outage for the installation of that project.
Another project was the EX2000, which is the related generator exciter project, and I just had, I guess, kind of a side role in that particular project,

working with the -- working with the contractor.
We replaced two hammer mill crushers on the outage, and I coordinated the contractor efforts on that project. I worked with Pennsylvania Crusher on some issues that came up during that project.
There was a lube oil temperature control project that was done during the outage, and there's two or three others that I don't recall at this time.
Q. Is coal the primary fuel for the 6/4 generation unit?
A. Yes, it is.
Q. Are there three combustion turbines at the Lake Road plant?
A. Yes, there are.
Q. Is it correct that an incident, a fire and explosion occurred on June 7th, 2000 with respect to the 6/4 generation unit?
A. Yes.
Q. What's the capacity of the 6/4 generation unit?
A. I believe the accredited capacity of that unit is 97 megawatts.
Q. And is it correct that just prior to the explosion that the 6/4 unit had been shut down for maintenance and overhaul?

A. Yes.
Q. When did that maintenance outage start?
A. It was the first week of May. It would be speculating as to the date. It was about May 4th, but it was the first week of May.
Q. And when did that scheduled outage end?
A. I believe the unit came back on line on June 2nd.
Q. And when I use the term scheduled outage, how would you define a scheduled outage?
A. Well, I guess it's kind of self-explanatory. It's something that is scheduled ahead of time. The work is planned, certain scope of work is planned. Contractors are lined up, purchase power arrangements are made, whatever is necessary to allow that work to be done, but it's a planned outage.
Q. And how does a planned outage differ from what I see in the documents as a forced outage?
A. Well, obviously a forced outage is not planned. Something has failed or a situation has arisen where a unit needs to be taken off with minimal, if any, plan.
Q. I think in a response to an earlier question you indicated that there were two modifications performed by General Electric during the scheduled

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outage, I think you said a Mark V controller and EX2000 exciter; is that correct?
A. Yes.
Q. And the first one was the control system, a new control system was put into place, and that was a GE Mark V control system; is that correct?
A. Yes.
Q. What is the Mark V control system?
A. I'll try to make this brief. It's a microprocessor-based control system that basically controls the operation of the turbine that drives No. 4 generator. The control, the majority of that control is basically controlling the valves that admit steam into the turbine. It also monitors various field parameters to shut the unit down if the situation's not correct.
I'm trying to think. It also has some logic in it that allows the unit to be prewarmed according to GE recommendations. If you have a cold turbine and you have hot steam, you have to bring the unit up to temperature in a controlled fashion. It controls that activity. I guess that's 95 percent of what the Mark V is.
Q. When you say various field parameters, could you expound on that? What do you mean by field

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parameter?
A. Various pressures, temperatures, vibration for example is what we're going to get to, the expansion of the unit, the differential expansion. The rotor and the shell have to expand in sync with each other so that things don't run. The condenser exhaust pressure that the steam, you know, after it goes through the turbine it goes through the condenser, that needs to be at a certain level. Otherwise the unit will come off.
If there's a shutdown signal from the generator, something from the generator, protected logic indicates that the unit needs to be shut down, it'll shut it down. Speed, if speed increases too fast, if load increases too fast, it'll limit the operator's ability to control. There are several things, but that's the sense of what's out there.
Q. You also said that the Mark V has some logic, and when you use the term logic, what are you referring to?
A. Basically, it's the rules that the software uses to make control actions.
Q. And that software is obviously programmed by someone; is that correct?
A. That is correct.

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Q. And who controls or programs that software?
A. General Electric engineers program that software.
Q. So St. Joe Light & Power has no part in programming the logic software?
A. We worked with General Electric engineers during startup, and after the unit was started up this summer we worked with them to, I guess, customize that to some extent.
In addition, we sat down with them early in the project and went through what field devices were available and worked with them to determine what -- what's the framework in which this unit needs to work. They designed and programmed all the logic. We didn't do any programming.
Q. When you say what field devices are needed, what's a field device?
A. Something like a temperature sensing device or a pressure sensing device that the Mark V will use for information in carrying out its logic.
Q. Who was the manufacturer of the old control system at the unit 6/4 turbine or 4/6 turbine?
A. General Electric.
Q. And when was that old system installed?
A. It was the original control system for the

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unit, and I believe it was 1966.
Q. So those controls have been in place since 1966; is that correct?
A. Like I said, I believe that was the year, yes.
Q. And why was that old system replaced?
A. Replacement parts were no longer readily available. It was becoming, I guess, more troublesome to maintain.
Q. What are the differences between the old system and the new Mark V control system that was installed?
A. Well, that's really getting into an area that I'm not real conversant in. I wasn't an expert on the old system. But basically, in a nutshell, you're using 1960s technology in one case and you're using more or less state of the art microprocessor technology in the latter case.
Q. Were you the individual in charge of this project?
A. You say in charge. I was responsible for overseeing the contractor and GE's scope of work.
Q. Who would know the differences between the old and the new Mark V control system? Who would be the expert I would talk to?

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A. Probably somebody from General Electric.
Q. So there's no one at St. Joe Light & Power that could tell me the difference between the old and the new system?
A. I imagine there's some of our technicians who worked on the old system who could describe that to you, and I could give you literature on the Mark V. Obviously we know there are many substantial differences.
Q. Who in management would I talk to? You talked about a technician. Who in management would I talk to, Mr. Svuba, about the differences, or is it down at the technician level where they would know the differences?
A. The technicians report to our instrument and controls supervisor, and he reports to Mike Ceglenski, the superintendent of maintenance/construction.
Q. Let me ask you, why did St. Joe Light & Power choose the GE Mark V system?
A. That decision wasn't made by me, so I'd be speculating as to why we chose that system.
Q. Who made that decision?
A. Well, I'm not sure. I was assigned the project after that decision had been made.
Q. Who assigned the project to you?

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A. Mr. Ceglenski.
Q. And who does Mr. Ceglenski report to?
A. Dwight Svuba.
Q. The second modification and major modification that you talked about was the installation of new static generator exciting system; is that correct?
A. Correct.
Q. And that's, I think you said, the GE EX2000 system?
A. Correct.
Q. Was that also a replacement for an old exciter system?
A. Yes.
Q. And why did you -- when I say you, why did St. Joe Light & Power elect to install the new EX2000 system?
A. I cannot really answer that. I'm a mechanical engineer and that's an electrical device. Again, I speculate because it was the age of the unit and that the same sort of issues were the case on the exciter as they were on the control system.
Q. Who could answer that question at St. Joe Light & Power as to why?
A. From a maintenance perspective, it would

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probably be Mr. Ceglenski.
Q. Okay.
A. From an electrical engineering perspective, our superintendent of engineering, Mike Smith.
Q. Why did St. Joe Light & Power select a GE system?
A. Again, I can't answer.
Q. Who would be able to answer that?
A. Again, I was -- in fact, I wasn't even assigned that project. That was Mike Smith's project.
Q. When was the Unit 4/6 put back into operation after this scheduled outage?
A. I believe the date was August 8th, 2000.
Q. Let me go back. That was when it was -- after the explosion occurred --
A. Right.
Q. -- when it went back?
My question was, when was the 4/6 unit placed into service after the spring scheduled outage?
A. Oh, I'm sorry. I misunderstood. Again, I believe the date was June 2nd.
Q. And the explosion and fire at the Unit 4/6 took place on June 7th; is that correct?
A. Yes, it is.
Q. Have you been involved in the investigation

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relating to the explosion and fire that occurred at the Unit 4/6 on June 7th?
A. Yes, I have.
Q. Are you the individual for St. Joe Light & Power who's heading up that investigation?
A. I would say yes.
Q. Is it correct that with respect to most of Public Counsel's data requests in this proceeding, you've drawn the lucky straw to answer those?
A. Well, since I would be assuming the case, I don't see all the data requests.
Q. Why have you been assigned to respond to certain data requests?
A. It was my assignment.
Q. And who gave you that assignment?
A. Mr. Svuba.
Q. And you are indeed the person in charge of the investigation regarding the explosion on June 7; is that correct?
A. What I will say is that I was the one who was asked to gather the information and facts regarding the incident. So from that regard, I've been the primary investigator.
Q. Okay. So why don't you explain to me what your responsibilities are as the primary investigator

of that explosion?
A. Basically, I've collected information regarding the incident and tried to put together the sequence of events that occurred.
Q. Are you also trying to understand the causes of that explosion and fire?
A. Sure.
MR. MICHEEL: I want to get an exhibit marked at this time. I guess we'll call it JM-1.
(EXHIBIT NO. JM-1 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. Do you have a copy -- let me just give you the JM-1. That's been marked as Deposition Exhibit, I believe, JM-1. Is that a copy of an e-mail from you to Mr. Svuba?
A. Yes, it is.
Q. In this e-mail, you mention both investigators from St. Joe Light & Power and General Electric, do you not?
A. Yes.
Q. Who were the General Electric investigators?
A. That would be John Mitchell.
Q. And he's with General Electric?
A. Yes.

Q. And what's his position with General Electric?
A. I believe he's a training specialist, but I'd have to look at his credentials to be sure.
Q. Are there any other investigators from GE?
A. He is the only person that I am aware of from General Electric who came to the site specifically to look at the incident.
Q. Are there any other GE investigators off site that you're aware of?
A. I'm not aware of any.
Q. And who are the St. Joe Light & Power, quote, investigators, close quote, that you refer to there?
A. At this point in time, I'm the only person I could put in there.
Q. So you're the only person investigating this on behalf of St. Joe Light & Power?
A. As far as this, believing that the initial trip was caused by a false indication, I would be the only person.
Q. Is it correct that, prior to the explosion, St. Joe Light & Power had been having some problems with vibrations and the unit tripping off line prior to that explosion?

A. No, not that I'm aware of.
Q. Did General Electric prepare any document or report or findings with regard to its investigation?
A. Just yesterday, the company received an e-mail with a summary of Mr. Mitchell's observations.
Q. And you're aware that the Office of the Public Counsel has an outstanding data request asking for those reports, are you not?
A. Yes.
Q. Have you provided that to us yet?
A. No. I was on vacation yesterday, and I just read it on my way down this morning.
Q. Do you have a copy of that report here with you today?
A. Yes.
Q. Could I see it? Could I get a copy of that?
MR. SVUBA: Are you asking me?
MR. DUFFY: Let me --
THE WITNESS: I don't have it in my possession, no.
BY MR. MICHEEL:
Q. Well, you were reading it on your way down here today, right?
A. Mr. Svuba had a copy.
MR. DUFFY: Let's take a break. Let me

confer.
(A BREAK WAS TAKEN.)
MR. DUFFY: We're back on the record after a short break. Let the record reflect that I have handed Mr. Micheel a five-page document. The first page is a printout of an e-mail that indicates that the four accompanying pages is a copy of Mr. Mitchell's report from General Electric. This indicates that St. Joseph Light & Power received this at some time on Tuesday, October the 3rd, 2000.
BY MR. MICHEEL:
Q. Let me go back just quickly to JM-1.
A. Okay.
Q. That's currently stamped highly confidential. Is that document highly confidential?
A. I don't believe there's anything about this document that requires it to remain highly confidential.
Q. Let me go back to the report from General Electric, and you stated that you read it in the car on the way down here today. Is that consistent with what you stated?
A. Yes.
Q. And what did the report conclude?
MR. DUFFY: Well, I'm going to object. The

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report speaks for itself.

THE WITNESS: Yes, and I'd -- okay.

MR. MICHEEL: Go ahead and answer.

MR. DUFFY: You can go ahead and answer the question to the extent you know.

THE WITNESS: My quick review of the report was that it contained generally the findings that we had found regarding the sequence of events. He also made some recommendations.

MR. MICHEEL: The first page of this -- I guess why don't I just go ahead now and I'll get this marked as an exhibit for the deposition since I'm going to be referring to it in the deposition.

(EXHIBIT NO. JM-2 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)

MR. DUFFY: Doug, if you don't mind, since this is General Electric material and we don't know whether they would have confidentiality concerns about it or not, why don't we just treat this as highly confidential for purposes of this deposition, and then if we find out later from General Electric that they don't have that concern, we can certainly declassify it at that point.

MR. MICHEEL: That's fine. I don't want to get things that shouldn't be public here out.

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MR. DUFFY: I'm just doing it out of an abundance of caution because I really don't know. It's not something generally that --

MR. SVUBA: And it's not addressed to us.

MR. DUFFY: Do you want to -- for purposes of the transcript, do you want to save your HC questions to a particular area or --

MR. MICHEEL: No. I'd just like to just go on, and if it has to be HC, then I guess, Kellene, you can type that out. I guess these will be HC per pending disclosure.

(REPORTER'S NOTE: At this time, a highly confidential session was held, which is contained in Volume No. 2, pages 24 through 26 of the transcript.)

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BY MR. MICHEEL:
Q. When did the scheduled outage begin? When was it -- with respect to the 4/6 unit, when was the outage scheduled to begin at the start and scheduled to end?
A. I'm going to tell you what I remember. I believe it was May 6th to June 3rd, but I'd have to pull out the outage schedule to be sure.
Q. And there's a specific outage schedule that lists the time the scheduled outage is supposed to begin and the time it's supposed to end and I guess decision points throughout that outage?
A. No.
Q. There's just two dates?
A. Yes.
Q. Is there a formal investigation team for St. Joe Light & Power regarding the explosion at the Unit 4/6?
A. No.
Q. So you're it?
A. Well, I've had assistance from other people.
Q. In response to various Public Counsel data requests -- and let me just give you copies. I'm referring to Data Request 5001 and Data Request 5007 -- St. Joe Light & Power has provided documents

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and memoranda. Other than that GE document that you just provided today that was marked as JM-2, are there any other documents outstanding that are responsive to those data requests?
A. We responded to later data requests and made updates in the last week. I'm not sure if you've received those responses.
Q. So there are other documents that would be responsive to those requests?
A. Yes.
Q. And those are on their way to the Office of the Public Counsel, to the best of your knowledge?
A. Yes.
Q. Did St. Joe Light & Power hire any other third parties to investigate the cause of the explosion at the 4/6 unit?
A. Not that I'm aware of.
Q. Okay. So --
A. Hold on. I'm trying to remember. We had one consultant come in to help review a certain piece of information regarding the Bailey DCS.
Q. And what --
A. That was not specifically for the cause of the outage. Of course, the insurance company had their people.

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Q. What consultant was that that St. Joe Light & Power had come in?
A. Sega Engineering.
Q. And when you say Bailey DCS, what does that mean?
A. That is the control system that controls the boiler and that provides steam to the turbine generator.
Q. Is DCS an acronym?
A. Yes.
Q. And what does that acronym stand for?
A. It can stand for distributed control system or digital control system, depending upon different usage.
Q. Well, as you used it in your answer and as it's used for the Unit 4/6, which one is it?
A. People would refer to it as either. That's what I'm saying.
Q. And Bailey, what does -- what's the significance of the term Bailey?
A. That's the manufacturer.
MR. MICHEEL: Let me get marked as an exhibit JM, I believe, 3.
(EXHIBIT NO. JM-3 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)

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BY MR. MICHEEL:
Q. I've had marked as JM-3 a letter from Sega, S-e-g-a, to your attention dated July 6th, 2000. Are you familiar with this document?
A. Yes, I am.
Q. Could you describe this document?
A. Well, it's a letter in response to our request that Sega come in and help with, like I said, a limited phase of the investigation as far as the control logic that was in place for the DC oil pump.
Q. So could you specifically explain to me what Sega's assignment was?
A. There's really two parts to the control logic. One is what we call hard wiring, actual wiring and again field devices, devices out in the field that is -- operates with wires, switches, relays, things like that.
There's also the -- similar to the Mark V, the Bailey uses software program logic, and we asked them to review both the hard wired logic and the software logic that was in place at the time of the incident.
Q. Did Sega prepare any other documents regarding this assignment other than this letter to you?

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A. I believe there's a handwritten summary of the DC oil pump activity that occurred on May 24th that was written by Homer Clark, and I believe that's been provided in a data request.
Q. Okay. That letter has two tasks. Task 1, are those tasks the hard wiring task? Is that what Task 1 describes in that letter, or why don't you just describe what Task 1 is?
A. Yes. It is the what I characterized as hard wired earlier.
Q. And Task 2?
A. Okay. The following paragraphs describe the DCS logic including the multi-state device driver and all supporting control logic. That's within the DCS. That's the software logic.
Q. And why did St. Joe Light & Power task Sega to do these two assignments?
A. It was fairly clear that the most likely cause for the damage from the beginning was the failure of the DC oil pump to run. The hard wired and soft DCS logic that Sega reviewed is what controls that pump and would call for it to run. We felt it was necessary to look at it and see if there was a fault in that logic.
Q. With respect to the hard wiring which you've

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referred to as Task 1, what did Sega discover with regard to that wiring?
MR. DUFFY: Let me pose an objection at this point or ask a question. The letter has got a confidential stamp up in the upper right-hand corner. Mr. Modlin, did it come to you with that confidential stamp on it? In other words, does Sega consider this material to be confidential, to your knowledge, or did somebody else put that on there?
THE WITNESS: I can't recall, to be honest?
MR. DUFFY: Okay. Out of an abundance of caution, I think we need to indicate your questions from this point forward if they're asking about this need to be highly confidential.
MR. MICHEEL: And if I could get your commitment to check to make sure that that is indeed a stamp by Sega, that would be fine.
(REPORTER'S NOTE: At this time, a highly confidential session was held, which is contained in Volume 2, pages 33 through 36 of the transcript.)

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(EXHIBIT NO. JM-4 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)

BY MR. MICHEEL:

Q. Do you have a copy of what's been marked as JM-4? It's a letter of June 20th, 2000 by Joseph G. Pisoni, P-i-s-o-n-i, of Factory Mutual Insurance Company to Gary Myers of St. Joe Light & Power.

A. Correct.

Q. Do you know if that letter is considered highly confidential?

A. I don't believe so. There's some content of it that I'm not as familiar with regarding the repairs that are to be made and the insurance payments.

Q. Do you recognize --

A. Since I don't see any dollar figures in here, I assume that it's not.

Q. Do you recognize that letter?

A. Yes.

Q. Did you prepare a data request response to the Office of the Public Counsel with that letter in it?

A. Yes. In fact, this is what I was referring to you as the information that was what I thought was on the way. So you've already received it.

Q. Could you describe this letter?

A. It's an acknowledgement from FM Global of the loss that occurred on June 7th. It summarizes a visit to the plant by FM Global and some of their consultants. It briefly describes the incident and sequence of events and talks about the status of the repairs that were going on at the time of the letter.
Q. And I think you said that St. Joe has an insurance policy with FM Global; is that correct?
A. That's my understanding.
Q. Who were the FM Global consultants that reviewed this incident?
A. First I want to clarify that most of the consultants listed here I believe were here to look at the repairs that were to be made, and I believe that Mr. Joe Byrd is the only consultant who looked at the cause of the incident itself.
Q. And who is Mr. Joe Byrd?
A. He's a -- looking at his credentials, he's a professional engineer with Mechanical Dynamics and Analysis.
Q. Are you aware of whether or not FM Global has prepared any other documents or analysis with respect to the incident that occurred at the Unit 4/6 on June 7th, 2000?
A. Mr. Byrd prepared a, I don't know if it's a

two or three-page writeup while he was on site, and that was provided in a data request.
Q. I'm looking at the fourth paragraph there on the third page.
A. Okay.
Q. And looking at the sentence that says, GE also provided an initial evaluation of damages, as did our turbine and generator consultants.
A. Yes.
Q. Do you have a copy of those analyses?
A. No, not with me.
Q. Do you have a copy on the premises of St. Joe?
A. I'm assuming all -- the evaluation of repairs and evaluation of damages was handled by Mike Ceglenski. So I wasn't involved in that part of the project, I guess.
Q. Have copies of those evaluations been provided to the Office of the Public Counsel?
A. I don't believe so.
Q. Are you aware that we had a data request requesting any and all written documents regarding the incident?
A. Right. Those were with regard to the repairs and the damage to the unit as opposed to the

incident that happened on June 2nd.
Q. Let me ask you this. Would any repairs need to be done to the Unit 4/6 if the incident hadn't occurred?
A. No.
Q. So would you agree with me that those documents are related to that incident?
A. That was an internal determination made by St. Joseph Light & Power that the incident was the incident that occurred on the 7th and not necessarily subsequent repairs that would be made.
Q. Let's talk about -- why don't you describe those documents for me that you claim are with respect to the repairs. How many documents are there?
A. I don't know. I wasn't involved with that part of the -- the repairs were a separate issue handled by Mr. Ceglenski.
Q. So it's St. Joe Light & Power's position that repairs as a result of the explosion at Unit 4/6, not documents related to that incident?
A. Again, differentiate between the incident and the repairs that are subsequent to it, two different things.
Q. Okay. Would you agree with me, but for the incident the repairs would not have taken place?

A. True.
Q. And so you don't think the incident has anything to do with the repairs?
A. I didn't say that.
Q. Do you have any of those documents here today?
A. No, I do not.
Q. Who authored those documents?
A. Again, you're asking about the repairs and the inspection that had to do with the scope of work that was done, and I was not involved with the repair of the unit.
Q. Did GE also conduct an initial evaluation of the damages?
A. I believe so.
Q. And is that a written document?
A. Again, I wasn't involved in that. There was -- you know, their engineers were here -- not here. They were on site at the same time as the insurance investigators, and I believe that the goal was to determine which repairs were related to the incident so that the insurance would know what they're responsible for.
And I assume that various people inspected the unit and made a list of this is what's wrong with

it, this is what needs to be repaired, and they consulted and agreed on certain repairs and moved forward.
Q. And again, St. Joe Light & Power has not provided copies of those documents to the Office of the Public Counsel in response to their data requests?
A. Not that I'm aware of.
Q. What should I ask for to get those documents? How should I word that data request?
A. I guess you would ask for documents related to the repairs of the unit.
Q. And if I send that data request to you today or if it's waiting for you when you get back to St. Joe tonight, you'll know what I mean when I want all documents with respect to the repairs?
A. We'll answer it to the best of our ability.
Q. That letter also talks about St. Joe's turbine and generator consultants, is that correct, or is that referring to FM Global's turbine and generator consultants?
A. Where do you see St. Joe's?
Q. I'm just questioning whether or not there are other consultants out there for St. Joe, or is that just FM Global's turbine and generator consultants? Again, I'm in the fourth paragraph.

A. You'll have to show me. I don't see where it says anything about St. Joseph's consultant.
Q. That was my question. Was there a consultant for St. Joe? I'm not suggesting it's in that letter.
A. Oh, I believe we did have a consultant that looked at the extent of repairs.
Q. And who was that consultant?
A. I'm not aware of his name.
Q. Also in that fourth paragraph of the letter it indicates that the turbine and stationary blading have been sent to the repair shop. Were those damages that occurred to the turbine and blading damages that resulted from the June 7th explosion and fire?
A. You're asking me to speculate on the scope of the repairs that were due to the incident. I was not involved in that part of the project. My best guess is yes, that they were, but --
Q. So sitting there today, you're not aware of whether or not the turbine and stationary blade damage that was done resulted as a result of the explosion and fire that occurred at the 4/6 unit on June 7; is that your testimony?
A. The way you put it, yes, that's my testimony. If you ask me about the bearings and the

journals and the seals that I know were related, but as far as the blading, I didn't get into that level of detail with Mr. Ceglenski or anybody else.
Q. Who got into that level of detail? Who would know the answer to that question?
MR. DUFFY: Objection. Calls for speculation on the part of the witness.
THE WITNESS: Yeah. Again, that wasn't my responsibility in this -- related to this incident.
BY MR. MICHEEL:
Q. Do you know whether or not within the confines of the accounting authority application, whether or not St. Joe Light & Power's requesting that the repair costs be deferred?
A. I believe that's what the Accounting Authority Order asks for.
Q. Is it correct for the explosion and fire that occurred on June 7th with respect to the Unit 4/6 that that unit tripped?
A. Are you asking me if it tripped?
Q. Prior to the explosion and fire on June 7th, did the unit trip off line?
A. Yes, it did.
Q. And what does it mean when I say a unit tripped off line?

A. We use the term trip to be a sudden unexpected shutdown of the piece of equipment.
Q. Is it correct that after the unit tripped, that the unit continued to run and the turbine continued to rotate?
A. The unit did not continue to run after the trip. Obviously it's spinning at 3,600 RPM. It's going to rotate for a while until it comes to a stop.
Q. So it's your testimony that when the turbine trips, it doesn't come to an immediate stop?
A. That is true.
MR. MICHEEL: I need to get another exhibit marked.
(EXHIBIT NO. JM-5 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. Do you have in front of you what's been marked as JM-5?
A. Yes.
Q. And is that a Production Department Outage Report by one W. White?
A. Yes, it is.
Q. And was that written on 6/14?
A. It is marked that way, yes.
Q. Are you familiar with this memo?

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A. Yeah, I've seen it before.
Q. And did you indeed produce that memo in response to a Public Counsel data request?
A. It was probably provided by Jim Parker in the operating department. It's an operating report.
Q. It's marked highly confidential. Do you know whether or not that report remains highly confidential?
A. Reviewing it right now, I don't believe there's anything right here that we would consider highly confidential.
Q. Who is W.J. White?
A. He's an operating shift supervisor. I should say he's the shift supervisor in the operating department, more clear.
Q. And was he the shift supervisor who was on duty on June 7th, 2000 when the Unit 6/4 exploded and caught fire?
A. I would have to check the operating schedule to be sure. I believe there were three superintendents on site at that time because it was shift change and also during relief schedule. So I'm not sure that he was the one on duty at that time, no.
Q. But he was in the plant at the time of the explosion and fire; is that correct?

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A. Yes.
Q. And indeed, I guess it's part of St. Joe Light & Power's internal policies to file reports like this with any explosion or incident that occurs?
A. Again, that's an operating department document, but I believe that is correct.
Q. If you would, turn to page 3 of that document, and I'm looking at the fifth line from the top there where it says, The unit was rolling extremely fast for the severe vibration and should have stopped. Do you see that?
A. Yes.
Q. And further on down he writes, I didn't believe this as the unit was still rolling and not decelerating?
A. Okay. Yes, I found that.
Q. And he indicates there that he didn't think the stop valve was still open; is that correct?
MR. DUFFY: Did you say stop valve?
THE WITNESS: I think you said the reverse of what you meant to say.
BY MR. MICHEEL:
Q. Okay. Valve stop. I'm just looking on -- up there it says, I thought the stop valve was still open.

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A. Yes, that's what he says in here.
Q. Okay. What does it mean if the stop valve is still open?
A. The stop valve is the main valve. There's two paths of steam to the turbine. One is the main steam and one is reheat steam. There's one main stop valve on the main steam and two reheat stop valves on the two reheat pipes. So if the stop valve was still open, it means that steam could theoretically still be admitted to the turbine.
Q. And according to Mr. White, at the time of the incident he thought the stop valve was open; is that correct?
A. Yes. That's what he said.
Q. He also indicates that when he looked at the control screen, it indicated the main stop and reheat stop had tripped and were closed. What does that mean if the main stop and reheat stop had tripped and were closed?
A. Means those valves were closed and would not allow steam into the turbine.
Q. So I take it the functions of the main stop and the reheat stop valve are to prevent steam from entering the turbine; is that correct?
A. That is correct.

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Q. And if I understand, the steam enters the turbine and causes the turbine to spin?
A. Correct.
Q. And once the turbine spins, that generates energy which in turn generates electricity?
A. Yes.
Q. Why did the unit, if you know, not stop when the main stop and reheat stop valves were tripped closed?
A. This is one observation that was made during the incident that could not be substantiated from anything that we looked at. We went through the stop valves, the reheat stop valves, the hydraulic control logic, and were not able to find any reason why this should have occurred.
Q. Did it occur?
A. I honestly can't say if it did or did not.
Q. So St. Joe Light & Power has not done any further investigation into this claim?
A. Again, we went through the stop valve, the stop valve, the reheat stop valves, all the extraction check valves. We went through the hydraulic system. We went through testing on startup again to satisfy ourself and the General Electric people who were back on startup that things were operating correctly when

we started back up.
Q. So the valves may indeed have failed, but you could not reproduce or reproduce it after the fact?
A. I'm not going to say that it may have failed. We couldn't find a problem with it.
Q. So they didn't fail?
A. No, I'm not going to say they failed or didn't fail. He made certain observations, and we weren't able to substantiate them.
Q. Okay. Later in the memo Mr. White says, I told Danny Kukuc, that's K-u-k-u-c, to go to the hydraulic set and open up the dump valve. First of all, who is Danny Kukuc?
A. He's an operator in the operating department.
Q. And why did Mr. White ask Mr. Kukuc to open the dump valve?
MR. DUFFY: Objection. Calls for speculation on the part of this witness as to why someone else asked a third person to do something, which calls for speculation.
You can go ahead and answer to the extent you know.
THE WITNESS: As I discuss this with you,

I'll give you the reasons that they've given me, and that is that the hydraulic -- the stop valves and control valves are controlled by hydraulic fluid. If those valves don't operate the way you believe, you want to get the hydraulic fluid off of them and let the springs shut those valves. So by dumping the hydraulic fluid, it'll allow those valves to go shut.
BY MR. MICHEEL:
Q. So you spoke specifically with Mr. White and Mr. Kukuc about why they opened the dump valves?
A. With Mr. White.
Q. Why would anyone open the dump valves?
A. I just explained that.
Q. Okay. Explain to me what a dump valve is.
A. The hydraulic system uses oil at a pressure of about 1,500 PSI.
Q. And when you say PSI --
A. Pounds per square inch. Pressure in pounds per square inch.
When they start that system up, it is not -- does not provide full pressure. There's an internal bypass, and that's where this dump valve is located. They would gradually bring the pressure up on the unit on the pump so you don't shock the pumps, and that charges the accumulators. As they bring it up, they

close this dump valve.
Okay. If for some reason you need to dump the pressure in a hurry, you can open this bypass or dump valve as the operators refer to it.
Q. And what are some of the situations that an operator would need to dump that pressure in a hurry?
A. I'm not sure what the operating procedures call for. Obviously they felt it was appropriate in this case.
Q. Did the unit stop after the dump valve was opened?
A. Mr. White indicates that it did.
Q. And do you have any findings that contradict the fact that after the dump valves were opened, that the unit came to an abrupt stop?
A. No, I don't have anything to contradict that.
Q. And why would the unit come to an abrupt stop after the dump valve was opened?
A. That would be speculation. I don't know that it came to an abrupt stop because the valve went closed or that it had lost inertia. I don't know. I wasn't there when it happened.
Q. Do you have any reason to not believe Mr. White's memo there that the unit came to a

complete stop or an abrupt stop after the dump valve was closed?
A. No, I don't have any reason not to believe him.
MR. MICHEEL: I need to get another item marked.
(EXHIBIT NO. JM-6 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. Do you have what's been marked JM-5?
A. Mine's marked JM-6.
Q. I'm sorry. JM-6. That's a document dated June 7. It says, Interviewee, Bill White, Shift Supervisor, Subject: Turbine Generator No. 4; is that correct?
A. Yes.
Q. Do you know when this document was prepared?
A. I believe it was the day of the incident. I can't say for sure.
Q. The memo that we talked about before, the JM-6, indicated that Mr. White did not believe that the main stop and reheat stop had tripped and were closed.
MR. DUFFY: You said JM-6. I think you meant JM-5.

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MR. MICHEEL: I'm sorry. JM-5.
BY MR. MICHEEL:
Q. And this document doesn't indicate that. Do you know why the discrepancy between those two documents?
A. No, I do not know why there's a discrepancy.
Q. About three-quarters of the way down on that exhibit it says, The noise from the unit sounded steady and like it was continuing to run under external power. It did not sound like the speed was decreasing and the unit was rolling down. I ran into the control room and told the head operator to call up the turbine review screen to verify the stop and reheat valves were closed. The indication on the screen showed they were.
What's the significance of the control screen coming up saying that the stop and reheat valves were closed?
MR. DUFFY: When you say what is the significance, do you mean what does -- what did those signals indicate?
BY MR. MICHEEL:
Q. What did they indicate with respect to the operation of the Unit 4/6?
A. It indicates that those valves were closed,

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and I believe I already described the operation of those valves.
Q. And if I understand correctly, when those valves are closed, the turbine is not receiving any steam; is that correct?
A. Correct, unless they're leaking through for some reason.
Q. Again, at the bottom of this it says after he radioed Mr. Kukuc and told him to go to the hydraulic set and open the dump valve, the unit came to a complete abrupt stop; is that correct?
A. Yes, that's what it says.
Q. Do you have any reason to dispute that?
A. No.
Q. Let me ask you this. That JM-6 has been marked highly confidential. Is there any reason for that to be continued to be treated as highly confidential?
A. I don't believe so.
MR. MICHEEL: I need to get another exhibit marked. I guess it would be JM-7.
(EXHIBIT NO. JM-7 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. Do you have a copy of JM-7 in front of you?

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A. Yes.
Q. That's been marked highly confidential. Is that in your mind a highly confidential document?
A. Again, I don't believe so.
Q. Okay. Who is Luke Hinkle?
A. He's an apprentice instrument technician at the power plant.
Q. Are you familiar with this document?
A. Again, I think it was -- I attached it as a copy to a data request.
Q. And on that second Q and A there, the question is, Did you hear the hydraulics dump when the turbine tripped? Answer: No.
And my question to you is, should the hydraulics dump have opened when the turbine tripped?
A. Well, there's -- I should clarify something here. The sound that he is referring to is actually not the hydraulics dumping. It's air on the extraction check valves that is released in response to the hydraulics dumping. So with that clarification, would you ask the question?
Q. Sure. Should the hydraulics dump have opened when the turbine tripped?
A. Should the hydraulics -- I don't understand the question.

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Q. Okay. Let me ask you this. Was Mr. Kukuc present at the time of the incident?
A. Danny Kukuc?
Q. Yeah, Kukuc.
A. Yes, I believe he was working at that time.
Q. Why didn't he open the hydraulic dump valve himself without being asked to do so by Mr. White?
MR. DUFFY: Objection. Calls for speculation. You can go ahead and answer to the extent of your knowledge.
THE WITNESS: The extent of my knowledge is the shift supervisor's in charge of the operations, and the operators work for him, you know, and respond to their requests.
BY MR. MICHEEL:
Q. Did you in your investigation ask Mr. Kukuc why he needed Mr. White's authority to throw the dump valve switch?
A. No, I didn't ask.
Q. So if I understand your statements with regard to the sound tripping, the sound that Mr. Hinkle is referring to is not the hydraulics dump?
A. That is true. As best as we know, the sound that plant personnel are familiar with hearing when the turbine tripped is air being released, like I

said, on this air operated system in response to loss of hydraulic pressure.
Q. So the only time you would hear that sound is when hydraulic pressure was lost?
A. Yeah. In most cases, that would be.
Q. So that would be consistent with tripping the hydraulic dump valve?
A. There's not a hydraulic -- are you referring to the dump valve Mr. White was referring to?
A. Yes, sir.
Q. I hesitate there because there's not a hydraulic dump valve on the unit. That's not what it's called. It's a hydraulic system bypass. If somebody opened that with the system in operation, you would hear this sound, yes.
Q. And was that valve opened by Mr. Kukuc under the direction of Mr. White?
A. I believe so.
Q. And was the system in operation when that happened?
A. All the other evidence regarding when the unit tripped and when hydraulic pressure was lost indicates that, no, the hydraulic system was not pressurized at that time. That's what I'm saying, that there was a -- there's a discrepancy there

between the observations.
Q. And have -- has St. Joe Light & Power been able to determine the basis for that discrepancy?
A. No, and we've, like I said, taken precautions and checked things the best of your ability to make sure that that system is functioning correctly today.
Q. What precautions has St. Joe Light & Power taken?
A. I've described them earlier. Disassembled the main stop and reheat stop valves, disassembled the extraction check valve, make sure that was not the steam path. General Electric was on site during reassembly. They looked through the systems. The hydraulic operation, the hydraulic unit was checked and the system was tested as it came back up.
Q. And the system came through all of those tests with flying colors?
A. Yeah. It operated as it was -- well, first inspection of the valves is not a test, but there was no problem with the valves. There was a little bit of runout on the main stop valve stem, but it was GE's opinion that that runout would not have caused that valve to hang up. And there was nothing found otherwise to indicate that the hydraulic system would

not operate as designed to shut the unit down in case of a trip.
Q. When you say runout on the main stop valve, what do you mean by runout?
A. The stem of the valve is what connects the actuator that actually moves the valve open and closed to the valve disk which closes to prevent steam from going in the unit, and it's probably 30 inches long or so, and this stem is -- should be straight and true. If you put it in a lathe and turned it, it would show that there was some runout on the far end, in other words that it wasn't perfectly straight.
Q. Bent, for people who are not mechanical engineers. Let's bring it down to my level.
A. Yes, it was slightly bent.
Q. So when we talk about runout, we're talking about this valve stem was bent a little bit?
A. I'm sorry. Yes, that's true.
Q. Okay. But the slight runout or bending of this valve stem was not enough to prevent this valve from properly closing?
A. That was GE's conclusions.
Q. And does St. Joe Light & Power agree with that conclusion?
A. I would say so, yes. That particular

condition I believe was found on past inspections. Again, I have no reason to disagree with him.
Q. So that was not a cause of the explosion and fire?
A. No.
MR. MICHEEL: All right. Another exhibit.
(EXHIBIT NO. JM-8 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. Mr. Modlin, do you have what's been marked as JM-8?
A. Yes.
Q. And is that a memo dated 6/15/2000 by Joseph Byrd of MD&A?
A. Yes.
Q. And I think we talked about Mr. Byrd, but who is Mr. Byrd and who is MD&A?
A. Mr. Byrd is a consulting engineer. I believe he was hired by the insurance company. MD&A, I forget now what that stands for. I read it earlier, but I'm not sure. Mechanical something. Do you want me to go back and find it?
Q. Sure.
A. We generally just refer to them as MD&A. Let's see, which exhibit was Mr. Pisoni's letter?

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Here it is. MD&A stands for Mechanical Dynamics & Analysis.
Q. And so to the best of your knowledge, Mr. Byrd was hired to investigate the causes of the explosion at Unit 6/4 for FM Global?
A. Yes.
Q. Okay. I've got some questions specifically about this memo. Have you seen this memorandum before?
A. Yes, I have.
Q. It's currently marked highly confidential. Is there any reason we should continue to keep this highly confidential?
A. I was just going to bring that up because it is from an outside party and how we've responded to the information from Sega and General Electric, maybe it should be.
Q. FM Global is St. Joe Light & Power's insurance company; is that correct?
A. Yes.
MR. DUFFY: I would say if you want to ask questions about this document, let's mark it as HC just to be on the safe side.
MR. MICHEEL: If you could check, because I don't really believe this should be HC because FM

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Global is obviously St. Joseph Light & Power's insurance company.
MR. DUFFY: Well, they may have their own reasons for wanting it, but I will ask.
MR. MICHEEL: I understand that, but I'd like to get the commitment from you to check. So this will be HC.
(REPORTER'S NOTE: At this time, a highly confidential session was held, which is contained in Volume 2, pages 64 through 75 of the transcript.)

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MR. MICHEEL: I need to get another exhibit marked.

(EXHIBIT NO. JM-9 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)

BY MR. MICHEEL:

Q. I've handed you what's been marked Exhibit JM-9. It's dated June 13th, and the title of the document is Lake Road Unit 4 Turbine Generator Occurrence, June 7, 2000, No. 5 Bearing Troubleshooting Steps Leading up to Occurrence. Are you the author of this document?

A. I'm going to say 50/50. I sat down with Lance Brumbaugh who was performing the steps and walked through those point by point, especially the latter, bottom half of this. Okay. The top half I pretty much authored in that I kind of set the stage of the background to the incident.

Q. Okay. And it indicates that it's troubleshooting steps performed on the No. 5 bearing; is that correct?

A. Yes.

Q. Is it the No. 5 bearing where the oil pumps failed on June 7, 2000?

A. The oil -- I don't understand the question.

Q. Well, was the No. 5 bearing related to the

explosion that occurred at the Unit 4/6?

A. There was work being performed on the No. 5 bearing of the turbine generator. The work -- not on the bearing, but on the vibration instrumentation installed to monitor vibration at that bearing. And it's currently our belief that those troubleshooting steps caused false vibration to be indicated on other bearings and that resulted in the trip.

Q. Okay. And what do you mean when you say vibration caused problems?

A. I'm not sure I said vibration caused problems. After the startup of the unit, the No. 5 bearing vibration sensors were not indicating what we believed to be correct vibration levels. We were working with General Electric and Bently Nevada Corporation to figure out what was not working correctly there.

And on the day of the incident, a General Electric startup engineer was directing our technician through various steps to troubleshoot the problem. Okay. We believe that those troubleshooting steps caused a false vibration to be indicated on the other turbine generator bearings and that resulted in the turbine trip on vibration.

Q. You said that the No. 5 bearing didn't give

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the reading you expected. Is there always some sort of vibration regarding that bearing or should there be no vibration?
A. Actually, it was reading zero, and, you know, you expect to see some movement in the bearing. So the fact that it was reading zero -- again, I'd have to go back. Maybe I say in here. The actual voltage reading from that probe may not have been what we would expect either. I'm not sure. I'd have to go back and look.
But basically it was reading zero vibration, and you would expect to see some small vibration.
Q. On the second paragraph there it says, When the unit was rolled on about June 2nd it was noted that the No. 5 bearing vibration proximity probes had diagnostic alarms, and it seems to me from reading this document that that's when the troubleshooting began, June 2nd, with respect to the No. 5 bearing. Is that a correct understanding?
A. No. I mean, we didn't start looking at this particular problem until a few days later.
Q. Okay. So what does that sentence mean, When the unit was rolled on it was noted the No. 5 bearing vibration proximity probes had diagnostic alarms?
A. A diagnostic alarm is -- and again, I'm

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relaying this from General Electric, so my interpretation may not be perfect. But if you have some sort of input signal from the field, you expect to see it within certain limits and have certain conditions that make it reasonable that, Hey, I can believe this signal.
If some of those characteristics or levels aren't there, then it's, Oh, something might be wrong here, and it generates a diagnostic alarm which basically says, Somebody needs to look at this.
Q. And on June 2nd you were getting that diagnostic alarm with respect to the No. 5 bearing; is that correct?
A. I would say so, yes.
Q. Okay. And I think we've already talked that the Unit 4/6 came up after the scheduled outage and became operational on June 2nd; is that correct?
A. Yes.
Q. And I guess looking further down this exhibit, it indicates that on June 5, St. Joe Light & Power and General Electric were troubleshooting the No. 5 bearing; is that correct?
A. It says, On June 5th John Modlin discussed this issue with Matt Mangus. Matt doubted that the bearing actually experienced enough vibration to

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damage the probe but sent out a replacement probe to install at first opportunity.
So I was on the phone with Bently Nevada Monday morning or Monday after we started the unit up indicating that something wasn't right.
Q. And then you say, We decided to check the 5Y prox--
A. Proximitor.
Q. -- proximitor. This work began late in the morning of 6/7/2000; is that correct?
A. Yes.
Q. And what is that?
A. What is the proximitor?
Q. Yes.
A. Well, again, we're getting into electrical instrumentation that I'll describe as best I can. The Mark V provides a DC voltage, a plus and a minus, like a battery, out to this proximitor and gets back a signal that is proportional to the displacement of the bearing, of the journal.
Okay. The proximitor works with the probe that is mounted on the shaft to detect that displacement or that gap between the turbine generator shaft and that probe. Okay. So the proximitor is a device that both excites this probe, gets feedback

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from it, and then turns it into a signal that the Mark V can read. Okay. Now, electronically how it does all that, I don't know.
Q. Is it correct that the explosion and fire on June 7th occurred right around 2 p.m.?
A. Yes.
Q. I'm looking at the fifth bullet point on this document, and I guess that's further on down. It starts out with, Before moving wires, Lance checked the 5C proximitor wires to the Mark V.
A. Uh-huh. Right.
Q. Just explain that to me. I just don't understand. I mean, why were you checking those wires?
A. Basically to find out if the proximitor was wired up correctly.
Q. Okay. And what was the end result of your testing?
A. Well, Lance found that on one end of the wires they were wired as expected. On the other end, let's see, two of the wires were reversed.
Q. And what was -- I mean, those wires were reversed, so what was the result of reversing those wires?
A. Well, if the wires were reversed, it

wouldn't operate as it should. I mean, it wouldn't get the correct signal.
Q. So is that probably why we got the diagnostic alarms?
A. I'm going to speculate that that was the reason we got the diagnostic alarms. I don't know for certain.
Q. Who would know that?
A. Somebody from General Electric would be able to say if this particular combination would generate a diagnostic alarm.
Q. Okay. Is it correct that at the time of the explosion and fire there were two people working on the Unit 4/6 at about 2 p.m.?
A. If you're talking about these two people, yes, and this is what they were doing at the time.
Q. And those people are Steve Alexander of General Electric and Lance Brumbaugh of St. Joe Light & Power, is that correct?
A. Yes.
Q. This document is also marked highly confidential. Is there any reason we should continue to treat this highly confidential?
A. I don't believe so, no.
Q. Okay. So we can treat this as a public

document.
MR. MICHEEL: Okay. I need to get another document marked.
(EXHIBIT NO. JM-10 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. Show you an eight-page document that is dated July 13th, 2000. It's entitled SJLP Lake Road Turbine Generator 4 June 7, 2000 Incident Investigation Notes. It's been marked as JM-10. Are you the author of this document?
A. Yes, I am.
Q. And you're familiar with that document?
A. Yes.
Q. Would you look at the first bullet there under 6/12/2000, and that says, Mark Phillips confirmed that DC oil pump was not tested on 6/5; is that correct?
A. Yes.
Q. And is that June 5th, 2000?
A. Yes.
Q. Who is Mark Phillips?
A. He's a shift supervisor in the operating department.
Q. And why would he be confirming that?

A. I had checked the -- I'm not sure what it's called, the operator, an operator log sheet that has routines on it that the operators perform on different shifts, and it had indicated that this test was not performed, and so I asked him if he recalled it being performed, and he didn't recall.
Q. Should the DC oil pump -- should the DC oil pump have been tested on June 5th?
A. It's scheduled to be tested every Monday.
Q. And indeed, in response to discovery, you provided us a big old sheet with that on there that I take it hangs on the wall of the operations shack or the control room; is that correct (indicating)?
A. Right.
Q. And I've just -- I don't want to make this an exhibit, but this big sheet?
A. Right.
Q. And it's my understanding that as an operator performs the tasks, the tasks that are on this sheet are up there for the operator to perform; is that correct?
A. That's the schedule which they're planned to do so, yes.
Q. And generally St. Joe operates its turbines pursuant to its schedule; is that correct?

A. Again, that's an operating department question. I don't want to -- I'm not exactly sure how they use those schedules, but that's my understanding, that that is the schedule and the plan that they follow.
Q. Okay. And it's your testimony that the DC oil pump was not tested on June 5th per that schedule; is that correct?
A. That's what the schedule indicates.
Q. Why should it have been tested at that time?
A. Well, at some point in time someone in the operating department determined that that is a test that should be done on a weekly basis and that that's the shift and time that they wanted to do it.
Q. And so it's standard St. Joe Light & Power operating procedure to test the operation of the DC oil pump at least on a weekly basis?
A. Again, that's my understanding. I'm not in the operating department, but that's my understanding.
Q. How did you come about that understanding?
A. Basically because they have it on their schedule. Basically, I'm -- you know, as I said from the outset, I was the collector of information, and I don't want to, you know, jump to false conclusions about that.

Q. But in collecting that information, you talked to the individuals who were responsible, did you not, for setting up that schedule? You talked to the operations people?
A. I talked to Mark Phillips about that particular occasion.
Q. And Mark Phillips is in the operations department; is that correct?
A. Yes.
Q. And he would be the individual responsible for following those schedules or making sure that the employees under him followed those schedules; is that correct?
A. Yes.
Q. And he indicated to you that, contrary to the schedule on June 5th, the DC oil pump was not tested; is that correct?
A. I guess the point I'm trying to make is that that's what the schedule shows, but as far as what the operating superintendent has indicated to his supervisors, you know, this needs to be done every week, we do it if we can, I don't know the operating guidelines those people work under.
What I was looking for was, was there any evidence that the test was done in this particular

week. Okay. That's what I'm trying to --
Q. And on that operating schedule, it indicated that the DC oil pump should have been tested on 6/5; is that correct?
A. Again, you're saying it should have been. I'm saying I don't know that it should have been. I know that it's scheduled to happen then, and I don't want to -- you know, if I were the operating superintendent, I could clarify what the instructions are regarding getting that work done.
Q. So I should talk to the operating superintendent? I should talk to Mr. Phillips to figure that out?
A. He's an operating -- he's a shift supervisor.
Q. Who should I talk to to determine whether or not that should have been done per operations?
A. Mr. Jim Parker is the operating superintendent.
Q. Did you get any indication from Mr. Parker that that should have been done?
A. You know, I don't remember what our discussions were exactly. I asked him -- actually, I got the schedule sheet from him, but as far as what his instructions are to his people, I don't know. We

didn't discuss that.
Q. Do you know whether or not the DC oil pump was tested prior to June 2nd?
A. Yes, it was tested prior to June 2nd.
Q. And why did it need testing?
A. Well, the primary reason it was tested prior to, and I'm talking immediately prior to June 2nd, was that we had moved wiring that related to not only the DC oil pump but the AC oil pumps and other motors and we had to verify that things were landed back correctly, wired back up correctly, and that things would operate as designed by GE in the retrofit.
Q. On the second page of that document JM-10 under the date 6/13/2000, the second bullet point indicates, Met with Jim White of Bently Nevada. Who is Jim White?
A. He's a service technician. I do not know what his background is as far as whether he's a technician or engineer. He came in to assess the damage to the Bently Nevada equipment, that's all the vibration and turbine supervisor instruments that were installed with the Mark V, and to, I guess, outline -- not outline, but determine which components needed to be replaced due to the incident so that we could get that equipment ordered, on site and installed.

Q. So the role of Bently Nevada was to determine what parts of equipment they provided were damaged due to the explosion and fire on June 7, 2000; is that correct?
A. Yes.
Q. Did Bently Nevada provide any documents or report to St. Joe Light & Power related to its investigation?
A. They provided a list of parts.
Q. Did you provide that list of parts to the Office of the Public Counsel?
A. No. Again, that was required for repairs.
Q. Okay. What kind of data request should I ask you to get copies of those documents?
A. I guess ask for the documents related to the repairs. I mean, that's going to be -- you know, it's a sheet of paper out of many for a lot of parts that were needed to repair the unit. It's very voluminous.
Q. Did they provide you with any other written documents other than a sheet of parts needed to replace as a result of the incident?
A. Well, sitting here right now, I'm not aware of any, but basically they were brought in as part of the repair effort, and the only input they had on the incident was when I met with Jim on that day and we

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discussed it. So I don't know if there was anything else other than a list of parts.
Q. Okay.
A. I guess while I'm thinking about it, I'd like to mention about this particular document here, I mean, these are my personal notes of things I did through the course of the investigation, and you're going to find that there's going to be something I say at one point in time and I contradict it later. I mean, it's just -- it's just my notes I guess is what I'm saying.
Q. Let me ask you this while we're here. These are marked highly confidential. Is there any reason this should be highly confidential?
A. Just the fact that they're my personal notes that I never thought would be brought out in this type of environment, but no. I mean, I don't know of any reason right now, but there's several pages here, but I don't believe I say anything that's proprietary or confidential.
Q. Okay.
A. But, you know, it's just a personal thing.
Q. Let me ask you this. Did you provide these notes to anybody else within St. Joe?
A. Actually, I don't believe -- not other than

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when they were submitted in response to a data request and then whoever looks at the data request would see them.
Q. Okay. Let me ask you, I'm still focusing on that second page, the 6/13, the fourth bullet there. It says, Reviewed hydraulic pressure trend. Did not see a sudden drop to indicate hydraulic oil bypass valve opening by operators. Could you explain that to me?
A. Well, I was trying to put together the sequence of events of what happened that day, and the operators said they opened what they call the dump valve, which is the hydraulic system bypass. And I was looking at the pressure trend to see could I see a point where it dropped off suddenly in response to that, and at that point in time I did not see anything that would indicate that.
Q. And when you say you looked at this pressure trend, does that mean that there's some instrument or some internal instruments within the computer system that controls this that would give you a printout of, for example, the hydraulic pressure trend?
A. Yes. It's in the DCS, it records one -- for most analog signals in the system, it records a data point once per minute that you can chart and see a

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trend over time, whether it's going up or down or changing.
Q. So this indicates that, based on your review of that information, that the operators did not open the dump valves; is that correct?
A. I'm just saying that I didn't see -- didn't see a drop that would indicate that they did that. I couldn't see any evidence on the trend that said they did that, that's true.
Q. And you would expect to see that in this trend analysis that you did?
A. Yes.
Q. I'm looking at the bullet point, I guess the fifth bullet point under 6/14 there. It says, Found HMI screen with trips. Did not show that vibration trip was, quote, active, close quote.
And I guess my first question is, what is an HMI screen?
A. It used to be an MMI, man machine interface. Then we got more politically correct, and now it's a human machine interface. But basically it's a personal computer that the operators use to interface with the Mark V control system.
Q. Okay. And could you describe the significance of the vibration trip not being, quote,

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active, close quote?
A. Okay. There's a particular screen that shows all of the trips that the Mark V monitors or will trip the unit. Okay. And when you're not in a trip condition, they'll show green, and when a particular situation is in a trip condition, it'll show red.
Okay. Some of these control systems have what is called a first out indication, which will kind of lock in on the situation at the time of the trip. And since the vibration trip -- and it'll hold it. It'll hold it until you reset the turbine. Well, we didn't reset the turbine. And I went and I looked at that screen and it didn't show the vibration, but we had a vibration trip.
And it shows up later on in these notes that the reason that was is because this isn't a first out screen that locks in. This just shows the current state, and obviously with the turbine sitting still it's not vibrating. So as soon as the vibrations got down below trip level, it went back to green.
Q. And what do you mean by the term active?
A. Well, it wasn't red.
Q. Okay. So when you looked at that time, it was green?

A. Right. The vibration trip bar was green.
Q. The bullet right under there, it says, Confirmed that DCS console trip and manual trip on M5 printout were same event. Somebody pushed DCS console turbine trip push buttons.
A. Right.
Q. A couple questions there that I need to understand. What are the DCS console trip and manual trip? What does that mean on the M5 printout?
A. Okay. The DCS has three consoles that the operators use to interface with it. Two of those consoles each have two screens. There's three 20-some-inch screens and one full-size, 43-inch or whatever television which kind of hangs from the ceiling.
There's a third console which has turbine trip push buttons on it, and they're a hard wired trip that the operator can initiate a trip and shut the turbine down immediately. In addition to all the sensing and monitoring that the Mark V is doing, it's a point where the operator can intervene and say, I need to shut the machines down and push these buttons.
So that's what the DCS console trip means. Okay. When I say that, I'm referring to those two buttons, and there's two there that you have to push

at the same time so you don't do it by mistake. That's what I referred to by that.
The manual trip on the M5, and M5 is short for Mark V, were the same event. The manual trip is -- well, I looked at the Mark V printout and it had a manual trip. Okay. So what we probably did on the 14th of June is somebody went up there and pushed those buttons and we looked and said, It printed out the same thing that was printed out on the day of the incident.
So that's just making sure that that manual trip that the Mark V printed out was indeed the operator pushing those buttons. That's all.
Q. And you say somebody pushed the DCS console turbine trip push buttons. Are you talking about on June 7th they did that?
A. Yes.
Q. And why would they do that?
A. Well, speculating, I mean, all I was doing was saying somebody did it. I was collecting information. They were trying to shut down the unit or make sure that it was tripped.
Q. And you said in response to one of my questions that when you pushed those two buttons together, it's a hard wire trip. What does that mean?

A. That means it doesn't require any software logic. It just goes out and it dumps the hydraulic fluid and it trips the turbine immediately.
Q. Do you know who pushed those two buttons on June 7th?
A. I'd have to look and confirm. I believe it was Dave Rehm who's the head operator. It may show up later on. He was the head operator who was in control.
Q. Okay. On page 3, I guess we're getting there right now, and I'm looking under the first bullet there on June 20. It says, Jim Parker verified with Dave Rehm, that's R-e-h-m, that he pushed the turbine trip on DC console as shown on Mark V printout. Also, Dave believes DCS DC pump control station was in, quote, local, close quote, at time of the incident.
Could you just explain that bullet to me?
A. Okay. Well, the first half -- well, there's two points under that. The first is that I evidently talked to Jim and said -- indicated to him that it appeared that somebody had pressed those push buttons that we've just talked about, and he talked to his head operator, who was Dave Rehm, and he said that he indeed did it.

He must have also asked Dave about the status of the DC pump control station, and Dave said he believed that it was in local at the time of the incident.
Q. And please explain to me the significance of the DC pump control station being in, quote, local, close quote, at the time of the incident.
A. The DCS control station had three operating modes. One was start, okay, which is a forced on condition by the operator. The second position is an automatic position or mode, and then the third was what was called local, and that really is an off condition at the time of the incident.
When General Electric made the changes to the DC control logic, that local -- that local switch was removed. Basically, when the operator said it was in local, that meant that the control switch outside of the DCS had control. So after that switch was gone, that local was basically off.
Q. So when the DC oil pump was in the local position at the time of the explosion on June 7th, that meant that the DC oil pump was off, is that correct?
A. Not only was it in the auto position, it would have been off also, but yes, it basically was

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off and was not going to come on on automatic.
Q. So even if it had been in the automatic position it would not have come on?
A. No. It would have.
Q. But it was in the local position, which is synonymous with off; is that correct?
A. Yes.
Q. And how did it get into the local position?
A. Somebody put it in local position.
Q. And that would have been an employee of St. Joe Light & Power that did that?
A. Yes. More than likely, yes, it would have been.
Q. At the time of the June 7th incident, should the DC oil pump been -- should it have been in the local position?
A. It should have been in the automatic position.
Q. It should not have been in the local position?
A. True.
Q. Okay. And what position should it have been in?
A. It should have been in the automatic position.

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Q. Going down to the June 21, 2000 bullet there on page 3, it indicates that John Mitchell gathered information for the root cause analysis for GE; is that correct?
A. Yes.
Q. Did GE indeed conduct a root cause analysis?
A. Well, that's the -- I think our Exhibit 2 today.
Q. Okay. So Exhibit 2 is the root cause analysis conducted by General Electric; is that correct?
A. Let's see. Mr. Mitchell says it was expected that this report will be used in the root cause analysis for this -- of this forced outage incident which involved a hydrogen explosion and oil fire. So I don't know that GE is considering this report its root cause analysis or if it's planning to do further work.
Q. Who would know that?
A. General Electric.
Q. Okay. And you were just referring to JM-2, is that correct, when you just responded to me?
A. Yes.
Q. Are you aware of any other root cause analysis reports prepared and provided to SJL&P with

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regard to the incident of June 7th other than this?
A. No. Other than, I was going to say, Mr. Byrd's short report that we already discussed and Mr. Pisoni's letter.
Q. Focusing on the 6/21/2000 still there and the fourth bullet point, you have a set of questions and answers.
A. Yes.
Q. Who was asking those questions and who was giving those answers?
A. Mr. Mitchell was asking the questions and I'm providing the answers.
Q. And just take me through those -- each of those questions and answers. I take it he asked you why the DC oil pump did not start and you responded you were looking into it, correct?
A. Yes. I mean, and this is, of course, a summarized discussion as I recalled it a short time later.
Q. Sure.
A. But yeah, he asked me if we knew why the DC pumps didn't start, and, of course, this is only -- I guess it's two weeks later, so we were still looking into and I was still trying to gather some information. I said we were looking into it.

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Was it related to the Mark V installation?
Yes, I believed it was related to the installation.
Q. How was it related to the installation, the Mark V?
A. Well --
Q. Let's just take these questions one at a time.
A. Okay. Basically, General Electric was hired to supply the Mark V control system, to do the control engineering, to do the construction and installation engineering, and to oversee the installation and startup of the system.
Okay. And due to their changes that -- due to the changes that General Electric made in the design of the controls and how they implemented those controls, we lost -- we lost reliability. We lost some robustness of our controls, and, in fact, their changes created a trap for the operators.
And so I indicated to him that the Mark V system changes that they had done contributed to the incident.
Q. When you say that the Mark V controls affected reliability, how did they affect reliability?
A. Well, the parallel path we talked about earlier, the DCS and the hard wire control switch --

Q. The pistol grips?
A. The pistol grip. The pistol grip switch was removed, and the only -- the other control mode through the DCS was what the operators needed to use, and that was not properly reviewed by GE in making their design changes. So because we went from a more reliable to a less reliable system, it resulted in the incident.
Q. Was St. Joe Light & Power aware at the time the Mark V system was put in that they were going from a less -- from a more reliable to a less reliable system?
A. No, we had no idea that we were going to a less reliable system.
Q. So when the pistol grips came down, St. Joe Light & Power was not aware that that took away a second opportunity or took away the parallel path to take care of this problem; is that your testimony?
A. Well, clearly we were aware that a parallel control path was removed, but every -- say nearly every motor in the power plant is controlled through the DCS through a multi-state device driver just like this DC oil pump was going to be controlled.
We also ran through a series of tests on the lube oil pumps prior to starting it up after the

Mark V changes to verify that the pump did operate as GE intended.
So clearly if we felt that we were getting into a situation where we were less reliable, we wouldn't have proceeded. There's times when a parallel control path can be the trap. I mean, you can come up with situations where removing the hard wired path might make you more reliable.
Q. Okay. At the time the pistol grips came down with the installation of the Mark V control unit, did any personnel from St. Joe Power & Light question General Electric about the removal of the pistol grips controls, pistol grip controls?
A. I don't believe so, no. I mean, I think we had an understanding about how the change was going to be -- was going to happen.
Q. I think you also said that the design by GE created what you termed as traps for your operators. Could you describe those traps?
A. Well, the operators were put into a situation where the control logic in this particular situation, in this critical application, was different, and the design engineers should have looked at that situation that was going to result from the changes they had made and make sure that the operators

were -- that they could operate as they believed the equipment would have operated as intended, I guess.
Because the system was not reviewed, this particular situation in that the DC oil pump control did not return to auto as described in Mr. Svuba's testimony, how it was different created a situation which the operators believed that they would stop that pump and it would automatically go back to the auto position. It didn't work that way.
And what I'm saying is that the proper operation of the DC oil pump controls, whether it's pistol grip or whether it's in DCS, is when you shut that off it should return to auto. That pistol grip switch was removed and the DCS logic was not reviewed, to my knowledge, to determine whether it would operate correctly --
Q. Did --
A. -- with those modifications being made.
Q. Did anyone from St. Joe Light & Power review the DCS logic to determine whether or not it would return to auto, the DC oil pump would return to auto?
A. No. We hired General Electric to perform those functions. It clearly states on the purchase order what their responsibility was.
Q. If the operators lost the ability to utilize

the pistol grips, the parallel path that we were talking about, why didn't they question General Electric about that when the pistol grip controls came down?
MR. DUFFY: Objection. Calls for speculation about the thought process of their employees.
Go ahead and answer to the extent you can.
THE WITNESS: Again, as I said, the -- and again, I'm speculating here, putting myself in the place of an operator. But for the last five years I've had ability to control that -- me being the operator now, I had the ability to control this at the hard wired switch or I could control it from the DCS. That switch has gone away. I know that I can control all these other motors from the DCS. It's going to work the same way. So it doesn't have a problem with it.
BY MR. MICHEEL:
Q. Let's go back to --
MR. DUFFY: Were you finished with your answer, Mr. Modlin?
THE WITNESS: Yes. I'm sorry.
BY MR. MICHEEL:
Q. Sorry if you cut you off. Your second

question there is, Was functional testing done on pump before startup? Answer: Yes, it -- yes, I performed it and it operated as designed. Could you explain that to me?
A. What I'm saying there is that I was present, along with GE startup engineers, when we checked the operation of that pump in automatic. Basically, the operator put that pump in automatic and we stopped the AC oil pumps, pulled the breaker on the second one and the DC pump started, which was how it should have operated.
So basically what I'm saying there is the way GE designed it to work, we, we being the startup engineer and myself and St. Joe Light & Power personnel, tested it and it did work the way GE designed it.
Q. It did work the way GE designed it?
A. Right.
Q. And that's when it was in the automatic position; is that correct?
A. Right.
Q. And I think you've testified earlier that when it was in the local position, the pump was off; is that correct?
A. That's true.

Q. And is that consistent with the way GE designed the system to work, that when it's in logic it's off -- or local, excuse me, it's off?
A. Yes. I mean, that's the way it would work after the GE modifications. GE did not go in and design the system to be that way. They failed to investigate what would be the result of changes they made.
Q. Okay. But you would agree with me that if the DCS logic had been in the automatic mode, the pumps, the DC pump would have come on?
A. Right. And that's what we verified when we did that functional test.
Q. The flip side is, when the DC control is in logic, the pump is off -- or local. Excuse me. Local, it's off?
A. Yes.
Q. And that's the way the software was designed to work?
A. Well, when the software design was designed, there was a local control switch there.
Q. And that's the pistol grips?
A. That's the pistol grip.
Q. And those came down?
A. The pistol grip switch was removed.

Q. Your final question there, Did the Mark V control the motor? Answer: No. Explain that to me.
A. Depending upon the extent of a Mark V retrofit and the particular plant that is doing it and their decisions, you may do motor control from the Mark V just like you do motor control from the Bailey.
So what he was asking because he wasn't familiar is, Are you doing motor control with the Mark V and were you controlling this DC pump? In other words, was the Mark V doing what the Bailey was doing? And I said no, the Bailey was doing the motor control, not the Mark V.
Q. Turn to page 4, and I guess I'm looking at 6/22/2000. It says you had a discussion, the third bullet point there, with John Mitchell of GE, and during the course of the conversation he asked whether I knew of any fault on the part of GE that contributed to the accident. I said that, yes, there appeared to be contributing factors. He asked for more information, but I said I wasn't sure I had the okay to elaborate at this time. Is that correct?
A. Yes.
Q. Other than the design faults that we've already talked about, were there any other faults that you're referring to there on behalf of GE?

A. That's the -- that's the only fault that I can think of that contributed to the accident. The reason I hesitated there is because they didn't do a very good job throughout the project.
Q. When you say they didn't do a very good job throughout the project, what do you mean? What didn't they do throughout the project?
A. We had several different project engineers on the project, very little continuity. We had three startup engineers instead of -- you normally would have one. So there was a lot of starting and stopping and lack of continuity on GE's part.
MR. MICHEEL: Do we need to take a little break?
THE WITNESS: I'd appreciate it.
(A BREAK WAS TAKEN.)
BY MR. MICHEEL:
Q. Okay. I guess I was talking to you about the --
A. Doug?
Q. Yes, sir.
A. It's been pointed out that I may have agreed with something you said that I didn't mean to earlier, and so I wanted to clarify.
When we were talking about the hydraulic oil

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trends, okay, and I think you asked something to whether or not that since I didn't see a sudden drop that means the operators didn't do it.
Q. Yes, sir.
A. And I didn't mean to say that they didn't do it. I just meant that I didn't see any indication that they had done it, but I have no reason to doubt that they did do that control action, but I didn't see any evidence in my hydraulic pressure trend that they did.
Q. Right. When you reviewed the computer printout with respect to the hydraulic pressure, that computer printout to you, based on your review of it, did not indicate that that was done?
A. Correct. That's what that showed.
Q. Fair enough. I guess I'm still on page 4 of 8.
A. Okay.
Q. And I'm looking at the last bullet point there under 6/23. It indicates that you discussed it with DVS, and why don't you just tell me who DVS is?
A. That's Dwight Svuba.
Q. And I guess this says that, He told me there was to be a free flow of information and that included telling John how GE's design and installation

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engineering contributed to the incident. Therefore, I gave John a summary review of GE's poor performance during the project and explained how they'd overlooked the impact of removing the oil pump control switch, explained that GE's installation package was not delivered until we got into the outage and that resulted in insufficient time for proper SJL&P engineering review. Is that correct?
A. Yes, that's what it says.
Q. And I guess my question to you is, is it correct that St. Joe Light & Power did not have the proper amount of time to do an appropriate engineering review of these changes?
A. I guess what I'd like to say there is that when we installed the system, we had a larger number of field changes that had to be made because we didn't have time to review the drawings in advance, that when we started the unit up, we did not believe that we were under any risk of something like this occurring, that there were any problems that were out there because we didn't have adequate time to review.
However, normally a project like this you get the drawings a couple months ahead of time and you have time to sit down and review and you find problems, and if GE had met their schedule, there's a

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better chance that this could have -- this problem, this what they overlooked could have been found.
Q. So in other words, if I understand what you're saying, you didn't -- you, being St. Joe Light & Power engineering, didn't have enough time to review the drawings of General Electric to find out these traps that we talked about for your operators?
A. I would have to agree, yes, that we didn't have time ahead of time and that we were in the outage and so we were limited to what we could look at.
Q. And so the cause of that, I think you said, was you had three GE startup engineers, they didn't get you the drawings on time and things like that; is that correct?
A. Yes.
Q. When did St. Joe Light & Power receive the drawings, the engineering drawings?
A. I want to say that it was about May, May 5th or 6th.
Q. And when -- I think you had indicated that GE had agreed to get them to you sooner than that. When were you, you being St. Joe Light & Power, when was St. Joe Light & Power supposed to get those engineering drawings?
A. The first draft was supposed to be to us the

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middle of March.
Q. So GE was, let's make it three months behind approximately on getting you the drawings?
A. It's not three months. It's more like a month and three weeks.
Q. Let me ask you this. Why didn't St. Joe Light & Power alter the outage schedule so it had time to review these drawings to make sure that you could do a sufficient, you being St. Joe Light & Power, sufficient engineering review?
A. As I indicated, we did, quote, review in the process of installing the system. In other words, we found problems that would have been found during the initial review. As we did the functional checkout and tested equipment, we found problems.
Okay. We knew going into the outage -- or I say we knew, but we wouldn't be surprised that for some reason the outage may be extended because GE's engineering package was late, but that we would have to go through a process during the outage to check it out and find problems, you know, that may have been overlooked.
So I guess what I'm saying is, should we have stopped and postponed the outage, no. We just knew that, Hey, there's going to be problems we're

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going to find in the course of installation that hopefully we would have found earlier if we had the drawings.
Q. Is there any reason why you couldn't extend? I mean, it was my understanding from your earlier testimony that this unit came back on line within the scheduled time for the scheduled outage; is that correct?
A. That is correct.
Q. Was there anything preventing St. Joe Light & Power from extending the outage to give its engineering folks appropriate time to review these drawings?
A. I guess what I'm saying is we spent the hours, we spent the time during the outage to get to the point where we were comfortable starting the unit up.
Q. So your statement here that it resulted in insufficient time for proper St. Joe Light & Power engineering review is incorrect?
A. Well, like I said, these are my personal notes that I didn't -- you know, what I was thinking at the time. What we did not have is time prior to the outage to sit down with the drawings, to go through with them, you know, mark them up, send them

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back to GE and look for problems such as we had.
So that time that we would have had ahead of time was compressed into the outage, and it took more hours and we had to redo certain pieces of work in the field because of changes that had to be made.
Q. Was there anything that prevented St. Joe Light & Power from extending the scheduled outage?
A. No. I mean, I'm speculating there because there's a whole -- I mean, you've got generation costs and availability of power and status of other units. I'd be speculating whether or not that would have been the right decision.
Q. So it's your testimony that at the time the unit went back on line on June 2nd, that St. Joe Light & Power felt comfortable with putting that unit back into operation?
A. Yes.
Q. Even though there was insufficient time for your engineering review?
A. Like I said, there was not time for the normal process of review prior to the outage.
Q. Let me ask you this. If you felt comfortable at the time you put the unit back into operation June 2nd, what impact did the delays of GE have at all on this event?

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A. Well, there was the installation cost, No. 1. We had to relocate cables, worked additional overtime by the contractor to adapt to changes that needed to be made in the field. I mean, is that answering your question? I'm not sure I --
Q. What I'm trying to understand here, Mr. Modlin, is you state one of the contributing factors was insufficient time for proper St. Joe Light & Power engineering review; is that correct? That's a contributing factor?
A. I believe you're referring to the one-page summary of possible contributing factors that I've provided.
Q. I'm referring to your statement on the top of page 5 of this memo. It says, I explained that GE's installation package was not delivered until we were into the outage and that resulted in insufficient time for proper SJLP engineering review.
A. Okay.
Q. Is that correct?
A. That is what I wrote on June 25th. Okay. And what I have tried to clarify for you is that the normal amount of time for review prior to the beginning of an outage was not available because of delays by General Electric.

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Okay. What I'm trying to tell you is that we did the review during the installation and started up, and we would not have started the unit up if we felt there was any risk of something like what happened on June 7th occurring due to lack of time in engineering review or installation. Okay. From an engineering point of view, we did not feel that there was a risk in starting the unit up.
Q. So from an engineering point of view, St. Joe Light & Power did not feel that there was a chance for an event like what occurred on June 7th, 2000 to occur?
A. That's true.
Q. In that same sentence there you say the installation package. Is that the installation package just for the Mark V or does that also relate to the exciter?
A. The exciter was completely turnkey by General Electric. So this is just for the Mark V.
Q. So is it your testimony that if they had gotten you the installation drawings and the package on the March 5 time frame when they were supposed to get it to you, they being General Electric, that that would have been sufficient time to review those?
A. It would have been longer time. What do

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you --
Q. Well, I mean, you used the word insufficient time for proper SJLP engineering review.
A. You have to remember that I wasn't writing testimony. I was writing personal notes to keep track of my conversations.
Q. And what I'm asking you, Mr. Modlin, is, in your personal opinion, do you believe that there was insufficient time for proper SJLP engineering review?
A. I'm going to say again that it was not the normal process, not the normal amount of time, and that we felt that the review that was done in the process of installation was adequate.
Q. So I guess then GE being late meant that St. Joe had to work harder and quicker, but it had no impact in the end?
A. That would be speculation.
MR. DUFFY: It's a compound question, Doug. If you want to say did St. Joe have to work harder and quicker, that's one thing, and then you threw in had no impact in the end. Obviously there was some kind of an impact there. So if you want to rephrase the question, try again.
BY MR. MICHEEL:
Q. I guess I asked you this. Was there any

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compulsion to place Unit 4/6 in operation on June 2nd?
A. Compulsion? The General Electric startup engineer was on site performing all the checks that they felt necessary to start the unit up. All other phases of the outage were done. The boiler was done. Other plant equipment was done. Basically, we were working with General Electric under their direction to check out the Mark V control system and put it on as soon as it was ready to be put on.
Q. So St. Joe Light & Power felt that the unit was ready to be put on line on June 2nd, 2000?
A. Yes.
Q. And St. Joe Light & Power felt comfortable with the new Mark V controls and how those controls worked on June 2nd, 2000 when they put that unit back on line?
A. To the extent that they were checked out and shown to operate properly, yes.
Q. And St. Joe Light & Power when the Unit 4/6 went back on line on June 2nd understood how those new controls operated and controlled the system; is that correct?
A. That's a pretty broad statement. Can you give me a specific example of --
Q. Well, I would assume that they would

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understand all of the controls if they were operating the generating unit. I mean, I wouldn't certainly -- let me ask you that. Did St. Joe Light & Power understand -- at the time it put the Unit 4/6 back on line on June 2nd, did it understand how the new Mark V controls operated?
MR. DUFFY: I have to object to the form of that question. That somehow indicates that St. Joseph Light & Power has a brain and therefore understands something. You're asking this witness to speculate what may have been the understanding of a myriad of people. I just don't think it's an appropriate question the way you formed it.
BY MR. MICHEEL:
Q. Let me rephrase it. Would St. Joe Light & Power restart a generator if its operators didn't understand how to operate that generator?
A. No.
Q. Would any prudent company -- or let me just leave that alone.
Let me go to page 5 of this document. I'm looking at the first bullet on top there that says, John Mitchell and I discussed John's draft report. And that's John Mitchell from General Electric; is that correct?

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A. Yes.
Q. What draft report is that referring to?
A. That is a draft of what is Exhibit 2 today, and he did not leave a copy with us. We read over it and we clarified it. He took it. I didn't have a copy to give you before today.
Q. What were the nature of your discussions with regard to that draft report?
A. Well, I'd have to sit down and go through his report and then try to recall. Basically, we talked about the sequence of events and if I was in general agreement with what he saw and if I saw anything that was incorrect, just a quick review and say, Yeah, I agreed.
Q. Did you see anything in that draft report that you did not agree with?
A. Not at that time. Like I say, on this review today, I think there's a couple minor points that may not quite be exactly right, but I couldn't point them out to you right now. I'd have to pull it up and read through it to see what it was. They're not significant.
Q. Okay. So any of the points that you don't think are correct on JM-2, they're not significant points; is that your testimony?

A. Let me review JM-2 and I will correct anything in St. Joseph Light & Power's perspective, if you'll agree to that.
Q. That's fair enough. This bullet point says you talked about the alleged stop valve failure.
A. Uh-huh.
Q. What was GE's role in the, quote, stop valve failure, close quote?
A. Grammatically I'm probably incorrect here. You read that last sentence and it sounds like I'm speaking of the stop valve failure, but actually I'm talking about the role in -- GE's role in the incident in the DC oil pump not starting. So it's the failure of the DC pump to start, not the stop valve failure.
Q. And what was -- so we're not talking about a stop valve failure here, it should be the DC oil pump's failure to start?
A. Right.
Q. And what was -- have we gone over what GE's role was in that?
A. Yes.
Q. And what was that?
A. That was GE's design failure to review the impact of their control system changes.
MR. MICHEEL: Get another document marked.

(EXHIBIT NO. JM-11 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:
Q. This JM-11, it's a one-page document. Did I -- it's a one-page document entitled Turbine Generator 4, June 7, 2000 Incident, Possible Contributing Factors. It's dated July 13th, 2000. Did you author this document?
A. Yes, I did.
Q. Is this document, is there any reason this document should be highly confidential?
A. I don't believe so.
Q. Okay. Up at the top of the document, do you see the stamp draft there?
A. Yes.
Q. Are there any changes that need to be made to this document?
A. Yes. It's been updated and provided in response to the data request.
Q. What were the changes?
MR. DUFFY: Well, are they shown in another document?
THE WITNESS: Yes.
MR. DUFFY: There's no need to go through all of them.

MR. MICHEEL: Sure.
MR. DUFFY: Before you say anything, John, why don't you indicate what the two documents are that you're comparing?
THE WITNESS: Okay. Both of these are entitled Turbine Generator 4, June 7th, 2000 Incident, Possible Contributing Factors. Both are marked draft and both are marked highly confidential. In the bottom right-hand corner JM-11 is dated July 13th, 2000. The second document is dated September 29, 2000, and was provided in response to OPC Data Request No. 5026.
BY MR. MICHEEL:
Q. Was that provided today at the beginning of this deposition?
A. I believe so, but you stated that you'd already had this one, I thought.
Q. And what are the differences between those two documents?
A. Okay. The second major bullet, fourth sub-bullet, in JM-11 it says, Control station shows local instead of off which is no longer meaningful, and the revised version is, Control station displayed local instead of off which was no longer meaningful after removal of the local, i.e. manual control

switch.
Q. And why did you make that change to the second document that you're referring to, the September document?
A. Well, it points out that local did have a meaning before and now was no longer meaningful. When you say something is no longer meaningful, it's helpful to clarify why it was meaningful in the past.
Q. Okay. What's the next change?
A. Under the third sub-bullet -- I'm sorry. Third major bullet and the last sub-bullet, it is regarding an issue we've been discussing. The first draft said inadequate time for company review, and now it says limited time for company review.
Q. And why did you make that change?
A. Well, for the very reason we've been discussing today. It's not like we did not review it and felt that we were risking anything in starting up the unit, but that the amount of time we had to review the GE changes were limited. Okay.
Q. What's the next difference between those two documents?
A. The next change is the sixth major bullet, and it's the -- under operation, May 25th to June 7, on JM-11 it says, DC pump breaker may not have been

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returned to the normal closed position after opened for hydrogen seal work on about 5/25. And that bullet was removed.

Q. And why was that bullet removed?

A. Upon review by the operating department at St. Joseph Light & Power, they believed that that DC pump breaker was closed on May 26th after the hydrogen seal work.

Q. And what does it mean if the breaker's closed?

A. That means that the pump would have had power to operate and the control circuits would have had power to initiate that operation.

Q. What's the next difference in these two documents?

A. It appears under that same major bullet. Instead of pump -- I'm sorry -- routine check of pump readiness not performed at shift changes, pump readiness less apparent to operators due to removal of the manual switch.

Q. And why was that change made?

A. Well, in my first draft I was -- I guess I was making the assumption that operators would go through and they would check all those things, and I'm not necessarily sure, since I'm not an operator, that

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they do those types of checks at shift changes.

But what is obvious and what is more correct is that, due to the lack of the manual control switch, checking that pump readiness is -- the pump readiness is less apparent because it's not a physical switch on the wall. So it's just a -- it's the same idea, but it's more correct.

Q. What's the next difference between those two documents?

A. Okay. I think the first two bullets on JM-11 are replaced with one larger sub-bullet.

Q. When you say the first two bullets --

A. I need to tell you where I'm at. Okay. Seven, the vibration trip major bullet, the first two sub-bullets are replaced with one major bullet, and I'll just read what the new -- what the new version says. Bently Nevada/GE testing in August 2000 indicates that high indicated vibration was likely a false indication caused by troubleshooting work which was under way by GE/company personnel at the time of trip.

And previous, before the testing in August 2000, we believe that it was false, but the testing that GE did confirmed that, or GE and Bently Nevada.

Q. What's the next item?

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A. I guess before we leave that, I say the testing confirmed that that was the cause. I guess there's still further testing that could be done to really verify that the troubleshooting work that was being done really was the cause, but it's really not a question. So what we've done thus far indicates that that work caused vibration, but I hate to say a hundred percent for sure that somebody wouldn't find something different.

Okay. July -- on JM-11, under the last major bullet, the first sub-bullet, JM-11 says, DC oil pump did not start. In the more recent version it says, DC oil pump did not run.

Q. And why did you make that change?

A. I guess it was felt to be more clear. I mean, obviously it didn't start, but if it had started -- I don't know. It was a word change that really is not that significant. It's really saying the same thing. One case it didn't start, the other case it didn't run.

MR. MICHEEL: I guess maybe for clarity of the record, Gary, if we could just get a copy of the second one that we're talking about and mark it JM-12.

BY MR. MICHEEL:

Q. Are there any other changes?

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A. No. That's what I was just looking at.

Q. Before we get that copied, Gary, let me ask just one question. You said it's not a significant difference between whether or not the item -- the unit, the DC oil pump started or whether the DC oil pump was running. Could you explain why that's not significant?

A. Well, if it starts and starts successfully, it will run. Okay. And if it runs, it'll provide oil. Okay. I guess --

Q. On June 7th -- let me just ask this. On June 7th at the time of the incident, did the DC oil pump run?

A. No.

Q. Did the DC oil pump start?

A. No, not that -- you know, not that anything that we have shows that it either started or ran.

MR. DUFFY: Just so I'm clear, are we just going to make a copy of the one page or are we going to make a copy of --

MR. MICHEEL: I think the one page is enough, Gary.

(AN OFF-THE-RECORD DISCUSSION WAS HELD.)

(EXHIBIT NO. JM-12 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)

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BY MR. MICHEEL:
Q. Mr. Modlin, you have before you what's been marked as JM-12?
A. Yes.
Q. And is that a one-sheet updated version of what was marked as JM-11?
A. Yes.
Q. Please refer to the first bullet there on JM-12, if you would. Does that indicate that the original system was installed in 1966?
A. About 1966.
Q. And it says in there that the DC oil pumps serve both as, quote, normal, close quote, and emergency role, paren i.e. no second line of defense, close paren; is that correct?
A. That's true.
Q. Was it usual not to install a second line of defense?
A. I honestly don't know. I don't know how units were designed back in 1966.
Q. Well, why did you make that statement then that no second line of defense was installed?
A. In discussion with Joe Byrd and John Mitchell and other people as it came to light what happened, it's my understanding that most units have

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an alternate AC supply or some other feature that protects the unit from situations such as this before relying on the DC oil pump. DC oil pump is usually the third thing in line, not the second.
Q. So this unit only has, if you will, two lines of defense?
A. Yes. I mean, it had the old AC pump and then the DC pump and that was it.
Q. Referring to the second bullet there, the first sub-bullet, it says, DCS control of DC pump did not, quote, return to auto, close quote, after stop as manual control switch did. Could you explain that to me, what that means?
A. When the operator stopped the DC oil pump using the manual control switch, it would return to an automatic position, okay, so that the operator did not have to make a second step, turn it off and then turn it back to automatic.
Q. Now, is that prior to the installation of the Mark V?
A. Yes.
MR. DUFFY: We're talking about the pistol grip at this point?
THE WITNESS: Yes, pistol grip switch, and the DCS control did not do that. When they press off,

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it stays in the off position.
BY MR. MICHEEL:
Q. Also known as local?
A. Exactly.
Q. The second sub-bullet point there, AC pumps did return to auto in DCS, misleading plant personnel to believe DC pump operation was similar. Is that your explanation there, that under the old system with the pistol grips, if it were returned to auto it was on?
A. Well, the point there is that the old control -- and they did use pistol grip more than they used DCS. The switch always returned to auto. Okay. When you operate the AC oil pumps in the DCS and you turn them off, they also return to the auto.
So that was the mode of operations that the operators were used to seeing for the lube oil pumps, whether they be AC or DC, and the logic in the computer for the DC pump inside the DCS was not that way.
Q. And how was it -- how was that logic in the new system constructed?
A. You mean after the Mark V change?
Q. Yes, sir.
A. Okay. Well, when they selected off or

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local, it stopped the pump and it would not return to automatic. It stayed off.
Q. Third sub-bullet says, No alarm for DC pump in off position. Explain that to me.
A. Well, before if the DC pump was in the off position, they would see it visually on the wall. It would get their attention. There was no alarm. There was nothing flashing at the operator saying, Hey, I'm off. Okay. So it was less apparent to them, to the operators, that the pump was off.
Q. So they would have had to go into the system logic to check to see that the pump, the DC pump was in the local position or off position?
A. When you say the system logic, you made it sound like they have to go into the software. Basically they would hit a button, one of the soft keys, and it would bring up the screen and they could look at it and it would say it was off. So it was not a matter of going into the logic. It's just a matter of checking the screen.
Q. Without checking the screen, they wouldn't know whether it was on or off?
A. That's true.
Q. The fourth sub-bullet there, Control station displayed local instead of off which is no longer

meaningful after removal of the, quote, local, i.e. manual control switch. Explain that to me.
A. I guess the point there is that local really didn't tell the operator that it was off. It was just in local mode and it no longer means anything. I mean, now it means off, and it didn't say off. It said local. So it would have been more clear to the operator if it just said off.
Q. At the time the unit went on line, were the operators aware that local meant off? And I'm talking about the June 2nd when it went on line.
A. Yeah. I'd be speculating about what they believed about what that meant.
Q. The next bullet there, sub-bullet is, No alarm for loss of pump control power. Explain that.
A. Well, similar to two bullets above, if there was an alarm or something to indicate to the operator that, Hey, I didn't have control power, you know, that would be -- make it more apparent to the operator that the DC pump wasn't available.
Q. And the final under that second one is, The DC weakness since '95 were not apparent due to continued use of manual switch. Would you explain that to me?
A. Well, basically because the parallel path

through the manual control switch was there in the past and that switch always returned to auto, it really didn't matter what mode they put the DCS control in, it was going to operate correctly.
Q. Okay. So that weakness, the local -- the weakness with the DCS was built into the system in 1995, is that what that sub-bullet is saying?
A. In 1995 when that system was installed, it did not return to automatic, and that worked at that point in time because there was the parallel control. Now, when GE took out the control switch in their design, they didn't go in and look at the DCS logic and say, Hey, this doesn't work anymore.
Q. Please refer to your third bullet there, third major bullet, Mark V installation engineering. How many weeks behind in project engineering was GE?
A. Well, there I said several, and basically that refers to the time at which we were supposed to get installation drawings to the time that we did, which was the March, mid March to early May time frame.
Q. Second sub-bullet under that is, Multiple lead engineers. How many lead engineers did you have on this project?
A. At one point in time I saw five listed down,

and I'd have to sit down and go through my notes and write them out by name. But at least three, maybe five.
Q. Okay. When you use a term there under that second bullet point, little continuity, what do you mean little continuity?
A. Well, each time you bring a new person into a project, they have to start from zero and figure out what the previous man had done, and you can't know every detail about what the prior person did, and so you don't know if something's been overlooked or -- I mean, I guess there's numerous examples where if you bring a person in on the project and they all have the same responsibility at different phases, things are going to suffer because of lack of continuity, and that's what I'm referring to.
Q. What, if anything, did St. Joe Light & Power do with respect to all these, the lack of continuity and the change of lead engineers?
A. Well, we -- I made several contacts, and I believe I've got some e-mails and phone notes, you know, letting GE know that we're disappointed because they were behind.
Q. And have you provided those e-mails to the Office of the Public Counsel per their data request?

A. No, because those were not related to the incident of June 2nd.
Q. And so is it your testimony that the multiple change lead engineers and the little continuity was not a contributing factor to the June 7th incident?
A. Well, this is possible contributing factors. It would be speculation. I mean, they could have provided the drawings on time and made those changes and those changes not be caught. So that would be speculation to say so.
Q. Do you still have copies of all those e-mails?
A. I believe I do.
Q. Okay. And what kind of data request would I ask you to get copies of those?
A. I guess request correspondence between St. Joseph Light & Power and General Electric during the design of the Mark V control system.
Q. Did we ask you a data request that requested all correspondence between St. Joe Light & Power and GE, if you know?
A. That related to the incident is the way I remember it.
Q. And it's your testimony that those e-mails

with respect to the continuing change of engineering personnel and the lack of continuity do not relate to the incident?
A. I guess you're trying to draw everything into and make everything related to the incident. I mean, what the operator did that morning when he came in to work is related to it, I mean, if you want to go that far.
When we focus on the incident, we're focusing on the events that happened on that day and the causes of those events that happened that day, and that is how I've defined the incident in responding to that request.
Q. And you have on this sheet that we're looking at possible contributing factors, and the lack of continuity and the multiple project engineers you have listed as a possible contributing factor; isn't that correct?
A. That's true. And you can see I was really broad here, and I brought in everything that I thought would be a possible contributing factor, going all the way back to the original design of the unit, and I didn't provide Black and Veech logic diagrams either.
Q. The third sub-bullet there talks about the manual switch removed without sufficient review. Who

removed that switch?
A. Now, this is a sub-bullet under Mark V installation engineering. So when I say that it was removed, I'm talking in the context of design and GE, their design removed the switch. Now, who physically removed that switch was a contractor who was hired to do that.
Q. Did St. Joe question that removal?
A. No.
Q. What's the problem caused by the removal of that manual switch or the possible contributing factor caused by the removal of that manual switch?
A. Well, in hindsight, the removal of the switch removed a parallel control path that covered up a -- let me back up here.
The switch was removed. The operators had to rely on the DCS to control. The DCS control operated in a different manner than they were used to. Therefore, the removal of the control switch was a possible contributing factor to the incident.
Q. Okay. Next one there is, Installation drawings were delivered to St. Joe after the outage was underway. What are the installation drawings?
A. Those are the drawings that were provided to the mechanical and electrical contractors that showed

what work needed to be done to install the Mark V.
Q. Are those the drawings we've been talking about that were supposed to come your way in March?
A. Yes.
Q. Did St. Joe Light & Power insist on their delivery in March.
Q. When we did not get them, we notified General Electric that we needed to get those so that we could begin the review and noted that we were concerned about the timeliness of the engineering project.
Q. How did St. Joe notify General Electric?
A. I'm not sure. I'd have to go back and look.
Q. Did you personally notify General Electric?
A. I was probably the person who did that.
Q. Did you do it via letter, telephone or e-mail?
A. That's what I'm saying, I don't know. I'd have to go back and see what mode of communication I used.
Q. What's the significance of the drawings to the June 7th incident?
A. The drawings included changes that were to be made that removed the DC oil pump control switch and the modifications to the control logic due to that

change.
Q. And I think we've gone over this before, but it's your view that St. Joe Light & Power in-house engineering didn't have adequate time to review those drawings; is that correct?
A. We had limited time to review those drawings.
Q. And that's one of the changes you made to this document?
A. Yes, it is.
Q. Did anyone ask you to change that to limited time?
A. No. That was my own change.
Q. The fifth main bullet there is Mark V training, and the first sub-bullet you say, Poor GE training, not specific to Lake Road Plant. What do you mean? Explain that.
A. We hired General Electric to train the operators on the Mark V control system. Their trainer who came in, I think, the week of May 20th or thereabouts did a poor job training operators, and that's -- the training was not specific to Lake Road Plant and it was very general engineering.
Q. When you say not specific to the Lake Road Plant, what do you mean?

A. Well, the Mark V control system is a generic platform that can be used to control many different power plants, and each installation is specific to the power plant in which it's installed. So he came in with a, Here's a Mark V. He didn't say this is how you as an operator at Lake Road are going to operate this.
Q. So it was generic Mark V training as opposed to -- so it was generic Mark V training; is that correct?
A. Yes.
Q. And the training you received from GE was not specific to the operation of the Mark V unit as it fit in to the Lake Road Plant?
A. That's true.
Q. The next sub-bullet there is, Change in DC pump control not explicitly pointed out to operators. Could you explain that statement?
A. The operators were aware from the outset that they had two control paths. They knew that the DC -- I'm sorry -- that the pistol grip control was there, and they knew the DCS control was there.
When the Mark V panel was put in and the pistol grip went away, they all knew that, Hey, I'm going to control it in the DCS now, but they were not

explicitly taken and shown, Okay, that's gone, this is where you've got to go to now.
And maybe if that step had been taken, they would have understood and things would have been more apparent to them, I guess. Does that make sense? I'm just saying that sometimes you have to state the obvious to people, and we didn't state the obvious.
MR. DUFFY: When you say we didn't state the obvious --
THE WITNESS: In the course of training that the operators received, that was not pointed out.
MR. DUFFY: From General Electric?
THE WITNESS: Related to -- General Electric did not point that out.
BY MR. MICHEEL:
Q. Let me try again. General Electric did not specifically point out to the operators in their training that they received in late May that the pistol grips were removed?
A. That's true.
Q. So they did not make the operators specifically aware that the pistol grip control had been removed from the installation of the new Mark V unit?
A. That's true.

Q. Was St. Joe Light & Power aware of these training deficiencies prior to June 2nd, 2000?
A. Yes, we were.
Q. What actions were taken prior to June 2nd, 2000, if any, to correct these training inadequacies?
A. During the startup of the system and of the unit, the GE startup engineer was available. Well, first -- I guess first and foremost immediately General Electric was contacted and notified that their operator training wasn't adequate, and basically they didn't take issue with that and planned to retrain the operators, and that has taken place.
Q. When did that retraining take place?
A. The week of September 25th, last week. So we started the unit up, and both myself and a GE startup engineer were there, both there throughout the process, and trained the operators as best we could through the startup process. Now, you do that over the course of several shifts because it took a few days to get the unit on line. So most of the operators got some hands-on training at that point in time.
Once the unit is on line for reliable operation of the unit and safe operation of the unit, basically they need to know how to control load, which

is a matter of opening and closing the valves and giving the system the control functions or the control commands to open and close the valves. If they got into a dangerous system, they knew how to trip the unit off.
So what I'm -- well, if the unit had come off, either myself or GE would be with the operators on the subsequent startup until the training, you know, took place, GE's correct appropriate training.
I guess what I'm saying is we were not in an unsafe situation due to lack of training. Operators knew how to control load on the unit and they knew how to take the unit off, and they knew how to interpret the alarms and screens and any information that they got out of the Mark V. But did they have the scope of training that we had liked and had contracted for from GE? No, they did not.
Q. So the operators fully understood how to operate the Mark V unit?
MR. DUFFY: Object to the form of the question, calling for speculation on the part of a third party.
BY MR. MICHEEL:
Q. Let me ask you this. St. Joe Light & Power's comfortable that their operators had

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appropriate training to operate the Mark V unit?
A. We were comfortable that the operators could safely operate the unit and take it off line if necessary, if the situation arose that they needed to take it off.
Q. Did you understand that the training was adequate personally for the operation of the unit?
A. Are you saying training that I received?
Q. Just the training.
A. Training? No. I was aware that the training was not adequate while it was going on that week. I mean, the feedback that I was getting from the operators was that this guy is not giving us what we need.
Q. Let me ask you about the sixth main bullet on that document, the operation.
A. Okay.
Q. First one on this new one is, The DC pump availability and operation not checked during the startup on 6/2/2000. Explain that.
A. On the day of putting the unit on line, it does not appear that the DC pump was checked.
Q. Should it have been checked?
A. It's part of the unit startup procedure.
Q. Are the operators required to follow that

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unit startup procedure?
A. That's an operating question.
Q. Are you familiar with what that operating procedure is?
A. I've seen it and it was provided to me in response to a data request.
Q. And does that operating procedure indicate that the DC oil pump should be checked on startup of that unit?
A. That is part of the startup procedure.
Q. Do you have any reason to doubt that that startup procedure's been changed or to think it's been changed?
A. No.
Q. Do you have any reason to doubt that the operators of that unit wouldn't follow that startup procedure?
A. No.
Q. Do you have any reason to believe that the operators of that unit aren't required to follow that startup procedure?
A. No.
Q. Indeed, isn't the entire reason St. Joe has a startup procedure like that is so that you can go through the checkpoints in starting up the unit?

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A. The purpose of any procedure is to guide somebody through a process. So it's provided to guide the operators through that process. The operators did check the pump, but it was not on the day -- it does not appear to be on the day of startup.
Q. Next bullet point is, Weekly DC oil pump test not performed on 6/5. Explain what you mean there.
A. Well, it's the operating schedule sheet that you provided earlier. There's no indication that the test was performed, the DC oil pump test was performed on June 5th.
Q. Do you know why the weekly DCS oil pump test was not performed on June 5th?
A. I do not know why.
Q. Have you attempted to find out why?
A. No, I haven't.
Q. You didn't think that was important in your investigation of this incident?
A. I've been, I guess, commissioned to gather the facts and put the facts together. I have not been given the, I guess, position or the role of finding fault or determining why things were or were not done.
Q. Do you know if anyone within the St. Joe Light & Power organization has been asked to do that?

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A. I don't know that anybody has.
Q. Do you know whether or not St. Joe Light & Power is going to undertake an investigation as to why those tasks were not done?
A. I do not know.
Q. Do you have an opinion about whether or not St. Joe Light & Power should task someone to make those determinations?
A. That's a management decision.
Q. Okay. And you're not part of the management of the company?
A. I'm not responsible for the operating department.
Q. And who would that person be that would be responsible for that?
A. Jim Parker is our operating superintendent.
Q. Back to JM-11 here, you say you removed this routine check of pump readiness not performed at shift changes. And you've replaced that, I believe, with pump readiness less apparent to operators due to removal of manual switch; is that correct?
A. Yes.
Q. Are you aware whether or not pump readiness is required to be checked at shift changes?
A. No, I'm not.

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Q. With respect to JM-12, do you know of any reason why that document should be treated as highly confidential?
A. No.
Q. There's also a stamp in the upper left-hand corner of "draft" of this document. Is this going to be your final version of the document or are there going to be further drafts?
A. I honestly don't know. You know, until the whole situation is resolved, there may be other findings. So I don't know.
Q. As you sit here today, are you comfortable that listed on this one-page document, JM-12 dated September 29th, that those are your thoughts with respect to the possible contributing factors?
A. Yes. I don't know of any other contributing factors or possible contributing factors to add to the list. The extent to which any of these factors contributed to the incident, you know, may increase or decrease as things progress.
MR. MICHEEL: Let me get another exhibit marked.
(EXHIBIT NO. JM-13 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)
BY MR. MICHEEL:

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Q. Let me say that I did not include the attachments here, Mr. Modlin. I'm not trying to fool you. They're just the written parts, but those are not included in this exhibit. Are you familiar with JM-13?
A. Yes.
Q. And that's marked highly confidential. Do you know any reason why that should be highly confidential?
A. Well, I guess we are taking issue with the quality of General Electric training in this letter, and I would consider that kind of an issue between ourselves and GE. And maybe they don't want it to become public knowledge that they have poor engineering. I mean, they have addressed that, so --
Q. Other than -- I mean, do you know any reason under the protective order that's been entered in this case why this document should remain highly confidential?
MR. DUFFY: Well, that calls for a legal conclusion. I guess based on what he's saying, it would be my position that this may have something to do with future contract negotiations between St. Joseph Light & Power and General Electric regarding compensation or something else. So I would

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say, based on what Mr. Modlin said, we need to treat this one as highly confidential.
MR. MICHEEL: Will you make a commitment to check and make sure that this does fall under the protective order that we need to continue to treat this as highly confidential?
MR. DUFFY: Well, if you're asking will I call General Electric and ask then, that will not be my intention. Based on what I've heard, it seems to me we have adequate reason for claiming highly confidential, claiming that this one is highly confidential.
MR. MICHEEL: All right. I guess these questions will be under the highly confidential part.
(REPORTER'S NOTE: At this time, a highly confidential session was held, which is contained in Volume No. 2, pages 153 through 166 of the transcript.)

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MR. DUFFY: Since you're transitioning to something else, it's 5:20. Do you have some indication as to how much longer we're going to be?

MR. MICHEEL: Yeah. I just have about ten more questions. Just need to get another exhibit marked.

(EXHIBIT NO. JM-14 WAS MARKED FOR IDENTIFICATION BY THE REPORTER.)

BY MR. MICHEEL:

Q. Mr. Modlin, I've handed you a copy of your response, the company's response to Public Counsel Data Request 17. Is that your signature there at the bottom?

A. Yes, it is.

Q. Did you prepare that response?

A. I believe I did, except for Jim Parker gave me the list of operators who attended the training.

Q. Okay. Does that response relate to additional training by GE?

A. No. This is training conducted in-house by St. Joseph Light & Power.

Q. Who prepared the training outline?

A. I did.

Q. Why was such an outline not prepared in May?

A. Well, in May we would have expected GE to

provide this type of information. GE did not do so.

Q. Okay. Does this outline-outline the training that St. Joe Light & Power feels that its operators should have received from GE in May?

A. I guess it represents at least a portion of what GE should have provided.

Q. Okay. So has General Electric conducted the follow-up training that we've referred to?

A. Yes, they have.

Q. And what did they do different in that training?

A. Well, I didn't attend the training, so I really can't speak to it. I know that, No. 1, the trainer was familiar with our system and was able to address operators' specific questions about our system. I know that the feedback from our operators was very positive on the training that they received last week.

I know that they went through every stream and explained, you know, the function of the control points on each stream, talked about the information available to the operator and how to interpret it. And then also the trainer had a copy of my outline and I believe they went through this and he answered anything in my outline, you know, that may not have

been clear to the operators.

Q. Okay. Have you looked at Mr. Svuba's direct testimony in this case?

A. Yes, I did. I did review it.

Q. Okay. Let me hand you that, and I'm looking at page 7 there, and I'm focusing on lines 3 through 5 there. Could you read that?

A. An investigation of the incident is still in progress. We currently believe that the pump control was not in the automatic operating mode. The pump control must be in automatic mode to start automatically on loss of oil pressure.

Q. So that seems to indicate that the DC oil pump must be in automatic to provide lubrication to Unit 4/6; is that correct?

A. In order for it to start in automatic and then provide lubrication, yes.

Q. So you would agree with me that if the DC oil pump was in automatic mode, it would have started to lubricate the bearings of Unit 4/6; is that correct?

A. That would have been the, yes, the normal course of events.

Q. Would you read lines 9 through 11 on page 7 there?

A. Okay. Starting with due?
Q. Uh-huh.
A. Due to control changes that were completed during the GE turbine control replacement project, the operators failed to realize that the pump control did not return to the automatic mode after a stop command. We believe that the pump control was in the local mode at the time of the incident, i.e. the pump would not automatically start.
Q. Does that testimony indicate that the operators were not fully conversant with the new control system and were not fully trained with its operation?
MR. DUFFY: Objection. That's argumentative. You can answer it to the best of your ability.
THE WITNESS: Go ahead and restate the question, please.
BY MR. MICHEEL:
Q. Does that testimony indicate that the operators were not fully conversant with the new control system and were not fully trained with its operation?
A. I'm going to say no, and here's why I'm saying no. The new control system training that they

received was the Mark V training and the HMI, the Mark V interface. The removal of the manual control switch was something that General Electric did in their design without proper review. The state of that pump was less apparent to the operators. It was in the local state and they were not aware.
Q. But for the failure of the DC oil pump to start on June 7th, 2000, do you have an opinion about whether the explosion and fire would have occurred at Unit 4/6?
A. Well, the normal course of events in that situation would be that the DC oil pump would start and provide oil flow until the operators transferred power.
Q. And so the failure of the DC oil pump to start providing lubrication to the bearings and the hydrogen seals caused increased friction heat, the explosion and the fire?
A. Right. And resulted in the damage, yes.
Q. So but for the failure of the DC oil pump to start, under normal operations, the explosion and fire that occurred on June 7th, 2000 would not have occurred?
A. Under normal situation, yes.
MR. MICHEEL: Thank you for your patience.

I really appreciate it.
(A BREAK WAS TAKEN.)
CROSS-EXAMINATION BY MR. WILLIAMS:
Q. My name is Nathan Williams, and I'm here for Staff. I've got a few questions in follow-up of what Mr. Micheel's covered with you.
The first thing I wanted to ask, what's the normal scheduled outage for Unit 4/6 on an annual basis?
A. That's not my area directly, but historically in my observation we normally have a three-week outage in the spring unless there's a significant turbine maintenance that needs to be done.
Q. Were there any changes to the scheduled outage in the spring of 2000 from the time it was first set up?
A. Again, I'm not the one who sets the schedule. So I'd have to go back and look at the different revisions. The only thing I can comment on is the unit did come off a few days prior to the scheduled May 5th or 6th start date, and so we started a few days early.
Q. Do you know why it came off early?
A. I don't remember now. I'd have to go back and look as to why it came down.

Q. And do you know what the time period for the May 2000 scheduled outage was to be? That particular outage that you had scheduled, do you know what the time frame for that was supposed to be?
A. What is May 6 to June 3rd? I'd have to look at a calendar. Is that three weeks or four weeks?
Q. It was originally scheduled one time -- at one time it was scheduled May 6 to June 3rd?
A. I'm sure it's the June 3rd was the stopping date. It's that weekend of May 6th. If someone has a calendar, I'll look at it.
Q. But however many days that is, that's --
A. That's what was scheduled for this year.
Q. Who had control over the time frame of that outage?
A. The time frame is dictated by the amount of work that needs to be done and basically is scheduled by the maintenance and construction superintendent to get that work done.
Q. It was determined by someone at St. Joe, though?
A. Yes, in coordination with again outside factors.
Q. Just in follow-up, was Mark Phillips the shift supervisor at the plant Unit 4/6 on June 5th of

2000?
A. Well, there's -- I guess from the notes here that were reviewed today, I believe he was the shift supervisor on the first shift on Monday, June 5th, 2000. There's three shifts. So he would have been one of three.
Q. Was that the shift where the incident occurred?
A. No.
Q. So then he was on a shift prior to the incident? Or am I mixing up dates?
A. I don't want to get confused.
MR. MICHEEL: At the start of that question, Nathan, you said June 5th. The incident occurred on June 7th, and that may be the confusion.
BY MR. WILLIAMS:
Q. I'm sorry. I meant the date of the incident, June 7th. Was Mark Phillips the shift supervisor on June 7th, 2000?
A. The incident occurred right at shift change, and I honestly can't say which shift supervisor was on duty, but Scott Hinkle and Bill White were two that were in the plant. I don't believe Mark Phillips was in the plant that day or that time. He may have been there in the morning prior to the incident.

Q. You said that the incident occurred right about shift change. What time would shift change have been?
A. Well, it's two o'clock.
Q. You indicated that there was a determination made to remove some equipment in order to locate the Mark V panel control panel, and one of the pieces of equipment was a manual switch for the DC oil pump, correct?
A. Correct.
Q. Who decided the location for where that control panel was placed?
A. General Electric was on site, I don't know if it was January, February, early in the year, and reviewed the cabinet dimensions and looked through the plant for appropriate locations and determined that that was the logical location.
Q. So when was the determination made regarding removal of the manual switch for the DC oil pump?
A. I guess it was made at that time when that site was located for the Mark V.
Q. And was that done by a recommendation from General Electric that was approved by St. Joe?
A. Probably more of a mutual decision.
Q. Were you involved in overseeing the startup

and operation of the -- strike that.
Were you familiar on the Mark V system that was installed that local meant off on or before June 2nd of 2000?
A. I think you meant to say on the boiler Bailey DCS, on the DCS system. Was I aware that local meant off? No, I was not personally aware of that, but I hadn't looked at it and said, What does that mean? If I had looked at it for a few minutes, I probably would have figured it out.
Q. Let me back up because there was something I wasn't clear on, and I want to make sure I get it clarified. In 1995 you said that there was an implementation of two parallel systems for controlling the DCS boil-- I mean the DC oil pump. One was a hard wire manual system and the other was a computer system, I believe you referred to a Bailey computer?
A. Bailey DCS.
Q. That's what you've been referring to throughout the testimony as the DCS system?
A. (Witness nodded.)
Q. What I want to know is, did the Mark V supplant the DCS system or was that something that interfaced with the DCS system?
A. First to clarify, the control switch was

there from the beginning of the unit back in 1966. It was not installed in '95. The Bailey DCS was installed in 1995. The Bailey system controls the boiler and what we call balance of plant, which is equipment out in the plant. It's not the boiler and it's not the turbine generator. Most of the plant equipment other than the turbine generator is controlled by the Bailey DCS.
Okay. So the Mark V did not replace the Bailey DCS and only interfaces with the DCS a little bit. It replaced the old Mark I or Mark II control system that had been there from the beginning of the year, which was a separate stand-alone control system for the turbine. Okay. Does that clarify?
Q. I think so, but let me ask a little bit more. If I understand you correctly, you're saying that basically what occurred with the implementation of the Mark V console, the placement of it and the removal of the manual switch, you went from having a parallel system to just having the DCS system controlling the DC oil pump. Is that a fair characterization?
A. Yes.
Q. So whatever problem there was in the DCS system existed since it was implemented in 1995 as a

stand-alone?
A. I kind of hate to characterize it as a problem because it did function properly when the system worked. When it said local control, it indeed had local control. It wasn't an off situation. But when that local switch was removed in the GE design, that change in how it was impacted or how it impacted operations through the DCS was not reviewed.
Q. Was the DCS system something that GE had implemented or did that come from some other source?
A. The DCS was there and GE had no -- they were not involved with that installation.
Q. Did St. Joe Light & Power provide them with any documentation regarding the DCS system whenever there was a decision made to remove the manual switching?
A. We provided General Electric with all the information that they requested and could have made that available, and the engineers that were working on it on behalf of GE were familiar with DCS type systems and how they function.
Q. You testified that it was routine to check -- from the information you gleaned, it was normal practice to check the DC oil pump on a weekly basis. Do you know if that was also done on a daily

basis?
A. I don't believe so.
Q. Was Unit 4/6 running at full capacity on June 7th of 2000 whenever the incident occurred, full load?
A. It was very close. I don't remember exactly what the load was, but it was very close to full.
Q. Is it normal to bring a system up to running at that capacity that quickly after bringing it back on line?
A. I guess that's speculation on my part. We were --
Q. If you don't know, that's fine.
A. Yeah. I mean, I don't know.
Q. What's your understanding of General Electric's responsibilities for training under the contract they entered into with St. Joe Light & Power?
MR. DUFFY: Object to the form of the question unless -- so that it's not construed that he's going to give some kind of legal opinion about what a contract provides --
MR. WILLIAMS: I'm just asking his understanding.
MR. DUFFY: Let me finish. He can certainly give his interpretation of what the contract provided,

but that's not going to necessarily be what position St. Joseph Light & Power might take in subsequent litigation.
MR. WILLIAMS: That's fine.
THE WITNESS: I'll just say I have to go back and look at the purchase order. I really don't remember now how many days and course content and those kind of details.
BY MR. WILLIAMS:
Q. Who made the decision that the plant -- that Unit 4/6 was ready to start up?
MR. DUFFY: When?
MR. WILLIAMS: On June 2nd of 2000.
THE WITNESS: Everything other than the Mark V control system was ready to go from the outage. Boiler work was done, balance of plant, whatever was needed. We were working with the General Electric startup engineer and satisfying him in the startup process that all the checks that needed to be done were done.
Okay. GE did have full responsibility in the purchase order for checkout and overseeing startup. So we were not going to do anything without permission of the GE startup engineers. So we brought the unit up and did an appropriate startup and

checkout in conjunction with General Electric recommendation and oversight.
BY MR. WILLIAMS:
Q. St. Joe Light & Power had an operating procedure in place prior to the installation of the Mark V. Who was responsible for making changes to St. Joe's operating procedure? Is that something done by GE or did St. Joe do that internally?
A. As far as operating procedures with regard to starting the unit, controlling the unit, that would be a St. Joseph Light & Power document.
Q. Were those done prior to June 2nd of 2000 in light of the changes that had taken place in the system?
A. I'm not aware of any changes made prior to the start.
Q. Were there changes in how the system operated prior to June 2nd of 2000?
MR. DUFFY: What system are you talking about?
MR. WILLIAMS: Unit 4/6.
THE WITNESS: Okay. Let me --
BY MR. WILLIAMS:
Q. Resulting from the modifications that GE made?

A. The basic -- well, in fact, we can -- in the data request it shows that the startup procedure for the turbine, I think only one line has changed in that startup procedure. The functional steps that the operators need to go through as far as checking equipment, performing prerun, rolling the turbine, accelerating the turbine, synchronizing, I mean, they still go through that same set of steps. They're just using a different interface to go through those steps.

So there's really, I would almost say no changes in the process that the operators go through. It's just the interfaces they use to go through those steps.

Q. Who determined the schedule for the modification of the General Electric performed during May of 2000?

A. Who determined the schedule? Really that was done under Mike Ceglenski, but in reviewing his data request response, I think I can safely speak to this in that we had a schedule of getting the Mark V system in in the spring and given a three-week outage, or however many days that figured out to be, and they were clear and understood that when they were issued the purchase order, and they accepted that purchase order.

So they believed that they could design the system, perform the installation package and engineering and get the work done in that period of time. If they would have taken issue with that, then we would have had to work that out in the purchase order in the contract up front.

Basically, we had a schedule. We went to GE and said, We want you to install your system according to this schedule, and they accepted that.

Q. Was the speed that the turbine was or the -- was the power level that the Unit 4/6 operating at after June 2nd -- no -- on June 7th, 2000 related to the testing that was taking place?

A. No.

Q. Exactly what equipment at Unit 4/6 was damaged by the incident on June 7th of 2000?

A. Well, that's a long list. I know it's been provided in a data request. It's really not my area. I didn't get involved in the repairs. I can tell you in general terms what.

Q. Just do that.

A. The bearings, oil seals, steam seals, you know, some equipment in the front stand, speed pickups, vibration equipment. There's more, I mean.

Q. Was there a necessity to rewind any rotors

on Unit 4/6?

A. In what context? As far as resulting from the incident?

Q. Yes.

A. I do not believe there was a need to rewind a rotor as a result of the incident on June 7.

Q. No rewind was done as a result of the June 7 incident?

A. No.

Q. So any rewinding that was done was because of some other condition?

A. Let me clarify. Let me back up a little bit. As the generator rotor was removed and inspected by General Electric, part of their inspection process was to perform a particular test. When they did that test, one of the coils in the generator rotor, I'm not sure how, but somehow insulation broke down. There was a short or something, and so that one coil had to be repaired.

And again, I'm not electrical. I don't know if that constitutes a rewind, partial rewind or what that's called, but there was a rotor coil that had to be repaired due to testing that was done as kind of a routine basis while the rotor was out of the machine.

Q. But you're not saying that was necessarily

attributable to the accident -- or not the accident, but the fire and explosion?

A. I don't believe it was, but I'm not the expert on that area.

Q. Was the DC oil pump breaker closed during the period of June 3rd through June 7?

A. We believe the DC oil pump breaker was closed.

Q. What is your belief based upon?

A. It is based upon the sequence of events that we -- I'm going to say May 24th, that may be a Tuesday or Wednesday. Starting with May 24th, the pump was operated. A generator air test was initiated. It was successful. The clearance tags were released on the 26th, and operators cleared those tags on the 26th, which would have included closing the DC oil pump breaker. There was no reason after that time for that breaker to be open.

Q. What was the position of the turbine trip valve after the trip?

A. The turbine trip valve? Here we're talking about the main stop valve?

Q. Yes.

A. It was closed.

Q. Did it come back open?

Page 186

A. There was no indication that the valve came back open or was partially open, other than the observations that Mr. Micheel pointed out from the operators after the event. Again, from the evidence that I looked at, everything indicates that the valve was closed.

MR. WILLIAMS: I don't have any further questions.

MR. FINNEGAN: I've got just one.

CROSS-EXAMINATION BY MR. FINNEGAN:

Q. Is it true that the reason that the pistol grip control for the DC lube oil pump was removed was to make room on the wall for the cabinet for the new Mark V turbine control system cabinet?

A. That was a primary reason.

MR. FINNEGAN: That's all.

MR. DUFFY: I'm just going to do one.

CROSS-EXAMINATION BY MR. DUFFY:

Q. According to my notes, you said the shift change at Lake Road occurs at 2 p.m. Is that correct?

A. Well, it's about that time. I really -- two o'clock in the afternoon, they're coming in and out. Officially what time they change shifts, I'm not sure.

Q. Within an hour --

Page 187

A. Within an hour of that.

Q. -- of two o'clock?

MR. DUFFY: That's all I have.

(PRESENTMENT WAIVED; SIGNATURE REQUESTED.)

____
JOHN MODLIN

subscribed and sworn to before me this day of , 2000.

____
Notary Public in and
for County
State of Missouri

A. Within an hour of that.
Q. -- of two o'clock?
MR. DUFFY: That's all I have.
(PRESENTMENT WAIVED; SIGNATURE REQUESTED.)

JOHN MODLIN

subscribed and sworn to before me this 9th day of October, 2000.

Notary Public in and
for County
State of Missouri

RITA SANDSTROM
Buchanan County
My Commission Expires
June 29, 2002

RITA SANDSTROM
Buchanan County
My Commission Expires
June 29, 2002

ERRATA SHEET

Deposition of John T. Modlin Case Caption: Date Taken: October 4, 2000

Page #	Line #	Strike	Insert	Reason
7	16	boiler		Correct meaning.
11	12	protected	protective	Correct meaning.
29	7	and		Correct meaning.
31	9	the		Correct meaning.
32	10	?		Correct meaning.
40	1	2nd	7th	Correct day of incident.
41	25	this is		Correct meaning.
65	6	coolant	cooling	Correct meaning.
67	14	again		Correct meaning.
73	3	which	where	Correct meaning.
75	3		large [between "the" and "motors"]	Small incidental motors not controlled by DCS.
91	14	could I	if I could	Correct meaning.
93	11	And since the vibration trip -- and it'll hold it.		Correct meaning.
93	17	is		Correct meaning.
97	24		not [between "it" and "in"]	Correct meaning.
102	21	motor in the power plant	large motor on Unit 4/6.	Small incidental motors not controlled by DCS. DCS is only on 4/6, not entire plant
104	23-24	it clearly states on the purchase order what their responsibility was.	The purchase order states that GE was to provide detailed engineering. Their construction documents show that they understood this to include changes to the DCS.	More accurate response regarding DCS-related engineering, which was the context of the question.
112	2	this what	that	Correct meaning.
127	23	believe	believed	Correct meaning.
127	24	or	rather	Correct meaning.
129	18	not that anything	nothing	Correct meaning.
131	7	old AC pump	AC pumps	Correct meaning.
133	16	a button	two buttons	It takes two steps to access screen.
137	2	2nd	7th	Correct day of incident.
138	23	Veech	Veatch	Spelling.
151	15	engineering	training	Correct meaning.
161	5		and [between "tools" and "to"]	Correct meaning.
161	13	internet	Arcnet	Correct meaning.
163	1	bars	vars	Spelling.
163	2	we	they	Correct meaning.
163	23	it was economically we	there was an economical	Correct meaning.
168	19	stream	screen	Correct meaning.
168	21	stream	screen	Correct meaning.
173	9	it's the	that	Correct meaning.
177	13	year	unit's life	Correct meaning
182	6	prerun	prewarm	Correct meaning.

John T. Modlin 10-9-00

Deponent's Signature Date

C E R T I F I C A T E

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

I, Kellene Feddersen, Certified Shorthand Reporter with the firm of Associated Court Reporters, Inc., do hereby certify that pursuant to agreement there came before me,

JOHN MODLIN,

at the law offices of Brydon, Swearengen & England, 312 East Capitol, in the City of Jefferson, County of Cole, State of Missouri, on the 4th day of October, 2000, who was first duly sworn to testify to the whole truth of his knowledge concerning the matter in controversy aforesaid; that he was examined and his examination was then and there written in machine shorthand by me and afterwards typed under my supervision, and is fully and correctly set forth in the foregoing pages; and the witness and counsel waived presentment of this deposition to the witness, by me, and that the signature may be acknowledged by another notary public, and the deposition is now herewith returned.

I further certify that I am neither attorney or counsel for, nor related to, nor employed by, any of the parties to this action in which this deposition is taken; and further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in this action.

Given at my office in the City of Jefferson, County of Cole, State of Missouri, this 4th day of October, 2000. My commission expires March 28, 2001.

KELLENE FEDDERSEN, CSR, RPR
Notary Public, State of Missouri
(Commissioned in Cole County)

COSTS: (Computation of court costs based on payment within 30 days.)
Paid by Attorney for OPC:
Paid by Attorney for St. Joe Light & Power:
Paid by Attorney for Staff of MPSC:
Paid by Attorney for Ag Processing:

From: John Modlin
To: Dwight Svuba
Date: 6/23/00 10:34AM
Subject: Mark V vibration failure

Both GE and SJLP "investigators" believe that the initial vibration trip on Turbine 4 was mostl likely caused by a false indication.

We need to look at the Mark V for why this may have occurred. We (SJLP) were not able to recreate the vibration spike in a simulation (using only one other probe).

I think we need to bring in either GE or a third party (or both?) to investigate the Mark V. We need to verify wiring, grounds, hardware condition, software logic, etc.

Please let me know how you would like me to proceed.

John

CC: John Modlin; Mike Ceglenski; Mike Smith

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JM-1
EXHIBIT
10-4-00 H

Deposition Exhibit JM-2 is attached to Kumar Rebuttal as H.C. Schedule JK-10

Sega®

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July 6, 2000

JM-3
EXHIBIT
10-4-00 KK

St. Joseph Light & Power Company
Lake Road Plant
P.O. Box 998
St. Joseph, MO 64502-0998

Attention: Mr. John Modlin

Re: St. Joseph Light & Power Company
Lake Road Plant
Turbine 4 Engineering Analysis
Sega Project No. 00-194

SUBJECT: DC EMERGENCY BEARING AND SEAL OIL PUMP ENGINEERING ANALYSIS

Dear Mr. Modlin:

Sega was asked to perform two (2) tasks by St. Joseph Light & Power Company (SJL&P). Task 1 was to determine if the wiring and function of the DC emergency bearing and seal oil pump for Turbine 4 are as shown on marked Drawings K-1 and K-1A, Rev. 0, as provided by SJL&P . These drawings were part of a set marked "Mark V Retrofit, Engineering Services, GE Co." Task 2 was to describe the distributed control system (DCS) logic for the pump as shown on Drawing B6MCSA3A as provided by SJL&P. Copies of these drawings are attached with this letter.

Task 1

On June 15, 2000, Sega observed SJL&P personnel perform continuity checks on all wiring shown on Drawing K-1A. Sega believes that Drawing K-1A accurately represents the wiring of the pump.

With the pump motor leads disconnected, Sega observed SJL&P personnel place the pump in the automatic state with the DCS. With the pump in automatic, the motor starter contactor was energized.

Sega then observed SJL&P personnel put the pump in the off state with the DCS. With the pump in the off state, the motor starter contactor was de-energized.

HIGHLY CONFIDEN

RECEIVED
JUL 7 2000
LAKE ROAD

Sega Inc.
16041 FOSTER
P.O. BOX 1000
STILWELL, KANSAS 66085-1000
PHONE 913-88[illegible]-288[illegible]
FAX 913-88[illegible]-347[illegible]

Sega next observed SJL&P personnel put the pump in the on state with the DCS. With the pump in the on state, the motor starter contactor was energized.

Sega lastly observed SJL&P personnel return the pump to the off state with the DCS. With the pump returned to the off state, the motor starter contactor was de-energized.

Sega believes that Drawing K-1 accurately represents the electrical and control function of the pump.

Sega also observed that input 6-ZSO-1160 (Pump Not Running) was present at termination Unit 3-3A, but not present at the module level. This was found while observing the I/O with monitor/tuning at the engineering work station. The impact of the absence of this signal at the module level is described later in this letter.

Task 2

On June 19, 2000, Sega reviewed the DCS logic. The following paragraphs describe the DCS logic including the multi-state device driver (MSDD) and all supporting control logic.

The MSDD is designed for manual mode only, requiring the control room operator (operator) to select the desired output. There is no other means of manipulating the outputs of the MSDD other than the override logic described later.

The three outputs associated with the MSDD are start, auto, and stop. When the operator selects a particular output, it is set (memorized) in logic, and the other two outputs are reset to logic zero. This is done using set/reset latches. Any output may be selected at any time by the operator. The only way to reset a selected output is for the operator to select a different output, or for the module to be taken out of execute mode which will reset all outputs to logic zero.

The override logic of the MSDD is executed when either the operator depresses the Auto/Man key on the keyboard or when the MSDD feedback masks do not match the corresponding output mask within 60 seconds. If either of these conditions occur, the MSDD will be overridden, remain in the manual mode, and all MSDD outputs will be set to the default output mask. The default output mask is logic zero for all three MSDD outputs. The following feedback/output mask conditions will activate the override logic:

1. A stop has been requested by the operator, and the running signal does not go to a logic zero and/or the not running signal does not go to a logic one.

2. A start has been requested by the operator, and the running signal does not go to a logic one and/or the not running signal does not go to a logic zero.

The start output is sent through a five-second time delay before going through an AND block along with the not running signal to generate a "TRIPPED" alarm. This will alarm the operator that the pump has tripped only after a start from the DCS was given.

6-ZSO-1160

Sega was also asked to investigate the function of input 6-ZSO-1160 by SJL&P on June 23, 2000. Sega reviewed graphic TURBINE.DR and the exception reports from logic sheet B6MCSA3A and determined that the absence of 6-ZSO-1160 at the module level would have generated an MSDD alarm sixty seconds after a pump-stop command was given by the control room operator. Sega also determined that the absence of 6-ZSO-1160 would not affect the starting/stopping of the pump, or the indication of running/not running at the console.

If you have any questions or comments, please call.

Sincerely,

SEGA INC.

Frederick R. Tolman

Frederick R. Tolman, P.E.

Homer Clark

Homer Clark, P.E.

FRT/sc

Enc. 3

c: Dick Sands
Jorge Carballeira
Bob Tolman

Deposition Exhibit JM-4 is attached to Kumar Rebuttal as Schedule JK-2.

Deposition Exhibit JM-5 is attached to Kumar Rebuttal as Schedule JK-1.

June 7, 2000

Interviewee: Bill White, Shift Supervisor
(Hire date 10/14/70; current classification since 5/1/86)

Subject: Turbine Generator #4 Occurrence on June 7, 2000.

Q. What exactly happened in your opinion?

A. I was in my office, Scott Hinkle came in to relieve me, and we heard the safeties lift on the boiler. We immediately went to the control room and determined the unit had tripped. While trying to determine what had happened, I sent Danny Kukuc to the F.D. fan to verify it had tripped. At about the time he left the control room, we heard an explosion. Danny came back into the control room through the NE door and yelled, "the generator is on fire." At approximately the same time, Lance Brumbaugh had come into the control room and said #5 bearing was smoking. I started towards the unit going through my office, when I heard a second explosion. I went on out to the unit and saw that the commutator rings and that the generator around the #5 bearing area was on fire. Fire was also shooting up through generator gratings. I ran over and grabbed a Halon fire extinguisher went back over and tried to put out, with no affect. That's when I called Danny Kukuc on the radio and told him to get the hydrogen secured on the unit. Went back into the control room told them to call the fire dept., which I believe they had already done. We determined the fire was serious and could get out of control, so we decided to evacuate the plant. Then I went back out to the unit, and was going down to the other end of the unit to try to assess other fires on the other end and at that time, I noticed that the bearings were smoking. That's when I believe that Scott arrived and I told Scott that I thought we should secure all sources of flammable material. So, we decided to shut down lube oil and hydraulic oil to the unit. So, we proceeded over to the motor control centers and pulled breakers on oil pumps and hydraulic pumps. Then at that time, I think we basically tried to regroup and went back to the control room to make sure everyone was evacuated. Estimate that 3 minutes had gone by at this time. I went back out to the unit, and saw that the fire was dissipating, so I thought to myself that the hydrogen source was about burned up, at that time, the fire was a lot smaller on the #5 bearing and commutator ring area, and there was also a small fire around #3 and 4 bearings, that I determined was oil. I got another dry chemical fire extinguisher and was able to put out the fires. By that time, Scott arrived again and grabbed another fire extinguisher and helped put it out. I think I remarked to Scott that the unit seemed to me like the unit was still rolling under power. The vibration on the unit was extremely severe and I saw the turbine shaft was still turning extremely fast. The noise from the unit sounded steady and like it was continuing to run under external power. It did not sound like the speed was decreasing and the unit was rolling down. I ran into the control room and told the head operator to call up the turbine overview screen to verify the stop and reheat valves were closed. The indication on the screen showed they were. I ran back out to the unit and determined from the extreme vibration and speed of the unit, that steam was still somehow entering the turbine. At that time, I called Danny Kukuc on the radio and told him to go to the hydraulic set and open the dump valve. At about the same time, he told me he opened it; the unit came to a complete abrupt stop. The unit was vibrating so severely, that I was afraid that it was going to completely destroy itself.

Signed: W J White

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JM-6
EXHIBIT
10-11-00 KF

June 7, 2000

Interviewee: Luke Hinkle, Instrument Technician Gr. 3
(Hire date 11/15/99; current classification since this date)

Subject: Turbine Generator #4 Occurrence on June 7, 2000.

Q. What happened in your opinion?

A. I was in the training room and heard a weird blow-off noise that sounded odd and the sound went on for 30 seconds or more. Then I heard what sounded like an explosion. I rushed to the door and saw flames coming from the generator end of the turbine. I then evacuated the building.

Q. Did you hear the hydraulics dump when the turbine tripped?

A. No.

Q. Are you familiar with the sound of the turbine tripping?

A. Yes. We've tripped it numerous times on different dates during testing of the Mark V control system.

Signed:

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JM-7
EXHIBIT
10-4-00 SS

Deposition Exhibit JM-8 is attached to Kumar Rebuttal as Schedule JK-3.

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Lake Road Unit 4 Turbine Generator Occurrence, June 7, 2000
No. 5 Bearing Troubleshooting Steps Leading up to Occurrence

The following outlines background information and troubleshooting steps performed by Steve Alexander (General Electric) and Lance Brumbaugh (SJLP) with regard to No. 5 bearing prior to the 6/7/00 turbine trip.

When the unit was rolled on about June 2, it was noted that the no. 5 bearing vibration proximity probes had diagnostic alarms. After start-up, Steve Alexander indicated that the X probe appeared to read okay, but that the Y probe had apparently failed and was showing 0 mils vibration (slightly positive voltage from proximitor, indicating "zero" gap). Voltage measurements (before start-up) indicated both X and Y probe gaps were smaller than Bently Nevada (BNC) settings, so we first suspected that the probe was damaged during roll up (possibly due to vibration through a critical). On Monday, June 5 John Modlin discussed the issue with Matt Mangus of BNC. Matt doubted that the bearing actually experienced enough vibration to damage the probe, but sent out a replacement probe to install at first opportunity.

We decided to check the 5Y proximitor (signal conditioning device between probe and Mark V). This work began late in the morning on 6/7/00.

Prior to troubleshooting, the X probe was reading about 1.5 mils and the Y probe was reading 0 (see Mark V trip log).

- Steve Alexander forced the bearing #5 trips to "0", so the unit would not trip due to troubleshooting activities.
- Lance switched probe cables, connecting the X probe into the Y proximitor and the Y probe into the X proximitor. After the switch: Y probe showed good via the X proximitor, X probe showed bad via Y proximitor. This made the Y proximitor suspect.
- Performed the following checks on Y proximitor:
  - Checked terminal potentials, showed –24V DC on all three terminals to local ground
  - Pulled 3 wires loose at proximitor and checked for potentials from Mark V: –24V DC on V- wire only, common and signal wires had 0V to ground - therefore, thought proximitor was bad.
- Lance contacted John Modlin, who called Matt Mangus, John added Lance to the call:
  - Matt suspected that the wiring between Mark V and proximitor may be incorrect, so he asked us to switch Mark V cables between proximitors.
- Before moving wires, Lance checked the 5Y proximitor wires to Mark V:
  - Expected: Red: Power (V-) / White: Signal / Black: Common / (on both ends)
    Found: Red: Power (V-) / White: Common / Black: Signal / (on Mark V end only, proximitor end was as expected)

JM-9
EXHIBIT
10-4-00 KF

- Instead of switching black & white in cabinet (risk of trip), reversed black & white in field (BN junction box)
- After switch, Steve Alexander stated that he had a signal momentarily, then lost it. He suggested that Lance double check wiring.
- Rechecked voltage on signal wire and was still showing a small positive voltage to common – thought proximitor still bad?
- Then checked connections at proximitor, the black (signal wire) was loose, it pulled out.
- Lance put the wire back about the same time as he sensed problems with the unit. This wire was found to be loose when checked after the trip on 6/13/00.

Deposition Exhibit JM-10 is attached to Kumar Rebuttal as Schedule JK-8.

Deposition Exhibit JM-11 is attached to Kumar Rebuttal as Schedule JK-4.

Deposition Exhibit JM-12 is attached to Kumar Rebuttal as Schedule JK-9.

Deposition Exhibit JM-13 is attached to Kumar Rebuttal as H.C. Schedule JK-5.

Deposition Exhibit JM-14 is attached to Kumar Rebuttal as Schedule JK-7.

This portion of Schedule JK-11 has been designated highly confidential by SJLP.