COPY

STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

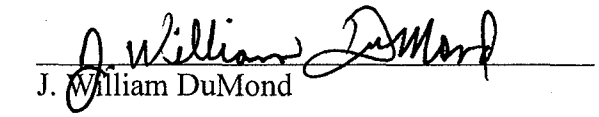
APPLICATION OF DUKE ENERGY INDIANA, INC. FOR APPROVAL OF A CHANGE IN ITS FUEL COST ADJUSTMENT FOR ELECTRIC SERVICE, FOR APPROVAL OF A CHANGE IN ITS FUEL COST ADJUSTMENT FOR HIGH PRESSURE STEAM SERVICE, AND TO UPDATE MONTHLY BENCHMARKS FOR CALCULATION OF PURCHASED POWER COSTS IN ACCORDANCE WITH INDIANA CODE § 8-1-2-42, AND INDIANA CODE § 8-1-2-42.3 AND VARIOUS ORDERS OF THE INDIANA UTILITY REGULATORY COMMISSION	)	FILED MAR 0 6 2009 INDIANA UTILITY REGULATORY COMMISSION CAUSE NO. 38707 FAC76 S1 APPROVED:

DUKE ENERGY INDIANA, INC.'S SUBMITTAL OF PROPOSED ORDER

Duke Energy Indiana, Inc. ("Duke Energy Indiana"), by counsel, respectfully submits its Proposed Order in the above referenced cause to the Indiana Utility Regulatory Commission. For purposes of convenience, a copy of Duke Energy Indiana's Proposed Order is being sent by electronic mail to the presiding Administrative Law Judge, counsel for the Indiana Office of Utility Consumer Counselor, and Intervenors.

Respectfully submitted,

DUKE ENERGY INDIANA, INC.



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CERTIFICATE OF SERVICE

The undersigned hereby certifies that copies of the foregoing Duke Energy Indiana, Inc.'s Submittal of Proposed Order and Proposed Order were delivered or mailed, postage prepaid, in the United States mail, this 6th day of March, 2009 to the following:

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BY THE COMMISSION:
David E. Ziegner, Commissioner
Loraine L. Seyfried, Administrative Law Judge

On April 24, 2008, pursuant to Ind. Code §§ 8-1-2-42 and 8-1-2-42.3 and various Orders of the Indiana Utility Regulatory Commission ("Commission"), Duke Energy Indiana, Inc. ("Duke Energy Indiana" or "Company") filed with the Commission an Application in Cause No. 38707 FAC 76, for approval of a change in its fuel cost adjustment for electric service, approval of a change in its fuel cost adjustment for steam service, and an update of monthly benchmarks. On April 29, 2008, the Duke Energy Indiana Industrial Group ("Industrials") filed a Petition to Intervene that was subsequently granted. On April 30, 2008, Nucor Steel, a Division of Nucor Corporation, ("Nucor") also filed a Petition to Intervene that was subsequently granted.

As part of its case in chief in Cause No. 38707 FAC 76, Duke Energy Indiana presented testimony describing the impact on fuel costs of a forced outage commencing on January 20, 2008 and lasting 66 days at Duke Energy Indiana's Gibson

Station Unit 4. On June 13, 2008, the Industrials filed a motion requesting the Commission to initiate a subdocket for the purpose of investigating the Gibson Unit 4 forced outage and its impact on the Company's fuel costs. Nucor joined the Industrials' motion. In our order of June 25, 2008, in Cause No. 38707 FAC 76, we granted the motion for a subdocket as it related to the Gibson Unit 4 outage, but allowed the Company to collect the related fuel cost revenues on an interim basis subject to the outcome of this subdocket and the outcome of the subdocket in Cause No. 38707 FAC 68S1[1]. See Cause No. 38707 FAC76 (June 25, 2008), p. 4. and Ordering Paragraph 4 at p. 13.[2]

Pursuant to proper notice of hearing, published as required by law, proof of which was incorporated into the record by reference, a public evidentiary hearing was held in this cause on January 27, 2009, in Conference Center Room 222 of the Indiana Government Center South, Indianapolis, Indiana. Duke Energy Indiana offered into evidence the testimonies and exhibits of Mr. Donald J. Steinmetz, Mr. Donald E. Faulkner, Mr. Barry E. Pulskamp, and Mr. Scott A. Burnside. The Industrials offered the testimony and exhibits of James R. Dauphinais. Duke Energy Indiana then offered the rebuttal testimonies and exhibits of Mr. Faulkner, Mr. Pulskamp and Mr. Ronald G. Halpern. All pre-filed testimonies and exhibits, as corrected at the hearing, were admitted into evidence without objection. All witnesses on behalf of the Company, except Mr. Burnside, were

[1] As we note later in this order, the subdocket in Cause No. 38707 FAC 68S1 was resolved in our order of June 25, 2008.

[2] The FAC 76 three month reconciliation period ended February 28, 2008. The Gibson Unit 4 outage commenced January 20, 2008 and ended March 26, 2008, when Gibson Unit 4 was returned to service. The fuel cost impact for March, 2008 was not reflected in FAC 76. Accordingly, the Commission order of September 24, 2008 in Cause No. 38707 FAC 77 permitted the Company to collect the proposed FAC factors on an interim basis, subject to the outcome of this subdocket proceeding. See Cause No. 38707 FAC 77 (September 24, 2008), pp. 11-12.

cross examined. No member of the general public appeared or participated in the hearing. Based on applicable law and the evidence herein, the Commission finds:

1. **Commission Jurisdiction and Notice.** Due, legal and timely notice of the Hearing in this Cause was given as required by law. Duke Energy Indiana is a public utility within the meaning of Ind. Code § 8-1-2, *et seq.*, as amended, and is subject to the jurisdiction of the Commission in the manner and to the extent provided by the laws of the State of Indiana. Therefore, the Commission has jurisdiction over the parties and the subject matter of this cause.

2. **Duke Energy Indiana's Characteristics.** Duke Energy Indiana is a public utility corporation organized and existing under the laws of the State of Indiana with its principal office in Plainfield, Indiana, as a wholly owned subsidiary of Duke Energy Corporation. Duke Energy Indiana is engaged in rendering electric utility service in the State of Indiana. The Company owns, operates, manages, and controls, among other things, plant and equipment within the State of Indiana used for the production, transmission, delivery and furnishing of such service to the public. The Company also renders steam service to one customer, Premier Boxboard Limited LLC.

3. **Duke Energy Indiana's Direct Evidence.** Mr. Donald Steinmetz, Manager of Regulated Generation Compliance and Protective Services (and Technical Manager of the Gibson Generating Station at the time of and prior to the Gibson Unit 4 outage), described Gibson Station as a five unit generating facility that was built and placed into service between 1975 and 1982. All of the Gibson Station generators are water/hydrogen design generators. With this design, the water flows through strands of the stator providing cooling to the stator windings. The hydrogen flows through the stator body

and through the field (rotor) of the generator providing cooling to those parts of the generator. The fundamental purpose of the stator bars is to form the winding around the rotor to collect the magnetic forces from the rotating shaft to generate electricity. There are two types of stator bars in a generator – 42 top stator bars and 42 bottom bars.

Mr. Steinmetz testified that Gibson Unit 4 tripped off-line on Sunday, January 20, 2008. Several Duke Energy Indiana employees as well as GE personnel were on-site Monday, January 21, 2008 for the initial inspection. By Tuesday, January 22, 2008, the upper half of the generator end bell was removed, which allowed limited access to the failure area. Mr. Steinmetz said that initial findings during visual inspections at that time showed considerable damage to the two phase connections attached to the stator bars T8 and B24, as well as contamination in the field. The generator was then disassembled and further inspections made.

Mr. Steinmetz summarized the damage to Gibson Unit 4: (1) two top bars, T8 and T9, along with bottom bar B24, were damaged to the extent of requiring replacement; (2) the stator cooling water filled the generator lead box area, soaking and contaminating the three phase and three neutral bushings, requiring their replacement; (3) the generator field (rotor) was contaminated by the vaporizing of copper and insulation from the failed stator, requiring the rotor to be removed and sent to a GE repair shop for disassembly, cleaning and reassembly; (4) the 4B and 4C boiler feed pump turbines were damaged; (5) the turbine #3 bearing was damaged and repaired; (6) the generator hydrogen seals were damaged, requiring removal, repair, and reinstallation; and (7) the main power transformer was tested and one of the three high voltage bushings was found damaged and was replaced.

Mr. Steinmetz stated that by utilizing GE and numerous other contractors, the investigation and repair work continued seven days a week, twenty-four hours a day, until the unit was back on line. According to Mr. Steinmetz, the primary role of Company personnel was to coordinate all of the retained contractors and parts suppliers to insure that the repair work was done in an efficient and timely manner.

Mr. Steinmetz testified that to determine the full extent of the damage to the stator bars (which of the stator bars were damaged and which were salvageable), GE performed a number of electrical, mechanical, and hydraulic tests. The hydraulic integrity test ("HIT") skid tests, consisting of the pressure decay test, vacuum decay test, helium leakage test and capacitance test, were performed to determine the integrity of the liquid cooling system in the stator winding. Electrical tests were also conducted. As a result, it was determined that two top bars and one bottom bar required replacement. To replace the bottom bar, 18 top bars were removed, refurbished and reinstalled. All other stator bars remained in place.

Mr. Steinmetz stated that typically, stator bars must be manufactured and it may take months to receive stator bars from the manufacturer. Duke Energy Indiana determined that its affiliate, Duke Energy Carolina's Cliffside Steam Station, had four stator bars on site that would fit Gibson Unit 4. These stator bars were on-site within three weeks of the failure. Mr. Steinmetz stated that the availability of those stator bars significantly reduced the repair schedule and length of the outage. In his opinion, without these bars, the sixty-six day outage time that actually occurred would have been extended by at least 5 weeks.

Mr. Steinmetz testified that the stator failure was a catastrophic failure, and the root cause of the failure was made undeterminable by the amount of collateral damage. Mr. Steinmetz said that in his opinion the length of this outage was extraordinary in that it only lasted 66 days. Under normal circumstances he said that this outage would have lasted five to six months instead of 66 days. Factors which led to the relative shortness of this outage were the extraordinary efforts of Company personnel and the primary contractors; the availability of the four stator bars from the Cliffside Steam Station which enabled the Company to avoid the production issues that are involved when obtaining new stator bars from the manufacturer; the decision to maintain a 24 hour, 7 day a week schedule; and the ability to coordinate all contracts and necessary supply and parts. In addition, many of the pieces needed to repair the stator connections were fabricated by GE personnel on site from raw materials or they were able to take pieces that had been saved from previous jobs and rework them to fit Gibson Unit 4.

Mr. Steinmetz concluded his testimony by opining that the Company has consistently exercised reasonable inspection and maintenance practices consistent with industry standards with respect to Gibson Unit 4. Mr. Steinmetz said that in his twenty years of experience as a professional engineer at Gibson Station, the safe operation and maintenance of Gibson Station was job one of all station personnel. He noted that from 2000 to January 20, 2008, the longest outage for Gibson Unit 4 was five days. In Mr. Steinmetz' opinion, the maintenance practices at the Gibson Station achieved the appropriate balance between availability, reliability and cost.

Mr. Donald Faulkner, Vice President Fossil Plant of the Belews Creek Steam Station in North Carolina and General Manager of Gibson Station at the time of the Unit 4

outage, testified that GE introduced its generators with water-cooled stator windings in the 1960's. GE began identifying stator winding leaks in its generators in the 1990s. He said that GE has issued Technical Information Letters ("TIL") recommending inspection procedures for potential stator bars leaks, which recommendations have evolved over the years as GE has continued investigating the root cause and solutions for stator bar leaks.

Mr. Faulkner testified that although GE recognizes that the suggested inspections and tests do not guarantee a leak-free winding, GE generally recommended the following tests be performed during both minor and major scheduled outages: (1) visual inspection of the accessible stator components; (2) vacuum decay test; and (3) pressure decay test. In order to perform the visual inspection, at a minimum the end bells of the generator must be removed. To perform the vacuum decay and pressure decay tests, the generator must be removed from service and all water removed from the stator cooling system. In addition to these tests, during major scheduled outages, GE recommended that a helium tracer gas test, stator bar capacitance mapping test, and the wet insulation detector test be conducted. In order to perform these tests, the generator must be disassembled and the rotor removed, which can only occur during a major outage.

Mr. Faulkner testified that prior to the Gibson Unit 4 outage that occurred on January 20, 2008, all of these tests (except the wet insulation detector test which was not available in 2003) were last performed by GE on Unit 4 during the major scheduled outage in the spring of 2003 when an SCR was installed on the Unit. The tests were performed successfully and no indication of leaks or wet insulation in the winding assembly was found.

Mr. Faulkner testified that although there was a minor scheduled outage in 2006 for purposes of conducting a boiler inspection on Unit 4, he approved the recommendation that the Company forego conducting the minor outage tests (visual inspection, vacuum decay test, and pressure decay test) at that time. Mr. Faulkner stated that this decision was based upon the following: (1) Unit 4 had successfully completed and passed these tests, as well as the more extensive and sensitive major outage testing, in 2003; (2) the Company daily monitors and/or inspects the stator system, which gave no indication of any problem or leak; (3) the operation of Unit 4 between 2003 and 2006 gave no indication that there were stator problems; and (4) the minor outage stator tests are not as sensitive as the other major outage tests recommended by GE and small leaks can be missed with these tests. Mr. Faulkner testified that he believes it is more efficient to perform these tests in addition to the more sensitive tests during major outages.

Mr. Faulkner testified that, in his opinion, if the minor outage stator tests (visual inspection, vacuum decay, and pressure decay) had been performed in 2006 on Unit 4, they would not have indicated any leaks. He further testified that oftentimes the Company follows the OEM's suggested testing and maintenance procedures, but certainly not always. The Company bases its testing and maintenance procedures on its decades of experience with the equipment, consideration of the other maintenance and outage schedules, and the desire to keep the units available to produce power to the maximum extent reasonably possible at a reasonable cost.

Mr. Faulkner testified that the Company has also experienced stator bar leaks on other units: Gibson Unit 1 in the spring of 2005 (clip to strand leak of a bottom bar, repaired by epoxy injection), Gibson Unit 3 in the fall of 2006 (top bar was suspected to

have wet insulation and was replaced; water clips on both ends of a bottom bar were sealed with epoxy injection), and Gibson Unit 5 in the spring of 2008 (repaired with epoxy injection). There were no indications that any leaks existed on these units. The leaks were detected during major scheduled outages for turbine overhauls while performing the major stator inspections/tests. All three units passed the vacuum decay and pressure decay tests. The leaks were only detected using the helium tracer gas test and capacitance mapping tests.

Mr. Faulkner testified that the hydrogen pressure in the generator is continually monitored and an alarm will sound in the control room if the pressure drops. If that were to occur, the stator cooling water storage tank vent would be checked for elevated concentrations of hydrogen. Also, liquid level alarm monitors are used and the sight glasses are visually checked daily for indications of water in the generator. Mr. Faulkner testified that these systems were monitored for Unit 4 and there was no indication of a potential stator bar leak in the months, weeks and days leading up to the failure.

Mr. Faulkner further testified that after the first Gibson Station stator leak was detected on Unit 1 in 2005, the Company did not implement any changes to the way in which it monitored or tested the stator windings in the other units because this was the first leak ever experienced at Gibson Station in over 130 years of combined unit operating history. After the second stator bar leak was detected in the fall of 2006 on Unit 3, which required the replacement of a stator bar due to wet insulation, the Company initiated a program to rewind all of the stator windings in each of the Gibson units over the next several years, beginning with Unit 2 (the oldest unit) in the spring of 2007. After issuing a Request for Proposal and receiving and evaluating bids, the Company contracted with GE in December 2007 to perform the stator rewinds on the remaining units. The stator rewinds

for the remaining Gibson units were scheduled in conjunction with the major outage schedule. No stator rewinds could be scheduled for 2008 because there were no GE manufacturing slots available until 2009. Gibson Unit 4 was the first unit scheduled for stator rewind under the contract, which was scheduled to occur during the planned Unit 4 major outage in the spring of 2009. The Unit 4 rewind was already scheduled at the time of the forced outage in 2008.

Mr. Faulkner testified that in December 2007 the Company installed GE Stator Leak Monitoring Systems ("SLMS") on Gibson Units 1, 3, and 5 (the Unit 5 installation was completed in spring 2008). The SLMS measure the hydrogen content in the stator cooling water and gas flow (similar to the daily inspections conducted by the Company, only automated). Installation of SLMS on Units 2 and 4 was scheduled for 2009. The Company began planning for installation of SLMS on its Gibson Units as early as 2004, but there were problems with the GE model and in 2005 GE discontinued its existing SLMS model and began manufacturing a new model. After the stator bar leak test failure on Unit 3 in the fall of 2006, the Company asked for revised quotes from GE for the new model, which it received in March 2007.

In Mr. Faulkner's opinion, as the General Manager of Gibson Station at the time of the Unit 4 outage, the Company exercised reasonable inspection and maintenance practices with respect to the Gibson Unit 4 generator and generator stator bars prior to the 2008 outage. This opinion is based upon the facts that the Company had no prior history of problems with the Gibson Unit 4 stator bars, Unit 4 had passed all major inspection tests in 2003 and the daily monitoring since that major outage showed no signs of a water leak.

Mr. Pulskamp, Senior Vice President, Regulated Fossil/Hydro Operations, discussed the Company's maintenance practices for the Gibson units. He testified that the objective of the Company's maintenance plan is to optimize the cost, reliability, availability, and efficiency of its generating units over the life of the unit. The Company tries to achieve or exceed industry acceptable levels of unit availability, reliability and efficiency from its generating units at the lowest reasonable cost.

Mr. Pulskamp testified that the Company projects its maintenance program over at least a ten year period, meaning that the Company looks out at the next ten years and begins planning/budgeting out over those years the various capital and maintenance programs that must be done. He said the Company lines out what needs to be done in order to maximize the availability of all the units going forward. The Company then prioritizes maintenance projects so that the projects that provide the greatest return on investment are considered first. He said that the Company utilizes this procedure in an effort to keep its costs affordable for its customers and to maximize the availability of the units, especially in times of peak electric demand.

Mr. Pulskamp further testified that the Company uses a combination of major and minor outages to maintain its generating units. Major outages are scheduled to coincide with turbine and generator overhauls, and other major work since the disassembly and reassembly of the turbine and generators normally require the longest duration for the unit to be out of service. Shorter outages to perform boiler repairs and other work requiring up to three weeks are normally scheduled in between the major outages. According to Mr. Pulskamp, this approach increases the availability of the units for generation purposes with a positive economic impact for the Company's customers. He said that the Company tries

to minimize the total length of time a unit is out of service to optimize the availability of the unit for service. Labor and equipment must be mobilized to support outage work. It is more cost efficient to schedule work to be done simultaneously on the units during scheduled outages.

Mr. Pulskamp also testified that although Duke Energy Indiana certainly considers the OEM recommendations regarding maintenance and possible replacement of equipment, Duke Energy Indiana evaluates the recommendations against other factors (including its own extensive experience for each unit and fleet experience) and makes a reasoned decision as to whether to follow a particular recommendation. According to Mr. Pulskamp, the OEM's recommendation is an important consideration, but it is by no means a conclusive factor. The Company relies upon the expertise of its own personnel with assistance from other experts to make its decisions. Mr. Pulskamp testified that if the Company were to follow all OEM recommendations for each piece of equipment on a generating unit, it would need to remove units from service for several additional weeks each year at a considerable increase in cost and loss of availability of the unit during the additional outage weeks. Mr. Pulskamp stated that the Company believes its maintenance program meets or exceeds industry standards and is customized to Gibson Station based on its vast experience from operating one of the largest generation systems in the United States.

Mr. Pulskamp testified that Gibson Station personnel continually perform a tremendous number of inspections, evaluations and tests, along with repairs and maintenance on Gibson Unit 4 during outages and while operating that unit. He explained that the Company also utilizes various predictive maintenance technologies as well as

preventive maintenance to help prevent in-service failures. As a result, Gibson Unit 4 has been a very reliable unit. He said that for the last five years, each of the Gibson Station units have experienced an equivalent forced outage rate ("EFOR") significantly less than the industry average for similar capacity units. Mr. Pulskamp stated that he believes the reliability of the Gibson Station units is directly attributable to the Company's prudent maintenance practices. In addition, the Company has participated in benchmarking studies, which demonstrate the overall effectiveness of its maintenance practices. Mr. Pulskamp explained that his Exhibit C-1 demonstrates that from 2005 to 2007 the Gibson Units out-performed the peer group in terms of higher availability and lower operating costs, equivalent forced outage rates and net capacity factors. He said that while unexpected outages occasionally occur, he opined that the Company's overall maintenance practices were reasonable and lead to reliability and overall reasonable rates for its customers.

Mr. Pulskamp also testified that the catastrophic failure that occurred on Gibson Unit 4 was unprecedented in the United States. Moreover, it was not representative of a typical stator bar leak. Mr. Pulskamp believed that this failure was unique and could not have been predicted with the tests recommended in GE's TILs for minor outages. The inability to predict a catastrophic failure, such as occurred here, does not indicate any imprudent management with regard to the maintenance on Gibson Unit 4.

Mr. Burnside, Lead Accounting Analyst, testified regarding the cost impact of the Unit 4 outage. Mr. Burnside testified that his analysis was based upon a number of conservative assumptions and showed an estimated increase in native load fuel costs during the month of January of $4.3 Million, February of $7.8 Million, and March $13.4 Million –

for a total estimate of about $25.5 Million. Mr. Burnside explained the assumptions used in the analysis. The assumptions and figures in the analysis were not contested by any party.

4. **Industrials' Direct Testimony**. Industrials sponsored the direct testimony of James R. Dauphinais, a consultant employed by the firm of Brubaker and Associates. Mr. Dauphinais began his testimony by stating that on January 20, 2008, at approximately 3:42 P.M., Gibson Unit 4 experienced a catastrophic failure of its generator stator and tripped off-line. He said Mr. Steinmetz indicated that the exact cause of the failure of the Gibson Unit 4 generator stator could not be determined due to the extensive damage that occurred. However, citing Duke Energy Indiana's facility/generation station incident report and February 5, 2008 insurance adjuster's report of the M.G. Thomas & Associates, Inc., Mr. Dauphinais opined that it was "abundantly clear" that it was "very likely" the Gibson Unit 4 stator had an undetected water leak that caused the catastrophic failure.

Mr. Dauphinais went on to opine that the Company's actions with regard to the detection of water leaks at Gibson Unit 4 were not prudent in that the Company did not conduct the vacuum and pressure decay tests on the Unit 4 stator bars at the time of the Unit 4 boiler outage in 2006. He said prudency addresses the reasonableness of the actions taken based on the information known or knowable at the time that the decision was made. He said that the reasonableness of the utility's actions should be judged in light of the circumstances and facts known or knowable at the time the decision was made. He also stated that prudence does not permit a "hindsight" review of the actions taken.

Mr. Dauphinais then went on to present his view of what was known or knowable to Duke with regard to the risks of stator failures and how they could be

minimized by taking reasonable measures to detect water leaks. He first cited GE's TIL 1447-2 and GE's document "Understanding, Diagnosing and Repairing Leaks in Water Cooled Generator Stator Windings". He said these two documents indicate that it was known or knowable by Duke Energy Indiana that the likelihood of a catastrophic stator failure could be minimized by strict adherence to the recommended on-line monitoring and maintenance inspections presented in TIL 1447-2.

Mr. Dauphinais stated that GE recommends during major inspections, all recommended minor inspection tests be done along with a helium tracer gas test and a stator bar capacitance mapping test. He said during minor outages, GE recommends a vacuum decay test and a pressure decay test. He also noted that GE recommended that the stator leak monitoring system ("SLMS") be installed for the purpose of on-line detection of water cooled stator winding leaks. He noted that on-line monitoring may not be able to detect small leaks that can be detected during major and minor inspection testing. He conceded that the minor inspection tests (vacuum decay and pressure decay) are less sensitive at detecting leaks than the major inspection tests (helium tracer gas and capacitance mapping), but noted that the minor inspection tests have been shown as able to detect approximately half of all water leaks that have been detected through off-line monitoring.

Mr. Dauphinais testified that the major inspections and water leak tests were performed on Gibson Unit 4 in January and February of 2003. He noted that the February 28, 2003 inspection report indicated that Gibson Unit 4 passed the pressure decay, the vacuum decay and tracer gas tests and that there was no indication of leaks in the winding assembly. He also noted that capacitance mapping was conducted on the stator bar arms and the results of this test were good. He noted there was a maintenance concern regarding

oil contamination that needed to be addressed. He also noted that HIT skid testing at the intervals recommended in GEK103566 and monitoring the system for signs of leak was recommended and that the addition of a SLMS system was the best way for continuing on-line monitoring. He also noted that the 2003 inspection report stated in three separate locations that vacuum and pressure decay tests should be performed as part of a regular maintenance program. He said this repetition was a sign of the concern that GE had with regard to strict conformance with TIL 1447-2.

Mr. Dauphinais stated that the minor inspection tests (vacuum and pressure decay tests) were last performed prior to the January 20, 2008 failure in January and February of 2003. He noted that approximately 59 months had passed between when these tests were performed and the January 20 catastrophic failure. He stated that this interval was nearly twice the amount of time (30 months) GE recommends for repetition of the minor inspection tests as contained in TIL 1447-2. Mr. Dauphinais said Gibson Unit 4 underwent a scheduled outage during March 25, 2006 to April 17, 2006, but Duke Energy Indiana chose not to perform the minor inspection tests even though Gibson Unit 4's next scheduled outage was not planned to occur until 2009, at least 61 months after the last performance of the major and minor inspection tests in 2003. He said Duke Energy Indiana has conceded that the minor inspection tests could have been performed during the 2006 scheduled outage.

Mr. Dauphinais noted that on or about February 5, 2005, a little over a year before the planned 2006 scheduled outage for Gibson Unit 4, Duke Energy Indiana discovered a stator bar water leak during a major scheduled outage of Gibson Unit 1. He said this leak was identified by the helium tracer gas test, one of the major inspection tests

recommended in TIL 1447-2. He noted this was the first stator water leak ever detected by Duke Energy Indiana on one of its Gibson generating units and in his opinion, this detection should have triggered three actions. First, Duke Energy Indiana should have immediately reviewed its practices for on-line monitoring for water leaks and brought such monitoring practice up to the minimum recommendations of GE to the extent that Duke Energy Indiana did not already conform to those recommendations. Second, Duke Energy Indiana should have reviewed its scheduled outage plans for all of GE's water-cooled generators to insure that the work plans for those outages conformed to maintenance test recommendations of TIL 1447-2. Third, in the review of its plan Duke Energy Indiana would have discovered, according to Mr. Dauphinais, that GE's minor inspection test recommendations were not being followed and that the intervals between major inspection tests would be significantly exceeded. He said given this and other factors, Duke Energy Indiana should have given serious consideration of performing the major inspection tests in addition to adding the minor inspection tests to the then upcoming 2006 scheduled outage for Gibson Unit 4. He said Duke Energy Indiana's responses to data requests indicate that it did not undertake to review any of its maintenance practices after the leak on Gibson Unit 1 was discovered.

Mr. Dauphinais then went on to discuss Mr. Faulkner's opinion that because the Gibson Unit 1 water leak was the first leak ever experienced at the Gibson station, Mr. Faulkner did not believe there was a need for a change in testing. Mr. Dauphinais believes such a conclusion is unreasonable. He said the indication of a stator water leak at Gibson Unit 1 should have been seen as a leading indicator of possible water leak issues developing on the remaining four Gibson generating units. He said GE's TIL 1447-2 clearly shows the likelihood of a stator water leak increases with age.

Mr. Dauphinais also opined that the Company's position that since Gibson Unit 4 passed the major inspection tests three years earlier, there was a reasonable basis for postponing the minor inspection tests to the planned scheduled major outage for 2009, did not conform to GE's recommendations that the minor inspection tests be performed every 30 months. He said this position also leaves the stator untested for water leaks for at least 71 months which is longer than the 60 month interval recommended between major inspection tasks. He said that Duke Energy Indiana has not produced any analysis that was performed to determine whether the Company could reasonably skip performing the recommended minor inspection tests nor has it produced any correspondence or meeting minutes documenting there was adequate peer review of the decision to skip the tests.

Mr. Dauphinais stated that it appeared the Company conformed to the GE TIL 1447-2 recommendations for on-line monitoring except in regard to installation of the SLMS, which he said is more sensitive at detecting water leaks than other on-line monitoring that is performed. Mr. Dauphinais said the Company did not aggressively pursue installation of SLMS until after the identification of a water leak on Gibson Unit 1 in 2005. Due to the complicating factor identified by the Company of GE discontinuing its earlier SLMS model, Mr. Dauphinais stated he was not able to make a determination in regard to the adequacy of Duke's on-line monitoring for water leaks prior to the January 20, 2008 Gibson Unit 4 outage. He noted that Duke Energy Indiana confirmed that on-line monitoring did not reveal any problem with Gibson Unit 1 prior to the failure of the major inspection tests. He said GE considers on-line monitoring, minor inspection tests and major inspection testing to be complimentary of each other and that all three are needed. Mr. Dauphinais opined it was not reasonable to skip minor inspection tests between major

outages unless an analysis had been performed that clearly demonstrated that such tests were ineffective and that that analysis has been subject to at least internal peer review. He stated that Duke Energy Indiana did not take either of these steps. Mr. Dauphinais concluded that Duke Energy Indiana's failure to conduct the recommended minor inspection tests during the 2006 scheduled outage was imprudent.

Based on a review of Mr. Steinmetz' testimony, Mr. Dauphinais stated that the efforts by Duke Energy Indiana's personnel with regard to returning Gibson Unit 4 to service appeared extraordinary. He believed that these efforts likely saved Duke Energy Indiana between $25-50 million. However, he said the savings do not absolve Duke Energy Indiana of its imprudence with regard to not adhering to the OEM's testing recommendations.

Mr. Dauphinais concluded his testimony with a recommendation that the Commission deny recovery of the estimated $25.5 million of net replacement power costs.

5. **Duke Energy Indiana's Rebuttal Testimony**. The Company sponsored the rebuttal testimonies and exhibits of Mr. Faulkner, Mr. Pulskamp and Mr. Ronald A. Halpern.

Mr. Faulkner disagreed with Mr. Dauphinais' contention that the Company should have performed the pressure and vacuum decay tests during the 2006 minor boiler outage for the following reasons: (1) Gibson Unit 4 had passed successfully the extensive stator testing in 2003; (2) leading up to the 2006 boiler outage, there was absolutely no indication of any leak from daily monitoring of hydrogen pressure and water gauges, or from the operation of the unit; (3) at the time of the 2006 minor boiler outage Gibson Station had only detected one stator bar leak (Unit 1) during the entire 130 year operating

history of the five Gibson units; (4) the Unit 1 stator leak in 2005 was discovered by performing the more sensitive helium tracer gas test, which can only be performed during a major outage, (5) Unit 1 passed both the vacuum and pressure decay tests. Based on this experience, as well as GE information that the vacuum and pressure decay tests are not particularly sensitive, it made sense to do all of the tests during the next major outage. He noted that the Company, at the time of the Gibson Unit 4 minor outage in the spring of 2006, had only detected one stator bar leak during the entire 130 year operating history of the five Gibson Station units. Furthermore, that stator bar leak was discovered during a major outage of Gibson Unit 1 in the spring of 2005. Vacuum and pressure decay tests were performed at that time, as recommended by GE, but all stator bars passed both tests. The leak was only discovered by performing the more sensitive helium tracer gas test, which can only be performed during a major outage. Mr. Faulkner said that given that the Unit 1 stator bar leak was the first to occur at Gibson Station, the fact that Gibson Unit 4 had passed successfully the extensive stator testing during 2003, and the fact that there was no indication from the daily monitoring and inspection of Gibson Unit 4 of any leak, he approved the recommendation that we forego the vacuum and pressure decay tests during the 2006 minor outage.

Mr. Faulkner disagreed with Mr. Dauphinais' hindsight argument that the Company should have given "serious consideration" to running the major inspection tests during the 2006 boiler outage. In order to conduct such tests, Mr. Faulkner testified that the 2006 outage would have been extended by four days, at a cost of approximately $1.5 million. Second, given the long reliable history with the Unit 4 stator bars and the fact they

had no indication of any leaks leading up to that outage, Mr. Faulkner saw no reason to disassemble Unit 4 to conduct the tests.

Mr. Faulkner testified that the GE investigation into the Gibson Unit 4 outage confirmed his decision not to perform the vacuum and pressure decay tests in 2006. As part of GE's investigation into the extent of the damage to Unit 4, GE plugged the open fittings to pressurize the windings after removing the damaged hose. The remaining winding (including the damaged bars) passed all of the stator tests (including the vacuum and pressure decay tests, as well as the more sensitive tests). Since it passed these tests at the time it was being inspected in 2008, Mr. Faulkner opined that the test results would have been the same if they had been performed in 2006. In Mr. Faulkner's opinion, not performing these tests during the 2006 minor outage was a reasonable and prudent decision.

Mr. Faulkner testified that Mr. Dauphinais placed too much reliance on the Company's incident report in concluding that the likely cause of the 2008 failure was an undetected stator bar water leak. This was a preliminary incident report circulated only two days after the failure, with the final incident report circulated only five days after the failure. This was well in advance of any investigation or testing by GE or Company personnel as to the cause of the failure.

Mr. Faulkner testified that Mr. Dauphinais' suggestion that the Company should have acted more aggressively in purchasing and installing the SLMS on its Gibson units was unfounded based upon the facts that the industry was well aware of the problems with the data generated by the SLMS technology, that GE was continuing to refine the system to produce more consistent, dependable data, and that it was not until 2005 that Gibson Station experienced its first stator leak. After the second stator bar leak was

detected on Gibson Unit 3 in 2006, Mr. Faulkner noted that the Company decided to begin installing SLMS on all of its Gibson units. It was not until 2007 that the Company was advised that GE had a new, more sensitive, SLMS model available for purchase. By December 2007, the SLMS was installed and in service for Gibson Units 1 and 3, with Unit 5 completed in March 2008. Faulkner also testified that the SLMS will be installed on the remaining two Gibson units during planned outages in 2009.

Mr. Faulkner disagreed with Mr. Dauphinais' position that the Company should have strictly adhered to a 30-month and 60-month maintenance schedule for Gibson Unit 4. Mr. Faulkner explained that this maintenance standard for generator leak testing ignores the technology that has become available to the electric industry and ignores the fact that the utility industry has extended maintenance beyond the timeframes recommended by GE 40 years ago. With the evolution of technology, Mr. Faulkner testified that the industry has evolved from a strictly preventative maintenance standard predicated solely on the calendar to a condition-based (predictive) maintenance standard which utilizes equipment performance data, operating condition data, vibration data, and test analyses to determine whether there has been a degradation of equipment inside a generating station and the need for maintenance. In Mr. Faulkner's opinion, Mr. Dauphinais ignores this industry evolution. Mr. Faulkner testified that the six year period between the Gibson Unit 4 spring 2003 major outage and the planned 2009 major outage is well within industry standards. Mr. Faulkner used the on-line flux probe test as an example of conditioned based maintenance that has evolved due to technology.

Mr. Faulkner also provided an example of another GE recommended maintenance procedure that the Company does not strictly follow. The example given was

the GE daily turbine main steam stop valve test, which, if performed on all five of the Gibson units as recommended by GE, would result in a daily 250 megawatt derate at Gibson Station. Therefore, after an engineering review of this procedure, the Company changed the frequency for this test from daily to weekly. As a result, this change has given the Company the same reliability in the operation of the stop valves and has reduced the derates taken weekly by 1500 megawatt-hours per week, thereby producing significant savings for customers.

A second example provided by Mr. Faulkner involved the 1986 GE recommendation for replacing large steam turbine generator retaining rings. Although GE recommended the rings be tested and replaced no longer than six years after the recommendation letter was issued, Mr. Faulkner explained that the Company, after reviewing the cost and duration required for performing inspection and/or replacement of the retaining rings as recommended by GE, chose to stock the retaining rings and replace them over a period from 2001 to 2008 in conjunction with other planned work for the generator field. In Mr. Faulkner's opinion, this reduced the expense of removing the rings, purchasing new insulating materials, and refurbishing components reused when reinstalling the retaining rings.

Mr. Faulkner dismissed the issue raised by Mr. Dauphinais of oil found in the generator during the 2003 Unit 4 major outage inspection. He responded that there is oil in every machine to varying degrees and it is not an issue unless it is excessive. Mr. Faulkner explained that the Company did not file testimony on this issue in its case in chief because the stator winding oil leak mentioned in the GE report referenced by Mr.

Dauphinais was actually resolved during the same outage in 2003. In addition, this issue had nothing to do with the stator bar failure because oil cannot cause a stator coolant leak.

Mr. Faulkner testified that Mr. Dauphinais overlooked the actual testing history of the Gibson Station units in his conclusion that the Company should have performed the vacuum and pressure decay tests during the 2006 Unit 4 boiler outage. Mr. Faulkner testified that all stator tests conducted on the Gibson units have historically passed these tests, even those units which actually had leaks (Units 1, 3 and 5). Further, Mr. Dauphinais did not acknowledge that in-service failures of GE water-cooled generators are extremely rare. The Gibson forced outage was the first domestic unit to trip off-line due to a stator bar failure.

Mr. Faulkner testified that he is convinced that even had the vacuum and pressure decay tests been conducted in 2006 during the minor outage, Gibson Unit 4 would have passed these tests. In his opinion, Mr. Dauphinais' erroneous conclusion that the Company was imprudent by failing to perform these tests is of no consequence with respect to whether or not the January 2008 forced outage would have occurred.

In his rebuttal testimony, Mr. Pulskamp testified that when an OEM makes a recommendation regarding repair, maintenance or replacement, the Company must evaluate that recommendation against many factors, including: (1) the fact that Gibson is a very large and complex generating unit that has thousands of pieces of equipment and components and therefore a corresponding amount of OEM recommendations; (2) maintaining high availability of its units at the lowest reasonable cost, consistent with good utility practice; and (3) taking into consideration the operating history of the unit and the

expertise and judgment of the Company's personnel and other experts. In Mr. Pulskamp's opinion, Mr. Dauphinais ignored these balancing factors.

Mr. Pulskamp testified that the Company's maintenance practices have resulted not only in Gibson Unit 4 being a low cost unit with a high rate of availability, but also have resulted in the overall low cost and high availability of all the Gibson Station units.

Mr. Pulskamp also testified that Mr. Dauphinais ignored the evolution of maintenance practices, and that strict adherence to GE's recommended 30 and 60 month outage interval is unreasonable in that such strict adherence would mean lower overall availability of the Gibson units due to planned outages, with no overall improvement in the amount of time the Gibson units are off-line due to unplanned outages. Mr. Pulskamp stated that due to new technology and increased experience of station personnel with the equipment, the electric utility industry has begun utilizing predictive maintenance procedures rather than strictly preventive maintenance. By utilizing increased intervals between outages, the units have increased availability with lower costs to the customers. Mr. Pulskamp stated that all maintenance procedures utilized by the Company on Gibson Unit 4 were reasonable, appropriate, timely and consistent with good utility practice. Therefore, he believed no imprudence on the Company's part was demonstrated by Mr. Dauphinais.

Mr. Pulskamp generally agreed with Mr. Dauphinais' comments about what constitutes imprudence except that a fact or matter must be "reasonably knowable" not just "knowable" before the failure to discover the fact or matter could be viewed as imprudent. Further, he testified that Mr. Dauphinais' was employing a "hindsight" review by claiming

that the Company was imprudent by not performing the pressure and vacuum decay test on Unit 4 during the minor outage in 2006. After a particular part on a particular generating unit fails, one can second guess maintenance decisions. Mr. Pulskamp's team was responsible for thousands of maintenance decisions on a yearly basis and was charged with making those decisions by balancing the risks of failure, the cost of maintenance, and the length of the required outage. Based upon the information the Company had at the time the decision was made not to conduct the vacuum and pressure decay tests on Unit 4 in 2006, Mr. Pulskamp believed the Company definitely was prudent not to take the time and spend the funds required for performing those tests, but instead to rely on the more sensitive and accurate tests that were performed during the previous Unit 4 major outage.

Although the Company was not imprudent, Mr. Pulskamp testified that Mr. Dauphinais' recommendation that customers be credited with the Company's estimated increased fuel costs related to the Unit 4 outage ignored the costs the Company has saved customers by not strictly following OEM recommendations which would increase outages, extend outages, and result in increased costs for customers. Pulskamp testified that the predictive maintenance practices over the past five years have saved customers significant dollars through higher availability of the Company's lowest cost generating units. The Gibson units have proven extremely reliable and low cost in comparison to other generating units, and this is due to the Company's maintenance practices at the station. Mr. Pulskamp said that these benefits have been passed to customers and should not be ignored.

Mr. Halpern, a generator expert and former GE Generator Product Line Manager responsible for GE generators, submitted expert testimony regarding the Unit 4 generator failure. He testified that the GE generators of the type operated at Gibson Station

have experienced stator bar water leaks and the most potentially damaging is the clip to strand leak that occurs over time and saturates the insulation on the stator bar causing it to lose its electrical insulating properties. Gibson has not had such a history of leaks. Mr. Halpern explained that the following types of testing are done to detect stator bar leaks: (1) the most sensitive tests which can only be performed during major outages, are the helium tracer gas test and capacitance mapping test; (2) other, not as sensitive, tests used to detect gross or major leaks are the pressure and vacuum decay tests.

Mr. Halpern testified that the Unit 4 2008 failure occurred at the connections and not at the end of the stator core, which is very unusual and not a typical clip to strand leak. He testified that it was also atypical because the unit tripped electrically due to a phase to phase fault, rather than a stator ground fault which occurs at the end of the core. Mr. Halpern testified that the stator ground fault was present in the case of the only other known in-service failure of a water-cooled generator.

Mr. Halpern explained that generally the first indication of a stator bar leak is increased hydrogen consumption. The Company monitored its hydrogen consumption daily, and there was no indication that Gibson Unit 4 was experiencing a leak.

Mr. Halpern disagreed with Mr. Dauphinais' opinion that based upon the Company's incident report and the insurance adjuster's report, the Unit 4 failure was "very likely" due to a typical stator bar leak. Mr. Halpern testified there was simply not enough factual evidence to support that conclusion. In his opinion, the GE Report issued in the summer of 2008, after the repairs were made to Unit 4, is a better source for forming an opinion as to potential causes of the outage. Mr. Halpern noted that Mr. Dauphinais did not even discuss this report, but instead relied upon the Company's incident report which was

completed within five days of the failure and before GE had an opportunity to do any testing. Likewise, Mr. Dauphinais relied upon the Insurance Adjuster's Report that does not provide any indication as to the thoroughness of the investigation before it was written.

Mr. Halpern testified that although the GE Report indicated that no formal root cause analysis was performed, it did state that when GE temporarily plugged only the two open nipples on the stator pipes after removing the damaged hose, the remaining stator winding passed all HIT skid tests (vacuum decay, pressure decay, capacitance mapping, wet insulation detection and helium tracer gas tests). Mr. Halpern concluded that if the stator winding passed all of these tests, then the failure was not a clip to strand leak, and the only components that could have caused the failure were the teflon hose and stainless elbow – which is very unusual. In addition to reviewing the GE Report, Mr. Halpern testified that he also talked directly to the GE Generator Specialist in charge of the Unit 4 repair and most knowledgeable regarding the failure. Mr. Halpern testified that the GE Generator Specialist stated that he did not see any indication of wet insulation at or near the point of failure and the insulation and putty was not soft – indicating no evidence of long-term exposure to water.

Mr. Halpern concluded that the failure was not due to a water leak at all. Since the failure was not due to a water leak, he further concluded that even if the Company had performed the stator tests recommended by GE for a minor outage such as the 2006 Gibson Unit 4 boiler outage, such tests would not have found any leaks.

Mr. Halpern testified that during his prior employment with GE, he was responsible for articulating the OEM's recommended maintenance practices and inspection schedules to utilities. He also frequently consulted with utilities on both the scope of

inspections and monitoring and how frequently to schedule these activities. In Mr. Halpern's opinion, Mr. Dauphinais' strict adherence to a 30 month (minor) and 60 month (major) maintenance interval standard developed 40 years ago is misplaced and not consistent with current industry practice. Mr. Halpern testified that the GE inspection interval recommendations are a very conservative estimate and guideline - not based on any empirical data. Mr. Halpern testified that the frequency of generator maintenance is unit specific and based on many variables, with the most important being previous inspections, maintenance history, and current monitored conditions. He further testified that with more sophisticated and better technology having become available over the last 10-15 years, minor and major maintenance outage intervals for generators have been extended, consistent with good utility maintenance practices and electric industry standards. He stated that fossil fuel generating units are extending their minor maintenance intervals to 4-5 years and major maintenance intervals to 8-10 years and in some cases longer. He explained that one major reason for this generator maintenance interval extension is that generators are one of the most reliable pieces of equipment in a power plant.

Mr. Halpern concluded that, in his opinion, Duke Energy Indiana's extension of the GE recommended maintenance intervals is not imprudent in any way. In his opinion, blind adherence to an OEM's generator maintenance recommendations, without consideration of actual operating history, current monitored conditions and informed engineering judgment, is not consistent with good utility practice or electric industry standards.

6. **Discussion**. The Industrials assert that Duke Energy Indiana was imprudent in its maintenance of Gibson Unit 4 because it failed to conduct the vacuum

decay and pressure decay tests on Unit 4 at the time of the Unit 4 boiler outage in 2006 and should be held responsible for the increased fuel costs incurred during the 66 day outage in the winter of 2008. In determining whether a utility is imprudent we must view the circumstances as they existed and they were known or reasonably knowable at the time of the alleged imprudent act. We cannot engage in a hindsight analysis in our initial inquiry as to whether a public utility acted in a prudent manner. We must also determine whether the alleged imprudent act or omission was the cause of the alleged harm – in this case, the January 20, 2008 Unit 4 forced outage.

Mr. Dauphinais' sole basis for alleging imprudence by Duke Energy Indiana is its failure to conduct the pressure decay and vacuum decay tests during a minor boiler outage in the spring of 2006. Mr. Dauphinais asserted that GE TIL 1447-2 is clear in its recommendation that such tests should be conducted during a minor outage. The Company countered with the testimonies of Mr. Faulkner and Mr. Pulskamp, Duke Energy Indiana managers with decades of combined experience in managing power plants or power plant fleets. Mr. Faulkner made it clear that he approved a consensus recommendation that the minor inspection tests not be conducted during the 2006 boiler outage, and Mr. Pulskamp testified that this decision was prudently made and consistent with the Company's maintenance practices and procedures.

The Company had several reasons for not conducting the recommended tests. First, Gibson Unit 4 had successfully completed the pressure decay and vacuum decay tests during a major outage in March, 2003, as well as the more sensitive capacitance mapping test and the helium gas tracer test. Also, the daily monitoring activities which monitored hydrogen content within the generator gave no indication that there was a stator

bar water leak in the unit at the time of the minor outage. Further, the actual operation of Gibson Unit 4 between 2003 and 2006 gave no indication of a stator bar problem. In addition, the Gibson Station maintenance personnel knew, as TIL 1447-2 states, visual inspection and the vacuum decay and pressure decay tests are not as sensitive as the other tests recommended by GE and, in fact, can miss small leaks. Also, the maintenance personnel reporting to Mr. Faulkner, as well as Mr. Faulkner himself, were aware that a stator bar leak had been detected on Gibson Unit 1 in the spring of 2005 during a major outage. At that time, Gibson Unit 1 stator bars passed the visual inspection, the pressure decay and the vacuum decay tests. These tests did not detect the leak in the Gibson Unit 1 stator bar. The leak was discovered only by utilizing the more sensitive capacitance mapping test which was recommended by GE to be performed during major planned outages. Based on this information, Mr. Faulkner approved the recommendation to forego the pressure decay and vacuum decay tests during the April, 2006 minor boiler outage.

Given the information available to Duke Energy Indiana's management in April of 2006, we cannot find that management acted in an imprudent manner. All parties conceded in this proceeding that the pressure decay and vacuum decay tests are not as sensitive as the capacitance mapping and helium tracer tests. While the pressure decay and vacuum decay tests may well be useful in discovering larger leaks, Duke Energy Indiana's experience with regard to those tests has been consistent; such tests did not discover small leaks and evidently are only capable of discovering larger leaks.

Importantly, the record indicates that the three damaged stator bars from Gibson Unit 4 were tested after being plugged following the January 20, 2008 incident and passed the pressure decay and vacuum decay tests, as well as the other tests, strongly

indicating that the problem on Gibson Unit 4 that caused the extended outage was not a water leak at all. (Tr. A-10, A-82, B-83, B-84) This result alone affirms management's decision not to utilize the vacuum and pressure decays tests during the 2006 minor outage.

The Company's decision not to use the pressure decay and vacuum decay tests during the minor 2006 Unit 4 outage (and other minor outages) was a reasoned decision predicated on sound engineering judgment. Duke Energy Indiana has extensive operating experience with the Gibson Station fleet totaling over 130 years. Moreover, the record reflects that Duke Energy Indiana utilizes sophisticated maintenance procedures to maintain the operating availability of these units.[3] Exhibit C-1 sponsored by Mr. Pulskamp vividly demonstrates the success of Duke Energy Indiana's maintenance practices. Duke Energy Indiana's equivalent forced outage rate for Gibson Unit 4 is better than the industry's national average equivalent forced outage rate and, when compared to a peer group of similar size units with SCRs, the Gibson units were superior in terms of unit availability, equivalent forced outage rate and cost. It is also uncontested that prior to the Unit 4 outage, not a single water cooled generator had tripped off-line in the United States due to a stator bar water leak and only one had tripped-off in the entire history of GE's global water cooled generators. (Tr. A-74, B-96) It is clear that the January 20, 2008 failure was truly unique and could not have been predicted.

In addition, the record reveals that in many cases of small leaks, stator bar insulation does not become wet because the hydrogen pressure keeps the water from leaking into the stator and the generator keeps operating as normal. This was certainly the case with Gibson Unit 1, which operated at a high level of efficiency and output. The leak

[3] The generation output for all of the Gibson units, including Unit 4, increased to record levels in 2005, 2006 and 2007. (Tr. A-34, B-22)

was not discovered until all of the major outage stator bar tests were utilized during a major planned outage With the stator bars passing the pressure and vacuum decay tests. Finally, Duke Energy Indiana maintenance personnel were aware that GE had issued TIL 1447-2 "in consideration of its ongoing sales and service relationship" with its customers. In short, TIL 1447-2 is a marketing document for GE parts and services. There is no reason for Duke Energy Indiana to blindly follow such a document as it develops and implements its generating plants maintenance decisions.

In any event, the Company's decisions not to follow OEM recommendations, including recommendations with respect to maintenance during outages, are not taken lightly. Mr. Faulkner described how the Company begins talking about outage issues 2 years before the outage takes place. On a quarterly basis, the Company meets with operational and maintenance people from the corporate office and discusses the outage issues that will be faced in the upcoming outage 2 years hence. In these meetings all the different groups within the plant are assigned responsibilities such as boilers, turbines, participators, scrubbers and generators. Mr. Faulkner made it clear that if someone recommends not to follow an OEM recommendation or TIL, that recommendation is discussed in these meetings. It is also discussed in meetings within the generation station staff as the engineers discuss and justify various maintenance expenditures. (Tr. B-8-B-16) Mr. Faulkner discussed in his testimony and during cross examination (Tr. B-34-B-38) several cases where an internal review process and analysis was utilized in making the determination not to follow an OEM recommendation. He also pointed out that the Company maintains flexibility in its maintenance procedures, citing as an example the

Company's actions in response to the second leak on Gibson Unit 3 in the fall of 2006. (Tr. A-95-A-97) The Company immediately began a process of determining the feasibility and viability of installing the SLMS system on the Gibson units. The maintenance review procedures outlined by Mr. Faulkner in prefiled testimony and during cross examination reflect a reasoned process for determining whether to follow OEM recommendations based on the multiple goals of achieving reliable plant operations with a high availability of the units at a reasonable cost. Likewise, the decision not to conduct the vacuum and pressure decay tests at the time of the 2006 minor boiler outage was a reasonable decision for the reasons cited by Mr. Faulkner.

Mr. Dauphinais was critical of the Company in not being more aggressive in installing SLMS systems on the Gibson units as recommended by TIL 1447-2 (although this was not the basis for his allegation of the Company's imprudence). We find this criticism to be unfounded. As early as 2003-2004, before any leaks were experienced at the Gibson Station, the Company began planning for the installation of the SLMS on its Gibson units by including them in the 10 year capital budget plan. In 2005, GE discontinued its existing SLMS model that was recommended in TIL 1447-2 because of data reporting problems. After discovery of the stator bar leak in the fall of 2006 on Gibson Unit 3, the Company again asked for a quote on a SLMS system. This quote was not provided by GE until its newer SLMS model was available for installation in March of 2007. (Tr. A-95, A-97, B-40) The record is clear that according to TIL 1447-2, the SLMS system is designed to measure the amount of hydrogen in the YTV vent of the generator. This is the very same measuring activity that the record shows is done on a daily basis by Company personnel on all of the Gibson Station units, including Gibson Unit 4. (Tr. B-30) We agree with Mr.

Pulskamp (Tr. B-58, B-61) that, at best, the SLMS system is a quality control on the daily monitoring activities of operating personnel. More importantly, Confidential Exhibit JRP-3 at page 13 explicitly recognizes the limited utility of the pressure decay and vacuum decay tests. That document states that if a SLMS system is installed, it is no longer necessary to do those tests. In sum, given the lack of the availability of a reliable SLMS model until the spring of 2007, and the Company's response in expeditiously installing the SLMS system on Units 1, 3 and 5, and with installation scheduled for Units 2 and 4, we find the Company acted appropriately in its decision and the timing of its decision to install the SLMS model.

We also note that the Company's reaction to the stator bar leaks is indicative of sound and prudent maintenance procedures and practices. As previously stated, Duke Energy Indiana detected stator bar leaks on Unit 1 in the spring of 2005 and Unit 3 in the fall of 2006 and Unit 5 in the spring of 2008. In each case, the units passed the vacuum decay and pressure decay testing procedures. The leaks were discovered utilizing either the capacitance mapping or helium gas tracer tests. In all three cases, the leaks were repaired during the major outage and no forced outage time was involved.

In response to the Unit 3 leak in the fall of 2006 which required replacement of two stator bars, the Company initiated a program to rewind all the stator windings at each of the Gibson Station units during scheduled maintenance outages over the next several years. Unit 2, the oldest unit at the Gibson Station, was already scheduled for a major outage in the spring of 2007, so it was the first unit scheduled for a stator rewind. With the Unit 2 rewind scheduled, the Company then determined which companies had completed stator rewinds on GE water-cooled generators and initiated discussions with those companies. In February, 2007, the Company issued a request for proposal and in

December, 2007, the Company contracted with GE to perform the stator rewinds. No rewinds could be scheduled for 2008 because there was no GE manufacturing slots available until 2009. Gibson Unit 4 was the first unit scheduled for a stator rewind because it had a major scheduled outage for the spring of 2009. Although Gibson Unit 4 had not experienced any operating issues, the Unit 4 rewind was scheduled under the rewind program well in advance of the January 20, 2008 forced outage.

We have structured this order to address the issues raised in the Industrials' evidentiary presentation. We must still consider the over-riding issue of the cause of the catastrophic failure at Gibson Unit 4. Resolution of this issue is important because if the cause was not a water leak, all of the tests recommended in TIL 1447-2 would have been unavailing because those tests are designed solely to detect water leaks in stator bars.

Mr. Dauphinais, citing the station incident report and the insurance adjuster's report, asserted that it was "very likely" that the cause of the failure was a water leak. Mr. Halpern, the Company's generator expert, asserted that there was no water leak in the generator at the time of the failure. We find Mr. Halpern's opinion, and the reasons for his expert opinion, to be persuasive. First, the draft of the incident report relied on by Mr. Dauphinais was prepared initially on January 22 and finalized on January 25, a mere 5 days subsequent to the January 20 failure. Also, the initial draft was prepared before a full visual inspection of the inside of the generator had been completed. It was finalized before any testing was completed by GE. As to the insurance adjuster's report, there is no indication of the investigation undertaken by the adjuster in preparation of that report. More importantly, the insurance report was dated February 5, 2008, which was, like the incident report, before GE had done any testing. In contrast, Mr. Halpern studied pictures of the failed stator bars

and the area of failure. More importantly, he utilized a GE failure investigation report completed in the summer of 2008 as a partial basis for his expert opinion. Finally, he conducted interviews of Company and GE personnel to develop answers to questions still remaining after reviewing the pictures and the failure report.

Mr. Halpern's Exhibit G-2 consisting of three pages, shows that the area of the Gibson failure is at the end of the stator bar connections, whereas the typical water leak occurs at the clip to strand braze joint. Mr. Halpern said the location of the Gibson Unit 4 failure was very unusual and atypical and different in location from the only in service failure due to a water leak which had occurred only once in the entire history of the GE water-cooled generator fleet worldwide. Mr. Halpern also testified that there was no leak at the point where the teflon hose or stainless elbow existed, and reached this conclusion based on testing done by GE subsequent to the failure which is detailed in the failure report. (Tr. B-96) He noted that GE tested the failed stator bars and that the capacitance mapping test and the wet installation detector showed that there was no wet insulation. Referring to his Exhibit G-3, Mr. Halpern pointed out during the hearing considerable insulation still existed around the failed area which was tested by GE electrically and indicated no wetness. Furthermore, as the hand applied insulation was removed by the GE winder service technicians, no moisture was found between the many layers of insulation. (Tr. B-97) He also noted there was no hydrogen consumption, there was no evidence of wet insulation along the bar arm, there was no evidence of wetness in the area of the connections, which typically occur when there is a leak, and there was no indication of a patina color on the copper which typically develops if there is a water leak. He also explained that the failed bars had been totally stripped of insulation and no wetness was found by GE's winders

during the stripping and there was no evidence of water when the GE repair technician stripped all of the insulation around the phased connection. (Tr. B-96-B-98)

Based on this information, Mr. Halpern then discussed the failure with Mr. Mike Hilkey, GE Generator Specialist, who was the GE project manager for restoration of the Gibson Unit 4 generator. Mr. Hilkey confirmed there was no wetness in the area of the failure, no wet insulation and no wet putty. Based on this information, Mr. Halpern opined that while he could not definitely determine the cause of the failure, he did definitely determine that the cause was not a water leak. We find this opinion is predicated on facts and reasonable conclusions drawn from those facts. Accordingly, we find that the main issue litigated in this proceeding is not relevant through to the ultimate outcome. The issue was whether minor outage tests designed to determine stator bar water leaks should have been conducted and we conclude that even if they had been conducted they would not have detected a leak because no leak existed. Accordingly, even if the Company had conducted the vacuum decay and pressure decay tests on the Unit 4 stator bars at the time of the 2006 minor boiler outage, such tests would not have detected any leak.

In sum, we find that Duke Energy Indiana did not act imprudently with respect to inspection and maintenance of the Gibson Unit 4 stator bars at any time prior to the January 20, 2008 Gibson Unit 4 failure. We further find that the decision not to conduct the vacuum decay and pressure tests on Unit 4 in 2006 at the time of the minor boiler outage, in any event, was not the cause of the Gibson Unit 4 forced outage on January 20, 2008. We note that all parties concur that Duke Energy Indiana's efforts in restoring Gibson Unit 4 to service were extraordinary. Accordingly, we find that no refunds are due the Company's retail customers and this subdocket should be terminated.

7. **Interim Rates**. As previously mentioned, the revenues in Cause No. 38707 FAC 76 were implemented on an interim basis subject to refund pending the outcome of this subdocket and an order in Cause No. 38707 FAC68 S1. Likewise the revenues in Cause No. 38707 FAC 77 were implemented on an interim basis subject to refund pending an order in this subdocket. On June 25, 2008, the Commission issued an order approving a settlement agreement in Cause No. 38707 FAC 68 S1 resolving that proceeding and terminating that subdocket. We hereby order that no refunds are appropriate and hereby terminate this subdocket. Accordingly, the potential refund obligations implemented by the September 24, 2008 and June 25, 2008 orders should be terminated.

In addition, in Finding Paragraph No. 15 in our order in Cause No. 38707 FAC 78, we found that the fuel cost variance amounts were calculated appropriately but could possibly be altered by the outcome of this subdocket proceeding. Given our findings in Finding Paragraph 6 herein, no alterations to the FAC 78 variance calculations are required.

8. **Confidential Information**. On July 25, 2008 and September 4, 2008, the presiding officers made preliminary findings that certain designated information marked "Confidential" as requested in Duke Energy Indiana's motions for protection of confidential and proprietary information should be treated as confidential in accordance with Ind. Code § 5-14-3-4 and that confidential procedures should be followed with respect to this confidential information. Upon review of the confidential information submitted pursuant to the presiding officers' preliminary determinations, the Commission confirms its prior preliminary findings that the confidential information for which the Company sought

and the Commission preliminarily granted confidential treatment contains confidential, proprietary and competitive sensitive trade secret information that has economic value to Duke Energy Indiana and GE; neither being known to or ascertainable by, its competitors and other persons who could obtain economic value from the knowledge and the use of such information; that the public disclosure of such information would have a substantial detrimental effect on Duke Energy Indiana and GE; and that the information is subject to efforts of Duke Energy Indiana and GE that are reasonable to maintain its secrecy. Accordingly, the confidential information contained in the exhibits submitted in this proceeding are exempt from the public access requirements of Ind. Code §§ 5-14-3-3 and 8-1-2-29 and shall continue to be held as confidential by the Commission.

IT IS THEREFORE ORDERED BY THE INDIANA UTILITY REGULATORY COMMISSION that:

1. This subdocket should be, and herby is, terminated.

2. The "subject to refund" obligations imposed in Cause Nos. 38707 FAC 76 and FAC 77 related to this subdocket proceeding are hereby terminated.

3. The information described in the Confidential Information submitted in this Cause are hereby exempt from the public access requirements of Ind. Code § 5-14-3-3 and shall continue to be held as confidential by the Commission.

4. This Order shall be effective on and after the date of its approval.

HARDY, GOLC, LANDIS, SERVER, and ZIEGNER CONCUR:
APPROVED:

I hereby certify that the above is a true and correct copy of the Order as approved.

Brenda A. Howe
Secretary to the Commission