Entergy

This Document Contains Proprietary Information
Withhold from Public Disclosure Per 10 CFR 2.390

Entergy Nuclear Northeast
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November 5, 2007
JAFP-07-0125

Pete Dietrich
Site Vice President - JAF

U.S. Nuclear Regulatory Commission
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REFERENCES:

1. Letter, Entergy to USNRC, "James A. FitzPatrick Nuclear Power Plant, Docket No. 50-333, License No. DPR-59, License Renewal Application," JAFP-06-0109, dated July 31, 2006
2. Letter, USNRC to JAFNPP, "Safety Evaluation Report with Open Items Related to the License Renewal of James A. FitzPatrick Nuclear Power Plant)," dated July 31, 2007
3. Letter, Entergy to USNRC, "James A. FitzPatrick Nuclear Power Plant, Docket No. 50-333, License No. DPR-59, License Renewal Application, Amendment 12," JAFP-07-079, dated June 20, 2007
4. Letter, Entergy to USNRC, "James A. FitzPatrick Nuclear Power Plant, Docket No. 50-333, License No. DPR-59, License Renewal Application, Amendment 13," JAFP-07-100, dated August 14, 2007

SUBJECT: **Entergy Nuclear Operations, Inc.**
James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333, License No. DPR-59
License Renewal Application, Amendment 14

Dear Sir or Madam:

On July 31, 2006, Entergy Nuclear Operations, Inc. submitted the License Renewal Application (LRA) for the James A. FitzPatrick Nuclear Power Plant (JAFNPP) as indicated by Reference 1.

Attachment 1 contains a response to the Open Items related to reactor vessel fluence provided in section 1.5 of Reference 2. Attachment 2 provides the LRA changes associated with the updated fluence calculation. Attachment 3 provides the fluence calculation. In accordance with 10 CFR 2.390 (b)(1), an affidavit attesting to the proprietary nature of the calculation and requesting withholding from public disclosure is included with attachment 3. Attachment 4 contains the same information with the proprietary information removed, and is provided for public disclosure. Attachment 5 supplements information previously provided in response to RAI 4.2.6-1 in Reference 3. Attachment 6 supplements information previously provided in response to RAI 4.3.3-1 in Reference 4, this information also addresses the Open Item related to section 4.3.3 provided in section 1.5 of Reference 2.

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NRR

When separated from Attachment 3 this document becomes de-controlled.

Should you have any questions concerning this submittal, please contact Mr. Jim Costedio at (315) 349-6358.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 5TH day of November, 2007.

Sincerely,

PETE DIETRICH
SITE VICE PRESIDENT

PD/cf

Attachments: 1) Draft SER Open Item Responses
2) LRA Changes
3) Fluence Calculation (Proprietary Version)
4) Fluence Calculation (Non Proprietary Version)
5) Axial Weld Analysis Clarification
6) Supplemental Information for RAI 4.3.3-1

cc:

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cc: without Attachment 3

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JAFP-07-0125
Docket No. 50-333

Attachment 1

James A. FitzPatrick Nuclear Power Plant

License Renewal Application – Amendment 14

Draft SER Open Item Responses:

OI 4.2.1-1
sOI 4.2.2-1
sOI 4.2.3-1
sOI 4.2.4-1
sOI 4.2.5-1
sOI 4.2.6-1
sOI B.1.24-3

OI 4.2.1-1 (SER Section 4.2.1 - Reactor Vessel Fluence)

The staff reviewed GE-NE-B1100732-01 report on analysis of the 120° capsule removed at 13.4 effective full power years (EFPYs) of operation submitted by the applicant to confirm if calculation of fluence values are in accordance with the guidance of RG 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence."

The staff's review of this report found several discrepancies with the RG 1.190 guidance. For determining pressure vessel neutron fluence, the staff finds the projected fluence values unacceptable. The applicant has stated that it will submit a new fluence calculation by a contractor to the staff for review when complete.

Response:

JAFNPP contracted Transware Enterprises, Inc to perform a fluence evaluation in accordance with guidelines in Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence". In compliance with the guidelines, comparisons to flux wire measurements were performed to determine the accuracy of the fluence model and an uncertainty analysis was performed to determine if a statistical bias exists in the model. It was determined that the JAF fluence model does not have a statistical bias and that the results presented in the report are suitable for use in evaluating the effects of embrittlement on RPV material as specified in 10CFR50 Appendix G. The fluence values were calculated using the RAMA fluence method which the NRC has found is in accordance with RG 1.190. For additional information, refer to the proprietary calculation included in Attachment 3.

The 54 EFPY fluence evaluation results using the RAMA fluence method for RPV beltline plates and welds compared to fluence values presented in Section 4.2.1 of the LRA are shown below.

Location	***Transware ¼ T fluence, n/cm²***	***LRA ¼T fluence, n/cm²***
Lower shell plates	*1.71E+18*	*1.85E+18*
Lower intermediate shell plates	*2.10E+18*	*2.21E+18*
Lower shell axial welds	*1.48E+18*	*1.74E+18*
Lower intermediate shell axial welds	*1.20E+18*	*1.29E+18*
Lower shell to lower intermediate shell circumferential welds	*1.71E+18*	*1.85E+18*

As can be seen, the 54 EFPY 1/4t fluence values predicted using the RAMA fluence method are less than the values in the LRA. As a result, the following conclusions described in Section 4.2 remain valid.

- *CvUSE values for vessel plates are projected to remain well above 50 ft-lbs.*
- *All equivalent margin analyses for reactor vessel welds show reductions in CvUSE below the BWRVIP-74-A reductions.*
- *All projected values for ART are well below the 200°F suggested in RG 1.99.*

sOI 4.2.2-1: (SER Section 4.2.2 - Pressure-Temperature Limits)

The staff's review of P-T limits was based on the applicant's fluence values in LRA Section 4.2.1. Until OI 4.2.1-1 is resolved, the staff cannot close its review of this TLAA.

Response:

JAFNPP will use the license amendment process to update P-T curves. As shown above, the new fluence values are less than the values used in the LRA and as such will not have a negative effect on updated P-T curves.

sOI 4.2.3-1: (SER Section 4.2.3 - Charpy Upper-Shelf Energy)

The staff's review was based on the fluence values provided by the applicant in LRA Section 4.2.1. Until OI 4.2.1-1 is resolved, the staff cannot close its review of this TLAA.

Response:

As shown above, the new fluence values are less than the values used in the LRA such that conclusions based on 54 EFPY projections for Charpy Upper-Shelf Energy described in the LRA remain valid.

sOI 4.2.4-1: (SER Section 4.2.4 - Adjusted Reference Temperature)

The staff's review was based on the applicant's fluence values in LRA Section 4.2.1. Until OI 4.2.1-1 is resolved, the staff cannot close its review of this TLAA.

Response:

As shown above, the new fluence values are less than the values used in the LRA such that conclusions based on 54 EFPY projections for adjusted reference temperature described in the LRA remain valid.

sOI 4.2.5-1: (SER Section 4.2.5 - Reactor Vessel Circumferential Weld Inspection Relief)

The staff's review was based on the applicant's fluence values in LRA Section 4.2.1. Until OI 4.2.1-1 is resolved, the staff cannot close its review of this TLAA.

Response:

As described in Section 4.2.5 of the LRA, surface rather than 1/4t fluence is used to calculate RT_{ndt} for circumferential weld inspection relief. The Transware 54 EFPY maximum circumferential weld surface fluence is 2.53E+18 n/cm^2 compared to 2.71E+18 n/cm^2 provided in Table 2.4-1 of the LRA. Therefore, conclusions based on the 54 EFPY evaluation for circumferential weld inspection relief as described in the LRA remain valid.

sOI 4.2.6-1: (See SER Section 4.2.6 - Reactor Vessel Axial Weld Failure Probability)

The staff's review was based on the applicant's fluence values in LRA Section 4.2.1. Until OI 4.2.1-1 is resolved, the staff cannot close its review of this TLAA.

Response:

As described in Section 4.2.6 of the LRA, surface rather than 1/4t fluence is used to calculate RT_{ndt} for axial weld failure probability. The Transware 54 EFPY maximum axial weld surface fluence is 2.34E18 n/cm^2 compared to 2.55E18 n/cm^2 provided in Table 4.2-5 of the LRA. Therefore, conclusions based on the 54 EFPY evaluation for axial weld failure probability as described in the LRA remain valid.

sOI B.1.24-3: (See SER Section 3.0.3.2.16 - Reactor Vessel Surveillance Program)

On the basis of the staff review for LRA item B.1.24 discussed in SER Section 3.0, the staff finds, pending the resolution of the OIs noted above, that the applicant has demonstrated that the effects of aging due to loss of fracture toughness of the reactor pressure vessel beltline region will be adequately managed, so that the intended functions will be maintained consistent with the CLB for the period of extended operation, as required by 10 CFR 54.21(a)(3).

Response:

As shown above, the various OIs associated with neutron fluence are resolved. The Reactor Vessel Surveillance Program will continue to adequately manage loss of fracture toughness of the reactor pressure vessel beltline region

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Attachment 2

James A. FitzPatrick Nuclear Power Plant

License Renewal Application – Amendment 14

LRA Changes

LRA Changes

(additions = underlined, deletions = strikethrough)

Section 4.2.1, Reactor Vessel Fluence

The 32 EFPY fluence is based on a General Electric analysis of measured fluence from the JAFNPP surveillance flux wires which allows for 5% power uprate completed after flux wire removal. ~~These fluence values were further extrapolated to 54 EFPY to obtain peak plate ID fluences with 1/4 T values derived using RG 1.99 formula and conservative wall thicknesses.~~

Neutron fluence was projected to the end of the period of extended operation (54 EFPY) using the RAMA fluence method with ¼ T values derived using RG 1.99 formula.

The following fluence values are used throughout the remainder of Section 4.2.

Location	Surface fluence, n/cm^2	¼ T fluence, n/cm^2
Lower shell	~~2.71E+18~~ 2.53E+18	~~1.85E+18~~ 1.71E+18
Lower intermediate shell	~~3.05E+18~~ 3.11E+18	~~2.21E+18~~ 2.10E+18
Lower shell axial welds	~~2.55E+18~~ 2.34E+18	~~1.74E+18~~ 1.48E+18
Lower intermediate shell axial welds	~~1.89E+18~~ 1.75E+18	~~1.29E+18~~ 1.20E+18
Lower shell to lower intermediate shell circumferential welds	~~2.71E+18~~ 2.53E+18	~~1.85E+18~~ 1.71E+18

Section 4.2.3 Charpy Upper-Shelf Energy

Table 4.2-1
JAFNPP Charpy Upper-Shelf Energy Equivalent Margin Analysis

Surveillance Weld	
Surveillance Weld % Cu	0.29
Surveillance Weld Fluence (n/cm^2)	5.00E+17
Surveillance Weld Measured Decrease (%)	Unknown
RG 1.99 Predicted Decrease (%)	22
Ratio of Measured to Predicted	1.000
Limiting Extrapolated Weld (1-240)	
Beltline Weld % Cu	0.337
54 EFPY 1/4 T fluence (n/cm^2)	~~1.723E+18~~ 1.710E+18
RG 1.99 Predicted Decrease (%)	~~31.46~~ 31.40
Adjusted % Decrease (%)	~~31.46~~ 31.40
Limiting % Decrease (%)	39.0
Acceptable	Yes

LRA Changes

Table 4.2-2
JAFNPP Charpy Upper-Shelf Energy Data for 54 Effective Full-Power Years (EFPY)

Material Description						54 EFPY Projection		
Reactor Vessel Beltline Region Location	**Material Type**	**Material Identification**	**Heat #**	**%Cu**	**Unirradiated C_VUSE**	**1/4 T fluence (10^{19} n/cm^2)**	**% Drop in USE**	**USE (1/4 T)**
Lower shell	A533B	157	C3394-1	0.11	85.6	~~0.1851~~ 0.1710	~~13.4~~ 13.2	~~74.1~~ 74.3
Lower shell	A533B	158	C3376-2	0.13	77.4	~~0.1851~~ 0.1710	~~14.8~~ 14.5	~~66.0~~ 66.2
Lower shell	A533B	159	C3103-2	0.14	82.6	~~0.1851~~ 0.1710	~~15.4~~ 15.1	~~69.9~~ 70.1
Lower intermediate shell	A533B	160	C3368-1	0.12	67.0	~~0.2210~~ 0.2100	~~14.7~~ 14.5	~~57.2~~ 57.3
Lower intermediate shell	A533B	161	C3301-1	0.18	82.3	~~0.2210~~ 0.2100	~~18.9~~ 18.7	~~66.8~~ 66.9
Lower intermediate shell	A533B	162	C3278-2	0.11	84.3	~~0.2210~~ 0.2100	~~14.0~~ 13.8	~~72.5~~ 72.6
Lower int. shell axial welds 1-233A/B/C	Linde 1092	608	13253 & 12008	0.210	Not available	~~0.2210~~ 0.1200	~~24.48~~ 21.18	EMA
Lower shell axial welds 2-233A/B/C	Linde 1092	609	27204 & 12008	0.219	Not available	~~0.1851~~ 0.1480	~~24.08~~ 22.84	EMA
Circ weld 1-240	Linde 1092	610	305414	0.337	Not available	~~0.1851~~ 0.1710	~~31.99~~ 31.40	EMA

Section 4.2.4 Adjusted Reference Temperature

Table 4.2-3
JAFNPP RTNDT Data for 54 Effective Full-Power Years (EFPY)

Initial Material Description									54 EFPY Extrapolation					
Reactor Vessel Beltline Region Location	Material Type	Material Identifier	Heat #	%Cu	%Ni	Chemistry Factor	Initial RT_{NDT} (°F)	σ_u	1/4 T fluence (10^{19} n/cm^2)	Fluence Factor	ΔRT_{NDT} (Deg F)	σ_Δ	Margin (Deg F)	ART_{NDT} (Deg F)
Lower shell	A533B	157	C3394-1	0.11	0.560	73.60	-10.0	0	~~0.1851~~ 0.1710	~~0.551~~ 0.533	~~40.6~~ 39.2	17.0	34.0	~~64.6~~ 63.2
Lower shell	A533B	158	C3376-2	0.13	0.600	91.00	24.0	0	~~0.1851~~ 0.1710	~~0.551~~ 0.533	~~50.2~~ 48.5	17.0	34.0	~~108.2~~ 106.5
Lower shell	A533B	159	C3103-2	0.14	0.570	98.65	-2.0	0	~~0.1851~~ 0.1710	~~0.551~~ 0.533	~~54.4~~ 52.5	17.0	34.0	~~86.4~~ 84.5
Lower intermediate shell	A533B	160	C3368-1	0.12	0.500	81.00	-10.0	0	~~0.2210~~ 0.2100	~~0.594~~ 0.581	~~48.1~~ 47.1	17.0	34.0	~~72.1~~ 71.1
Lower intermediate shell	A533B	161	C3301-1	0.18	0.570	131.15	-18.0	0	~~0.2210~~ 0.2100	~~0.594~~ 0.581	~~77.8~~ 76.2	17.0	34.0	~~93.8~~ 92.2
Lower intermediate shell	A533B	162	C3278-2	0.11	0.600	29.40	-10.0	0	~~0.2210~~ 0.2100	~~0.594~~ 0.581	~~17.4~~ 17.1	~~0.0~~ 8.5	~~16.0~~ 17.1	~~23.4~~ 24.2
Lower int shell axial welds 1-233A/B/C	Linde 1092	608	13253 & 12008	0.210	0.873	208.68	-50	0	~~0.2210~~[1] 0.1200	~~0.594~~ 0.454	~~123.9~~ 94.8	28.0	56.0	~~129.9~~ 100.8
Lower shell axial welds 2-233A/B/C	Linde 1092	609	27204 & 12008	0.219	0.996	231.06	-48	0	~~0.1851~~[1] 0.1480	~~0.551~~ 0.500	~~127.3~~ 115.5	28.0	56.0	~~135.3~~ 123.5
Circ weld 1-240	Linde 1092	610	305414	0.337	0.609	209.11	-50	0	~~0.1851~~[1] 0.1710	~~0.551~~ 0.533	~~115.2~~ 111.4	28.0	56.0	~~121.2~~ 117.4

~~[1] No credit is taken for axial and azimuthal lead factors to reduce peak fluence.~~

LRA Changes

Section 4.2.5 Reactor Vessel Circumferential Weld Inspection Relief

Table 4.2-4
Effects of Irradiation on JAFNPP RPV Circumferential Weld Properties

Plant / Parameter Description	CEOG/ 32 EFPY Bounding Parameters	JAFNPP/ 32 EFPY Bounding Weld (1-240)	CEOG/ 64 EFPY Bounding Parameters	JAFNPP/ 54 EFPY Beltline Circ Weld
Initial (unirradiated) reference temperature (RT_{NDT}), °F	0	-50	0	-50
Neutron fluence at the end of the requested relief period, n/cm^2	2.00×10^{18}	1.61×10^{18}	4.00×10^{18}	~~2.71×10^{18}~~ 2.53×10^{18}
Fluence factor (FF) (calculated per RG1.99 based on fluence in previous line)	0.569	0.519	0.746	~~0.644~~ 0.627
Weld copper content, %	0.183	0.337	0.183	0.337
Weld nickel content, %	0.704	0.609	0.704	0.609
Weld chemistry factor (CF)	172.2	209.1	172.2	209.1
Fluence factor times chemistry factor (FF x CF)	98.1	108.5	128.5	~~134.7~~ 131.1
Margin (implied), °F	0.0	0.0	0.0	0.0
Increase in reference temperature (ΔRT_{NDT}), °F (FF x CF + Margin)	98.1	108.5	128.5	~~134.7~~ 131.1
Mean adjusted reference temperature (ART), °F (RT_{NDT} + ΔRT_{NDT})	98.1	58.5	128.5	~~84.7~~ 81.1

Section A.1.2 UFSAR Chapter 4 Changes

Section 4.2.7 - Safety Evaluation

(5th paragraph)

NRC Regulatory Guide 1.99, "Radiation Embrittlement of Reactor Vessel Materials", Revision 2, May 1988, provides the basis for the reactor vessel material surveillance analysis which accounts for irradiation embrittlement effects in the reactor vessel core region, or beltline. The best estimate fluence for the peak locations in the lower shell and the lower intermediate shell after 54~~32~~ effective full power years (EFPY) or 60~~40~~ years of power operation at 90~~80~~% capacity factor are expected to be 2.52~~.71~~.61~~ x 10^{18} n/cm^2 and 3.11~~.81~~ x 10^{18} n/cm^2 respectively at the vessel ID.

Section A.2.2 Evaluation of Time-Limited Aging Analyses

Section A.2.2.1.1 Reactor Vessel Fluence

Calculated fluence is based on a time-limited assumption defined by the operating term. As such, fluence is the time-limited assumption for the time-limited aging analyses that evaluate reactor vessel embrittlement.

The existing 32 EFPY fluence is based on a General Electric analysis of measured fluence from the JAFNPP surveillance flux wires (Reference A.2-8). ~~These fluence~~

~~values were further extrapolated to 54 EFPY to obtain peak plate ID fluences with 1/4 T values derived using RG 1.99 formula and conservative wall thicknesses.~~

Neutron fluence was projected to the end of the period of extended operation (54 EFPY) using the RAMA fluence model.

Affidavit

I, **Dean B. Jones**, state as follows:

1. I am the President of TransWare Enterprises Inc. ("TWE") and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.

2. The information sought to be withheld is contained in the attachment TransWare Enterprises Inc. Document No. ENT-FLU-002-R-004, Revision 0, "Licensing Version of James A. Fitzpatrick Reactor Pressure Vessel Fluence Evaluation at End of Cycle 17 and 54 EFPY," October 2007. TWE proprietary information is indicated by enclosing it in double brackets and highlighting the proprietary text in blue. Paragraph 3 of this affidavit provides the basis for the proprietary determination.

3. In making this application for withholding of proprietary information of which it is the owner or licensee, TWE relies upon the exemption of disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and the NRC regulations 10CFR9.17(a)(4) and 2.390(a)(4) for "trade secrets and commercial or financial information obtained from a person and privileged or confidential" (Exemption 4). The material for which exemption from disclosure is here sought is all "confidential and commercial information," and some portions also qualify under the narrower definition of "trade secret," within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).

4. Some examples of categories of information that fit into the definition of proprietary information are:
   a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by TWE's competitors without license from TWE constitutes a competitive economic advantage over other companies;
   b. Information which, if used by a competitor, could reduce the competitor's expenditure of resources or improve competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product;
   c. Information that reveals cost or price information, production capacities, budget levels, or commercial strategies of TWE, its customers, or its suppliers;
   d. Information which reveals aspects of past, present, or future TWE customer-funded development plans and programs of potential commercial value to TWE;
   e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

   The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs 4a. and 4b., above.

5. To address 10CFR2.390 (b)(4), the information sought to be withheld is being submitted to the NRC in confidence. The information is of a sort customarily held in confidence by TWE, and is in fact so held. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in paragraphs 6 and 7 following. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by TWE, no public disclosure has been made, and it is not available to public sources. All disclosures to third parties including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.

6. Initial approval of proprietary treatment of a document is made by the manner of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to TWE. Access to such documents within TWE is limited on a "need-to-know" basis.

7. The procedure for approval of external release of such a document typically requires review by the project manager, principal engineer, and by the Quality Assurance department for technical content, competitive effect, and the determination of the accuracy of the proprietary designation. Disclosures outside TWE are limited to regulatory bodies, customers, and potential customers and their agents, suppliers, and licensees, and others with a legitimate need for the information and then only in accordance with appropriate regulatory provisions or proprietary agreements.

8. The information identified in paragraph 2 is classified as proprietary because it contains details of TWE's methodologies for fluence and uncertainty analyses.

   The development of the methods used in these analyses, along with the testing, development, and approval of the supporting methodology was achieved at a significant cost, on the order of several million dollars, to TWE or its licensor.

9. Public disclosure of the information sought to be withheld is likely to cause substantial harm to TWE's competitive position and foreclose or reduce the availability of profit-making opportunities. The methodologies for fluence and uncertainty analyses are part of TWE's nuclear engineering consulting base expertise and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

   The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by TWE or its licensor.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it is clearly substantial.

TWE's competitive advantage will be lost if its competitors are able to use the results of the TWE experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to TWE would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall and deprive TWE of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information, and belief.

Executed at Sycamore, Illinois, this 31st day of October, 2007.

Dean B. Jones
TransWare Enterprises Inc.

OFFICIAL SEAL
CHRIS ROLLINS
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:05/17/09

Chris Rollins 10/31/07