



Commonwealth Edison
Braidwood Nuclear Power Station
Route #1, Box 84
Braceville, Illinois 60407
Telephone 815/458-2801

August 10, 1992
BW/92-0424

Director, Office of Resource Management
United States Nuclear Regulatory Commission
Washington, D.C. 20555

ATTN: Document Control Desk

Gentlemen:

Enclosed for your information is the Monthly Performance Report covering Braidwood Nuclear Power Station for the period July 1 through July 31, 1992.

K. L. Kofron
Station Manager
Braidwood Nuclear Station

KLK/JL/dla
(609/ZD85G)

Attachments

cc: A. B. Davis, NRC, Region III
NRC Resident Inspector Braidwood
Ill. Dept. of Nuclear Safety
M. J. Wallace
E. D. Eenigenburg
T. J. Kovach
Nuclear Fuel Services, PWR Plant Support
INPO Records Center
Performance Monitoring Group, Tech Staff Braidwood Station
Nuclear Group, Tech Staff Braidwood Station
R. Pulsifer - USNRC
T. W. Simpkin
D. R. Eggett - Nuclear Engineering Department

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BRAIDWOOD NUCLEAR POWER STATION

UNIT 1 AND UNIT 2

MONTHLY PERFORMANCE REPORT

COMMONWEALTH EDISON COMPANY

NRC DOCKET NO. 050-456, LICENSE NO. NPF-72

NRC DOCKET NO. 050-457, LICENSE NO. NPF-77

I. Monthly Report for Braidwood Unit 1

A. Summary of Operating Experience

Braidwood Unit 1 entered the month of July, 1992 at approximately 99% reactor power. The unit operated routinely through the end of the month.

B. OPERATING DATA REPORT

DOCKET NO.: 50-456
 UNIT: Braidwood 1
 DATE: 08/10/92
 COMPILED BY: C. E. Pershey
 TELEPHONE: (815)458-2801
 ext. 2173

OPERATING STATUS

1. Reporting Period: July, 1992 Gross Hours: 744
2. Currently Authorized Power Level (MWt): 3411
 Design Electrical Rating (MWe-gross): 1175
 Design Electrical Rating (MWe-net): 1120
 Max Dependable Capacity (MWe-gross): 1175
 Max Dependable Capacity (MWe-net): 1120
3. Power level to which restricted (If Any): None
4. Reasons for restriction (If Any): None

	<u>THIS MONTH</u>	<u>YR TO DATE</u>	<u>CUMULATIVE</u>
5. Report period Hours:	744.0	5111.0	35120.0
6. Hours Reactor Critical:	744.0	5045.7	27325.9
7. RX Reserve Shutdown Hours:	0.0	0.0	0.0
8. Hours Generator on Line:	744.0	5026.5	26858.5
9. Unit Reserve Shutdown Hours:	0.0	0.0	0.0
10. Gross Thermal Energy (MWH):	2511721	16198382	81182898
11. Gross Elec. Energy (MWH):	842178	5509678	27831870
12. Net Elec. Energy (MWH):	810748	5298233	26600157
13. Reactor Service Factor:	100.0	98.7	77.8
14. Reactor Availability Factor:	100.0	98.7	77.8
15. Unit Service Factor:	100.0	98.3	76.5
16. Unit Availability Factor:	100.0	98.3	76.5
17. Unit Capacity Factor (MDC net):	97.3	92.6	67.6
18. Unit Capacity Factor (DER net):	97.3	92.6	67.6
19. Unit Forced Outage Rate:	0.0	1.7	10.8
20. Unit Forced Outage Hours:	0.0	84.5	3236.3
21. Shutdowns Scheduled Over			

Next 6 Months:

Refueling Outage - September, 1992

22. If Shutdown at End of Report Period,
 Estimated Date of Startup: _____

C. AVERAGE DAILY UNIT NET POWER LEVEL LOG

DOCKET NO.: 50-456
UNIT: Braidwood 1
DATE: 08/10/92
COMPILED BY: C. E. Pershey
TELEPHONE: (815)458-2801
ext. 2173

MONTH: July, 1992

1. 1091	17. 1090
2. 1088	18. 1067
3. 1098	19. 998
4. 1101	20. 1085
5. 1099	21. 1089
6. 1096	22. 1091
7. 1097	23. 1096
8. 1099	24. 1096
9. 1095	25. 1096
10. 1093	26. 1092
11. 1090	27. 1089
12. 1089	28. 1089
13. 1091	29. 1090
14. 1091	30. 1096
15. 1095	31. 1097
16. 1094	

INSTRUCTIONS

On this form list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt. These figures will be used to plot a graph for each reporting month. Note that when maximum dependable capacity is used for the net electrical rating of the unit, there may be occasions when the daily average power level exceeds the 100% line (or the restricted power level line). In such cases the average daily unit power output sheet should be footnoted to explain the apparent anomaly.

D. UNIT SHUTDOWNS/REDUCTIONS

DOCKET NO.: 50-456
UNIT: Braidwood 1
DATE: 08/10/92
COMPILED BY: C. E. Pershey
TELEPHONE: (815)458-2801
ext. 2173

REPORT PERIOD: July, 1992

<u>No</u>	<u>DATE</u>	<u>TYPE</u>	<u>HOURS</u>	<u>REASON</u>	<u>METHOD</u>	<u>LER NUMBER</u>	<u>SYSTEM</u>	<u>COMPONENT</u>	<u>CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
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NONE

* SUMMARY *

<u>TYPE</u>	<u>REASON</u>	<u>METHOD</u>	<u>SYSTEM & COMPONENT</u>
F-Forced	A-Equipment Failure Maint or Test	1 - Method	Exhibit F & H
S-Scheduled	B-Maint or Test	2 - Manual Scram	Instructions for Preparation of
	C-Refueling	3 - Auto Scram	Data Entry Sheet
	D-Regulatory Restriction	4 - Continued	Licensee Event Report
	E-Operator Training & License Examination	5 - Reduced Load	(LER) File (NUREG-0161)
	F-Administration	9 - Other	
	G-Oper Error		
	H-Other		

E. UNIQUE REPORTING REQUIREMENTS - UNIT 1

1. Safety/Relief valve operations.

<u>DATE</u>	<u>VALVES ACTUATED</u>	<u>NO & TYPE ACTUATION</u>	<u>PLANT CONDITION</u>	<u>DESCRIPTION OF EVENT</u>
NONE				

2. Licensee generated changes to ODCM.

See attached.

F. LICENSEE EVENT REPORTS - UNIT 1

The following is a tabular summary of all Licensee Event Reports submitted during the reporting period, July 1 through July 31, 1992. This information is provided pursuant to the reportable occurrence reporting requirements as set forth in 10 CFR 50.73.

<u>Licensee Event Report Number</u>	<u>Report Date</u>	<u>Title of Occurrence</u>
92-006	07/31/92	Both Trains of Boron Dilution Prevention System Assumed to be Previously Inoperative as a Result of Analysis Deficiency.

II. Monthly Report for Braidwood Unit 2

A. Summary of Operating Experience

Braidwood Unit 2 entered the month of July, 1992 at approximately 99% reactor power. The unit operated routinely through the end of the month.

B. OPERATING DATA REPORT

DOCKET NO.: 50-457
UNIT: Braidwood 2
DATE: 08/10/92
COMPILED BY: C. E. Pershey
TELEPHONE: (815)458-2801
ext. 2173

OPERATING STATUS

1. Reporting Period: July, 1992 Gross Hours: 744
2. Currently Authorized Power Level (MWT): 3411
Design Electrical Rating (MWe-gross): 1175
Design Electrical Rating (MWe-net): 1120
Max Dependable Capacity (MWe-gross): 1175
Max Dependable Capacity (MWe-net): 1120
3. Power level to which restricted (If Any): None
4. Reasons for restriction (If Any): None

	<u>THIS MONTH</u>	<u>YR TO DATE</u>	<u>CUMULATIVE</u>
5. Report period Hours:	744.0	5111.0	33202.0
6. Hours Reactor Critical:	744.0	4774.4	27541.0
7. RX Reserve Shutdown Hours:	0.0	0.0	0.0
8. Hours Generator on Line:	744.0	4739.3	27279.3
9. Unit Reserve Shutdown Hours:	0.0	0.0	0.0
10. Gross Thermal Energy (MWH):	2379800	15133661	80489212
11. Gross Elec. Energy (MWH):	803648	5182674	27540114
12. Net Elec. Energy (MWH):	772925	4982583	26345478
13. Reactor Service Factor:	100.0	93.4	82.9
14. Reactor Availability Factor:	100.0	93.4	82.9
15. Unit Service Factor:	100.0	92.7	82.2
16. Unit Availability Factor:	100.0	92.7	82.2
17. Unit Capacity Factor (MDC net):	92.8	87.0	70.8
18. Unit Capacity Factor (DER net):	92.8	87.0	70.8
19. Unit Forced Outage Rate:	0.0	7.3	4.6
20. Unit Forced Outage Hours:	0.0	371.7	1319.5
21. Shutdowns Scheduled Over			
Next 6 Months:	None		
22. If Shutdown at End of Report Period,			
Estimated Date of Startup:			

C. AVERAGE DAILY UNIT NET POWER LEVEL LOG

DOCKET NO.: 50-457
UNIT: Braidwood 2
DATE: 08/10/92
COMPILED BY: C. E. Pershey
TELEPHONE: (815)458-2801
ext. 2173

MONTH: July, 1992

1. 1101	17. 1043
2. 1082	18. 1073
3. 991	19. 1029
4. 962	20. 1045
5. 1012	21. 1021
6. 998	22. 1009
7. 1002	23. 1064
8. 1043	24. 1037
9. 1069	25. 1024
10. 1087	26. 991
11. 1078	27. 1040
12. 1029	28. 1039
13. 1063	29. 109
14. 1030	30. 1101
15. 1059	31. 1008
16. 965	

INSTRUCTIONS

On this form list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt. These figures will be used to plot a graph for each reporting month. Note that when maximum dependable capacity is used for the net electrical rating of the unit there may be occasions when the daily average power level exceeds the 100% line (or the restricted power level line). In such cases the average daily unit power output sheet should be footnoted to explain the apparent anomaly.

D. UNIT SHUTDOWNS/REDUCTIONS

DOCKET NO.: 50-457
UNIT: Braidwood 2
DATE: 08/10/92
COMPILED BY: C. E. Pershey
TELEPHONE: (815)458-2801
ext. 2173

REPORT PERIOD: July, 1992

<u>No.</u>	<u>DATE</u>	<u>TYPE</u>	<u>HOURS</u>	<u>REASON</u>	<u>METHOD</u>	<u>LER NUMBER</u>	<u>SYSTEM</u>	<u>COMPONENT</u>	<u>CAUSE & CORRECTIVE ACTION TO PREVENT RECURRENCE</u>
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NONE

* S U M M A R Y *

<u>TYPE</u>	<u>REASON</u>	<u>METHOD</u>	<u>SYSTEM & COMPONENT</u>
F-Forced	A-Equipment Failure Maint or Test	1 - Method	Exhibit F & H
S-Scheduled	B-Maint or Test	2 - Manual Scram	Instructions for Preparation of
	C-Refueling	3 - Auto Scram	Data Entry Sheet
	D-Regulatory Restriction	4 - Continued	Licensee Event Report
	E-Operator Training & License Examination	5 - Reduced Load	(LER) File (NUREG-0161)
	F-Administration	9 - Other	
	G-Oper Error		
	H-Other		

E. UNIQUE REPORTING REQUIREMENTS - UNIT 2

1. Safety/Relief valve operations.

<u>DATE</u>	<u>VALVES ACTUATED</u>	<u>NO & TYPE ACTUATION</u>	<u>PLANT CONDITION</u>	<u>DESCRIPTION OF EVENT</u>
NONE				

2. Licensee generated changes to ODCM.

See attached.

F. LICENSEE EVENT REPORTS - UNIT 2

The following is a tabular summary of all Licensee Event Reports submitted during the reporting period, July 1 through July 31, 1992. This information is provided pursuant to the reportable occurrence reporting requirements as set forth in 10 CFR 50.73.

<u>Licensee Event</u> <u>Report Number</u>	<u>Report</u> <u>Date</u>	<u>Title of Occurrence</u>
NONE		

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

Changes to the Offsite Dose Calculation Manual (ODCM) are reportable to the Nuclear Regulatory Commission (NRC) in accordance with station Technical Specifications.

The special note was updated due to the Rets being removed from Tech Specs and placed in the ODCM; also, a typographical error was corrected in the LLD formula.

This revision does not reduce the accuracy or reliability of dose calculations or setpoint determinations, and has been reviewed and found acceptable by the Onsite Review and Investigative Function.

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Braidwood On-site Review and Investigation Report

OSR Number: 92-058 Date: 7-8-92
 Subject Review: Offsite Dose Calculation Manual (OSCM) Revision 0.4

Requested by: Kim Aleshire

Disciplines Required: ☒ A Nuclear Power Plant Technology
^{NA} ~~☒ B~~ Reactor Operations
^{2/2/92} ☐ C Reactor Engineering
☐ D Chemistry
☒ E Radiation Protection
☐ F Instrumentation and Control
☐ G Mechanical and Electrical Systems

Participants: Rad Protection Supervisor GSEP COORDINATION
Lead HP

Reg. Ass. Supervisor
 OSR Membership Approved MDL 7/8/92
 Technical Staff Supervisor / Date

10CFR50.59 Screening and/or Safety Evaluation is Required? - - - Y (N) N
 If yes, attach completed documentation in accordance with BWAP 1205-6.

Concurrence Required by Offsite Review? (per Section C.6) - - - Y (N) N

Findings and Recommendations:

Updating special note due to the RETS being removed from Tech Specs and placed in the OSCM. Also, correcting some typographical errors. Recommend Approval.

Kim Aleshire

 On-Site Review Committee: Signature indicates concurrence with Findings and Recommendations and 10CFR50.59 Safety Evaluation.

Signature	Discipline(s)	Date
<u>Kim Aleshire</u>	<u>E</u>	<u>7-8-92</u>
<u>Edward M. Roche</u>	<u>A D G</u>	<u>7-8-92</u>
<u>Robert K. Smith</u>	<u>A E D</u>	<u>7-8-92</u>
<u>Al Broom</u>	<u>A B C D M</u>	<u>7/8/92</u>

APPROVED

JUL 09 1991

BRAIDWOOD
ON-SITE REVIEW

Approved by: S.R. Petro for 7/9/92
 STATION MANAGER DATE

BRAIDWOOD ON-SITE REVIEW AND INVESTIGATION REPORT

OSR No. _____

NOTE
* This checklist is provided as guidance for OSR *
* preparation and rev' .. Items should be *
* completed as appropriate. *

Preparer

App. N/A

I. SYNOPSIS FORMAT

[X] - Purpose _____
[X] - Executive Summary of Findings and Recommendations _____
[] [X] - References _____
[] - Basis of Findings and Recommendations _____
[] - Contingency Actions Recommended _____

II. DOCUMENTATION REVIEWED: (List Applicable Sections in Synopsis)

[X] [X] - UFSAR 13 _____
[X] [X] - Tech Specs. 4 _____
[X] [X] - Admin Tech Requirements _____
[X] [X] - Safety Evaluation Report _____
[X] [X] - Fire Protection Report _____
[X] [X] - Prior 10CFR50.59 Safety Evals _____
[X] [X] - NRC Commitments _____
[X] [X] - Vendor Documentation _____
[X] [X] - Special Permits/Licenses _____
[X] [X] - Station Procedures _____
[X] [X] - Environmental Qualification _____
[X] [X] - Design Basis Documentation _____
[X] [X] - Drawings _____
[X] [X] - Maint. History (TJM) _____
[X] [X] - NPRDS _____
[X] [X] - PRA Info. _____
[X] [X] - Prior NED QE 40.1 Operability Evaluations _____
[X] [X] - _____
[X] [X] - _____

III. PLANT CONDITIONS: (Discuss Applicable Items in Synopsis)

[] [X] - Applicable Modes _____
[] [X] - Work In-Progress/Planned _____
[] [X] - Temporary Alteration Installed _____
[] [X] - Out-of-Service _____
[] [X] - Degraded Equipment Log _____
[] [X] - Abnormal Valve Lineups _____
[] [X] - Effect on Opposite Train _____
[] [X] - Effect on Other Unit _____
[] [X] - Effect on Other Station _____
[] [X] - Training Required _____
[] [X] - _____
[] [X] - _____

IV. OTHER CONSIDERATIONS: (Discuss Applicable Items in Synopsis)

[X] - Consistency (dates, document no.s, values, EID's etc.) _____
[X] - Grammar (Continuity, spelling, flow, etc.) _____
[] [X] - Engineering Review of A/E Calculations and Assumptions _____
[] [X] - Adequately Documented _____
[] [X] - Reportability (10CFR21, 10CFR72, etc) _____
[] [X] - _____
[] [X] - _____

Prepared by:

Vern Alster 78-92

APPROVED

(Final)
2 of 2

JUL 09 1991

130(070991)
ZWBWAP

BRAIDWOOD
ON-SITE REVIEW

BRAIDWOOD

CHAPTER 12.0

SPECIAL NOTE

The transfer of the Radiological Effluent Technical Specifications to the ODCM by Technical Specification, Amendment 35, dated April 13, 1992, was approved by the Nuclear Regulatory Commission. The requirements of the Radiological Effluent Technical Standards (RETS) in this Chapter were implemented June 15, 1992.

BRAIDWOOD

BRAIDWOOD ANNEX INDEX

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CHAPTER 12	
12 - i	O.H
12 - ia	O.H
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12 - iii	O.A
12 - iv	O.A
12 - 1	O.A
12 - 2	O.A
12 - 3	O.A
12 - 4	O.A
12 - 5	O.A
12 - 6	O.A
12 - 7	O.A
12 - 8	O.A
12 - 9	O.A
12 - 10	O.A
12 - 11	O.A
12 - 12	O.A
12 - 13	O.A
12 - 14	O.A
12 - 15	O.A
12 - 16	O.A
12 - 17	O.A
12 - 18	O.A
12 - 19	O.A
12 - 20	O.A
12 - 21	O.H
12 - 22	O.A
12 - 23	O.A
12 - 24	O.A
12 - 25	O.A
12 - 26	O.A
12 - 27	O.A
12 - 28	O.A
12 - 29	O.A
12 - 30	O.H
12 - 31	O.A
12 - 32	O.A
12 - 33	O.A
12 - 34	O.A
12 - 35	O.A
12 - 36	O.A
12 - 37	O.A
12 - 38	O.A
12 - 39	O.A
12 - 40	O.A
12 - 41	O.A
12 - 42	O.A
12 - 43	O.A
12 - 44	O.A
12 - 45	O.A

REVISION O.H
JUNE 1992

BRAIDWOOD

BRAIDWOOD ANNEX INDEX

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12 - 46	O.A
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12 - 48	O.A
12 - 49	O.A
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12 - 51	O.H
12 - 52	O.A
12 - 53	O.A
12 - 54	O.A
12 - 55	O.A
12 - 56	O.A
12 - 57	O.A
12 - 58	O.A
12 - 59	O.A
12 - 60	O.A

TABLE 12.3-1 (Continued)TABLE NOTATIONS

- (1) The LLD is defined, for purposes of these sections, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66s_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

Where:

LLD = the lower limit of detection (microCuries per unit mass or volume),

s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),

E = the counting efficiency (counts per disintegration),

V = the sample size (units of mass or volume),

2.22×10^6 = the number of disintegrations per minute per microCurie,

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (sec^{-1}), and

Δt = the elapsed time between the midpoint of sample collection and the time of counting (sec).

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as a before the fact limit representing the capability of a measurement system and not as an after the fact limit for a particular measurement.

- (2) A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed by a method described in the ODCM to assure representative sampling.

TABLE 12.4-1 (Continued)

TABLE NOTATIONS

- (1) The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66s_b}{E \cdot V \cdot 2.22 \times 10^6 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

Where:

LLD = the lower limit of detection (microCuries per unit mass or volume),

s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),

E = the counting efficiency (counts per disintegration),

V = the sample size (units of mass or volume),

2.22×10^6 = the number of disintegrations per minute per microCurie,

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (sec^{-1}), and

Δt = the elapsed time between the midpoint of sample collection and the time of counting (sec).

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as a before the fact limit representing the capability of a measurement system and not as an after the fact limit for a particular measurement.

- (2) The principal gamma emitters for which the LLD specification applies include the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 in noble gas releases and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, I-131, Cs-134, Cs-137, Ce-141, and Ce-144 in iodine and particulate releases. This list does not mean that only these nuclides are to be considered.

TABLE 12.5-3 (Continued)

TABLE NOTATIONS

- (1) This list does not mean that only these nuclides are to be considered. Other peaks that are identifiable, together with those of the above nuclides, shall also be analyzed and reported in the Annual Radiological Environmental Operating Report pursuant to Section 12.6.1.
- (2) Required detection capabilities for thermoluminescent dosimeters used for environment measurements shall be in accordance with the recommendations of Regulatory Guide 4.13.
- (3) The LLD is defined, for purposes of these specifications, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system, which may include radiochemical separation:

$$LLD = \frac{4.66s}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

Where:

LLD = the "a priori" lower limit of detection (picoCuries per unit mass or volume),

s_b = the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (counts per minute),

E = the counting efficiency (counts per disintegration),

V = the sample size (units of mass or volume),

2.22 = the number of disintegrations per minute per picoCurie,

Y = the fractional radiochemical yield, when applicable,

λ = the radioactive decay constant for the particular radionuclide (sec^{-1}), and

Δt = the elapsed time between sample collection, or end of the sample collection period, and the time of counting (sec).

Typical values of E, V, Y, and Δt should be used in the calculation.

It should be recognized that the LLD is defined as a before the fact limit representing the capability of a measurement system and not as an after the fact limit for a particular measurement.