



## Condition Report Record Report



CR Num	CR Level	CR Type	Step Entry Date	Step	Step Resp	Step Owner
5430	C	Q NCR	1/4/2006 2:32:16 PM	Completed	N/A	N/A

**Routing Notes:**

May 10 2005 (Mike Collins) CR Ownership Org changed from Repository Developmnt Mgr to Licensing Nuclear Safety CR Responsible Org changed from Lawrence Livmr Natl Lab to Lawrence Livmr Natl Lab based on organizational structure changes.

By V. Barish 8/18/2005. Based upon discussions and agreements reached during the 8/18/2005 BQAP-BSC-05-07 audit status meeting, rerouting this CR back to the plan CR stage to complete the Functional evaluation field entry.

**Condition Information**

<b>CR Title:</b>	Data acquired by Vaisala Temperature/Humidity Probes Above 90 Degrees Celsius is Indeterminate					
<b>Date Found:</b>	08-Apr-05	<b>Site:</b>	Labs	<b>CR Initiator:</b>	Barish, Victor	
<b>Time Found:</b>	08:00	<b>Location:</b>	LLNL	<b>CR Initiating Org:</b>	Lawrence Livmr Natl Lab	
				<b>Involve Initiator?</b>	Yes	

**Condition Description:**

(REFER TO CR 2247) Out of Condition (OCR) reports have been written for Vaisala probes that were broken as found or out-of-calibration as found. Currently, no method has been identified to determine with accuracy the acceptability of the data taken by the Vaisala probes above the range of calibration. The range of calibration for temperature is 20-60 degrees celsius and for Relative Humidity is 15-85 %RH. The data taken above 60 degrees celsius is therefore indeterminate since no determination of accuracy or tolerance has been established. This CR is a nonconforming condition. The list of OCRs and corresponding equipment are attached in the attachment section.

**Supplemental Information:**

CR 2247 remedial actions have modified the existing TDMS DTNs containing temperature/humidity acquired data from the Vaisala probes to include caveats for the use of data acquired above 90 degrees celcius.

**Possible Solution:**

**Requirement Involved?** Yes  
**Requirement:** LP-12.1Q-BSC Rev 0 ICN 0 5.7 [16]

**Recommended CR Level:**  
**Resolved / Closed?** No  
**CAQ / Q NCR?** Yes  
**DOE Scope?** No

**Business Process:**  
**Business Process ID:**

**Immediate Action Taken?** Yes  
**Immediate Action Desc:**



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Determined all outstanding OCRs addressing Vaisala Temperature Humidity probes, placed the list on a spreadsheet and started generating the CR (NCR).

**Affected Resources:**

Since the initial problem was identified and processed under CR 2247 as a "use of M&TE outside the range of calibration" issue and existing DTNs were correctly modified to address the CR resolution, the resources for the resolution of this issue will be LLNL.

**Condition Information****Assignment Information**

<b>Ownership Organization:</b>	Licensing Nuclear Safety	<b>Oversight Organization:</b>	Postclosure & License Acq
<b>Responsible Organization:</b>	Lawrence Livmr Natl Lab	<b>Oversight Lead:</b>	Coleman-OLAS, Drew
<b>Business Process Review Org:</b>		<b>Quality Assurance Rep (QAR):</b>	

**Assignment Information****Screening Information**

<b>CR Level:</b> C	<b>Category:</b> Equipment NCR	<b>Date Submitted:</b> 4/18/2005	<b>Date Issued:</b> 4/20/2005
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**CST / MRC Conclusions:**

4.20.05 M. Cleveland/CAP Staff CST approves screening. Significance Guidance 3A. DOE Scope field was changed from Yes to No. Business Process field was changed from Condition Report to blank. Business Process ID field was changed from Nonconformance to blank.

**Screening Information****Evaluation Information****Extent of Condition:**

Extent of Condition Investigation

Nonconformance Plan CR 5430 addresses the impact of Vaisala Temperature Humidity sensors calibration reports on percent relative humidity [%RH] data collected at temperatures above 60 degrees celsius. We refer to these probes as RH probes in this document. The out of calibration reports are tabulated in file CR 5430 list of OCRs and temp\_humid probes.pdf and the relevant data submittals are listed in file CR\_5430\_dtn\_sar1.pdf Each of these OCRs was initiated because the RH probe was used past the calibration due date or because the probe was determined to be out-of-calibration by Thunder Scientific at temperatures 60 C and below. Condition report CR 2247 statistically quantified the uncertainty of RH probes from 90 to 120 C based on multiple calibration checks using saturated KNO3 solutions. Following the resolution of CR 2247, data collected from 90 to 120 C contain a caveat stating uncertainty characterized by a temperature-independent standard deviation of approximately +/- 1.6 %RH should be applied to mixed salt deliquescence data from 90 to 120 degrees celsius. A standard deviation of +/-1.6%RH units translates to an uncertainty of 3.2%RH units at the 95th percentile



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confidence level. Data for experiments conducted above 120 C contain the caveat that %RH values are conditional values only and may be used to indicate chemical processes but not for quantitative model development or validation.

### Evaluation of Technical Data

Excel spreadsheet file CR\_5430\_dtn\_sac1.pdf lists LLNL DTNs for which Vaisala temperature relative humidity sensors were used above 90 degrees celsius to acquire data. The spreadsheet provides:

DTN and corresponding source[s]

DTN Title

Vaisala instrument[s] used

CR 2247 caveat[s] included or not

Product in which DTN used.

Data originator[s]

Comments

1. Three DTNs (shaded in brown in file CR\_5430\_dtn\_sar1.pdf) will be downgraded to non-qualified, because the chamber RH probe did not accurately record the relative humidity directly above the experimental brine. These DTNs have not been used as direct or indirect input to technical products.

- a. LL021012623121.013
- b. LL021206223121.016
- c. LL030106223121.017

2. In three DTNs (shaded in white on page 1 of CR\_5430\_dtn\_sar1.pdf), RH is a qualitative parameter and already contain the caveat that %RH values are conditional values only and may be used to indicate chemical processes but not for quantitative model development or validation (CR 2247). These DTNs have been used as direct and indirect input to technical products. The %RH data from the DTNs directly used in ANL-EBS-MD-000001, Rev. 1 had no impact on this AMR as identified in IRANs 4793-B and 4794-A. attached to this plan.

- a. LL020903812251.019 in ANL-EBS-MD-000003, Rev. 2 [indirect]
- b. LL030308812251.017 in ANL-EBS-MD-000003, Rev. 2 [indirect] and ANL-EBS-MD 000001, Rev. 1 [direct]



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5430	C	Q NCR	1/4/2006 2:32:16 PM	Completed	N/A	N/A

c. LL030309012251.018 in ANL-EBS-MD-000001, Rev. 1 [direct]

3. In ten DTNs (highlighted in yellow in CR\_5430\_dtn\_sar1.pdf), RH is quantitative and contains the caveat that uncertainty characterized by a temperature-independent standard deviation of approximately +/- 1.6 %RH should be applied to mixed salt deliquescence data from 90 to 120 degrees celsius (CR 2247). These DTNs are not impacted by out-of-calibration reports for the specific probes, because

- a. the probes were used to monitor the chamber RH and are not submitted as data in the DTN,
- b. the probes used to acquire the %RH met 95th percentile confidence level (CR 2247) or were included in CR 2247 defining the uncertainty for RH measurements at elevated temperatures
- c. the accuracy of the probe was corroborated with another probe that met 95th percentile confidence level (CR 2247)

4. One DTN contains both quantitative RH below 120 C and qualitative RH above 120 C. The caveats need to be updated to include all temperatures above 120 degrees Celsius rather than only 150 degrees Celsius.

a. LL040702212251.113

5. Two DTNs are subject to verification using a new two temperature probe system that is being developed at LLNL. These DTNs will include quantitative %RH values without caveats for use.

a. LL050205123121.047

b. LL050501212251.143

Based upon the above, there are no technical products impacted by changes in %RH to these DTNs therefore, with the exception of DTNs LL050205123121.047 and LL050501212251.143, the disposition of the data taken with the Vaisala Temperature/Humidity sensors (probes) documented in the OCRs on the list attached to the initiated CR are USE-AS-IS.

**Impact of Condition:**  
IMPACT ANALYSIS

As identified in the extent of condition investigation results, there is no current impact to waste isolation, radiological safety, or quality. If existing DTNs must be changed or modified as a result of the disposition of this CR [NCR], then other work may be affected. Based upon the extent of investigation



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results there are no DTNs on file CR\_5430\_dtn\_sar1.pdf that are used as a source to other DTNs. Therefore, there are no technical products impacted by changes in %RH to these DTNs.

**CR Previous Similar Event(s):**

CR 2247 addressed the use of the Vaisala Temperature Humidity probes [sensors] outside of the range of calibration. Although CR 2247 corrective actions did not address the dispositioning of OCRs, the same equipment and data fall under CR 5430.

Functional Evaluation Req?	No	Hold Tag Applied?	No	Effectiveness Rev Required?	No	Effectiveness Rev Days	0
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Functional Evaluations

FEV Num	Title	Cond. Release Disposition	Step Entry Date	Step
285	Data acquired by Vaisala Temperature/Humidity Probes Above 90 Degrees Celsius is Indeterminate	No Use As Is	8/18/2005 1:02:56 PM	Completed

**Evaluation Information**

**Cause Analysis Information**

**Cause Analysis Type:** N/A

**Cause Analysis Results:**

A2B1 Calibration for Instruments Less Than Adequate (LTA)

Cause Code A2B1 was chosen because the as-found condition of the instruments during calibration is mostly out-of-calibration within the specified range of calibration, i.e., 20 thru 60 degrees Celsius. Often the instruments must be sent to the manufacturer, Vaisala, for repair because seals are broached or broken.

A7B3 - Other

Cause Code A7B3 was chosen because no other cause code applies. The Vaisala sensors were chosen by LLNL scientists because they are the best instruments for the intended purpose on the market. The manufacturer, Vaisala, states in published literature that calibrating the temperature humidity sensor at 25 degrees Celsius and 15, 50, and 85 percent relative humidity provides a calibration curve that allows the use of the instrument through its full operating range. Experience has shown, however, that the manufacturer's published statement is difficult to verify at temperatures above 60 degrees



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Celsius. Additionally, there are no national or international calibration suppliers that can calibrate temperature humidity sensors throughout the full range of temperatures because there are no NIST-traceable standards or equipment for calibrations above 60 degrees Celsius.

**Recurrence Control:**

**Investigation Findings:**

**Probable Solution:**

LL/GI Required? No

**Reason LL/GI Not Performed:**

The temperature humidity sensor problem is isolated to work being performed by LLNL-YMP personnel. LLNL Scientists/Investigators are already aware of this particular issue and are working to resolve it. LLNL is not aware of any other instruments used on the project that cannot be calibrated throughout the entire range of use.

**Cause Analysis Team Members**

Team Member Name	Team Member Organization
< NO CAUSE ANALYSIS TEAM MEMBERS IDENTIFIED FOR THIS CONDITION REPORT >	

**Cause Code(s):**

- A2B1 - Equipment/Material Problem - Calibration for Instruments LTA
- A7B3 - Other Problem - Other

**Event Code(s):**

- PAB - PA Conf Data

Cause Analysis Information



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### Plan Information

<b>Plan Due Date:</b>	5/20/2005	<b>Completion Goal Date:</b>	6/19/2005	<b>Date Completed:</b>	12/22/2005
<b>Plan Completed Date:</b>	6/9/2005	<b>Original Est Comp Date:</b>	8/5/2005	<b>Date Closed:</b>	1/4/2006
		<b>Current Est Comp Date:</b>	11/7/2005		
		<b>Actions Required?</b>	Yes	<b>Verify Actions?</b>	Yes

### Corrective Action Plan Summary:

1. Three DTNs (shaded in brown in file CR\_5430\_dtn\_sar1.pdf) will be downgraded to non-qualified, because the chamber RH probe did not accurately record the relative humidity directly above the experimental brine. These DTNs have not been used as direct or indirect input to technical products.

- a. LL021012623121.013
- b. LL021206223121.016
- c. LL030106223121.017

2. In three DTNs (shaded in white on page 1 of CR\_5430\_dtn\_sar1.pdf), RH is a qualitative parameter and already contain the caveat that %RH values are conditional values only and may be used to indicate chemical processes but not for quantitative model development or validation (CR 2247). These DTNs have been used as direct and indirect input to technical products. The %RH data from the DTNs directly used in ANL-EBS-MD-000001, Rev. 1 had no impact on this AMR as identified in IRANs 4793-B and 4794-A. attached to this plan.

- a. LL020903812251.019 in ANL-EBS-MD-000003, Rev. 2 [indirect]
- b. LL030308812251.017 in ANL-EBS-MD-000003, Rev. 2 [indirect] and ANL-EBS-MD 000001, Rev. 1 [direct]
- c. LL030309012251.018 in ANL-EBS-MD-000001, Rev. 1 [direct]

3. In ten DTNs (highlighted in yellow in CR\_5430\_dtn\_sar1.pdf), RH is quantitative and contains the caveat that uncertainty characterized by a temperature-independent standard deviation of approximately +/- 1.6 %RH should be applied to mixed salt deliquescence data from 90 to 120 degrees celsius (CR 2247). These DTNs are not impacted by out-of-calibration reports for the specific probes, because

- a. the probes were used to monitor the chamber RH and are not submitted as data in the DTN,
- b. the probes used to acquire the %RH met 95th percentile confidence level (CR 2247) or were included in CR 2247 defining the uncertainty for RH measurements at elevated temperatures
- c. the accuracy of the probe was corroborated with another probe that met 95th percentile confidence level (CR 2247)



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5430	C	Q NCR	1/4/2006 2:32:16 PM	Completed	N/A	N/A

4. One DTN contains both quantitative RH below 120 C and qualitative RH above 120 C. The caveats need to be updated to include all temperatures above 120 degrees Celsius rather than only 150 degrees Celsius.

a. LL040702212251.113

5. Two DTNs are subject to verification using a new two temperature probe system that is being developed at LLNL. These DTNs will include quantitative %RH values without caveats for use.

a. LL050205123121.047

b. LL050501212251.143

Action	Title	Type	Accepting Org / Assigned To Org	Step Entry Date	Step
5430-001	Downgrade three DTNs	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	5/25/2005 2:47:31 PM	Plan Action
5430-001	Downgrade three DTNs	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/9/2005 9:11:17 AM	Perform Action
5430-001	Downgrade three DTNs	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	7/7/2005 11:58:57 AM	Supv Verify Action
5430-001	Downgrade three DTNs	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	7/11/2005 4:25:54 PM	Completed
5430-002	Modify caveat	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	5/25/2005 3:14:43 PM	Plan Action
5430-002	Modify caveat	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/9/2005 9:12:22 AM	Perform Action
5430-002	Modify caveat	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	7/8/2005 1:44:58 PM	Supv Verify Action
5430-002	Modify caveat	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	7/11/2005 4:26:39 PM	Completed
5430-003	Process DTNs in accordance with new process	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	5/25/2005 3:18:12 PM	Plan Action
5430-003	Process DTNs in accordance with new process	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/9/2005 9:12:50 AM	Perform Action
5430-003	Process DTNs in accordance with new process	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	9/20/2005 11:18:34	Supv Verify Action
5430-003	Process DTNs in accordance with new process	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	9/20/2005 1:38:47 PM	Completed



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5430	C	Q NCR	1/4/2006 2:32:16 PM	Completed	N/A	N/A
5430-004	Construct system to calibrate probes at high temperatures	T/RH	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/8/2005 4:27:06 PM	Plan Action
5430-004	Construct system to calibrate probes at high temperatures	T/RH	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/9/2005 9:13:17 AM	Perform Action
5430-004	Construct system to calibrate probes at high temperatures	T/RH	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	7/7/2005 12:40:38 PM	Supv Verify Action
5430-004	Construct system to calibrate probes at high temperatures	T/RH	Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	7/11/2005 4:27:32 PM	Completed
5430-005	Write Technical Implementing Procedure		Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/8/2005 4:30:51 PM	Plan Action
5430-005	Write Technical Implementing Procedure		Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	6/9/2005 9:13:44 AM	Perform Action
5430-005	Write Technical Implementing Procedure		Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	12/16/2005 4:31:09	Supv Verify Action
5430-005	Write Technical Implementing Procedure		Essential	Lawrence Livrmr Natl Lab / Lawrence Livrmr Natl Lab	12/22/2005 2:32:10	Completed

### Plan Information

### Review Information

#### Supv Review Plan

Step Completion Date	Person that performed review	Plan Approval Indicator and Comments, if any
6/6/2005 4:34:20 PM	McCallen, David	No Supervisor does not accept plan yet
6/9/2005 3:58:19 PM	McCallen, David	Yes
8/18/2005 1:08:36 PM	McCallen, David	Yes Supervisor accepts the revisions to the plan

-D.McCallen 8/18/05

#### Oversee Implementation

Step Completion Date	Person that performed review	Implementation Done Indicator and Comments, if any
8/18/2005 9:44:17 AM	Barish, Victor	No By V. Barish 8/18/2005 - Rerouting this CR back to the Plan CR stage to address functionality field.



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**Oversee Implementation (continued)**

Step Completion Date	Person that performed review	Implementation Done Indicator and Comments, if any
12/22/2005 2:49:32 PM	Barish, Victor	Yes All actions related to this CR are complete and verified. This CR can therefore be closed.

**Supv Verify Impl**

Step Completion Date	Person that performed review	CR Verification Indicator / Comments
12/22/2005 2:53:24 PM	McCallen, David	Yes Supervisor accepts actions

-D.McCallen 12/22/05

**Review Information**

**CR Attachments**

Filename	Size	Date
<a href="#">CR 5430 dtn sac1 color.pdf</a>	6035 kb	
<a href="#">CR 5430 IRAN 4793-B.pdf</a>	93 kb	
<a href="#">CR 5430 IRAN 4794-A.pdf</a>	86 kb	
<a href="#">CR 5430 list of OCRs and temp humid probes.pdf</a>	76 kb	
<a href="#">CR tem rel hum ncr.xls</a>	18 kb	

**CR Attachments**



## Condition Report Record Report

### Functional Evaluation Report



CR Num	Func Eval #	Step Entry Date	Step	Step Resp	Step Owner
5430	285	8/18/2005 1:02:56 PM	Completed	N/A	N/A

#### Routing Notes:

#### Functional Eval Information

**Func Eval #** 285

**Functional Evaluation Title:**

Data acquired by Vaisala Temperature/Humidity Probes Above 90 Degrees Celsius is Indeterminate

**Conditional Release:** No

**Conditional Release Justification:**

NOT APPLICABLE - This CR was written to address the indeterminate status of data taken with Vaisala Temperature Humidity probes above 60 degrees celsius and is not in the "Equipment" category.

**Hold Tag Restrictions:**

There is no hold status on the existing data. Caveats were placed in all existing DTNs containing temperature and relative humidity data taken with the Vaisala Temperature Humidity probes. Users of the data must consider the caveats prior to using the data.

**Disposition:** Use As Is

**Disposition Justification:**

Since this is an NCR identifying indeterminate data, the functional evaluation dispositions do not exactly correspond to the allowable data dispositions. The data in the DTNs associated with the data acquired by the Vaisala Temperature Humidity probes above 90 degrees celsius did not change, but caveats were needed to provide the user the limitations of the use of the data. The limitations relate to the amount of uncertainty for relative humidity values to be applied when using the data acquired above 90 degrees celsius.

Based upon the above, the data is dispositioned as Use-as-is.

Functional Eval Information

#### Functional Eval Attachments

**Filename**

**Size**

**Date**

< NO ATTACHMENTS LINKED TO THIS FUNCTIONAL EVALUATION >



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CR Num	Func Eval #	Step Entry Date	Step	Step Resp	Step Owner
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Functional Eval Attachments



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### Corrective Action Report



CR Num	Action Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-001	7/11/2005 4:25:54	Completed	N/A	N/A

#### Routing Notes:

#### Action Details

<b>Action Number:</b>	5430-001	<b>Current Due Date:</b> 7/8/2005	<b>Date Completed:</b> 7/7/2005	<b>Date Closed:</b> 7/11/2005
<b>Action Type:</b>	Essential	<b>Original Due Date:</b> 7/8/2005		
<b>Accepting Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>	<b>Milestone:</b>	
<b>Assigned To Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>	<b>Site:</b>	Labs
<b>Action Title:</b>	Downgrade three DTNs			

#### Action Description:

Three DTNs will be downgraded to non-qualified because the chamber RH probe did not accurately record the relative humidity directly above the experimental brine and the experiments were repeated in subsequent mixed salt tests. These DTNs have not been used as direct or indirect input to technical products.

LL021012623121.013

LL021206223121.016

LL030106223121.017

#### Action Taken:

The LLNL-YMP Data Coordinator downgraded DTNs LL021012623121.013, LL021206223121.016, and LL030106223121.017 to unqualified. IRANs 5196-A, 5197-A, and 5198-A were processed with no impact since the three DTNs were not used as an input to technical products or as a source to another DTN. Copies of the supplemental record packages for these three DTNs are attached to this action item attachment field.

Verification can be performed by reviewing the attached record packages and viewing the corrections in the TDMS ATDT Metadata.

#### Action Details

#### Action Adjustments

Adjustment Num	Adjustment Title	Proposed Due Date	Step
< NO ADJUSTMENTS LINKED TO THIS CORRECTIVE ACTION >			



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<b>CR Num</b> 5430	<b>Action Num</b> 5430-001	<b>Step Entry Date</b> 7/11/2005 4:25:54	<b>Step</b> Completed	<b>Step Resp</b> N/A	<b>Step Owner</b> N/A
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**Action Adjustments**

**Action Attachments**

<b>Filename</b>	<b>Size</b>	<b>Date</b>
< NO ATTACHMENTS LINKED TO THIS CORRECTIVE ACTION >		

**Action Attachments**



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<b>CR Num</b> 5430	<b>Action Num</b> 5430-002	<b>Step Entry Date</b> 7/11/2005 4:26:39	<b>Step</b> Completed	<b>Step Resp</b> N/A	<b>Step Owner</b> N/A
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**Routing Notes:**

**Action Details**

<b>Action Number:</b>	5430-002	<b>Current Due Date:</b>	6/30/2005	<b>Date Completed:</b>	7/8/2005	<b>Date Closed:</b>	7/11/2005
<b>Action Type:</b>	Essential	<b>Original Due Date:</b>	6/30/2005				
<b>Accepting Org:</b>	Lawrence Livmr Natl Lab	<b>McCallen, David</b>		<b>Milestone:</b>			
<b>Assigned To Org:</b>	Lawrence Livmr Natl Lab	<b>McCallen, David</b>		<b>Site:</b>	Labs		
<b>Action Title:</b>	Modify caveat						

**Action Description:**

One DTN contains both quantitative %RH values below 120 C and qualitative %RH above 120 C. The wording for the caveat for temperatures above 120 degrees Celsius must be updated to reflect that temperatures above 120 degrees Celsius rather than at 150 degrees Celsius.

LL040702212251.113

**Action Taken:**

The caveat for LL040702212251.113 was modified to indicate temperatures above 120 degrees Celsius vice temperatures at 150 degrees celsius. A copy of the record package is attached to this action item in the attachment field.

**Action Details**

**Action Adjustments**

<b>Adjustment Num</b>	<b>Adjustment Title</b>	<b>Proposed Due Date</b>	<b>Step</b>
< NO ADJUSTMENTS LINKED TO THIS CORRECTIVE ACTION >			

**Action Adjustments**

**Action Attachments**

<b>Filename</b>	<b>Size</b>	<b>Date</b>
<a href="#">CR5430.pdf</a>	936 kb	



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CR Num	Action Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-002	7/11/2005 4:26:39	Completed	N/A	N/A

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Action Attachments



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### Corrective Action Report



CR Num	Action Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-003	9/20/2005 1:38:47	Completed	N/A	N/A

**Routing Notes:****Action Details**

<b>Action Number:</b>	5430-003	<b>Current Due Date:</b> 8/12/2005	<b>Date Completed:</b> 9/20/2005	<b>Date Closed:</b> 9/20/2005
<b>Action Type:</b>	Essential	<b>Original Due Date:</b> 8/12/2005		
<b>Accepting Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>	<b>Milestone:</b>	
<b>Assigned To Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>	<b>Site:</b>	Labs
<b>Action Title:</b>	Process DTNs in accordance with new process			

**Action Description:**

Use the process for calibrating temperature relative humidity probes described in action item CR 5430-004 to process the data for DTNs:

LL050205123121.047

LL050501212251.143

**Action Taken:**

DTN LL050501212251.143 was processed and submitted to TDMS on May 19, 2005. The temperature used was 105 degrees celsius which is not applicable to the new process to be described in a new procedure [See action item 5430-005]. The applicable caveat from the disposition of CR 2247 was included to ensure that users of the data include the additional plus or minus 1.6 %RH when using the data.

[For DTN LL050205123121.047 finalization of the technical review delayed the submittal of the date. Anticipate 8/19/05 due date.]



**OCRWM Corrective Action Program**  
**Condition Report**  
**Record Report**  
**Corrective Action Report**



CR Num	Action Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-003	9/20/2005 1:38:47	Completed	N/A	N/A

DTN LL050205123121.047 was submitted on August 29, 2005 without using the new process described in CR 5430-005. The data submitted under this DTN was based upon data acquired prior to the implementation of the new process. Applicable caveats determined under CR 2247 for temperatures up to 120 degrees celsius were used to provide the users the limitations of use of the data.

Verification can be performed by reviewing the DTN in TDMS.

**Action Details**

**Action Adjustments**

Adjustment Num	Adjustment Title	Proposed Due Date	Step
5430-003-001	Extention of proposed due date	8/12/2005	Completed

**Action Adjustments**

**Action Attachments**

Filename	Size	Date
< NO ATTACHMENTS LINKED TO THIS CORRECTIVE ACTION >		

**Action Attachments**



**OCRWM Corrective Action Program**  
**Condition Report**  
**Record Report**  
**Corrective Action Report**



CR Num 5430	Action Num 5430-004	Step Entry Date 7/11/2005 4:27:32	Step Completed	Step Resp N/A	Step Owner N/A
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**Routing Notes:**

**Action Details**

<b>Action Number:</b>	5430-004	<b>Current Due Date:</b>	6/30/2005	<b>Date Completed:</b>	7/7/2005	<b>Date Closed:</b>	7/11/2005
<b>Action Type:</b>	Essential	<b>Original Due Date:</b>	6/30/2005				
<b>Accepting Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>			<b>Milestone:</b>		
<b>Assigned To Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>			<b>Site:</b>	Labs	
<b>Action Title:</b>	Construct system to calibrate T/RH probes at high temperatures						

**Action Description:**

LLNL-YMP scientists and technicians will construct a system to check the accuracy of calibrated Vaisala probes at temperatures from 105 180 degrees celsius. (NIST is also experimenting with a similar equipment set-up and process to check temperature/humidity probe accuracy at high temperatures). RH calibrations will be checked before and after each set of experiments to determine the sensor s accuracy directly subsequent to testing. If the two-temperature system can not adequately confirm relative humidity at higher temperatures all RH data reported in future DTNs will be qualitative and will have the following caveat: %RH values are conditional values only and may be used to indicate chemical processes but not for quantitative model development or validation (CR 2247).

**Action Taken:**

LLNL-YMP constructed and tested a system for verifying/validating the calibration of temperature humidity probes at temperatures from 105-180 degrees Celsius. The documents for the description of high temperature RH validation setup and operation are attached to the attachment field of this action item.

Verification of the action can be performed by reviewing the attachment and, if required, by viewing the test setup in the laboratory.

The process steps for calibrating (validating) the temperature humidity probes are being captured in the procedure under action item CR 5430-005

**Action Details**

**Action Adjustments**

<b>Adjustment Num</b>	<b>Adjustment Title</b>	<b>Proposed Due Date</b>	<b>Step</b>
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<p>OCRWM Corrective Action Program  <b>Condition Report</b>  <b>Record Report</b>          Corrective Action Report</p>
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<b>CR Num</b> 5430	<b>Action Num</b> 5430-004	<b>Step Entry Date</b> 7/11/2005 4:27:32	<b>Step</b> Completed	<b>Step Resp</b> N/A	<b>Step Owner</b> N/A
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< NO ADJUSTMENTS LINKED TO THIS CORRECTIVE ACTION >

**Action Adjustments**

**Action Attachments**

<b>Filename</b>	<b>Size</b>	<b>Date</b>
< NO ATTACHMENTS LINKED TO THIS CORRECTIVE ACTION >		

**Action Attachments**



OCRWM Corrective Action Program  
**Condition Report**  
**Record Report**  
 Corrective Action Report



CR Num	Action Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-005	12/22/2005 2:32:10	Completed	N/A	N/A

**Routing Notes:****Action Details**

<b>Action Number:</b>	5430-005	<b>Current Due Date:</b>	10/31/2005	<b>Date Completed:</b>	12/16/2005	<b>Date Closed:</b>	12/22/2005
<b>Action Type:</b>	Essential	<b>Original Due Date:</b>	10/31/2005				
<b>Accepting Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>		<b>Milestone:</b>			
<b>Assigned To Org:</b>	Lawrence Livmr Natl Lab	<i>McCallen, David</i>		<b>Site:</b>	Labs		
<b>Action Title:</b>	Write Technical Implementing Procedure						

**Action Description:**

If the two-temperature system can be used to adequately calibrate RH probes at elevated temperature, a LLNL-YMP Technical Implementing Procedure [TIP] will be written and followed to ensure consistency. The TIP will include justification for using a calibration process that is not traceable to NIST, i.e., there is no NIST traceable standard for the calibration of temperature humidity sensors above 60 degrees celsius.

**Action Taken:**

TIP-CM-72, Rev 0, CN 0, Calibration of RH Meters Using the Bi-Thermal RH Calibration System, was authorized by Kirk Staggs, reviewed in accordance with LLNL procedure 033-YMP-QP 5.0, and approved by the Technical Area Leader on 12/15/2005. The approved procedure, effective 12/16/2005, was placed on the controlled LLNL YMP\_DOC\_SERVER in the TIP folder on 12/16/2005.

Verification can be performed by viewing the TIP on the LLNL YMP\_DOC\_SERVER. (NOTE: The TIP must be in color so it cannot be attached to the attachment field of this action item because of its size.)

**Action Details****Action Adjustments**

Adjustment Num	Adjustment Title	Proposed Due Date	Step
5430-005-001	Extension of due date for writing and processing a TIP	8/19/2005	Completed
5430-005-002	Adjustment of due date to write and process procedure	10/31/2005	Completed

**Action Adjustments**



OCRWM Corrective Action Program  
**Condition Report  
Record Report**  
Corrective Action Report



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<b>CR Num</b> 5430	<b>Action Num</b> 5430-005	<b>Step Entry Date</b> 12/22/2005 2:32:10	<b>Step</b> Completed	<b>Step Resp</b> N/A	<b>Step Owner</b> N/A
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**Action Attachments**

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<b>Filename</b>	<b>Size</b>	<b>Date</b>
< NO ATTACHMENTS LINKED TO THIS CORRECTIVE ACTION >		

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**Action Attachments**



## Condition Report Record Report

### CA Adjustment Report



CR Num	Action Num	Action Adj Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-003	5430-003-001	7/29/2005 2:09:59	Completed	N/A	N/A

**Routing Notes:****Action Adjustment Details****Adjustment Number:** 5430-003-001**Requested Due Date:** 8/12/2005**Date Request Submitted:** 7/29/2005**Date Closed:** 7/29/2005**Adjustment Title:** Extension of proposed due date**Reason for Adjustment:**

Due to addressing resolutions related to technical review comments, DTN LL050205123121.047 has not yet completed LLNL processing.

DTN LL050501212251.143 was submitted to the TDMS on 6/9/2005 and the record package on 6/14/2005 so the extension is for the DTN ending in .047 only.

**Adjustment Response:**

Extension to 8/12/2005 is within the limits of the proposed closure date.

**Action Adjustment Details**



## Condition Report Record Report

### CA Adjustment Report



CR Num	Action Num	Action Adj Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-005	5430-005-001	7/19/2005 11:06:22	Completed	N/A	N/A

#### Routing Notes:

#### Action Adjustment Details

**Adjustment Number:** 5430-005-001

**Requested Due Date:** 8/19/2005

**Date Request Submitted:** 7/19/2005

**Date Closed:** 7/19/2005

**Adjustment Title:** Extension of due date for writing and processing a TIP

**Reason for Adjustment:**

The original due date was premature because it did not take into consideration other work priorities assigned to the personnel responsible for writing the procedure.

**Adjustment Response:**

Action adjustment accepted.

**Action Adjustment Details**



## Condition Report Record Report

### CA Adjustment Report



CR Num	Action Num	Action Adj Num	Step Entry Date	Step	Step Resp	Step Owner
5430	5430-005	5430-005-002	8/26/2005 8:25:11	Completed	N/A	N/A

**Routing Notes:****Action Adjustment Details****Adjustment Number:** 5430-005-002**Requested Due Date:** 10/31/2005**Date Request Submitted:** 8/26/2005**Date Closed:** 8/26/2005**Adjustment Title:** Adjustment of due date to write and process procedure**Reason for Adjustment:**

Final testing of the test configuration has been delayed several months due to the lack of newly calibrated MandTE. Required MandTE are now available but the final testing and development of a procedure to perform the validation of %RH will take an additional two months to complete. The due date is therefore required to be adjusted to 10/31/2005.

**Adjustment Response:**

This adjustment is necessary to assure that the process is tested under the best condition possible and the procedural steps are accurate and repeatable.

**Action Adjustment Details**