



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 22, 2011

LICENSEE: Union Electric Company  
FACILITY: Callaway Plant, Unit 1  
SUBJECT: SUMMARY OF JANUARY 25, 2011, MEETING WITH UNION ELECTRIC COMPANY ON RESPONSES TO THE U.S. NUCLEAR REGULATORY COMMISSION STAFF'S QUESTIONS RAISED DURING THE PREVIOUS PUBLIC MEETING ON NOVEMBER 18, 2010 (TAC NO. ME2822)

On January 25, 2011, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a Category 1 public meeting with representatives of Union Electric Company, licensee for Callaway Plant, Unit 1, at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss the licensee's responses to NRC staff questions raised during the previous public meeting on November 18, 2010, as noticed and summarized in the Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML103020279 and ML103470147 regarding Callaway Plant, Unit 1's license amendment request. The licensee requested revision to Technical Specification (TS) 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," in its submittal dated November 25, 2009 (ADAMS Accession No. ML093290318). A list of attendees is provided in Enclosure 1.

The licensee first answered the three questions the NRC staff raised during the November 18, 2010, public meeting regarding (1) main feedwater flow actuation instrumentation for auxiliary feedwater (AFW); (2) the procedure for inserting the AFW ESFAS channel trip; and (3) the operational implementation interpretation of TS 3.3.2 as currently approved. The licensee also reviewed the main feedwater pump startup and shutdown procedures during plant power level manipulations. Finally, the licensee discussed its proposed TS 3.3.2 wording modification, provided within Enclosure 2, and the precedent for the proposal.

The NRC staff questioned the licensee's TS 3.3.2 modification proposal utilizing the TS proposal annotations provided in Enclosure 3. The staff discussed limits to the TS Limiting Condition for Operation (LCO) Completion Time based on the existing risk-informed analysis; the relevance of the licensee-discussed TS precedence to the proposed TS modifications; and the implication of a TS 3.0.2 exception due to the nature of the TS modification proposed. Based on this discussion, the staff and licensee extensively examined the merits of various and specific TS 3.3.2 modifications.

The licensee expressed its intention to review the proposed changes internally and to provide an additional supplement to its license amendment request.

No members of the public were in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-1476 or [mohan.thadani@nrc.gov](mailto:mohan.thadani@nrc.gov).



Mohan C. Thadani, Senior Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-483

Enclosures:

1. List of Attendees
2. Licensee proposed TS wording modifications
3. NRC TS modification comments to licensee proposal

cc w/encl: Distribution via Listserv

LIST OF ATTENDEES

JANUARY 25, 2011, MEETING WITH UNION ELECTRIC COMPANY

RESPONSES TO THE U.S. NUCLEAR REGULATORY COMMISSION STAFF'S QUESTIONS

RAISED DURING THE PREVIOUS PUBLIC MEETING ON NOVEMBER 18, 2010

DOCKET NO. 50-483

**NRC Participants:**

Michael Markley, Chief, Plant Licensing Branch IV  
Greg Casto, Chief, Balance of Plant Branch  
Mohan Thadani, Senior Project Manager, Plant Licensing Branch IV  
Andrew Howe, Senior Reliability and Risk Analyst, PRA Licensing Branch  
Carl Schulten, Senior Reactor Engineer, Technical Specifications Branch  
Stanley Gardocki, Reactor Systems Engineer, Balance of Plant Branch  
Kristy Bucholtz, Reactor Systems Engineer, Technical Specifications Branch  
Rossnyev Alvarado, Electronics Engineer, Instrumentation and Controls Branch  
James Polickoski, Project Manager, Plant Licensing Branch IV

**Union Electric Company Participants:**

Scott Maglio, Manager, Regulatory Affairs  
Bert Yates, Principal Engineer, Regulatory Affairs  
Mark Covey, Assistant Operations Manager, Operations

**Members of the Public:**

None

ENCLOSURE 2

LICENSEE PROPOSED TS WORDING MODIFICATIONS WITH BACKGROUND

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
I. One channel inoperable.	<p>----- NOTE ----- The inoperable channel may be bypassed for up to 12 hours for surveillance testing of other channels.</p> <p>I.1 Place channel in trip.</p> <p><u>OR</u></p> <p>I.2 Be in MODE 3.</p>	<p>72 hours</p> <p>78 hours</p>
<del>J. One or more Main Feedwater Pumps trip channel(s) inoperable.</del>	<del>----- NOTE ----- One inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels.</del> <p><del>J.1 Place channel(s) in trip.</del></p> <del><u>OR</u></del> <p><del>J.2 Be in MODE 3.</del></p>	<del>1 hour</del> <p><del>7 hours</del></p>

(continued)

*INSERT A2*

INSERT A2

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. One channel inoperable.</p> <p><u>OR</u></p> <p>Two channels inoperable within the same separation group.</p>	<p>-----NOTE-----</p> <p>One inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels.</p> <p>-----</p> <p>J.1 Place inoperable channel(s) in trip.</p> <p><u>OR</u></p> <p>J.2 Be in MODE 3.</p>	<p>24 hours</p> <p>30 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
M. <del>Not used.</del> <del>INSERT</del>		
N. One or more Containment Pressure - Environmental Allowance Modifier channel(s) inoperable.	N.1 Place channel(s) in trip. <u>OR</u> N.2.1 Be in MODE 3. <u>AND</u> N.2.2 Be in MODE 4.	72 hours  78 hours  84 hours
O. One channel inoperable.	O.1 Place channel in trip. <u>AND</u> O.2 Restore channel to OPERABLE status.	<del>4 hour</del> 24 hours  During performance of the next required COT

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>P. One or more channel(s) inoperable.</p>	<p>P.1 Declare associated auxiliary feedwater pump(s) inoperable.</p> <p><u>AND</u></p> <p>P.2 Declare associated steam generator blowdown and sample line isolation valve(s) inoperable.</p>	<p>Immediately</p> <p>Immediately</p>
<p>Q. One train inoperable.</p>	<p>----- NOTE ----- One train may be bypassed for up to 2 hours for surveillance testing provided the other train is OPERABLE. -----</p> <p><i>INSERT C</i> →</p> <p><del>Q.1</del> <i>Q.2.1</i> Be in MODE 3.</p> <p><u>AND</u> →</p> <p><del>Q.2.2</del> <i>Q.2.2</i> Be in MODE 4.</p>	<p><del>6</del> hours <i>30</i></p> <p><del>12</del> hours <i>36</i></p>
<p>R. One or both train(s) inoperable.</p>	<p>R.1 Restore train(s) to OPERABLE status.</p> <p><u>OR</u></p> <p>R.2.1 Be in MODE 3.</p> <p><u>AND</u></p> <p>R.2.2 Be in MODE 4.</p>	<p>48 hours</p> <p>54 hours</p> <p>60 hours</p>

(continued)

INSERT C

REQUIRED ACTION	COMPLETION TIME
Q.1 Restore train to OPERABLE status.  <u>OR</u>	24 hours

*No changes - provided for context only*

Table 3.3.2-1 (page 8 of 11)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE <sup>(a)</sup>
6. Auxiliary Feedwater					
a. Manual Initiation	1, 2, 3	1/pump	P	SR 3.3.2.8	NA
b. Automatic Actuation Logic and Actuation Relays (SSPS)	1,2,3	2 trains	G	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA
c. Automatic Actuation Logic and Actuation Relays (BOP ESFAS)	1,2,3	2 trains	Q	SR 3.3.2.3	NA
d. SG Water Level Low-Low					
(1) Steam Generator Water Level Low-Low (Adverse Containment Environment)	1, 2, 3	4 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 20.6% <sup>(s)</sup> of Narrow Range Instrument Span
(2) Steam Generator Water Level Low-Low (Normal Containment Environment)	1 <sup>(r)</sup> , 2 <sup>(r)</sup> , 3 <sup>(r)</sup>	4 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 16.6% <sup>(s)</sup> of Narrow Range Instrument Span

- (a) The Allowable Value defines the limiting safety system setting except for Functions 1.e, 4.e.(1), 5.c, 5.e.(1), 5.e.(2), 6.d.(1), and 6.d.(2) (the Nominal Trip Setpoint defines the limiting safety system setting for these Functions). See the Bases for the Nominal Trip Setpoints.
- (r) Except when the Containment Pressure – Environmental Allowance Modifier channels in the same protection sets are tripped.
- (s) 1. If the as-found instrument channel setpoint is conservative with respect to the Allowable Value, but outside its as-found test acceptance criteria band, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service. If the as-found instrument channel setpoint is not conservative with respect to the Allowable Value, the channel shall be declared inoperable.  
2. The instrument channel setpoint shall be reset to a value that is within the as-left setpoint tolerance band on either side of the Nominal Trip Setpoint, or to a value that is more conservative than the Nominal Trip Setpoint; otherwise, the channel shall be declared inoperable. The Nominal Trip Setpoints and the methodology used to determine the as-found test acceptance criteria band and the as-left setpoint tolerance band shall be specified in the Bases.

Table 3.3.2-1 (page 9 of 11)  
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE <sup>(a)</sup>
6. Auxiliary Feedwater					
d. SG Water Level Low-Low					
(3) Not used.					
(4) Containment Pressure - Environmental Allowance Modifier	1, 2, 3	4	N	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 2.0 psig
e. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
f. Loss of Offsite Power	1,2,3	2 trains	R	SR 3.3.2.7 SR 3.3.2.10	NA
g. Trip of all Main Feedwater Pumps	0 <sup>(n)</sup>	<del>2 per pump</del> 4	J	SR 3.3.2.8	NA
h. Auxiliary Feedwater Pump Suction Transfer on Suction Pressure - Low	1,2,3 1 <sup>(u)</sup>	3	O	SR 3.3.2.1 SR 3.3.2.9 SR 3.3.2.10 SR 3.3.2.12	≥ 20.64 psia

(a) The Allowable Value defines the limiting safety system setting except for Functions 1.e, 4.e.(1), 5.c, 5.e.(1), 5.e.(2), 6.d.(1), and 6.d.(2) (the Nominal Trip Setpoint defines the limiting safety system setting for these Functions). See the Bases for the Nominal Trip Setpoints.

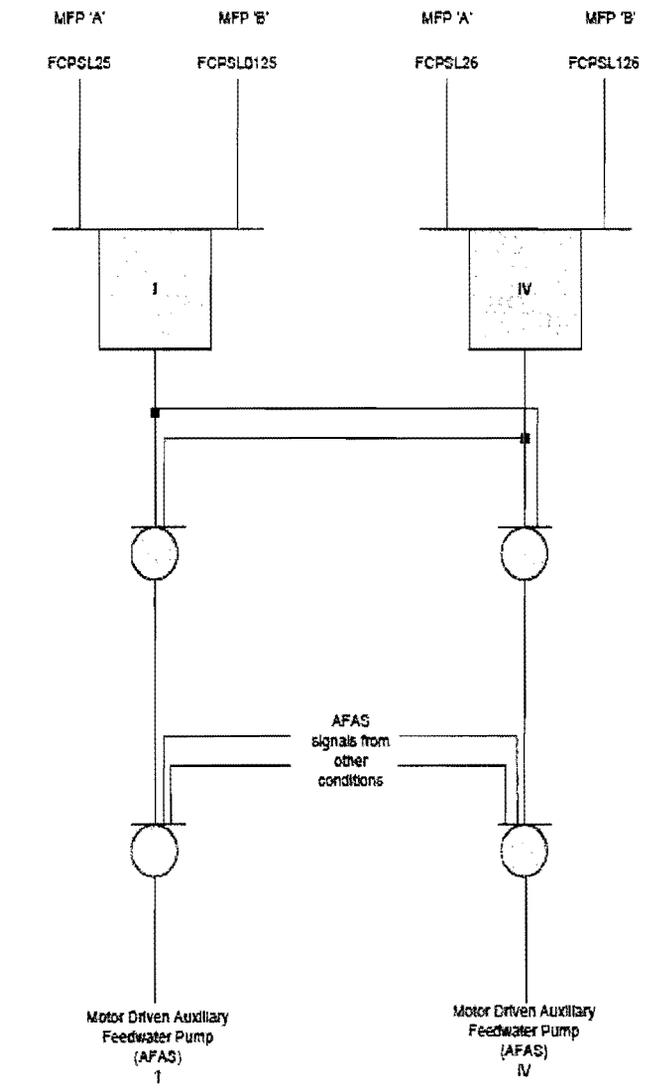
(n) Trip function may be blocked just before shutdown of the last operating main feedwater pump and restored just after the first main feedwater pump is put into service following performance of its startup trip test.

(u) INSERT E

INSERT E

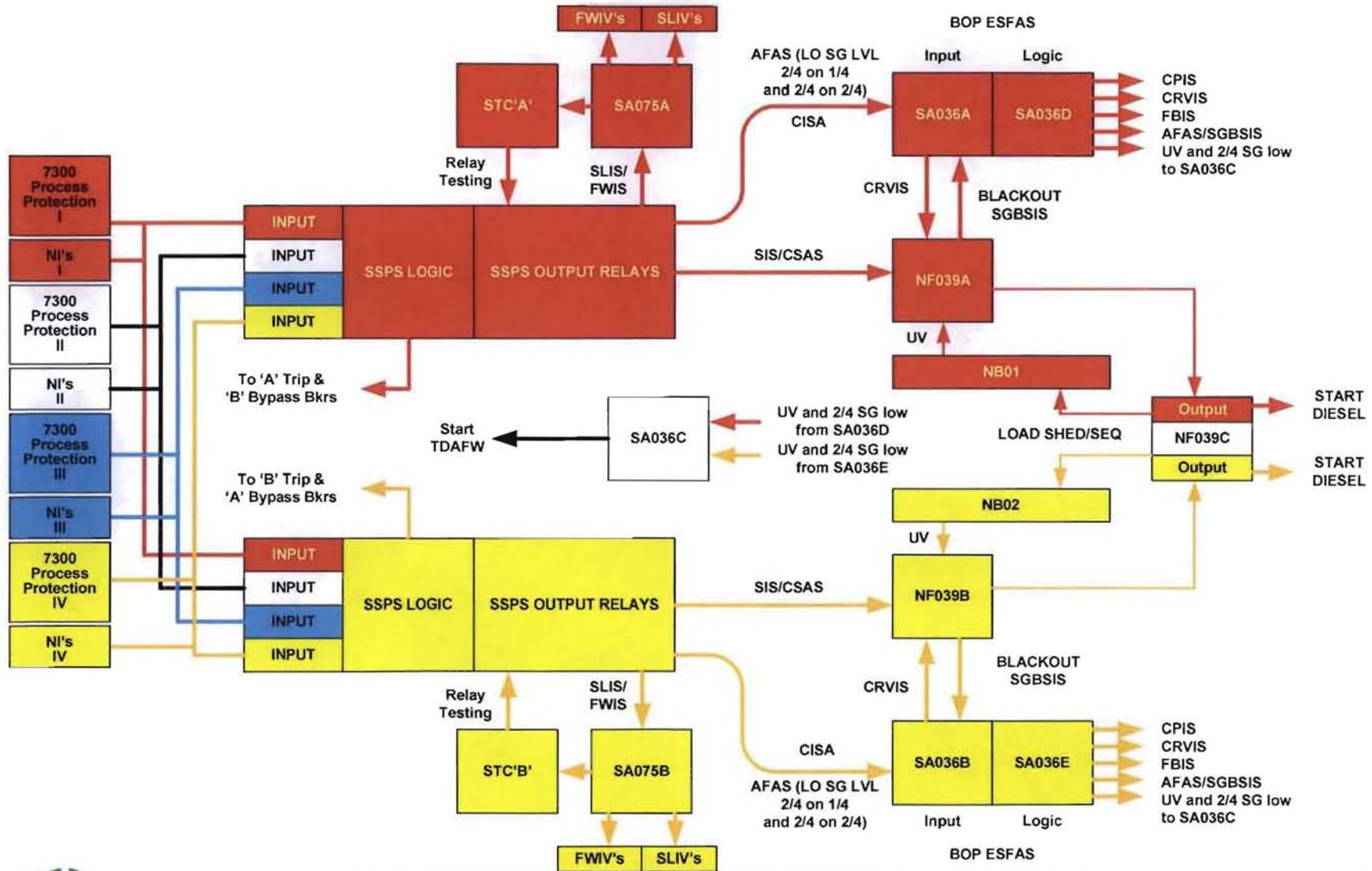
- (u) LCO 3.3.2 is not applicable for up to 4 hours for the channels associated with placing the second main feedwater pump into service or when removing the first main feedwater pump from service.

Attachment 1  
Logic diagram of MDAFAS from trip of all Main Feedwater Pumps



Note this drawing is simplified. Refer to J-104-00176 for the current design logic diagram.

# CALLAWAY PLANT RISK-INFORMED AMENDMENT REQUEST 24-HOUR BOP ESFAS COMPLETION TIME



ENCLOSURE 3

NRC TS MODIFICATION COMMENTS TO LICENSEE PROPOSAL

EXAMPLE

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>J. One channel inoperable.</p>	<p>-----NOTE-----                      One inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels.                      -----</p> <p>J.1 Place channel in trip.</p>	<p>24 hours</p>
<p>M. Two channels inoperable.</p> <p><u>AND</u></p> <p>AFW actuation on Trip of all Main Feedwater Pumps maintained.</p>	<p>M.1 Place channels in trip.</p>	<p>24 hours</p>

EXAMPLE TABLE

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE <sup>(a)</sup>
6. Auxiliary Feedwater					
d. SG water level Low Low					
(3) not used.					
(4) Containment Pressure – Environmental Allowance Modifier	1, 2, 3	4	N	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≤ 2.0 psig
e. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.				
f. Loss of Offsite Power	1, 2, 3	2 trains	R	SR 3.3.2.7 SR 3.3.2.10	NA
g. Trip of all Main Feedwater Pumps	1, 2 <sup>(n)</sup>	2 per pump 4 <sup>(u)</sup>	J, M	SR 3.3.2.8	NA
h. Auxiliary Feedwater Pump Suction transfer on Suction Pressure - Low					≥ 20.64 psia

(a) The allowable Value defines the limiting safety system setting for Functions 1.e, 4.e.(1), 5.c, 5.e.(1), 5.e.(2), 6.d.(1), and 6.d.(2) (the Nominal Trip Setpoint defines the limiting safety setting for these Functions). See the Bases for the Nominal Trip Setpoints.

(n) Trip function may be blocked just before shutdown of the last operating main feedwater pump and restored just after the first main feedwater pump is put into service following performance of its startup trip test.

(u) During power ascension when one main feedwater pump is in operation supplying feedwater to the SGs and the other main feedwater pump is reset and not supplying feedwater to the SGs the following exception applies: The requirement for four operable channels is met if two required channels are OPERABLE on the associated main feedwater pump in operation supplying feedwater to the SGs and two required channels are in trip on the associated main feedwater pump in reset and not supplying feedwater to the SGs. When both main feedwater pumps are in operation supplying feedwater to the SGs the exception no longer applies.

No members of the public were in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-1476 or [mohan.thadani@nrc.gov](mailto:mohan.thadani@nrc.gov).

/RA/

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Division of Operating Reactor Licensing  
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Docket No. 50-483

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**ADAMS Accession No.** Meeting Notice ML110120470 Meeting Summary ML110400166

OFFICE	DORL/LPL4/PM	DORL/LPL4/PM	DORL/LPL4/LA	DORL/LPL4/BC	DORL/LPL4/PM
NAME	JPolickoski	MThadani	JBurkhardt	MMarkley	MThadani
DATE	2/9/11	2/16/11	2/9/11	2/18/11	2/22/11

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