

# SECTION 305 TECH SUB COMM

MINUTES

DECEMBER 18,  
2014

3:00PM EASTERN

CONFERENCE CALL

<b>FACILITATOR</b>	<i>Mario Bergeron, Chair, NGENC Technical Subcommittee</i>
<b>ATTENDEES</b>	<b>Core Team Members:</b> Mario Bergeron, Dale Engelhardt, Jeff Gordon, Allan Paul, Stan Hunter, Jack Madden, Marci Petterson, Phil Meraz, Eric Curtit, Troy Hughes, Tammy Krause, Andrew Wood, Jeff Schultz, Curtis McDowell, Steve Hewitt <b>Industry Members:</b> Josh Coran, Steve Morrison, Dave Warner, Tom Hunt, Kevin Myles, Al Bieber, Bill Saddler, Bob Diehl, Mike Pracht, Jonathan Michel, James Michel, Tom Sisler, Lew Hoens, Fred Nangle
<b>ABSENTEES</b>	<i>Charles Poltenson, Jennifer Bastian, Art Peterson, Darrell Smith, Nikki Rudnick, Vincent Brotski, Melissa Shurland, Devin Rouse, Anand Probhakaran, Charles Bielitz, Sal DeAngelo, Nico Lindenau, Michael Coltman, Brian Marquis, Patricia Llana, Larry Salci, Shayne Gill</i>

## DISCUSSION/DECISIONS MADE

**1.**

Chairman Bergeron called today's meeting to order and asked Steve Hewitt to call the roll.

After calling the roll, Steve confirmed the presence of a quorum.

**As always, industry participants are asked to email a notification of their attendance to Steve Hewitt at [shewitt109@aol.com](mailto:shewitt109@aol.com)**

**2.**

**Review of the Meeting Agenda – Mario Bergeron:**

Mario Bergeron provided a brief overview of today's meeting agenda

**3.**

**Review of Action Items – Steve Hewitt:**

Steve Hewitt reviewed the open action items, providing a brief update on those items that were not to be specifically covered on the agenda:

**Maintaining Industry Participation List: Status:** Steve reported that this remains an ongoing action item. There are currently **233** registered industry participants.

**Requesting Backgrounder educational document:** With changes to the NGENC organizational structure at the October 24<sup>th</sup> Fall Meeting, the Backgrounder will need to be updated. Steve Hewitt is working with AASHTO to incorporate the changes into a new Backgrounder.

**Updating ECP Standards:** This is an ongoing item which the Technical subcommittee is tracking – it is anticipated that status updates will take place on every other call.

Paul Jamieson was unavailable for today's call but provided the following update for inclusion in the minutes:

*"The APTA ECP working group is meeting with the contractor to finalize the safety analysis that supports the standard development effort. A full report of the outcome will be provided at the next subcommittee meeting."*

**4.**

**Approval of the Minutes of the December 18, 2014 Technical subcommittee conference call – Mario Bergeron:**

On a motion by Allan Paul, NCDOT, and a second by Jack Madden, NYSDOT, the Minutes from the December 18, 2014 Technical subcommittee call were approved without objection.

**5.**

**Accessibility Working Group/RVAAC related issues update –Jeff Gordon for Melissa Shurland:**

In the absence of Melissa Shurland, Jeff Gordon reported that Melissa continues to work on re-establishing a contract with Oregon State University which had previously expired.

**6.**

**Document Control update - Tammy Krause:**

Tammy Krause, provided the following update for inclusion in today's minutes:

*"The Diesel/Electric Locomotive specification 305-005 changes requested were 5 urgent DCR's and 12 minor DCR's were approved by the Executive Board December 9, 2014. That brings the current specification revision to A1."*

**7.**

**Status/Discussion: Technical explanation – 110 mph maximum speed rationale DM Locomotive – Jack Madden:**

Jack Madden, NYSDOT, provided the following report for inclusion in today's minutes:

*"In follow up to the Action Item from the 12/4 Technical Subcommittee conference call, the Locomotive Working Group developed the technical explanation requested by the FRA for the sustained speed of 110 MPH for the Dual Mode (DC 3<sup>rd</sup> Rail) Passenger Locomotive. On 12/9, Steve Hewitt circulated to the Technical Subcommittee members this technical explanation as Section A.4 of Appendix A to the Revised Dual Mode (DC 3rd Rail) Passenger Locomotive Requirements Document for their review.*

*We received a number of comments on Section A.4 from the TSC members. The Loco WG met by conference call this morning and incorporated the comments into a revised Section A.4, Which Mr. Hewitt sent out to the TSC members after this morning' TSC call.*

*There were changes in four areas. To summarize those changes:*

1. *Both the State of Connecticut and MNR have explicitly weighed in supporting the 110 MPH sustained speed and stating that the 125 MPH maximum speed is unnecessary for the contemplated operation. The new text reads:*

*"The position of New York State and the State of Connecticut (and Metro North Railroad, which operates in both States) is that a sustained speed of 110 MPH for the Dual Mode (DC 3<sup>rd</sup> Rail) Passenger Locomotive is sufficient to provide intercity passenger service into Amtrak's New York Penn Station from the north (i.e., Vermont and Upstate New York), as well as commuter rail operation into Grand Central Terminal. The 125 MPH maximum speed is unnecessary for the operation contemplated.*

*The position of New York State and the State of Connecticut also is that..."*

2. *New York State was concerned that the increase in engine power and weight required to increase the Bombardier ALP-45DP locomotive maximum speed in diesel mode from its existing 100 MPH to 110 MPH or 125 MPH, and the increased weight for after-treatment to improve from EPA Tier 3 to EPA Tier 4 emissions standards, may cause the Bombardier locomotive to exceed the P2 force limit at 125 MPH in diesel mode. Bombardier reviewed those concerns and responded that they can accommodate both the increase in diesel engine power and the addition of after-treatment within the maximum locomotive weight of 288,000 pounds and not exceed the P2 force on the rail at either 110 MPH or 125 MPH. The new text reads:*

*"Bombardier has indicated that they can accommodate the increase in diesel engine power to reach 110 MPH and 125 MPH respectively, as well as the addition of after-treatment to achieve EPA Tier 4 emission standards, and still not exceed the P2 force limit at 125 MPH in diesel mode."*

3. *One comment we received was that the use of a "target range" of 286,000 pounds for the DM locomotive was too proscriptive and did not account for axle weights of the locomotive, which is the more pertinent number to consider when looking at the bridge load ratings. The use of the phrase "target range" was an attempt at allowing some flexibility in the maximum weight of the vehicle allowed. I'm not a structural engineer, but I do understand that the axle loadings, number of axles, spacing of the axles, gross weight of the locomotive, the speed of the locomotive, the length & depth & age of the spans and the Cooper E-rating of the structures over which the locomotive will operate all*

*must be taken into consideration when we are developing this DM specification. Without removing the concept of a "target range" from the document, we include as a target 71,500 pounds per axle for a four-axle, 286,000 pound locomotive and 54,333 pounds per axle for a 326,000 pound locomotive. This six-axle locomotive weight was the GE/MPI response to the MNR RFI of last summer.*

*As we develop the DM specification for operation into Penn Station and Grand Central Terminal, however, I believe that we will home in on what the maximum weight of the PRIIA DM locomotive will be limited to, so as to satisfy the Structures Engineers in both MNR and AMTK. The new text reads:*

*"New York State is concerned that even if the P2 forces are met, the weight of the locomotive may exceed the capacity of the legacy infrastructure to support it into Penn Station and Grand Central Terminal. The target range for 4-axle locomotives is 286,000 pounds (71,500 pounds per axle) and for 6-axle locomotives is 326,000 pounds (54,333 pounds per axle); the maximum weight of the locomotive will be constrained by structural limitations in the New York Terminal Area and will be determined during the specification development process."*

4. *Based upon the most recent comments from Bombardier, we have modified that last paragraph slightly. To summarize the positions of the three manufacturers,*
  - a. *Bombardier is confident that they can provide a Dual Mode DC 3<sup>rd</sup> Rail locomotive, with on-board energy storage, and meet the P2 forces at both 110 MPH and 125 MPH.*
  - b. *EMD/Progressive is confident that they can provide a DM loco which will meet the P2 forces at both 110 MPH and 125 MPH, but it is unclear what effect the additional weight of the on-board energy storage will have on the P2 forces at 125 MPH.*
  - c. *Siemens is confident that they can provide a Dual Mode locomotive, with on-board energy storage, and meet the P2 forces at 110 MPH; however, the locomotive will exceed the P2 force limit at 125 MPH.*

*Each manufacturer has provided their best engineering judgment for their particular vehicle. Collectively, however, there is still uncertainty and risk as to exceeding the P2 force limit at 125 MPH. The new text reads:*

*In conclusion, based upon the information provided for this document from Siemens, Bombardier and EMD/Progress Rail, the Locomotive Working Group has identified that it is feasible for a Dual Mode (DC 3<sup>rd</sup> Rail) Locomotive, with on-board energy storage, to meet the P2 force limit of 82,000 pounds at a sustained speed of 110 MPH; however, at a maximum speed of 125 MPH, there is a risk that the P2 force limit would be exceeded.*

*Mr. Chairman, pending your questions and those of the Technical Subcommittee, this concludes my comments."*

#### Discussion:

Dale Engelhardt, Amtrak, asked the question, "Was Connecticut and New York State OK with 3-axle trucks?"

Jack noted that the GE/MPI response to the Metro North RFI of last summer for a MNR Dual Mode unit included the use of 3-axle trucks on the proposed locomotive. So, yes, New York State and Connecticut would be OK with 3-axle trucks. Jack also noted that the Siemens, Bombardier, and EMD/Progress rail units all have 2-axle trucks.

Mario Bergeron asked Jeff Gordon, FRA, who had initially asked for the technical explanation as a justification for changing the maximum speed from 125 mph to 110mph, if what Jack had described was acceptable and was what he was looking for.

Jeff responded that – "Based on what was reported – it is what I asked for – a justification to deviate from the 125 mph maximum speed for this specification and to have it appended to the Requirements Document for posterity. I agree with the justification and I find it to be explainable. I have no other questions or comments."

Mario asked, "When did New York State anticipate procuring Dual Mode units?" "Is there any benefit to be gained in waiting for technical innovations from the industry?"

Jack responded that in MNR's DRAFT 5-Year Capital Plan (2015-2019), MNR's intent is to procure 5 to 10 Dual Mode units. New York State's intent is to begin the procurement process for Dual Mode units shortly after the PRIIA DM spec is completed, with delivery of the first units in 2019. NYS is looking at approximately 25 Dual Mode units, depending upon the service level alternative selected in the DEIS. Jack reminded the members that the first of the AMTK P32AC-DM units will reach the end of their 20-year service life in April 2015, so we should have begun procurement of replacement units already. New York State wants to move forward.

Jeff Gordon asked, "Would New York compromise and accept language of "up to 125 MPH" instead of "sustained speed of 110 MPH?"

Jack understood that a locomotive has to be tested by FRA at 10 MPH over the speed for which it is rated, so a 110 MPH locomotive would have to operate at 120 MPH in testing. Jeff Gordon advised that he thought that it was 5 MPH over the operating speed.

After some discussion, Jack stated that New York State was firm with the "sustained speed of 110 MPH" and reminded the members that the Draft Empire Corridor Environmental Impact Statement, for which FRA is the lead agency, plans for no speed in diesel mode in excess of 110 MPH. Jack noted that a document discussing the DEIS issue had been provided to the TSC members a couple of meetings ago.

Fred Nangle of Metro North Railroad supported the 110 MPH sustained speed vs the 125 MPH maximum speed. Fred noted that the delivery of the first DM units for MNR would be in the 2019-2020 time frame, with larger quantities in the next 5-year Capital Plan (2020-2024)

Mario asked if the documentation concerning the DEIS could be included in the package with the Revised DM Requirements Document to be sent to the Executive Board.

Jack indicated that he could do this and have the package to Steve Hewitt on Friday, 12-19-14.

**8. Technical Subcommittee consideration of approval DM Locomotive (DC 3<sup>rd</sup> Rail) Requirements Document – Mario Bergeron:**

With no further discussion forthcoming, Chairman Bergeron entertained a motion for consideration:

Jack Madden, NYSDOT, offered the following motion:

"Mr. Chairman, New York State moves that the Technical Subcommittee vote to recommend the Revised Dual Mode (DC 3<sup>rd</sup> Rail) Locomotive Requirements Document (11-6-14) including the additional Section A.4 (12-18-14) in the Appendix, and accompanied by the document discussing the DEIS issue, be sent to the Executive Board for their approval."

The motion was seconded by Stan Hunter, Caltrans.

Chairman Bergeron asked Steve Hewitt to poll the voting members of the Subcommittee:

Mario Bergeron, Amtrak – aye  
Jeffrey Gordon, FRA – aye  
Stan Hunter, Caltrans – aye  
Allan Paul, NCDOT – aye  
Jack Madden, NYSDOT – aye  
Jeff Schultz for CtDOT – aye  
Phil Meraz, Iowa DOT – aye  
Troy Hughes, Missouri DOT – aye

With a quorum having been confirmed and all members voting in the affirmative, Chairman Bergeron determined that consensus has been achieved and the motion is approved.

Jack Madden will finalize the submittal package as approved, and provide it to Steve Hewitt for distribution to the Executive Board by Friday, 12-19-14. This item will be placed on the Executive Board's agenda for 12-23-14 for an introductory discussion. Ray Hessinger, NYSDOT, with support from Jack Madden, will introduce the topic to the Board.

**9. Update: NGENC Procurements:**

**Diesel-Electric Locomotive Steve Hewitt for Jennifer Bastian, IDOT:**

The following update was provided for inclusion in today's minutes:

"a) CDRL #10 for maintenance manual plan will likely be closed-out this week. Invoice for Milestone 'A' will likely

follow next week.

- b) Follow-up action items to close IDR are on-going for closure.
- c) Long-range planning for Final Design Review (FDR) is underway for February and March 2015. The location for FDR has been confirmed for Seattle by WSDOT.
- d) Mock-up reviews for the machine rooms were held last week in Sacramento, CA and Munich Germany. The Mock-up reviews held in Sacramento covered machine room #1 & #4 on the ACS-64 locomotive, as they are so very close in configuration to the multi-state locomotive. For machine room #2 & #3 (diesel engine compartment and cooling plant), Siemens' full scale 3D Reality Lab was used in Germany. The results were very impressive.
- e) After the 3D lab in Munich, the team traveled by train to Linz, Austria to review Buy-America manufacturing technology transfer with Hitzinger for the traction alternator; as well as the same items with Siemens in Graz Austria for Buy-America and transfer of the manufacturing of the truck frames in Sacramento, CA.
- f) Four more draft DCRs are being processed. Rich Stegner will contact Tammy Krause to coordinate."

#### **Bi-Level Car Procurement – Stan Hunter, Caltrans:**

Stan Hunter, Caltrans, provided a brief status update on the bi-level car procurement:

They are in the middle of First Article Inspection (FAI) of a number of items. Good progress is being made.

The next set of FAIs will take place in February, 2015 and will include a multitude of items such as manual doors, wheel axles and mechanical and functional communications system.

The first undertrain FAI will take place on Monday, 12-22-14 in Rochelle, Illinois at the Nippon Sharyo plant.

Stan also reported that Nippon Sharyo is "re-certifying" its Rochelle plant to ISO 9001.

QA/QC audits have begun and are ongoing.

Option assignments and delivery schedule have still not been finalized. FRA has taken the lead in those negotiations.

The OBIS agreement with Amtrak has not yet been completed.

Early in 2015 functional testing of DTL for adequate through put will take place.

Stan noted that he has received the "new wheel profile information" from Dale Engelhardt.

The weight management issue is being finalized.

#### **10.**

#### **Planning for Diesel Exhaust Fluid (DEF) / UREA in new Diesel-Electric Locomotive - Dale/Mario:**

Mario Bergeron introduced the fact that Tier 4 compliance will require the use of Diesel Exhaust Fuel (DEF) UREA. The intent, today, is to introduce this topic to the Technical subcommittee to begin the discussion.

Dale Engelhardt provided the following presentation to members of the subcommittee on today's call:

#### **PRIIA 305 - Tier 4 Compliance - The Use of Diesel Exhaust Fluid (DEF) Urea**

##### **EPA Regulation**

##### **All diesel locomotives built in 2015 must meet Tier 4 emission standards**

- **Diesel OEM Solutions**
  - **Catalytic Converter Utilizing DEF**
    - **Siemens Use of Cummins Engine and DEF**
    - **EMD F125 Caterpillar Engine and DEF**
  - **GE EGR System**
  - **EMD EGR System**

##### **The Use of DEF (Urea)**

- **Mixture - 67% Water 33% Liquid Ammonia**
  - **Provisions required to prevent freezing**
- **Consumption - 1 Gallon DEF to 10 Gallons Diesel Fuel**
  - **DEF Cost Per Gallon Similar to the Price of Diesel**

- **Heated, Separate Storage Tank and Pumping Station**
  - **Refueling points require DEF pumping capability**
- **DEF PH 9.5 Basic, corrosive to steel**
  - **PH 5.6 Diesel Fuel (Mildly Acidic)**
  - **See Attached information**
- **Catalytic Converter Solution**
  - **Sprayed on C.C. during operation converting NOx to nitrogen gas and water**
- **Infrastructure Impact**
  - **DEF storage**
  - **DEF pumping at fueling locations**
  - **Austenitic stainless or plastic containers and piping**
- **Exposure to DEF During Maintenance**
  - **Special handling and PPE**

Dale summarized "If we select a solution to meet Tier 4 requirements and choose DEF it is important we know what it will entail."

Mario Bergeron commented on the fact that he and Dale have brought this issue to the Technical Subcommittee's attention as "we (Amtrak) want to be supportive and do what we need to do to have a successful introduction of the new diesel-electric locomotives...and we feel that the NGEC is the place to bring this into the discussion". Mario pointed out that while Amtrak has no immediate funding for new locomotives right now ..."so Amtrak has no need to proceed to plan for the introduction of this product (UREA) but we want to support our NGEC partners." He added, "Amtrak, in isolation has no need for this, but there are safety and storage issues that need to be raised, and we raise it because it will be an NGEC issue as the new diesel-electric locomotives come on line."

Mario added that it is a good time to begin this discussion – but it is not one that needs immediate resolution – "it doesn't need to be decided tomorrow" and he continued "the first new locomotive is due from Siemens for testing around March, 2016, and then in the later part on 2016 it would be expected to be put into revenue service, but we want to begin the conversation now because there are complexities."

Mario asked Steve Hewitt to keep this issue on the Technical Subcommittee agenda for continued discussion and asked for it to be an agenda item for the next Subcommittee call – 1-15-15.

**Adjourn:** At approximately 4:27 PM, Mario Bergeron adjourned today's Technical subcommittee conference call meeting.

**Next Call: January 15, 2015 – 3:00pm Eastern**

### Decisions and Action Items

RVAAC: the contract between FRA and Oregon State University has expired and is in the process of being renewed.

Updating ECP Standards: remains as a standing action item and as activities occur; Paul Jamieson will provide status updates to the subcommittee. (Ongoing)

Maintaining Industry Participation List: This remains an ongoing action item. There are currently **232** registered industry participants. (ongoing)

Requesting Backgrounder educational document: With changes to the NGEC organizational structure at the October 24<sup>th</sup> Fall Meeting, the Backgrounder will need to be updated. Steve Hewitt will work with AASHTO to incorporate the changes into a new Backgrounder.

Consideration of the revised Dual Mode requirements document (DC 3<sup>rd</sup> rail): Approved

Jack Madden, NYSDOT, offered a motion requesting that the Technical Subcommittee approve the revised Dual Mode Locomotive (DC 3<sup>rd</sup> Rail) Requirements Document, (11- 6-14), and the Section A.4 (12-18-14) as well as the DEIS mentioned in the discussion as additional reference materials, for submittal to the NGEC Executive Board for its consideration.

With a quorum having been confirmed and all members voting in the affirmative, Chairman Bergeron determined that consensus has been achieved and the motion is approved.

Jack Madden will finalize the submittal package as approved, and provide it to Steve Hewitt for distribution to the Executive Board by Friday, 12-19-14. This item will be placed on the Executive Board's agenda for 12-23-14 for an introductory discussion. Ray Hessinger, NYSDOT, with support from Jack Madden, will introduce the topic to the Board.

Planning for Diesel Exhaust Fluid (DEF) / UREA in new Diesel-Electric Locomotive: This topic was introduced on today's call and will be an ongoing agenda item for future calls. Chairman Bergeron asked Steve Hewitt to add it to the next call agenda on January 15, 2015.


**ATTACHMENTS**

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**PRIIA Section 305 Tech Sub Committee Meeting**

**December 18, 2014**

The agenda for the meeting is below:

- |  |                |
|--|----------------|
| 1. Roll Call                           | Steve Hewitt   |
| 2. Review meeting agenda               | Mario Bergeron |
| 3. Review Action Items                 | Steve Hewitt   |
| 4. Approve Minutes of December 4, 2014 | Mario Bergeron |

- |   |                                  |
|---|----------------------------------|
| 5. Accessibility Working Group/RVAAC related issues update                                    | Jeff Gordon for Melissa Shurland |
| 6. Document Control update  | Tammy Krause                     |
| 7. Discussion: Review of proposed appendix (tech explanation summary) to DM Loco Req Document | Jack Madden                      |
| 8. Consideration of approval - DM Locomotive (DC 3 <sup>rd</sup> Rail) revised Req. Document  | Mario Bergeron                   |
| 9. Update: Procurements   |                                  |
| a. Diesel-electric locomotive   | Steve Hewitt for Jenifer Bastian |
| b. Bi-level Cars  | Stan Hunter                      |
| 10. Planning for Diesel Exhaust Fluid (DEF) / UREA in new Diesel-Electric Locomotive          | Dale/Mario                       |
| 11. Review this meeting:  | Steve Hewitt                     |
| a) Decisions  |                                  |
| b) New Action Items   |                                  |

***Technical Sub Committee Conference Call Meeting:  
Thursday December 18, 2014 3:00 Eastern 1-866-209-1307 / passcode 6486648#***

***Please call in a few minutes early so all is in attendance for Roll Call.  
Thank you***

***Next Call – 1-15-15 at 3:00pm Eastern***