

Implementation Update of MP-19 and Specification Review



NEAUPG Annual Conference
October 23, 2013



Past MSCR Presentations

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- [Development of Standard Practice for Superpave Plus Specifications](#) - J. D'Angelo – 2005 – Burlington, VT
- [Binder and Mixture ETG Update](#) - J. D'Angelo – 2006 – Wimington, DE
- [FHWA Pavements Program - What's Happening](#) - J. D'Angelo – 2007 – Mystic, CT
- [Current Status for Multiple Stress Creep Recovery October 9, 2008](#) - K. Mooney – 2008 – Atlantic City, NJ
- [Asphalt Mixture and Binder Expert Task Group UPdate](#) - J. Bukowski – 2008 – Atlantic City, NJ
- [Update on National Issues - ETG Activity](#) - J. Bukowski – 2009 – Portland, ME
- [MSCR Test - A New High Temp Spec](#) - J. D'Angelo – 2009 – Portland, ME
- [Update on National Issues - ETG Activity](#) - J. Bukowski – 2010 – Saratoga, NY
- [Binder Grade Selection Using the MSCR Specification](#) - J. D'Angelo – 2010 – Saratoga, NY
- [Update on National Issues - ETG Activity](#) - J. Bukowski – 2011 – Providence, RI
- [Regional Implementation of the MSCR Test](#) – G. Harder – 2012 – Philadelphia, PA



Why implement MSCR?

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- Increased use of polymers
- Current M 320 testing does not properly characterize PMA
- Test at temperatures actually experienced in the field
- Elimination of PG plus tests e.g. elastic recovery
- Almost all DOT's and suppliers are equipped to do the testing



- T 316, Viscosity Determination of Asphalt Binder Using Rotational Viscometer
- TP 70, Multiple Stress Creep Recovery (MSCR) Test of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

2.2

ASTM Standards:

- D 8, Standard Terminology Relating to Materials for Roads and Pavements
- D 5546, Standard Test Method for Solubility of Asphalt Binders in Toluene by Centrifuge

3.

TERMINOLOGY

3.1

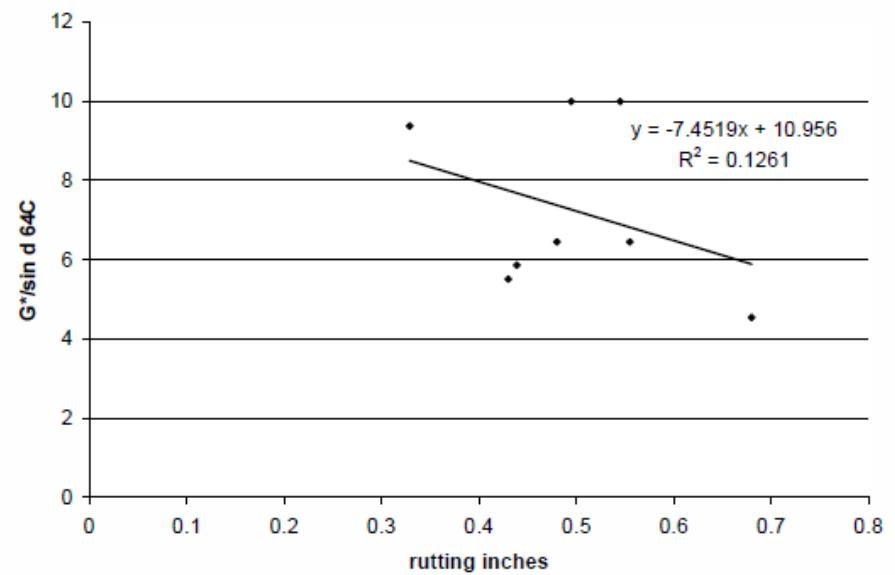
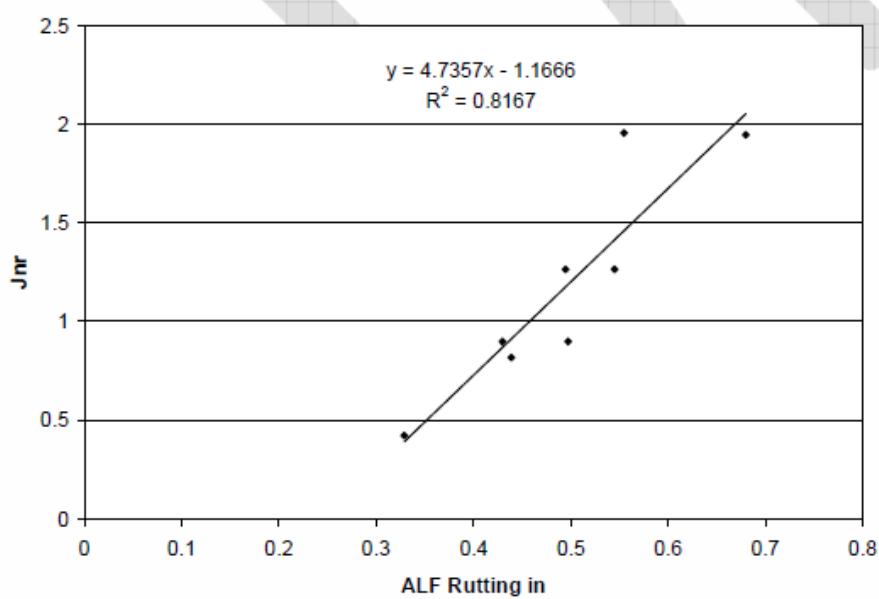
Definitions:

3.1.1

Definitions for many terms common to asphalt binder are found in ASTM D 8.

3.1.2

asphalt binder—an asphalt-based cement that is produced from petroleum residue either with or



Regional Cooperation - MSCR

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- Steering committee tasked the binder committee to develop recommendations
- Multiple webex meetings held to date
- Implementation team identified
- Mission statement, description, target audience, opportunities, obstacles, strategies, and goals identified



Goals

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Goal 1	Provisional AASHTO Test Method and Specification to full standards by 2014
Goal 2	Hold a regional workshop in 2013 (if needed)
Goal 3	Each state agency to place one trial project by 2014 – the binder to be specified shall be a modified grade “V” or “E”
Goal 4	Replace current PG plus tests with MSCR % recovery by end of 2013
Goal 5	Full implementation of MSCR (in the special notes and/or specifications) by 2014 – this shall include the use of MP-19 for all “H”, “V”, and “E” grades and shall not include “S” (standard or neat) grades at this time – the use of the polymer curve shall also be implemented for all “V” and “E” grades

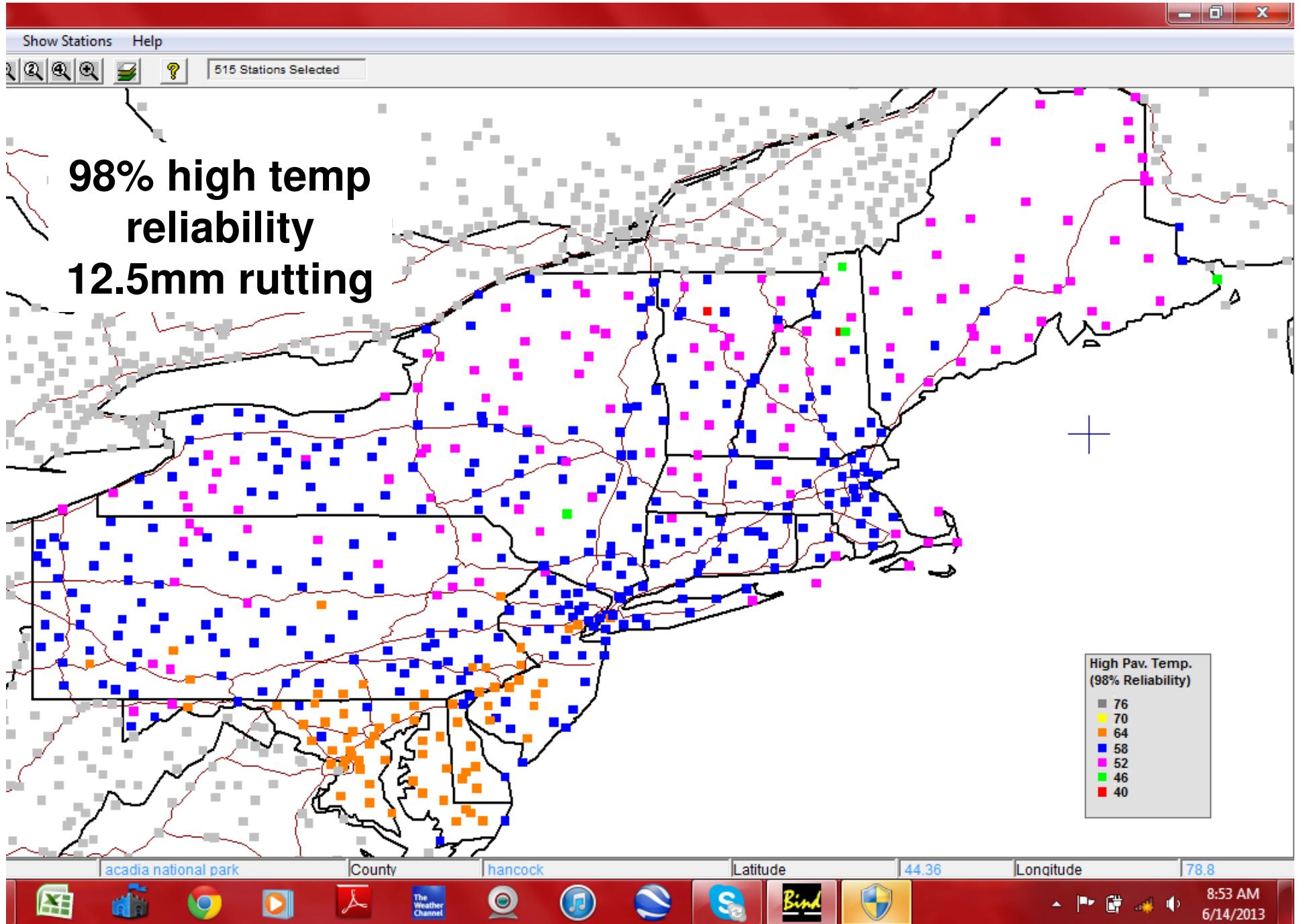


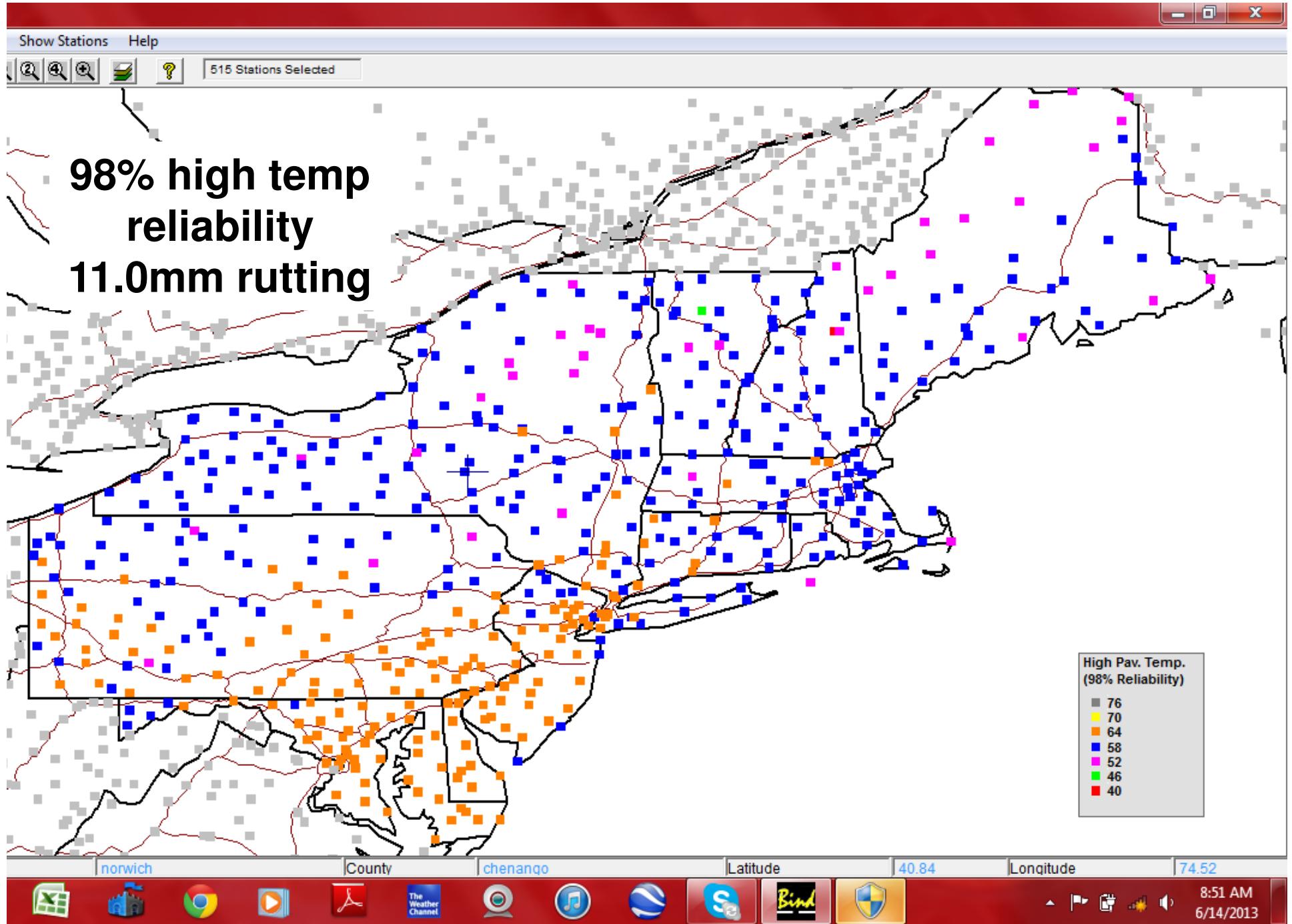
Base Temperature Selection

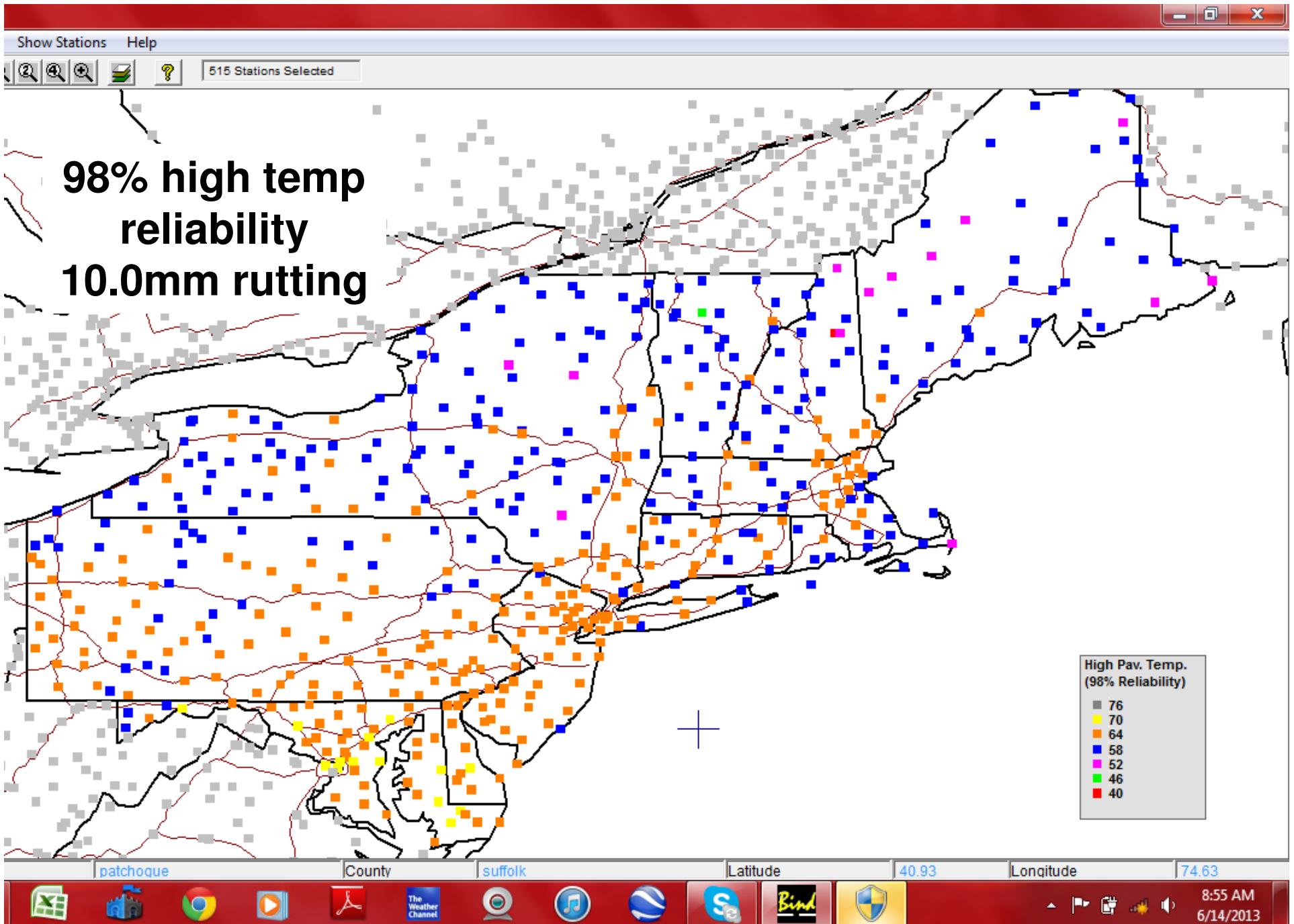
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- Will affect the temperature at which binders are tested
- Will affect the intermediate test temperature for PAV residue
- **Use what you are currently using**
- Convenient for DOT's
- Not necessarily convenient for supplier's

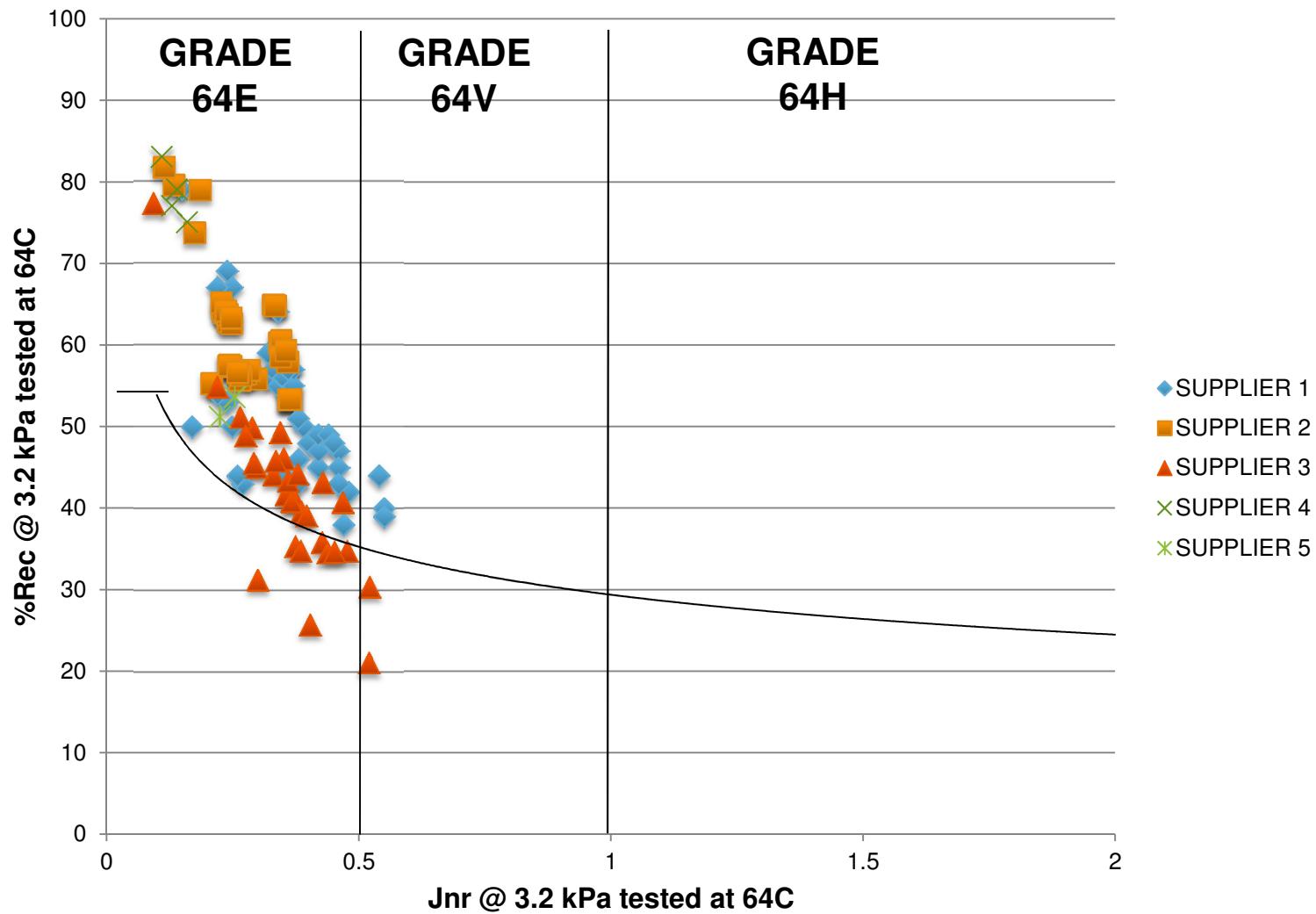




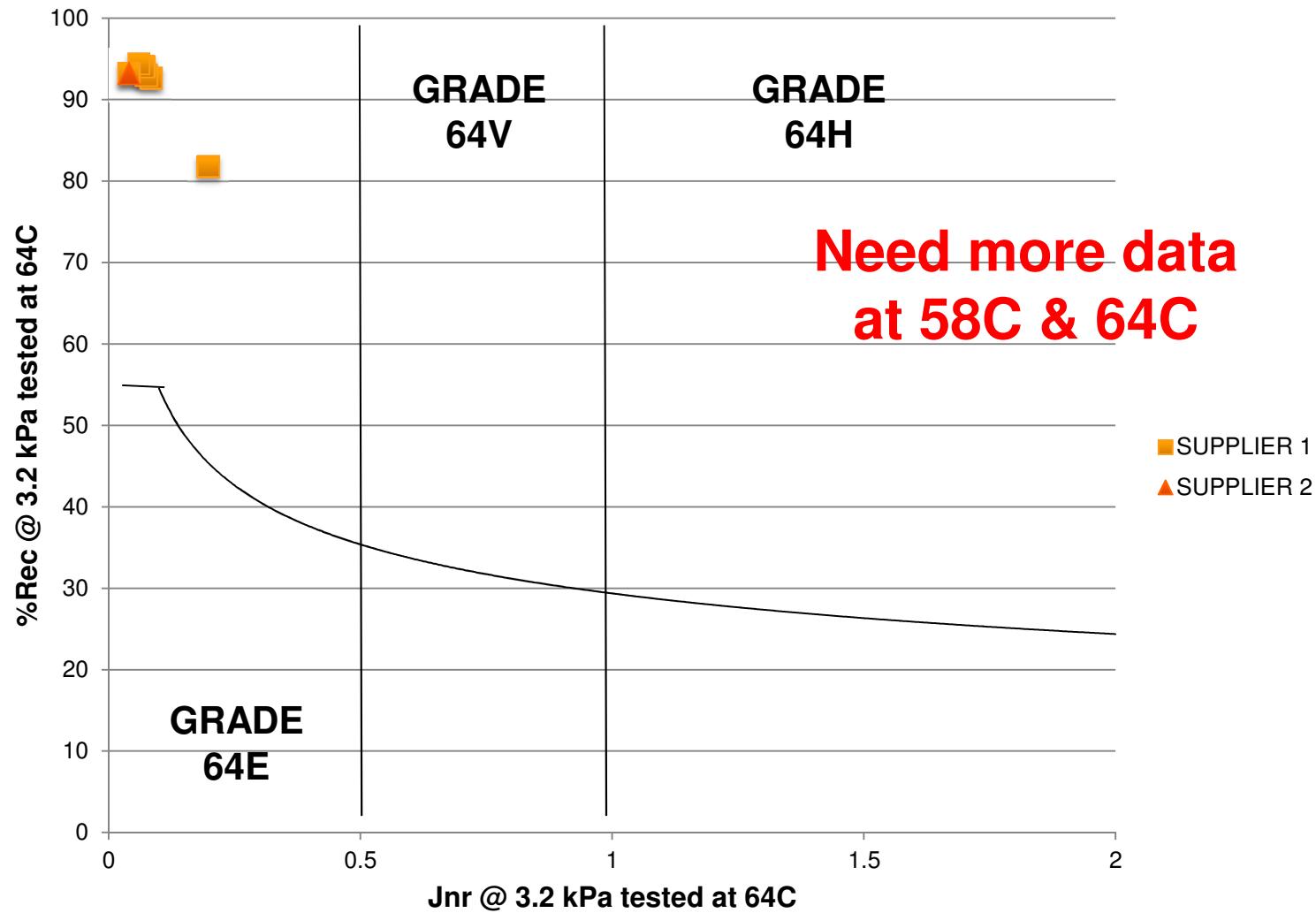




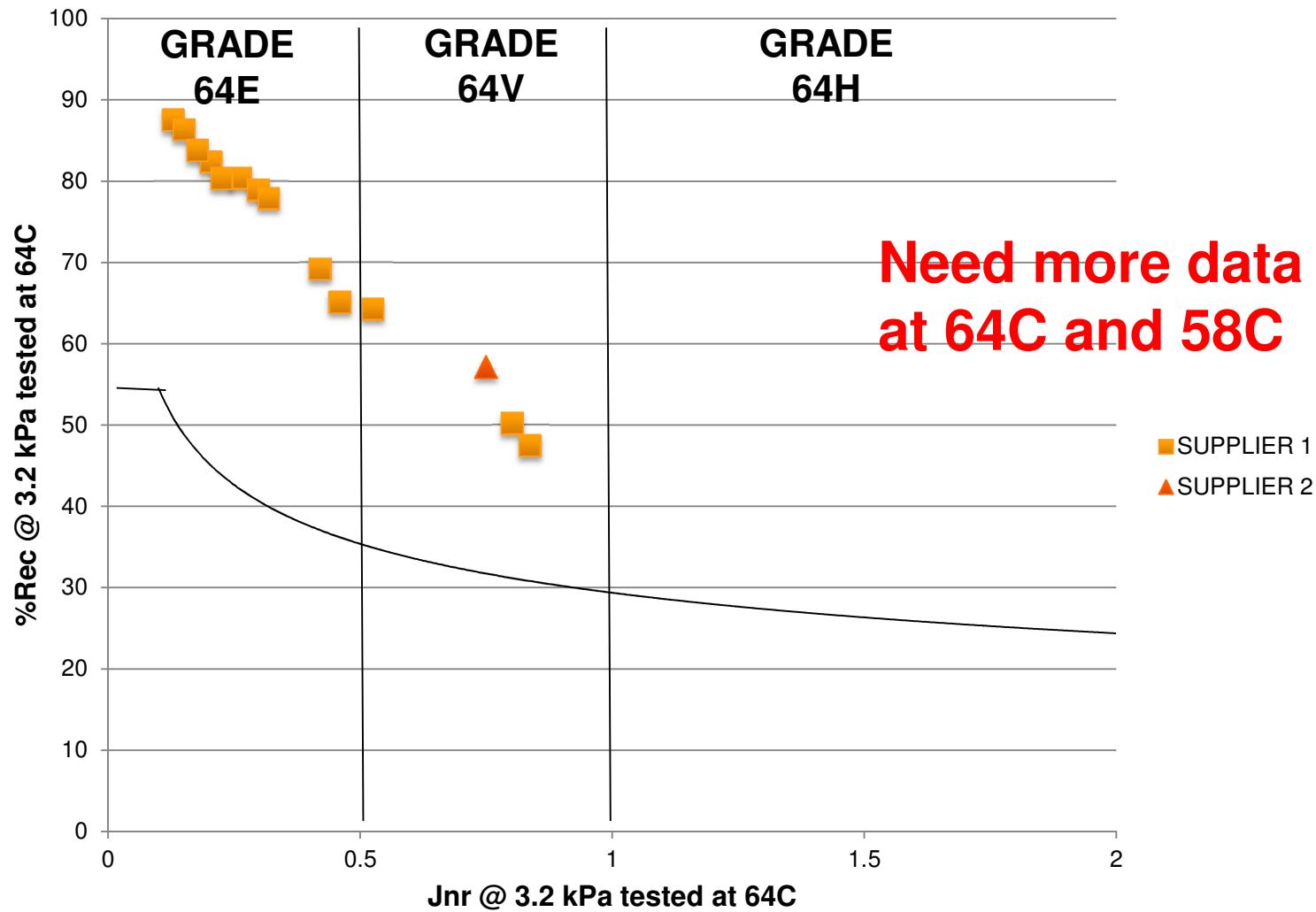
MSCR DATA - PG 76-22



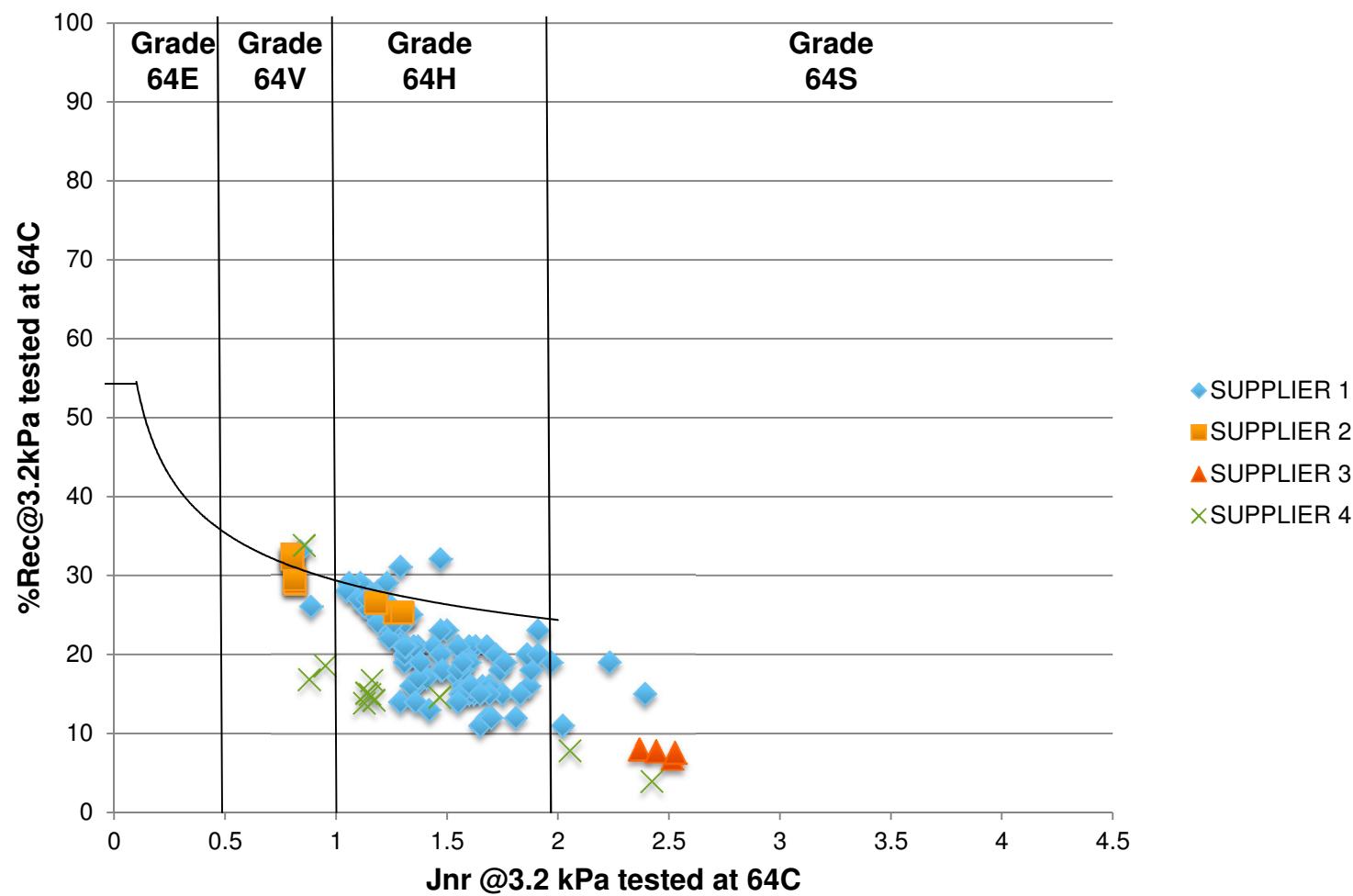
MSCR DATA - PG 76-28



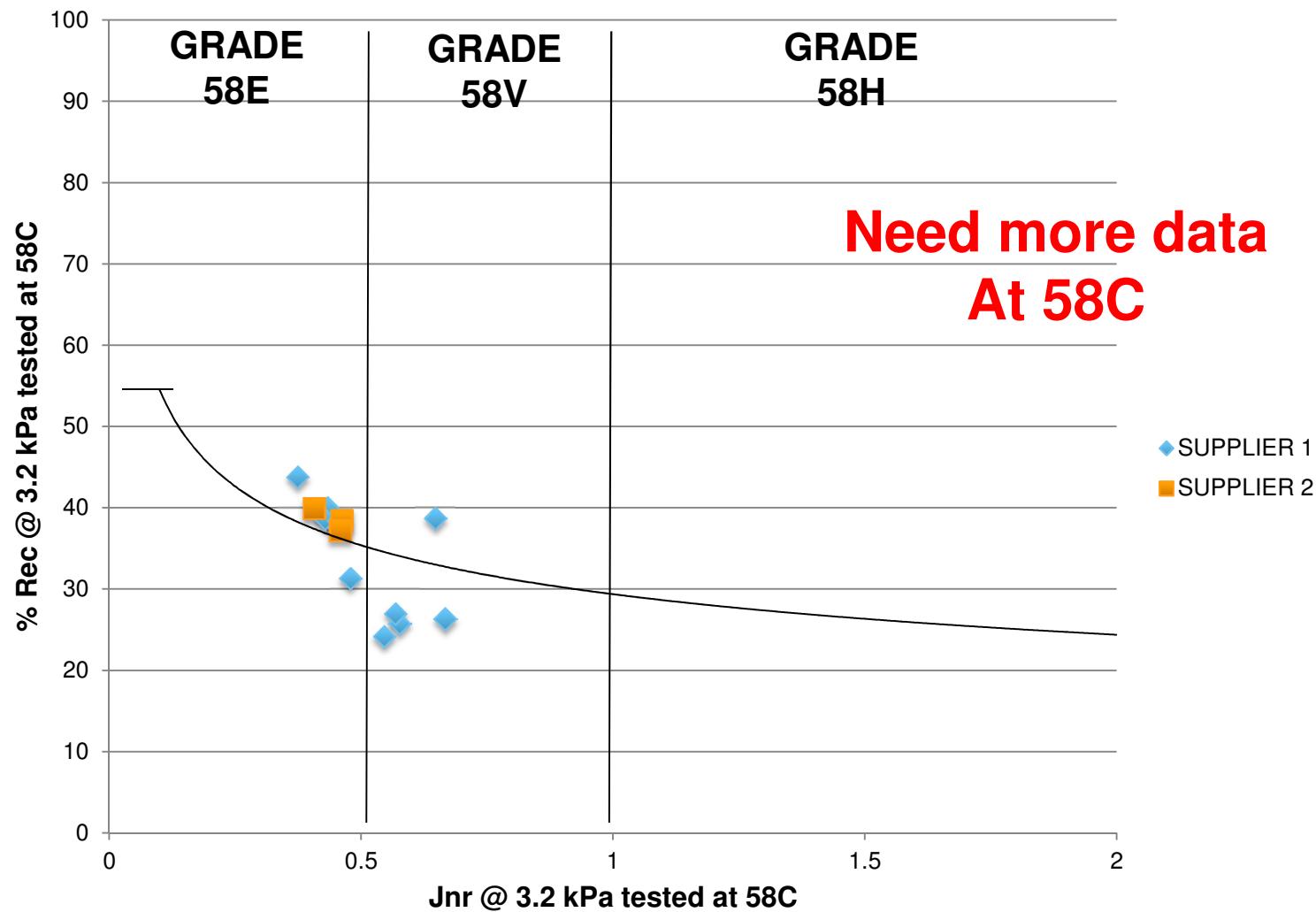
MSCR DATA - PG 70-28



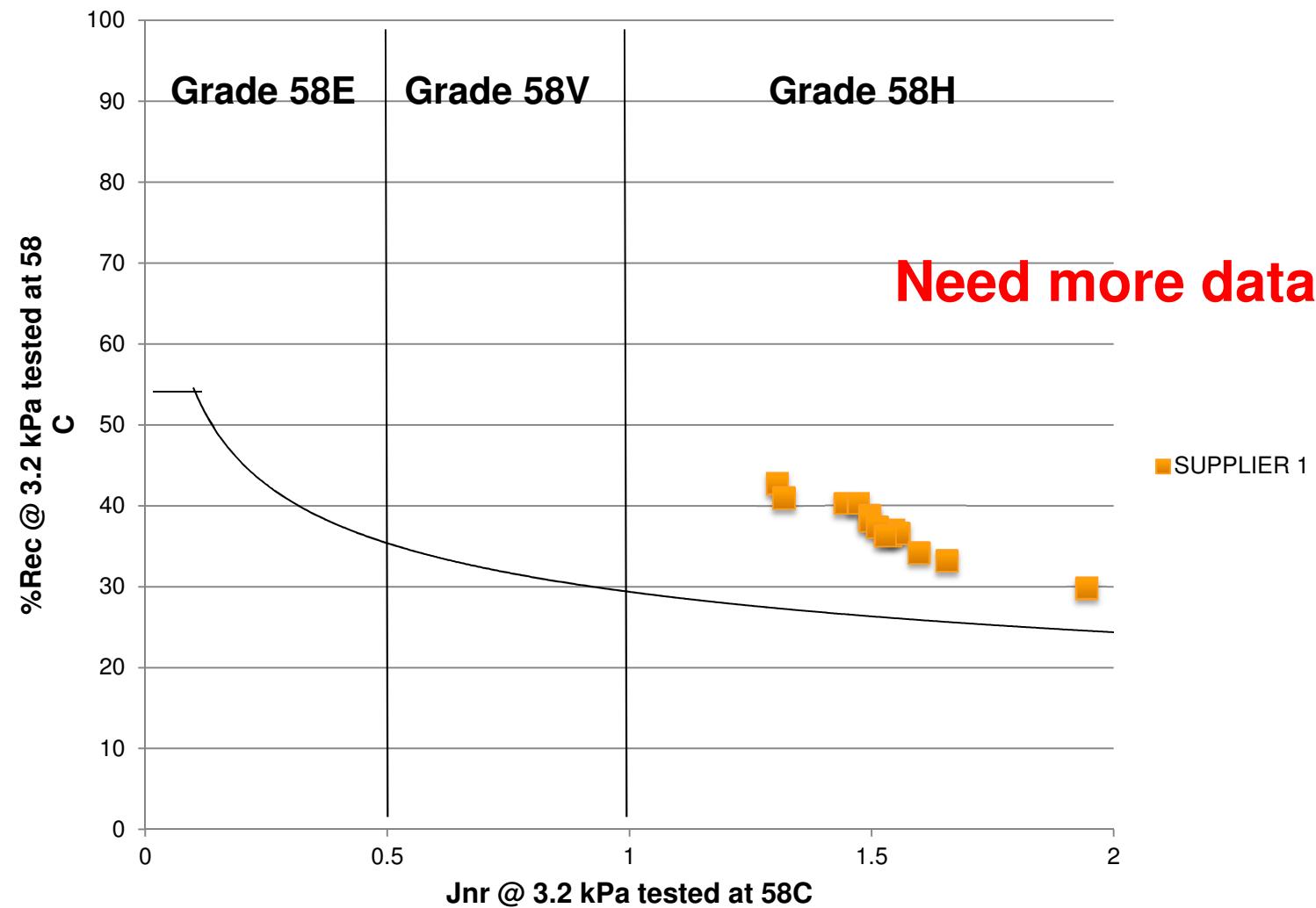
MSCR DATA - PG 64-22P (NY)



MSCR Data - PG 64-22P (NY)



MSCR DATA - PG 58-34



Other Binders

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Modified

- PG 64-28 (PPA)
 - PG 64S-28
 - PG 58H-28
- PG 64-28 Polymer
 - PG 64H-28
- PG 64-28 Rubber
 - PG 64H?-28

Neat

- PG 64-22
 - PG 64S-22
 - PG 58H-22
- PG 58-28
 - PG 58S-22
- PG 58-22
 - PG 58S-22
- PG 52-34
 - PG 52S-34
- PG 70-22
 - PG 64H-22
 - PG 58V-22



MEDOT BASE – 58C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 58-28	PG 58S-28
	PG 58-34	PG 58H-34
	PG 64-28(PPA)	PG 58H-28
	PG 70-28	PG 58V-28
	PG 76-28	PG 58E-28

Will be specifying for modified grades on Jan. 1, 2014 – PG 58V-28[PG 70-28] – little to no use of PG 58-34 – not sure yet on PG 64-28 (PPA modified)



NHDOT BASE – 58C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 64-22	PG 58H-22
	PG 64-28(PPA)	PG 58H-28
	PG 70-22	PG 58V-22
	PG 76-28	PG 58E-28

Use a very limited amount of modified grades but will implement PG 58V and PG 58E grades on Jan. 1, 2014



NJDOT BASE – 64C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 64-22	<i>PG 64S-22</i>
	PG 76-22	PG 64E-28

Will be specifying MSCR for PG 76-22 effective
Jan.1, 2014 – not sure if it will be PG 64V-22 or PG
64E-22



DelDOT BASE – 64C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 58-28	<i>PG 58S-28</i>
	PG 64-22	<i>PG 64S-22</i>
	PG 70-22	<i>PG 64H-22</i>
	PG 76-22	PG 64E-22

Will implement on Jan. 1, 2014 if suppliers want to



MDSHA BASE – 64C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 58-22	<i>PG 58S-22</i>
	PG 58-28	<i>PG 58S-28</i>
	PG 64-22	<i>PG 64S-22</i>
	PG 64-28	<i>PG 64H-28</i>
	PG 70-22	<i>PG 64H-22</i>
	PG 76-22	<i>PG 64E-22</i>

Working on software upgrade to test for MSCR – will collect data for information – implementation of MSCR possible in 2014



PennDOT BASE – 58/64C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 58-28	<i>PG 58S-28</i>
	PG 64-22	<i>PG 64S-22</i>
	PG 76-22	PG 64E-22

Have been collecting data - will allow a substitution
of PG 64E-22 for PG 76-22 effective Jan.1, 2014



NYSDOT BASE – 58/64C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 58-34	<i>PG 58H-34</i>
	PG 64-22	<i>PG 58H-22 or PG 64S-22</i>
	PG 64-28	<i>PG 58H-28 or PG 64S-28</i>
	PG 64-22P	<i>PG 58E-22 or PG 64H-22</i>
	PG 70-22	<i>PG 64H-22</i>
	PG 76-22	<i>PG 64E-22</i>

Wants to fully implement MP-19 for all grades on
Jan. 1, 2014 – details need to be worked out



VT-AOT BASE – 58C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 52-34	<i>PG 52S-34</i>
	PG 58-28	<i>PG 58S-28</i>

Currently running MSCR on 75% of the full set testing – base temperature will be 58C – but will test at 52C for those mixtures containing high RAP – all projects for 2014 have been bid – have been using MSCR on emulsion residue



CTDOT BASE – 58C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 58-28	<i>PG 58S-28</i>
	PG 64-22	<i>PG 64S-22</i>
	PG 76-22	PG 64E-22

Limited amount of PG 76-22 polymer modified is used - currently running test and collecting data – considering allowing substitution of MP-19 grades in 2014 with full implementation for all grades possible in 2015



Mass Highway BASE – 58C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 52-34	<i>PG 52S-34</i>
	PG 64-28	<i>PG 64S-22 or PG 58H-28</i>
	PG 64-28 Rubber	<i>PG 64?-28</i>
	PG 64-28 SBR	<i>PG 64?-28</i>

Currently discussing internally – want to talk with industry this winter as to how to move forward – no implementation on Jan. 1 – hope to have better idea of direction in early 2014



RIDOT BASE – 64C	CURRENT GRADE – M320	NEW GRADE – MP-19
	PG 64-28	<i>PG 64S-28</i>
	PG 70-28	PG 64V-28
	PG 76-28	PG 64E-28

Already implemented PG 64V-28 and PG 64E-28



MODIFIED GRADES

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**CURRENT GRADE –
M320**

NEW GRADE – MP-19

PG 76-22

PG 64E-22

PG 76-28

PG 64E-28

PG 70-28

PG 58E-28

PG 64-22P

PG 64H-22

PG 64-28P

PG 58V-28

PG 64-28PPA

PG 58H-28

PG 58-34

PG 58H-34



UNMODIFIED GRADES

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**CURRENT GRADE –
M320**

NEW GRADE – MP-19

PG 70-22

PG 64H-22

PG 64-22

PG 64S-22 and/or
PG 58H-22

PG 58-22

PG 58S-22

PG 58-28

PG 58S-28

PG 52-34

PG 52S-34



Thanks

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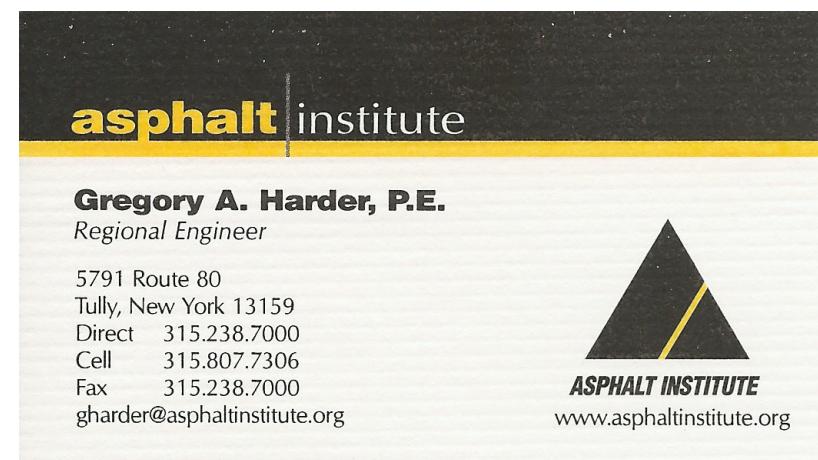
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