



U.S. Department
of Transportation

1200 New Jersey Avenue SE
Washington, DC 20590

**Pipeline and Hazardous
Materials Safety
Administration**

OCT 18 2012

Mr. Hyun-Joon Ji
Assistant Manager
Quality Inspection Team
NK CO., LTD
497, Sinpyeong-dong, Saha-gu,
Busan 604-030, Korea

Ref. No.: 12-0202

Dear Mr. Ji:

This is in response to your September 10, 2012 email concerning the requirements for cylinders in accordance with the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically you request confirmation of your understanding of the appropriate lot size for conducting the physical tests on DOT 3AA and DOT 3AAX cylinders.

As provided in § 178.37(k), a physical test must be conducted to determine the yield strength, tensile strength, elongation and reduction of area of material. The test is required on two specimens cut from one cylinder taken at random out of each lot of 200 or less. Alternatively, for lots of thirty or less, the physical tests are authorized to be made on a ring at least 8 inches (20 cm) long cut from one cylinder and subjected to the same heat treatment as the finished cylinder(s).

I hope this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

Delmer Billings
Senior Regulatory Advisor
Standards and Rulemaking Division

Leary
\$178.37

Drakeford, Carolyn (PHMSA)

From: Betts, Charles (PHMSA)
Sent: Monday, September 10, 2012 10:32 AM
To: Drakeford, Carolyn (PHMSA)
Subject: FW: [FW]:RE: A inquire related to DOT Audit at NK-Korea

Cylinders
12-0202

Importance: High

Carolyn –

Please log and assigned to Kevin for response.

Thanks,
Charles

From: hjji@nkcf.com [mailto:hjji@nkcf.com]
Sent: Monday, September 10, 2012 8:19 AM
To: Betts, Charles (PHMSA)
Cc: Chaney, Wayne (PHMSA); Lynch, Tom (PHMSA)
Subject: [FW]:RE: A inquire related to DOT Audit at NK-Korea

Dear Mr. Charles Betts,

This is a personnel (Mr. Hyun-Joon Ji) in charge of Q.C of NK CO in South Korea.
Recently our company has had a fitness inspection for approvals of DOT specification and UN ISO cylinder.
During the fitness inspection we have inquired of DOT investigators about a lot size in the heat treatment process and we could get a reply from them that a lot size could be maximum 200 as long as it is subject to the same heat. Also one test ring could be applied to a lot of 30 or less as long as it represents the same heat. Therefore we would like to get your official confirmation to clarify a lot size according to the e-mail below. Please kindly let us know your reply about our question.

Best Regards,

Hyun-Joon Ji, Assistant Manager (지현준 대리)
Quality Inspection Team (녹산 품질검사팀)
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E-mail : hjji@nkcf.com

▶ Original Message-----

From : <Wayne.Chaney@dot.gov>
To : <hjji@nkcf.com>

CC : <Tom.Lynch@dot.gov>

Sent : 2012-09-08 1:53:04 AM

Subject : RE: A inquire related to DOT Audit at NK-Korea

Mr. Hyun-Joon Ji,

You are correct in the email below, you can have a lot size of 200 or less, also in talking with one of our PHMSA engineers one ring could be used for a lot as long as it represents the same heat for the lot of 30 or less. As a senior enforcement investigator my personal interpretation cannot be used as an official interpretation there for it is best that you request an official interpretation from PHMSA Standards. The person to contact is Mr. Charles Betts at email Charles.betts@dot.gov . you may forward my email as well. I have talked with Mr. Glenn Foster, Chief, Regulatory Review and Reinvention Standards, and he has been made aware of your email to me.

Best regards

Wayne

Wayne E. Chaney

Sr. Hazardous Material Investigator/

Cylinder Program Manager

East Building, PHH-40

1200 New Jersey Ave, SE

Washington, DC 20590-0001

202 834-3568 Fax: 404 393-9552

wayne.chaney@dot.gov

From: hjji@nkcf.com [<mailto:hjji@nkcf.com>]

Sent: Wednesday, September 05, 2012 5:39 AM

To: Chaney, Wayne (PHMSA)

Subject: A inquire related to DOT Audit at NK-Korea

Dear Mr.Chaney,

We always thank for your help.

Could you please let us get your reply to below e-mail?

We are sorry to bother you with this question again. This is NK's important concerns and we very appreciate if you reply to us about it.

Best Regards,

Hyun-Joon Ji, Assistant Manager (지현준 대리)

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▶ Original Message-----

From : CN=지현준/OU=10928/O=nke
To : Wayne.Chaney@dot.gov
CC :
Sent : 2012-09-03 5:08:21 PM
Subject : A inquire related to DOT Audit at NK-Korea

Dear Mr.Chaney,

We are looking forward to getting a good result for the fitness inspection. By the way, now we plan to revise the "Lot control procedure"

to reflect a lot size (maximum 200) of heat treatment based on the point that you advised during NK's question time at the end of the audit.

At first NK have defined a lot size as two cylinders having the same heat number and the same heat treatment condition.

Therefore NK have attached a test ring every two cylinders and then would conduct the physical tests with the test ring.

However, I believe that this is very inefficient LOT composition considering the DOT regulation § 178.37 (The physical tests are authorized to be conducted on a test ring for lot of 30 maximum). So prior to a revision of our procedure I would like to get your agreement with settling

a lot size by maximum 30 cylinders as long as cylinders have the same heat number and heat treatment condition in the heat treatment process. Please kindly let us get your confirmation if you don't have any comments.

Best Regards,

Hyun-Joon Ji, Assistant Manager (지현준 대리)

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E-mail : hjji@nkcf.com

▶ Original Message-----

From : <Wayne.Chaney@dot.gov>

To : <hjji@nkcf.com>

CC : <Tom.Lynch@dot.gov>

Sent : 2012-08-27 9:49:35 PM

Subject : RE: NK Corrective Action related to DOT Audit at NK-Korea

Thank you for the corrective actions as submitted, once the IIA testing is complete I will inform you of the results of your fitness inspection.

R/

Wayne

Wayne E. Chaney

Sr. Hazardous Material Investigator/

Cylinder Program Manager

East Building, PHH-40

1200 New Jersey Ave, SE

Washington, DC 20590-0001

202 834-3568 Fax: 404 393-9552

From: hjji@nkc.com [<mailto:hjji@nkc.com>]
Sent: Sunday, August 26, 2012 10:31 PM
To: Chaney, Wayne (PHMSA)
Cc: Lynch, Tom (PHMSA)
Subject: NK Corrective Action related to DOT Audit at NK-Korea

Dear Mr.Chaney,

Please review NK's corrective action for your findings during the audit for NK in Korea.

Finding #1) Application for 3AA/3AAX/3T does not show hold points for IIA Witnessing.

Corrective Action) Flow chart for DOT3AA/3AAX/3T has been revised in order to reflect DOT comment by adding

Independent Inspector's Inspection point (Verify, Witness).(See Attachment #1

Finding #2) Failure to calculate proper wall thickness.

Corrective Action) NK has measured the actual wall thickness for raw material at the time of receiving inspection and recorded

the actual wall thickness on receiving inspection check sheet. As per your comment

NK will calculate the wall stress by measuring actual wall thickness for each LOT, but not simply

use the wall thickness mentioned in the Drawing.(See Attachment #2)

Finding #3) Chemical analyses should be accomplish upon arrival of material.

Corrective Action) NK modified the Flow Chart for Manufacturing and Inspection and Traveller Sheet according to DOT's comment.

So chemical Analyses will be conducted based on each heat of material at the stage of receiving inspection of the material.

(See Attachment #1)

Finding #4) Ensure hydrostatic retesting is performed using equipment proven to be within 1% accuracy.

Corrective Action) NK has found the cause of failure to meet 1% accuracy requirement of the equipment and then repaired it.

(See Attachment #3)

Finding #5) Failure to hold hydrostatic test pressure for at least 30 sec or longer to reach full expansion.

Corrective Action) NK has held the hydrostatic test pressure for at least 30 sec for only manufactured cylinders not a calibration cylinder.

However NK has taken action to apply holding time for at least 30 sec for the each pressure level of the calibration

cylinder as well.(See Attachment #4)

Finding #6) For Jumbo Hydrostatic Retesting & Testing records missing calibration cylinder serial number used to calibration system.

Corrective Action) NK has recorded the calibration cylinder number on the test records and to prevent any repetition,

the tester and Q.C inspector have been trained for the requirement. (See Attachment #4,6)

Finding #7) Records missing elastic & permanent expansion on calibration sheets

Corrective Action) NK has trained the test operators to record elastic & permanent expansion on the test record.
(See Attachment #6)

Finding #8) Test records of Jumbo & Medium must have legible identification of the test operator.

Corrective Action) NK Q.M has performed necessary training to the Inspector and Tester to legible identification on the Record/Report by their registered identification such as clearly spelled out name

and signature registered. (See Attachment #5, 6)

Finding #9) Test records must record actual test pressure applied to each cylinder.

Corrective Action) NK has trained the test operators to record the actual test pressure on the test record when hydrostatic test is conducted.

(See Attachment #6)

Finding #10) Retest records missing actual dimensions of cylinder.

Corrective Action) NK has trained the test operators to record the actual dimensions on the test record. (See Attachment #6)

Finding #11) Observed DOT-SP 14003 & DOT E10945 composit cylinders being retested at facility under Korean Standards, cylinder should meet All DOT Requirement under the special permits.

Corrective Action) NK has conducted the retest of composit cylinders according to the customer request that is required

to NK follow only Korean Standard not DOT regulation.

We NK Q.M Div. have well trained about those requirement and will implement above mentioned element and corrective action immediately to the production and Inspection of DOT Cylinder .

If you have any question, please let us know.

Attachment

- 1: Manufacturing Process Flow Chart & Traveller Sheet -4 pages
- 2: Receiving Inspection Report - 1 page
- 3: Verification for proving 1% Accuracy of the Hydro Test Machine. - 9 pages.
- 4: High and Low seting -Calibration of test system -1 page
- 5: Log of Signature Registered for Inspection and Test Personnel - 1 page
- 6: Training Record for DOT comments. - 1 page

Hyun-Joon Ji, Assistant Manager (지현준 대리)

Quality Control 2 Team (녹산 품질검사팀)

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