UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
325 Broadway
Boulder, CO 80305-3337

September 3, 2015

Lubomir Grufik
Instytut Lotnictwa
al. Krakowska 110/114
Warszawa, 02-256
Poland

Dear Mr. Grufik:

Charpy verification specimens tested on the 300.0 J (221.3 ft-lbf) capacity Labortech, s.r.o. Machine, Serial No. 21/15, have been received for evaluation along with the completed questionnaire. We have analyzed the results (see attached table) and find that the average values fall within the acceptable ranges at the energy levels tested. The following paragraphs describe further analysis of the questionnaire, the test results, and the fractured specimens.

This machine satisfies the indirect verification requirements of the current ASTM Standard E 23 from an absorbed energy level of 0.3 J (0.2 ft-lbf) to an absorbed energy level of 142.1 J (104.8 ft-lbf).

Enclosed is a Charpy Verification Sticker to attach to your machine.

If the machine is moved or undergoes any major repairs or adjustments, this verification becomes invalid and the machine must be rechecked (see ASTM E23). If a specimen stops the pendulum during a test, the machine should be checked to assure that the pendulum is straight, the anvils and striker have not been damaged, and that all bolts are still tight.

If you have any questions concerning the verification of your machine, you may contact me by phone at (303) 497-3351, by fax at (303) 497-5939, or by email at charpy@boulder.nist.gov.

Sincerely,

Raymond Santoyo

Raymond L. Santoyo
Applied Chemicals & Materials Division

3 Enclosures

NIST

National Institute of Standards and Technology
Applied Chemicals & Materials Division
325 Broadway
Boulder, CO 80305-3328

Facility: Instytut Lotnictwa, al. Krakowska 110/114
Warszawa, 02-256 Poland

Machine Manufacturer: Labortech, s.r.o. Serial Number: 21/15

Test Date: 8/24/2015

SERIES NUMBER	PT* Code	CLIENT VALUES					UNITS	AVERAGE (J)		VARIANCE	STATUS
		1	2	3	4	5		CLIENT	NIST		
Low LL-143	70498	15.2	15.7	16.1	15.5	15.3	J	15.6	14.9	0.7 J	Pass
High HH-144	70282	98.9	91.5	92.3	102.3	91.2	J	95.2	94.7	0.6%	Pass
Super High											NT

Allowable Variance is 1.4 J or 5%, whichever is greater (ASTM Standard E 23)

NT = NOT TESTED

* Proficiency Test (PT) results for your data is available on-line. To access the PT data you need to go to the PT website and enter the Series Number and PT Code for each energy level of interest. PT Website Link

Additional Information

The information contained in Table 2 can be used to compute the uncertainty for a new material tested in your laboratory using a procedure outlined in NIST SP 960-18 [1].
http://www.nist.gov/msel/materials_reliability/structural_materials/charpy-verification-program.cfm.

Table 2. Summary statistics for SRM materials and customers verification test result.

Series Number	Client Statistics					NIST SRM Statistics			
	Client Average $\overline{V}$ (J)	Standard Deviation S_V (J)	Number of Tests n_V	$S_V/\sqrt{n_V}$ (J)	Degrees Of Freedom df_V	Certified Reference Value R (J)	Combined Uncertainty $u(R)$ (J)	Degrees Of Freedom df_R	*Expanded Uncertainty* U (J)
LL-143	15.6	0.34	5	0.15	4	14.9	0.0735	126	0.1455
HH-144	95.2	5.04	5	2.26	4	94.7	0.224	137	0.4429

The fifth column, labeled $S_V/\sqrt{n_V}$, is the uncertainty of the verification test mean, $\overline{V}$, if there are no additional sources of systematic error that need to be included. It is the customer's responsibility to determine the final uncertainty of $\overline{V}$.

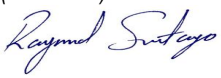
The expanded uncertainty of the NIST reference value (U), corresponding to a 95 % uncertainty interval, is based on a coverage factor from the Student's t distribution with df_R degrees of freedom. The expanded uncertainties include sources of error in the measurement and testing process at NIST, and are not the expanded uncertainties of the individual verification specimens or the uncertainties of tests performed in your laboratory.

References

[1] Splett, J. D., McCowan, C. N., Iyer, H. K., Wang, C.-M., "NIST Recommended Practice Guide: Computing Uncertainty for Charpy Impact Machine Test Results," NIST Special Publication 960-18, September, 2007.

NIST Charpy Verification Sticker

This machine meets the indirect verification requirements of the current ASTM Std E 23

Machine Serial Number:	*21/15*
Verification Date:	August 24, 2015
Range of Verification:	*From 0.3 J (0.2 ft-lbf) to 142.1 J (104.8 ft-lbf)*
Signature:	

Raymond Santoyo, Charpy Program Coordinator
National Institute of Standards and Technology