Declaration of Conformity

In Accordance with ANSI/ISEA 125-2014 and ANSI/ASSP Z359.7-2019

Declaration #: DOC-UFL201422
Declaration Date: 1/15/2020

Item #: UFL201422

Description: KStrong® 6 ft. Twin leg 100% tie-off Tie-Back Design Shock Absorbing Lanyard with Snap Hook, Tie-Back Hooks, and Adjustable D-rings (ANSI)

Brand Name: KStrong

Manufacturer: KStrong

Address: 18505 Intercontinental Crossing, Houston, TX 77073

Additional Items Conforming Under this Declaration (If Applicable):

KStrong declares that the product(s) listed above is in conformity with the requirements of the following performance standard(s):

ANSI Z359.13-2013

Conformity Assessment Method in accordance with ANSI/ISEA 125-2014

- ○ **Level 1:** KStrong Lab Outside the Scope of ISO/IEC Standard 17025:2017
- ○ **Level 2:** KStrong Lab Within the Scope of ISO/IEC Standard 17025:2017
- ● **Level 3:** Independent 3rd Party Lab accredited to ISO/IEC Standard 17025:2017

Supporting Documentation: KS-Test-UFL201422.pdf

This Certificate is a guarantee that the above standard(s) was met by the requirements of such standard. Testing was performed under normal operation mode. The results of testing apply only to the particular sample tested and the specific test carried out. This Certificate is only issued for products which have passed the testing requirements of listed standard(s).

Authorized Signature:

Chad McBride
Chief Operating Officer - KStrong

ISO 17025 Accredited Test Laboratory

INSPEC Technical Services (Kunshan) Co Ltd
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Test Report

Personal Fall Arrest Equipment
ANSI Z359.13-2013
Energy Absorbing Lanyards
(Qualification testing)

Report no:	2.20.01.05
Client:	KSTRONG LLC 17330 Preston Road #200 D Dallas TX 7525 U.S.A
Manufacturer:	KSTRONG LLC
Client orders and dates received:	T/0572A (9 August 2019) T/0659 (21 September 2019) T/0728 (15 January 2020)
Model:	UFL201422
Dates of tests:	28 August 2019 to 4 December 2019, and 15 January 2020

Signed:

Steven Sum, Laboratory Manager

Issued: 15 January 2020

Conditions

This report may be reproduced and distributed to your clients, provided that it is reproduced and distributed in full.

Specimens will be disposed of four weeks from the date of this report, unless otherwise instructed.

Opinions, comments and interpretations expressed in this report are shown in italics.

Copies of INSPEC interpretations referenced in this report are available upon request.

Tests marked ☒ are not included in our ANAB Scope of Accreditation.

This report has been provided in accordance with our standard Terms of Business, which can be viewed at, and printed from:

http://inspec-international.com/ToB.pdf

If you have difficulty accessing the Terms of Business, you may contact us for a copy.

Summary of assessment*

Clause	Requirement	Assessment (See Key)	
	Submissions	**01**	**02**
3.2	Energy absorber	Pass	
3.2.1	Material	NAs	
3.2.2	Terminations	Ltd	
3.2.3	Connectors		
3.2.4	Dynamic performance – ambient dry		
3.2.5	Dynamic performance – ambient wet		Pass
	Dynamic performance – cold dry	Pass	
	Dynamic performance – hot dry	Pass	
3.2.6	Static strength (slippage test)	Pass	
3.2.7	Static test for wrap-around lanyards (3600 lbf – abraded)	Pass	
3.2.8	Static test for wrap-around lanyards (5000 lbf – unabraded)	Pass	
3.2.9	Static test for Y-lanyards	Pass	
3.2.10.1	Dynamic test for Y-lanyards (Single connection)	Pass	
3.2.10.2	Dynamic test for Y-lanyards (Dual connection)	Pass	
3.2.10.3	Dynamic test for Y-lanyards (Hip connection)	Pass	
5.1 / 5.2	Marking	Ltd	
5.3 / 5.4	Instructions	Ltd	

Key

	Shading shows the clauses requested. Any other clauses were not requested.
Pass	Requirement satisfied.
Ltd	Testing requested was insufficient completely to verify compliance with the clause. Refer to the “Result details” section for more information.
Fail	Requirement not satisfied. Refer to the “Result details” section for more information.
NAs	Assessment not carried out.
NAp	Requirement not applicable.
NT	Requested but not tested due to early termination following failure.

* Assessment relates only to those specimens which were tested and are the subject of this report.

Submission 01 details

Product	Quantity	Date received	INSPEC specimen no.
Tie Back Lanyard, model FAP30498(6)	30	19 August 2019	2G12901 to 2G12930
Tie Back Lanyard, model UFL201422	27		2G13001 to 2G13027

Submission 02 details

Product	Quantity	Date received	INSPEC specimen no.
Tie Back Lanyard, model UFL201422	03	27 Sept 2019	2G13028 to 2G13030

Procedures

Specimens were selected at random from the submission detailed above.

Testing was performed in accordance with ANSI Z359.13-2013 unless otherwise specified below. Reference should be made to the standard when reading this report.

Unless stated otherwise, specimens were tested in the condition as received by INSPEC.

Testing was performed at INSPEC's laboratory in Kunshan, China.

The manufacturer declared the following:

Tie Back Lanyards, models FAP30498(6) and UFL201422 incorporates the same shock pack.

To avoid duplicate testing, test results of clause 3.1.6 Activation force of model FAP30498(6) was read across to model UFL201422

Result details – submission 01

3.1.5 Deployment indicator

Subsequent to the testing of specimen 2G13010 against 3.2.10.1, it became obvious that the energy absorber had been activated. Pass

3.1.6 Activation force

Specimens 2G12901 to 2G12903 were assessed.

The specimens showed no sign of activation when subjected to the 450 pounds static force. Pass

The permanent elongations of the specimens, following the tests, were 0.39, 0.2 and 0.39 inches respectively. These values are less than the maximum 2 inches permitted. Pass

3.2 Personal Energy Absorbing Lanyard Component

Specimen 2G13001 was assessed.

The specimen incorporated a Personal Energy Absorber Component. Pass

3.2.1 Materials

Specimen 2G13001 was assessed.

Webbing was used in the construction of the energy absorbing lanyard.

The materials used in the construction of this energy absorbing lanyard, and their characteristics, were not assessed. Manufacturer to certify. NAs

3.2.2 Terminations

Specimen 2G13001 was assessed.

The energy absorbing lanyard was constructed of webbing. The end terminations satisfied clause 3.2.2.2, as appropriate (see below). Ltd

3.2.2.2 Webbing terminations

Specimen 2G13001 was assessed.

a) Lock stitches sewn on all stitched eye termination straps were not assessed. Manufacturer to certify. NAs

b) The material and characteristics of thread used was not assessed. Manufacturer to certify. NAs

Threads used for sewing the harness were white colour. This contrasted with the black colour of the webbing. Pass

c) The webbing was protected at load-bearing connector elements. Looped webbing were used. Pass

e) The ends of the webbing were hot-cut so as to prevent unravelling. Pass

3.2.5 Dynamic performance test - Cold dry condition

During the dynamic performance tests, the average arrest force were:

Specimen 2G13004 - 876 pounds. Pass
Specimen 2G13005 - 901 pounds. Pass
Specimen 2G13006 - 876 pounds. Pass

These values are less than the maximum 1,125 pounds permitted.

During the dynamic performance tests, the maximum arrest force were:

Specimen 2G13004 - 1114 pounds. Pass
Specimen 2G13005 - 1133 pounds. Pass
Specimen 2G13006 - 1138 pounds. Pass

These values are less than the maximum 1,800 pounds permitted.

During the dynamic performance tests, the deployment distance were:

Specimen 2G13004 - 33.3 inches. Pass
Specimen 2G13005 - 32.5 inches. Pass
Specimen 2G13006 - 33.1 inches. Pass

These values are less than the maximum 48 inches permitted.

See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Hot dry condition

During the dynamic performance tests, the average arrest force were:

Specimen 2G13007 - 786 pounds. Pass
Specimen 2G13008 - 774 pounds. Pass
Specimen 2G13009 - 776 pounds. Pass

These values are less than the maximum 1,125 pounds permitted.

During the dynamic performance tests, the maximum arrest force were:

Specimen 2G13007 - 1028 pounds. Pass
Specimen 2G13008 - 1059 pounds. Pass
Specimen 2G13009 - 1089 pounds Pass

These values are less than the maximum 1,800 pounds permitted.

During the dynamic performance tests, the deployment distance were:

Specimen 2G13007 – 39.6 inches. Pass
Specimen 2G13008 – 39.8 inches. Pass
Specimen 2G13009 – 39.2 inches. Pass

These values are less than the maximum 48 inches permitted.

See Annex 1 for the plot of force versus time.

3.2.6 Static strength (slippage test)

Specimens 2G13010 to 2G13012 were assessed.

The specimens maintained its adjusted length, (no slippage of adjuster) during loading to 2,000 pounds force for 1 minute. Pass

3.2.7 Abrasion and Static strength - Wrap-around energy absorbing lanyards only

Specimens 2G13019 to 2G13021 were assessed.

The specimens withstood the tensile test of 3,600 pounds applied for 1 minute without breaking, after the abrasion conditioning. Pass

3.2.8 Static strength - Wrap-around energy absorbing lanyards only

Specimens 2G13022 to 2G13024 were assessed.

The specimens withstood the tensile test of 5,000 pounds applied for 1 minute without breaking. Pass

3.2.9 Static strength – Y-lanyards only

Specimens 2G13010 to 2G13012 were assessed.

Leg A withstood the tensile test of 5,000 pounds applied for 1 minute without breaking. Pass

Specimens 2G13013 to 2G13015 were assessed.

Legs A and B withstood the tensile test of 5,000 pounds applied for 1 minute without breaking. Pass

3.2.10.1 Dynamic test, Y-lanyards only – Single connection

During the dynamic performance tests, the average arrest force were:

Specimen 2G13010 - 787 pounds.	Pass
Specimen 2G13011 - 774 pounds.	Pass
Specimen 2G13012 - 825 pounds.	Pass

These values are less than the maximum 900 pounds permitted.

During the dynamic performance tests, the maximum arrest force were:

Specimen 2G13010 - 1028 pounds.	Pass
Specimen 2G13011 - 1045 pounds.	Pass
Specimen 2G13012 - 1122 pounds.	Pass

These values are less than the maximum 1,800 pounds permitted.

During the dynamic performance tests, the deployment distance were:

Specimen 2G13010 – 38.4 inches.	Pass
Specimen 2G13011 – 38.2 inches.	Pass
Specimen 2G13012 – 37.4 inches.	Pass

These values are less than the maximum 48 inches permitted.

See Annex 1 for the plot of force versus time.

3.2.10.2 Dynamic test, Y-lanyards only - Dual connection

During the dynamic performance tests, the maximum arrest force were:

Specimen 2G13013 - 1166 pounds.	Pass
Specimen 2G13014 - 1116 pounds.	Pass
Specimen 2G13015 - 1122 pounds.	Pass

These values are less than the maximum 1,800 pounds permitted.

See Annex 1 for the plot of force versus time.

3.2.10.3 Dynamic test, Y-lanyards only - Hip connection

Specimens 2G13016 to 2G13018 were assessed.

During the dynamic tests, all nylon keepers were broken.

The energy absorbing lanyards did include a warning label on each leg according to clause 5.2.2. Pass

5 Marking

5.1 General Marking Requirements

5.1.1	Markings shall be in English.	Pass
5.1.2	The legibility and attachment of required markings shall endure for the life of the component, subsystem or system being marked was not assessed.	NAs
	The legibility and attachment of required markings endured for the duration of the testing performed.	
	Labels were supplied electronically and used for assessment.	
	When pressure sensitive labels are used, they shall comply with the applicable provision of reference 8.5.1. This requirement was not assessed. Manufacturer to certify.	NAs
5.1.3	Equipment shall be marked with the following:	
	· part number and model designation; [UFL201422]	Pass
	· year of manufacture;	Pass
	· manufacturer's name or logo; [KSTRONG]	Pass
	· capacity rating; [130-310lbf]	Pass
	· serial number;	Pass
	· standard number; [ANSI Z359.13-2013]	Pass
	· warning to follow the manufacturer's instructions included with the equipment at time of shipment from the manufacturer.	Pass

5.2 Specific Marking Requirements

5.2.1	Energy absorbing lanyards shall be marked to identify:	
	· the fiber used in the material of construction; [Polyester, Nylon]	Pass
	· the length; [6 ft]	Pass
	· the need to avoid contact with sharp edges and abrasive surfaces;	Pass
	· the need to make only compatible connections;	Pass
	· the maximum elongation; [48"]	Pass
	· restriction, if any, on the types of components, subsystems, or systems with which the energy absorber is designed to be used;	Pass
	· the average arrest force, maximum free fall distance and capacity of the energy absorber on a separate label identical in size, color and content as figure 16a and 16b of the standard; [size and color of label not assessed]	Ltd
	· 6 ft FF personal energy absorbers shall be in black print on a contrasting white background;	NAs
	· 12 ft FF personal energy absorbers shall be in white print on a contrasting black background;;	NAp
5.2.2	· In addition to 5.2.1, Y-lanyards that fail the Dynamic Hip Test detailed in 3.2.10, must include a warning label on both connecting ends of the lanyard specifically directing users how to safely store the unused leg of the lanyard.	Pass

5.3 General Instruction Requirements

The instructions to users have been assessed as detail below, with reference only to the relevant requirements of the Standard.

INSPEC Testing Services has not assessed these instructions with respect to claims made by the manufacturer outside of these requirements, and therefore accepts no responsibility for the legitimacy of any such claims.

5.3.1	Instructions shall be provided to the user, printed in English, and affixed to the equipment at the time of shipment from the manufacturer.	NAs
5.3.2	Instructions shall contain the following information:	
	· a statement that the manufacturer's instructions shall be provided to users;	Pass
	· manufacturer's name, address, and telephone number;	Pass
	· manufacturer's part number and model designation for the equipment;	Pass
	· intended use and purpose of the equipment;	Pass
	· proper method of use and limitation on use of the equipment;	Pass
	· illustrations showing locations of markings on the equipment;	Pass
	· reproduction of printed information on all markings;	Pass
	· inspection procedures required to assure the equipment is in serviceable condition and operating correctly;	Pass
	· anchorage requirements;	Pass
	· an illustration of how to calculate free fall distances;	Pass
	· criteria for discarding equipment which falls inspection;	Pass
	· procedures for cleaning, maintenance, and storage;	Pass
	· reference to the ANSI/ASSE Z359.13, *Personal Energy Absorbers and Energy Absorbing Lanyards*, standard and applicable regulations governing occupational safety.	Pass
5.3.3	Instructions shall require that only the equipment manufacturer, or persons or entities authorized in writing by the manufacturer, shall make repairs to equipment.	Pass
5.3.4	Instructions shall require the user to remove equipment from field service if it has been subjected to the forces of arresting a fall.	Pass

5.4 Specific Instruction Requirements

5.4.1 In addition to general instruction the requirements, written instructions for personal energy absorbers shall include:

· the material used in the personal energy absorber construction;	Pass
· the need to make only compatible connections and limitations of compatibility;	Pass
· proper method of coupling the personal energy absorber to adjacent components of the system;	Pass
· the maximum arrest force of the personal energy absorber when dynamically tested in accordance with the requirements of this standard;	Pass
· the maximum elongation of the personal energy absorber when dynamically tested in accordance with the requirements of this standard.	Pass
· a reference chart that indicates the deployment distance of the personal energy absorber according to the user weight and free fall distance;	NAs
· a statement that indicates information necessary in designing fall protection systems shall be made available from the manufacturer.	Pass
· manufacturers may provide designers of fall protection systems a representative graph(s) of the time history plot of the loading from a drop test.	NAs

Result details – submission 02

3.2.5 Dynamic performance test - Ambient wet condition

During the dynamic performance tests, the average arrest force were:

Specimen 2G13028 - 793 pounds.	Pass
Specimen 2G13029 - 811 pounds.	Pass
Specimen 2G13030 - 791 pounds.	Pass

These values are less than the maximum 1,125 pounds permitted.

During the dynamic performance tests, the maximum arrest force were:

Specimen 2G13028 - 1188 pounds.	Pass
Specimen 2G13002 - 1217 pounds.	Pass
Specimen 2G13003 - 1100 pounds.	Pass

These values are less than the maximum 1,800 pounds permitted.

During the dynamic performance tests, the deployment distance were:

Specimen 2G13028 - 34.6 inches.	Pass
Specimen 2G13029 - 35.0 inches.	Pass
Specimen 2G13030 - 35.0 inches.	Pass

These values are less than the maximum 48 inches permitted.

See Annex 1 for the plot of force versus time.

Estimates of the uncertainty of measurement

Clause	Test		Uncertainty
3.1.5	Deployment indicator		See Note 1
3.1.6	Activation force		See Note 1
	Permanent elongation		0.40%
3.2	Personal Energy Absorber Component, if fitted		See report
3.2.1	Materials		-
3.2.2	Terminations		-
3.2.3	Connectors		See report
3.2.4	Dynamic performance – ambient dry	Force	± 3.0%
		Deployment distance	± 1mm
3.2.5	Dynamic performance – various conditions	Force	± 3.0%
		Deployment distance	± 1mm
3.2.6	Static strength – single lanyard		See Note 1
	Static strength – slippage		± 2.1%
3.2.7	Abrasion and Static strength - Wrap-around energy absorbing lanyards only		See Note 1
3.2.8	Static strength - Wrap-around energy absorbing lanyards only		See Note 1
3.2.9	Static strength - Y-lanyards only		See Note 1
3.2.10.1	Dynamic test, Y-lanyards only - Single connection	Force	± 3.0%
		Deployment distance	± 1mm
3.2.10.2	Dynamic test, Y-lanyards only - Dual connection	Force	± 3.0%
3.2.10.3	Dynamic test, Y-lanyards only - Hip connection		See Note 1
5.1 / 5.2	Marking		-
5.3 / 5.4	Information		-

Note 1. The acceptance criterion for this test is a straightforward “Pass/Fail”, rather than a numerical value. Consequently, as there is no value to be reported, uncertainty has not been reported either.

Note 2. The uncertainty value is based on a standard uncertainty multiplied by a coverage factor k = 2, which provides for a confidence level of approximately 95%. Values expressed as a percentage (%) are relative.

Note 3. It should be noted that the above values have not been taken into account when making assessments against the pass/fail criteria.

ANNEX

This Annex comprises two sections.

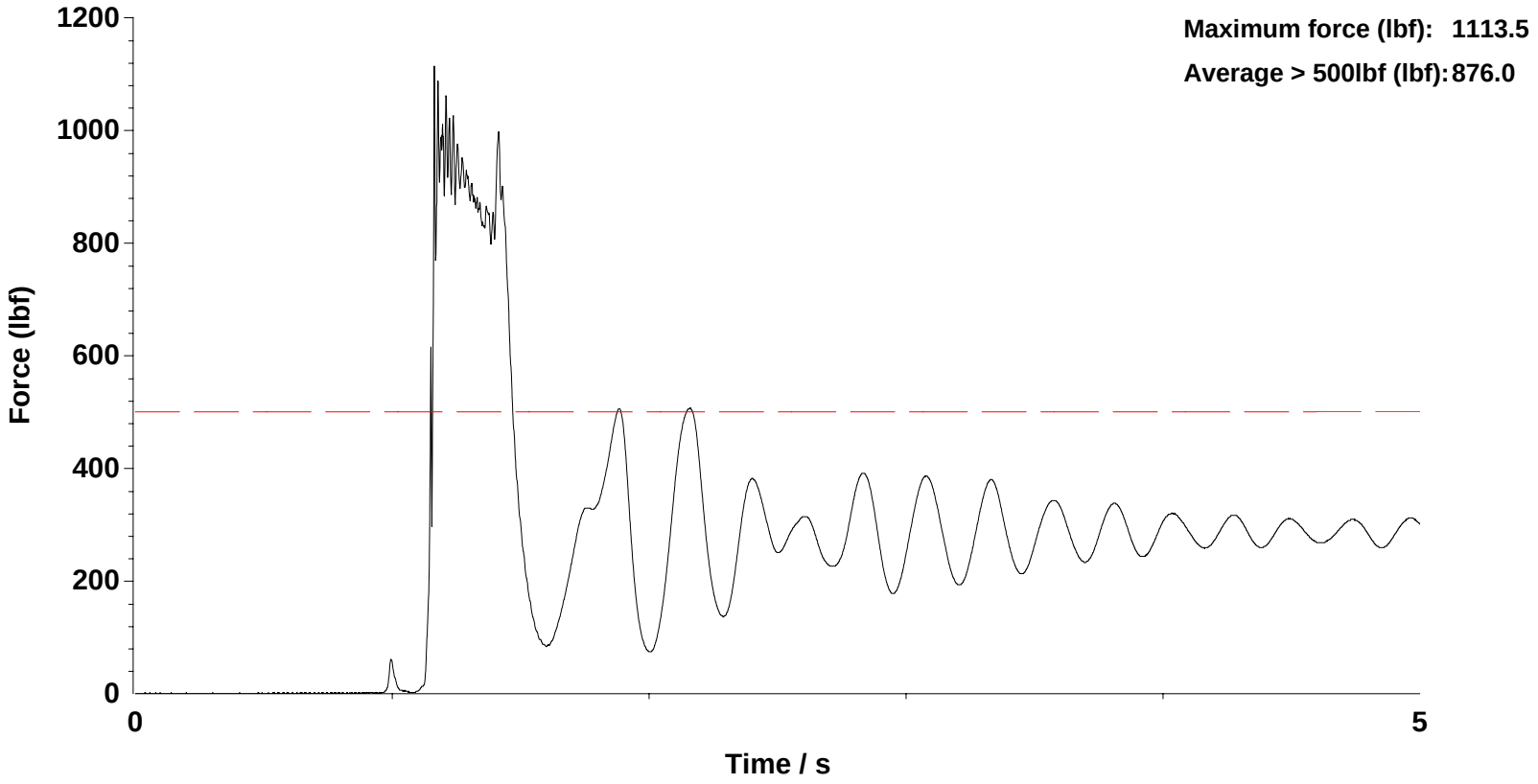
1. Plots of arrest force versus time. (15 pages)

2. Photographs of the product tested. (1 page)

END OF REPORT

INSPEC Technical Services

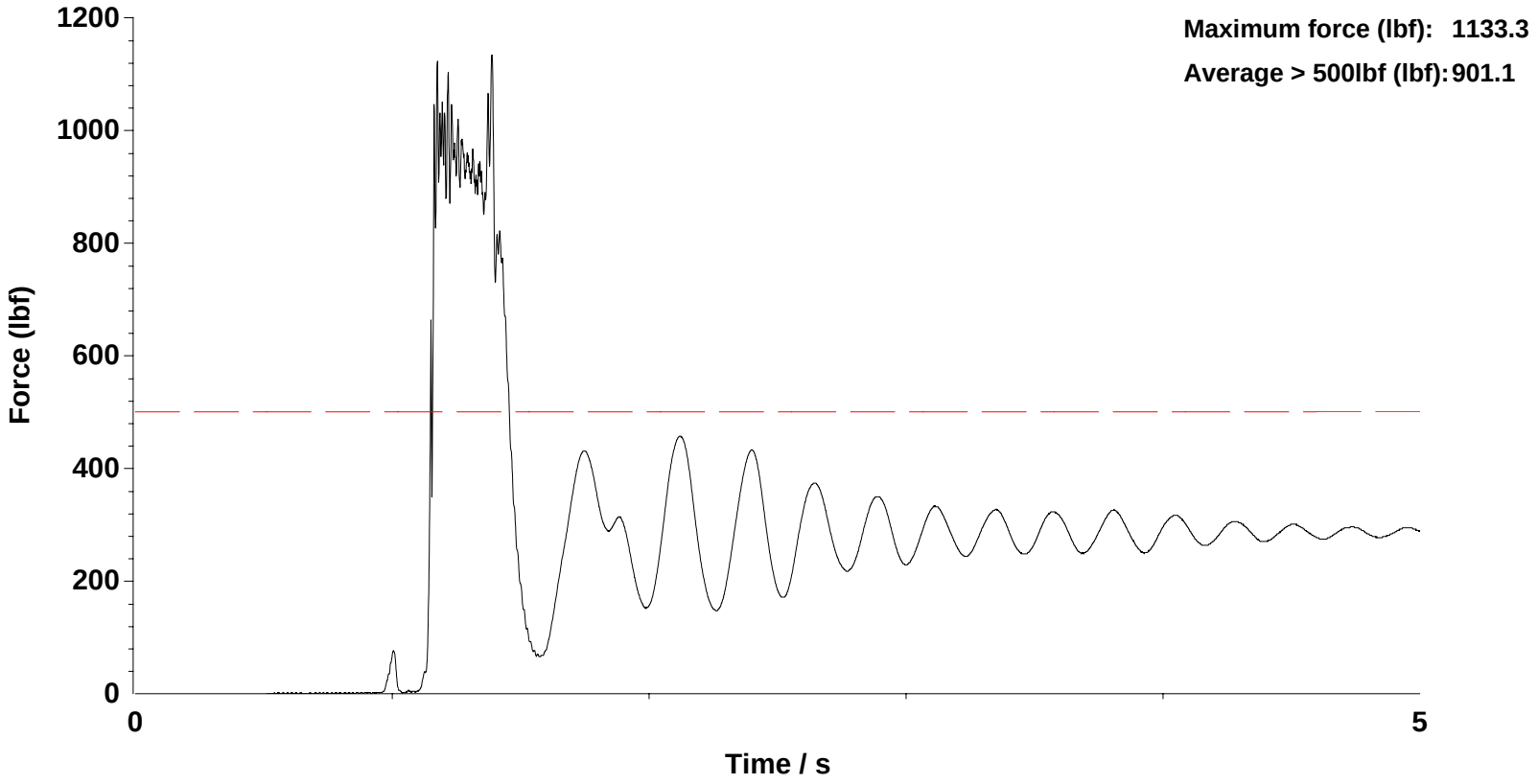
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13004
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	17:21 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

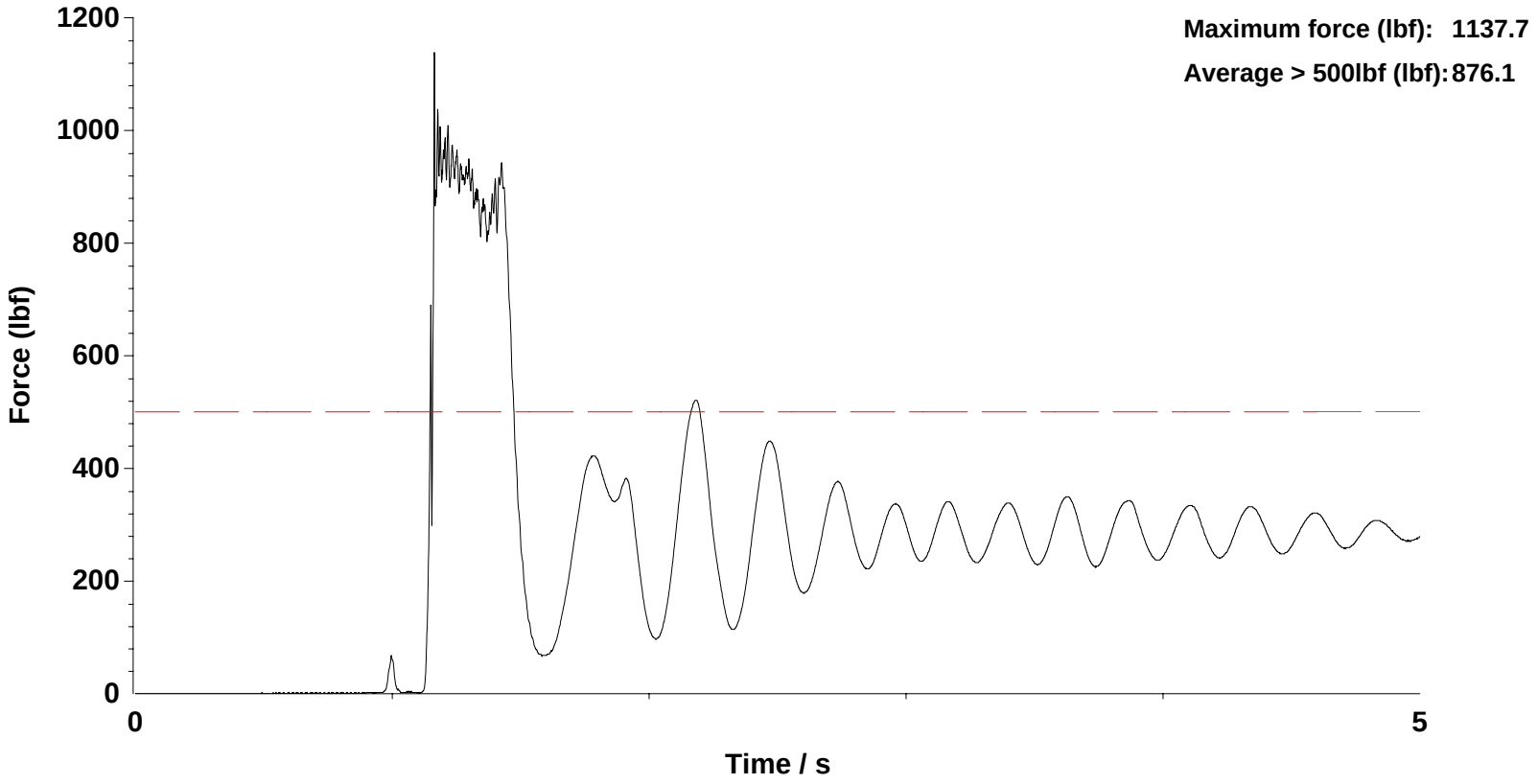
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13005
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	17:28 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

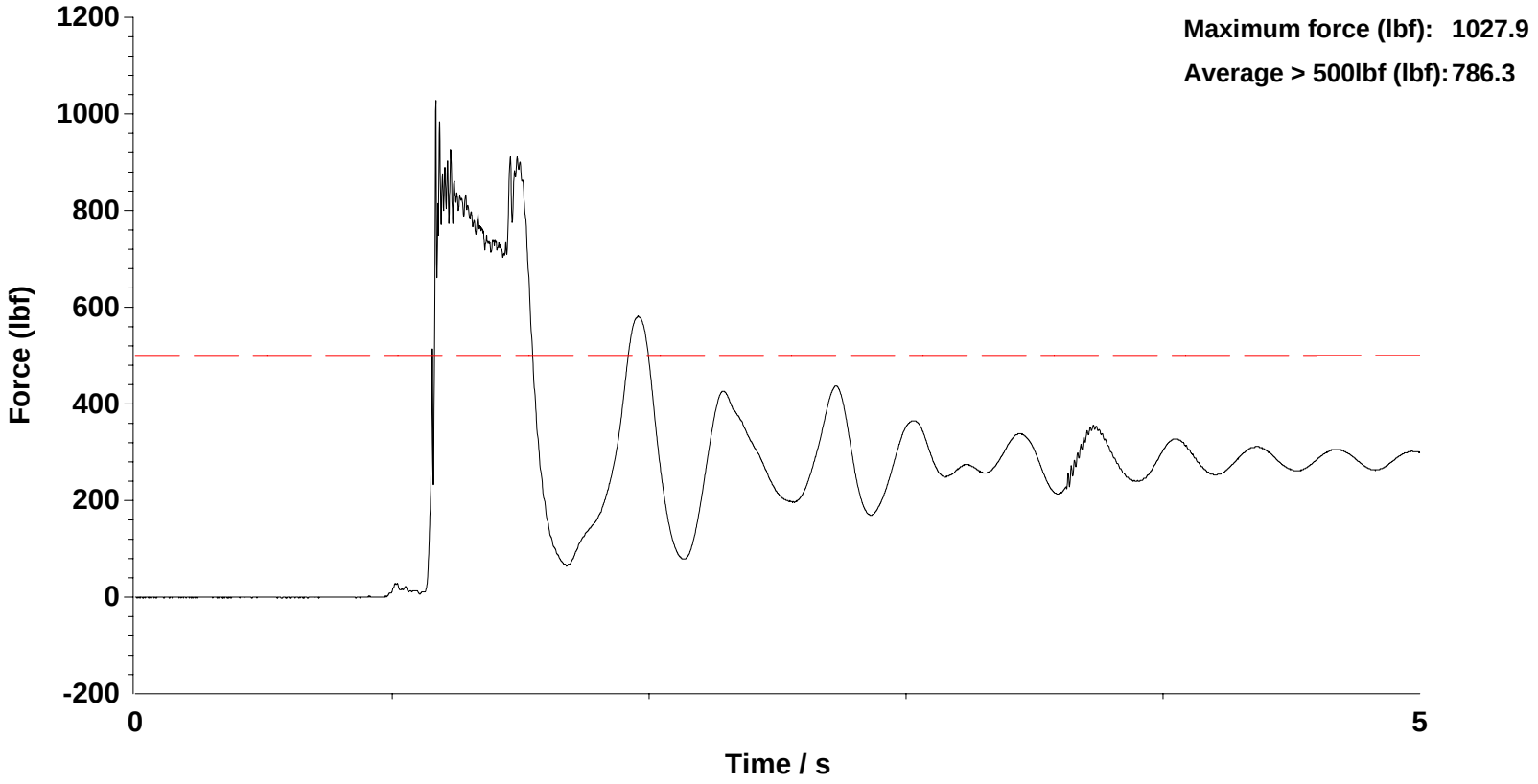
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13006
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	17:36 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13007
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	18:32 28/08/19



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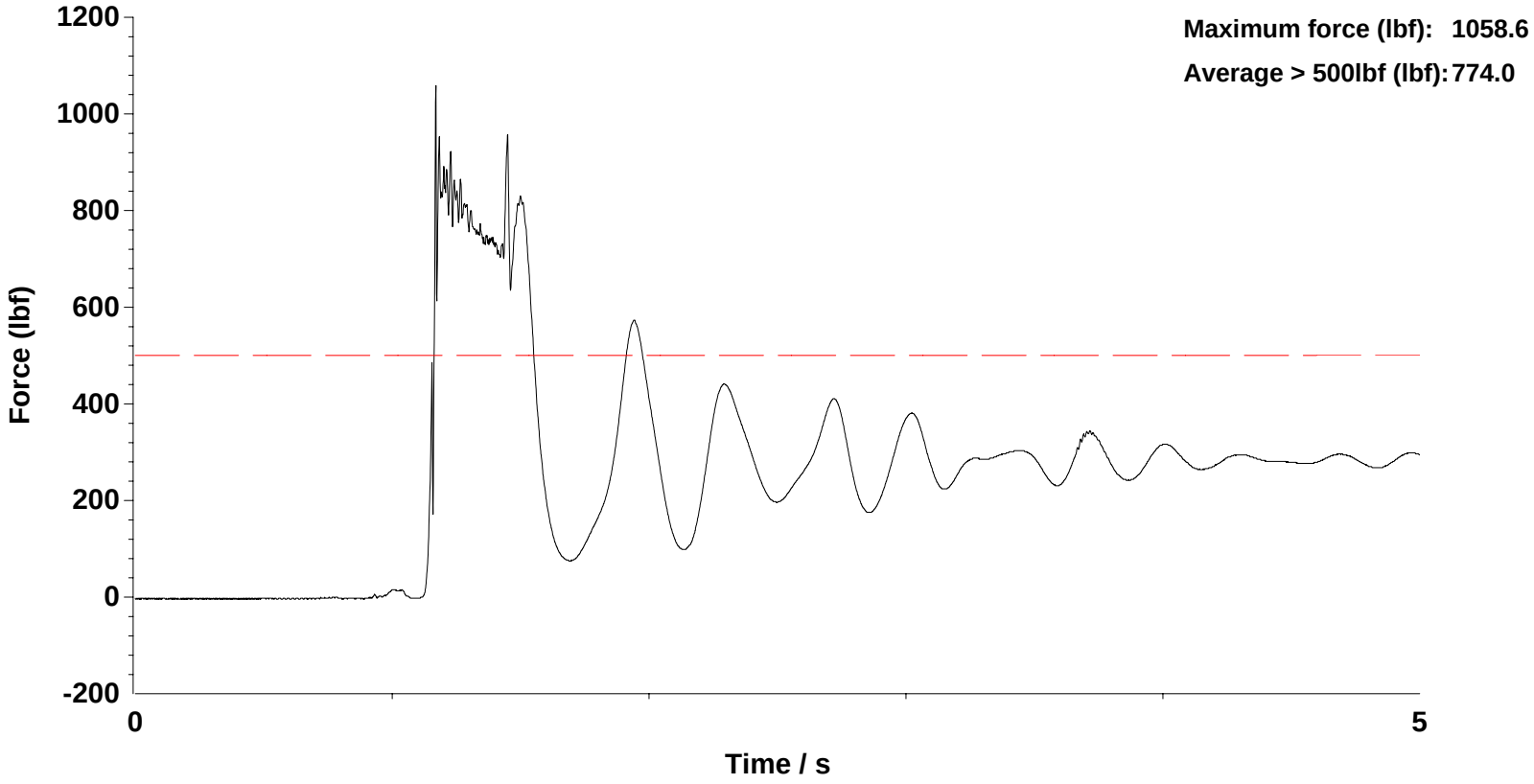
INSPEC Technical Services

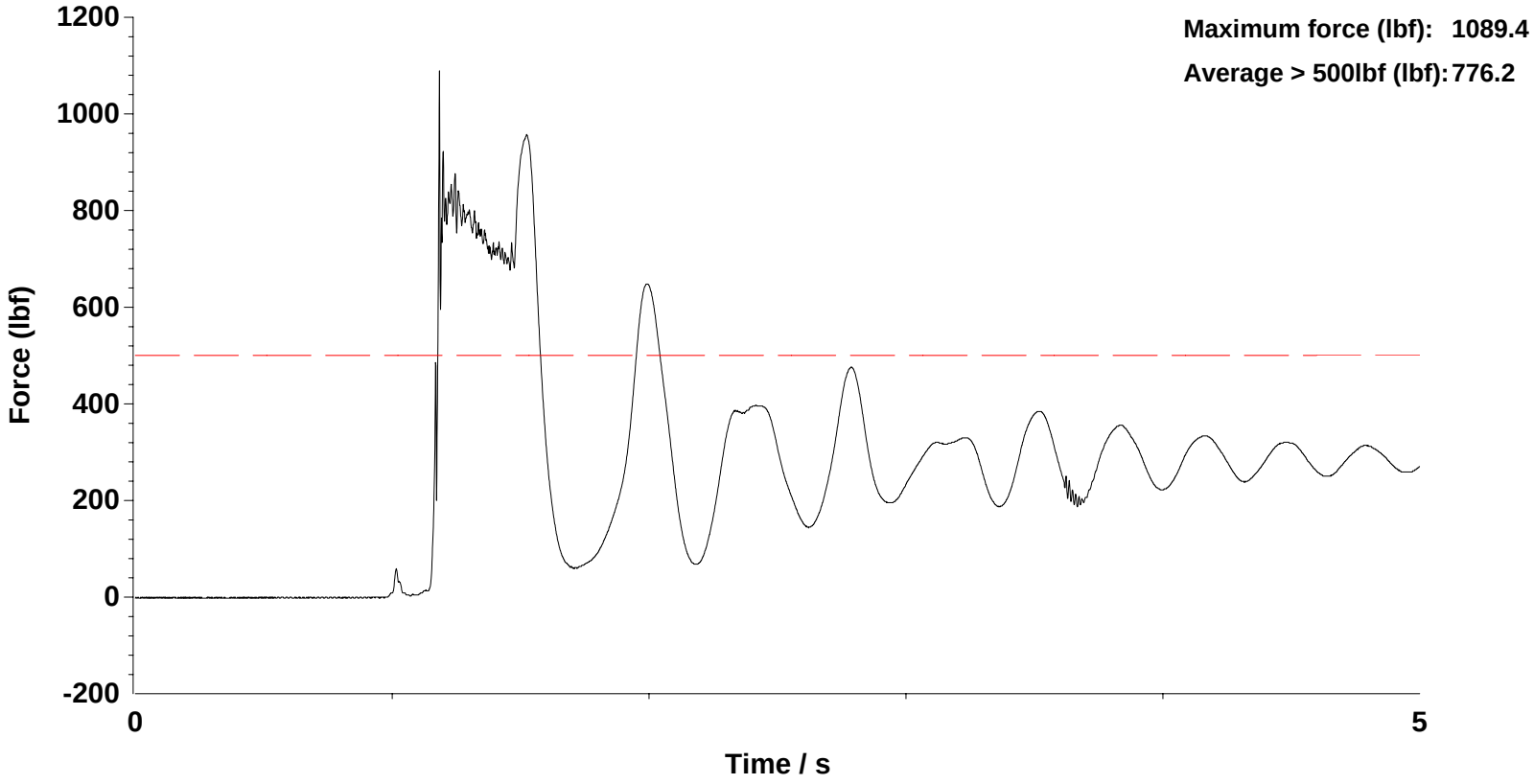
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13008
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	18:41 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

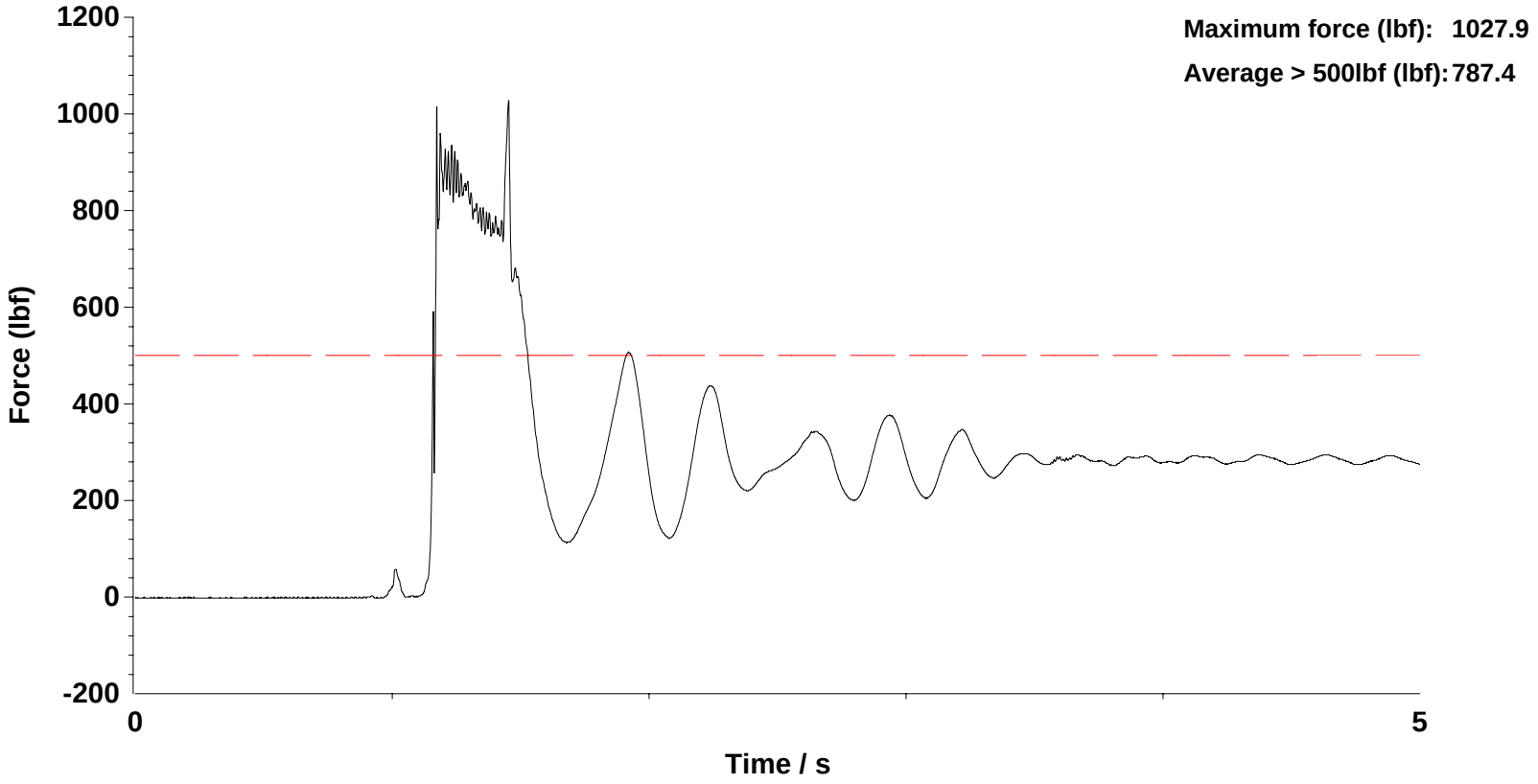
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13009
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	18:48 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13010
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	16:32 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

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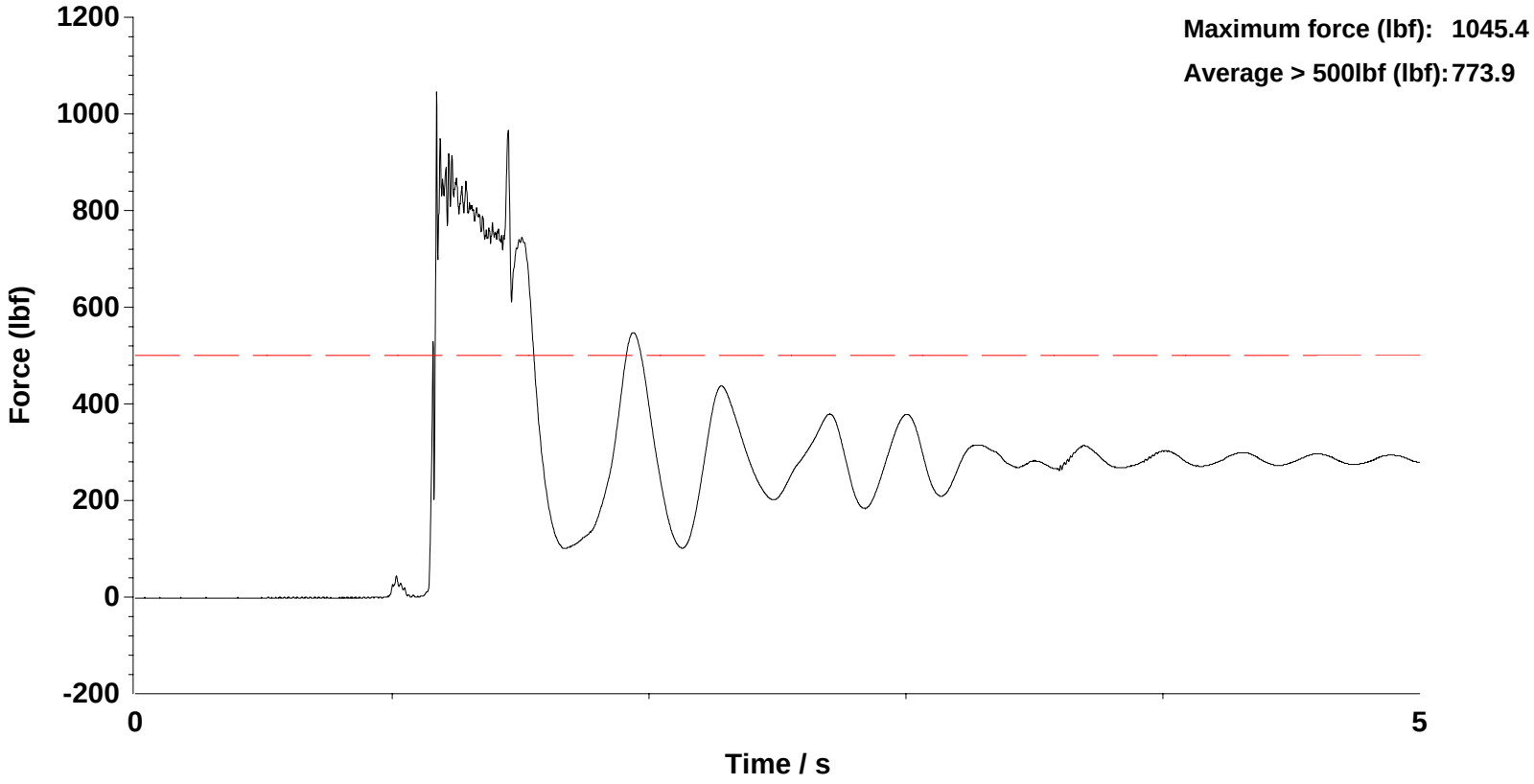
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13011
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	16:37 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

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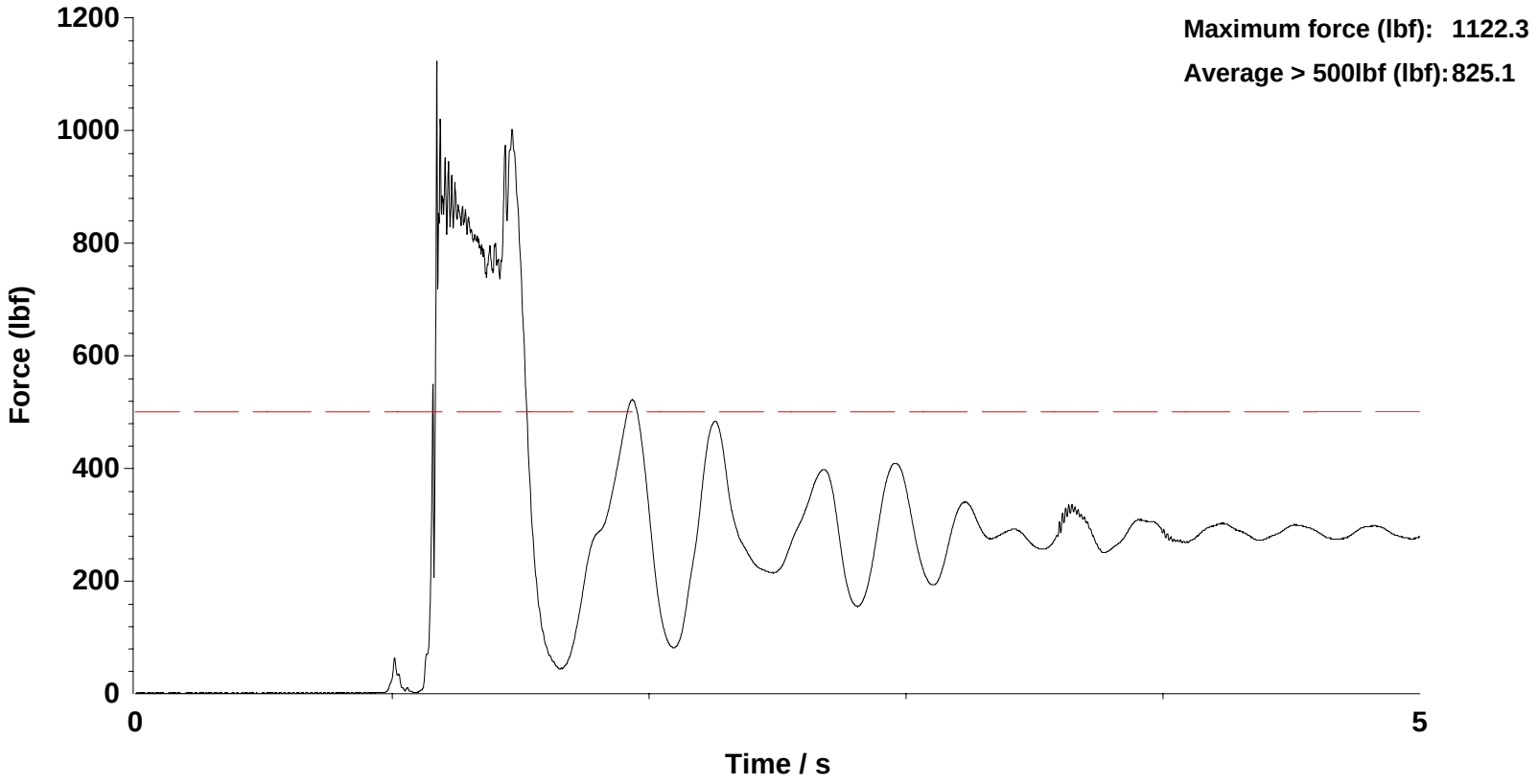
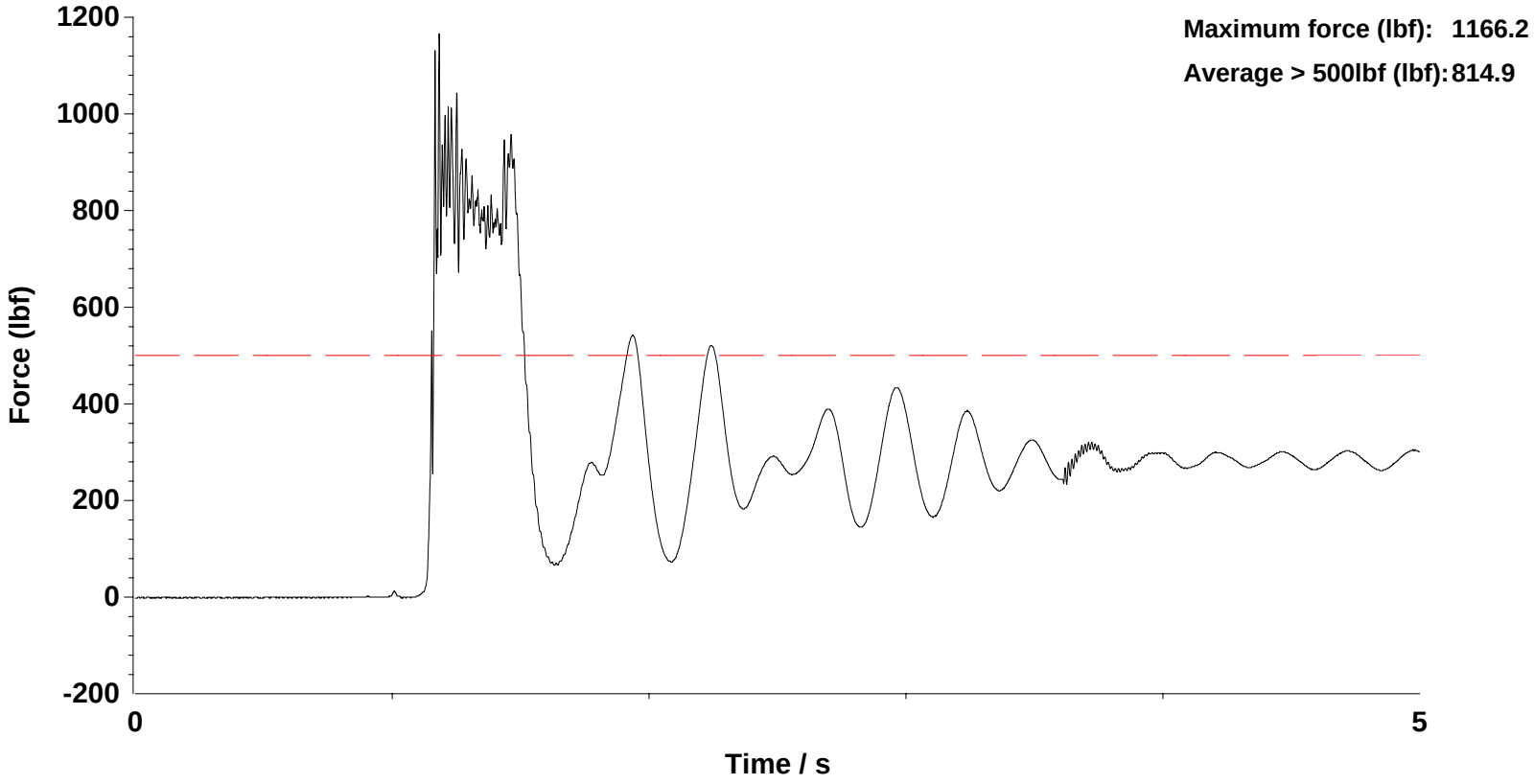
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13012
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	16:42 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

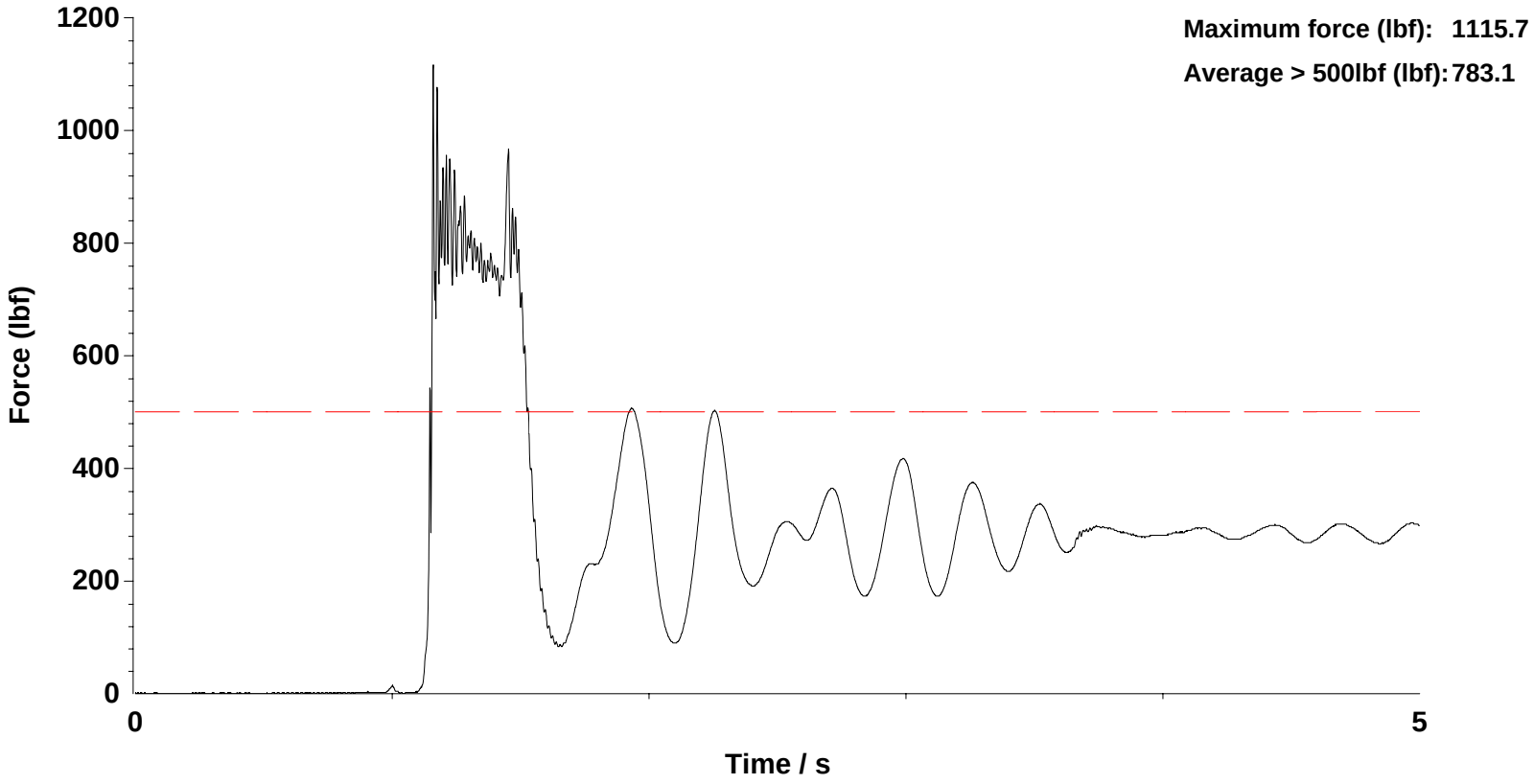
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13013
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	16:47 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

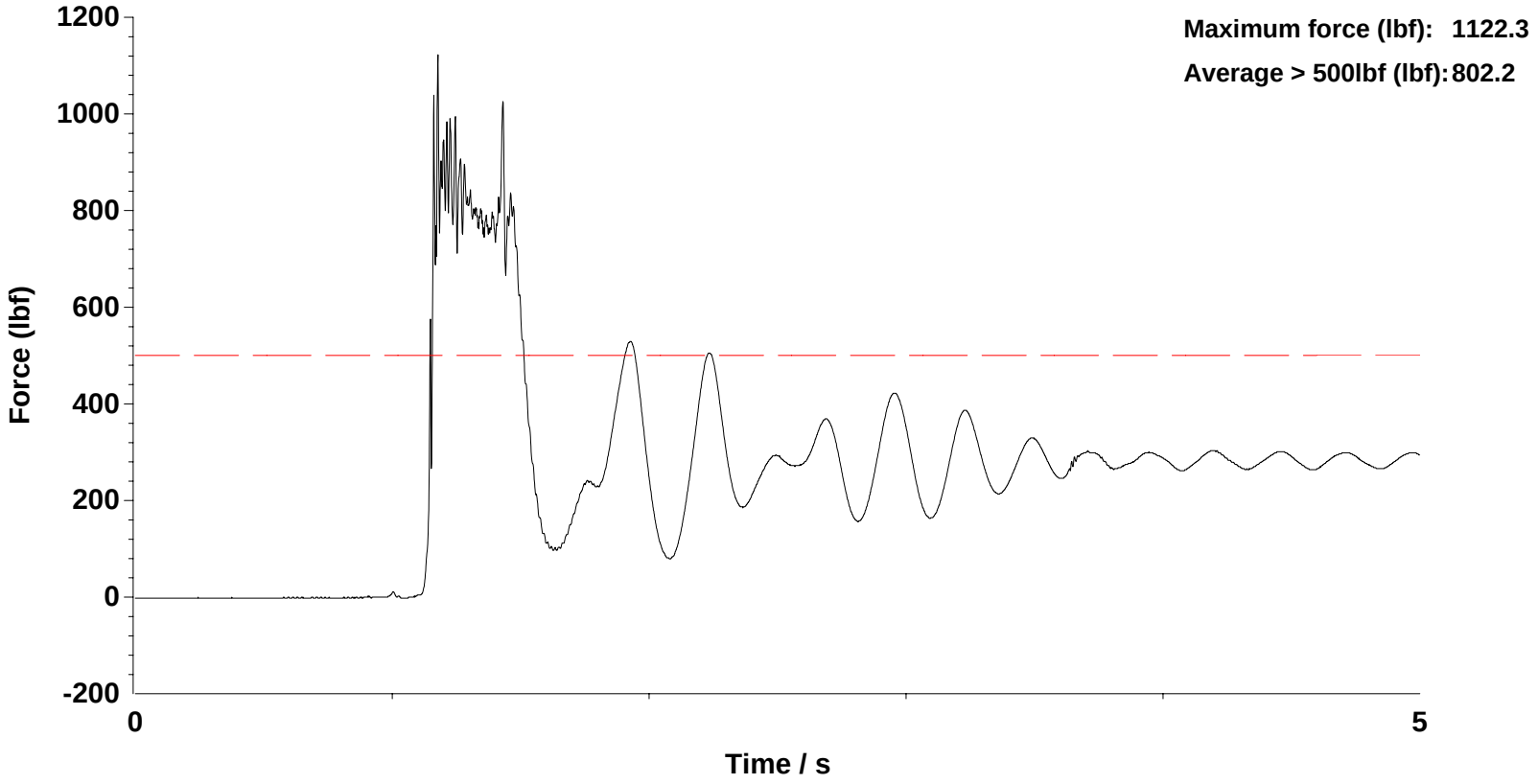
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13014
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	16:53 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

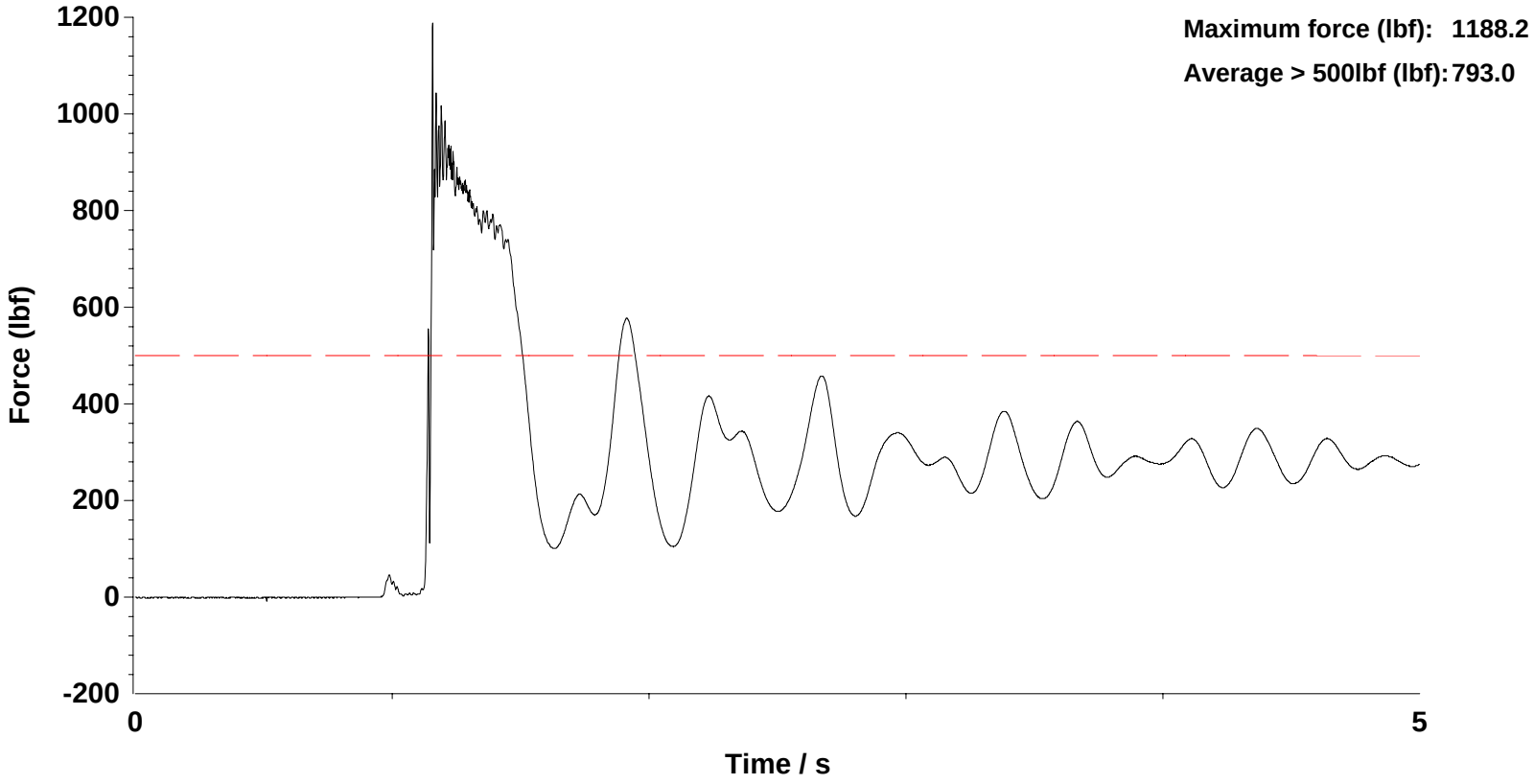
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13015
Drop item	Drop weight, US 128 kg
Orientation/Attachment Point:	Center eyebolt
Time and Date of Test:	17:01 28/08/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

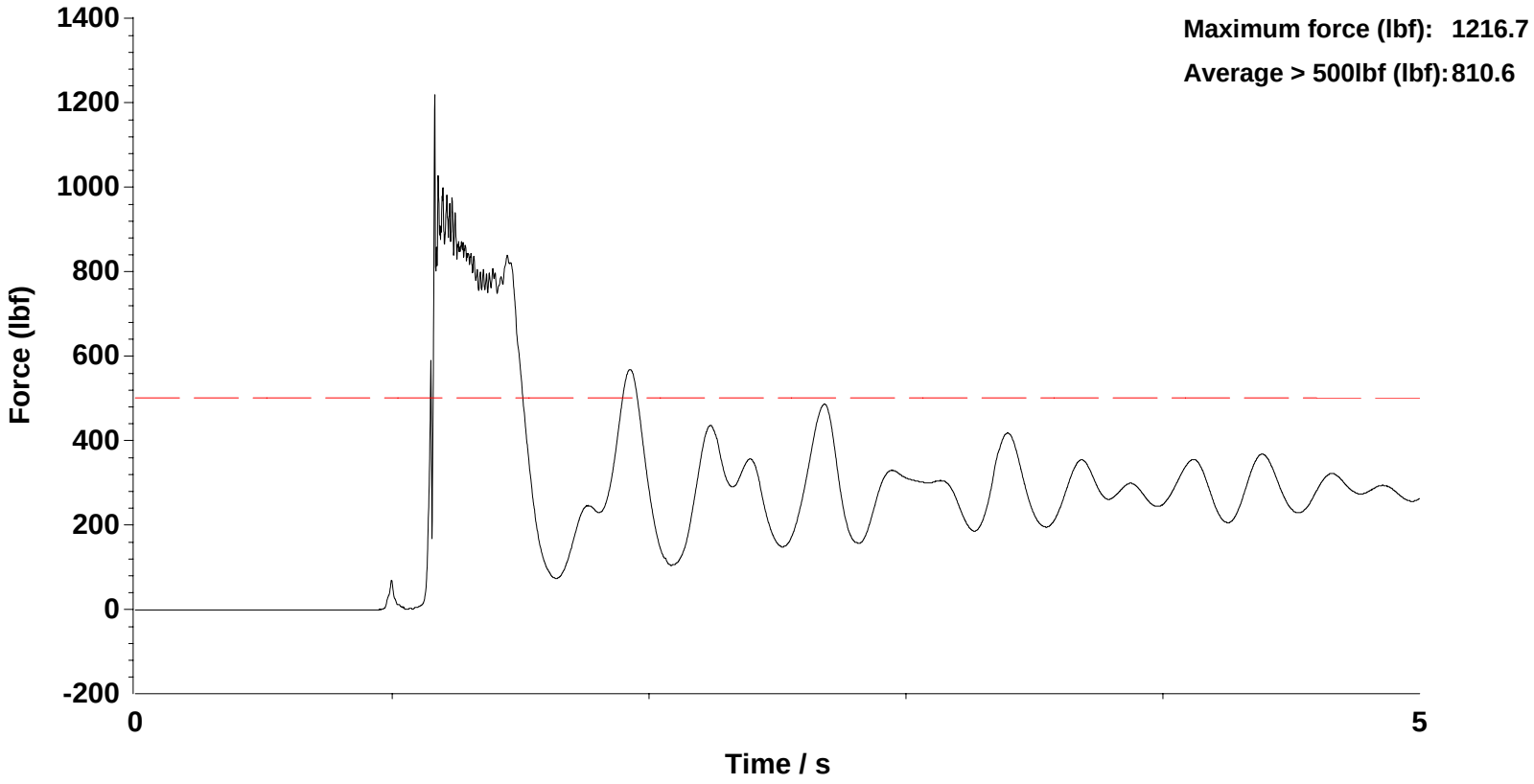
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13028
Drop item	drop weight, U.S
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	17:43 14/10/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

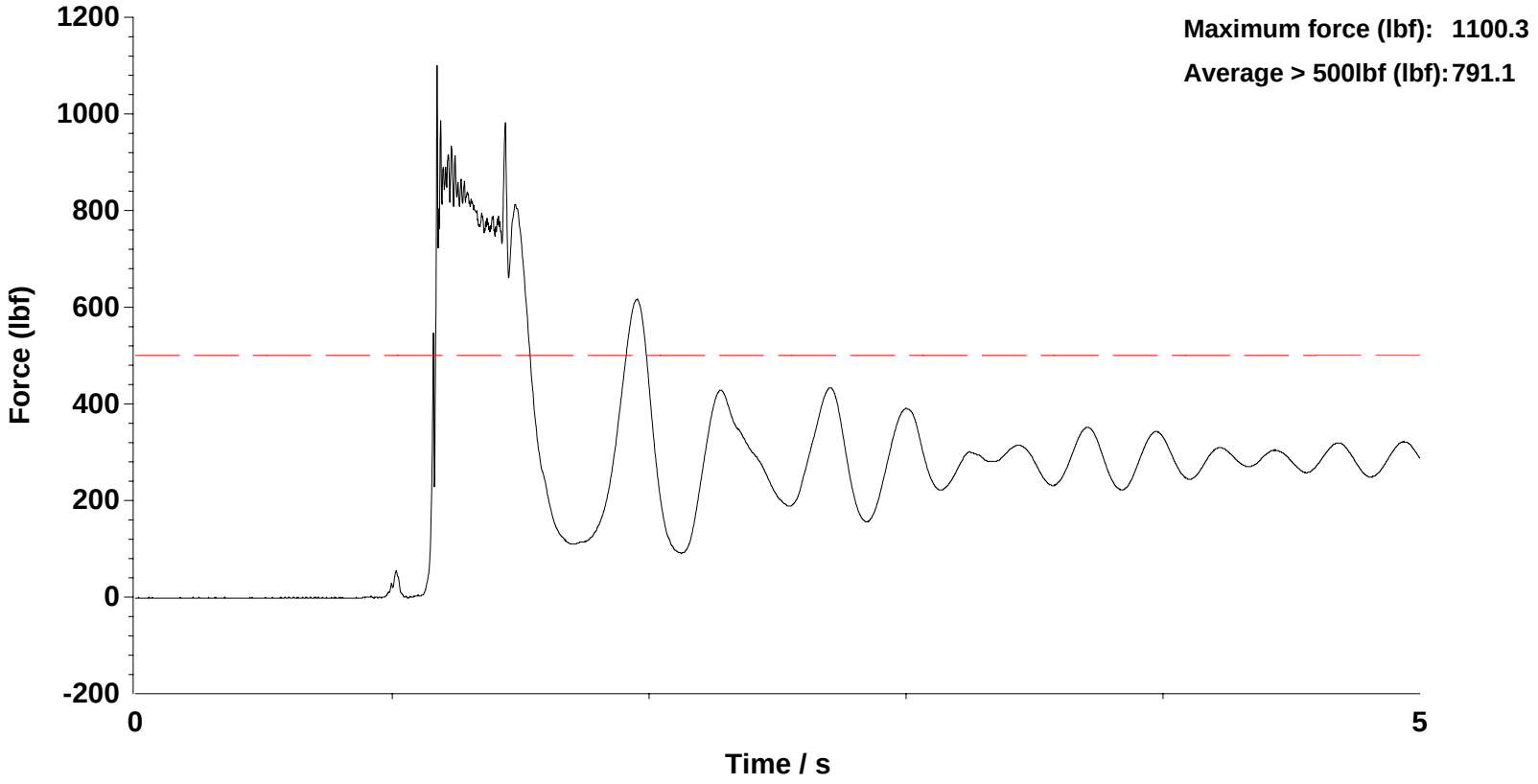
Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13029
Drop item	drop weight, U.S
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	17:24 14/10/19



Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

Technician:	LJ/SS
Standard	ANSI Z359.13:2013 Energy absorbing lanyard
Sample / File name:	2G13030
Drop item	Drop weight, US
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	18:26 14/10/19



Results do not achieve full ANAB status until a formal test report has been issued.

KSTRONG LLC –
Tie Back Lanyard, model UFL201422