Economic Commission for Europe

Inland Transport Committee

Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods **17 March 2014**
Bern, 17–21 March 2014
Item 5 (a) of the provisional agenda
Proposals for amendments to RID/ADR/ADN: pending issues

Proposal for the use of flexible bulk containers (FBC)

Transmitted by the International Dangerous Goods and Containers Association (IDGCA)

1. The Report of the Experts Joint Meeting on Rules attached to the European Agreement concerning the International Carriage of Dangerous Goods on Inland Waterway relating to its twenty fourth session (see points 21-23) contains a proposal to perform complete tests of FBC in accordance with the requirements of Section 6.8 of the UN Recommendations.

2. International Dangerous Goods and Containers Association (IDGCA) has performed the test of FBCs by upper part lifting in accordance with the requirements of Section 6.8 of the UN Recommendations. The test procedure, Methods and Protocol are attached hereto.

3. The tests were performed in the presence of the Russian competent bodies representatives and the expert of BAM Institution (Germany)

4. Please be informed that all other kinds of tests FBC in accordance with section 6.8 of the UN Recommendations have been conducted and published previously:
Drop test – **UN/SCETDG/38/INF.8**
Topple test, Righting test, Tear test, Stacking test – **UN/SCETDG/35/INF.27/Add.1, UN/SCETDG/35/INF.27/Add.2, UN/SCETDG/35/INF.27/Add.1/Corr.1**

FSUE Krylov State Research Center

APPROVE

Head of Department 3

V.M. Shaposhnikov

« » February, 2014

PROGRAM

for Safety Certification Tests for Structure Type
of Specialized Flexible Container
MK 14-10

Saint Petersburg

2014

1. General

2.1. This program establishes provisions and an order of carrying out certification tests of a prototype of a flexible container for bulk cargoes (FBC) of high load-carrying capacity, recycling and intended for solid bulk cargoes including dangerous goods of packing group III.

2.2. The container is manufactured by CJSC New Technology in Transportation under TU 2297-001-56579756-06 approved by the Federal Agency Roszheldor and JSC RZD.

2.3. Compliance of FBCs to requirements of Section 6.8.5 of the Recommendations of UN Standard Rules for Transportation of Dangerous Goods and Section 4.3 of the International Maritime Dangerous Goods Code (IMDG Code) is established during the tests.

2. Technical characteristics of FBC

Material	Rubberized fabric stiffened with strip net
Maximum load-carrying capacity, kgf (Q_{max})	14,000
Maximum capacity, m^3	15.0
Top structure	Closed with a loading arm
Bottom structure	Flat, solid with a loading arm
Lifting device (number of slings)	8
Insert presence	NO
Total number of tiers when stacking	4
Overall dimensions, cm	240×240×280

3. Structure type tests

No.	Test type	Load	
		Requirements	Value, kgf
1	Lifting by the upper part	$6\times Q_{max}$	84,000
2	Lifting by the upper part	$8.5\times Q_{max}$	119,000

Head of Laboratory 31 A.V. Alexandrov

Senior Researcher E.A. Shishenin

Federal State Unitary Enterprise
Krylov State Research Center

Copy No.

APPROVED BY

Head of Department 3,
Cand.Sc. (Engineering)

(signature) V.M. Shaposhnikov

L.S. « 28 » 02 , 2014

FLEXIBLE BULK CONTAINERS. TESTING BY UPPER PART LIFTING OF CONTAINER MK-14-10 TEST METHODS

ИМЯН 31- 405 -14 МИ

AGREED

Chief Metrologist,
Cand.Sc. (Engineering)

(signature) V.D. Morozov

«26» 02 , 2014

Certificate of Attestation
No. 405/3-14

Saint Petersburg

2014

Table of contents

1 General requirements to conditions of test support and conducting

1.1 Tests of flexible bulk container MK-14-10 shown in fig. 1 A in Appendix A are carried out under the contract between CJSC New Technology in Transportation and FSUE Krylov State Research Center No. 339-31/13 "Testing by upper part lifting of flexible bulk container MK-14-10". The purpose of these tests – check of durability of the mentioned flexible bulk container at its upper part lifting in accordance with the requirements of Section 6.8.5.3.6 of Recommendations of UN Standard Rules for Transportation of Dangerous Goods and Section 4.3 of the International Maritime Dangerous Goods Code (IMDG Code).
Test loads should be applied to the container statically. Their values are ranging from 412 to 1150 kN (specific values are determined by the statement of work). The container is subject to a test load within 5 minutes minimum.
A criterion of passing tests is as follows: no damages of the flexible bulk container or its load-gripping devices, in the presence of which the container becomes unsafe for transportation of goods and handling operations, and no contents loss.

1.2 Control of test object is conducted according to provisions of Section 7.0 ДП 5.8-01Б ЭР "A quality manual of the laboratory of strength tests and full-scale structure life of FSUE Krylov State Research Center".
1.3 Tests of the container are conducted in the shed of endurance and static tests (ERSI) at air temperature from 15 to 25°C.
1.4 Load layout of the test object is shown in figure 2A (see "Appendix A") to these methods.
1.5 Test means
1.5.1 Loading of the flexible bulk container is carried out through four force measurement channels consisting of ViCont system and ДСТУ-type force-measuring transducers. Expanded uncertainty of force measuring (with a coverage factor of 2) should be not more than ± 3% in relation to measured value.
1.5.2 Four channels of linear movement measurement consisting of ДЛП-type linear movement transducers, power supplies and ADC of the personal computer are used for measurement of pressure disk movements. Expanded uncertainty of movement measurement (with a coverage factor of 2) should be not more than ± 3 mm.
1.5.3 Weight measurement of the loaded container together with the pressure disk should be performed using a force measurement channel consisting of ViCont system and a ДСТУ-type force-measuring transducer. Expanded uncertainty of force measurement (with a coverage factor of 2) should be not more than ± 3% in relation to measured value.
1.5.4 Time measurement of container dwelling under loading is performed using a СОСпр-type stopwatch. A maximum error for it in the range of 0-60 minutes is not more than ± 1.5 s.

2 Test methods

2.1 Preparation for tests

2.1.1 Level out the top layer of sand in the container and to put a pressure disk onto it. Then make weighing of the filled container together with the pressure disk through a special force measurement channel (see item 1.5.3). Results of weighing (G value) shall be recorded in a special free-form act.

2.1.2 Lift a beam over the container by means of a crane. Then set container slings on beam brackets and secure them from slipping.

2.1.3 Install hydraulic cylinders with force transducers in accordance with load layout shown in fig. 2A in Appendix A. At that, it is necessary to set dynamometer gauges into beam bracket grooves and to secure them there, and to insert hydraulic cylinder shanks into special bushings on the pressure disk.

2.1.4 Connect force-measuring transducers to the ViCont system.

2.1.5 Prepare linear movement measurement channels for installation installing transducers on hydraulic cylinders.

2.2 Test procedure

2.2.1 Lift the loaded container by means of a crane; a clearance between the floor and the bottom of the container should be not less than 0.5 m.

2.2.2 For measurement of hydraulic cylinder rod strokes (that is equivalent to pressure disk movement against the beam), it is necessary to secure cables of the linear movement transducers on hydraulic cylinders (see fig. 2A).

2.2.3 Using hydraulic cylinders apply a test load (force) P_1^{test} operating on the container and equal to 412 kN (42 tf taking weight of the loaded container and the pressure disk into account). At that, a load value P_1^c created by the hydraulic cylinders shall be determined by the formula:

$$P_1^c = P_1^{test} - G.$$

2.2.4 Dwell the container under application of the load P_1^{test} within not less than 5 minutes.

2.2.5 In the course of dwelling the container under the load, it is necessary to measure movements of the pressure disk using linear movement channels and to record results to the test report.

2.2.6 After 5-minute dwelling under load, it is necessary to inspect the container. If no destructions are detected, increase the test load P_2^{test} to 825 kN (84 tf taking weight of the loaded container and the pressure disk into account). At that, the force P_2^c created by the hydraulic cylinders shall be determined by the formula:

$$P_2^c = P_2^{test} - G.$$

2.2.7 Then shall be repeated pp. 2.2.4 and 2.2.5.

2.2.8 If the container sustained damages after 5-minute dwelling, then increase the test load P_3^{test} to 1150 kN (117 tf taking weight of the loaded container and the pressure disk into account). At that, the total force P_3^c created by the hydraulic cylinders shall be determined by the formula:

$$P_3^c = P_3^{test} - G.$$

2.2.9 If the container does not torn, operations under pp. 2.2.4 and 2.2.5 shall be repeated.

2.2.10 Unload hydraulic cylinders, lower the container onto the floor, and dismantle the testing equipment.

2.2.11 The weight (sand) shall be dumped from the container. The container shall be transferred to the Consumer.

3 Reporting

Test Results are presented to the Consumer in the form of a Protocol issued according to the requirements of the enterprise standard STP ИМЯН.083-2013 "Quality management system. Metrological support of work. Test methods".

4 Safety and environment protection requirements

Tests of the container conducted under these Methods do not require any special conditions. Therefore, there is no necessity to develop special requirements for personnel safety when conducting such tests. Following the instructions and Rules being in force in this field shall be enough.

Conducting tests of the container is not connected with use or application of materials and means that pollute environment. Therefore, there is no necessity to formulate any requirements regarding ecology observance of which should be obligatory in the course of preparation and conducting tests.

Senior researcher	(signature)	E.A. Shishenin
Chief of Sector 312	(signature)	S.A. Dmitriyev
Head of Laboratory 31	(signature)	A.V. Alexandrov
Senior researcher Head of MS-3	(signature)	Yu.A. Zimnitsky
Agreed Consumer representative	(signature)	E.A. Akhundov

Appendix A

(compulsory)

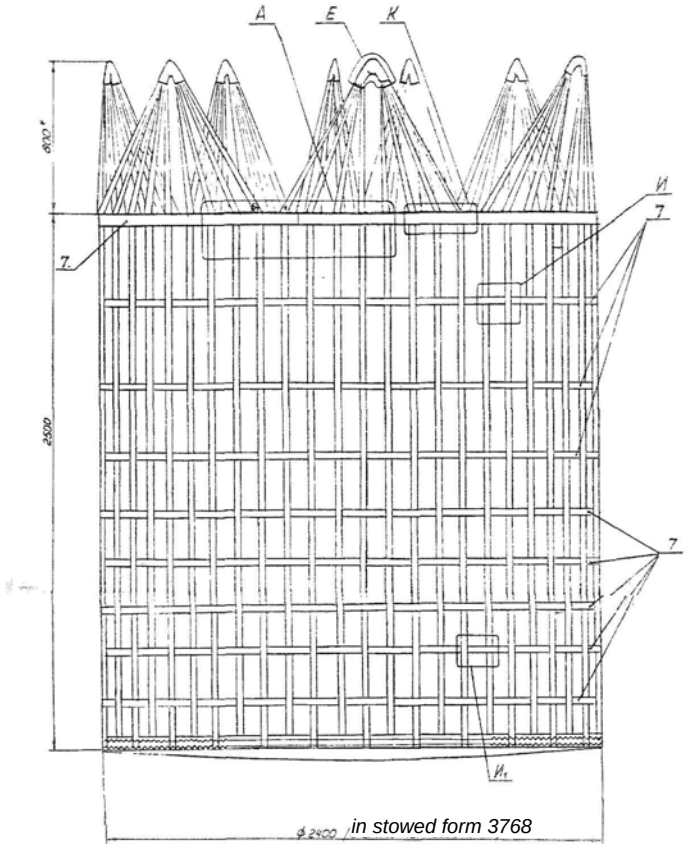

Figure 1A – Suspension design and configuration when handling of flexible bulk container МК-14-10

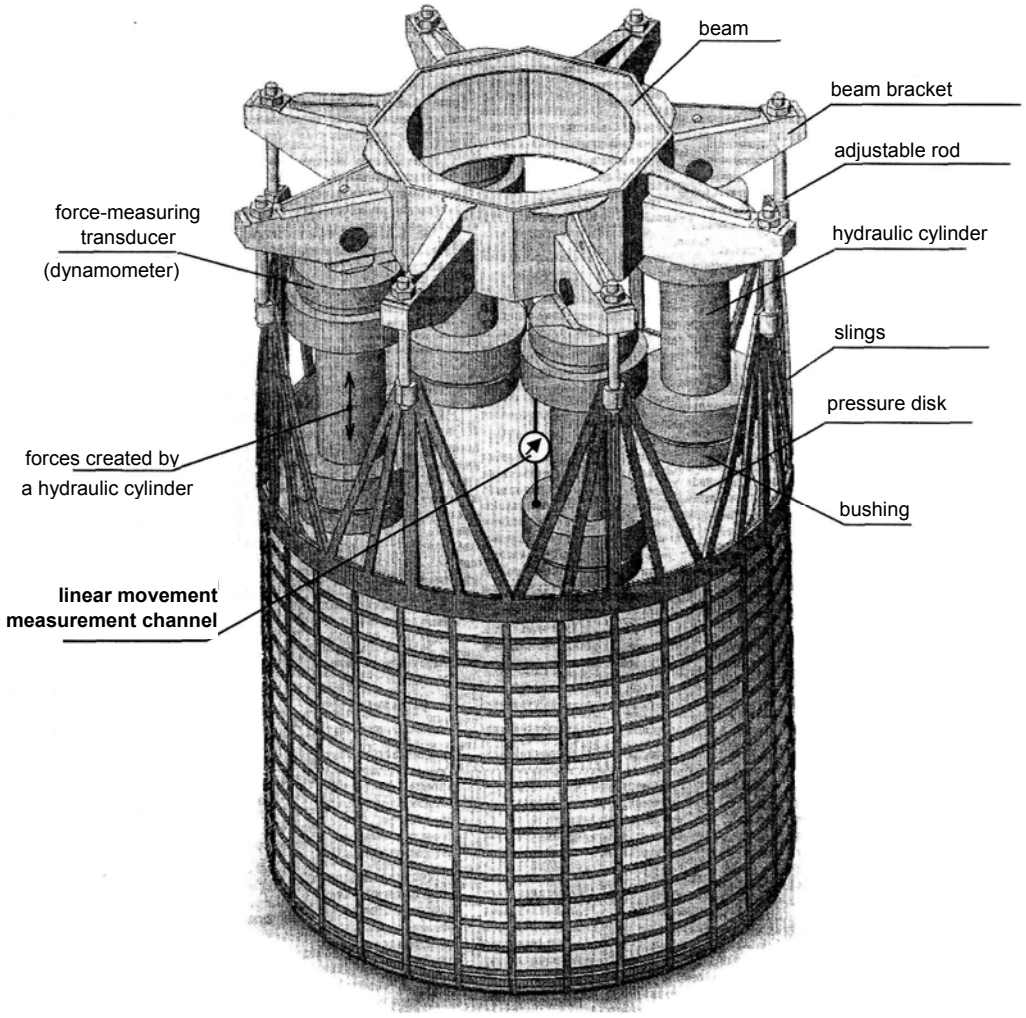

Figure 2A – Container load and linear movement transducer layout
(forces created by other hydraulic cylinders as well as locations of other linear movement transducers conditionally are not shown)

Appendix B

(referential)

Justification of given parameter repeatability and measurement error

Main parameters, measurement accuracy of which can significantly affect results of flexible bulk container tests, are as follows:
- weight of a loaded container together with a pressure disk
- values of test loads
- values of pressure disk movements under the influence of test loads.

1. Weight of the loaded container together with the pressure disk is determined through a channel of force measurement consisting of ViCont system and ДСТУ-type force-measuring transducer. For conducting the tests, the channel is calibrated in a required range of force measurement according to methods ИМЯН 307-82-02 МК "A force measurement channel. Calibration methods". Only the channel for which a bound of a relative error of force measurement with a confidence probability of 0.95 does not exceed ± 2.5% that corresponds to expanded uncertainty (with a coverage factor of 2) of ± 2.5% masurable with respect to a measured value is allowed to the tests.

Thus, a requirement of the Methods for a loaded container weighing error (± 3%) is fulfilled.

2. The test load applied to the container consists of weight of a container with a pressure disk and forces created by hydraulic cylinders. These forces are measured through channels of force measurement consisting of ViCont system and ДСТУ-type force-measuring transducers. Before tests, the channels are calibrated (see p. 1 of this Appendix) and the same requirements for a measurement error as in p. 1 are imposed to them.

P. 1 of this Appendix shows that a relative error of container weighing does not exceed ± 2.5%. A measurement error of forces created by hydraulic cylinders, as it appears from the stated above, is not more than ± 2.5%. In these conditions the relative error of repeatability of the test load also amounts to not more than ± 2.5% that corresponds to expanded uncertainty (with a coverage factor of 2) of ± 2,5% masurable with respect to a measured value.

Thus, a requirement of the Methods for a relative error of test load repeatability (± 3.0%) is fulfilled.

3. Pressure disk movements under the influence of the test load are measured through channels consisting of ADC of the personal computer, power supplies and ДЛП-type linear movement transducers that are calibrated according to methods ИМЯН 307-83-03 МК "A measuring channel of linear movements. Calibration methods". Bounds of an absolute error of the movement measurement channels should not exceed ±3.0 mm with a confidence probability of 0.95 that corresponds to expanded uncertainty (with a coverage factor of 2) of ±3.0 mm.

Thus, a requirement of the Methods for a measurement error of pressure disk movements under the influence of test loads (± 3.0 mm) is fulfilled.

General conclusion

The norms for a determination error of loaded container weight, test load values as well as values of pressure disk movements under the influence of test loads set in the Methods are fulfilled.

Chief Metrologist	(signature)	V.D. Morozov
Head of MS-3	(signature)	Yu.A. Zimnitsky

Record of revisions

Revision	Page number				Document number	Signature	Date	Revision compliance date
	Changed	Replaced	New	Canceled				

Federal State Unitary Enterprise
Krylov State Research Center

AGREED

Chief Metrologist,
Cand.Sc. (Engineering)

(signature) V.D. Morozov

«26» 02 , 2014

APPROVED

Head of Department 3,
Cand.Sc. (Engineering)

(signature) V.M. Shaposhnikov

L.S. « 28 » 02 , 2014

CERTIFICATE OF ATTESTATION No. 405/3-14

Test methods ИМЯН 31-405-14 МИ

FLEXIBLE BULK CONTAINERS.
TESTING BY UPPER PART LIFTING
OF CONTAINER MK-14-10
TEST METHODS

1. **Purpose**

Determination of requirements to the process of preparation and conducting tests of flexible bulk container MK-14-10 by upper part lifting.

2. **Field of application**

Static strength tests of a flexible bulk container at the equipment of FSUE Krylov State Research Center.

3. **Target parameters**:

- Loaded weight of the container is determined with expanded uncertainty (with a coverage factor of 2) of ± 3% masurable with respect to a measured value
- A test load applied to the container with expanded uncertainty (with a coverage factor of 2) of ± 3% masurable with respect to a measured value
- Movements of the pressure disk under the influence of test loads with expanded uncertainty (with a coverage factor of 2) of ± 3.0 mm.

Based on attestation results the commission considered it possible to recommend Methods ИМЯН 31-405-14 МИ for application.

Commission chairman
Head of MS-3
Cand.Sc.
(Engineering) (signature) Yu.A. Zimnitsky

Members of the commission
Lead engineer of Laboratory 32 (signature) B.F. Yegorovsky

Engineer of category I
of Laboratory 31 (signature) L.V. Fyodorova

Krylov State Research Center "

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44 Moscowskoye Shosse,
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Tel.(812) 727-95-93

Copy No.

APPROVED BY

V.M. Shaposhnikov
Head of Strength &
Structure Division
March ___, 2014

Test report No. AR-107-P

Certification tests for structural type and safety of soft specialized container of MK-14-10 grade

Made in 3 copies.
Экз. No. 1 – to Customer
Экз. No. 2 – Laboratory Archives
Экз. No. 3 – Laboratory Archives

St.Petersburg
2014

Table of contents

1. General

1.1. A soft container of MK-14-10 grade having the following characteristics was tested.

Material	Rubbered cloth reinforced with grid of belt bands
Maximum carrying capacity, kgf (Q_{max})	14,000
Maximum holding capacity, m^3	15.0
Top structure	Closed with loading arm
Bottom structure	Flat blind with discharging arm
Lifting device (quantity of lifting eyes)	8
Presence of insert	No
Total quantity of layers when piling	4
Overall dimensions, cm	240×240×280
Package group	III
Registration number	11213691

1.2. Test type – lifting by the top .
1.3. Basis for the testing – Contract No. 331-31/13 dated 31.01.14 with CJSC New Technologies in Transportation
1.4. The following attended the testing:
From CJSC "New Technology in Transportation" – Emil A. Akhiundov, Vera A. Kolodina;
From CJSC Russian Register Igor G. Sannikov ;
From CJSC CNIIMF(ЦНИИМФ) – Oleg Ye. Karpovich;
From "IDGCA" (НП АСПОГ) -Mikhail I. Ognev;
From "BAM" (Germany)- Jan Werner.

1.5 The test entity was supplied to the laboratory on February 27, 2014

1.6. The tests were conducted on February 27, 2014 – March 12.2014.

2. Test equipment and instrumentation

2.1. Force metering channel DSTU -1000-04 consisting of:

- Vi Cont system
- Force-measuring transducer 1798 DSTU-2I-200-No.4, bridge No.1, Certificate No.1811/314-14 valid up to February 02, 2015.

.

2.2 Displacement sensors

Pressure disk displacements under test loads are measured by channels consisting of an analog-to-digital converter of a personal computer, power source and linear displacement transducers calibrated by Methodology IMAN 307-83-03 MK "Linear Displacement Measuring Channel. Calibration Methodology". Boundaries of channels' absolute errors of the shall not exceed ± 3.0 mm at confidence probability 0.95 that corresponds to extended uncertainty (at the coverage ratio 2) ± 3.0 mm.

3. Documents

3.1. Test program for structural type and safety of soft specialized container of MK-14-10 grade.
3.2. Methodology IMAN 31-405-14 MI "Soft containers. Testing through lifting by the top of container MK-14-10. Test methodology".
3.3. Certification of automatic loading channels for SNPK2000-300 system. Methodology IMAN 307-310-00MA.

4. Test procedure

Actions for the container preparation for testing are explained in the methodology IMAN 31-405-14 MI "Soft containers. Testing through lifting by the top of container MK-14-10. Test methodology".
(Information required in the test report is given below for each test type on individual pages)

5. Testing through lifting by the top

5.1 Container registration number is 11213691
5.2 Test date "March 12, 2014 "
Test facility layout is given in Fig. 5.1

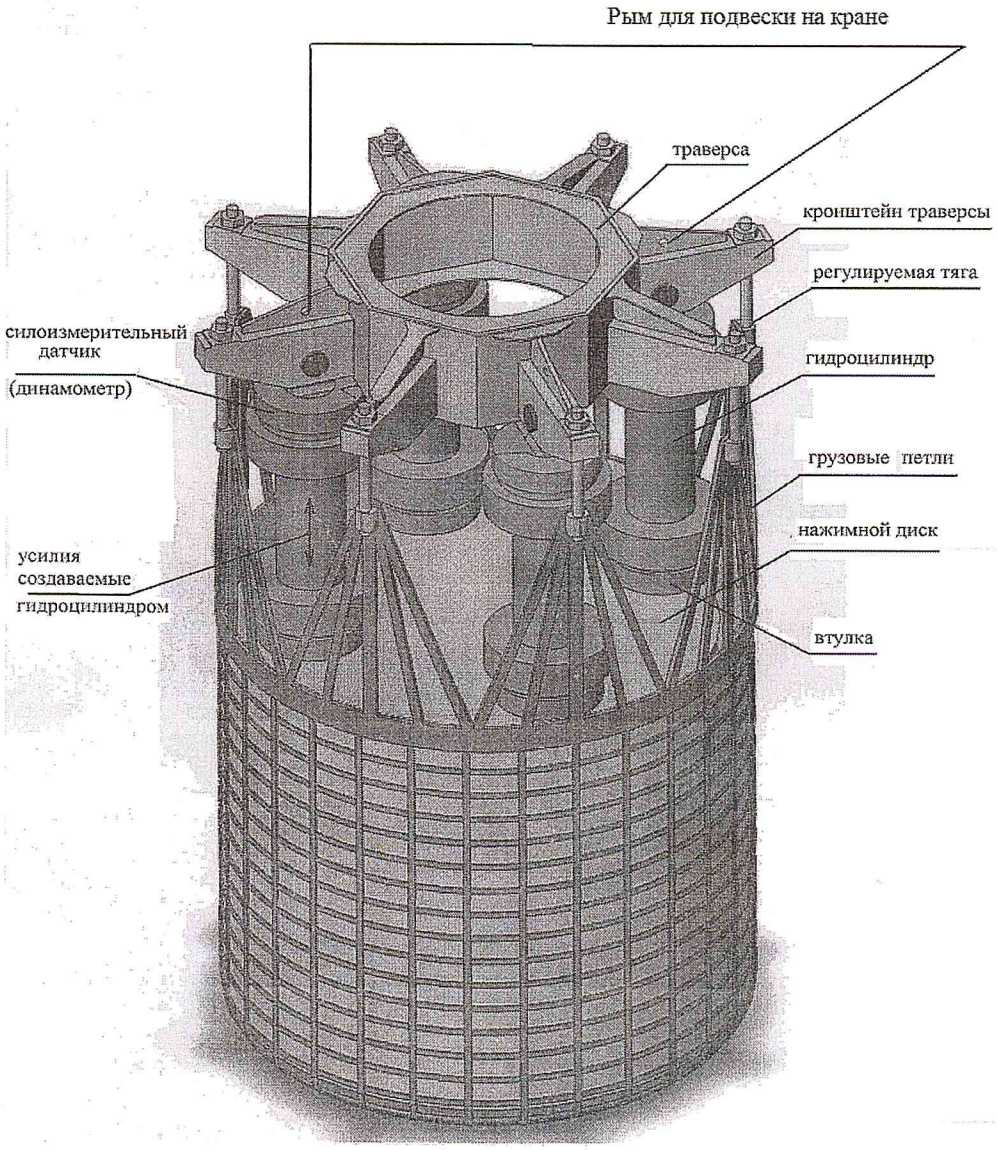

Fig.5.1- Test facility layout

Ring for lifting on crane
crosspiece
Force-measuring transducer (dynamometer)
Forces produced by hydrocylinder
cross-piece bracket arm
adjustable rod
hydrocylinder
lifting eyes
pressure disk
bushing

5.3 Conducting tests under maximum load 119 tf

5.3.1 Test conditions

Static testing equivalent to lifting by upper slings for the container of 14 t weight with overload factors 6 and 8.5 is conducted.

5.3.2 Loading parameters

Maximum load P(tf) - 119.04;

Load incremental step dP(tf) - 10.9, 11.7;

Holding time under maximum load min - 5;

Air temperature T C^0 - 18.

Table of cylinder rods displacement during testing

No.	Cylinder load P_{cl} (tf)	Sling load P_s(tf)	Rod travel; 1st cyl. (mm)	Rod travel; 2nd cyl. (mm)	Rod travel; 3rd cyl. (mm)	Rod travel; 4th cyl. (mm)	Average travel (mm)	Notes
1	0	18.75	0.1	0.1	0.1	0.1	0.1	
2	2.72	29.63	16.1	18.3	17.9	16.4	24.58	
3	5.44	40.51	64.9	73.0	73.9	66.5	69.57	
4	8.16	51.39	131.6	145.2	145.0	129.5	137.8	
5	10.88	62.27	196.4	214.1	211.7	192.2	203.6	
6	13.6	73.15	257.8	278.2	275.1	252.8	265.97	
7	16.32	84.0	314.2	337.6	330.4	307.2	322.4	Holding for 5 minutes
8	16.32	84.0	335	359	352	328	343.5	
9	17.06	87.0						Failure of bottom ring framework without container loss

5.4 Deviations

Testing under load 119 t was not conducted because of ring framework failure under sling load 87 tf.

5.5 Test results

The container framework grid and gripping devices were not damaged. The container structure loading was stopped under the sling load 87 tf.

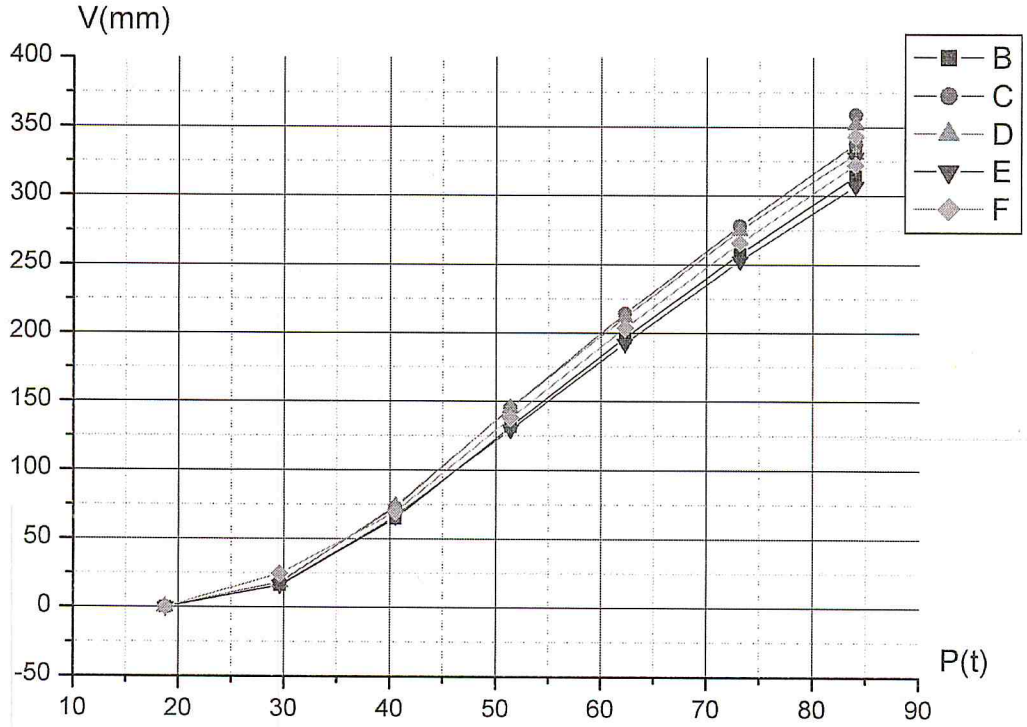

Fig. 5.2 – Displacement of cylinder rods (V) versus load during testing
B – rod travel, 1st cyle, C - rod travel, 2nd cyle, D - rod travel, 3rd cyle, E - rod travel, 4th cyle, F – average values.

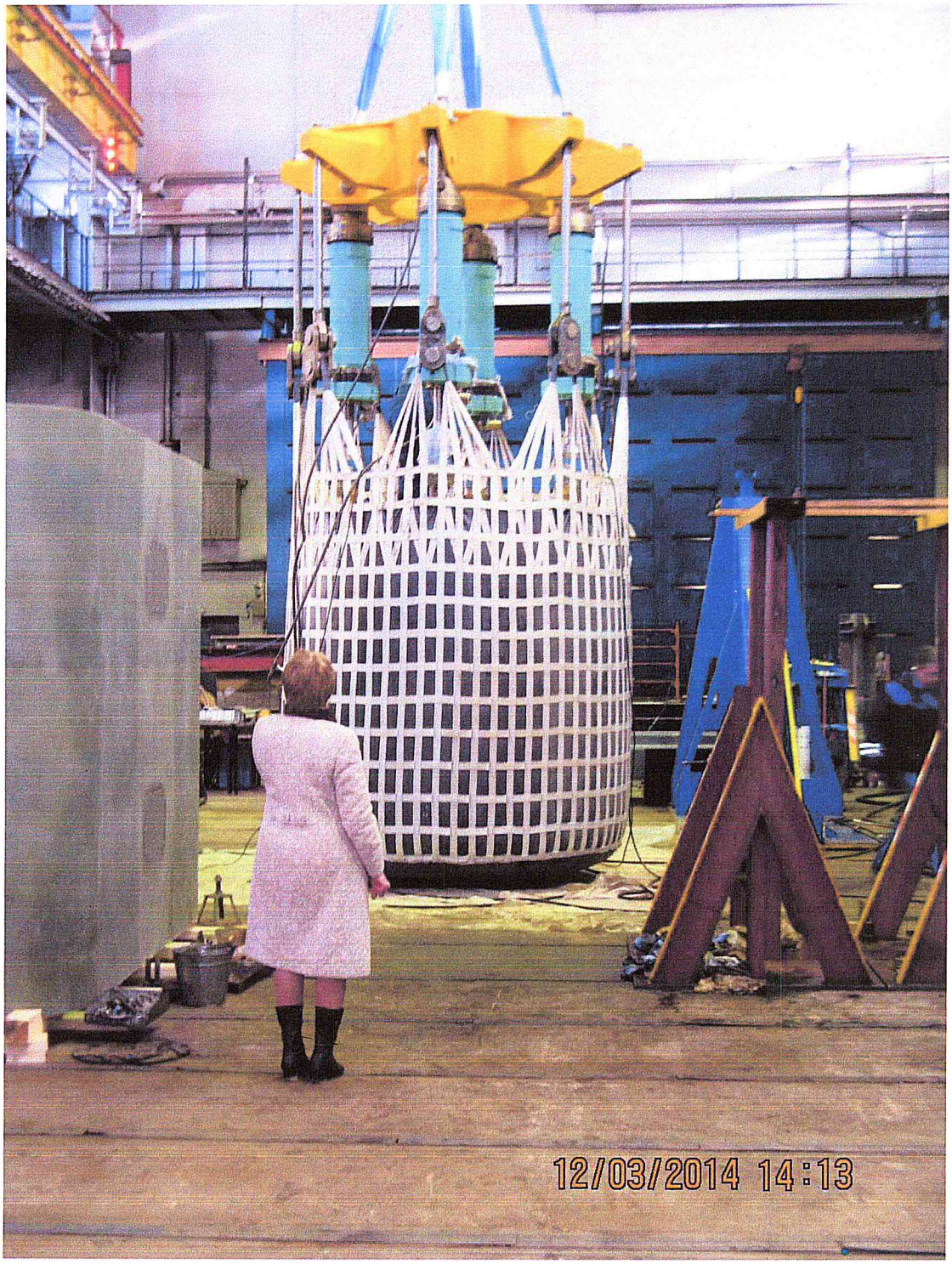

Fig. 5.3. Container gripped by test facility before testing

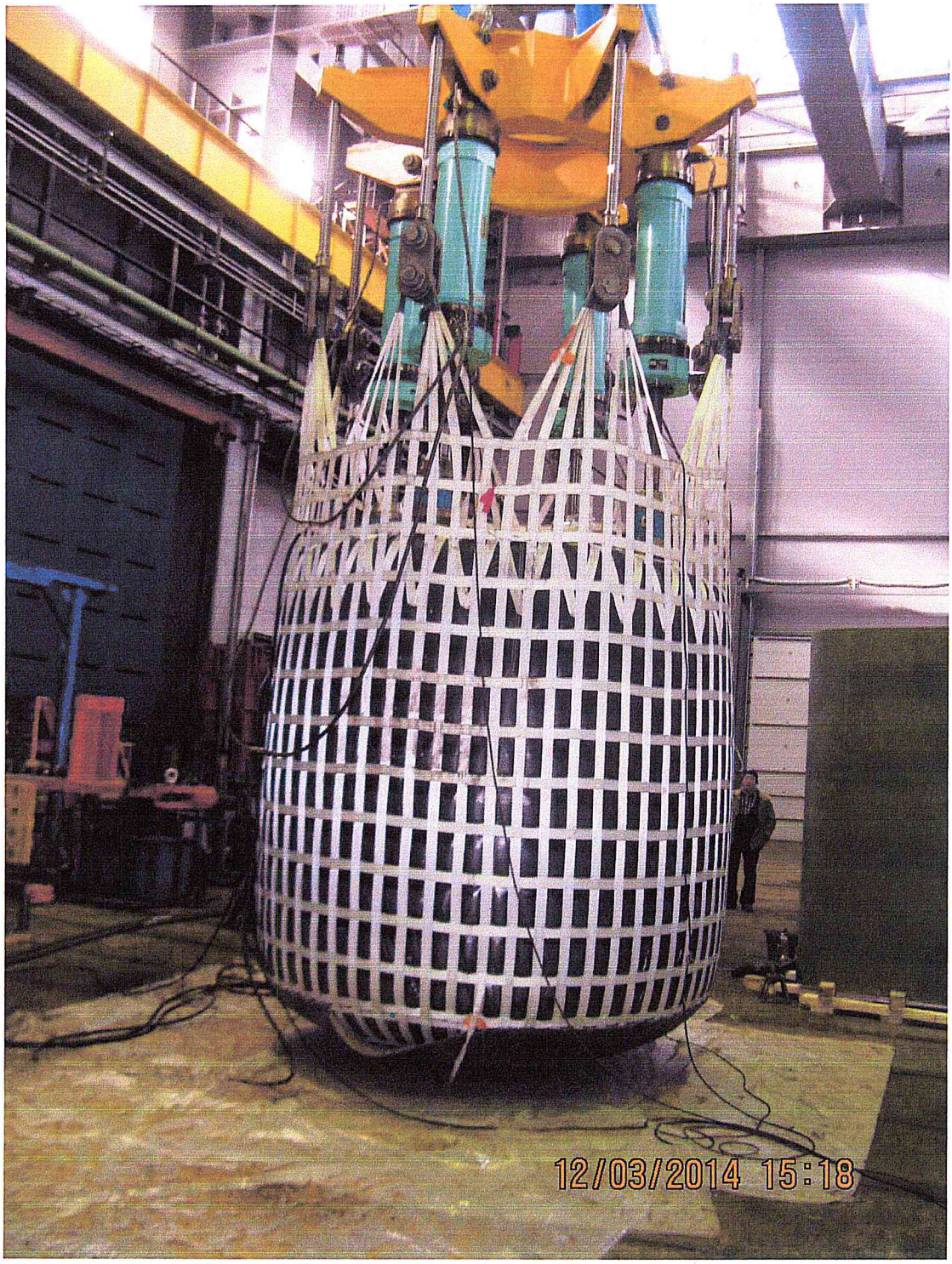

Fig.5. 4 Container during testing

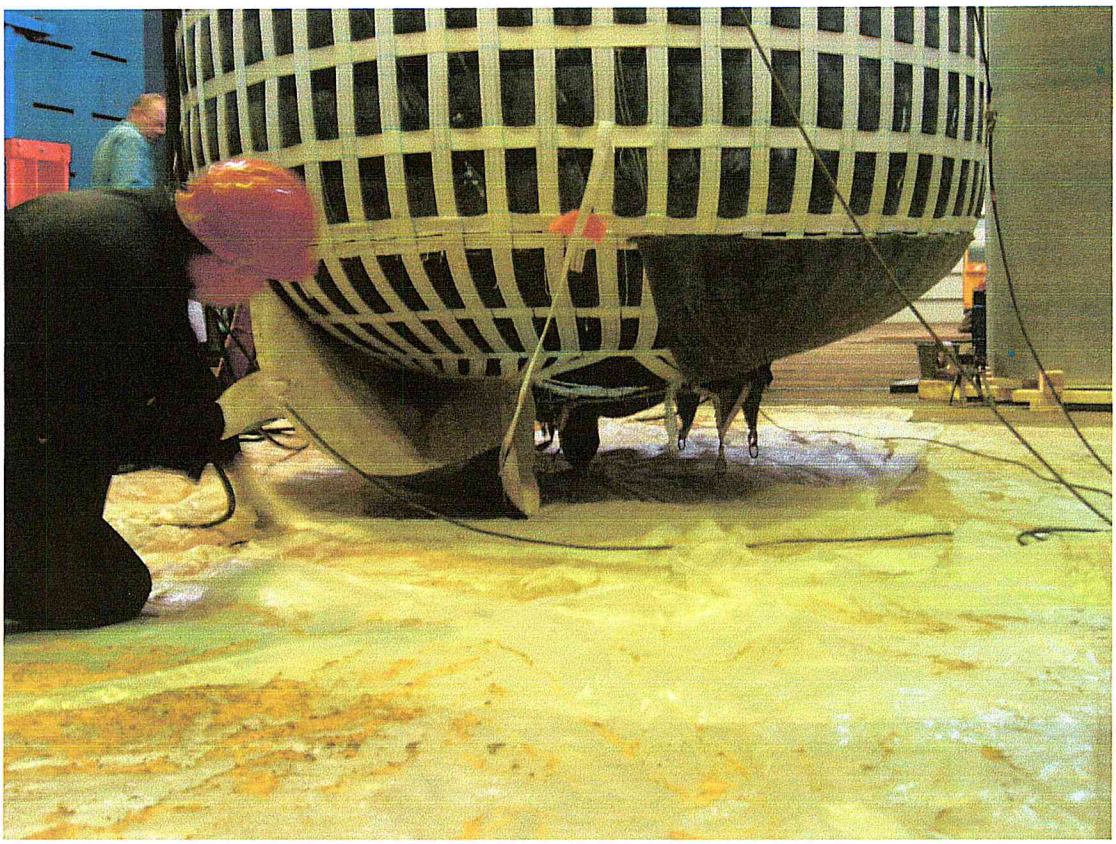

Fig.5.5 Container after testing

5.6 Conclusion

The container has passed the testing of lifting by the top under the load 84 t.

Test Manager E. A. Shishenin

Deputy Head of Laboratory 31 A.V. Aleksandrov

The following attended the test results:

Jan Werner

M.I. Ognev

O.Ye. Karpovich

I.G. Sannikov

E.A. Akhiundov

6. Receipt inspection report AR – AR107 P-1

St.Petersburg February 28, 2014.

The soft container of MK-14-10 grade was manufactured in JCSC "New Technologies in Transportation" (Moscow) by Specification 2297-001-56579756-06, approved by Federal Agency "Roszheldor" and JSCo Russian Railways.
Container registration number is 11213691.
Container visual examination and measurement of main dimensions demonstrated the container structure compliance with the drawings. No damage was found in the container shell and loading grippers.
Conclusion: admit the container for the testing.

Test Manager E.A. Shishenin

Lead Engineer of Section 314 S.G. Vagengeim

7. Report AR – AR107 P-2

Mass evaluation for the soft container with a pressure disk

Report

Mass evaluation for the soft container of MK-14-10 grade with a pressure disk

St.Petersburg March 5, 2014

We, undersigned, have compiled this report that we have weighted the soft container of MK-14-10 grade with the pressure disk using the Force metering channel No. DSTU-200-20". Container registration number is 11213691.
In the result of direct measurement it was established that the container mass with the pressure disk is equal to (18750±200) kg. The mass evaluation error complied with RMRS requirements to the accuracy, with which the container mass is to be evaluated.

Test Manager
Senior Research Fellow E.A. Shishenin

Lead Engineer of Section 314 S.G. Vagengeim

8. Certificates on calibrating instrumentation

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ УНИТАРНОЕ ПРЕДПРИЯТИЕ
"КРЫЛОВСКИЙ ГОСУДАРСТВЕННЫЙ НАУЧНЫЙ ЦЕНТР"

Метрологическая служба

СЕРТИФИКАТ № 1811 /314-14
о калибровке средства измерения

Срок действия до
« 20 » февраля 2015 г.

Канал измерения силы № ДСТУ-1000-04 (314 сектор) в составе:
1. Система "ViCont",
2. Датчик силоизмерительный 1798 ДСТУ 2И-1000 № 4, мост №1 (со стороны шильдика).

РЕЗУЛЬТАТ КАЛИБРОВКИ

Калибровка выполнена в соответствии с требованиями методики ИМЯН 307-82-02 МК

Диапазон измерения силы 100–1000 кН (сжатие)
Границы относительной погрешности измерения силы при доверительной вероятности 0,95 (расширенная неопределенность с коэффициентом охвата 2) равны ± 0,9 %

Условия проведения калибровки: температура окружающего воздуха +18 °С; атмосферное давление 102 кПа; относительная влажность воздуха 65 %.

ЗАКЛЮЧЕНИЕ: Канал измерения силы № ДСТУ-1000-04 на основании результатов калибровки (протокол № 554 от 20.02.14 г.) допускается к применению в качестве рабочего средства при проведении прочностных испытаний
(допускается, не допускается к применению)

Ведущий инженер 314 сектора
(должность специалиста, проводившего калибровку)

(подпись)

А.А. Дудин
(и.о. фамилия)

ГЛАВНЫЙ МЕТРОЛОГ

(подпись)

В. Д. Морозов
(и.о. фамилия)

Крыловский государственный научный центр
МЕТРОЛОГИЧЕСКАЯ СЛУЖБА
М. П.

« 20 » февраля 2014 г.

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ УНИТАРНОЕ ПРЕДПРИЯТИЕ
"Крыловский государственный научный центр"
Метрологическая служба

СЕРТИФИКАТ № 1716/314 – 13
о калибровке средства измерения

Срок действия до
" 18 " июля 2014 г.

Канал измерения линейных перемещений в составе:
- датчик линейных перемещений ДЛП № 110;
- источник питания Б5-47 № 8064;
- аналого-цифровой преобразователь L154 № НЕ-00895, канал 0;
- персональный компьютер IBM PC 586 AT.

РЕЗУЛЬТАТ КАЛИБРОВКИ (протокол № 512 от 18.07.13)

Диапазон измерения перемещений 0 ÷ 1200 мм.
Коэффициент преобразования k = 2.284 мВ/мм.
Границы погрешности измерения перемещений (расширенная неопределенность) при доверительной вероятности 0.95 равны ± 2.3 мм

Условия проведения калибровки соответствуют требованиям методики ИМЯН 307-83-02 МК.

ЗАКЛЮЧЕНИЕ

Канал измерения линейных перемещений в составе, указанном выше, допускается к применению в качестве рабочего средства измерений при испытании опытных конструкций и изделий.

Инженер 1 категории А.А. Дегтев

Главный метролог В.Д. Морозов

" 18 " июля 2013 г.

ФГУП «Крыловский государственный научный центр» * МЕТРОЛОГИЧЕСКАЯ СЛУЖБА

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ УНИТАРНОЕ ПРЕДПРИЯТИЕ
"Крыловский государственный научный центр "
Метрологическая служба

СЕРТИФИКАТ № 1717/314 – 13
о калибровке средства измерения

Срок действия до
" 18 " июля 2014 г.

Канал измерения линейных перемещений в составе:
- датчик линейных перемещений ДЛП № 111;
- источник питания Б5-47 № 8064;
- аналого-цифровой преобразователь L154 № НЕ-00895, канал 1;
- персональный компьютер IBM PC 586 AT.

РЕЗУЛЬТАТ КАЛИБРОВКИ (протокол № 513 от 18.07.13)

Диапазон измерения перемещений 0 ÷ 1000 мм.
Коэффициент преобразования k = 2.299 мВ/мм.
Границы погрешности измерения перемещений (расширенная неопределенность) при доверительной вероятности 0.95 равны ± 2.5 мм

Условия проведения калибровки соответствуют требованиям методики ИМЯН 307-83-02 МК.

ЗАКЛЮЧЕНИЕ

Канал измерения линейных перемещений в составе, указанном выше, допускается к применению в качестве рабочего средства измерений при испытании опытных конструкций и изделий.

Инженер 1 категории А.А. Дегтев

Главный метролог В.Д. Морозов

МЕТРОЛОГИЧЕСКАЯ СЛУЖБА

" 18 " июля 2013 г.

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ УНИТАРНОЕ ПРЕДПРИЯТИЕ
"Крыловский государственный научный центр"
Метрологическая служба

СЕРТИФИКАТ № 1718 / 314 – 13
о калибровке средства измерения

Срок действия до
" 18 " июля 2014 г.

Канал измерения линейных перемещений в составе:
- датчик линейных перемещений ДЛП № 201;
- источник питания Б5-47 № 8064;
- аналого-цифровой преобразователь L154 № НЕ-00895, канал 3;
- персональный компьютер IBM PC 586 AT.

РЕЗУЛЬТАТ КАЛИБРОВКИ (протокол № 514 от 18.07.13)

Диапазон измерения перемещений 0 ÷ 1000 мм.
Коэффициент преобразования k = 2.330 мВ/мм.
Границы погрешности измерения перемещений (расширенная неопределенность) при доверительной вероятности 0.95 равны ± 2.6 мм

Условия проведения калибровки соответствуют требованиям методики ИМЯН 307-83-02 МК.

ЗАКЛЮЧЕНИЕ

Канал измерения линейных перемещений в составе, указанном выше, допускается к применению в качестве рабочего средства измерений при испытании опытных конструкций и изделий.

Инженер 1 категории А.А. Дегтев

Главный метролог В.Д. Морозов

" 18 " июля 2013 г.

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ УНИТАРНОЕ ПРЕДПРИЯТИЕ
"Крыловский государственный научный центр"
Метрологическая служба

СЕРТИФИКАТ № 1719 / 314 – 13
о калибровке средства измерения

Срок действия до
" 18 " июля 2014 г.

Канал измерения линейных перемещений в составе:
- датчик линейных перемещений ДЛП № 204;
- источник питания Б5-47 № 8064;
- аналого-цифровой преобразователь L154 № НЕ-00895, канал 4;
- персональный компьютер IBM PC 586 AT.

РЕЗУЛЬТАТ КАЛИБРОВКИ (протокол № 515 от 18.07.13)

Диапазон измерения перемещений 0 ÷ 1000 мм.
Коэффициент преобразования k = 2.326 мВ/мм.
Границы погрешности измерения перемещений (расширенная неопределенность) при доверительной вероятности 0.95 равны ± 2.2 мм

Условия проведения калибровки соответствуют требованиям методики ИМЯН 307-83-02 МК.

ЗАКЛЮЧЕНИЕ

Канал измерения линейных перемещений в составе, указанном выше, допускается к применению в качестве рабочего средства измерений при испытании опытных конструкций и изделий.

Инженер 1 категории А.А. Дегтев

Главный метролог В.Д. Морозов

" 18 " июля 2013 г.

9. Certificate of soft container MK 14-10

• Количество и дата использования							

• Произведенный ремонт с кратким описанием и заключением о возможности дальнейшего использования				

ПАСПОРТ

мягкого контейнера МК-14-10 «09» 01 2014.

Изготовитель: ЗАПО «Новые технологии в перевозках»
Адрес изготовителя: 125009,Россия, Малый Гнездниковский пер.,дом 12, стр.4
Тел.:(495)629-69-01,629-35-01, факс: 629-90-22

Заводской номер контейнера (соответствует номеру сетки)	1121 3691
Дата изготовления	09.01.14
Чертеж	0-20954.00
Технические условия	ТУ 2297-001-56579565-06
Грузоподъемность	14000кг
Коэффициент безопасности	8:1
Сертификаты соответствия контейнера:	
- органа по сертификации РФ	РОСС RU.АЯ02.Н40103
- Lloyd's Register	
Вес порожнего контейнера, не более	70кг

Назначение:

Для транспортирования и временного хранения сыпучих продуктов при температуре окружающей среды от минус 40 до плюс 60°С. Эксплуатировать контейнеры в соответствии с «Руководством по эксплуатации 26469-01РЭ»

Гарантии изготовителя:

Изготовитель гарантирует соответствие контейнеров требованиям технических условий ТУ2297-001-56579565-06 при соблюдении потребителем условий эксплуатации, транспортирования и хранения.

Гарантийный срок службы контейнера устанавливается 1 год со дня изготовления, включая время хранения, транспортирования и эксплуатации. Срок эксплуатации может быть продлен по результатам экспресс испытания на остаточную прочность по методике №МИ-009

Руководитель предприятия-изготовителя Калдж / Э.А.Ахундов/

Контролер ОТК Игатенко