

1. World Heritage Property Data

1.1 - Name of World Heritage Property

Struve Geodetic Arc

1.2 - World Heritage Property Details

State(s) Party(ies)

- Belarus
- Estonia
- Finland
- Latvia
- Lithuania
- Moldova, Republic of
- Norway
- Russian Federation
- Sweden
- Ukraine

Type of Property

cultural

Identification Number

1187

Year of inscription on the World Heritage List

2005

1.3 - Geographic Information Table

Name	Coordinates (longitude / latitude)	Property (ha)	Buffer zone (ha)	Total (ha)	Inscription year
FUGLENAES Fuglenes , Hammerfest , Finnmark , Norway	70.67 / 23.663	0.075	0.15	0.225	2005
LILLE-REIPAS Raipas , Alta , Finnmark , Norway	69.939 / 23.36	0.01	0.1	0.11	2005
LOHDIZHJOKKI Luvdiidcohkka , Kautokeino , Finnmark , Norway	69.664 / 23.602	0.01	0.1	0.11	2005
BÄLJATZ-VAARA Baelljasvarri , Kautokeino , Finnmark , Norway	69.029 / 23.305	0.01	0.1	0.11	2005

PAJTAS-VAARA Tynnyrilaki , Kiruna , Norrbottens län , Sweden	68.255 / 22.983	0.01	0.1	0.11	2005
KERROJUPUKKA Jupukka , Pajala , Norrbottens län , Sweden	67.277 / 23.243	0.01	0.1	0.11	2005
PULLINKI Pullinki , Övertorneå , Norrbottens län , Sweden	66.646 / 23.782	0.01	0.1	0.11	2005
PERRA-VAARA Perävaara , Haparanda , Norrbottens län , Sweden	66.018 / 23.923	0.01	0.1	0.11	2005
STUOR-OIVI Stuurahanoaivi , Enontekiö , Lapin lääni , Finland	68.683 / 22.746	0.031	0.196	0.227	2005
AVASAKSA Aavasaksa , Ylitornio , Lapin lääni , Finland	66.398 / 23.725	0.008	0.785	0.793	2005
TORNEA Alatornion kirkko , Tornio , Lapin lääni , Finland	65.83 / 24.157	0.16	1.93	2.09	2005
PUOLAKKA Oravivuori , Korpilahti , Länsi-Suomen lääni , Finland	61.927 / 25.534	0.008	0.09	0.098	2005
PORLOM II Tornikallio , Lapinjärvi , Etelä-Suomen lääni , Finland	60.705 / 26.003	0.008	0.126	0.134	2005
SVARTVIRA Mustaviiri , Pyhtää , Etelä-Suomen lääni , Finland	60.276 / 26.603	0.008	0.503	0.511	2005
MÄKI-PÄÄLYS Mäkipällys , Kingisepp , Leningrad Oblast , Russian Federation	60.074 / 26.97	0.001	1.54	1.541	2005
HOGLAND, Z Gogland, Tochka Z , Kingisepp , Leningrad Oblast , Russian Federation	60.085 / 26.961	0.001	1.54	1.541	2005
WOIBIFER Võivere , Avanduse , Lääne-Viru , Estonia	59.058 / 26.338	0.01	0.5	0.51	2005
KATKO Simuna , Avanduse , Lääne-Viru , Estonia	59.048 / 26.414	0.01	0.5	0.51	2005
DORPAT Tartu Observatory , Tartu , Tartu , Estonia	58.379 / 26.72	0.12	0.5	0.62	2005
SESTU-KALNS Ziestu , Sausneja , Region of Madona , Latvia	56.84 / 25.637	0.01	1.3	1.31	2005
JACOBSTADT Jekabpils , Town Jekabpils , Region Jekabpils , Latvia	56.501 / 25.857	0	0.12	0.12	2005
KARISCHKI Gireišiai , Panemunelis , Northern Lithuania , Lithuania	55.903 / 25.437	0.01	0.1	0.11	2005
MESCHKANZI Meškonys , Nemencine , Eastern Lithuania , Lithuania	54.931 / 25.317	0.01	0.1	0.11	2005
BERESNÄKI Paliepiukai , Nemežis , Eastern Lithuania , Lithuania	54.634 / 25.429	0.01	0.1	0.11	2005

TUPISCHKI Tupishki , Oshmyany , Grodno Oblast , Belarus	54.292 / 26.045	0.002	0.01	0.012	2005
LOPATI Lopaty , Zelva , Grodno Oblast , Belarus	53.561 / 24.87	0.002	0.01	0.012	2005
OSSOWNITZA Ossovnitsa , Ivanovo , Brest Oblast , Belarus	52.289 / 25.649	0.002	0.01	0.012	2005
TCHEKUTSK Chekutsk , Ivanovo , Brest Oblast , Belarus	52.208 / 25.556	0.002	0.01	0.012	2005
LESKOWITSCHI Leskovichi , Ivanovo , Brest Oblast , Belarus	52.161 / 25.571	0.002	0.01	0.012	2005
RUDY Rudi , Rudi , Soroca Judetul , Republic of Moldova	48.319 / 27.877	0.002	0.1	0.102	2005
KATERINOWKA Katerinowka , Antonivka , Khmelnytskiy region , Ukraine	49.566 / 26.756	0.004	0.01	0.014	2005
FELSCHTIN Felschtin , Hvardiiske , Khmelnytskiy region , Ukraine	49.33 / 26.682	0.003	0.01	0.013	2005
BARANOWKA Baranowka , Baranivka , Khmelnytskiy region , Ukraine	49.149 / 26.992	0.001	0.004	0.005	2005
STARO-NEKRASSOWKA Stara Nekrasivka , Nekrasivka , Odessa region , Ukraine	45.332 / 28.928	0.003	0.012	0.015	2005
Total (ha)		0.573	10.966	11.539	

Comment

Moldova: shall be "RUDY Rudi, Soroca district, Republic of Moldova" Change "oblast" instead of "region" for Ukraine Change for Latvia: SESTU-KALNS Ziestu ,Ērgļu parish, Latvia; JACOBSTADT Jekabpils City, Latvia.

1.4 - Map(s)

Title	Date	Link to source
Struve Geodetic Arc - map of inscribed property	15/07/2005	

1.5 - Governmental Institution Responsible for the Property

- Grigory E. Ordzhonikidze
Commission of the Russian Federation for UNESCO
Executive Secretary
- Maria Wikman
Swedish National Heritage Board
Senior Adviser
- Algimantas Degutis
Department of Cultural Heritage under the Ministry of Culture; National Coordinator for

- Cultural Heritage of Lithuania
- Deputy Director
- Dagnija Baltina
- Latvian National Commission for UNESCO
- Secretary General
- Stefan Wessman
- National Board of Antiquities
- Senior researcher
- Heritage policy and guidance
- Cultural environment protection

Comment

Lithuania: Ministry of Agriculture Estonia: Ministry of Culture of the Republic of Estonia Liina Jänes, adviser on cultural heritage. Moldova: The State Agency for Land Relations and Cadastre of the Republic of Moldova. Ukraine: Department of Cultural Heritage Protection under the Ministry of Culture of Ukraine. Details are provided by the letter of 22 July 2014 No. 4S-133 of the Lithuanian National Commission for UNESCO.

1.6 - Property Manager / Coordinator, Local Institution / Agency

- Pekka TÄTILÄ
- National Land Survey of Finland
- Chief-Engineer
- Gints Putikis
- the Latvian Agency of Geospatial Information
- Geodesy engineer
- Department of Geodesy,
- Karin Kollo
- Estonian Land Board
- Head Specialist
- Department of Geodesy
- Dan Norin
- Lantmäteriet (Swedish mapping, cadastral and land registration authority)
- Geodesist
- Palmira Petniūnienė
- The Ministry of Agriculture of the Republic of Lithuania
- Chief Specialist
- Land Policy Department Real Estate, Geodesy and Cartography Division
- Ivars Aleksejenko
- Latvian Geospatial Information Agency
- Senior Expert on Geodesy
- Department of Geodesy and Cartography
- Georgy Kuznetsov
- The State Committee on Property of the Republic of Belarus
- Chairman
- Hagen Gerd
- City of Hammerfest
- Culture Director
- Ovdii MARIA
- Agency for Land Relations and Cadastre

Dr., Head of the Geodesy, Mapping and GIS Department

Comment

Finland: Pekka Tätilä Ukraine: State Agency of Land Resources of Ukraine. Bul. Narodnoho Opolchennia, 3, MSP Kyiv, UA-03689 Ukraine Iryna Kucher, Ph +380 44 292 30 04, Fax. +380 44 573 42 13, kart_ukrgeo@ukr.net Moldova: Maria Ovdii Belarus: Sergey Zabagonskiy, The State Committee on Property of the Republic of Belarus, Director of the UE "Belaerocosmogeodesy", mail@geo.by Norway: Gerd Hagen Latvia: Ivars Aleksejenko, Latvian Geospatial Information Agency, ivars.aleksejenko@lgia.gov.lv

1.7 - Web Address of the Property (if existing)

1. [Portal to the Heritage of Astronomy](http://www2.astronomicalheritage.net)

Comment

www2.astronomicalheritage.net <http://struvearc.wikidot.com/>

1.8 - Other designations / Conventions under which the property is protected (if applicable)

2. Statement of Outstanding Universal Value

2.1 - Statement of Outstanding Universal Value / Statement of Significance

Comment

The Struve Geodetic Arc is a chain of survey triangulations stretching from Hammerfest in Norway to the Black Sea, through ten countries and over 2,820 km. These are points of a survey, carried out between 1816 and 1855 by different several scientists (surveyors) under leadership of the astronomer Friedrich Georg Wilhelm Struve, which represented the first accurate measuring of a long segment of a meridian. This helped to establish the exact size and shape of our planet.

2.2 - The criteria (2005 revised version) under which the property was inscribed

(ii)(iii)(vi)

2.3 - Attributes expressing the Outstanding Universal Value per criterion

The inscribed property consists of 34 components, which in total comprise an area of 0.6 ha, with an 11 ha buffer zone. All components of the Struve Geodetic Arc are linked to one chain and a number of the Arc sites belong to national state geodetic reference networks that confer integrity even with the geodetic measurements processed today. The inscribed components of the property have special characteristics and significance on a technological and scientific level. Criteria: (ii)(iv)(vi)

2.4 - If needed, please provide details of why the Statement of Outstanding Universal Value should be revised

The SOV was revised and the updated version was adopted at the 38th Session of the World Heritage Committee in Doha, Qatar, the decision 38.COM/8E.

2.5 - Comments, conclusions and / or recommendations related to Statement of Outstanding Universal Value

Nothing in addition.

3. Factors Affecting the Property

3.14. Other factor(s)

3.14.1 - Other factor(s)



Nothing in addition.

3.15. Factors Summary Table












3.15.1 - Factors summary table

	Name	Impact	Origin
3.1	Buildings and Development		
3.1.1	Housing		
3.1.2	Commercial development		
3.1.3	Industrial areas		
3.1.4	Major visitor accommodation and associated infrastructure		
3.1.5	Interpretative and visitation facilities		
3.2	Transportation Infrastructure		
3.2.1	Ground transport infrastructure		
3.3	Services Infrastructures		
3.3.4	Localised utilities		
3.3.5	Major linear utilities		
3.4	Pollution		
3.4.1	Pollution of marine waters		
3.4.4	Air pollution		
3.5	Biological resource use/modification		
3.5.3	Land conversion		
3.5.5	Crop production		
3.6	Physical resource extraction		
3.6.1	Mining		
3.6.2	Quarrying		
3.7	Local conditions affecting physical fabric		
3.7.5	Dust		
3.8	Social/cultural uses of heritage		
3.8.6	Impacts of tourism / visitor / recreation		
3.9	Other human activities		
3.9.1	Illegal activities		
3.9.2	Deliberate destruction of heritage		
3.9.3	Military training		
3.9.4	War		
3.9.5	Terrorism		
3.10	Climate change and severe weather events		
3.10.1	Storms		
3.10.2	Flooding		

3.11 Sudden ecological or geological events

- 3.11.3 Tsunami/tidal wave    
- 3.11.4 Avalanche/ landslide    
- 3.11.5 Erosion and siltation/ deposition    
- 3.11.6 Fire (wildfires)    

3.13 Management and institutional factors

- 3.13.1 Low impact research / monitoring activities    
- 3.13.2 High impact research / monitoring activities    
- 3.13.3 Management activities   

Legend  Current  Potential  Negative  Positive  Inside  Outside

3.16. Assessment of current negative factors

3.16.1 - Assessment of current negative factors

		Spatial scale	Temporal scale	Impact	Management response	Trend
3.8	Social/cultural uses of heritage					
3.8.6	Impacts of tourism / visitor / recreation	widespread	intermittent or sporadic	minor	low capacity	increasing
3.9	Other human activities					
3.9.1	Illegal activities	localised	intermittent or sporadic	minor	medium capacity	static
3.9.2	Deliberate destruction of heritage	localised	intermittent or sporadic	minor	low capacity	static

3.17. Comments, conclusions and / or recommendations related to factors affecting the property

3.17.1 - Comments

Nothing in addition

4. Protection, Management and Monitoring of the Property

4.1. Boundaries and Buffer Zones

4.1.1 - Buffer zone status

There is a buffer zone

4.1.2 - Are the boundaries of the World Heritage property adequate to maintain the property's Outstanding Universal Value?

The boundaries of the World Heritage property are **adequate** to maintain the property's Outstanding Universal Value

4.1.3 - Are the buffer zone(s) of the World Heritage property adequate to maintain the property's Outstanding Universal Value?

The buffer zones of the World Heritage property **are adequate** to maintain the property's Outstanding Universal Value

4.1.4 - Are the boundaries of the World Heritage property known?

The boundaries of the World Heritage property are known by both the management authority and local residents / communities / landowners.

4.1.5 - Are the buffer zones of the World Heritage property known?

The buffer zones of the World Heritage property **are known** by both the management authority and local residents / communities / landowners.

4.1.6 - Comments, conclusions and / or recommendations related to boundaries and buffer zones of the World Heritage property

Nothing in addition.

4.2. Protective Measures

4.2.1 - Protective designation (legal, regulatory, contractual, planning, institutional and / or traditional)

BELARUS:

All the suggested points are legally protected, and in most cases by two laws - one protecting geodetic points and the other for the protection of cultural heritage.

MOLDOVA:

The property is linked to the National Geodetic Network and is protected by the state according to the legislation of the Republic of Moldova, Law nr. 778-XV, 27.12.2001 on "Geodesy and Gartography".

NORWAY:

FUGLENAES, LILLE-REIPAS, LOHDIZHJOKKI, BÄLJATZ-VAARA: The property is served by the Act for Ancient Monuments, The Norwegian Law Nr 1978-06-09 nr 50. Kulturminneloven and the law for surveying markers: LOV-1923-07-09-1, Lov om anbringelse av signaler og merker for målearbeider.

SWEDEN:

PAJTAS-VAARA, KERROJUPUKKA, PULLINKI, PERRA-VAARAThe Struve Geodetic Arc site is protected under the Ancient Monument Act, 1988:950, 1988-06-30.

FINLAND:

STUOR-OIVI: The property STUOR-OIVI is served by the Act for Ancient Monuments, The Finnish Law Nr 295/1963, 17.6.1963. The area around is preserved also by the law of "Tarvantovaara Wilderness", The Finnish Law Nr. 62/17.1.1991 (Erämaalaki).

AVASAKSA: The property AVASAKSA is served by the Act for Ancient Monuments, The Finnish Law Nr 295/1963, 17.6.1963. The summit area of Aavasaksa has been preserved as a State park of Aavasaksa, "Aavasaksan Kruununpuisto" since 1870s.

TORNEA: The Church of Alatornio is served by the Church Act Nr. 1054/26.11.1993

PUOLAKKA: The property PUOLAKKA is served by the Act for Ancient Monuments, The Finnish Law Nr 295/1963, 17.6.1963. There is also valid a mutual agreement between land owner, National Land Survey of Finland, Geodetic Institute and Municipality of Korpilahti for using and preserving the Struve Arc station PUOLAKKA as an historical site for triangulation and mapping and also as a modern ground control station.

PORLOM II: The property PORLOM II is served by the Act for Ancient Monuments, The Finnish Law Nr 295/1963, 17.6.1963.

SVARTVIRA: The property Svartvira is served by the Act for Ancient Monuments, The Finnish Law Nr 295/1963, 17.6.1963 and by the Law about the National Park 674/1981 and the sub degree 932/1981.

ESTONIA:

WOIBIFER: The property WOIBIFER (VÕIVERE) is a Cultural Monument and is registered in the National Heritage Register of Estonia under number 24046.

KATKO: The property KATKO (SIMUNA) is a Cultural Monument and is registered in the National Heritage Register of Estonia under number 27073.

DORPAT: The property DORPAT (TARTU) OBSERVATORY is a Cultural Monument and is registered in the National Heritage Register of Estonia under register number 6889.

LATVIA:

SESTU-KALNS: Regulation about construction , supervision and protection methods of state geodetic supporting points (reference points). The Protective Zone Law protects all the geodetic points in Latvia.

JACOBSTADT: Regulation about construction , supervision and protection methods of state geodetic supporting points (reference points). The Protective Zone Law protects all the geodetic points in Latvia. As the SGA point JACOBSTADT is located in the Struve Park in the historical centre of Jēkabpils (town) it is also protected by the Law About Protection of the Cultural Monuments.

LITHUANIA:

KARISCHKI, MESCHKANZI, BERESNĀKI: The properties KARISCHKI, MESCHKANZI and BERESNĀKI as cultural heritage are served by the LAW ON PROTECTION OF IMMOVABLE CULTURAL PROPERTIES, the Lithuanian Law No I- 733, 1994 12 22 and as a modern geodetic station - by the LAW ON LAND, the Lithuanian Law No I-446, 1994 04 26. There is also valid the agreements called "Statement on transferring the geodetic station for preserving" between land users and institution, which renovated the stations, Geodetic Institute of Vilnius Technical University, for using and preserving these Struve Arc stations as historical sites for triangulation and mapping and also as modern ground control stations.

Comment

Updates for Belarus, Moldova, Lithuania, Ukraine, Sweden, Latvia. Details are provided by the letter of 22 July 2014 No. 4S-133 of the Lithuanian National Commission for UNESCO.

4.2.2 - Is the legal framework (i.e. legislation and / or regulation) adequate for maintaining the Outstanding Universal Value including conditions of Integrity and / or Authenticity of the property?

An adequate legal framework for the maintenance of the Outstanding Universal Value including conditions of Authenticity and / or Integrity of the World Heritage property exists but there are **some deficiencies in implementation**

4.2.3 - Is the legal framework (i.e. legislation and / or regulation) adequate in the buffer zone for maintaining the Outstanding Universal Value including conditions of Integrity and / or Authenticity of the property?

An adequate legal framework for the maintenance of the Outstanding Universal Value including conditions of Authenticity and / or Integrity of the World Heritage property exists but there are **some deficiencies in implementation**

4.2.4 - Is the legal framework (i.e. legislation and / or regulation) adequate in the area surrounding the World Heritage property and buffer zone for maintaining the Outstanding Universal Value including conditions of Integrity and / or Authenticity of the property?

The legal framework for the area surrounding the World Heritage property and the buffer zone provides **an adequate or better basis** for effective management and protection of the property, contributing to the maintenance of its Outstanding Universal Value including conditions of Authenticity and / or Integrity

4.2.5 - Can the legislative framework (i.e. legislation and / or regulation) be enforced?

There is **acceptable** capacity / resources to enforce legislation and / or regulation in the World Heritage property but some deficiencies remain

4.2.6 - Comments, conclusions and / or recommendations related to protective measures

Nothing in addition.

4.3. Management System / Management Plan

4.3.1 - Management System

Management authority:

BELARUS:

Each of the nominating countries has their own regime to manage the heritage. At the same time the ten countries are setting up a joint "management mechanism", in the form of a coordinating committee, to coordinate the management of the nominated sites.

Many of the nominated "sites" are points in rock or of another shape, with very small area around

them, as part of the nomination. Most of them are still part of the national geodetic system and therefore still in potential use and practical importance. Therefore they are managed by national geodetic services and controlled by national cultural heritage institutions.

MOLDOVA:

1) The Municipality of Rudy

2) The State Agency for Land Relations and Cadastre which is the central authority of public administration which ensures the implementation of Government policy in the area of land tenure, cadastre, geodesy and cartography on the territory of Moldova. The Agency reports to the Government of Moldova.

NORWAY:

FUGLENAES

Municipality of Hammerfest
Norwegian Mapping Authority

LILLE-REIPAS

Municipality of Alta.
Norwegian Mapping Authority,

LOHDIZHJOKKI

BÄLJATZ-VAARA
Municipality of Kautokeino.
Norwegian Mapping Authority,

SWEDEN:

PAJTAS-VAARA, KERROJUPUKKA, PULLINKI, PERRA-VAARA

- 1) National Land Survey of Sweden,
- 2) National Heritage Board,
- 3) Länsstyrelsen i Norrbottens län,

FINLAND:

STUOR-OIVI, SVARTVIRA

- 1) National Land Survey of Finland
- 2) Metsähallitus
- 3) Geodetic Institute

AVASAKSA

- 1) National Land Survey of Finland
- 2) Metsähallitus

TORNEA

- 1) National Land Survey of Finland
- 2) Parish of Alatornio

PUOLAKKA

- 1) National Land Survey of Finland
- 2) Geodetic Institute
- 3) Municipality of Korpilahti

PORLOM II

- 1) National Land Survey of Finland
- 2) Geodetic Institute

ESTONIA:

WOIBIFER, KATKO, DORPAT
Estonian Land Board

LATVIA:

SESTU-KALNS
State Land Service of the Republic of Latvia, Geodesy board

JACOBSTADT
1) As above (State Land Service) and
2) Council of Jēkabpils


LITHUANIA:

KARISCHKI, MESCHKANZI, BARESNÄKI
1) Department of Cadastres and Geodesy of National Land Service under the Ministry of Agriculture of Lithuania,
2) Geodesy, Land Planning and Geographical Information Systems (GIS) service of Urban Development Department of Municipality of Vilnius,
3) Geodetic Institute of Vilnius Technical University

Comment

Management System is organised by the International Coordinating Committee, which consists nominees from responsible national public authorities. Site management of protective measures is executed by national public authorities and municipalities. Information shall be updated for following countries: Moldova, Lithuania, Ukraine, Latvia. Details are provided by the letter of 22 July 2014 No. 4S-133 of the Lithuanian National Commission for UNESCO.

4.3.2 - Management Documents

Title	Status	Available	Date	Link to source
Operational Guidelines and Rules of Procedure: International Management Mechanism for te transboundary monument "Struve Geodetic Arc"	N/A	Available	01/01/2004	

Comment

Operational Guidelines and Rules of Procedure: INTERNATIONAL MANAGEMENT MECHANISM FOR THE TRANSBOUNDARY PROPERTY “STRUVE GEODETIC ARC” was approved at 01/01/2004 and updated by the Coordinating Committee at 04/07/2012

4.3.3 - How well do the various levels of administration (i.e. national / federal; regional / provincial / state; local / municipal etc.) coordinate in the management of the World Heritage Property ?

There is coordination between the range of administrative bodies / levels involved in the management of the property **but it could be improved**

4.3.4 - Is the management system / plan adequate to maintain the property's Outstanding Universal Value ?

The management system / plan is **fully adequate** to maintain the property's Outstanding Universal Value

4.3.5 - Is the management system being implemented?

The management system is being **fully** implemented and monitored

4.3.6 - Is there an annual work / action plan and is it being implemented?

An annual work / action plan exists and **many activities** are being implemented

4.3.7 - Please rate the cooperation / relationship with World Heritage property managers / coordinators / staff of the following

Local communities / residents	Fair
Local / Municipal authorities	Good
Indigenous peoples	Fair
Landowners	Good
Visitors	Fair
Researchers	Good
Tourism industry	Fair
Industry	Fair

4.3.8 - If present, do local communities resident in or near the World Heritage property and / or buffer zone have input in management decisions that maintain the Outstanding Universal Value?

Local communities have **some input** into discussions relating to management but no direct role in management

4.3.9 - If present, do indigenous peoples resident in or regularly using the World Heritage property and / or buffer zone have input in management decisions that maintain the Outstanding Universal Value?

Indigenous peoples directly contribute to **some decisions** relating to management but their involvement could be improved

4.3.10 - Is there cooperation with industry (i.e. forestry, mining, agriculture, etc.) regarding the management of the World Heritage property, buffer zone and / or area surrounding the World Heritage property and buffer zone?

There is contact but only **some cooperation** with industry regarding the management of the World Heritage property, buffer zone and / or area surrounding the World Heritage property and buffer zone

4.3.11 - Comments, conclusions and / or recommendations related to human resources, expertise and training

More awareness raising activities (workshops, publications, etc) toward residents, tourism industry and local authorities would benefit to the maintenance of Outstanding Universal Value.

4.3.12 - Please report any significant changes in the legal status and / or contractual / traditional protective measures and management arrangements for the World Heritage property since inscription or the last Periodic report

International Coordinating Committee members and enthusiasts permanently communicate by the specific basecamp hosted by EuroGeographics, the European association of National mapping and Cadastre Authorities; the Coordinating Committee updated and approved the new edition of the Operational Guidelines and Rules of Procedure, better defining operational activities and management rules.

4.4. Financial and Human Resources

4.4.1 - Costs related to conservation, based on the average of last five years (relative percentage of the funding sources)

Multilateral funding (GEF, World Bank, etc)	0%
International donations (NGO's, foundations, etc)	0%
Governmental (National / Federal)	70%
Governmental (Regional / Provincial / State)	0%
Governmental (Local / Municipal)	30%
In country donations (NGO's, foundations, etc)	0%
Individual visitor charges (e.g. entry, parking, camping fees, etc.)	0%
Commercial operator payments (e.g. filming permit, concessions, etc.)	0%
Other grants	0%

4.4.2 - International Assistance received from the World Heritage Fund (USD)

Comment

There is a good collaboration and support to NGOs by National Commissions for UNESCO in all ten countries. No funding was received from WHF.

4.4.3 - Is the current budget sufficient to manage the World Heritage property effectively?

The available budget is **acceptable** but could be further improved to fully meet the management needs

4.4.4 - Are the existing sources of funding secure and likely to remain so?

Existing sources of funding are **not secure**

4.4.5 - Does the World Heritage property provide economic benefits to local communities (e.g. income, employment)?

There is **some flow** of economic benefits to local communities

4.4.6 - Are available resources such as equipment, facilities and infrastructure sufficient to meet management needs?

There are **some** adequate equipment and facilities, but deficiencies in at least one key area **constrain** management at the World Heritage property

4.4.7 - Are resources such as equipment, facilities and infrastructure adequately maintained?

There is some *ad hoc* maintenance of equipment and facilities

4.4.8 - Comments, conclusion, and / or recommendations related to finance and infrastructure

Nothing in addition.

4.4.9 - Distribution of employees involved in managing the World Heritage property (% of total)

Full-time 0%

Part-time 100%

4.4.10 - Distribution of employees involved in managing the World Heritage property (% of total)

Permanent 70%

Seasonal 30%

4.4.11 - Distribution of employees involved in managing the World Heritage property (% of total)

Paid 50%

Volunteer 50%

4.4.12 - Are available human resources adequate to manage the World Heritage property?

A range of human resources exist, but these are **below optimum** to manage the World Heritage Property.

4.4.13 - Considering the management needs of the World Heritage property, please rate the availability of professionals in the following disciplines

Research and monitoring	Good
Promotion	Fair
Community outreach	Fair
Interpretation	Poor
Education	Fair
Visitor management	Poor
Conservation	Good
Administration	Fair
Risk preparedness	Fair
Tourism	Fair
Enforcement (custodians, police)	Fair

4.4.14 - Please rate the availability of training opportunities for the management of the World Heritage property in the following disciplines

Research and monitoring	Low
Promotion	Medium
Community outreach	Medium
Interpretation	Medium
Education	Low
Visitor management	Not available
Conservation	Low
Administration	Medium
Risk preparedness	Not available
Tourism	Low
Enforcement (custodians, police)	Not available

4.4.15 - Do the management and conservation programmes at the World Heritage property help develop local expertise?

A capacity development plan or programme is in place and **partially implemented**; some technical skills are being transferred to those managing the property locally **but most of the technical work is carried out by external staff**

4.4.16 - Comments, conclusions and / or recommendations related to human resources, expertise and training

There are limited human resources involved, mainly from National Governmental Organisations, municipalities and volunteers from academic/professional societies.

4.5. Scientific Studies and Research Projects

4.5.1 - Is there adequate knowledge (scientific or traditional) about the values of the World Heritage property to support planning, management and decision-making to ensure that Outstanding Universal Value is maintained?

Knowledge about the values of the World Heritage property is **sufficient** for most key areas **but there are gaps**

4.5.2 - Is there a planned programme of research at the property which is directed towards management needs and / or improving understanding of Outstanding Universal Value?

There is **considerable** research but it is **not directed** towards management needs and / or improving understanding of Outstanding Universal Value

4.5.3 - Are results from research programmes disseminated?

Research results are **shared widely** with the local, national and international audiences

4.5.4 - Please provide details (i.e. authors, title, and web link) of papers published about the World Heritage property since the last Periodic Report

Each country publish materials nationally. The information is available in <http://struvearc.wikidot.com/> and from the websites of NGOs and professional associations (Geographical Information, Surveying). Details are provided by the letter of 22 July 2014 No. 4S-133 of the Lithuanian National Commission for UNESCO.

4.5.5 - Comments, conclusions and / or recommendations related to scientific studies and research projects

Continuous research activities have been implemented by continue making inventories and exploration of the poorly established and described Struve Geodetic Arc sites. A number of attempts have been initiated in some countries engaging educational authorities and providing materials for amending information about Struve Geodetic Arc in educational materials in primary and high schools.

4.6. Education, Information and Awareness Building

4.6.1 - At how many locations is the World Heritage emblem displayed at the property?

In many locations and easily visible to visitors

4.6.2 - Please rate the awareness and understanding of the existence and justification for inscription of the World Heritage property amongst the following groups

Local communities / residents	Average
Local / Municipal authorities within or adjacent to the property	Excellent
Local Indigenous peoples	Poor
Local landowners	Excellent
Visitors	Average
Tourism industry	Average
Local businesses and industries	Poor

4.6.3 - Is there a planned education and awareness programme linked to the values and management of the World Heritage property?

There is a **limited and *ad hoc*** education and awareness programme

4.6.4 - What role, if any, has designation as a World Heritage property played with respect to education, information and awareness building activities?

World Heritage status has influenced education, information and awareness building activities, **but it could be improved**

4.6.5 - How well is the information on Outstanding Universal Value of the property presented and interpreted?

The Outstanding Universal Value of the property is adequately presented and interpreted **but improvements could be made**

4.6.6 - Please rate the adequacy for education, information and awareness building of the following visitor facilities and services at the World Heritage property

Visitor centre	Poor
Site museum	Adequate
Information booths	Not needed
Guided tours	Adequate
Trails / routes	Adequate
Information materials	Adequate
Transportation facilities	Poor
Other	Adequate

4.6.7 - Comments, conclusions and / or recommendations related to education, information and awareness building

It is not easy to understand the OUV and the essence of the Struve Geodetic Arc for wide public. Therefore more awareness raising activities nationally and internationally are desired.

4.7. Visitor Management

4.7.1 - Please provide the trend in annual visitation for the last five years

Last year	Static
Two years ago	Static
Three years ago	Static
Four years ago	Static

Five years ago Static

4.7.2 - What information sources are used to collect trend data on visitor statistics?

Other

4.7.3 - Visitor management documents

4.7.4 - Is there an appropriate visitor use management plan (e.g. specific plan) for the World Heritage property which ensures that its Outstanding Universal Value is maintained?

There is **some management** of the visitor use of the World Heritage property

4.7.5 - Does the tourism industry contribute to improving visitor experiences and maintaining the values of the World Heritage property?

There is **limited co-operation** between those responsible for the World Heritage property and the tourism industry to present the Outstanding Universal Value and increase appreciation

4.7.6 - If fees (i.e. entry charges, permits) are collected, do they contribute to the management of the World Heritage property?

No fees are collected

4.7.7 - Comments, conclusions and / or recommendations related to visitor use of the World Heritage property

OUV of Struve Geodetic Arc is only partly related to visits to the sites. There is no intention to achieve high level of visitors of the sites, but more active promotion and visits of professionals could be better elaborated.

4.8. Monitoring

4.8.1 - Is there a monitoring programme at the property which is directed towards management needs and / or improving understanding of Outstanding Universal Value?

There is a **small amount** of monitoring, but it is not planned

4.8.2 - Are key indicators for measuring the state of conservation used to monitor how the Outstanding Universal Value of the property is maintained?

Information on the values of the World Heritage property is sufficient to define key indicators, **but this has not been done**

4.8.3 - Please rate the level of involvement in monitoring of the following groups

World Heritage managers / coordinators and staff	Poor
Local / Municipal authorities	Average
Local communities	Average
Researchers	Excellent
NGOs	Excellent
Industry	Poor
Local indigenous peoples	Average

4.8.4 - Has the State Party implemented relevant recommendations arising from the World Heritage Committee?

Implementation is **complete**

4.8.5 - Please provide comments relevant to the implementation of recommendations from the World Heritage Committee

All sites are monumented, informative materials were produced, conservation is defined.

4.8.6 - Comments, conclusions and / or recommendations related to monitoring

The International Coordinating Committee meets biannually. National authorities together with

Local/Municipal authorities monitor sites and coordinate dissemination of awareness to public amongst professional communities.

4.9. Identification of Priority Management Needs

4.9.1 - Please select the top 6 managements needs for the property (if more than 6 are listed below)

Please refer to question 5.2

5. Summary and Conclusions

5.1. Summary - Factors affecting the Property

5.1.1 - Summary - Factors affecting the Property

	World Heritage criteria and attributes affected	Actions	Monitoring	Timeframe	Lead agency (and others involved)	More info / comment
3.8		Social/cultural uses of heritage				
3.8.6	<p>Stronger interaction with tourism / visitors would improve an awareness about Struve Geodetic Arc. However the increased number of visitors is a potential thread for damaging the sites.</p> <p>Impacts of tourism / visitor / recreation</p>	<p>Close collaboration between site managers and tourism industry.</p>	<p>Close collaboration between site managers and tourism industry. Responses from guides and visitors could be collected and analysed.</p>	<p>Annual activities.</p>	<p>NGOs, municipalities, professional societies.</p>	<p>Nothing in addition.</p>
3.9		Other human activities				
3.9.1	<p>Prevention against illegal activities</p> <p>Illegal activities</p>	<p>Surveyance and monitoring</p>	<p>Permanent monitoring</p>	<p>Permanent</p>	<p>Local authorities and State bodies</p>	<p>No additional comment</p>

3.9.2 Deliberate destruction of heritage	Prevention against the destruction	Surveyance and monitoring	Permanent monitoring	Permanent	Local authorities and State bodies	No additional comment
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5.2. Summary - Management Needs

5.2.2 - Summary - Management Needs

4.6 Education, Information and Awareness Building

	Actions	Timeframe	Lead agency (and others involved)	More info / comment
4.6.3 There is a limited education and awareness programme	Promote Struve Geodetic Arc to wide public through producing collectables and encouraging all State Parties to look for new ways of initiating new attractive collectables to be produced.	Permanently.	NGOs and Coordinating Committee.	The decision for the action was taken at the Coordinating Committee meeting in Oshmiany (Belarus), 2012.

4.7 Visitor Management

4.7.4 Some management of visitor use of the property but this could be improved	Closer collaborate with municipalities and tourism authorities for better management of visitors.	Permanent.	NGOs.	Nothing in addition.
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4.8 Monitoring

4.8.1 Some monitoring, but it is not planned	Discuss on the measures for better monitoring at the next Coordinating Committee meeting.	End of 2014	Coordinating Committee	Nothing in addition.
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5.3. Conclusions on the State of Conservation of the Property

5.3.1 - Current state of Authenticity

The authenticity of the World Heritage property has been **compromised** by factors described in this report

5.3.2 - Current state of Integrity

The integrity of the World Heritage property has been **compromised** by factors described in this report

5.3.3 - Current state of the World Heritage property's Outstanding Universal Value

The World Heritage property's Outstanding Universal Value has been **maintained**.

5.3.4 - Current state of the property's other values

Other important cultural and / or natural values and the state of conservation of the World Heritage property are **predominantly intact**

5.4. Additional comments on the State of Conservation of the Property

5.4.1 - Comments

Nothing in addition

6. World Heritage Status and Conclusions on Periodic Reporting Exercise

6.1 - Please rate the impacts of World Heritage status of the property in relation to the following areas

Conservation	Very positive
Research and monitoring	Very positive
Management effectiveness	Positive
Quality of life for local communities and indigenous peoples	Positive
Recognition	Positive
Education	Positive
Infrastructure development	Positive
Funding for the property	Positive
International cooperation	Very positive
Political support for conservation	Very positive
Legal / Policy framework	Positive
Lobbying	No impact
Institutional coordination	Positive
Security	Positive
Other (please specify)	Positive

6.2 - Comments, conclusions and / or recommendations related to World Heritage status

There are no major constrains in preserving the OUV and conservation of the sites. However the state funding and resources for promoting and maintenance of the sites need to be secured.

6.3 - Entities involved in the preparation of this Section of the Periodic Report

Governmental institution responsible for the property

Site Manager/Coordinator/World Heritage property staff
Non Governmental Organization
External experts

6.4 - Was the Periodic Reporting questionnaire easy to use and clearly understandable?

yes

6.5 - Please provide suggestions for improvement of the Periodic Reporting questionnaire

The questionnaire is very much focused to physical preservation / conservation of the property, while the value of the Struve Geodetic Arc contains both physical and non-physical elements to be maintained. Therefore in addition to the current survey the information about the status of publications, level of awareness and preservation of movable properties could be also evaluated. The coordinates of the sites could be maintained in geographical coordinates instead of decimals.

6.6 - Please rate the level of support for completing the Periodic Report questionnaire from the following entities

UNESCO	Very good
State Party Representative	Very good
Advisory Body	Good

6.7 - How accessible was the information required to complete the Periodic Report?

Most of the required information was accessible

6.8 - The Periodic Reporting process has improved the understanding of the following

The concept of Outstanding Universal Value
The property's Outstanding Universal Value
The concept of Integrity and / or Authenticity
The property's Integrity and / or Authenticity
Managing the property to maintain the Outstanding Universal Value

Monitoring and reporting

6.9 - Please rate the follow-up to conclusions and recommendations from previous Periodic Reporting exercise by the following entities

UNESCO Excellent

State Party Satisfactory

Site Managers Excellent

Advisory Bodies Satisfactory

6.10 - Summary of actions that will require formal consideration by the World Heritage Committee

- **Statement of Outstanding Universal Value / Statement of Significance**

Reason for update: The Struve Geodetic Arc is a chain of survey triangulations stretching from Hammerfest in Norway to the Black Sea, through ten countries and over 2,820 km. These are points of a survey, carried out between 1816 and 1855 by different several scientists (surveyors) under leadership of the astronomer Friedrich Georg Wilhelm Struve, which represented the first accurate measuring of a long segment of a meridian. This helped to establish the exact size and shape of our planet.

- **Geographic Information Table**

Reason for update: Moldova: shall be "RUDY Rudi, Soroca district, Republic of Moldova"
Change "oblast" instead of "region" for Ukraine
Change for Latvia: SESTU-KALNS Ziestu, Ērgļu parish, Latvia; JACOBSTADT Jekabpils City, Latvia.

6.11 - Comments, conclusions and / or recommendations related to the Assessment of the Periodic Reporting exercise

Nothing in addition