I. ANNEX

ISA Contract for Exploration – Public Information Template

	Type of resource: Polymetallic Nodule		
TONGA OFFSHORE MINING LIMITED	Name of Contractor: Tonga Offshore Mining Limited		
	Contract Start: 11 January 2012		
Sponsoring State: Kingdom of Tonga	Contract End: 11 January 2027		
Timiguom or Tonigu	Location: 6 Areas in the Clarion Clipperton		
	Zone		

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Introduction

The information contained in this ISA Contract for Exploration – Public Information Template is made available to the public in response to the request by the Council of the ISA to make contracts publicly available, subject to restrictions on confidential information, industrial secrets and proprietary data.

The content of the present template is in accordance with the Regulations on Prospecting and Exploration for [Polymetallic Nodules in the Area] [ISBA/19/C/17] (the "Regulations").

1. Contract Information

Annex III of the Regulations.

Type of resource	Polymetallic Nodules		
Name of Contractor	Tonga Offshore Mining Limited		
Contract Start	11 January 2012		
Contract End	11 January 2027		
Location	6 Areas in the Clarion Clipperton zone, Pacific Ocean		
Contract Area (km²)	74,713		

2. Coordinates and Illustrative Chart of the Exploration Area

Schedule 1 of Annex III of the Regulations.

Area A (10,281 km²)

All that area of seafloor within the Authority's reserved Block 2 in the Clarion-Clipperton Zone of the Pacific Ocean that is bounded by a line commencing at the north-west corner at:

	Latitude	Longitude
	8.1667 N	-152.510 W (the point of commencement)
Then to	8.1667 N	-151.667 W
Then to	7.1667 N	-151.667 W
Then to	7.1667 N	-152.510 W
Then to	8.1667 N	-152.510 W (being the point of
		commencement)

Area B (9,966 km²)

All that area of seafloor within the Authority's reserved Block 15 in the Clarion-Clipperton Zone of the Pacific Ocean that is bounded by a line commencing at the north-west corner at:

	Latitude	Longitude
	14.2900 N	-132.800 W (the point of commencement)
Then to	14.6667 N	-132.000 W
Then to	13.5801 N	-132.000 W
Then to	13.5801 N	-133.200 W
Then to	13.8667 N	-133.200 W
Then to	13.8667 N	-132.800 W
Then to	14.2900 N	-132.800 W (being the point of
		commencement)

Area C (15,763 km²)

All that area of seafloor within the Authority's reserved Block 16 in the Clarion-Clipperton Zone of the Pacific Ocean that is bounded by a line commencing at the north-west corner at:

	Latitude	Longitude
	15.800 N	-131.00000 W (the point of commencement)
Then to	15.800 N	-130.00000 W
Then to	15.333 N	-130.00000 W
Then to	15.333 N	-129.30000 W
Then to	15.500 N	-128.58333 W

Then to	15.000 N	-128.58333 W
Then to	15.000 N	-131.00000 W
Then to	15.800 N	-131.00000 W (being the point of
		commencement)

Area D (15,881 km²)

All that area of seafloor within the Authority's reserved Block 21 in the Clarion-Clipperton Zone of the Pacific Ocean that is bounded by a line commencing at the north-west corner at:

	Latitude	Longitude
	14.083333 N	-123.583333 W (the point of commencement)
Then to	13.125000 N	-123.583333 W
Then to	13.125000 N	-124.375000 W
Then to	13.375000 N	-124.375000 W
Then to	13.375000 N	-125.333300 W
Then to	13.750000 N	-125.333300 W
Then to	13.750000 N	-125.000000 W
Then to	14.083333 N	-125.000000 W
Then to	14.083333 N	-123.583333 W (being the point of
		commencement)

Area E (7,002 km²)

All that area of seafloor within the Authority's reserved Block 20 in the Clarion-Clipperton Zone of the Pacific Ocean that is bounded by a line commencing at the north-west corner at:

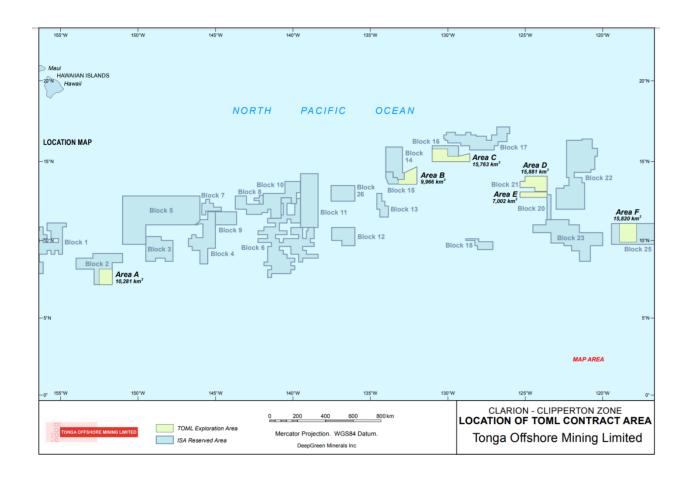
	Latitude	Longitude	
	13.0833 N	-125.333 W (the point of commencement)	
Then to	13.0833 N	-123.583 W	
Then to	12.7500 N	-123.583 W	
Then to	12.7500 N	-125.333 W	
Then to	13.0833 N	-125.333 W(being the point of commencement)	

Area F (15,820 km²)

All that area of seafloor within the Authority's reserved Block 25 in the Clarion-Clipperton Zone of the Pacific Ocean that is bounded by a line commencing at the north-west corner at:

	Latitude	Longitude
	11.083333 N	-117.81667 W (the point of commencement)
Then to	9.895000 N	-117.81667 W

Then to	9.895000 N	-118.91667 W
Then to	11.083333 N	-118.91667 W
Then to	11.083333 N	-117.81667 W (being the point of
		commencement)



3. Plan of Work

Summary of Plan of Work for Exploration including the Programme of Activities for the first and/or the current 5-year period (Regulation 18).

TOML is currently in the third five-year period of its fifteen-year exploration contract. The current five-year period runs from 2023 until 2027. During the third, five-year Contract period, it is TOML's intent to significantly advance a proposal for the development of the TOML-F¹ contract area.

To meet its objective, TOML plans to complete the following key activities during its current fiveyear period:

Exploration Studies

- Upgrade TOML-F Resource to indicated status
- Define impact reference zone and preservation reference zones

Environmental Studies

- Completion and lodgement of TOML-F Environmental and Social Impact Assessment (ESIA) Scoping Study
- Involvement in the preparation of NORI Collector Test ESIA and preparation of exploitation contract application
- Undertake biological baseline studies
- Define impact reference zone and preservation reference zones
- Deployment of metocean long term monitoring mooring array
- Development of Collector Test EIS (if required)

Mining Tests and Proposed Mining Technology

- Finalisation of processing flow sheet development
- Undertake collector test involving nodule collection system previously deployed at NORI-D (if required)

Training

Provide at minimum 10 training opportunities to developing state nationals

¹ TOML's programme of activities for the current five-year period are indicative and subject to change. TOML will review the programme regularly and make necessary changes in the programme depending on such circumstances and work results. TOML will inform the Secretariat and Commission about any changes to its proposed work programme through its annual reports and will make itself available to discuss the changes and the rationale should either the Secretariat or Commission require further rationale for the changes.

4. Programme of Activities and Exploration Expenditure

Section 4.1 of Annex IV of the Regulations and Schedule 2 of Annex III of the Regulations.

I. <u>Agreed 5-year Programme of Activities</u>

5-year Programme of Activities	First		Second	Third	Extension
General Objectives	Objective	Description			
	TOML-F ESIA and scoping study	TOML plans to complete a scoping study to undertake an ESIA for the development of the TOML-F area.			
	Environmental baseline	TOML will pride environmenta			ent and completion of its TOML-F.
	Onshore Environmental Studies	TOML will collaborate with NORI to develop a combined pyrometallurgical and hydrometallurgical flowsheet to process nodules to battery and steel making products with no significant solid waste streams. TOML will contribute to the refining pilot tests whose objective is to produce nickel and cobalt sulfates consistent with product specifications.			
	Stakeholder Engagement	An active programme of stakeholder engagement is planned to inform and seek feedback from stakeholders to inform project design as part of the ESIA Scoping Study. A stakeholder engagement plan will be developed as part of the ESIA Scoping report.			
	Offshore engineering studies	TOML will complete a Collaboration Agreement with NORI which will provide TOML with access to information on NORI's integrated nodule collection system and the results from its testing in NORI-D. It is TOML's intention to utilize the same system as was tested in NORI-D.			
	Training programme	TOML plans to provide a minimum of ten training opportunities. These will include training on operations, and providing support for studies at the University of the South Pacific. In addition to the above training opportunities, TOML will collaborate with the Kingdom of Tonga to develop a training and capacity building programme designed to provide Tongan nationals with the opportunity to gain knowledge and experience relevant to the seafloor minerals industry. TOML plans to provide the opportunity for up to six candidates			
		from developing states to participate in the TOML campaigns during the next five-year period. TOML plans to support up to			

eight developing state nationals to pursue degrees relevant to the seafloor minerals industry, including but not limited to engineering, law, marine science, or geology. TOML will cover the student's tuition, return airfare, accommodations, monthly
living stipend and required textbooks.

I. Results achieved during reported years: 2012 - 2023

		Annual objectives and acti	vities
Year	No.	Agreed Objectives	Objective: Completed, Modified, Postponed or Replaced
2012	1	 Exploration / Geology & Onshore Engineering Programme 1. Compilation and detailed review of all existing data on the exploration area, including a comprehensive literature review of possible metallurgical flow paths. 	1. Complete
2013 - 2014	2-3	 Carry out a campaign to determine the size and grade of the deep-sea mineral resources in the exploration area Obtain sufficient quantities of samples to evaluate the principal metallurgical characteristics of the resources Report the results to modern commercial resource reporting standards (eg. NI 43- 101) Undertake prefeasibility study 	 Complete: some environmental studies were undertaken as well. Complete Complete Complete
2015- 2016	4-5	 Launch a full-scale feasibility study to define to a high order of accuracy the engineering and design parameters for the mining and processing of the nodule resources Develop mining solutions to recover the nodules and transfer them to transport vessels 	1. Partially Complete: A gap and risk analysis was undertaken on the PEA and specific studies including lift simulations, logistical studies, material handling, metallurgical and mineralogical characterisation, nodule attrition studies and revised resource assessment were undertaken to address the

		Report the results to modern commercial resource reporting standards. Environmental Programme Completing a detailed environmental	3.	identified risks. A draft PFS was prepared. Incomplete Complete
		impact assessment of the project	4.	Ongoing: TOML completed a 96-day combined resource evaluation and environmental baseline survey
		Environmental programme	1.	Complete
		Analysis and interpretation of the large volume of baseline environmental and related data including megafauna logging	2.	Complete
		Exploration / Geology programme		
		In collaboration with fellow contractor Yuzhmorgeologiya, TOML's will conduct three dredges	3.	Complete
		Offshoring Engineering programme		Commiste
2017	6	3. Advancement of prefeasibility study - The designing of TOML's mining system called the decoupled underwater collection concept (DUCC), progressed to prefeasibility study stage	4.	Complete
		Onshore Engineering Programme		
		4. Advancement of prefeasibility study - TOML conducted a number of studies on processing and the metals market, the assessment of the processing and marketing of metal product from nodules		
		Environmental Programme	1.	Complete
2018	7	Analysis and interpretation of the large volume of baseline environmental and related data including completion of the megafauna survey and completion of the eDNA pilot.		

		2. Advancement of the prefeasibility study	2.	Complete
		Offshore Engineering programme		
		3. A mine plan and mine equipment/schedule were completed for the TOML PMAs (preliminary mining areas).	3.	Complete
		Onshore Engineering programme Concentrate on environmental and engineering analysis and studies	4.	Complete
2019	8	 Environmental Programme Locate and recover the environmental moorings in the TOML F block Advancement of the prefeasibility study. Offshore Engineering Programme Advance project design by conducting land based tests 		Postponed: A campaign was organized to the TOML F block for 2020. Postponed Complete
2020	9	 Environmental Programme Analysis and interpretation of megafauna logging results. Locate and recover the environmental moorings in the TOML F block Exploration / Geology Programme A review was undertaken of the TOML resource to Ni 43-101 standard in 2016 and revise to SK 1300 SEC standard in 2021. Offshore Engineering Programme Review of DUCC collection system 	3.	Complete Modified - A campaign was organized to the TOML F block between 16 June and 10 July 2020. The moorings were located, but unfortunately, were not able to be retrieved. Complete Complete
2021	10	Environmental programme 1. TOML conduct a campaign to the TOML-F lease site in Q4 2021. Exploration / Geology programme	1.	Postponed – The campaign was postponed due to pandemic and scheduling challenges

		2. The key objective of the 2021 campaign	2.	Postponed – See above
		is to convert a significant portion of the		
		TOML F area from inferred to indicated resource status	3.	Complete
		resource status	Э.	Complete
		Offshore Engineering Programme		
			4.	Complete
		3. TOML will continue to collaborate with		
		NORI to monitor and inspect the development of the nodule collection		
		system engineering programme. The		
		key milestones anticipated in 2021 is		
		the completion of the collector vehicle.		
		The collector vehicle will then undergo factory commissioning followed by a		
		short harbour test.		
		Onshoring Engineering Programme		
		4. Continue to develop the onshore		
		programme at a prefeasibility maturity consistent with the base case project		
		requirements. The major activity for		
		2021 will be the pilot plant campaign.		
		This will entail processing nodules		
		through unit operations of the flowsheet.		
2022		Environmental programme	1.	Postponed
		1. TOML-F ESIA scoping study		
		3,	2.	Complete
		Exploration/geology programme		
		2. Commence work to undertake resource	3.	Complete: - TOML agreed to contribute to the NORI-D
		upgrade work.		integrated collection system
		Offshore engineering programme		test. TOML plans to use the
	11			knowledge and information to inform the TOML- F ESIA
	11	3. Contribute to the NORI-D collector test		scoping study.
		Onshore processing programme	4.	Complete
		4. Continue and complete a refinery		
		bench scale test work program, which		
		involved putting products from the converting pilot through small scale unit		
		operations. Continue test work around		
		refining of other non-matte products.		

		Environmental programme	1.	Postponed – TOML
			ļ.	coordinated a joint campaign
		1. Deploy oceanographic moorings in		
		TOML-F:		with NORI to deploy the
		I OWIL-F:		moorings but due to
				Greenpeace's obstruction,
		Collaborate with NORI on the review of NORI-D baseline studies and development of the NORI application		TOML was unable to deploy the moorings as planned.
			2.	Ongoing: NORI-D is directly
		3. Habitat and resource: TOML intends to implement its habitat and resources assessment plan of work.		adjacent to TOML-F, making the data relevant to TOML-F's scoping study.
		Exploration/geology programme	3.	Ongoing - TOML has
			0.	prioritized the completion of its
		4. TOML intends to conduct a campaign in TOML-F in the next 12 months to	1	TOML-F scoping study.
2023	12	collect a strategic array of box cores.	4.	Postponed - TOML intends to
				complete its Scoping study prior
		Offshore engineering programme		to conducting its next offshore
				campaign and with its mooring
		 TOML will monitor the ongoing assessment of NORI's recent integrated nodule collection system test 		campaign obstructed, additional planning and coordination is required to reschedule scopes
		and the development of the NORI-D		of work.
		test-mining report.	5.	Ongoing
		Onshore processing programme	6.	Complete
		6. TOML will continue to monitor and participate in the ongoing refinery bench-scale test work programme, which involves processing matte		
		products from the completed pilot plant.		

III. Training Programme

Schedule 3 of Annex III of the Regulations.

I. <u>2023-2027 Training Programme²</u>

Type of training	At-sea exploration training programme (3 opportunities)	AUV training and Deep Dive Level 2 (2 opportunities)	National Expert Deployment (NED) and Deep Dive Level 2 (2 opportunities)	Study / research relating to seafloor minerals and the environment (6 opportunities)
Institutions	Training opportunity will be provided by TOML and its contractors	AMC Search ISA Deep Dive	ISA	University of the South Pacific in Suva, Fiji
Duration	Dependent on at-sea cruise length	20 days + duration of Deep Dive Level 2	6 or 12 months + Duration of Deep Dive Level 2	2-4 years (depending on programme)
Scope	Geological exploration, geophysical survey or environmental baseline studies	AUV technical training – theory and in-field training E-learning on various aspects of UNCLOS	To be agreed upon with ISA Secretariat E-learning on various aspects of UNCLOS	Support relevant research to the seafloor minerals industry
Fields	Marine geology, geophysics, marine environment, oceanography	Marine technology/underwat er robotics	Any aspects related to UNCLOS	Environmental science, engineering or geology
Qualification required	Undergraduate or Masters degree in a relevant degree such as marine geology, geophysics, marine environment, oceanography	Degree in marine science, engineering, environmental science, or a related field.	Dependent on scope of NED	Bachelor degree

 $^{\rm 2}$ TOML renegotiated its training commitments with the ISA Secretariat in 2024 to identify at-sea equivalent training opportunities.

Financing	TOML will cover all costs associated with the training opportunity	TOML will cover all costs associated with the training opportunity	TOML will cover relevant costs as per NED fee schedule outlined by ISA	TOML will cover all costs associated with the training opportunity
	,,			, ,

II. Trainings conducted up to reported years [2012 - 2023]

Start year	End Year	Name of Trainee	Nationality	Gender	Type of Programme	Details	Duration
2012	2012	Tupou Halaifonua	Tongan	Male	MPI Scholarship Programme	Rating Deck	6 months
2012	2012	Sione M Fakapulia	Tongan	Male	MPI Scholarship Programme	Rating Deck	6 months
2012	2012	Vaea Kaho	Tongan	Male	MPI Scholarship Programme	Rating Engineer	6 months
2012	2012	Sione L Ala	Tongan	Male	MPI Scholarship Programme	Rating Engineer	4 months
2012	2012	Samisoni Tokelau	Tongan	Male	MPI Scholarship Programme	Deck Watchkeeping Course	6 months
2012	2012	Sione M Fakapulia	Tongan	Male	MPI Scholarship Programme	Deck Watchkeeping Course	6 months
2012	2012	Paula 'Ulu'ava	Tongan	Male	MPI Scholarship Programme	Engineer Watchkeeping	6 months
2012	2012	Maka Tongilava	Tongan	Male	MPI Scholarship Programme	Engineer Watchkeeping	2 months
2012	2012	Sione Pahia	Tongan	Male	MPI Scholarship Programme	Engineer Class V	4 months
2012	2012	Tevita Havili	Tongan	Male	MPI Scholarship Programme	Engineer Class V	4 months
2012	2012	Sione M Fakapulia	Tongan	Male	MPI Scholarship Programme	Master Class V	4 months
2012	2012	Taaniela Kula	Tongan	Male	Ministry of Lands, Survey and Natural Resources	Deep Sea Minerals Regional Workshop, Fiji	1 week

					capacity building and training		
2012	2012	Rennie Vaiomouinga	Tongan	Male	Ministry of Lands, Survey and Natural Resources capacity building and training	Deep Sea Minerals Regional Workshop, Fiji	1 week
2012	2012	Malakai Finau	Tongan	Male	Ministry of	Deep Sea Minerals Regional Workshop, Fiji	1 week
2012	2012	Taaniela Kula	Tongan	Male	Ministry of Lands, Survey and Natural Resources capacity building and training	International Geological Congress, Brisbane	1 week
2013	2013	Fine Loa	Tongan	Male	Student bursary & Fellowship	Marine Science Short Course, PNG	3 weeks
2013	2013	Steven McLaren	Fijian	Male	Student bursary & Fellowship	Marine Science Short Course, PNG	3 weeks
2013	2013	Albert Manuel	Fijian	Male	Student bursary & Fellowship	Marine Science Short Course, PNG	3 weeks
2013	2013	Akapei Vailea	Tongan	Male	Ministry of Lands, Survey and Natural Resources capacity building and training	SPC-SOPAC Deep Sea Mining Workshop in Vanuatu	1 week
2013	2013	Akapei Vailea	Tongan	Male	Ministry of Lands, Survey and Natural Resources capacity building and training	Tongan observer for TOML CCZ13 cruise	2 months
2013	2013	Paul Poloka	Papua New Guinea	Male	At-sea	Trainee at TOML CCZ13 Cruise	2 months

2013	2013	Dody Darmawan	Indonesia	Male	At-sea	Trainee at TOML CCZ13 Cruise	2 months
2013	2013	Tevita Suka Mangisi	Tongan	Male	Ministry of Lands, Survey and Natural Resources capacity building and training	19 th Session of ISA in Jamaica	1 week
2014	2014	Cardinia Funganitao	Tongan	Female	Student bursary & Fellowship	Marine Science Short Course, PNG	3 weeks
2014	2014	Salesi Kauvaka	Tongan	Male	Student bursary & Fellowship	Marine Science Short Course, PNG	3 weeks
2014	2014	Asenaca Balerogo	Fijian	female	Student bursary & Fellowship	Marine Science Short Course, PNG	3 weeks
2015	2015	Tuamelie Fusimalohi	Tongan	Male	Ministry of Lands, Survey and Natural Resources capacity building and training	Tongan observer for 2016 CCZ cruise	3 months
2015	2015	Rantosoa Andriharizafy	Madagascar	Male	At-sea	Trainee at TOML CCZ15 Cruise	3 months
2015	2015	Victor Lopes	Brazil	Male	At-sea	Trainee at TOML CCZ15 Cruise	3 months
2016	2016	Afa Kasimili	Tongan	Male	MPI Scholarship Programme	General Purpose Rating	5 months
2016	2016	Maxwell Tuifua	Tongan	Male	MPI Scholarship Programme	General Purpose Rating	5 months
2016	2016	Sione Otuhouma	Tongan	Male	MPI Scholarship Programme	General Purpose Rating	5 months
2017	2017	Mele Makaafi	Tongan	Female		Megafauna logging training	4 months
2017	2018	Elenoa Moala	Tonga	Female		Megafauna logging training	18 months
2018	2019	Akesa Ahokava	Tongan	Female	TOML in-office training	Megafauna logging training	8 months

2020	2020	Lopeti Afu	Tongan	Male	Scholarship	Tonga Maritime Polytechnical Institute (TMPI)	18 weeks
2020	2020	Finau.H.Taofi	Tongan	Male	Scholarship	Tonga Maritime Polytechnical Institute (TMPI)	18 weeks
2020	2020	Taliauli Hamale	Tongan	Male	Scholarship	Tonga Maritime Polytechnical Institute (TMPI)	18 weeks
2020	2020	Foakautuu Kafoika	Tongan	Male	Scholarship	Tonga Maritime Polytechnical Institute (TMPI)	18 weeks
2020	2020	Temise Uele	Tongan	Male	Scholarship	Tonga Maritime Polytechnical Institute (TMPI)	18 weeks
2020	2020	Talaiasi Ilangana	Tongan	Male	Scholarship	Tonga Maritime Polytechnical Institute (TMPI)	18 weeks
2021	2021	Kioshi Mishiro	Japan	Male	At-sea	Environmental baseline campaign	~1.5 months
2021	2021	Mariana Cullel Delgado	Costa Rica	Female	At-sea	Environmental baseline campaign	~1.5 months
2021	2021	Miriam Chantal Rodriguez	Mexico	Female	At-sea	Environmental baseline campaign	~1.5 months
2022	_	Paola Quintero	Colombia	Female	At-sea	Environmental baseline campaign	2.5 months
2022	2022	Mostafa Monwar	Bangladesh	Male	At-sea	Environmental baseline campaign	1.5 months
2023	Present	Diandra Tauauvea	Samoa	Female		University of the South Pacific, Fiji	3 years
2023		Matereti Buren	Kiribati	Female	_	University of the South Pacific, Fiji	3 years
2023	Present	Mercy Brown	Solomon Islands	Female		University of the South Pacific, Fiji	3 years

2023	2024	Mele Matoto	Tonga	Female	Undergraduate	University of the	1 year
					scholarship –	South Pacific, Fiji	
					Sciences		

III. Completed Trainings per Year

Year	Natural Resources capacity building	Polytechnical Institute Support	At-sea training	Student bursary and fellowship	Megafauna Training
Year 1 (2012)	4 trainees in year	11 trainees in year			
Year 2 (2013)	3 trainees (note one opporruntiy was at sea participating in a cruise)		2 trainees	3 trainees	
Year 3 (2014)				3 trainees	
Year 4 (2015)	1 trainee		2 trainees		
Year 5 (2016)		3 trainees			
Year 6 (2017)					1 trainee
Year 7 (2018)					1 trainee
Year 8 (2019)					1 trainee
Year 9 (2020)		6 trainees			
Year 10 (2021)			3 trainees		
Year 11 (2022)			2 trainees		
Year 12 (2023)				4 trainees	

IV. Standard clauses

Annex IV of the Regulations.