

Agreement

With

Bharat Sanchar Nigam Limited

For

Provision of

Submarine Optical Fiber cable (OFC) connectivity between
Mainland India (Chennai)

And

A&N Islands

UNDER

UNIVERSAL SERVICE OBLIGATION FUND

No. 30-174-1/2014-BB-USOF

DATED 12/07/2018

Burde

(विलास बर्दे)
VILAS BURDE
Director (USOF)
Dept. of Telecom, Govt. of India
New Delhi

GOVERNMENT OF INDIA
MINISTRY OF COMMUNICATIONS
DEPARTMENT OF TELECOMMUNICATIONS
OFFICE OF THE ADMINISTRATOR (USOF)
20, ASHOKA ROAD, NEW DELHI-110 001, INDIA

Pune

Bharat Sanchar Nigam Limited
Regd. Office Bharat Sanchar Bhawan
Harish Chandra Mathur Lane, Janpath
New Delhi-110001 Website: www.bsnl.co.in
CIN: U74899DL2000GC1107739

SECTION-I

No. 30-174-1/2014-BB-USOF

Government of India

Department of Telecommunications

Office of the Administrator USO Fund

20, Ashoka Road, Sanchar Bhawan, New Delhi - 110 001

AGREEMENT

The Agreement is made and entered into on the 12th day of July, 2018

Between

The President of India, acting through the Administrator, Universal Service Obligation Fund(USOF) who for the purpose of this Agreement is being represented by Director (VSB), USOF, Shri Vilas Burde Department of Telecommunications under Government of India and having its office at 2nd Floor, Sanchar Bhawan, 20 Ashoka Road, New Delhi - 110001, (hereinafter referred to as the "**Administrator**", which expression, unless repugnant to the context or meaning thereof, shall include its successors, administrators or assignees;) of the First Part

AND

M/s. Bharat Sanchar Nigam Limited, a company registered under the Companies Act 1956, having its registered office at Bharat Sanchar Bhawan, H.C.Mathur Lane, New Delhi – 110 001, acting through Shri H.C. Pant, Company Secretary, Bharat Sanchar Nigam Limited, the Authorized Signatory (hereinafter called BSNL which expression shall, unless repugnant to the context or meaning thereof, shall include its successors, administrators or permitted assignees) of the Second Part.

Whereas, the Government of India has approved on 21.09.2016 provision of submarine optical fibre cable (OFC) connectivity between Mainland India (Chennai) and Port Blair & seven other islands viz. Little Andaman (Hutbay), Car Nicobar, Kamorta, Great Nicobar, Havelock. Long Island and Rangat.

Whereas, the Government of India has decided that Capital Expenditure (CAPEX) for the project to be met from Universal Service Obligation Fund (USOF).

Whereas, Net Annual Operational Expenditure (OPEX) i.e. OPEX minus Revenue, as per actual in the form of viability gap funding to be provided by Andaman & Nicobar Islands U.T. Administration for initial period of five years. Subsequently a call may be taken to fund it further based on the revenue and cash flow by taking into consideration the viability gap funding.

Whereas, Bharat Sanchar Nigam Limited (BSNL) hereby agrees and undertakes to work as the Project Execution Agency for implementation of the project on behalf of USOF for the works related to the provision of Submarine OFC connectivity between mainland India and Port Blair and other

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Islands of A&N and for carrying out Operation and Maintenance (O&M) of the Project for 5 years after its commissioning.

(1) NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

(2) This agreement will remain valid for Seven years. unless revoked earlier for any reason whatsoever. Date of effect of this agreement shall be the date of signing of the agreement.

(3) BSNL hereby agrees and unequivocally undertakes to fully comply with all terms and conditions stipulated in this Agreement without any deviation or reservation of any kind.

In consideration of the mutual covenants set out in this Agreement, the parties hereby agree as follows:

1.1 This Agreement is divided into six Sections. Apart from the present Section-I, other Sections are as under:

- II. General Conditions
- III. Operating Conditions
- IV. Technical Conditions
- V. Financial Conditions
- VI. Definitions

All the Sections and Annexure together form the Agreement.

1.2 **No Partnership** - Nothing in this Agreement shall be construed to constitute a partnership or agency between the Parties and BSNL shall not make any assurance, promise or covenant nor shall hold itself out as competent to do so, on behalf of the Administrator nor shall pledge the credit of the Administrator for any transaction in relation to this Agreement.

1.3 **No Employment** - Nothing in this Agreement shall constitute an offer or assurance of employment of any nature whatsoever to BSNL or any person employed by or under him for this Agreement.

1.4 **Indemnify the Administrator**---BSNL shall indemnify and at all times keep the Administrator indemnified and harmless against any direct loss to it or any claims by any third person, for any personal injury to anybody or loss to property, movable or immovable, caused by or attributable to any act or omission of BSNL or any of his officer, employee, agent or professional etc. while performing or purporting to perform this Agreement.

1.5 **Waiver** - Neither the failure of either Party to insist on any occasion upon the performance of the provisions of this Agreement nor time or other indulgence granted by a Party to the other Party shall be treated or deemed as waiver of such breach or acceptance of any variation or the relinquishment of any such right there under. Waiver by either Party of any default by the other Party in the observance or performance of any provision of this Agreement shall not operate or be construed as a waiver of any other or subsequent default or of other provisions of or obligations under this Agreement nor shall affect the validity or enforceability of this Agreement in any manner.

1.6 **Severability of Terms** - If for any reason whatsoever, any provision of this Agreement is or becomes invalid, illegal or unenforceable or is declared by any court of competent jurisdiction or

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any other instrumentality to be invalid, illegal or unenforceable, the validity, legality or enforceability of the remaining provisions shall not be affected in any manner.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed through their duly authorized representatives, at New Delhi on the day, month & year first above written.

Signed for and on behalf of President of India.

Burde
12/07/2018

By Mr Vilas Burde,
Director (VSB),
Universal Service Obligation Fund,
Department of Telecommunication

(विलास बुरडे)
(VILAS BURDE)
निदेशक (यू.एस.ओ.एफ.)
Director (USOF)
सर्वसंचार विभाग, भारत सरकार
Deptt. of Telecom, Govt. of India
नई दिल्ली / New Delhi

Signed on behalf of Bharat Sanchar Nigam Limited by Mr. H.C. Pant, authorized signatory executed in accordance with the decision taken in by Management Committee of BSNL vide its meeting held on dated 10.07.2018.

By Mr. H.C. Pant,
Bharat Sanchar Nigam Limited,

H.C. Pant
12/07/18 AM

Bharat Sanchar Nigam Limited
Regd. Office Bharat Sanchar Bhawan
Harish Chandra Mathur Lane, Janpath
New Delhi-110001 Website: www.bsnl.co.in
CIN: U74899DL20090701007739

In the presence of:

Witnesses:

(1) Signature:

[Signature]

Bharat Sanchar Nigam Limited

12/7/18
OSD to Dir CFA
BSNL CO, New Delhi

(2) Signature:

[Signature]
12-7-18

Universal Service Obligation Fund,
Department of Telecommunication

(ललित गंगल)
(LALIT GANGAL)
उप महानिदेशक (USOF-III)
Dy. Director General (USOF-III)
सर्वसंचार विभाग, भारत सरकार
Deptt. of Telecom, Govt. of India
नई दिल्ली / New Delhi

SECTION-II
SCOPE AND GENERAL CONDITIONS

BSNL shall be bound by the terms and conditions of the Agreement and any other instructions issued from time-to-time by the Administrator. BSNL shall always be liable to perform the obligations under this Agreement for the works related to the provision of Submarine OFC connectivity between mainland India and Port Blair and seven other Islands of A&N for which the Agreement has been entered into during the validity period of the Agreement.

2.1 Scope of the Agreement

2.1.1 BSNL, the Project Execution Agency shall set up and provide (i.e. procure, install, test and commission) the network and associated infrastructure for effective provision of a direct communication link through a dedicated submarine OFC between Mainland India(Chennai) and Port Blair & seven other islands of ANI viz. Little Andaman, Car Nicobar, Havelock, Kamorta, Great Nicobar, Long Island and Rangat and shall be solely responsible for carrying out the following works:

- i. Tendering (Tender formulation, Evaluation, and contract signing)
- ii. Monitoring of Permits other than environment clearance and CRZ clearances etc.
- iii. Procurement of equipment and supply contract management
- iv. Project implementation, testing and commissioning
- v. Cable station and infrastructure readiness:
 - (a) Station installation supervision
 - (b) Marine activity supervision
- vi. **Roll out**
 - (a) Network Operations Centre (NOC) establishment.
 - (b) Network Management System (NMS) development.
 - (c) NOC procedures.
 - (d) Training.
 - (e) Service Level Agreement (SLA) defining.

BSNL shall also provide:

2.1.2 Creation of requisite infrastructure for dry plant i.e. construction of BMH and CLS etc. at Port Blair (BSNL owned building) and at new buildings at eight locations (Chennai, Little Andaman, Car Nicobar, Havelock, Kamorta, Great Nicobar, Long Island and Rangat) to house the equipment to be installed under the CANI Submarine OFC Project.

2.1.3 Trenching and laying of Land OFC cable between BMH and CLS by providing redundancy.

- a) Dimensioning of CLS building taking into consideration the requirements of co-location of equipment by other Service Providers [Domestic Service Providers like National Long Distance Operators (NLDO), International Long Distance Operators (ILDO), Telecom Service Providers (TSPs) etc. for sharing of bandwidth so created on non-discriminatory basis [especially for Chennai and Port Blair].

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2.1.4 Necessary funding towards CAPEX for creation of assets/infrastructure would be made by USOF to BSNL in accordance with this Agreement and the instructions issued thereunder by the Administrator.

2.1.5

Ownership of Assets

The ownership of assets created under this project including buildings created under this project shall vest with USO Fund/Government of India.

2.2 Duration of the agreement:

This Agreement will remain valid for **Seven years** from the Effective Date of signing of the Agreement

2.3 Extension of Agreement

The Administrator may extend, if deemed expedient, the validity of Agreement for such period and on such terms as may be mutually agreed. The decision of the Administrator shall be final in this regard.

2.4 Modifications in the Terms and Conditions of Agreement

The Administrator reserves the right to modify at any time the terms and conditions of the Agreement, in consultation with BSNL, if in the opinion of the Administrator it is necessary or expedient to do so in public interest or in the interest of the security of the State or for the proper conduct of the service. The decision of the Administrator shall be final in this regard.

2.5 Requirement to furnish information

BSNL shall furnish to the Administrator, on demand, such documents, accounts, estimates returns, reports or other information as may be called for by the Administrator pertaining to the submarine cable laying between Chennai to ANI Islands.

2.6 Suspensions, Revocation or Termination of Agreement

2.6.1 The Administrator may, without prejudice to any other remedy available for the breach of any conditions of Agreement, by a written notice of 90 calendar days issued to BSNL at its registered office, terminate the Agreement under any of the following circumstances:

- a. Failure to perform any obligation(s) under the Agreement;
- b. Failing to rectify, within the time prescribed, any defect as may be pointed out by the Administrator.

2.6.2 The Agreement shall stand terminated forthwith in case BSNL goes into liquidation or is ordered to be wound up.

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2.6.3 Wherever considered appropriate, Administrator may conduct an inquiry to determine whether there has been any breach in compliance of the terms and conditions of the Agreement by BSNL and upon such inquiry, BSNL shall extend all reasonable facilities and shall endeavour to remove the hindrance of every type.

2.6.4 It shall be the responsibility of BSNL to maintain the Quality of Service as per conditions of the Agreement during the period of notice for termination of Agreement failing which penalty shall be imposed as per Clause 3.7.1

2.7 Actions pursuant to Termination of Agreement

2.7.1 Deleted

2.7.2 If it is found that BSNL had received any payment in excess of the amounts under the Agreement prior to termination, then such amount shall be paid back immediately on demand by BSNL to the Administrator. Any amount due from BSNL under this agreement, without prejudice to any other mode of recovery, may be recovered.

2.8 Disputes Settlement

2.8.1 Dispute Settlement

- a. Except otherwise provided in this Agreement in the event of any question or interpretation of any clause, dispute or difference or to any other claim, right, matter or thing whatsoever in any way arising out or relating to this agreement whether arose during the progress of the work or after the cancellation, termination, completion or abandonment thereof shall be settled by the parties amicably through negotiation within a period of 30 days of the notice by other party, failing which, the dispute shall be referred to the sole arbitrator appointed by the Secretary, Department of Telecommunications, Government of India. The arbitration shall be conducted in accordance with the provisions of the Arbitration & Conciliation Act, 1996 or any statutory modification of re-enactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings. The arbitrator shall adjudicate on only such disputes as are referred to him by the appointing authority and give separate award against each dispute and claim referred to him and shall give reasons for the award. The fee payable to arbitrator shall be paid equally by both the parties.
- b. Notwithstanding any dispute or claim of the pendency of any arbitration or other proceedings, BSNL shall continue to provide the service for the whole duration of the Agreement.

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2.9 Force-Majeure

2.9.1 If at any time, during the continuance of the Agreement, the performance in whole or in part, by either party, of any obligation under this is prevented or delayed, by reason of war, or hostility, acts of the public enemy, terrorism, civic commotion, sabotage, Act of State or direction from Statutory Authority, explosion, epidemic, quarantine restriction, strikes and lockouts (not limited to the establishments or facilities of BSNL), fire, floods, natural calamities or any act of GOD (hereinafter referred to as EVENT), provided notice of happenings of any such EVENT is given by the affected party to the other, within 10 Calendar days from the date of occurrence thereof, neither party shall, by reason of such event, be entitled to terminate the Agreement, nor shall either party have any such claims for damages against the other, in respect of such non-performance or delay in performance. Provided SERVICE under the Agreement shall be resumed as soon as practicable, after such EVENT comes to an end or ceases to exist.

2.9.2 The decision of the Administrator as to whether the service may be so resumed (and the time frame within which the service may be resumed) or not, shall be final, binding and conclusive.

2.10 Set off Clause

2.10.1 In the event any sum of money or claim becomes recoverable from or payable by BSNL to the Administrator either against the Agreement or otherwise in any manner, such money or claim can be (without restricting any right of set off for counter claim given or employed by law) deducted or adjusted against any amount or sum of money then due or which at any time thereafter may become due to BSNL under this Agreement or any other Agreement or Contract between the Administrator/Department of Telecommunications, Govt. of India and BSNL.

2.10.2 The aforesaid sum of money payable by BSNL shall include any valuable security, which can be converted into money.

2.10.3 After exercising the right of set off, a notice shall always be given immediately by the Administrator to BSNL.

2.11 Other Obligations

2.11.1 BSNL shall be bound by the terms and conditions of the Agreement as well as by such orders/directions/regulations/ guidelines issued by DoT/TRAI from time to time and instructions as issued by the Administrator.

2.11.2 The provisions of the Indian Telegraph Act, 1885 or the Indian Wireless Telegraphy Act, 1933 as amended or replaced, the Rules made and orders passed under these statutes, so far as applicable, shall be binding on BSNL.

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2.11.3 BSNL represents and warrants to the Administrator that

- a. It is duly organized and validly incorporated under the laws of India, and has full power and authority to execute and perform its obligations under this Agreement;
- b. It has taken all necessary corporate and other actions under applicable laws to authorize the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement;
- c. It has the financial standing and capacity to undertake and perform the obligations in accordance with this Agreement;
- d. This Agreement constitutes its legally valid and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement will be legally valid, binding and enforceable obligations under it in accordance with the terms hereof;
- e. The execution, delivery and performance of this Agreement will not conflict with, result in the breach of, constitute a default under, or accelerate performance required by, any of the terms of its memorandum and Articles of Association or any Applicable law or any covenant, contract, agreement, arrangement, understanding, decree or order to which it is a party or by which it or any of its properties or assets is bound or affected.

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Section-III

Operating Conditions

The terms and conditions of the, NLDO or BSO or CMTS or UASL or UL License Agreement and any future evolution of licenses from time to time, as applicable, shall prevail and shall be binding mutatis mutandis. The same shall also be applicable in case of migration to or award of new license in lieu of the ILD/NLDO/BSO/ CMTS/ UASL/UL license.

3.1. NETWORK OPERATIONS RECORD

3.1.1 BSNL shall keep a record of the Submarine OFC transport network created under the scheme, along with the equipment details and OFC connectivity of nodes, network bandwidth created and provided to various Service Providers, types of traffic transported from different nodes and also maintain Service Provider-wise and node-wise faults and rectification reports of the OFC system and associated infrastructure and other related details in respect of the service rendered, which will be produced before the Administrator or TRAI, as and when and in whatever form desired.

3.1.2 It is desired that BSNL will create a GIS mapped record of the OFC transport network augmented and created under the scheme.

3.2. RIGHT TO INSPECT, TEST AND MONITOR

3.2.1 The Administrator or his authorized representative or Designated Monitoring Agency (DMA) shall have the right to inspect the created OFC network, the associated nodes and also the equipment installed for providing the network bandwidth BSNL will provide the necessary facilities at its own cost for inspection of the system, as required by the Administrator or its authorized representative(s) or DMA. The Inspection will ordinarily be carried out after reasonable notice except in circumstances where giving such a notice will defeat the very purpose of the inspection.

3.2.2: Wherever considered appropriate, Administrator may conduct any inquiry, either suo moto or on a complaint, to determine whether there has been any breach in compliance of terms & conditions of the Agreement by BSNL, and during such inquiry, BSNL shall extend all reasonable facilities without any hindrance.

3.2.3 Access to Network Operations Centre(NOC)/Network Management System (NMS) shall be provided to representatives authorised by the Administrator. Web based access to NOC/NMS is desirable.

3.3. ROLLOUT

3.3.1 BSNL shall have to commission submarine OFC network connecting Chennai with eight islands of A&N given in Appendix (IV) of Annexure-I within 24 months from the effective date of this Agreement.

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3.3.2 BSNL shall submit an indicative roll out plan for this project for each segment, within four weeks period from the date of signing of the Agreement, which will be followed by a PERT chart for the monitoring of the scheme.

3.3.3 The Rollout period may be extended, if deemed fit, by the Administrator under exceptional circumstances.

3.3.4 BSNL shall provide a statement giving details of the nodes, where the OFC network has been commissioned as per Appendix- I to Annexure I

3.4 Liquidated Damages (LD) on BSNL will be imposed for non-execution of the work in scheduled time-period. The quantum of LD will be in accordance with the LD provisions contained in the Contract Agreement of BSNL with the successful bidder, consistent with the bid document. BSNL shall ensure recovery of LD, in accordance with the contract agreement, and shall pass on the same to USOF. In addition to pass-through LD, 10% of the quantum shall also be payable by BSNL to USOF and entire LD payable amount shall be adjusted against the claims of BSNL.

3.5 COMMISSIONING THE SUBMARINE OFC TRANSPORT NETWORK

3.5.1 BSNL should conduct a detailed site survey, immediately after award of work, at all proposed sites to assess and provision for land / building / shelter / space requirements, deciding of new OFC routes, inlet arrangements for OFC into buildings/equipment rooms/ shelters, available and additional air-conditioning, requirements for upgrading the existing DC power supplies / storage batteries or installing new ones, green energy solutions and electricity connections and all other aspects required for complete site and route engineering. Administrator USOF will be kept informed of the survey and the results obtained as also the engineering plans developed accordingly for each node for monitoring the progress on monthly basis.

3.5.2 BSNL shall be fully responsible for Network Design & Engineering of the Submarine OFC network. It includes detailed link engineering, based on optical fibre characteristics and optical transmit power and optical receiver threshold levels of the equipment to be used. It will also lay down the procedures for smooth changeover of existing traffic on to the higher capacity replaced equipment and assessing the requirement of adequate space and other facilities such as power supply, earthing, etc. BSNL will do a detailed dimensioning and quantification of items, D.C. power supply up-gradation at existing locations, including power plant equipment and storage batteries, A.C. power supply up-gradation at existing locations.

3.5.3 BSNL has the primary responsibility to integrate both new and existing Routes/networks as applicable and carry out inspection and testing of supplies and services at all stages viz., FAT (Factory Acceptance Testing), verification of supplies, local testing of system and of A.C./D.C. power supplies at the equipment Node locations, testing of alarms and status display, loop testing, commissioning tests, tests on network management system and trial run including simulated/active traffic loading.

3.5.4 On completion of Project, BSNL shall self-certify and declare the OFC network commissioned and ready for validation in all respect, as specified in Section:IV TECHNICAL CONDITIONS, inter-alia, the installation, testing and commissioning of the submarine OF cable connecting all the nodes. Submarine OF Equipment of appropriate transport technology to create 100

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Gbps bandwidth i.e. one lambda (100 Gbps) available on two lit fibre pair each in the submarine cable of total four fibre pair, meeting all the deliverables,. BSNL shall provide details as per Appendix (I) to Annexure I.

3.6 VALIDATION AND CERTIFICATION OF THE COMMISSIONED SUBMARINE OFC TRANSPORT NETWORK

- 3.6.1 During the rollout period and on completion of the roll out, an Independent Monitoring Agency (IMA), to be appointed by Administrator, shall carry out inspection and testing of the created submarine OFC transport network and network bandwidth as per prescribed test schedules for their conformity to the specifications. IMA will conduct the inspection and testing and issue the certification as per Appendix (IV) to Annexure I, as applicable. BSNL shall provide all reasonable facilities and assistance like testing instruments and other test gadgets, including access of drawings and other details to IMA at no cost to the Administrator. The inspection test schedule shall be finalized by USOF based on inputs from BSNL.
- 3.6.2 BSNL shall be fully responsible for making the system work. In case, at the time of validation by IMA, it is established that the technology/system deployed fails to meet the specified requirements or is unable to effectively extend the transport services through the node equipment, BSNL shall rectify the defect in the network at own cost.

3.7 PERFORMANCE LEVEL

- 3.7.1 BSNL shall ensure that the OFC transport network performance level meets the TRAI Quality of Service parameters defined for OFC transport network. The OFC network availability at each node shall be better than or equal to 99.9%. The penalty on BSNL will be imposed for non-compliance of the stipulated performance level and shall be in accordance with the penal & SLA provisions contained in the separate Agreement to be signed between BSNL and the MHA/Andaman & Nicobar Islands U.T. Administration.
- 3.7.2 BSNL will work under the licensing framework and all the conditions viz. Confidentiality of information, security conditions, prohibition of certain activities etc., as per the applicable license, shall be binding mutatis mutandis.

3.8 PROHIBITION OF CERTAIN ACTIVITIES BY BHARAT SANCHAR NIGAM LIMITED (BSNL)

The terms and conditions as to prohibition of certain activities of the NLD/ILD license agreement, as the case may be, shall be binding mutatis mutandis.

3.9 Security Conditions

- 3.9.1 The terms and conditions as to security conditions of the NLD/ILD license Agreement, as the case may be, shall be binding mutatis mutandis.

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3.9.2 Mandatory Licensing requirements, policy guidelines, etc., with regards to security related concerns issued by the Government of India from time-to-time shall be strictly followed.

3.9.3 If the entity is found indulging in acts inimical to India's national security, the tender/agreement is liable to be terminated and matter will be reported to concerned authorities for suitable legal/criminal action

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Section-IV
Technical Conditions

BSNL shall abide by the existing land laws, labour laws, local customs and the best of prevalent latest practices in the Industry.

Administrator, USOF shall not be responsible for any breach of such Act(s)/ Law(s) by the executing entities for whatsoever may be the reason.

BSNL shall work within the framework of the Technical conditions of the BSO/ CMTS/ UASL /NLDO/ UL licence, as the case may be.

4.1 DETAILS OF THE SCHEME

The technical specifications of the scheme for creation and management of network are explained in the forthcoming clauses.

4.2 OUTLINE OF THE SCHEME

BSNL shall create and manage submarine OF network connecting all the nodes. BSNL to lay 4 fibre pair optics submarine cable system between Mainland Chennai and A&N Islands. Chennai – Port Blair Segment shall be Repeated and all other sections shall be non-repeated. The Initial capacity of the systems is as given below:

- a. Out of four Fibre pairs, one fibre pair is to be allocated to Ministry of Defence (MoD) for strategic requirement while two fibre pairs (lit) shall be used in redundant 1+1 mode for commercial traffic and one additional fiber pair would be used for maintenance purpose.
- b. In Chennai – Port Blair segment, each lit fibre shall initially carry 2x 100 Gbps Traffic capacity. In other segments, each lit fibre shall initially carry 1x 100 Gbps Traffic capacity.
- c. Each lit fibre pair may be loaded upto 50 % capacity and remaining 50% capacity shall be for protection of other lit fibre pair. However, it shall also be possible to use each fibre pair to its full capacity, without provision of protection. The protection shall be provided at client interface level.

This network will meet the futuristic requirement in terms of capacity and technology for various applications and services.

4.3 TECHNOLOGY NEUTRAL APPROACH

4.3.1 BSNL shall select the best appropriate technology, compliant with relevant ITU-T/IEEE/IETF/IEC/TEC standards, as applicable, to meet the deliverables of the scheme. In no case, the submarine technology used should be proprietary one. The IMA may call for such documentary evidences ensuring the compliance with the prescribed standards, as applicable, from accredited test labs/designated agencies at the time of verification and testing.

4.3.2 The selected technology should be capable of interfacing with existing national long distance for transport of all types of digital traffic with various data rates and formats and/or protocols

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from source to destination location as per the requirement and demand. The deployed equipment should be interoperable and meet open standards both on the optical line and drop-insert/ingress outgress ports side. It should be modular and support expansion in bandwidth capacity on interface side as well as optical line side through add-on hardware and/or software.

- 4.3.3 The desired technical specifications for meeting the respective features and performances such as system timing, synchronization and power supply by the deployed OF equipment and associated interfaces, OF cable and associated accessories, Network management system for monitoring and provisioning, DC power supply, power plant, battery backup for guidance of BSNL are placed at ANNEXURE II

4.4 DELIVERABLES OF THE SCHEME

- 4.4.1 BSNL shall deploy appropriate transport technology equipment at each node ensuring each have a minimum 100 Gbps bandwidth i.e. one lambda (100 Gbps) available on two lit fibre pair each in the submarine cable of total four fibre pair, meeting all the deliverables, conforming to ITU-T Standard and performance level for availability of the OFC network as per Performance Level requirement given in Section: III, OPERATING CONDITIONS.
- 4.4.2 The OFC network shall have the capability to efficiently transport SDH/ IP / OTN protocols, conforming to ITU-T / IEEE rates and standards to facilitate maximum utilization by stakeholders.
- 4.4.3 BSNL, at each node, shall provide equipment with tributary/interface/ add-drop modules of required capacity and type on demand, for transport of the traffic.
- 4.4.4 BSNL shall be responsible for procurement, installation, testing commissioning & Maintenance of submarine Cable system – both Equipment and OF Cable with accessories and all related items and testing and commissioning of all the nodes to meet the deliverables as specified in this Section.

BSNL shall build, operate and manage the network to meet the deliverables of the scheme, which shall include, but not limited to, Project management, Survey, Design & Engineering, Procurement, Installation, Testing, Integration, Trial run and Commissioning of all equipment & cables and related works, including electrical and civil works, preparation of the related drawings as well as taking all necessary permissions/approvals.

4.5 SPECIFICATIONS AND NETWORK FEATURES ENSURING DELIVERABLES OF THE SCHEME

BSNL shall design the network and deploy the equipment with associated infrastructure with the following features:

- a) **Scalability:** The network and the equipment should be technologically as well as capacity-wise scalable, compatible and flexible so as to support the future bandwidth and service needs, to carry and route all standard traffic protocols. In Chennai – Port Blair Segment, DWDM system of appropriate technology having ultimate design Capacity of 64 x 100Gbps transmission capacity per fibre pair shall be provided. In other segment, DWDM system of appropriate technology having ultimate design Capacity of 16 x 100 Gbps transmission capacity per fibre pair shall be provided.

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b) **Connectivity requirements:** The network and equipment should meet service provider's connectivity needs as per ITU-T standards.

c) **Network Management System / Element Management System:** The NMS / EMS/ shall manage the Submarine Cable system (cable and equipment) The NMS/EMS shall provide the capability to monitor, configure, re-configure and control the network elements from a centralized location.

4.6 MARINE SURVEY, INSTALLATION, LAYING AND CONSTRUCTION SPECIFICATION:

4.6.1 BSNL shall adopt industry standard best practice of installation, laying and construction of the submarine cable and land cable while executing the project.

4.6.2 BSNL shall adopt industry standard practice of Marine survey and operations as per Annexure-III.

4.7 RESPONSIBILITY OF BSNL

4.7.1 BSNL shall bring to the prior notice of Administrator USOF, any deviation in meeting any of the deliverables and specifications, as prescribed in the **section: IV TECHNICAL CONDITIONS.**

4.7.2 At all the nodes in CANI submarine project, BSNL shall plan sufficient battery capacity to provide 24X7 services taking in to consideration the availability of electricity and sunlight.

4.7.3 BSNL shall make suitable arrangements for safety and security of the equipment installed under the project.

4.7.4 BSNL shall obtain all necessary statutory clearances, including custom clearance, excise, octroi clearances, etc. from central/state/local authorities, regulatory bodies, statutory bodies of the central/state Government, municipality, highway authority, electrical utilities, forest department, gas authorities, pollution board for clearance for DG set operation and any operational permits/clearances, and any other clearances, if required.

4.8 QUALITY OF SERVICE PARAMETERS

4.8.1 The Quality of Service Parameters (QOS) for lease bandwidth, as prescribed by TRAI, shall be applicable.

4.8.2 BSNL shall ensure provision of bandwidth on lease to the services providers as per the Quality of Service (QOS) prescribed by the TRAI from time to time. BSNL shall adhere to such QOS standards and provide timely information as required therein.

4.8.3 The Administrator or TRAI may carry out performance tests either directly themselves or through Independent Monitoring Agency and also evaluate the QOS parameters at any time during the tenure of the Agreement. BSNL shall provide access and other support, including documents, instruments, equipment etc. for carrying out such performance tests and evaluation of Quality of Service.

4.8.4 BSNL will keep a record of equipment installed at all the stations. Submarine OF cable provided for connecting, and lease bandwidth provided from, the node installed under the scheme. BSNL shall also maintain faults and rectification reports of the nodes, submarine cable and other related items of the transport network

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such as Battery, Power Plant in respect of the bandwidth, provided to the service provider on lease, which will be produced before the Administrator or TRAI as and when and in whatever form desired.

4.8.5 BSNL shall be responsive to the complaints and shall rectify the deficiencies and maintain the history sheets for each installation, statistics and analysis on the overall maintenance status.

4.8.6 Proper arrangement should be made by BSNL for reporting/ booking complaints.

4.9 INSPECTION AND TESTS

4.9.1 The Administrator or his representative or the agencies authorized (**Independent Monitoring Agency**) shall have the right to inspect and test the network bandwidth created in the OFC transport network for leasing as per prescribed test schedules for their conformity to the specifications. Where the Administrator decides to conduct such tests on the Network Bandwidth created in the submarine OFC transport network by BSNL, all reasonable facilities and assistance like testing instruments and other test gadgets including, access to drawings and other details, shall be furnished to the Independent Monitoring Agency at no charge to the Administrator.

4.9.2 Should any inspected or tested components of the OFC transport network fail to conform to the specifications, the Administrator may reject them and BSNL shall either replace the rejected components of the infrastructure or make all alterations necessary to meet specification/ requirements free of cost to the Administrator.

4.9.3 If any equipment or any part thereof is found defective or fails to fulfil the requirements of the Agreement, the Independent Monitoring Agency shall give notice to BSNL setting forth details of such defects or failure and BSNL shall, make the defective equipment good, or alter the same to make it comply with the requirements of the Agreement forthwith, and in any case, within a reasonable time frame of the initial report. These replacements shall be made by BSNL free of all charges at site during Installation and Warranty period. After Warranty is over the replacement charges shall form part of O&M expenditure.

4.9.4 Nothing in the Clause above shall, in any way, release BSNL from any warranty or other obligations under this Agreement.

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SECTION-V
Financial Conditions

5.1. Funding from USOF shall be limited to the Capital Expenditure (CAPEX) approved and actually incurred for the project and the associated works, in accordance with the Cabinet Approval dated 21.09.16 as stated in Clause 2.1 (Scope of the Agreement).

5.2. Telecom Commission approved on 01.05.2018, the CAPEX cost of Rs. 929.358 crore to BSNL, which will be funded by USOF. The details are as follows-

(Rupees in crore)

| Sl. No. | Item | Amount |
|--|---|------------------------------|
| 1 | Prices Discovered through Tender for CAPEX (Excluding AMC) | 677.81 |
| 2 | Civil & Electrical Infrastructure work as stated in Clause 2.1.2 to 2.1.5 (to be executed by BSNL, to be discovered through tender) | 60.00* (estimated amount) |
| Total of S. No. 1 & 2 (Total CAPEX) | | 737.81 |
| Applicable Taxes @ 18% | | 131.80# |
| CAPEX including taxes | | 869.61 |
| 3 | PMC payable to BSNL limited as per para 6.3 of the Cabinet Approval | 59.748 |
| Total CAPEX cost to be funded by USOF | | 929.358 |

*BSNL shall intimate the market discovered costs to USOF and subsequent to its approval, in case it exceeds the estimated amount, funding shall be done. In this regard, funding shall be on actuals and necessary instructions with regard to its quantum & schedule of disbursement shall be issued by USOF separately.

Taxes and duties are variable components and the same are to be paid as per actual as per the prevailing rates.

5.3. Net Annual Operational Expenditure (OPEX) i.e. OPEX minus Revenue, as per actual in the form of viability gap funding to be provided by MHA/Andaman & Nicobar Islands U.T. Administration for initial five years and shall be governed by a separate Agreement with MHA/Andaman & Nicobar Islands U.T. Administration. Subsequently, decision would be taken by Department of Telecom whether to fund it further based on the revenue and cash flow by taking into consideration the viability gap funding.

5.4. Additional Requirement of Fund, beyond the approved amount of Rs. 929.358 crore, as sought by BSNL such as variation in the bill of quantities (BoQ) based on actual Marine survey, RoW charges, vessel entry fee, statutory levies other than GST, etc. for the execution

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and the implementation of the project and hardware/software upgradation of the project, if required, shall be payable on actuals, subject to approval of the Competent authority.

5.5 BSNL shall submit claim, linked to segment and various Stages of Milestones, along with the physical & financial progress report and other supporting documents, in prescribed affidavit format (**Annexure IV**), as per the following disbursement schedule:

| S. No. | Stage | Nature of Claim | Documentation |
|--------|---|--|---|
| 1 | Signing of the Agreement | 10% of the Capex including taxes (excluding PMC & Civil & Electrical Infrastructure work) shall be payable to BSNL as Mobilization advance. In addition, 20% of the estimated amount for Civil & Electrical Infrastructure work shall be payable as Mobilization advance. | Submission of Claim |
| 2 | Completion of marine route survey | Segment-wise, Quarterly | Submission of Claim for the quarter, in which route survey is completed |
| 3 | Completion of delivery of cable | Segment-wise, Quarterly | Submission of Claim for the quarter, in which delivery of cable supply is completed |
| 4 | Completion of delivery of equipment | Segment-wise, Quarterly | Submission of Claim for the quarter, in which delivery of equipment supply is completed |
| 5 | Completion of installation, testing, AT & commissioning | Segment-wise, Quarterly | Submission of Claim and commissioning certificate and validated by the IMA, for the quarter, in which |

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| | | | commissioning is completed. |
|--|--|--|-----------------------------|

5.6 Payment of 35% of PMC shall be payable at the end of Stage 2 (as defined in Clause 5.5. above), next 35% of PMC shall be payable at the end of Stage 3 and balance 30% shall be payable on project completion i.e. commissioning of all segments & validation of the entire network by the IMA (Stage 5).

5.7 Release of Fund:

- a. The funding towards Capex & PMC shall be disbursed by the Controller of Communication Accounts Office, TamilNadu, the Designated Monitoring Agency, in accordance with the aforesaid schedule and other provisions of the Agreement, with each quarter ending on 30th June, 30th of September, 31st of December and 31st of March. Any advance payment shall be adjusted against the quarterly claim. The claim for a part of quarter will be computed with reference to the actual number of days in that quarter.
- b. The claim in the prescribed format along with the supporting documents should be submitted, at the office of Controller of Communication Account Office, within one month of the end of the quarter. Condonation of delay for claims received after this date may be considered under exceptional circumstances as per prevailing instructions.
- c. The claims of BSNL would be said to be settled only after adjustment & recovery of any pending LD, penalties, outstanding dues, etc. as per the Agreement or recovery of inadmissible/excess funding as ascertained on the basis of scrutiny, sample physical verification conducted by CCA office to authenticate the claims during the Agreement period, as per instructions issued thereunder or as per the report of the IMA.

5.8 Annual Audit: The aforesaid quarterly claim statements for each financial year shall be required to be audited by the auditors of BSNL appointed under Section 139 or any other relevant section of the Companies Act, 2013. The report of the Auditors should be in the prescribed form given in Annexure-V to be filed with the designated Controller of Communication Account Offices within 7 (seven) calendar days of the date of signing the audit report but not later than 30th September of the following year.

5.9 The funding for a quarter shall be paid after making adjustments, if any, for the payments made in the previous quarter(s).

5.10 Final adjustment, if any in respect of excess or shortage in the disbursed amount shall be made in the following year based on the quarterly statements duly certified by BSNL

5.11 In case BSNL is found to have claimed and received in excess of 10% of the amount due to them, the entire amount in excess shall be recovered along with an interest from the date of disbursement at the prime lending rate (PLR) of State Bank of India prevalent on the day the disbursement was made. The interest shall be compounded monthly and a part of the month shall be reckoned as a full month for the purposes of calculation of interest. (Month

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for this purpose shall be taken as an English calendar month). No further funding shall be disbursed until final adjustment of the excess payment.

5.12 No interest shall be payable for any short/late payment made to BSNL by the Administrator USOF or concerned Controller of Communication Accounts Office.

5.13 ~~The guidelines regarding inspection of sites and verification of claims regarding the project will be communicated separately.~~

5.14 All the relevant records, systems, relevant NOC (Network Operation Centre)/ Network Management System (NMS) data, logbooks, books of accounts of BSNL shall be subject to such scrutiny & examination as may be prescribed by the Administrator so as to facilitate independent verification of the claims and disbursed/paid amount.

5.15 Administrator, USOF reserves the right to issue instructions, prescribe procedures, formats and certificates with respect to physical and financial progress of the project, financial reports for reconciliation and verification. Depending on the stage of completion of the project and requirements, the same may be prescribed which has to be furnished by BSNL.

5.16 In order to ensure proper utilization of funds released and verification thereof, the Administrator can issue instructions/directions & even modify, alter, or substitute and amend, if deemed necessary, whatever is stated herein.

5.17 Bank Guarantees: Performance Bank Guarantee (PBG) is not required from BSNL so long as BSNL continues to be wholly owned by the Government of India.

5.18 Maintenance and Supply of Records:

- a. The Administrator shall have the right to call for and BSNL shall be obliged to maintain, supply and provide for examination the relevant NOC (Network Operation Centre) data, books of accounts, measurement books, log books and any record(s) relating to CANI submarine project.
- b. BSNL shall invariably preserve all accounting records and other records (electronic as well as hard copy) for a period of three years from the date of publishing of duly audited and approved accounts of the company. Any dereliction thereof shall be treated as a material breach independent of any other breach, sufficient to give cause for cancellation of the Agreement.
- c. The relevant records of BSNL shall be subject to such scrutiny as may be prescribed by the Administrator so as to facilitate independent verification of the amount due to BSNL.

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SECTION-VI DEFINITIONS

6. Interpretation of Terms/ Definitions

Unless the context otherwise requires, the different terms and expressions used shall have the meaning assigned to them in the following paragraphs:

- **ADMINISTRATOR** means the Administrator, Universal Service Obligation Fund in the Department of Telecommunications under Ministry of Communications.
- **CANI Submarine Project** shall mean Chennai to A&N islands (CANI) network connecting all the nodes i.e. Mainland India (Chennai) and Port Blair & seven other islands of A&N viz. Little Andaman, Car Nicobar, Havelock, Kamorta, Great Nicobar, Long Island and Rangat with a dedicated submarine optical fibre cable on appropriate bandwidth and telecom connectivity.
- **AGREEMENT** shall mean the Agreement signed by BSNL with the Administrator, related to creation of the CANI Submarine OFC Transport Network and associated infrastructure for effective provision of direct communication link through a dedicated submarine optical fibre cable (OFC) between Mainland India (Chennai) and Port Blair & seven other islands viz. Little Andaman, Car Nicobar, Havelock, Kamorta, Great Nicobar, Long Island and Rangat with appropriate bandwidth and telecom connectivity to be executed by BSNL.
- **DESIGNATED MONITORING AGENCY** refers to the agency authorized by the Administrator to settle claims and disburse fund and to carry out inspection of the records, systems, claims and installations including physical verification in order to ensure compliance with terms and conditions of the Agreement.
- **INDEPENDENT MONITORING AGENCY** refers to agency authorized by the Administrator to carry out inspection and testing of the created Submarine OFC transport network and network bandwidth segment wise along with its validation & certification.
- **EFFECTIVE DATE** is the date on which this Agreement comes into effect.
- **LICENSE** means a License granted or having effect as if granted under Section 4 of the Indian Telegraph Act 1885 and Indian Wireless Act 1933.
- **SERVICE AREA** means the territorial jurisdiction as specified under the Basic Service Licence except the areas that may be notified to be excluded from time to time.
- **TRAI** means Telecom Regulatory Authority of India constituted under the TRAI Act, 1997 as amended from time to time.
- **USO** means Universal Service Obligation as enunciated in Indian Telegraph Act and the Rule framed there under.
- **USO FUND** means the fund established under Indian Telegraph (Amendment) Act, 2003, Indian Telegraph (Amendment) Act, 2006 and Rules framed there under.
- **CCA** means Controller of Communications Account.

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- DoT means Department of Telecommunications.

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Appendix-I: Commissioning report w.r.t. Equipment Procurement (Supply and Installation)
for the month of:

Name of State/UT

Name of the Telecom Circle

| S. No. | Nomenclature | Status of Tender | Date of PO | Delivery Period | Date of Receipt | Status of Installation |
|--------|----------------------------|------------------|------------|-----------------|-----------------|------------------------|
| 1 | Submarine Cable | | | | | |
| 2 | Terminal Station Equipment | | | | | |
| | | | | | | |
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Appendix-II: Commissioning Report w.r.t Marine Operations & Cable supply of Submarine Cable Route for the Month of:

Name of the Telecom Circle

Name of State/UT

Name of district/
Island

| S. No. | Name of Segment | Total Length (Kms.) | | Name and Address of BMH and CLS | Status | Date of completion / Target |
|--------|-----------------|---------------------|------------|---------------------------------|--------|-----------------------------|
| | | Submarine Cable | Land cable | | | |
| | | | | | | |
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Appendix-III: Progress Report w.r.t. Infrastructure Activities for the month of:

Name of state / UT

Name of the Telecom Circle

| Sl. No | Name of Location | Status of Land | Status of Building | Status of Battery, PP and EA | Status of Electrical works | Status of BMH | Target Date for completion | Any major issue to be addressed | Remarks |
|--------|------------------|----------------|--------------------|------------------------------|----------------------------|---------------|----------------------------|---------------------------------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Chennai | | | | | | | | |
| | Port Blair | | | | | | | | |
| | Little Andaman | | | | | | | | |
| | Car Nicobar | | | | | | | | |
| | Kamorta | | | | | | | | |
| | Campbell bay | | | | | | | | |
| | Havelock | | | | | | | | |
| | Long Island | | | | | | | | |
| | Rangat | | | | | | | | |

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Appendix-IV: Certificate Format Certifying the Completion of Network of Relevant Nodes in CANI Submarine Network

It is to certify that,

1. We have carried out network validation, inventory checking and performance checking on sample basis covering the below mentioned nodes of Chennai/ ANI Service area as per approved manual;

Node:

.....
.....

2. We have taken into account the documentary backup made available;
3. We have also observed the network configuration on the network management system;
4. The detailed report is annexed herewith along with exceptional points (if any);
5. On basis of above we conclude that BSNL has installed and commissioned the network as per Agreement No

Dated in the segment



For and on behalf of
Independent Monitoring Agency

(Authorized signatory)
Enclosure: Detailed Report.

Technical Specifications of OFC Equipment & of Cable Ensuring Deliverables and Network Features Under the Scheme

1.0 SPECIFICATIONS OF SUBMARINE LINE TERMINAL EQUIPMENT (SLTE)

1.1 The following two types of SLTE equipment are envisaged in this project:

- **Type-A:** SLTE with 64 x 100 Gbps capacity- For repeatered section
- **Type-B:** SLTE with 16 x 100 Gbps capacity- For repeaterless sections

Each SLTE shall be equipped with two channels each of 100 Gbps / OUT-4 capacity initially. The line side of every channel cards (transponder cards) shall be tuneable through software for entire range of the WDM grid used.

1.2 The SLTE equipment shall be basically a Dense Wave length Division Multiplexing (DWDM) Optical Line equipment and shall consist of DWDM Mux De-Mux, booster amplifier, pre-amplifier etc. Which shall operate at discrete wavelengths in the C-band 1529 nm to 1565 nm, centered around 193.1 THz frequency as per ITU-T Rec.G.694.1 grid, at 50 GHz (64 λ system) and at 50 / 100 GHz channel spacing (for 16 λ system) as the case may be. The DWDM system shall support transmission of 64/16 wavelengths channels comprising of OTU-4 per channel or a combination of them in the C-band.

1.3 The system shall have OUT-4 interfaces both on client side and line side. The line side shall be tuneable in entire range of C-band. The SLT shall consist of–
I) Optical multiplex section(OMS) consisting of Mux and De-Mux blocks,
II) DWDM bandwidth transport layer consisting of Optical Transmission Section (OTS) processing module having booster and pre-amplifier.

1.4 The equipment shall support forward error correction (FEC) in accordance with ITU-T Rec.G.709 in the optical budget of the equipment and the same shall be part of the network planning.

1.5 The bidder / manufacturer shall supply entire common hardware including Mux /Demux and embedded control & management software etc. for ultimate capacity @ 64 Channels / 16 Channels of OTU-4 DWDM system on day one. The system shall hitlessly upgradable in field to its full capacity by inserting transponder cards @ OTU-4 followed by necessary cross connection and mapping functions.

1.6 The Booster Amplifier and Pre-Amplifier (Optical Amplifier) shall be the integral part of SLTE and ILAs.

1.7 The removal/ insertion of any card including the redundant one shall not disturb the working of the system or deteriorate the BER of the other working channels in the system.

1.8 **Optical Monitoring (OM):** The objective of optical monitoring is to detect anomalies, defects, degradations and fault affecting the quality of SLTE systems at optical layer. The optical monitoring of the SLTE system shall provide the facility of locally and remotely monitoring of some important parameters as specified in the ITU-T Rec.G.697. The parameters shall facilitate in-service fault analysis and performance degradation of SLTE system and enhance the reliability of the system. The methodology of "Optical Monitoring" shall be as specified in ITU-T Rec.G.697. The local and remote monitoring of following Optical parameters of the SLTE system shall be supported by the system through its EMS & LCT.

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- I) **Channel power:** The equipment shall support the channel power measurements at the following points:
- Channel power before the DWDM multiplexer,
 - Channel power after the DWDM demultiplexer.
- II) **Total power:** The equipment shall support the total channel power measurements at the following points:
- Total power at input of various stages of optical amplification,
 - Total power at output of various stages of optical amplification,

1.9 Supervisory parameters:

The supervisory system of the equipment shall be capable of local & remote monitoring the various parameters of the equipment:

The measurement accuracy of input/ output power of the Booster/ In-Line Amplifier/ Pre-Amplifier from the EMS of the system shall be within ± 1 dB from the actual measured value on a wide-band Optical Power Meter.

The supervisory system shall provide necessary audio/ visual alarm on equipment for indicating the alarms. Also from the EMS of the system it shall be possible to locate the faulty-section in the case the fibre is cut.

To maintain transparency and supervision capability of client services in accordance with ITU-T Rec.G.709, all client services shall be supervised by processing the ODU/ OTU overhead bytes. At least path monitoring (PM) and section monitoring (SM) shall be supported.

- 1.10 **Monitoring points** There shall be the provisioning of monitoring points for monitoring of channel power, OSNR and wavelengths at the output points of Booster Amplifier, In Line Amplifier and Pre-amplifier using external OSA/ DWDM analyzer etc. These points shall be suitably connectorised and on connection of a measurement device, the main transmission path shall not be affected at all.

2.0 Specification of OTN Based Interconnect equipment:

- 2.1 The Optical Interconnection Equipment (OIE) including Digital Cross Connectors (DXC) shall:

- Interface with SLTE in each cable landing station.
- On Client side, the IE shall provide connection to the Landing Point Party equipment via the Cable System Interface
- Provide connection to other transmission facilities for restoration, interconnection with other cable systems/back-haul facilities.
- Support Layer1 control plane for providing protection, restoration

The OIE shall consist of the required OTN Digital Cross-connect (including Craft Terminal) and associated Element Management System (EMS).

2.2 Cross Connect Capacity:

The cross connect module of the equipment shall be universal packet / OTN switch matrix type. The equipment is divided in to two distinct categories based on cross-connect matrix size and functionality, as equivalent OTU4.

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- A) Type -A: 3.2 Terabits / OUT-4 equivalent ports bi-directional non-blocking matrix with each port configurable for any direction of transmission.
- B) Type- B: 1.6 Terabits / OTU4 equivalent ports bi-directional non-blocking matrix with each port configurable for any direction of transmission.

2.3 Requirement of physical interfaces:

The following defines the physical interfaces configuration of the IE to be quoted as the baseline option:

| Type of Interfaces | Quantity of Interfaces to be equipped | |
|--|---------------------------------------|--------|
| | Type-A | Type-B |
| OUT-4 / 100 GbE | 6 | 6 |
| 40 GbE | 2 | 0 |
| OUT-2/ OUT-2e / STM-64 / 10 GbE LAN / 10 GbE WAN | 28 | 24 |
| OUT-1 / STM-16 / STM-4 / STM-1/ GbE | 16 | 16 |

THE IE shall be upgradable in future by just inserting additional interfaces cards.

- A. Only one OIE has been proposed at each cable station except at Port Blair, where two different types of OIE have been proposed. The single OIE shall provide connectivity to all SLTES. However, at Port Blair, one OIE will be connected for Chennai – Port Blair section and other with remaining sections. These two OIE shall be interconnected with each other.
- B. It is desirable that the 100 G (OTU4) interfaces are configurable as client interfaces or line interfaces.
- C. 10 G (OTU-2) interface shall be software configurable for STM-64/ 10GE LAN /10 GE WAN / OTU2/ OTU2e using appropriate plug.
- D. 2.5 G (OTU 1) Interface shall be software configurable for STM-1/STM-4/STM-16/OTU1/GigE using appropriate plug.
- E. Minimum two nos. of interface cards shall be provided for each interface.

2.4 Power supplies:

The equipment shall meet the requirements of ETSI 300 132-2 for nominal –48V DC power supplies. The Bidder shall describe how the power is distributed within the equipment and how the equipment is protected against power failures (redundancy, etc.). The IE shall support redundant power supply inputs (A & B supplies). The IE shall be capable of meeting the performance requirements of this Technical Specification if either of the –48V supply fails.

3.0 SPECIFICATION OF SUBMARINE of CABLE:

3.1 GENERAL REQUIREMENTS:

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Cable Products shall include cables (including fibres, fibre splices), cable joints, cable transitions, Universal Joints/ interconnection devices, beach joint, land joint, cable end seals, and manufacturing repairs.

Cable Product Set is the complete range of Cable Products offered.

Only qualified Cable Product Sets that meet the requirements of this specification shall be accepted for use in the system.

The fibre, fibre splices, couplers (terminations), cable, cable joints, cable transitions, cable end seals and interconnection devices shall be designed such that the overall performance requirements, shall be met throughout the Design Life of the System. The quality and materials and workmanship used in their manufacture shall be appropriate for the design life of the system..

All system components shall conform to ITU-T recommendation G.973/G.976 where applicable unless required otherwise by this specification.

3.2 CABLE TYPES: The following types of cables are to be provided as per requirement:

3.2.1 Light Weight (LW): This type of cable shall be suitable for deployment, operation, recovery and reuse in water depths down to more than 3000 metres.

3.2.2 Light Weight Protected (LWP): This type of cable shall provide a quantifiable improvement over LW in fish-bite protection and protection from abrasion and be suitable for deployment, operation, recovery and reuse in water depths down to 3000 metres.

3.2.3 Single Armoured (SA): This type of cable shall be suitable for laying, burial, recovery and reuse in depths down to 1000 metres.

3.2.4 Double Armoured (DA): This type of cable shall be suitable for laying, burial, recovery and reuse and for providing protection in depths down to 100 metres, where required. This cable shall be sufficiently heavy so as to be unlikely to be moved by tidal action.

3.3 The dimensional characteristics of fibre shall be as per ITU-T Recommendation G.654 or G.655 whichever is applicable;

3.4 SPECIFICATION OF LAND CABLE:

3.4.1 The land cable shall be used between the CLS and beach manhole for connecting the Station cable and Submarine cable.

3.4.2 Power cable for feeding power is also to be providing in Repeated section. Separate optical cable and power cables will also be accepted.

3.4.3 The OFC shall meet/exceed applicable ITU-T/TEC specifications and the materials used in the manufacture of OFC.

3.4.4 Protection to Land Cable shall be provided as per international practice.

4.0 The system performance shall be equal to or better than 10^{12} as per relevant ITU-T TEC Standards, including Rec. G.821/G.826/TETF/RFC/2544/Standards specific to the deployed technology, and any other approved specifications as applicable.

5.0 EMI / EMC Requirement: The equipment shall meet exceed EMC/EMI requirement as per TEC Standard No. TEC/EMI/TEL-001/01/Feb-09 (including latest revisions and amendments) or equivalent ITU-T/International standards

6.0 ENVIROMENTAL SPECIFICATIONS: Equipment, Cable and their components provided under this specification shall conform to relevant ETSI standard.

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7.0 LIGHTNING AND TRANSIENT VOLTAGE PROTECTION: Bidder shall provide lightning and transient voltage protection for all telecommunications equipment, in accordance with the following-

- a) Should have proper earthing arrangement as per ITU-T/IEC/BIS/TEC standards.
- b) At the outside cable plant point-of-entry of all cabling penetration, the Bidder shall provide lightning and transient voltage isolation as well as surge protection, wherever applicable, for the inside-plant cabling, wiring, and all terminations and equipment.
- c) All equipment installed, under this specification that requires 230VAC primary power, shall be surge protected.

8.0 STATION SAFETY EARTHING AND SIGNAL GROUNDING: The equipment shall meet the IEC Publication 60950 (2001) in general and for optical safety it shall comply with ITU-T G.664 and IEC 60825-1 and IEC 60825-2. For each facility, the Bidder is responsible for meeting the following station and equipment earthing requirements-

- a) All safety earthing and signal grounding shall be in full compliance as per relevant international standards.
- b) Each cabinet (enclosure) shall include suitable signal ground and safety earth networks. The signal ground network shall terminate at a separate signal ground stud connection isolated from safety earth.
- c) Each earth/ ground network shall utilize copper bus bars, copper braids and/or 16 sqmm or bigger earth cable. All equipment earth/ ground connections shall be made directly to the equipment chassis utilizing grounding and secured metal-to-metal with star washers. Use of the enclosure frame, skin or chassis mounting hardware, as part of the earthing/ grounding networks, is not acceptable.
- d) The safety earth network shall be connected to "earth ground" at the safety earth stud. The earth stud connection shall be sized for an external earthing cable equipped with a 2/0 solid copper lug secured metal-to-metal with star washers. Primary AC feeds and distribution within enclosures requires earthing wire connection to the safety earth stud.
- e) The safety earth and signal ground networks shall be inter-connected only at the safety earth stud and signal ground stud.
- f) The BSNL shall be responsible for providing all required earthing/ grounding cable and installation.

9.0 ELEMENT MANAGEMENT SYSTEM: BSNL shall provide, a ELEMENT Management System (EMS). The EMS shall manage the entire CANI Submarine Cable system. The EMS should be provided, along with local craft terminal/client terminals/work stations, as applicable. The EMS shall provide the capability to monitor, configure, re-configure and control the elements of the telecommunication network from a centralized location and also at each node of the network where equipment is located using portable devices (e.g. laptops).

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10.0 EQUIPMENT AVAILABILITY: The Mean Time Between Failure (MTBF) of the deployed equipment by BSNL shall be at least 44,800 hours. The calculations shall be as per international standards. An MTTR of maximum 4 hours will be assumed ensuring the equipment availability at least 99.991%.

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MARINE SURVEY AND OPERATIONS

- 1.0 BSNL shall be responsible for the overall satisfactory performance of all marine operations necessary for the installation of the Submerged Plant between the beach manholes. In order to meet the requirements, suitable vessels, personnel and equipment shall be deployed.
- 2.0 Marine Survey and Operations shall include the following:
- a) Route survey ,
 - b) Route clearance ,
 - c) Burial assessment survey,
 - d) Cable laying, including pre-lay grapnel run (PLGR), and pre-lay shore-end installation, if applicable,
 - e) Post-lay inspection and burial operation (PLIB), and
 - f) All other associated aspects of the works.
- 3.0 International standard practice shall be followed for laying the Submarine cable
- 4.0 BSNL or its contractor shall be solely responsible for providing and operating all vessels, equipment, charts, personnel and any other items required for successful performance of all marine operations, including the beach works.
- 5.0 The BSNL shall be solely responsible for obtaining all necessary operational approvals and permissions for vessels, equipment, personnel and procedures to complete the work, except EIA & CRZ clearances.
- 6.0 **Quality Assurance**
- BSNL's contractor shall operate Quality and Environmental Management Systems based on and conforming to ISO9000 and ISO14001 (or equivalent) respectively.
- 7.0 **Health and Safety**
- BSNL's contractor shall operate International Safety Management (ISM) and Health Environmental and Safety (HES) systems based on legislation relevant to the proposed activities.
- 8.0 **VESSELS AND EQUIPMENT:** The vessels to be used for this project shall be seaworthy, suited to and suitably equipped for the work as required by these Technical Specifications and operational procedures.

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AFFIDAVIT (ON STAMP PAPER) FORMAT FOR STATEMENT OF CLAIM

AGREEMENT NO. _____ DATED _____

I, _____, aged about _____ years s/o, d/o of Shri _____, resident of _____, do solemnly affirm and state as under:

1. That I am _____ (Name) _____ (Designation) of _____ (USP), Universal Service Provider in _____ Licensed Service Area and I am duly authorized by the resolution dated _____ passed by Board of Directors of the Company to furnish a Claim in Affidavit on behalf of USP viz. BSNL.

2. That the claim pertains to creation and implementation of CANI Submarine project, after the date of entering into the Agreement and is in accordance with the Agreement provisions and details are as follows- (*Strike Down whichever not applicable*)

a. That a claim towards mobilization advance of Rs. _____ (Rupees _____) is being made.

b. That a quarterly claim of Rs. _____ (Rupees _____) towards marine route survey, that has been completed on _____ for the segment from _____ to _____, is being made.

c. That a quarterly claim of Rs. _____ (Rupees _____) towards delivery of cable, that has been completed on _____ for the segment from _____ to _____, is being made.

d. That a quarterly claim of Rs. _____ (Rupees _____) towards delivery of equipment, that has been completed on _____ for the segment from _____ to _____, is being made.

e. That a quarterly claim of Rs. _____ (Rupees _____) towards installation, testing, AT & commissioning, that has been completed on _____ for the segment from _____ to _____, is being made and for which the commissioning & acceptance testing certificate is attached.

f. That a claim of Rs. _____ (Rupees _____) towards PMC, is being made.

3. That the contents including that of utilisation certificate (Annexure – IV A) towards the fund already disbursed by USOF, of all the Attachments and enclosed supporting documents, if any, are true and correct to the best of my knowledge, based on the records of the company, which are available for further verification by the appropriate authorities and that the infrastructure has been commissioned from the date as stated.

D. J. 10/2

P. S. 10/2

5. That any fund claimed shall be/will be utilized for the purpose as stipulated in the Agreement.

6. That excess payment or shortage, if any, shall be adjusted in the following year(s) based on the quarterly statements duly certified by the Auditors of the Company and scrutiny/verification/inspection as prescribed by the Administrator.

7. The infrastructure created under this Agreement have not been utilized in claiming fund under any other Agreement entered into with the Administrator.

10. I understand that Administrator or its representatives (DMA) shall have the right to inspect & verify the site and records & systems, during the currency of the Agreement and if any deficiency is observed the payments made to the company shall be recovered forthwith, without prejudice to the right of Administrator to take any other action(s) as deemed fit.

For and on behalf of BSNL

Signature of the authorized signatory of BSNL

Pun Sane
12/07/2008

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Format of Utilization Certificate

Agreement No. dated

Name of Circle:

| Sl. No. | Nature of Claim | Sanction letter no. | Amount (INR) |
|---------|---------------------------|---------------------|--------------|
| 1 | Mobilization advance | | |
| 2 | Marine route survey claim | | |
| 3 | Cable delivery claim | | |
| 4 | Equipment delivery claim | | |
| 5 | Commissioning claim | | |
| 6 | PMC claim | | |
| | | | |

1. I certify that a sum of Rs. was received for the, as per details given above.
2. It is also certified that out of the above mentioned total funds of Rs. a sum of Rs. only has been utilized for the purpose for which it was sanctioned. It is further certified that the unspent balance of Rs. only was remaining as on.....
3. Certified that I have satisfied myself that the terms & conditions of the Agreement No. dated have been duly fulfilled for which funding was sanctioned and I have exercised the following checks to see that the money has been actually utilized for the purpose for which it was sanctioned.
 - a. BSNL's statement of accounts w.e.f.to..... have been duly audited and are enclosed/would be forwarded by(specify the date) in accordance to clause of the agreement.

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Bharat Sanchar Nigam Limited
 Regd. Office Bharat Sanchar Nigam Limited
 Harish Chandra Park, Connaught Place, New Delhi-110008
 www.bsnl.co.in

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b. It has been ensured that the deliverables and contractual obligations has been according to the requirements as per the Agreement and instructions issued thereunder.

4. Certified that the responsibilities assigned under the project as per the Agreement and instructions issued thereunder has been satisfactorily completed. *(This clause certifying the project completion i.e. commissioning of all segments & validation of the entire network by the IMA, to be inserted in the UC for during last claim).*

For and on behalf of BSNL

Signature of the authorized signatory of BSNL

Pull Saral
12/9/2011

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Annexure-V

Format for Annual Auditor's Report on Statement(s) of Claim & Utilization of Funds for
CANI Submarine Project

To

The Board of Directors

.....
.....

We have examined the attached Statement(s) of Claim of Funds from USF Fund of M/s Bharat Sanchar Nigam Limited for the period ending _____. We understand that the aforesaid statement(s) is /are to be furnished to the Central Government for assessment of the fund payable to M/s Bharat Sanchar Nigam Limited by the Government, in terms of the Agreement No. for release of funds for Creation and Implementation of CANI Submarine project for provision of Broadband Connectivity.

We report that:

We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purposes of our audit.

In our opinion and to the best of our knowledge and belief and according to the explanations given to us, the Statements have been prepared in accordance with the conditions contained in the said Agreement and clarification thereon in this behalf and gives a true and fair view of the funds claimed and utilized for the period computed on the basis of the aforesaid conditions.

(NAME AND SIGNATURE WITH COMPANY'S SEAL)

Date

Pune Sane
12/07/17 UM
Bharat Sanchar Nigam Ltd.
Regd. Office Bharat Sanchar Nigam Ltd.
Harish Chandra Mathur Lane, Jangpore
New Delhi-110001 Website: www.bsnl.co.in
CIN: U74899DL2000G01107739