
 <p>NATIONAL INSTITUTE OFOCEAN TECHNOLOGY</p>	NOTICE INVITING TENDER (NIT)	
	Form No. NIOT/S&P/NIT	

E-Tender Schedule

निविदा संख्या /Tender No	NIOT/S&P/S&GH/100166/2024-25
निविदा शीर्षक / Tender Title	Testing of Syntactic Foam For MATSYA6000
निविदा प्रणाली /Mode of Tender	Single Tender (ST)
ईएमडी जमा करना / Earnest Money Deposit (EMD)	USD10952/- a) Scanned copy of the instrument of the EMD to be uploaded in NIC portal b) <i>Original EMD shall be submitted through courier/speed post or dropped in the tender box in person before the due date</i>
निविदा जारी करने की तारीख / Tender Issue date	29.11.2024
निविदा समापन तिथि और समय/ /Tender Closing Date and Time	06.12.2024@11.00Hr
निविदा खोलने की तिथि और समय /Tender Opening Date and Time	06.12.2024@11.30Hr
निविदा दस्तावेज उपलब्ध स्थान / Tender documents available place	Tender documents can be freely downloaded from eprocare@nic.in website www.niot.res.in till closing date and time of the Tender. The tender document fee is waived for downloading the Tender.
बोली लगाने का प्रकार और निविदा प्रस्तुत करना / Bidding Type &Tender submission	Single Bid Tender comprising of Techno-commercial Bid and Price Bid should be submitted electronically through NIC portal eprocare@nic.in
ई-निविदा के लिए हेल्प मैनुअल/ Help manuals for e-Tender	0120-4001002,0120-40001005, 0120-6277787 support-eproc@nic.in
Send your queries to the email Ids /अपने प्रश्न ईमेल आईडी पर भेजें	Up to Tender finalisations/ टेंडर फाइनल होने तक hvt@niot.res.in

1. INTRODUCTION

National Institute of Ocean Technology (NIOT) is the technical arm of the Ministry of Earth Sciences, Government of India and is involved in developing technology for utilizing ocean resources in an eco-friendly manner. Tender is invited to submit a proposal for the **“Testing of Syntactic Foam for MATSYA6000”**

General Conditions of Contract (GCC)

National institute of Ocean Technology invites E-bids for **“Testing of Syntactic Foam for MATSYA6000”** at NIOT Chennai as per details given below.

1. **Submission of bids:**

Bidders are requested to submit their Bid/quotation in single part containing Technical proposal and price bid (BOQ) should be submitted electronically through CPP Portal eprocare@nic.in. The responsibility to ensure timely submission of bid lies with the bidder. Bids submitted through FAX or e-mail will not be considered. Bidders shall also attach scanned copies of all the requisite documents i.e. other certificates/documents specified in the tender documents. The bids are to be submitted (electronically) as per the bidding type indicated in the front page of the NIT. The bidders are advised to obtain DSC (Digital signature Certificate) from the authorized register with. The bid/quotation cannot be submitted without DSC. Bidders are advised to submit their quotation in single Part. **No manual tender is acceptable.**

2. This NIT shall form part of the LOI / Contract.

3. Terms and conditions indicated in the NIT shall be superseded by the terms and conditions mentioned in the Special conditions of contract (SCC) as at Annexure wherever applicable.

4 INSTRUCTION TO BIDDERS

4.1 Security:

Any information / material / document supplied along with this tender or after placement order should not be disclosed or copied without written permission from NIOT.

4.2 Contacting NIOT:

No correspondence / discussion / visits whatsoever will be entertained on the subject unless specifically called by this office after opening the tender or clarifications in writing. Any violation of this will render the quotation invalid and the firm is liable to be removed from our approved vendor list. However, if vendor requires any clarification on the bid, the query may be mailed to hvt@niot.res.in.

4.3 LOI Acceptance:

The successful bidder should submit LOI acceptance within 15 days from the date of LOI, failing which it shall be presumed that the bidder is not interested and his bid security /EMD shall be forfeited.

4.4. Signing of Contract: On successful evaluation and declaration of the bidder, initially a Letter of Intent will be issued by NIOT. The bidder should submit his acceptance of LOI within 15 days along with the deliverables as sought in the LOI and

copy of power of attorney along with the Board resolution copy authorizing to sign the contract with NIOT. If the Director of the company is signing the contract the copy of the Memorandum Of Association to be submitted. Upon receipt of acceptance of LOI and other relevant documents mentioned, the contract will be signed by NIOT.

4.5 Change of Name after award: Request / intimations with regard to change of name of the Contracting company or constitution of the contracting company after the tender opening or award of contract shall not be allowed as a matter of right. The bidders / Bidders are required to submit all relevant documents with regard to change of name or/and change of constitution and the circumstances leading to such change beforehand. It shall be the discretion of NIOT to proceed with the contract after such changes and in case, NIOT decides to proceed with the contract, it may require the bidder/Bidder to execute further agreements with regard to execution/ implementation of the contract.

BIDDING CONDITION

5. Deadline for Submission of Bids:

e-Bid must be submitted only at the CPP portal specified in the Invitation for Bids cover page on or before the due date/extended due date thereof. All bidders are advised to take adequate care to plan for bid submission in CPP portal well ahead of closing date and time and avoid any last-minute submission.

6. Due date Extension, Corrigendum to NIT:

Any corrigendum including due date extension for NIT, will be notified in CPP portal of NIOT website. Hence bidders are requested to watch our website for such due date extension and corrigendum if any.

7. In case of the unscheduled holiday in Chennai being declared on the prescribed closing / opening day of the tender, the next working day will be treated as the scheduled prescribed day of closing/opening of the tender.

8. Unsolicited correspondences:

NIOT will not entertain any unsolicited correspondence or queries on the status of offer against this tender.

9. Non-Receipt of Tender:

NIOT will not be responsible for the non-submission/receipt of the tender due to any network problem or technical issues with bidder.

10. Submission of tender by a tenderer

implies that he has read the Notice Inviting Tender and has made himself aware of the scope and specifications of the services/work to be done; local conditions and other factors bearing on the execution of the works.

11. Bid Validity:

Bids shall remain valid and open for acceptance for a minimum period of **90 days** from the date of opening of Techno-commercial Bids.

12. Bid validity extension:

While NIOT will finalize the tender within the bid validity sought as per this NIT, due to circumstances beyond the control of NIOT, prior to expiry of the original Bid validity period; NIOT may request the Bidder for a specified extension of the bid validity without modifying RFP or Price. The request and the responses thereto shall be made in writing. A Bidder agreeing to the request will extend the validity of his Bid and Bid Security (EMD) correspondingly. When bid validity is extended EMD BG also deemed to have been extended automatically for which necessary action would be taken by the bidder to submit the extended BG well before the expiry of the current validity.

13. EMD/Bid security:

The EMD/Bid security is mandatory as indicated in the cover page and should be submitted along with the technical bid for the value indicated in the front page of this tender document. The EMD / Bid Security shall be in the form of a Bank demand draft drawn in favour of "NIOT OTHER RECEIPT ACCOUNT" in INR or in equivalent foreign currency or a guarantee from a public sector bank or foreign bank acceptable to NIOT. The format of the guarantee shall be in accordance with the sample form of Bid Security available at NIOT website. The format can be downloaded from the website <https://www.niot.res.in/index.php/vendor/login>

- a) By Demand Draft/Banker's Cheque drawn in favour of "NIOT OTHER RECEIPT ACCOUNT", NIOT, payable at Chennai (or)
- b) Bank Guarantee as per prescribed format issued by an Indian nationalized bank or indicate in stamp paper of appropriate value and valid for 60 days beyond the validity of the bid. (or)
- c) Insurance Security Bond. (or)
- d) Fixed Deposit Receipt. (or)
- e) Online payment in an acceptable form.

If the EMD (scanned copy of the EMD) is not submitted along with Techno-commercial (Part-I). The bid will be summarily rejected. The original EMD should be submitted (or) reach NIOT on or before closing date the time of the tender.

- f) In case of a successful bidder, fails to furnish order acceptance within 7 days of the order and / or fails to furnish Performance Security.

EMD for a successful Bidder shall be adjusted against performance security payable if submitted in DD / refunded if / performance security is submitted.

14. Signing of bids:

Each page of the tender and tender document shall be digitally signed and uploaded by the bidder in e-procurement Portal.

15. The broad configuration / specification of the proposed purchase / work are given. Bidders are required to keep their proposal strictly as per the scope of work prescribed in this NIT.

16. The compliance sheet

with reference to the specifications should be furnished against each parameter while submitting the quotation, which is absolutely necessary. THE TENDERER SHALL SUBMIT

TECHNICAL & COMMERCIAL COMPLIANCE SHEETS and BOQ (Price bid) separately ALONG WITH THEIR OFFER. TENDERS WITHOUT COMPLIANCE SHEETS WILL NOT BE EVALUATED. The Price bid should be unconditional.

17. Canvassing:

Exerting pressure and/or offering inducement in any form by the bidder or by any other person on behalf of the bidder shall disqualify the bid and lead to its rejection.

18. Commercial compliance

As per NIT commercial compliance shall be furnished along with the bid.

19. Unrealistic bids

With either cost which is impossible to achieve or for bidders who show that they are completely inexperienced or have completely inappropriate equipment will be rejected.

20. Conditional offers:

Conditional offers will not be accepted.

TERMS AND CONDITIONS GOVERNING THE CONTRACT

21. Currency of bids:

a) **Firms outside India:** Quotations should be Delivery at place DAP NIOT, Chennai. (For other conditions please refer Additional Terms & Conditions for Import) with Insurance covered from shipper's warehouse to NIOT warehouse.

22. Price: The price shall include but not limited to

- a. Costs of goods/ services covered in this contract.
- b. Taxes and duties

The Bidder shall indicate on the appropriate price schedule form, the unit prices and total bid prices of the work he proposes under this order/contract strictly as per price bid format of tender.

23. Taxes and duties.

Deduction of Indian Income Tax Deduction at source applicable to foreign bidders :

1. Deductible for all the services rendered for India as per Indian Income Tax Act and Double Taxation Avoidance Agreement between the bidder's Country and the Government of India. The tax deduction at source will be @10.40% as per Income Tax Tariff of India or the rate as contained in the DTAA whichever is less, on production of a copy of the Tax Residency Certificate or Tax Identification Number. In case the Tax Residency Certificate or Tax Identification Number is not furnished, the Tax Deduction at source will be @20.8% as per Indian Income Tax Act. However, the applicable taxes at the time of actual utilization of service etc. will be deducted.

2. Service Portion – Deduction of Indian Income tax Deduction at Source:

Without Permanent Account Number (PAN) & Tax Residency Certificate (TRC) tax deduction at source will be @25.75% for foreign bidders @20% for Indian bidders and with PAN & Tax Residency Certificate (TRC) tax deducted at source will be as per DTAA

rate. However, the applicable taxes of the time of actual utilization of service etc. will be deducted. TDS shall be deducted for services rendered within India and also outside India. It is mandatory to submit Tax Residency Certificate (TRC) and PAN details to deduct TDS as per DTAA rate applicable for your country. In the absence of the above, TDS will be deducted as per Sect.115A(b) of the Income Tax Act, 1961 @25.75%.

24.Default in Performance: If any Vendor is not successfully discharging their contractual obligations against the order/contract placed on them by NIOT within the agreed time limit, (OR) if there is any deficiency in performing such obligations, NIOT reserves the right to suspend such Vendor from their participation in future tenders of NIOT for a minimum period of one year. Even after revoking the suspension period the Vendor's performances till continues to be the same without any improvement, NIOT reserves right to BAN such Vendor permanently from participation in all the tenders of NIOT and organizations of MOES.

25.Guaranteed time of delivery:

The time of delivery including testing and handing over in satisfactory condition is the essence of contract. Testing to be completed **within 26 Weeks** from the date of signing of contract.

26. Extension of delivery period:

If the completion of systems / components is delayed for reasons of force majeure such as acts of God, Acts of Public enemy, acts of Government, fires, floods, epidemics, quarantine restrictions, illegal strikes and freight embargoes, the Bidder shall within 3 days from the date of such occurrence, give notice to NIOT in writing of his claim for extension of delivery period. NIOT on receipt of such notice may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract. Unless the extended delivery period is agreed by NIOT in writing, Bidder cannot claim the extension of delivery time as a matter of right. NIOT shall have the right to either cancel/extend the order validity/ levy LD as appropriate.

27. Insurance:

The Goods supplied under the Contract shall be fully insured against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the NIT. If any such damage occurred the goods shall be replaced within the contract price immediately without waiting for the insurance claim. The insurance shall be the scope of the bidder.

28. Force Majeure:

For purposes of this Clause, "Force Majeure" means an event beyond the control of the Bidder and not involving the Bidder's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of NIOT either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes. If a Force Majeure situation arises, the Bidder shall promptly notify NIOT in writing of such conditions and the cause thereof. Unless otherwise directed by NIOT in writing, the Bidder shall continue to perform its obligations under

the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

29. Discounts:

Bidders are advised not to indicate separate discounts. Discounts, if any, should be merged in the rates against the quoted items.

30. Performance Security:

The successful bidders shall deposit 5% of the order value as Performance Security within two weeks from the date of issue of order. The performance security shall be in one of the following forms:

1. By Demand Draft/Banker's Cheque drawn in favour of "Director, NIOT" payable at Chennai (or)
2. Bank Guarantee as per prescribed format issued by a nationalized bank and valid for 60 days beyond the scheduled delivery/completion period as per order. (or)
3. Insurance Security Bond. (or)
4. Fixed Deposit Receipt. (or)
5. Online payment in an acceptable form.

This format can be downloaded from the link <https://www.niot.res.in/index.php/vendor/login>. Performance security shall be forfeited in the event of breach of order by the Bidder in terms of the order. If Performance Security is not paid within the specified time, NIOT reserves its right to cancel the order and EMD will be forfeited.

31. Currency of the bid:

Currency once quoted will not be allowed to change.

32. Forex fluctuation:

Since bidders are permitted to quote in any currency and also receive payments in that currency, NIOT shall not compensate for any foreign exchange fluctuations. Also, there will be no loading of foreign exchange for deciding the inter-se- ranking of bidders in this tender.

33. Bank charges:

All Bank charges inside India to NIOT account and all Bank charges outside India to Bidder account.

34. Payment:

NO ADVANCE PAYMENT WILL BE CONSIDERED. Payment will be made through Irrevocable Letter of Credit at sight within 30days to be opened through our Banker as per the following milestone payment terms.:

Stage I: 30% upon DNV approval and updated design approval against 100% Advance Bank Guarantee

Stage II: 20% of Euro upon DNV approval manufacturing Modification design and analysis. Against 100% Advance Bank Guarantee

Stage III:15% upon completion of FAT (Factory Acceptance Test) SI.No 1&2 ABG's will be released

stageIV:35% upon Supply and acceptance of Syntactic Foam at EX Works.

35. Limitation of Liability:

Notwithstanding anything contained herein, SERVICE PROVIDER shall not be liable for any indirect, exemplary, special, punitive, consequential or incidental loss, damage, claims, liabilities, charges, costs, expense or injury (including, without limitation, loss of use, data, revenue, profits, business and for any claims of any third party claiming through SERVICE PROVIDER) that may arise out of or result from this Agreement and the aggregate liability of SERVICE PROVIDER, under this Agreement, shall not exceed the fees (excluding reimbursements) received by it under this Agreement during the six months preceding the date of such claim.

36. Termination:

a) The contract shall become effective from the date of signing of contract and the contract shall automatically get terminated after successful completion of all contract obligation as per the terms of the contract.

b) (i) Termination of the contract due to breach of contract by the contractor

(ii) Termination of contract due to default,

(iii) Termination of the contract due to insolvency,

(iv) Termination of the contract for convenience.

If the termination of the contract happens due to the above factors, [(i), (ii) &(iv)] initially the written notice will be issued within 30 days to settle the issue on mutually agreed terms with mutual consent.

37. INDEMNITIES:

The contractor hereby agrees to indemnify and hold harmless NIOT and its Director, officers and employees, from and against any and all suits, losses, liabilities, damages, claims, settlements, costs and expenses, including reasonable attorneys' fees, based on or arising, directly or indirectly, from:

i. Breach of this Agreement by the Contractor.

ii. Not performing the Scope of Work or any other obligation under this Agreement or Tender in accordance with the provisions and schedules of this Agreement or the Tender

iii. Violation or contravention of any Legislation on the part of the Contractor.

iv. Any negligence or wilful misconduct of Contractor, which violates any provision of this Agreement

v. Infringement of any intellectual property belonging to any third party by the Contractor

vi. Any breach of an agreement or understanding between Contractor and any and all Third Parties due to which a liability arises on NIOT.

vii. Any claim that any representations or warranties contained herein are not true or Any breach thereof

viii. Any loss or damage caused by the Contractor to NIOT, its personnel or property

ix. Any loss or damage caused by the Contractor to any and all Third Parties for which a claim against NIOT has arisen

- x. Breach, expiry, cancellation, revocation or invalidity of any and all licenses, permits, authorizations and registrations which the Contractor is required to obtain, keep valid and comply with under any legislation in order to perform its obligations hereunder
- xi. Any obligation of the Contractor performed by NIOT under this Agreement or under any Legislation.

38. Arbitration/Disputes:

In the event of any dispute, difference, interpretation or application relating to this agreement arises, the same shall be settled amicably by the parties. In case the dispute or differences could not be settled amicably, the same shall be referred for adjudication through Arbitration by an Arbitrator to be appointed by the Director, NIOT. The Indian Arbitration shall be concluded in accordance with the provisions of Arbitration & Conciliation Act, 1996 or any statutory modifications or reenactment thereof and the rules made there under and for the time being in force shall apply to the arbitration proceedings. Venue of such arbitration shall be at Chennai in India. The language of arbitration proceedings shall be English. The Arbitration shall make a reasoned award (the "award"), which shall be final and binding on the parties. The cost of the arbitration shall be shared equally by the parties to the contract. However, expenses incurred by each party in connection with the preparation, presentation etc., shall be borne by each party.

39. Confidentiality:

Neither party shall, without the prior written approval of the other party, disclose the other party's designated confidential information. These obligations shall survive the early termination or expiration of this Agreement, for a period of one year.

40. PENALTY:

Any delay in conducting the works (as per the scope of work) due to breakdown or in general condition beyond 15 days at a stretch, a penalty at 0.5% per week of the invoice value to the maximum of 5% shall be charged and recovered from the payable amount.

Section I

Commercial Terms Compliance sheet (To be filled by bidder)

Sl. No	Particulars	Yes	No	Page Ref
1	Whether EMD for USD10952/- scanned and uploaded along with the technical document?			
2	Whether every page of the tender document is digitally signed and uploaded in the CPP portal along with the other documents.			
3	Whether Taxes and duties are shown separately in the quote. (Registration numbers for claiming the same to be strictly indicated and the copy of the certificates enclosed)			
4	Whether accepted to submit the LOI acceptance within 15 days from the date of receipt of the LOI?			
5	Whether submission of 5% of the contract value as Performance Security is acceptable?			
6	Whether quote is valid for 90 days from the date of tender opening or time specified in the tender document whichever is later?			
7	Whether payment terms of the tender is complied with?			
8	Whether the tender is fully complying with tender specification Adjustment if no, list out deviations very clearly along with the appropriate reason for the deviation?			
9	Whether item-wise price is quoted as per price bid and quoted price is realistic?			
10	Whether Penalty as specified in the NIT accepted unconditionally?			
11	Whether the work completion period is acceptable as per the tender.			
12	Whether OEM authorisation is complied with?			
13	Bidder is responsible for all performance benchmarks and the quote should contain an undertaking certifying the same.			

Section II Technical Compliance sheet

Technical Compliance Sheet				
SI No	Item Name	Specification	Description	Yes/No
1.	ALL	Redesigning of the syntactic foam blocks for final testing.	Redesigning of the syntactic foam blocks given in the drawings as per Annexure-VIII for final testing.	
2.	ALL	Manufacturing modification with new machining, finishing and titanium inserts / plates.	Manufacturing modification with new machining, finishing and titanium inserts / plates.	
3.	ALL	Density of syntactic foam	< 540 ± 32 kg/m ³ .	
4.	ALL	Testing of the finished final syntactic foam blocks [Qualification tests & real external pressure test] to DNV standards at NUI, Norway.	Testing of the finished final syntactic foam blocks [Qualification tests & real external pressure test] at ≥700 bar in < 6 degree Celsius to DNV standards at NUI, Norway.	
5.	ALL	Crush Pressure	> 88 MPa at low temperature.	
6.	ALL	Water Absorption	< 3% @6000m water depth.	
7.	ALL	Product certification	DNV.	
8.	ALL	Approved quality assurance plan / equivalent procedure	Syntactic foam manufacturing compliance based on DNV and NIOT approved quality assurance plan / equivalent procedure.	
9.	ALL	Syntactic foam tests	List of syntactic foam tests as per DNV rules. Ease of cutting, drilling and machining without affecting its performance.	

Section III scope of Work

To accommodate the final syntactic foam blocks in a suitable hyperbaric chamber, following activities are necessitated for the syntactic foam:

- Redesigning of the syntactic foam blocks given in the drawings for final testing.
- Testing of the syntactic Foam final blocks at ≥ 700 bar.
- Manufacturing modification with new machining, finishing and titanium inserts / plates.
- Additional Qualification tests & real External Pressure test on finished syntactic foam blocks as per DNV standard.

Section IV Price Bid format

Price Bid Format					
S.No.	Item Name	UoM	Qty	Unit Rate	Total price
1.	•Charges for Redesigning of final syntactic foam blocks.	Lumpsum	01		
2.	•Manufacturing modification (new machining, finishing and titanium inserts / plates) of final syntactic foam blocks in the pressure tank of NUI, Norway to perform real external pressure test according to DNV Standards.	Lumpsum	01		
3.	Qualification tests & real external pressure test, charges on finished syntactic foam blocks according to DNV Standards at NUI, Norway.	Lumpsum	01		
	TOTAL				

Annexure to NIT

Technical Specification and Special Conditions of Contract (SCC) for Testing of Syntactic Foam for MATSYA6000

Contents

1. Introduction.....	3
2. Scope of Work.....	4
3. Technical requirement.....	14
Description of syntactic foam Testing requirements.....	14
Quality standards.....	14
Certification and classification.....	14
Documents to be supplied.....	14
Technical Compliance sheet.....	15
4. Indicative realization plan.....	15
5. Acceptance criteria.....	15
6. Contractual obligations.....	15
7. General information to successful bidder.....	16
8. Price bid Format.....	16
Price Bid Format.....	16

Testing of Syntactic Foam for MATSYA6000

1. Introduction

- a) National Institute of Ocean Technology (NIOT) is an autonomous institute under Ministry of Earth Sciences (MoES), Government of India involved in development of reliable indigenous technologies to solve various engineering problems associated with exploration of living and non-living resources in Indian Ocean region.
- b) NIOT had demonstrated deep water work class ROV (ROSUB 6000) and In-situ soil tester for 6000 m operational capability and involved in development of integrated underwater mining system for Poly-metallic nodule mining for 6000 m water depth through its pool of trained manpower.
- c) NIOT has also developed technologies in the niche areas viz Low Temperature Thermal Desalination (LTTD) Plant for islands and demonstrated 1 MLD barge mounted LTTD plant in open ocean, Ocean Data Buoys and Tsunami- for ocean and atmospheric data collection, Drifters and AUPD profiling floats, buried object detection systems, ocean noise measurement, Acoustic Tide Gauges installation in major ports of India and abroad, coastal protection measures and marine biotechnology related activities useful for coastal communities.
- d) Besides, NIOT-MoES is equipped with a fleet of vessels which include deep water vessels namely ORV Sagar Nidhi, ORV Sagar Manjusha as well as coastal research vessels.

As a part of the program envisaged by Ministry of Earth Sciences, Government of India, NIOT is interested in realizing syntactic foam for 6000m depth rated human occupied submersible. This human occupied submersible namely MATSYA6000 is manned submersible to be used for the following applications.

1. Carrying-out exploration for Deep Ocean mineral and energy resources.
2. Support scientific investigation and sampling from deep ocean basins.
3. Provide engineering support for developmental projects in deep waters.
4. Search and recovery operations.

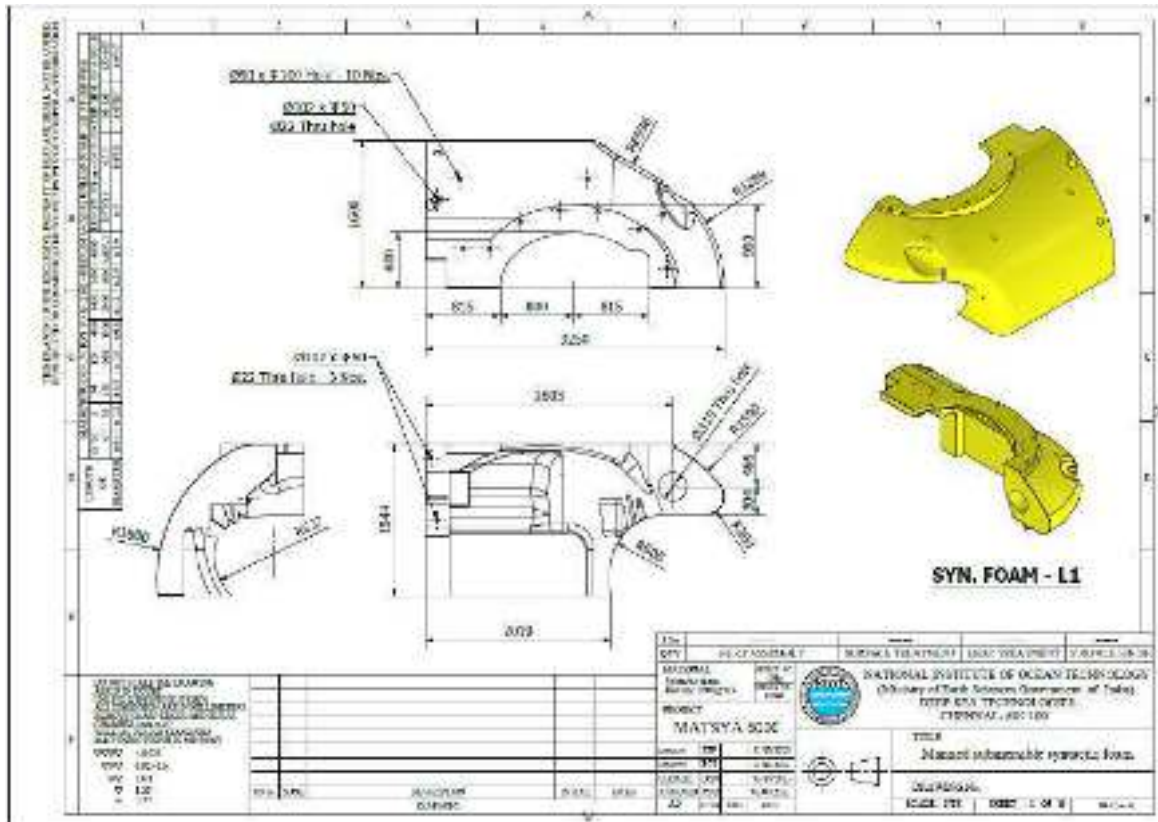
In this regard, the technical specifications for testing of syntactic foam for deepwater Manned Submersible is enumerated below.

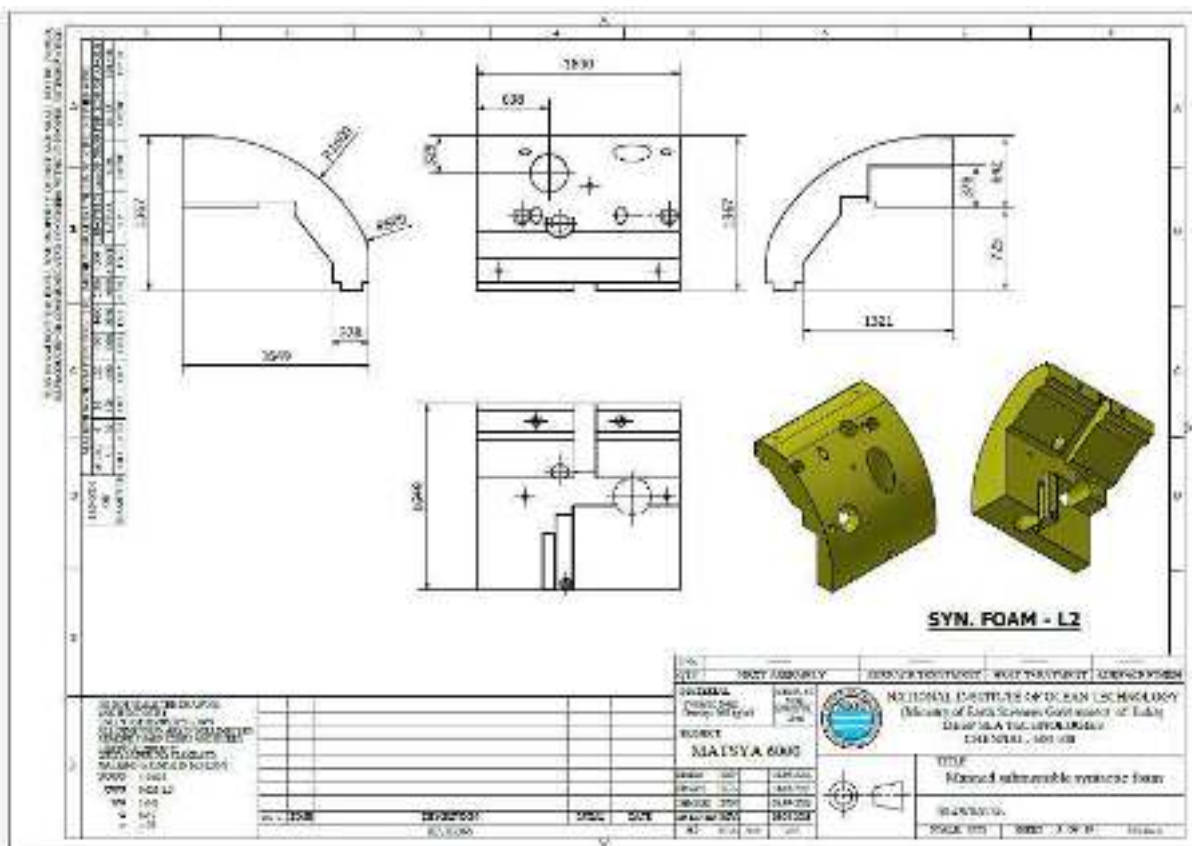
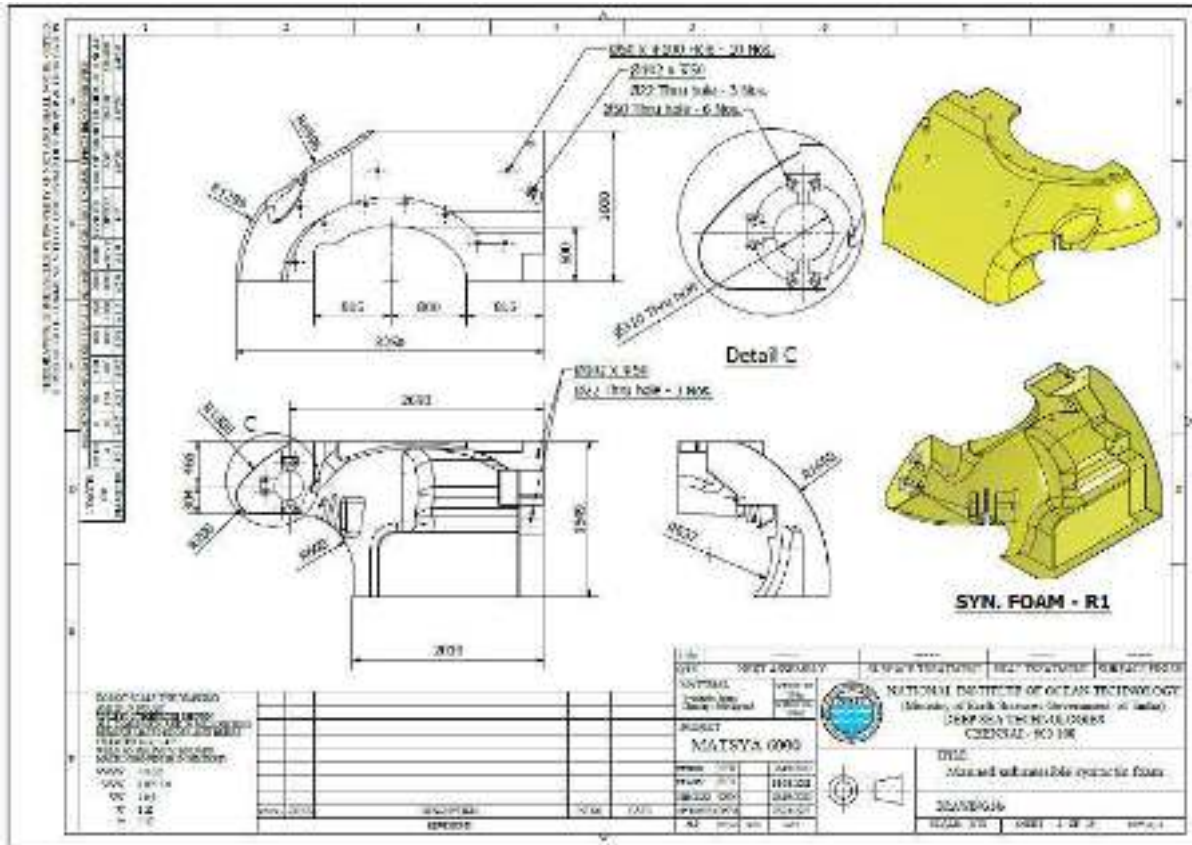
2. Scope of Work:

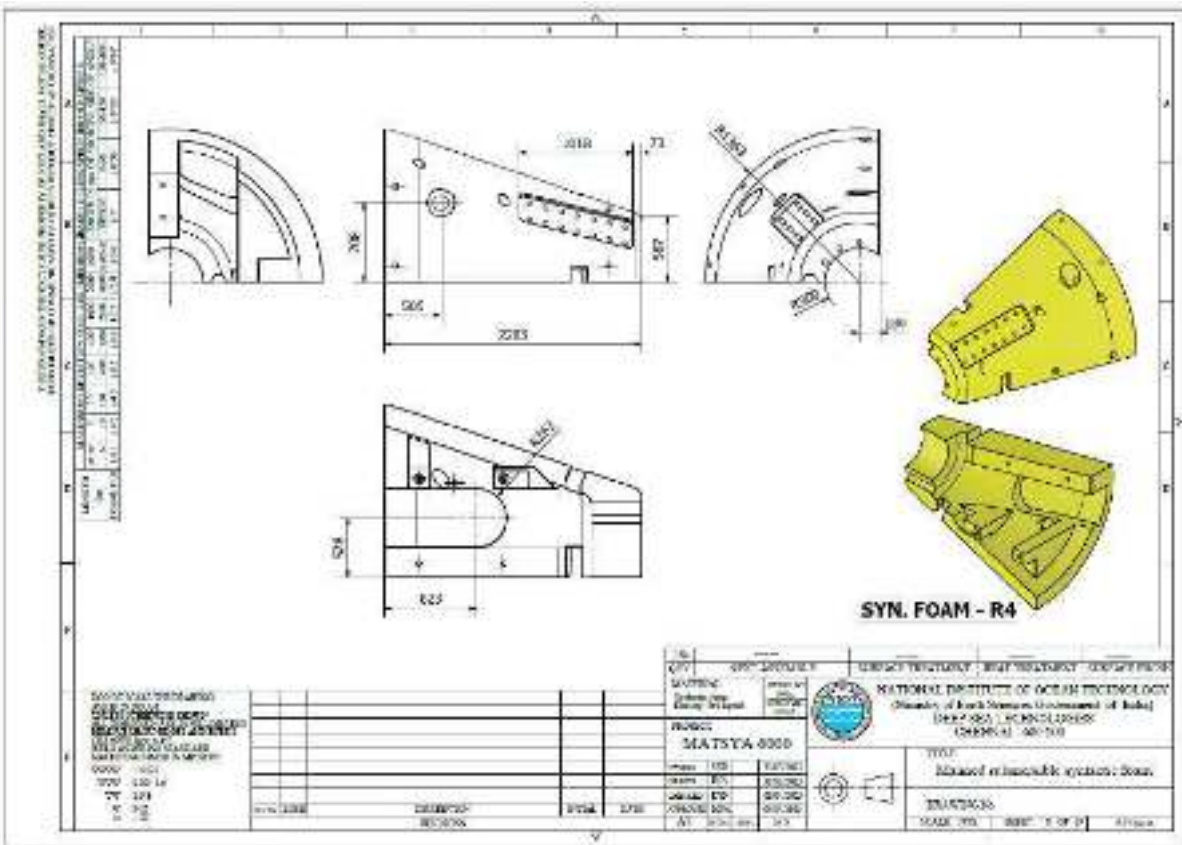
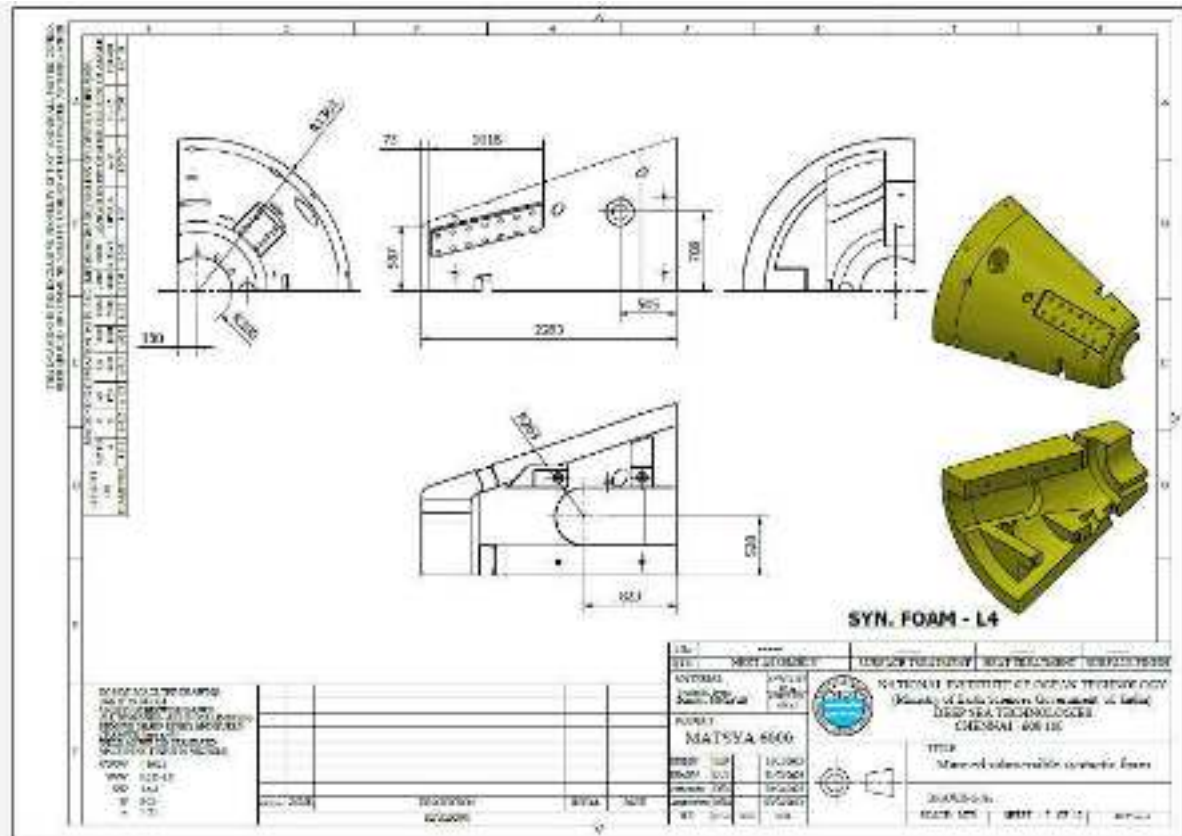
To accommodate the final syntactic foam blocks in a suitable hyperbaric chamber, following activities to be carried out for the syntactic foam:

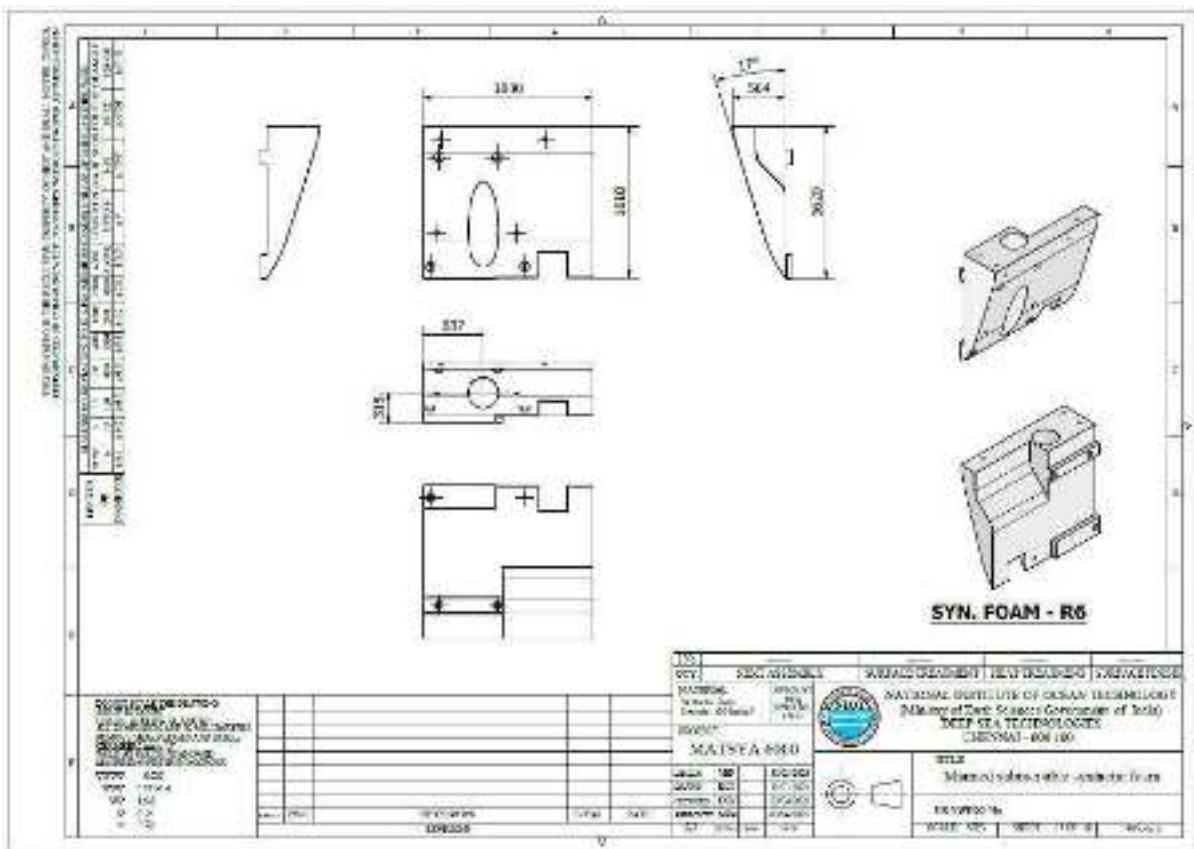
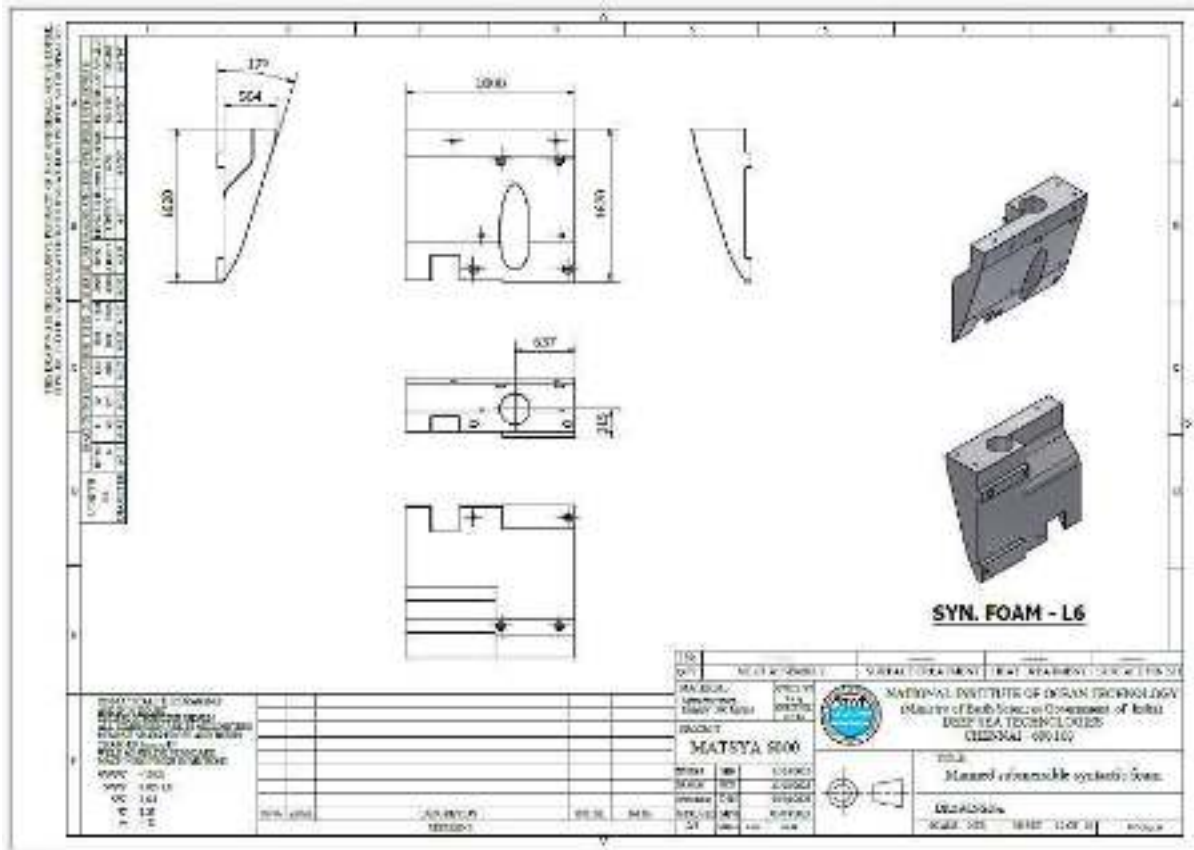
- Redesigning of the syntactic foam blocks given in the drawings for final testing.
- Testing of the syntactic Foam final blocks at ≥ 700 bar.
- Manufacturing modification with new machining, finishing and titanium inserts / plates.
- Additional Qualification tests & real External Pressure test on finished syntactic foam blocks as per DNV standard.
- Drawings of Syntactic foam blocks is attached as **Annexure-A**.

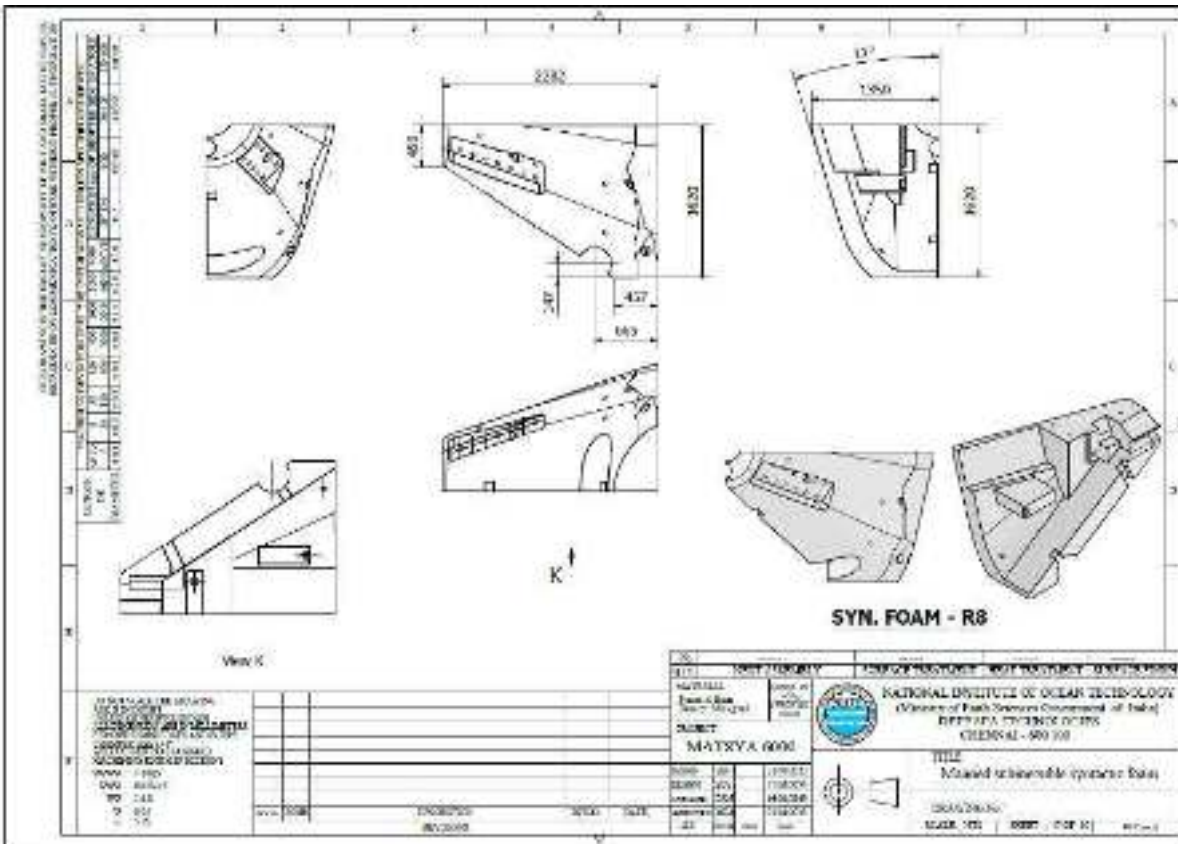
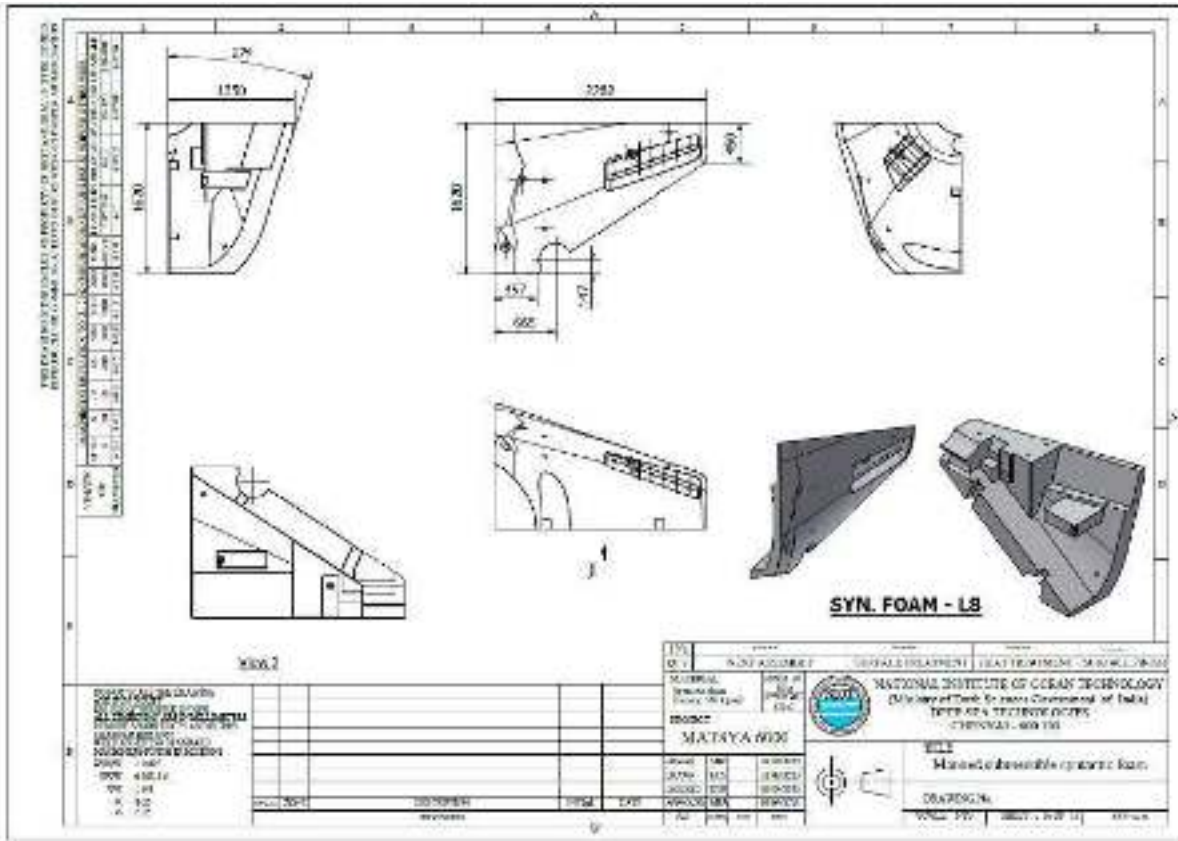
SYNTACTIC FOAM BLOCKS-DRAWINGS

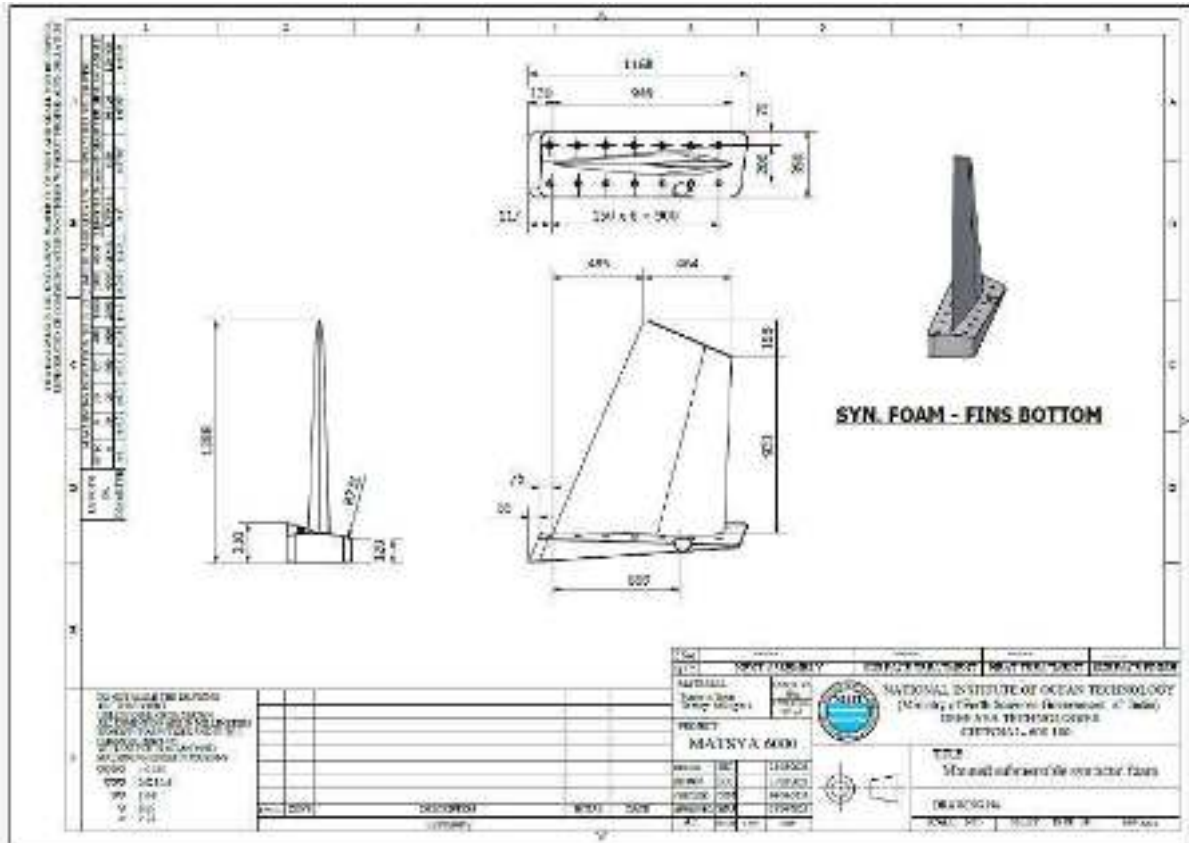










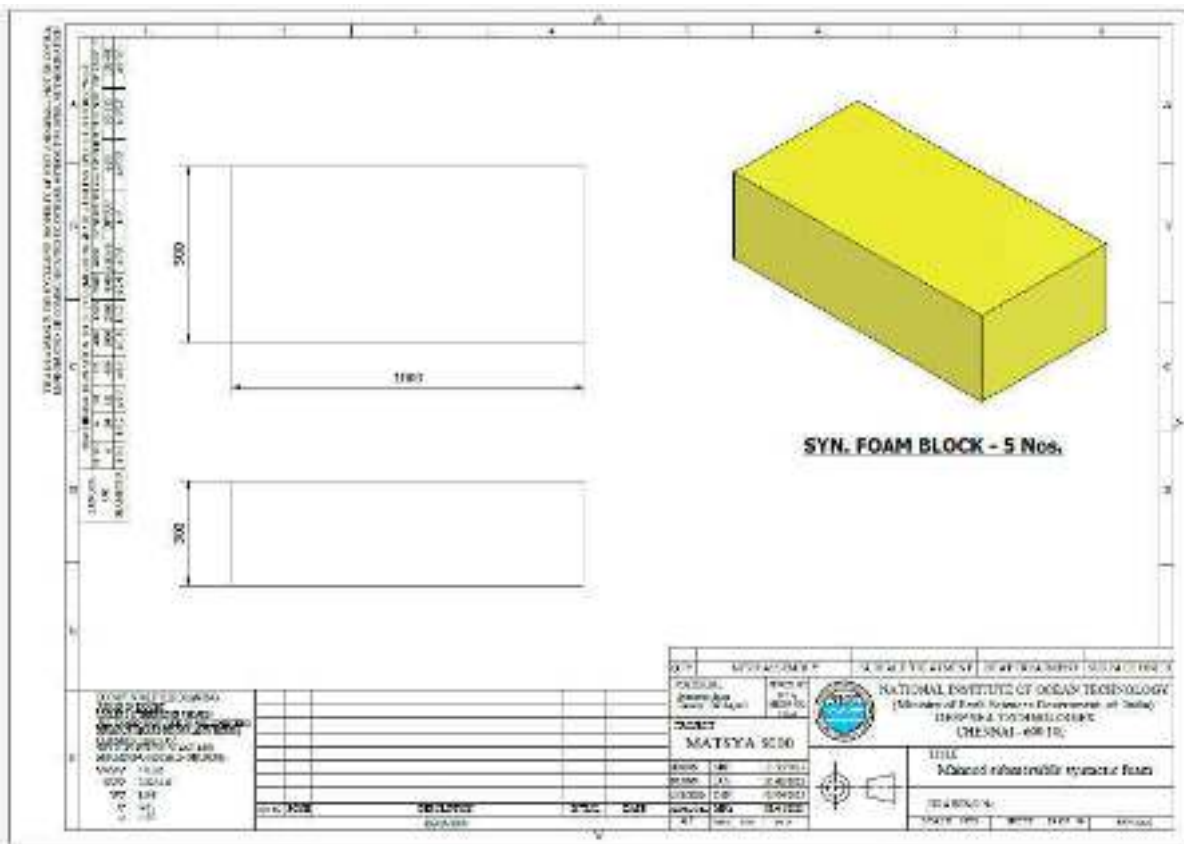


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 NATIONAL INSTITUTE OF OCEAN TECHNOLOGY.

NO.	REV.	DATE	DESCRIPTION

DATE					

NATIONAL INSTITUTE OF OCEAN TECHNOLOGY (Ministry of Earth System & Environment, Govt. of India) 605016 KANNIYAKUMARI CAMPUS CHENNAI - 605 006	PROJECT MATSYA 6000	TITLE Manual reference file for the fins
DRAWING NO. DATE SCALE	SHEET NO. OF	PROJECT NO. DATE



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3. Technical requirement:

Syntactic Foam Testing Requirements:

1. DNV (July 2019) rules for Underwater Technology, shall be followed.
2. The external pressure test on finished blocks must be carried out in compliance with DNV rules. The tests to be conducted in the presence of NIOT and DNV class surveyor.
3. Buoyancy gain/loss given by the syntactic foam will be tested excluding the metal inserts
4. Pressure test report highlighting all the test data shall be made by OEM and presented to NIOT.

Certification Requirements:

Object	Certificate type	Issued by	Certification standard*	Additional description
syntactic foam	VL /TA	Society		<ul style="list-style-type: none"> – density (e.g. according to EN ISO 845) – tensile strength – uniaxial compressive strength (e.g. according to ASTM D695-15) – buoyancy variation in regard to nominal diving pressure – seawater intake (e.g. according to ASTM D2735) – hydrostatic crush pressure. <p>The tests shall be made with different specimen of different fabrication batches to be applied for the actual submarine project.</p>

Quality standards:

All stage inspection and approvals are as per DNV approved quality assurance plan / inspection test plan / equivalent procedure. Classification society (DNV) needs to approve all stages of testing of the product. Hence, successful bidder should follow DNV certified quality for testing of the product.

Certification and classification:

Certification and classification shall be as per latest class documents of DNV Rules for Classification (July 2019). Any deviation from the class requirements is to be addressed to classification society and NIOT with necessary documentation and will be permitted only after obtained written approval from the classification society and NIOT.

Documents to be supplied:

1. Testing procedure and reports at each stage as per the realization plan in accordance with DNV Rules for Classification, Underwater Technology (July 2019) must be submitted.
2. Class approved drawings and documents along with relevant certificates.

Technical Compliance Sheet:

Technical Compliance Sheet			
SI No	Item Name	Specification	Description
1.	ALL	Redesigning of the syntactic foam blocks for final testing.	Redesigning of the syntactic foam blocks given in the drawings as per Annexure-VIII for final testing.
2.	ALL	Manufacturing modification with new machining, finishing and titanium inserts / plates.	Manufacturing modification with new machining, finishing and titanium inserts / plates.
3.	ALL	Density of syntactic foam	< 540 ± 32 kg/m ³ .
4.	ALL	Testing of the finished final syntactic foam blocks [Qualification tests & real external pressure test] to DNV standards at NUI, Norway.	Testing of the finished final syntactic foam blocks [Qualification tests & real external pressure test] at ≥700 bar in < 6 degree Celsius to DNV standards at NUI, Norway.
5.	ALL	Crush Pressure	> 88 MPa at low temperature.
6.	ALL	Water Absorption	< 3% @6000m water depth.
7.	ALL	Product certification	DNV.
8.	ALL	Approved quality assurance plan / equivalent procedure	Syntactic foam manufacturing compliance based on DNV and NIOT approved quality assurance plan / equivalent procedure.
9.	ALL	Syntactic foam tests	List of syntactic foam tests as per DNV rules. Ease of cutting, drilling and machining without affecting its performance.

4. Indicative realization plan

Successful bidder shall submit an indicative project execution plan covering the following but not limited to

1. External pressure test as per the DNV rules.
2. Submission of test reports to DNV for certification and classification.
3. Delivery of syntactic foam blocks to National Institute of Ocean Technology, Chennai, India.

5. Acceptance criteria

- DNV Class certification criteria for manned operations for testing and supply of syntactic foams at NIOT.

6. Contractual obligations

1. An agreement detailing all the aspects of the project, responsibilities, scope of work, administrative procedures, schedule and commercial aspects of the projects shall be effected between NIOT and selected supplier before embarking on the execution part of it.
2. It is the full responsibility of the supplier to test and supply of syntactic foam as per the requirement for the intended purpose within the stipulated time period.

7. General information to successful bidder

1. All documents along with drawings if any., to be submitted to owner (NIOT) for sending to class approval for information / review.
2. On receipt of the confirmed order, tentative execution plan along with schedule to be made and submitted to NIOT in one month time.
3. OEM shall submit detailed weekly progress report on weekly basis along with drawings / reports / photos during inspection / testing.
4. Delivery site: National Institute of Ocean Technology, Pallikaranai, Chennai, India.
5. DNV charges towards testing of syntactic foam: Drawing / reports review and approval, inspection visits, product approval and travel/ accommodation etc., shall be paid by NIOT directly to DNV. However, cost towards arranging/conducting tests and preparing reports as per approved ITP/QAP in order to comply DNV rules shall be included in the cost quoted against S. No: 2 of price bid.

8. Price bid Format

Price Bid Format					
S.No.	Item Name	UoM	Qty	Unit Rate	Total price
1.	Charges for Redesigning of final syntactic foam blocks.	Lump sum	01		
2.	Manufacturing modification (new machining, finishing and titanium inserts / plates) of final syntactic foam blocks in the pressure tank of NUI, Norway to perform real external pressure test according to DNV Standards.	Lump sum	01		
3.	Qualification tests & real external pressure test, charges on finished syntactic foam blocks according to DNV Standards at NUI, Norway.	Lump sum	01		
	TOTAL				
