

Bayu-Undan & DLNG Export

Packing & Marking Logistics

Procedure

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Revision History

Rev	Date	Description	Author Name & Signature	Reviewer Name & Signature	Approval Name & Signature
0 -1	1998-2000	Developed and used for the Bayu-Undan Project Phase	TIGA – Temay et al	TIGA	Client
2	13/09/06	Revised for Operations	P. Rogers	S. Thring	P. Rogers
3	28/03/14	Significant reformat and rewrite to update business processes, lessons learned and incorporate DLNG & Drilling. Also converted to Supply Chain document	P. Rogers/B. Rankine	Refer DCAF #3040	M. Zimmermann

ALL/DRM/TEM/002

Table of Contents

1.0	SCOPE	3
2.0	RELATED COMPANY SPECIFICATIONS.....	3
3.0	NATIONAL/INTERNATIONAL CODES & STANDARDS	3
4.0	CRITICAL SAFETY REQUIREMENTS FOR PACKAGING	3
5.0	GENERAL REQUIREMENTS.....	5
6.0	SPECIFIC REQUIREMENTS FOR PACKAGING TYPES	7
7.0	SPECIFIC REQUIREMENTS FOR COMMODITY/EQUIPMENT TYPES.....	8

1.0 SCOPE

This Procedure defines the export packing and marking requirements for equipment and materials intended for delivery to the Company Bayu-Undan, the Darwin LNG Facilities, for onshore/offshore drilling activities and all associated warehouses. This Procedure defines minimum standards and does not relieve the Supplier of its responsibility to adequately protect the equipment packed for export in accordance with the Contract or Purchase Order Specifications and Terms and Conditions.

Specific technical requirements for packaging may also be included in the technical specifications that form part of the Contract or Purchase Order. The requirements in those technical specifications will take precedence over this Procedure and this Procedure is to be read as a minimum requirement.

This Procedure is not intended to define packing requirements for long-term storage/preservation at any Company facilities / warehouses or Supplier or Third-Party facility. If Company requires packaging/preservation systems suitable for long term storage these would form a specific part of the Contract or Purchase Order requirements. In those cases, requirements for detailed long-term storage and preservation of materials would be issued separately.

Requirements for shipping documentation do not form part of this Procedure and reference should be made to the specific Contract or Purchase Order and/or the Company Logistics Specification “Shipping Documentation Requirements”.

This Procedure applies equally to equipment and materials for domestic shipments and for shipments from overseas.

2.0 RELATED COMPANY SPECIFICATIONS

- “Shipping Documentation Requirements” (ALL/SUP/LOG/WKI/2000)
- Facility specific documents - *Note for vendors – refer clause 4.1 second para. for the applicability of these documents.*
 - Bayu-Undan (offshore) - “Site Conditions, Climate and Utility Data for Topside Equipment” (H8-GEN-00-010-S01-0100)
 - DLNG & Supply Base (onshore) – “Complex Site Data” (N8-1-00-000-S01-2000 – Part2) t

3.0 NATIONAL/INTERNATIONAL CODES & STANDARDS

- International Maritime Dangerous Goods Code (IMDG)
- International Air Transport Association (IATA) Dangerous Goods Regulations (IATA DGR)
- Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

4.0 CRITICAL SAFETY REQUIREMENTS FOR PACKAGING

Company has recognised the ongoing risk to personal safety and protection of assets through dropped objects, hand or leg injuries through pinch points, uncontrolled pressure release and leakages to the environment that can occur as the result of transport/handling of goods and materials. The hazards creating the risks may be inherent through poor design, poor marking, incorrect construction/assembly and/or damage to the packaging (beyond its reasonable design criteria) during transport. To assist in mitigating these risks the following is required (as applicable) to be considered by the Supplier in selecting packaging:

4.1 Identification of Package Mass

- Accurate identification of the weight of a package by clear legible marking is required.
- Gross and net weights marked on packages shall be expressed in kilograms.

4.2 Stability (Centre of Gravity) of Packaging

- Containers, boxes, and pallets etc. shall be designed to be and packed in such a way to maintain the centre of gravity as uniform and low as possible.
- Large items (>15kg) with unusual centre of gravity because of overall geometric shape or because of the varying mass of attachments (e.g. odd shaped pipe spools, certain valves and other mechanical equipment) shall be supported on purpose built cradles/bolsters that maintain the item in a stable position even when any restraint devices used to hold the package, pallet or container are removed.
- The package shall indicate the Centre of Gravity point (as applicable). If the item/s can move suddenly when strapping or other restraints are cut during unpacking then markings shall be clearly shown on a minimum of 2 sides of the package warning of this danger.
- Items within packaging and combinations of packages in larger containers, pallets etc. shall be effectively secured to avoid either gross movement or internal movement of items which would cause changes in the centre of gravity that may not be detectable from outside the packing.

4.3 Securing Packages/Containers

- Adequate and proven systems of securing items within packages and on pallets shall be used.

4.4 Lifting/handling of packaging

- Recommended or required lifting points and method shall be clearly shown by painted markings or similar on all equipment. Use of international symbols/icons is recommended.
- Special lifting devices such as spreader bars, shackles, lifting eyes, slings, and all special shipping containers and cradles supplied by a Supplier shall be described in full in the packaging proposal made to Company. Company will require certification of design and testing of any such devices or lifting equipment prior to lifting within Company controlled or contracted warehouses or facilities.
- Some lifting devices may be required to remain attached to the equipment until installed at the final destination. During land and sea transportation these items shall remain secured until such time that the lifting devices are used. Items such as spreader bars are to be secured for transport and may not be attached to the equipment until required.
- Where specified in a Contract or Purchase Order, the lifting points, lifting gear/equipment for moving packaged equipment or removing equipment from its packaging shall be designed as per Company requirements.

4.5 Dangerous Goods

- Packages or containers containing chemicals, flammable liquids, chemicals and other defined dangerous goods shall be packaged and segregated in accordance with the applicable International and/or the Australian code for transport of dangerous goods (i.e. IMDG, IATA DGR, ADG).

4.6 Pressurised (or Potentially Pressurised) Equipment

- Packages or containers containing pressurised items (excluding normally pressurised gases covered by dangerous goods requirements) shall be identified by marking and attached shipping documentation shall provide a summary of the type of pressurised items and any hazards associated with it during normal handling or in the event of accidental damage to the packing.
- Sufficient air space shall be provided in liquid filled containers to provide space for expansion and minimise head pressure and to withstand exposure to extreme heat (55°C).

4.7 Position Critical Items

- Packages containing articles required to rest in an upright position shall be marked with red arrows applied on diagonally opposite corners of the shipping container pointing to the top of the package. If it is **critical for the load to remain upright, the box shall be equipped with lift handles, skids, tip peaks or cables**, or some similar device to ensure the box will be stowed and handled in an upright position.

5.0 GENERAL REQUIREMENTS

5.1 Submission of Supplier's Procedures for Review/Approval

Suppliers shall submit their proposed standard packing and preservation procedures for Company review and approval. The submitted procedures shall be mindful of both this Procedure and any other requirements for packaging/preservation stated in other specifications included with the requisition.

Where applicable, the Supplier shall indicate in the tender/bid submission if the packaging complies with an International/National standard or is a non-standard Supplier packaging method. Proposed non-standard packaging and crating shall be reviewed by Company and approved prior to assembly of packaging, with the review to include proposed marking, lifting point's etc. Any information on verification testing on non-standard packaging performed by the Supplier should be provided to assist in determining fitness for the intended use. Similarly, any information on limitations of packaging and preservation should be provided e.g. "not suitable for long term exposure to UV and outdoor conditions", "limited life of packaging if stored continuously at high temperatures (above 40degC) and/or high humidity", "moisture control materials within packaging need to be replaced after 12 months". The expected climatic conditions for the locations where the packaged goods/equipment will be delivered and stored, both onshore and offshore, may be provided to the Supplier in individual Company requisition documentation such as equipment engineering data sheets or Company specifications (such as "Site Conditions, Climate and Utility Data for Topside Equipment"). Where not provided in Company Contract/PO requisitions the Supplier may request further information directly from Company before proposing a packaging method.

Material used for packaging including packing, wrapping, sealers, moisture resistant barriers and corrosion preventatives shall be recognised brands and grades and shall conform to the applicable international standards. There shall be no defects, imperfections, or omissions which would tend to impair the protection afforded by the package as a whole. All metals subject to corrosion shall be treated with a rust preventative suitable for the purpose intended (subject to Company's approval). Any materials used for packaging and/or preservation that may be a health hazard in normal handling or require special care during waste disposal are to be highlighted in the packaging proposal submission.

5.2 Consignment Requirements

- All Contract or Purchase Orders shall be shipped complete in one shipment, unless stipulated to the contrary in the Contract or Purchase Order or instructed by Company.
- Only items covered by one Contract or Purchase Order shall be packed in a box. Several cartons of the same item or different items on the same Contract or Purchase Order can be export crated or boxed together, as long as this is clearly shown on the box or crate stencil and packing list.
- Dry cargo shipping containers shall be used whenever possible to reduce volume and speed cargo unloading at all points.
- Bundled and strapped items shall be segregated to length and size and bundled into units not to exceed 1000kg.

5.3 Markings

The following shall apply as a minimum to all export markings (but may be further extended in the Contract or Purchase Order instructions to the Supplier) –

- All markings must be in English.
- Gross and net weights marked on packages shall be expressed in kilograms.

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- All crates/boxes/drums/packages containing dangerous goods shall be marked clearly on the outside with the relevant code/legislated details (UN No, IMCO/IMDG Class, Packaging Group etc.) and the relevant “Material Safety Data Sheets” (MSDS) must accompany the goods. These markings shall comply with the international requirements for air and marine transport and regional requirements for road transport (as applicable to the modes of transport) and the further Contract or Purchase Order instructions and specifications (if applicable). The Supplier should seek further advice from their freight forwarder, the ground and/or air carrier and/or the local regulator for transport of dangerous goods if unsure about compliance of packaging or markings.
 - The “Equipment Tag Numbers” or “Work Order Numbers” (if applicable and specified in the Contract or PO) must be marked on the outside of all cases, for ease of identification on site. Also where applicable, the Supplier’s part/identification number shall be marked for cross checking.
 - The Supplier must mark on or securely attach as applicable –
 - Any special handling and/or storage instructions
 - List of oils, greases & corrosion preventatives used to protect the equipment, with details of type, Supplier, application and method of removal and any disposal requirements.
 - Markings shall be stencilled with waterproof ink in clear legible characters on top and two opposite sides of the package, with a minimum character size of 20mm. Where applicable, markings shall be coated with protective material (varnish, plastic film, etc.) to prevent shipping information from being obliterated due to rough handling or the elements.
 - Bundles shall be marked by embossing steel (or similar tough material) tags with the details and securely fastening to the bundle in an accessible position (see below).
 - Where labels or tags are used they shall be clearly visible and shall be of a quality to remain visible and attached during transit, handling and storage for a minimum period of twelve months.
 - Drum head stencils and body stencils shall be coated with durable varnish or other suitable coating to prevent shipping information from being obliterated due to rough handling or the elements.
 - The case number shall identify the individual package and also indicate the total number of packages in the shipment for example Box No. 1 of 4, Box No. 2 of 4, etc. Items within a multiple pack of the same commodity, with identical count, gross, tare and net weights and cube, (such as shipment of twenty drums of lubricant) need not be numbered 1, 2, 3 and up.
 - Multiple parts which comprise a single line item on one Contract or Purchase Order shall be identified by applying the full article description to one unit while the remaining units retain the standard Supplier’s, Supplier’s, or Supplier’s identifying marks on individual packages. Packing lists shall list each individual unit. The piece or package indicating the full article identification marking must be packed in a location within the shipping container for first removal.

5.4 Packing Lists & Shipping Documents Accompanying Consignments

Packing lists and associated shipping documentation (including inspection release certificates where applicable) shall be prepared in accordance with the specific instructions in the Contract or Contract or Purchase Order or by default to Company specification “Shipping Documentation Requirements”.

The packing list shall be enclosed in a clear, weatherproof plastic, re-sealable envelope glued or stapled to the box/package such that anyone may determine the contents without opening the package. An additional packing list is to be enclosed in a clear, waterproof plastic, re-sealable envelope glued or stapled inside the box/package. Stapling of the envelopes shall not prevent removal of the documents. A copy of the Supplier’s delivery ticket and/or packing list is to be attached outside the box/package in a non-clear plastic re-sealable envelope. Each carton in the shipment shall be identified with its Contract or Purchase Order number.

5.5 Quarantine Requirements – Department of Agriculture

Australia and Timor-Leste have strict quarantine requirements and the Supplier will need to determine any specific requirements by referencing the Department of Agriculture (formerly DAFF and AQIS) web sites at www.daff.gov.au/biosecurity and specifically related to timber packaging/dunnage refer to www.daff.gov.au/biosecurity/import/timber/timber-packaging-and-dunnage-import-requirements

In particular

- Timber material, including packaging, shall be treated/fumigated to prevent infestation by insects or similar for all material destined for Australia and the Bayu-Undan/DLNG facilities. Timber material should either be marked as ISPM15 compliant or a copy of a suitable fumigation certificate must be supplied.
- Second hand machinery and tooling must be cleaned prior to export from origin to 'as new condition' in order to meet Australian quarantine requirements.
- Greasy machinery may attract insects or seeds and will need to be cleaned to 'as new' condition prior to arrival in Australia.
 - Tyres are not to be used for packaging/dunnage.
 - Attention to quarantine requirements is important to avoid delays and costs at the point of entry and Customs clearance. Quarantine delays can hold materials at a bonded site for up to a week (or more) subject to further inspections and cleaning.

6.0 SPECIFIC REQUIREMENTS FOR PACKAGING TYPES

6.1 Boxes, Crates and Pallets

6.1.1 Boxes/Crates (Cardboard/Timber/Plastic/Metal)

- In this context boxes are generally smaller light weight containers constructed from cardboard, plastic or light metal (although maybe light timber), crates are larger containers for larger, heavier, more awkward items sometimes divided into parts (e.g. for valves etc.) generally constructed from heavier timber, engineered plastics or metal (crates are generally designed and constructed for direct lifting by fork lifts etc.)
- All boxes/crates provided for export shipping shall be designed and constructed in accordance with an applicable Australian or International standard (unless otherwise approved by Company). Note that the Australian Department of Agriculture requires all relevant timber products to be treated in accordance with ISPM 15 and stamped accordingly.
- Interior support boards (where fitted) shall be strong enough to withstand stevedore handling
- Tops of crates shall be one piece whenever possible to avoid seepage through cracks; otherwise a top coating is required.
- Waterproof lining shall be used for sides, ends and top of crates; proper venting of crates containing machinery is required, as well as sufficient use of desiccants. The Supplier is to calculate the quantity of desiccant in accordance with the Supplier's recommendations. Desiccants shall be "bagged" to avoid dispersing in boxes or crates. Boxes and Crates shall be marked / tagged to reflect that desiccant is being used.
- Crates shall be diagonally braced on all faces and suitable for proposed lifting methods (e.g. hooks, slings and/or forklifts).
- Heavy items (>15kg) shall be secured with wood braces. Fragile items shall be cushioned. Material packed in large crates shall be layered between plywood sheets to maintain load integrity during transit.
- Appropriate banding (steel or plastic) shall be used on all boxes/crates to prevent distortion / deformation of the box/crate

6.1.2 Pallets

- All pallets provided for export shipping shall be provided in accordance with an applicable Australian or International standard (unless otherwise approved by Company). The Australian Department of Agriculture requires all relevant timber products to be treated in accordance with ISPM 15 and stamped accordingly.
- Pallets shall be packed in such a way to maintain the centre of gravity as low as possible.
- All goods on a pallet shall be secured to the pallet, so that no movement or damage can occur to the goods during normal transportation.
- Standard pallets shall be 1200mm x 1200mm unless material to be palletised requires additional length.
- Clear plastic wrap/heat shrink wrap shall be used for all palletised materials. Coloured plastic wraps, especially black, shall not be used for any palletised materials.

6.2 Drums

- 200 litre drums shall be shipped inside of International Shipping Organisation (ISO) 2.4m x 2.4m x 6.1m steel dry cargo containers and they shall be securely banded to the container walls to prevent shifting.
- Small drums and cans of paint (or other chemicals) shall be packed in approved standard type crates as required (refer to clause 4.5 of this document).

6.3 Mailing Boxes and Tape

- Mailing boxes for literature and printed matter shall be crushproof and properly sealed to prevent damage to contents.

7.0 SPECIFIC REQUIREMENTS FOR COMMODITY/EQUIPMENT TYPES

7.1 Flanges

- All flanges in an assembly, as a minimum, shall be supplied with adequately protected faces. Protection shall be of the entire flange face and stop any potential ingress into the bore. Preferred cover is a secured (in a diagonally opposed arrangement) 5mm board/ plywood cover with rubber sheeting placed between the timber and flange, Hardboard, particleboard, plywood, or plastic insert caps that cover the entire OD of the valve flange with rubber sheeting placed between the timber and flange, will also be accepted. Note that the Australian Department of Agriculture requires all relevant timber products to be treated in accordance with ISPM 15 and stamped accordingly.
- All flanges shall be suitably protected with a thin coating of preservative.
- All flanges in size DN100 and above made of austenitic stainless steel, duplex stainless steel and Cu-Ni / titanium shall be protected with clamp fitting end caps.
- Flanges, when stacked together in one case/crate, must be separated by hardboard/plywood between each flange with rubber sheeting placed between the timber and flange and secured/strapped to the case/crate to prevent movement/ damage in transit.

7.2 Gaskets

- Gaskets are considered fragile and shall be treated as such. Individual gasket sizes shall be boxed and labelled separately.
- If gaskets are natural rubber, neoprene or Buna are specified, the crate shall specify the Contract or Purchase Order and the item number, quantity, and state "Warning – Package Contents Require Long Term Cold Storage and may be Damaged by Exposure to Heat– Do not leave package in hot locations including direct sunlight outdoors for extended periods during transport".
- Gaskets supplied from Suppliers that have Company Quality Agreements in place (and current) will have specific requirements for packaging defined.

7.3 Valves

- All valves shall be individually tagged, and openings plugged with caps, flange protectors (as per Section 6.1 Flanges).
- They shall be packed in the Supplier's approved export boxed crates, pallets or other suitable Company approved packing. Several cartons of the same item or different items on the same Contract or Purchase Order can be export crated or boxed together as long as this is clearly shown on the box or crate stencil and on packing lists.
- A thin film of preservative that can be removed with a petroleum solvent shall protect large valves, (DN80 and over). Butt-welded valves shall be similarly preserved, coated, and protected with butt end protectors.
- Screwed or socket weld valves shall have similar preservative coating, and removable plastic caps or plugs shall protect faces.
- Manual Operators and/or hand wheels, levers, or reach rods may be removed from valves by Suppliers after testing and inspection, similarly protected and boxed, and similarly tagged as valves. Electric, hydraulic and air operators shall have all holes plugged to prevent entry of moisture and dirt.

7.4 Rotating Mechanical Equipment

- Pumps, compressors, turbines, motors, and other rotating mechanical equipment etc. will require specific packing and preservation. These details will be issued separately as a supplement to this Procedure in the Contract or Purchase Order, and must be read in conjunction with and not replace this document.
- Brinelling Protection – Adequate precautions, for example shaft locks to prevent longitudinal / rotational movement of rotor shaft of motors, shall be included in the packaging of all equipment which have a plain, ball or roller bearings so as to minimise the risk of bearing damage. All motors / equipment fitted with shaft locks, or other restraining devices, shall have adequate warning notices displayed prominently on the motor / equipment frame.
- The shaft/s of rotating equipment shall be locked in position.

7.5 Rotating Electrical Equipment

- Openings in electrical motors, generators and other electrical equipment shall be sealed with waterproof tape.

7.6 Control Panels, Instruments, Circuit Boards and Similar Electrical Devices

- Instrument panels, delicate instruments, parts, etc., shall be packed in vapour proof material, foam packed, desiccant added, and will therefore generally be shipped via airfreight.
- This equipment shall be packed in an interior moisture/vapour-proof barrier with a silica gel or comparable desiccant. Desiccants shall be "Bagged" to avoid dispersing in containers. The quantity of desiccant shall be calculated in accordance with the Supplier's recommendations.
- Equipment must be secured to the case with bolts, blocks, or straps.

7.7 Pipe Fittings, Bolting, Instrument Fittings

- Small fittings (i.e. unions, tees, elbows, sockets, reducers, etc. up to DN80) shall be preserved and boxed similar to valves as per section 6.1 Flanges.
- Large fittings (over DN80) shall be preserved and palletised similar to flanges. Fittings may be boxed if appropriate.
- Stud bolts, cap screws, nuts, and bolts should be preserved and boxed in Suppliers export packed cartons. Each stud bolt and nut must be packed/protected to prevent damage to threads whilst in transit.
- Pneumatic and hydraulic fittings shall be preserved and boxed similar to small valves.

7.8 Skidded Equipment

- For skidded equipment, the purchase order/contract normally requires the Supplier to submit a detailed packing procedure for Company review and approval. As a minimum packing procedures should ensure that flange faces, threaded connections, shafts, wires, valve stems, instruments and other component parts subject to mechanical damage or corrosion shall be adequately protected (in line with the requirements of other clauses in this document).. These requirements will apply equally to components that are removed from the skid assembly for shipping and those remaining in place on the skid assembly.
- Each skid shall have one weather resistant box strapped to it containing a complete set of drawings together with a manual covering installation and operating instructions and other pertinent instructions required for reassemble of components that were disassembled for shipment.

7.9 Pipe and Instrument Tubing

- Each length of pipe, including plastic, of DN50 or larger diameter shall be shipped boxed / crated and marked accordingly. All pipes shall be supported along their lengths to prevent bending / flexing during transport.
- Pipe and rigid conduit smaller than DN50 diameter shall be bundled in units not to exceed 1000kg. Threaded and coupled pipe shall be equipped with plastic thread protectors.
- All material shall be segregated and shipped by generic material type to prevent cross contamination.

End of Procedure