



# NEW MANGALORE PORT TRUST HOT WORK PERMIT

#### PROCEDURE FOR HOT WORK PERMIT SYSTEM

### following is the procedure for the implementation of Work Permit System

1) Hot Work Permit shall be in three copies viz., Original,Duplicate and Triplicate, where only the Original shall be in pink colour. The Duplicate and Triplicate shall have the word 'COPY printed in large letters.

ii) No hot work shall be undertaken without a work permit except in the areas predetermined and designated by the owner incharge. All work permits shall be issued by the person who is designated as responsible person for the operation of the area where work is to be carried out. In respect of the work permits for handling highly criticial types of work and also for long duration work such as in construction jobs in a running installation, the authorising level should be elevated.

iii) The work may be planned to be done either departmentally or through a contractor. In either case, the work permit should be received and signed by the maintenance/ project/construction supervisor of the company. as he is responsible for the work of the contractor also. Where. no such independent supervisor exists, for example in <u>small installations, the owner-incharge can</u> <u>issue the permit to the contractor's supervisor</u> directly and obtain his signature.

iv) Permit should be issued only for a single shift and its validity should expire at the termination of the shift. However, where the work has to be continued, the same permit may be revalidated in the succeeding shift, by authorised person after satisfying the normal checks. In instances like plant tumaround or an activity where work is of continuous nature involving round-the-clock activity, Blanket Hot Work Permit could be given if the ownerincharge is fully satisfied that the conditions are totally safe for the multiple jobs to be performed. But this should not be resorted to especially in highly integrated units.

(i)

Even when construction activity has to be undertaken in non-operating areas in intergrated units, it is recommended that approval be obtained from designated senior management for issuing Blanket Hot Work Permit.

v) It is recommended that Hot Work Permit be made in the form of books with tear-off facility. In the case of Hot Work Permit, the authorised Original copy shall be given to the receiver, the Duplicate to the Fire & Safety Section and Triplicate retained in the book. In case of Hot work permit, the authorised Original shall be issued to the receiver, retaining the Duplicate in the book.

It is recommended that plot plans of the installation and the operating blocks should be displayed in the Fire and conerned Unit Control Rooms respectively, and site of hot jobs under progress sholud be indicated on these plot plans with red pins. This helps the incoming supervisor/s (both in Fire and Operating departments) to get a quick idea of the hot jobs being undertaken and help in identifying the areas which require inspection/attention depending upon the criticality of the area and job. vi) As a prerequisite to permit issue, particularly in the case of hot work/vessel entry permit, gas test for hydrocarbons/oxygen deficiency/toxic gases shall be conducted as applicable.

vii) Where gas-free conditions are not fully assured for the duration of hot work, a system of monitoring either by automatic or by manual periodic verificaton shall be resorted to depending upon the prevalent conditions of the operating area.

viii) After completion or stoppage of the job, the person to whom the permit was issued should thoroughly check the area for clearing of debris, removal of temporary electrical installations etc., and then shall sign the work permit and return it to the issuer.

#### EXPLANATORY NOTES TO HOT WORK PERMIT FORMS

i) Equipment/Area Inspected:

Equipment of area where hot work is to be conducted, should be inspected to ensure that it is safe to carryout work and assess other safety requirements/stipulated are complied. In case of vessel box-up permit, the inspection is required to ensure work is complete, all personnel are out, no maintenance gear is left behind and debris is removed.

ii) Surrounding area checked/cleaned:

Unsafe conditions for performance of work may arise from surrounding area. It should be cleaned up to remove flammable material such as oil, rags, grass.

iii) Sewers, Manholes, CBD etc. and Hot Surfaces covered;

Flammable gases may be released from nearby sewers. Hot unisulated surfaces/pipelines may provide a source of ignition. Therefore, these are to be properly covered to prevent fires.

iv) Considered hazard from other routine/nonroutine operations and persons alerted: Othe activities (routine/non routine) being carried out near by, which can create conditions which are unsafe for performance of the permit work, should be taken into consideration and the concerned persons should be alerted accordingly.

v) Equipment electrically isolated and taggred:

Before issuing permit for mechanical/electrical work in the operating area, it should be ensured that electrical switches are locked out and cautionary tags duly signed with date and time are attached. Wherever local locking arrangement is provided in the field, the same should be used. Refer format for electrical lockout/energising given in OISD-Std-137 on 'Inspection of Electrical equipment`

vi) Running water hose/Portable extinguisher provided:

Running water hose and portable fire extinguisher are required respectively to flush/ dilute in case of release of any hazardous chemical or to quench sparks and to put out small fires immediately.

vii) Fire water system checked for readiness: In order to meet any contingency, it should be ensured that the fire water pumps, storage, network, etc., is checked and kept ready for immediate use.

viii) Equipment blinded/disconnected/closed wedged open Equipment/Vessel on which the work permit is being issued should be completely isolated from the rest of the plant with which it is connected during normal operation, in order to ensure that there is no change in the work environment with respect to presence of toxic/flammable gases, liquids, hazardous chemicals etc., in the course of the work. Blinding is one of the most effective ways of isolation. Blinds should be installed as close to the vessel as possible. If lines cannot be blinded, they should be installed as close to the vessel as possible. If lines cannot be blinded, they should be disconnected and the open ends should be made safe by installing pipe caps/plugs, blind flanges, mud packing etc.,

ix) Equipment properly drained/

depressurized after isolation. This will be followed by draining/purging/water flushing etc., as the case may be.

Equipment containing liquid hydrocarbons should be drained completely. There may be a possiblity of overlooking liquid collected in pockcts or inaccessible areas such as level gauges, small nozzles/bleeders on vessels, laterals in pipe work etc., All low point drains should be in unplugged condition.

x) Equipment properly steamed/purged: Purging of equipment (vessels, pipelines, compressors, etc.,) is done to free them of flammable hydrocarbons and toxic gases. Steam is used for gas-freeing of vessels and pipes in refineries and processing units, but pipes in refineries and processing units, but It may not be available at other locations. Other means of purging is by displacement with water and final traces of gas removed by air eductor. All high point vents should be unplugged while purging. Purging may be done continuously or in batches to conserve purge medium. It should be done equipment/plant and continued till the allowable level of toxic/ flammable gas concentration is attained. xi) Equipment water flushed

Water flushing is an effective means of Cooling, cleaning and even gas-freeing of equipment. It is also employed to remove traces of acids/ chemicals. Equipment metallurgy must be considered before using sea/saline water Sometimes flushing with demineralised water would be necessary depending upon the metallurgy of the equipment.

xii) Gas/Oxygen deficiency test done and found
OK Gas test includes measurement of:
(a) Hydrocarbons by Explosivity Meter
(b) Oxygen Deficiency by Oxygen Meter.

(c) Toxic gases like Hydrogen Sulphide, Carbon Monoxide, Nickel Carbonyl, Chlorine etc., by techniques like Indicator Tube method, Lead Acetate Paper etc.,

Measurement of lead in air is required for entering leaded tanks. Octel/Ethyl regulations are to be followed while handling leaded gasoline.

Gas tests may be specified for vessel entry including open excavation where head of a man will be below ground level and when hot work is being carried out. The person carrying out gas test must wear proper protective gear.

No hot work shall be permitted unless the explosivity meter reading is zero. Vesel entry where no hot work is to be carried out may be permitted if combustible gases are upto 5% of lower explosivity limit (LEL). Entry with an air supplied mask may be permitted with LEL of up to 50%

The oxygen level should be at least 19.5 Vol.% and the concentration of toxic gases below the threshold limits xiii) Shield against sparks provided: In order to protect against welding sparks, which can provide ignition in operating areas, shields are to be provided. The shield material should be non-flammable. In case tarpaulins are used, they should be kept wet with water.

xiv) Proper ventilation and lighting provided: Where natural ventilation is not available, fans/ air eductors are provided. Some types of works like welding, may generate fumes, Facilities may be required for the speedy dispersal of these fumes. Only approved reduced voltage extension lights (24 volts) are to be allowed for work inside vessels, from consideration of personal safety.

xv) Proper means of exit provided: Proper means of exit is required in case of emergencies developed on account of the work or otherwise. Availability of an alternate route of escape should be considered.

xvi) Precautionary tags/boards provided:- To prevent any unwarranted entry in the work area and also to caution other personnel taking actions which may endanger people working on the permit job, precautionary tags/ boards are to be provided. Example, 'No Entry' sign on roads or 'Caution-Men At Work Inside' on the manhole of a vessel.

xvii) Portable equipment/Hose nozzles property grounded:

As a precaution against static electricity generation, portable equipment/hose/nozzles, example: nozzle of a sand blasting gun, are to be grounded. Use of hydrocarbon lines for earthing should be avoided. xviii) Standby person provided for vessel entry: Whenever a vessel is being entered or work is being carried out in confined space, it may be necessary to keep standby persons (minimum 2) at the manhole or entry point holding the rope connected to the safety belt of the person inside.

In case of any emergency inside or outside the vessel, the standby will be able to assist the person out.

xix) Standby personnel provided for fire watch from Process/Maintenance/Contractor/ Fire Department: Depending on critically of the job, work permit issuer shall decide the type of standby to be provided i.e from which department, of what level, how many and also additional fire fighting support facilities

xx) Iron Sulphide removed/kept wet: Pyrophoric substances may be present in operating area equipment handling hydrocarbon. Iron sulphide scales is the most common pyrophoric substance encountered. These should be either removed to safe locations or kept wet all the time to prevent their auto-ignition.

#### xxi) Area cordoned off

In order to prevent the unauthorised entry of people and to avoid acidents during excavation jobs, work area is to be cordoned off.

xxii) Precaution against public traffic taken: On case hot work is to be carried out in the close proximety of a public road, for example in the case of a trunk pipeline, it may be desirable to block-off/divert public traffic for the duration of the job as a precautionary measure.

xxiii) Clearance obtained for excavation from Technical concerned departments: For any excavation work which may affect underground sewers/telephone lines/cables/ pipelines etc., Technical Services Dept., and/ or other concerned departments, should be consulted for obtaining the co-ordinates and the depth to which excavation can be resorted to, without damaging the existing facilities. Markers should be put around the area where excavation can be done and the depth can be done and the depth can be indicated in the work permit.

xxiv) Clearance obtained for road cutting from Technical/Fire/concerned departments Since road cutting can hamper the movement of the fire trucks, initial clearance should be obtained from fire Department, and final approval from the higher designated authorities. If the road is wide, preferably the road should be cut half at a time.Duration of cut road should be restricted as far as possible.

xxv) Clearance obtained for the dike cutting: when the dike is cut, any mishap in the tank farm can lead to a free flow of oil to outside the bund. A high level authority should be designated for authorizing dike cutting. Further it should be ensured that dike would be reconstructed in the shortest possible time. For example, if pipes have to be laid through the dikes, the pipes should be laid quickly and plugged/capped so that the dike can be closed. Thereafter balance or pipe fabrification can continue without any risk. Standby personnel should be available at the work site, who should posses a suitable size steel plate for blocking the opening in case of a mishap/ tank failure. If no work is undertaken in

evening and night shifts, invariably the gap should be closed with steel plate and mud packing at the end of days work.

xxvi) Checked flame arrester on mobile equipment:

Although only certified vehicles engines are permitted in operating areas, it should be ensured that the flame arrester is not inadvertently removed.

xxvii) Checked for oil/gas trapped behind lining in equipment:

Before undertaking hot jobs, a check should be done for oil gas trapped behind lining in the equipment. Many times oil gas trapped behind lining depicts itself in the form of welling and can be confirmed by way of drilling holes.

### ORIGINAL 1/2 **NEW MANGALORE PORT TRUST**

PANAMBUR

No: 2401

### HOT WORK/VESSEL ENTRY/VESSEL BOX-UP / EXCAVATION

THE FOLLOWING ITMES SHALL BE CHECKED BEFORE ISSUING THE PERMIT

(Strike out boxes not applicable)

SI. No.\_\_\_\_\_

VALID FROM\_\_\_\_\_\_TO\_\_\_\_\_

PERMISSION GRANTED TO SECTION/CONTRACTOR:\_\_\_\_\_ NAME: \_\_\_\_\_

NATURE OF WORK\_\_\_\_\_

LOCATION OF WORK

	Item	Done	Not Reqd.	ltem	Done	Not Reqd.
1.	Equipment/work area inspected		15.	Proper means of exit Provided		
2.	Surrounding are checked/cleaned		16.	Precautionary tags/boards Provided		
3.	Sewers, manholes, CBD etc, and		17.	Portable equipment/nozzles grounded		
4	hot surface nearby covered		18.	Standby personnel provided for vessel entry		
	operations and concerned persons alerted		L 19.	Standby personnel provided for fire		
5.	Equipment electrically Isolated and tagged		20	watch from Main/Contractor /fire Dept		
6.	Fire water hose/portable extinguisher Provided		20. 21.	Area Cordoned off		
7.	Fire water System checked for readiness		22.	Precautions against public		
8.	Equipment blinded disconnected/ Closed./isolated/wedged open		23.	Clearance obtained for excavation		
9.	Equipment properly drained depressurised.		24.	Clearance obtained for road cutting from Technical/Fire/		
10.	Equipment properly steamed/ purged			Concerned Depts.		
11.	Equipment water flushed		25.	Clearance obtained for dike Cutting		
12.	Gas/Oxygen deficiency test done and found ON.		26.	Checked Flame arrester on mobile equipment		
13.	Shielf against sparks provided	- count	27.	Checked for oil gas trapped behind		-
14.	Proper ventilation and lighting provided			lining on equipment		

Note: For items marked (\*) clearance to be obtained from higher designated authority. SPECIAL INSTRUCTIONS

1.	Following personal protective equipment are required (check all items required):
	Safety hat/Gloves/Goggles/Safety Shoes Boiler Suit Welding Suit
	Dust Respirator/Face Shielf/Fresh Air Mask/Apron/Lifeline/Safety Belt
2.	In case of fire alarm, all work must be stopped, all personnel must leave work site and proceed to Designated areas
3.	In case of liguid/gas release, stop work and immediately advise concerned Operation personnel

Only certified vehicle, engines and permitted type of electrical equipment and tools are allowed in operating areas.

- 5
- Ensure proper grounding/earthing/insulation of cables. This permit must be available at the work site at all times 6
- 7. Additional remarks, if any:

Name and Signature of Receiver Name and

Signature of Issuer

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## NEW MANGALORE PORT TRUST

#### PANAMBUR

No:2401

## HOT WORK/VESSEL ENTRY/VESSEL BOX-UP/EXCAVATION

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SI. No.\_\_\_\_\_

VALID FROM\_\_\_\_\_

PERMISSION GRANTED TO SECTION/CONTRACTOR:\_\_\_\_\_NAME: \_\_\_\_\_

NATURE OF WORK\_\_\_

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#### THE FOLLOWING ITMES SHALL BE CHECKED BEFORE ISSUING THE PERMIT

Item	Done	Not Reqd.	ltem Do	one Not Rec	qd.
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Considered hazard from other routine operations and concerned persons ale	rted.	19.	for vessel entry Standby personnel provided for fire		
<ul> <li>Equipment electrically Isolated and tag</li> <li>Fire water hose/portable extinguisher</li> </ul>		20.	Iron Sulphide removed/kept wet		
Provided Fire water System checked for readine	ess	21. 22.	Area Cordoned off Precautions against public Traffic taken		1
Equipment blinded disconnected/ Closed./isolated/wedged open		23.	Clearance obtained for excavation from Technical/Concerned Depts.		]
Equipment properly drained depressurised.		24.	Clearance obtained for road cutting from Technical/Fire/		]
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In case of fire alarm, all work must be stopped, all personnel must leave work site and proceed to Designated areas.

3. In case of liquid/gas release, stop work and immediately advise concerned Operation personnel.

4. Only certified vehicle, engines and permitted type of electrical equipment and tools are allowed in operating areas.

- 5. Ensure proper grounding/earthing/insulation of cables.
- 6. This permit must be available at the work site at all times
- 7. Additional remarks, if any:\_

Name and \_\_\_\_\_\_ Signature of Receiver \_\_\_\_\_\_ Name and \_\_\_\_\_

Signature of Issuer\_\_\_\_

то\_\_\_\_

## **NEW MANGALORE PORT TRUST**

PANAMBUR

2401 No.

COPY

## HOT WORK/VESSEL ENTRY/VESSEL BOX-UP / EXCAVATION

(Strike out boxes not applicable)

SI. No.

PERMISSION GRANTED TO SECTION/CONTRACTOR: NAME:

NATURE OF WORK

VALID FROM

LOCATION OF WORK

## THE FOLLOWING ITMES SHALL BE CHECKED BEFORE ISSUING THE PERMIT

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7.	Fire water System checked for readiness		22.	Precautions against public Traffic taken.		
8.	Equipment blinded disconnected/ Closed./isolated/wedged open		23.	Clearance obtained for excavation from Technical/Concerned Depts.		
9.	Equipment properly drained depressurised.		24.	Clearance obtained for road cutting from Technical/Fire/		
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  - Additional remarks, if any:\_

PLE OF HETUEN PERMIT TO INCOME. Name and

Signature of Receiver

Name and

Signature of Issuer

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GAS TEST (HYDROCARBON/TOXIC GAS/OXYGEN DEFICIENCY) DONE

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2401 ADDITIONAL PRECAUTIONS REQUIRED IF ANY

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SIGNATURE

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NOTE: HOT WORK INCLUDES WELDING, BURNING GRINDING, SOLDERING, SAND BLASTING, CHIPPING, RIVITTING, DRILLING, CAMERA FLASHING, POWER TOOLS, IC ENGINE OPERATIONS ENTY, OPEN FLAME.

WORK COMPLETED/STOPPED/AREA CLEARED AT

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DATE

By\_

(Signature)

(PLEASE RETURN PERMIT TO ISSUER)

NAME

2401

#### GAS TEST (HYDROCARBON/TOXIC GAS/OXYGEN DEFICIENCY) DONE

#### PERMIT EXTENDED UPTOS

ADDITIONAL PRECAUTIONS REQUIRED IF ANY

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By\_\_\_\_

(Signature)

NAME

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NEW MANGALORE

## No: 2401

SIGNATURE

GAS TEST (HYDROCARBON/TOXIC GAS/OXYGEN DEFICIENCY) DONE

PERMIT EXTENDED UPTOS

ADDITIONAL PRECAUTIONS REQUIRED IF ANY

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#### WORK COMPLETED/STOPPED/AREA CLEARED AT

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#### (PLEASE RETURN PERMIT TO ISSUER)

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