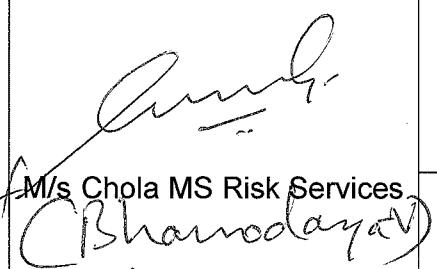
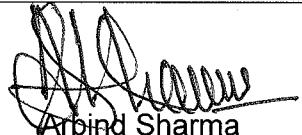
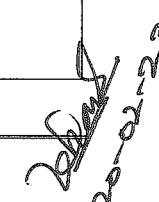


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TECHNICAL STANDARD (TS)

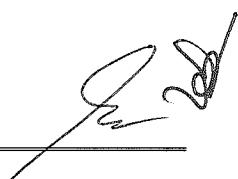
HAND TOOLS AND PORTABLE POWER TOOLS SAFETY

Prepared by	Reviewed and verified by	Authorized by
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Document Change Note

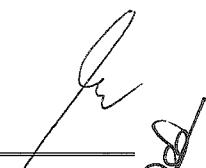
Rev. No	Rev. Date	Comments / Changes
00	20-01-2023	New Issue



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1 PURPOSE

To prevent accidents while working with hand tools and portable power tools.

2 SCOPE

This procedure shall apply to all AMNS project sites and related work areas including contractors to meet –

- Legal and regulatory requirements
- AMNS HSE requirements
- ISO 45001 and ISO 14001 standard requirements

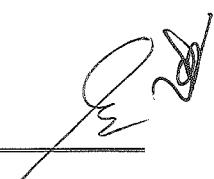
3 DEFINITIONS

Portable power tools: A power tool is a tool that is actuated by an additional power (electrical/ compressed air) source and mechanism other than the solely manual labor used with hand tools. The most common types of power tools use electric energy, internal combustion engines and compressed air as external or additional power.

4 RESPONSIBILITIES

The Project Head is responsible for ensuring that the project is in compliance with the general requirements and those given in this procedure.

HSE Manager is responsible for providing advice on this standard and oversight inspections to verify compliance.



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5 HAND TOOLS & PORTABLE POWER TOOLS - SAFETY ASSURANCE PROCESS

5.1 HAZARDS

The hazards associated with use of hand tools are:

- Sharp edges - Crush/ laceration injuries
- Incendiary sparks
- Flying broken parts / particles / dust
- Struck by – falling tools, impact from misusing hammers
- Nip/ pinch points
- Electrical current shock
- Noise
- High pressure fluid
- Vibrations
- Heavy and laborious task
- Slipping of tool tip from work surface and fall on to/ struck legs/ foot
- Failure of compressed air hose/ connections; hit by swaying hose/ exposed to high pressure air
- Kick back due to uneven surfaces/ tool get struck/ jammed

5.2 PROCEDURE

5.2.1 HAND TOOLS

Defective Hand tool and untrained person pose a great deal of hazard at any work site. Control measures shall be installed and maintained for identifying defective hand tools and restricting untrained person to use any hand tools.

SELECT	- The correct type of tools for the work
CHECK	<ul style="list-style-type: none"> - The location to work - The types of tools to be used - The weight and design of the tools - The tools are in good working condition
USE	<ul style="list-style-type: none"> - The tools safely - No Horseplay

It is the responsibility of the concerned supervisor / engineer to see that the employees are using the right type of tools for the specific job in correct manner.

- Employees shall be given with adequate standard hand tools to execute the work safely
- Only trained employees shall use the hand tools for which they are trained.



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- Look out for any person working nearby when working with hand tools
- All hand tools should have fixed with proper handles for safe use
- Necessary and applicable PPE shall be worn by the employee for doing the task
- Stores personnel shall issue the tools to the authorised persons only
- Do not improvise or modify any of the hand tools provided for the job
- Do not keep tools spread haphazardly at workplace. This can pose hazard to persons working in the area.
- Workers should maintain their hand tools in good condition by using properly and keeping orderly in a tool box when not in use
- Keep the hand tools free from oil/ grease
- Workers should inspect their tools for their good condition before use. If any tool found defective, the same should be replaced immediately.
- Hacksaw blade should not be used without frame
- Hammer head should not be welded with pipes and it must be fitted with wooden handles only.
- While working at heights hand tools should be tied to the user's body (Using tool holders) to prevent from accidental dropping.
- Prevent tools from falling – use holder. Do not store heavy tools above head height
- Supervisor / Foreman should inspect the Hand tools in random for its good condition with the help of following check lists attached

EXAMPLES OF HAND TOOLS

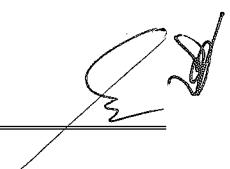
➤ Screwdrivers	➤ Pipe wrenches	➤ File
➤ Hammer	➤ Pliers	➤ Jacks
➤ Chisels	➤ Scissors	➤ Crow bars
➤ Spanners	➤ Taps/ Dies	➤ Knife
➤ Wrenches	➤ Punches	

SCREWDRIVERS

- Use correct type & size of tip to fit the slot of the screw to prevent slip
- Do not over tighten screw
- Do not hit the screwdrivers with a hammer
- Do not carry screwdrivers in pockets

HAMMERS

- Use the correct type of hammer
- Handles are to be of a good grip
- Use eye protection when using hammer
- Hammerheads are to be secured to the handles with correct wedges
- No makeshift hammer to be used at site



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CHISELS

- Ensure chisels are sharpened correctly. Do not use blunt chisels
- Chisels with mushroom head should not be used
- Use eye protection when using cold chisels
- No makeshift chisel to be used at site

SPANNERS / WRENCHES

- Use correct size tools
- Use spanners as suitable instead of adjustable wrenches
- Do not strike wrenches with a hammer

PIPE WRENCHES

- Wrenches are to be large enough for the job
- Keep the teeth clean and sharp
- Do not strike with a hammer or use as a hammer

PLIERS

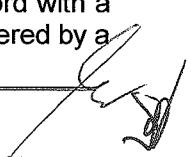
- Use only for gripping, not as a wrench
- Keep free from dirt and grit
- Pliers with insulated handles should be used for electrical works

JACKS

- Place on firm solid support with load, positioned centrally
- Block load after raising the load
- Avoid working under or near a raised load

5.2.2 PORTABLE POWER TOOLS

- Use only with properly placed, adjusted, and functioning guards. In general, the exposed moving parts of power tools need to be safeguarded.
- Do not carry a tool by the hose or cord.
- Do not pull on a cord to disconnect the tool from the receptacle. Firmly grasp the plug.
- Avoid accidental starting. Do not hold fingers on the switch button while carrying a power tool.
- Keep hoses and cords away from heat, oil, and sharp edges.
- Disconnect tools from their power source before servicing, cleaning, when changing accessories, and when not in use/attended.
- When a temporary power source is used for construction a ground-fault circuit interrupter should be used.
- To protect the user from shock and burns, electric tools must have a three-wire cord with a ground and be plugged into a grounded receptacle, be double insulated, or be powered by a low-voltage isolation transformer.



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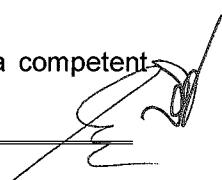
- Do not use electric tools in damp or wet locations unless they are approved for that purpose.
- Keep all people not involved with the work at a safe distance from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments from being ejected during tool operation.
- Compressed air guns should never be pointed toward anyone. Workers should never "dead-end" them against themselves or anyone else. A chip guard must be used when compressed air is used for cleaning.
- Handle, transport, and store gas or fuel only in approved flammable liquid containers, according to proper procedures for flammable liquids. Allow a hot engine to cool before refueling a tool. Use fuel-powered tools only when there is sufficient ventilation for removal of fumes.
- All power tools/equipment shall be maintained in good working condition.
- Equipment and tools used on site will be inspected on a daily basis by the operator.
- Equipment and tools approved and tagged shall only be used.
- Any tool or equipment that is found to be unsafe or not in safe working condition must immediately be set aside for service, repair or replacement. Damaged or defective tools are to be taken out of service, tagged "Do Not Operate," and stored in a controlled area until appropriate repairs have been made.
- Users of tools must have received training on the tools they are meant to use. The training has to be provided by the supervisor or HSE officer.
- Contractors and sub-contractors (irrespective of levels of sub-contracting) shall take ownership of the hand tools provided by them and be responsible for the safe upkeep of the tools
- Personal protective equipment approved for the selected tools must be used while operating with the hand tools
- All fuel powered tools shall be stopped and disconnected at the time of refueling, servicing and maintaining
- Safety goggles with side shields should be used to prevent eye injuries from particles/pieces
- Sharp edges of the tools should be covered with appropriate material prior to storage
- Power tools should not be modified informally, extended, sharpened or twisted in an unauthorized manner
- While drilling, cutting, striking or breaking, it should be ensured that any electrical wiring in the vicinity, especially wiring that can come in contact with the hand tool is not live.
- Power tools shall be double insulated type

EXAMPLES OF PORTABLE HAND TOOLS

(i) Grinding machine	(ii) Cutting machine	(iii) Pneumatic breaker
(iv) Chain saw	(v) Drilling machine	(vi) Circular saw

PNUEMATIC BREAKER

- Employees using pneumatic Jack hammer must be trained in their use by a competent person.

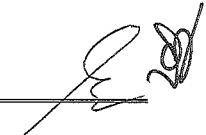


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- Pick only the breaker having valid inspection sticker prior to use.
- Employees are required to inspect the hose, connections, emergency shut off valve, jack hammer and report damaged and defective tools/ parts to their supervisor.
- Persons who operate jack hammer should wear appropriate protective footwear, thick leather hand gloves, ear muffs/ ear plugs, eye protection, coverall.
- Ensure proper position while working on uneven surfaces, ensure balancing of self along with the jack hammer
- Ensure rest intervals are planned/ provided with additional people to limit exposure to vibrations to palm and fingers.

GRINDING/CUTTING MACHINE

- RPM (rotation per minute) of the wheel shall be more than a grinding machine, if machine RPM exceeds than a wheel can break easily. Abrasive wheels, grinding or cutting discs without the manufacturer's maximum RPM marked shall not be used.
- Each grinding machine shall be fitted with its correct guard as supplied by the manufacturer. The guard shall cover a minimum of 70% of the circumference of the rotating disc. Never use a grinder without the grinding wheel guard which is provided for protection.
- Grinding/cutting machine shall be equipped with the 'dead man switch'.
- Abrasive wheel consists of several smaller parts which should be properly assembled and tightened together. Make sure that the right flanges are used and attached properly for a smooth movement. Ensure that there are no traces of burr or flash.
- Using the right dimension of grinding wheel plays an important role in ensuring safety and achieving higher efficiency. Using the right dimension wheel also helps in achieving the maximum allowed rotation speed of the grinding wheel.
- Grinders must always be tested before beginning any kind of work. Test run the grinder in a safe enclosed area such as beneath the workbench to detect any kind of damage or fault in the wheel or the grinder.
- Carry out maintenance of grinders at regular intervals of time and as stated by the manufacturer. Never use a faulty device and carry out all possible preventive maintenance for safe operation of the grinder .
- Screens shall be erected by fire blanketed around welding/grinding works to prevent flying sparks showering nearby personnel/equipment.
- Cables shall be run neatly in a manner and shall hang on insulated hangers that do not cause tripping hazards.
- When changing the grinding disc of the grinder, the power source shall be isolated and the plug physically removed.
- Expiry year of abrasive wheel shall be visible on the disk. Do not use an expired grinding disk. & do not use a wheel without an expiry date.
- Due to the possibility of a wheel disintegrating during start-up, employees shall be briefed not to stand directly in front of the wheel as it accelerates to full operating speed.
- Worn out / damaged, grinding or cutting disc shall be replaced. When changing the disc, proper tools shall be use.
- All abrasive wheel shall be procured from reputed brands approved by AMSN HSE and the same shall be implemented in all AMNS project sites.



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- Stores officer shall inspect the newly received tool and check for necessary test certificates if any.
- The defective tools shall be immediately tagged appropriately and shall be either repaired or replaced.

7 TRAINING

All employees shall be trained in general hazards and precautions to be taken while working near overhead lines / underground cables.

Relevant supervisors/ Engineers shall be trained in this procedure for compliance.

8 RECORDS

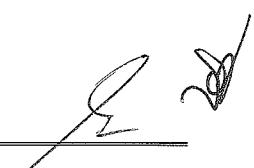
S. No.	Title	Location	Retention period
1	Periodic inspection reports	HSE department	Until completion of the project.

9 REFERENCE DOCUMENTS

AMNS/Project/SS/HSEM/14	Occupational Health and Hygiene
AMNS/Project/TS/HSEM/06	Electrical Safety
AMNS/Project/SOP/HSEM/04	Hot Work Safety

10 ANNEXURES

AMNS-Project-TS-HSEM-06-F04	- Portable Breaker checklist
AMNS-Project-TS-HSEM-06-F06	- Portable drilling Machine checklist
AMNS-Project-TS-HSEM-06-F13	- Portable grinding machine checklist
AMNS-Project-TS-HSEM-06-F17	- Wheel type cutting machine
AMNS-Project-TS-HSEM-06-F12	- Ply cutting machine checklist



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- All worn out / damaged, grinding or cutting disc shall be returned to the stores at the end of each shift to ensure that they are disposed of properly.

SAW

- Use a safe depth of cut settings
- Only use sharp blades
- Check for obstructions in stock / wood to be cut
- Secure the stock or wood before cutting
- Kickback pawls are to be taken care
- The guard shall cover a minimum of 70% of the circumference of the rotating disc
- Machine shall be equipped with the 'dead man switch'.

DRILLING MACHINE

- Select a drill bit suitable for the size of the drill, for the material to be drilled (e.g. wood, masonry, metal, etc.) and the work being performed.
- Ensure the drill bit is in good condition, sharp and clean.
- Ensure the bit is properly seated and tightened in the chuck.
- Ensure the chuck key is removed from the chuck.
- Check the material/stock for any defects such as knots and foreign objects such as nails, staples or screws.
- Secure the material/stock to be drilled to prevent movement. Clamp small pieces so they do not twist or spin.
- Hold the drill by the insulated gripping handle. Use an auxiliary handle for larger work or continuous operation.
- Drill a small pilot hole before drilling a large hole.
- Use the recommended speed for the material you are drilling. Slow the rate of speed just before breaking through the material.
- Be aware of sawdust and debris from drilling

5.2.3 MINIMUM PPE REQUIREMENTS

Head Protection	Helmet	Hand Protection	Leather gloves
Respiratory Protection	Dust mask	Ear Protection	Ear Plugs/ Ear Muffs
Body Protection	Coverall	Foot Protection	Steel toe safety shoes
Eye protection	Safety glasses	Any other PPE as prescribed in Job Safety Analysis	

6 CHECKING, CORRECTIVE AND PREVENTIVE ACTION

- All the tools shall be subjected to inspection at least once in three months by the concerned supervisor/ engineer and HSE officer and green tagged. The records shall be maintained till the successful completion of the project.

