

NIT PRACTICAL LEARNING SERIES - KENYA

Plant Operator Study Notes and Daily Safety Checklists

A printable revision pack covering the pre-start walk-around, work-area checks, safe operating habits, shutdown, defect reporting, G1-G14 machine reminders and practical-assessment questions.

SAFETY FIRST

This pack supports instructor-led theory and supervised machine practice. It does not authorise anyone to operate equipment and does not replace the operator's manual, site risk assessment or instructions from an authorised trainer or supervisor.

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How to use this study pack

Read it before practice, carry it to the training yard and review it after the instructor's feedback.

One checklist, three actions

Before practice	With the instructor	After practice
Read the handover, inspect the work area and identify the machine-specific danger zones.	Point to each component, explain what you are checking and ask what should stop the machine.	Record the correction you received and one habit to repeat during the next session.

Five questions before the machine moves

1. Am I authorised, fit and familiarised for this machine and task?
2. Is the machine safe enough to inspect, start and test?
3. Are the ground, route, services, weather and people controlled?
4. How will the operator, spotter and site team communicate?
5. How will I stop, isolate and report a problem?

Core rule

Inspect. Communicate. Control. Report. A dependable operator follows the same order on an easy shift and a difficult one.

Use this plant operator safety checklist as a study and handover aid. The correct machine manual, site form and instructor's directions remain controlling.

PPE and access

Wear the protective equipment required by the site risk assessment. Common items include a helmet, safety boots, high-visibility clothing, gloves, eye protection and hearing protection. Face the machine and use the steps and handholds provided. Maintain three points of contact. Do not jump from the cab.

PPE is not permission to enter a danger zone. A reflective vest does not make a person visible inside every blind spot, and a helmet does not make it safe to walk under a suspended load.

Daily pre-start inspection record

Complete one record for the machine and shift. Use the site's approved form when it requires additional fields.

Machine / fleet ID		Category G code	
Hour reading		Date / time	
Site / work area		Operator	
Planned task		Spotter / supervisor	

Defect and action record

Item / component	Defect or observation	Action taken / person notified	Safe decision

Operator decision	☐ Fit for the planned check/task ☐ Stop, isolate and report ☐ Refer to authorised person
Operator name / sign	
Supervisor / instructor sign-off	
Corrective action closed by / date	

If a defect may affect safety, do not convert this record into permission to operate. Keep the machine parked or isolated as instructed and wait for an authorised decision.

Daily pre-start checklist

Record the machine ID, hour reading, date, site, operator and every defect on the approved form.

A. Authority, documents and handover

- ☐ I am authorised and familiarised for this machine and task.
- ☐ I reviewed the previous shift's handover and unresolved defects.
- ☐ The required inspection, service or examination status is current.
- ☐ I know the task, work limits, route and emergency procedure.
- ☐ A competent person has explained any instruction I do not understand.

B. Work area

- ☐ Pedestrian and mobile-plant routes are controlled and understood.
- ☐ Swing, crush, reversing, loading and tipping zones can be kept clear.
- ☐ Ground condition, slope, edge distance and bearing capacity suit the task.
- ☐ Overhead and underground services have been identified and controlled.
- ☐ Lighting, dust, rain and visibility allow safe operation.
- ☐ The operator and designated spotter agree on signals or radio use.

C. Walk-around with the engine off

- ☐ No unexplained fresh leak is visible beneath or around the machine.
- ☐ Tyres, wheels, tracks and undercarriage show no obvious unsafe damage.
- ☐ Attachments, pins, locking devices and visible retaining parts appear secure.
- ☐ Hoses, cylinders, pipes and connections show no damage or active leak.
- ☐ Steps, handholds, platforms, windows and the cab are clean and secure.
- ☐ Guards, mirrors, cameras, lights, labels and reflectors are present and usable.
- ☐ The specified fire extinguisher and emergency equipment are serviceable.
- ☐ Fluid levels are checked only by the approved method and under safe conditions.

Never use a hand to search for a pressurised hydraulic leak. Fluid can penetrate skin. Keep clear, shut down and report the suspected defect.

Start-up, function checks and work decision

D. Cab and stationary checks

- ☐ The seat, seat belt or restraint and mirrors are adjusted.
- ☐ Controls are in the required safe position before starting.
- ☐ Gauges and warning indicators complete their normal start-up check.
- ☐ Horn, lights, beacon, reversing alarm and warning devices work.
- ☐ Steering, service brake and parking brake respond correctly.
- ☐ Controls and attachments are tested slowly in a clear area.
- ☐ No unusual noise, smell, vibration, smoke or warning remains unexplained.

Stop-use warning signs

Stop and report	Why it matters
Steering or brake failure	The machine cannot be controlled or held safely.
Failed restraint, alarm or safety device	A required protective layer is missing.
Fuel, coolant or hydraulic leak	Fire, injection injury, loss of control or component damage may follow.
Unsafe tyre, wheel, track or undercarriage	Failure can cause loss of stability or movement control.
Cracked, bent or loose attachment part	The attachment or load may release unexpectedly.
Sticking or unexpected controls	Machine response is no longer predictable.
Warning, overheating, smoke, smell or noise	The cause must be assessed before continued use.
People in the exclusion zone	Movement may strike, trap or crush a person.
Unknown service, power line or unstable ground	The task has changed and requires a new control decision.

Operator authority

The operator identifies, records and reports defects. Repair, inspection and return-to-service decisions belong to authorised competent people. Do not hide a defect or attempt a repair outside your role.

Safe operation and shutdown

Operating habits

- [] Wear the fitted seat belt or restraint as trained and required.
- [] Keep guards, covers and doors in their approved operating position.
- [] Travel slowly enough to stop within the clear route ahead.
- [] Keep clear of edges, people, structures and other equipment.
- [] Carry or position attachments as the manual and instructor require.
- [] Use one agreed spotter where a clear view is not possible.
- [] Do not carry passengers without a designated passenger seat.
- [] Do not overload, misuse attachments or bypass alarms and interlocks.
- [] Stop before using a phone or responding to another distraction.
- [] Reassess when ground, traffic, weather, visibility or the task changes.

Blind spots and signals

Stop when someone enters the exclusion zone, the spotter disappears, a signal is unclear, several people give directions, or visibility no longer supports the manoeuvre. Re-establish control before moving.

Shutdown checklist

- [] Park in the authorised place on firm, stable ground.
- [] Keep clear of traffic, edges, fire points and emergency access.
- [] Select neutral or park and apply the parking brake.
- [] Lower attachments to the approved safe position.
- [] Follow the required idle or cool-down period.
- [] Shut down, isolate and remove the key or access device as required.
- [] Exit with three points of contact.
- [] Complete a post-use check and record defects or service needs.
- [] Give the next operator or supervisor a clear handover.

Never work beneath raised equipment supported only by hydraulic pressure. Isolation, stored-energy control and approved mechanical support belong to the authorised maintenance procedure.

G1-G6 machine revision guide

Use this table as a memory aid. Training and paperwork must identify the exact machine code.

Code	Machine and purpose	Beginner inspection focus	Main danger-zone reminder
G1	Track shovel - tracked loading and earth handling	Tracks, undercarriage, bucket, pins, hoses and access	Stable ground; keep people outside the loading path
G2	Wheel shovel - stockpiles, trucks and yard loading	Tyres, articulation, steering, bucket and hydraulics	Articulation crush zone and restricted visibility
G3	Bulldozer - pushing, clearing and spreading	Tracks, rollers, blade, push arms and ripper	Edges, slopes, buried hazards and blade clearance
G4	Excavator - digging, trenching and loading	Undercarriage, boom, stick, bucket, pins and hoses	Full swing radius; underground and overhead services
G5	Motor grader - road levels, drainage and camber	Tyres, steering, articulation, blade, circle and scarifier	Long frame and offset blade need traffic and clearance control
G6	Motor roller - compaction of road layers	Drum or tyres, scrapers, water system, brakes and alarms	Soft shoulders, edges, reversing and vibration risk

Stability note

Raising, extending, swinging or tipping a load can shift the machine's combined centre of gravity. Slopes, soft shoulders, excavation edges and sudden control inputs reduce the stability margin. Follow the manual, task plan and instructor's method; never test a machine's limit by feel.

Memory prompts

1. Which machine creates an articulation crush zone?
2. Which machine adds a rear counterweight swing area?
3. Which machines require special attention to road edges and soft shoulders?
4. Why must services be confirmed before excavation?

Suggested answers: G2 wheel shovel; G4 excavator; graders, rollers and other mobile plant working near edges; because service contact may cause electrocution, flooding, fire, collapse, interruption or serious injury.

G7-G14 machine revision guide

Code	Machine and purpose	Beginner inspection focus	Main danger-zone reminder
G7	Backhoe loader - front loading and rear excavation	Tyres, both attachments, pins, hoses and stabilisers	Set up on suitable ground; control both ends
G8	Dumper - carrying and tipping site materials	Tyres, brakes, body hinge, ram, tailgate and alarms	Tip on prepared ground; body down for travel
G9	Crane - planned lifting with truck or mobile variants	Examination status, load chart, outriggers, hook, rope and devices	Ground, power lines, lift zone and suspended loads
G10	Forklift - lifting and moving loads	Forks, pins, mast, chains, tyres, brakes and capacity plate	Load stability, pedestrians, turning and slopes
G11	Tele Handler - telescopic-boom lifting and placement	Tyres, attachment, locks, boom, hoses, load chart and stabilisers	Capacity changes with reach, height and attachment
G12	Farm tractor - towing and implement work	Tyres, brakes, hitch, hydraulics, lights and power take-off guard	Slopes, hitching, rotating parts and riders
G13	Top Loader - lifting and stacking from above	Tyres, lifting structure, attachment, locks, hydraulics and alarms	Positive engagement, yard surface and exclusion zone
G14	Reach Stacker - container handling at varying reach	Tyres, boom, hydraulics, spreader, locks, brakes and alarms	Capacity by reach and row; controlled stacking zone

Lifting note

A crane, forklift, Tele Handler, Top Loader or Reach Stacker must never be treated as a guessing exercise. The operator needs the correct capacity information, machine configuration, load details, ground or route assessment and communication plan. A planned lift also requires the competent roles and controls specified by the site.

Machine-specific reminders

- [] G7: lower and secure both attachments in the approved position before travel or shutdown.
- [] G8: confirm overhead clearance and keep everyone clear of the rear and sides before tipping.
- [] G9: never pass a suspended load over people and never exceed the approved load chart.
- [] G10: keep the load stable and in the approved travel position; control pedestrians and speed.
- [] G11: confirm the load chart for the boom reach, height and fitted attachment before lifting.
- [] G12: keep the power take-off guard in place and isolate before approaching an implement.
- [] G13: verify positive attachment engagement before lifting and keep the stacking zone clear.
- [] G14: confirm capacity for the reach and row, then control the travel and stacking zone.

Practical-assessment readiness

Exact tasks vary. Practise the method your instructor and examining authority require.

- [] Approach with correct PPE and check the surrounding area.
- [] Complete an orderly walk-around without skipping the underside or far side.
- [] Identify a defect and explain the reporting decision.
- [] Enter using steps and handholds; adjust seat, belt and mirrors.
- [] Start correctly and interpret gauges and warning indicators.
- [] Test controls, steering, brakes, horn and alarms in a clear area.
- [] Confirm the route, signals, exclusion zone and task instruction.
- [] Use smooth, controlled steering, braking and attachment movement.
- [] Position accurately without crossing the agreed limits.
- [] Respond correctly when a person, signal or condition makes the task unsafe.
- [] Park, lower attachments, shut down and isolate correctly.
- [] Complete the log and give a useful handover.

Instructor observation

Skill	First attempt	Correction received	Repeat date
Pre-start walk-around			
Start and stationary checks			
Straight travel and braking			
Turning and positioning			
Machine-specific task			
Parking and shutdown			

Do not memorise the checklist as a performance. Understand what each item protects. An assessor may ask why a leak, missing pin, soft edge or failed alarm changes the decision to operate.

Revision questions

Answer without looking back. Use the blank space for short notes.

1. Why read the previous shift's defect log before the walk-around?

2. What should happen when the operator loses sight of the spotter?

3. Why can a raised bucket or load reduce stability?

4. Name four work-area hazards to check before moving.

5. Why should a hydraulic leak not be searched for with a bare hand?

6. What is the difference between an operator check and a repair?

7. Why must underground services be confirmed before excavation?

8. What creates the crush hazard on an articulated wheel shovel?

9. Why should a dumper not travel with the body raised?

10. What information must be known before a crane lift?

11. What does a forklift capacity plate help the operator decide?

12. What should happen when a required alarm or brake fails its check?

13. Why is PPE not a substitute for an exclusion zone?

14. List the main steps in a safe shutdown.

15. Which codes cover excavator, Tele Handler, Top Loader and Reach Stacker?

Answer key

No.	Suggested answer
1	It identifies known defects, restrictions and unresolved work before the new inspection starts.
2	Stop and re-establish clear communication before moving again.
3	It shifts the combined centre of gravity and may reduce visibility and the stability margin.
4	Examples: pedestrians, traffic, soft ground, edges, slopes, overhead lines, underground services and poor visibility.
5	Pressurised fluid can penetrate skin and cause a serious medical emergency.
6	The operator identifies, records and reports within their authority; authorised competent people repair and approve return to service.
7	Service contact may cause electrocution, fire, flooding, collapse, interruption or serious injury.
8	The central articulation joint closes and changes position as the machine steers.
9	The raised body moves the centre of gravity, reduces stability and may hit overhead hazards.
10	Load, radius, configuration, ground support, lifting plan, communication and applicable machine limits.
11	Whether the load and arrangement are within the forklift's rated capacity and stated conditions.
12	Stop, park or isolate as instructed, report the defect and do not use the machine until authorised.
13	PPE reduces some consequences; it does not prevent a machine striking or crushing a person.
14	Park safely, select neutral or park, apply the brake, lower attachments, follow cool-down instructions, shut down and isolate, exit safely, inspect and hand over.
15	Excavator G4; Tele Handler G11; Top Loader G13; Reach Stacker G14.

A correct answer should explain the safety reason, not simply repeat a phrase. Ask the instructor to correct any answer that depends on the exact machine or site procedure.

Personal practice log

One row for every supervised session. Write the correction while it is still fresh.

[illegible]

Training and source notes

Plant operator training at NIT

Newton Institute of Technology in Migori offers a two-month plant operator programme structured around 70% practical training and 30% theory. Learners select four-, five- or six-machine packages from the equipment available for their intake. Confirm the current machine selection, timetable, fees, entry requirements and attachment arrangement with admissions before paying.

Contact	Details
Campus	Migori Town, Namba Area, along the Migori-Sirare Highway
Call / WhatsApp	0713 584 858
Email	info@niteducation.com
Programme	https://niteducation.com/courses/plant-operator/
Admissions	https://niteducation.com/admissions/

Information sources

- [] Kenya Occupational Safety and Health Act, 2007 - new.kenyalaw.org/akn/ke/act/2007/15/eng@2022-12-31
- [] Ministry of Labour - labour.go.ke/node/302
- [] TVET CDACC learning guides for plant and services engineering - tvetcdacc.go.ke/downloads/
- [] NTSA individual services - ntsa.go.ke/services/category/individual-services
- [] HSE mobile work equipment - hse.gov.uk/work-equipment-machinery/mobile.htm
- [] HSE construction-site traffic management - hse.gov.uk/construction/safetytopics/vehicletrafficmanagement.htm
- [] NIT Category G guide - niteducation.com/resources/how-to-become-a-plant-operator-in-kenya-2026-guide/

Final safety note

Use this pack as a revision aid. The exact machine manual, approved inspection form, site risk assessment, task plan and authorised instructor or supervisor remain controlling. When conditions change or an instruction is unclear, stop and ask.

Prepared by Newton Institute of Technology Editorial Team

Institutional / Technical review: Engineer Simon Barongo

Engineer Simon Barongo is a director at Newton Institute of Technology with more than ten years of experience in road and bridge construction.

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