Course Objectives Excavator 360 above 10 tonnes – Lifting Operations (experienced)

It is envisaged that by the end of this course of training the learner will be able to answer questions on and perform the following:

- Lift planning and lifting operations preparation
- Configure the machine to pick up a range of loads
- Lift and place loads accurately and safely at given places
- Travel with suspended loads

Learning Outcomes for Excavator 360 above 10 tonnes – Lifting Operations (experienced)

Learning Outcome	Instructor Notes
Lift planning and lifting operations preparation	***Delivery to include:*** • Why all lifts must be planned, supervised, and carried out safely • Competence requirements for those involved in lifting operations • Function of a lift planner, lift plan and typical information that should be detailed in the plan • Type, limitations and extent of information contained within load capacity charts • Extracting information from, and interpreting, lifting/load capacity charts • Load centres/centres of gravity, lifting capacities relevant to reach, height and slew • Methods of establishing the weight of loads, including shape, size, and density • Type of lifting accessories for given types of loads • Machine mode settings for lifting operations • Required boom/dipper configurations for intended activities • Factors that can impact the lateral and longitudinal stability including reach, height, overloading, ground type and compaction, load swing, levelling requirements • How lifting on inclines can affect machine stability • Methods of communication including radio protocol and hand signals, for unit loads • Use of stabilisers and other stability aids • Rated Capacity Indicators (RCIs) and other types of indicators and warning systems for machine stability • Safety devices connected with lifting operations • Factors for exclusion and segregation zones • Identification of proximity hazards • Authorised and non-authorised accessory attachment points to the machine • Thorough examinations and other certification requirements • Manufacturers authorisation/approval for the lifting of suspended loads

Learning Outcomes for Excavator 360 above 10 tonnes – Lifting Operations (experienced)

Configure the machine to pick up a range of loads	***Delivery to include:*** • The correct use and application of travel controls (all types) to include braking controls (wheeled types) • The importance of maintaining good all-round visibility • The correct use of all hydraulic controls • How attachments and lifting accessories can reduce the stated lifting capacity of the machine • Correct machine configuration for different lifting activities • How lifting capacity is reduced when lifting 90 degrees to the centre line of the machine for example over the side • Employing stabilisers, lock-outs and levelling systems (wheeled types) • Checking security/integrity of load • Checking ground conditions to support the total machine weight including load • Determining the load capability of the machine at various configurations • Prior confirmation on where each load needs to be lifted to and where to be placed • How stabilisers increase stability (wheeled types) • Effects of stabilisers on ground pressures and on finished surfaces (wheeled types) • Stabiliser sinkage and effects on stability (wheeled types) • Positioning of excavator for lifting and placing a range of given loads • How long loads can contact the machine when lifting and slewing
Lift and place loads accurately and safely at given places	***Delivery to include:*** • Quick coupler positioning during lift • Checks on the security/integrity of load • Placing the hook/accessories directly above the centre of gravity of the load • Use of boom locks and king posts • Following given signals and instructions from the slinger/signaller • Maintaining full all-round observation, including with the slinger/signaller

	• Mode selection for the given activity • Factors and examples that determine where loads can and cannot be placed • Smooth use of all controls • Methods of controlling of load movement/swing and load security including environmental factors • How loads should be guided and controlled • Carrying out trial lifts and the reasons for • Controls isolated/deactivated during accessory attachment and detachment activities • Stabiliser employment for the given activity (wheeled) • Effects on load integrity and security and machine stability when slewing with loads • How to minimise load swings and the effects of load swing on stability • Lifting and placing loads which may be partially or fully out of sight of the operator • How load shapes, size, weight, length, centre of gravity and securing arrangements affect load security and safe movement of suspended loads • How moisture content within a load can affect stability • How to lift and place a range of loads at various locations where a change of radius (from minimum to maximum) and slewing of up to 360 degrees is required • Identification of and function of check/burst valves • Why suspended loads should not be left unattended
Travel with suspended loads	***Delivery to include:*** • Authorisation/approval by appointed lift planner for travelling with suspended loads • Rated capacity of the machine for travelling with suspended loads in various configurations to include derating requirements • Additional load lift planning requirements for suspended loads • Establishing the route of travel when traveling with a suspended load • Condition of intended travel route for stability and visibility • Dangers of travelling with suspended loads including slinger/signaller positioning

- Why suspended loads should not be left unattended
- Methods of communication, radio protocol and hand signals for travelling with suspended loads
- How, typical site terrain for example, uneven ground and inclines can affect machine stability
- Visibility requirements when travelling with a suspended load and dangers of losing sight of the slinger/signaller
- Definition of dynamic stability and the causes and effects of instability
- How and why load swing must be minimised

The learning outcomes listed should not be considered in isolation and may be added to in order to accurately reflect the learner's duties and working environment