Tasmanian Forest Industries Bush Fire Awareness

Level 2

PUAFIR215– Prevent Injury
PUAFIR309B – Operate Pumps
PUAEQU001B – Prepare, maintain and test response equipment
FPICOR2204B – Follow fire prevention procedure.

Introduction

- Housekeeping
  - Emergency exits
  - Facilities
  - House rules
  - Designated smoking areas.

Introduction

- Assessment process
  - On completion of the delivery session an assessment will be conducted to achieve your endorsement
  - This will include:
    - Theory assessment
    - Practical assessment
    - The theory assessment can be undertaken either verbally or in written form
    - Please discuss this with your trainer.

Introduction

- Welcome to the bush fire awareness training session
- On successful completion of this program you will receive the ForestWorks endorsement for bush fire awareness
- This endorsement replaces the bush fire safety/suppression endorsement.

Introduction

- What is bush fire awareness?
  - Bush fire awareness is designed to provide you with the underpinning skills and knowledge to help you protect yourself and assets on site
  - This enables you to provide first response in the event of a fire on your operation.

Bush Fire Safety

- As a contractor/employee you are expected to make the first effort at extinguishing or containing the outbreak of fire on your operation
- The above will only be done if you consider it safe to do so at no risk to any personnel.

Bush Fire Safety

- You need to make a decision on whether the fire can be immediately and safely extinguished or contained with the limited available resources
- You need to get all personnel and equipment to a safe area and notify relevant agencies
- ***You are not a fire fighting agency or expected to have fully trained fire fighters.***

Course Content

This course will cover the following:

- Elements of fire
- Bush fire safety
- Water usage
- Pumps, hoses and fittings
- Fire operations
- Communications
- Prepare, maintain and test equipment.

Fire Elements

- There are 3 main elements needed for a fire to exist
  - Fuel
  - Oxygen
  - Heat
- If one element doesn’t exist then burning cannot continue.

The Fire Triangle

To Suppress Fire

- This can be achieved by treating the elements of fire:
  - Removing the fuel
  - Smothering to remove the oxygen
  - Cooling to remove the heat.

Bush Fire Safety

- Under the Work Health and Safety Act 2011 it's stated that it is the personal responsibility of all workers to protect themselves and their fellow workers from injury when working in any role

- There is no activity to be conducted in the course of responding to a fire which is worth the life or health of an employee

Bush Fire Safety

- Safety in extinguishing fires depends upon the individual having the knowledge of fire weather evaluation and fire behaviour together with discipline and self control.

Bush Fire Safety

- The application of the basic principles of safety in heat and smoke are essential
- Employees must be constantly aware of the dangers inherent in bush fires and be trained so that any risk is responded to automatically and correctly.

Personal Protective Equipment

- The following PPE/PPC must be worn (but not limited to) when responding to a fire incident on your operation.
  - Safety Helmet
  - Crush-resistant safety footwear
  - Eye protection
  - Leather gloves
  - Hearing protection
  - Long sleeved shirt.

Personal Protective Equipment

- The effects of heat are greatly reduced by wearing the right clothes, using safety equipment and reducing the amount of skin surface exposed to the heat
- Some clothing fabrics can be hazardous if worn while responding to a fire
- Do not wear clothing such as:
  - Nylon
  - Rayon
  - Polyester
  - Light weight cotton such as short sleeved shirts and singlets
- ***SYNTHETIC CLOTHING MUST NOT BE WORN.***

Personal Protective Equipment

- When responding to fire employees often work in heat and it's important that all clothing is loose fitting to allow air to circulate next to the body

- Smoke and noise often make it difficult for machinery operators to see people working in the bush. For this reason it's important that employees wear high visibility clothing when responding to fire incidents.

Emergency Meeting Point

- Emergency meeting points are signposted meeting places used by the Forest Industry and emergency services to assist with the response to emergency situations.

Emergency Meeting Point

If an accident occurs:

Apply first aid. Do not move the injured person unless agreed to by a qualified first aider

- Radio Company Base for help, stating the following:
  - What has happened
  - Exact location of incident
  - Number of injured personnel
  - Your requirements i.e. Ambulance, Police or Doctor
  - Special considerations such as access difficulties.

Emergency Meeting Point

- Stand by radio if possible for advice or further instructions
- Base will make necessary arrangements for meeting Ambulance etc at a suitable Emergency Meeting Point
- ***If you do not have a Radio, phone 000 or 112 and ask for an ambulance and state above details.***
- ***Never state the injured persons name.***

LACES

- Lookout
- Awareness
- Communications
- Escape routes
- Safety zones.

WATCH OUT

- Weather
- A ctions
- T ake care
- C ommunications
- H azards
- O bserve fire behaviour
- U nderstand your instructions
- T hink clearly.

Chain of Command

COMPANY SUPERVISOR

|

CONTRACTOR/EMPLOYER

|

BUSH BOSS

|

CREWS

Hazards on the Fire Ground

- Heat related illness
- Fatigue
- Smoke inhalation
- Burns
- Sprains/strains
- Snake and insect bites
- Radiant heat
- Trips and falls
- Disorientation
- Falling limbs/trees
- Lack of visibility
- Machinery
- Lack of communication
- Lack of skills/training.

Smoke inhalation

Some measures to prevent being overcome by smoke may include but not limited to:

- Wearing respiratory protection
- Move away from smoke
- Do not work in smoke if it can be avoided
- Stay down low.

Causes of Heat Stress

- Radiant heat from fire
- Fluid loss through sweating with out replacement
- Dehydration
- The internal heat our bodies generate as we work
- Tight clothing
- Poor fitness
- Fatigue.

Heat Stress Symptoms

Firefighters may feel thirsty, dizzy, weak, sick and suffer from cramps, headache & fatigue, experience a change in the colour of urine.

To Help Prevent Heat Stress

- Drink lots of water often
- Avoid soft drinks
- Keep fit
- Eat good food regularly
- Wear loose clothing
- Use rest periods to recover
- Limit alcohol during rest
- Share the workload.

Treating Symptoms Heat Stress

- Remove to a cool place
- Rest
- Loosen clothing
- Assist in air circulation by fanning
- Replace lost fluids with cool drinks
- Sponge body with cold water
- Avoid further exertion.

Entrapment

WARNING

if you are caught in an intense,
fast moving wildfire,

THERE IS A VERY GOOD CHANCE
YOU WILL DIE

so always observe the safe firefighting rules
and don't get caught.

Sheltering in a Vehicle

- Radio for assistance
- Park on clear or burnt ground not obstructing access
- Face vehicle towards your exit route
- Headlights and hazard lights should be on
- Close all windows and vents
- Lie low and cover up (with fire blanket if available)
- Remain in vehicle until fire has passed.

Sheltering Away From a Vehicle

- Communicate situation if possible
- Move further away from fire
- Move to flank of fire
- Move to clear or burnt ground or low fuel area
- Use any type of heat shield - log, dirt, mud, rocks, drains etc.

Sheltering Away From a Vehicle

- Get to areas with less fine fuels
- If time allows, burn off fine fuels
- Scrape hollow if possible
- Lie face down wearing your PPE
- Cover all exposed skin
- Submerge yourself in a creek or shallow waterway.

Powerlines

Power lines may be broken on the ground or sagging due to heat stress:

- Treat all power lines as though they are alive
- Contact Aurora or applicable agency
- Position personnel to warn others
- Never spray water at or near power lines
- Never park directly under power lines
- Smoke is also an effective conductor of electricity.

Incorrect Position of Vehicle

Water

Water can be conserved by:

- Opening nozzle only when applying water to fire
- Roll over/break up logs during mop up
- Adjust flow as appropriate
- Use foam when appropriate and available
- Aim water at base of fire not at flames.

Wetting Agents (Foam)

A wetting agent is a soap or detergent based product that allows the water to spread out and form a film rather than a series of droplets:

- Smothers available fuels
- Smothers fire
- Spreads water further by lowering surface tension
- Can be used as a fire break.

Foam Safety

- When decanting:
  - Eye protection
  - Skin protection ie gloves, long sleeves
  - Respiratory protection
- When tank is filling:
  - Ensure all foam control valves are closed
  - Keep foam out of all water sources.

Foam Mix Ratio

- Initial attack
  - The foam mix ratio for an initial attack needs to be between 0.5-1%.
- Mop up and patrol
  - The foam mix ratio for mop up needs to be between 0.1-0.5%
  - At 0.5% wetting and surface tension is at its maximum
  - At 1% expansion is at its maximum

PUMP OPERATIONS

Types of Pumps

low pressure/high volume

- used in filling tankers
- used for speed of fill not pressure

high pressure/low volume

- fitted on fire tankers
- pump water over long distances
- also up steep hills

You can use a combination of both.

Suction

- Suction hose –
  - Suction hose needs to fitted with a float
  - Suction hoses are designed for deliver of water from water source to the pump (inlet)
  - Suction hoses must be reinforced in order to maintain shape
  - They must be stored correctly to prevent puncturing.

Suction Hose

Foot Valve

•A foot valve allows prime to be maintained at all times whilst in water source

•Should be attached to a float/strainer which prevents the intake of debris.

Strainer

Should be attached to a float which prevents the intake of debris.

Priming

Functions of a Primer

- Priming is the action of drawing the air from a suction hose and pump, replacing it with water pushing it into the empty space by atmospheric pressure
- Types of Primers
  - Diaphragm (Whale)
  - Rotary Sliding Vane
- Maximum Priming Time - 45 seconds
- Rotary Sliding Vane - 20 seconds

Priming Pumps

Can be done:

- Manually – bucket or helmet
- Manually – lever
- Electric
- Vacuum.

Problems Priming

Check:

- All seals on suction hose
- Outlet valve of pump is closed (nozzle)
- No holes in suction hose
- Diaphragm in primer not damaged
- Drain plug on bottom of pump is not open
- Don’t expect to draw water from a height of greater than 6 meters.

Diaphragm Primer

Hoses

P.V.C. – Rubber

- Found on hose reels
- Normally 20 – 25 mm
- Will burn
- May not be easily linked to other hoses.

Rubber hose

Hoses

<u>Delivery hose (canvas</u>)

Percolating:

- 25 – 70 mm
- Won’t burn easily when wet
- Won’t stand much abrasion from dragging around
- Requires cleaning and drying after use
- Smaller diameter can be used in conjunction with rubber.

Percolating (Canvas) Hose

Hose maintenance

- Make sure canvas hoses are cleaned and hung up to dry
- Stored appropriately
- Ensure any punctures or holes are identified
- Ensure threaded ends are screwed together to protect ends.

Nozzles

- bubble cup foam nozzle
- branch nozzle
- variable nozzle
- task force tip.

Variable Nozzles

Specialised Nozzles

Friction loss

- Friction loss is:
  - Resistance to the flow of water inside the hose
  - Larger diameter hose = less friction loss
  - Allow 50 kPa per 30m length (fireground calculation)
  - Calculated on the number of lengths in the longest line.

Types of Couplings

- Threaded
- Quarter turn quick coupling
- Camlock
- Adaptors and splitters.

Coupling Types

Camlock Fittings

Water Delivery Problems

- Blocked nozzle
- Damaged nozzle
- Outlet valve not open
- Sucking of air
- Hole in line
- Broken Impeller
- Not primed
- Loss of prime
- Kinked hose
- Restricted delivery line
- Pump failure
- Cavitation.

Where To Obtain Water

- Mains Reticulated (water under pressure)
  - Hydrants, town water supplies etc
- Static Supplies (below pump)
  - Swimming pools, water holes, dams, rivers, water troughs etc
- Gravity Feed Tanks (above pump)
  - Water carriers (carts and tanker units) or domestic water tanks etc

Safety Management Systems

- All contractors must have a safety management system in place
- A copy of this document must always be stored on the work site
- All employees must be aware of its contents.

Faulty Equipment and OHS Issues

- Tag out equipment
- OHS notification process
- Notify responsible officer
- Try to rectify the problem
- Remove from worksite
- Discuss at toolbox or staff meetings
- Follow reporting procedures as per Safety Management System.

Stress in the workplace

- Examples of stress may include:
  - Bullying
  - Discrimination
  - Work hours
  - Conflict
  - Management
  - Lack of training
  - Unreasonable expectations
  - Personal issues
  - Lack of communication

Fire On Operation

Evidence of fire on your site could be, but not limited to:

- Smoke or smell of smoke
- Flame
- Smouldering materials.

Causes Of Fire On Your Operation

- Exhausts on chainsaws
- Discarded cigarette butts
- Welding or grinding
- Friction – dragging timber over rocky terrain
- Illegally lit fires
- Sparks from track plates on rocky terrain
- Direct heat from machinery
- Mechanical maintenance.

Exhaust Systems

- All exhausts including chainsaws, mobile machinery and portable engines need to be in good working order
- A spark arrestor/s must be fitted and operational.

Stihl Modification

- Replace mesh screen with metal plate during fire season

This modification applies to the Stihl 066 or MS 660.

Fire On Operation

If there is a fire on your operation you must:

- Stop work immediately
- Notify your Bush Boss or Responsible Officer
- Notify your Company Supervisor
- Notify Tasmanian Fire Service on 000 or 112 on mobile
- Investigate and attempt to suppress the fire with equipment available on site
- Always remember your own safety and the safety and capabilities of your crew.

Fire Preparedness

Prior to fire season you will need to:

- Run and test all fire suppression equipment (pumps, extinguishers, hoses and ancillary equipment)
- Ensure training or refresher course undertaken where required.

Impact Of Fire On Operations

- Loss of life or serious injury
- Negative impact on safety of personnel
- Loss of property/equipment
- Loss of income - employer/employee
- Loss of resource
- Legal action if found liable and/or negligent.

Communication

- All personnel on the work site must be contactable at all times
- It's important that all communication on site is effective, particularly in the event of a fire. This communication may include:
  - Verbal
  - Written
  - Hand signals/body language
  - Mobile phone (if coverage available)
  - UHF/VHF radio
  - Signage.

Harassment And Discrimination

- No comment or action of a discriminatory nature should ever be made in the workplace. This includes but is not exclusive to:
  - Ethnic origin
  - Skin colour
  - Gender
  - Age
  - Sexuality
  - Religion etc.

Summary

- It's vital that all relevant personnel are adequately trained in bush fire awareness
- Remember, with this limited training you are not bush fire fighters
- Make do with the minimum equipment you have at your disposal and do the best you can with this
- **However personal safety and on going risk assessment will determine how much or how little you may be able to accomplish.**

Where To From Here

Level 3 – Wildfire Suppression

- Pre requisite – Level 2 – Bush Fire Awareness
- This program is for those individuals actively involved in the suppression of wildfire
  - PUAFIR204B – Respond to wildfire
  - PUAFIR303B – Suppress wildfire
  - FPICOR3203B – Evaluate fire potential prevention.

Bush Fire Awareness

- Thankyou for your attendance at the Bush Fire Awareness session
- Any questions?