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

Learning Resource

forestworks
LEARNING AND SKILL DEVELOPMENT
FOREST, WOOD, PAPER & TIMBER PRODUCTS INDUSTRY

Introduction

Welcome to the Bush Fire Awareness training session. This additional resource manual is for your reference and will assist with giving you extra information to help you back in the workplace.
On successful completion of this program you will receive the ForestWorks endorsement for Bush Fire Awareness.
This endorsement replaces the Bush Fire Safety endorsement.

Individuals who hold the Bush Fire Awareness endorsement are responsible for initial response to fire on your operations. This in turn reduces the potential loss of resource, assets, income, property and life. These skills will also help you and your fellow workers to safeguard against such things as litigation.

The Bush Fire Awareness endorsement is the second of three levels as part of fire courses offered. This program forms the intermediate skills, knowledge and understanding required to minimise the likelihood of wildfire in Tasmania.

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 with your trainer if you have any additional needs or learning or literacy difficulties.

Course Content

The Bush Fire Awareness 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

Introduction

- Assessment process
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    - Please discuss this with your trainer.

Bush Fire Safety

- As a contractor/worker 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

- You need to make a judgement call 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***

The Fire Triangle

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

- This can be achieved by:

  - Removing the fuel
  - Smothering the fire to remove the oxygen
  - Cooling fire to remove the heat

Bush Fire Safety

- Under the Workplace Health and Safety Act of 1995 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
- Safety in extinguishing fires depends upon the individual having the knowledge of fire weather evaluation and fire behaviour together with discipline and self control.

- 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 (but not limited to) must be worn when responding to a fire incident on your operation.
  - Helmet
  - Crush-resistant safety footwear
  - Eye protection
  - Leather gloves
  - Hearing protection.

- 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.
- Synthetics such as
  - Nylon
  - Rayon
  - Polyester
  - Light weight cotton such as shirts and singlets

- ***SYNTHETIC CLOTHING MUST NOT BE WORN.***

- 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 sign posted meeting places used by the Forest Industry and emergency services to assist with the response to emergency situations.

For more information and maps go to Forestry Tasmania's web site:
http://www.forestrytas.com.au/forest-management/emergency-meeting-points

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 ie. Ambulance, Police or Doctor
  - Special considerations such as access difficulties

- 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 don't have a Radio, phone 000 or 112 and ask for an ambulance and state above details.***

Never state the injured person's name

LACES

L ookout

A wareness

C ommunications

E scape routes

S afety zones

WATCH OUT

W	eather
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

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
- 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
- Get to areas with less fine fuels
- If time allows, burn off fine fuels
- Scrape hollow if possible
- Lie face down wearing your PPE

Example of Sheltering Away From Vehicle

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 an initial attack 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

Types of Pumps

<u>low pressure/high volume</u>
- used in filling tankers
- speed of fill not pressure

<u>high pressure/low volume</u>
- fitted on fire tankers
- pump water over long distances
- also up steep hills

can have a combination of both.

Operating Pumps

Suction hose –
- 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.

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

Diaphragm Primer

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.

- 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

Hoses

P.V.C. – Rubber

- Found on hose reels
- Normally 20 – 25 mm
- Will burn
- Not easily linked.

Delivery hose (canvas)

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

Suction Hose

Foot Valve

Strainer

Types of Couplings

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

Male threaded Female threaded Quarter turn quick coupling

Coupling Types

Camlock Fittings

Nozzles

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

Variable Nozzles

Foaming branch (top), Task force tip (bottom)

Specialised Nozzles

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

Priming Pumps

Can be done:

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

Problems Priming

Check:

- All seals on suction hose
- Cutlet 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.

Water Sources

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

Fire Fighting Hazards

- Heat related illness
- Fatigue
- Smoke inhalation
- Burns
- Sprains/strains
- Snake and insect bites
- Trips and falls
- Disorientation
- Falling limbs/trees
- Lack of visibility
- Water bombing
- Machinery

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 top 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

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

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 of 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

Fire on your 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

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
- 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 the fire season you will need to:

- Run and test all fire suppression equipment (pumps, extinguishers, hoses and ancillary equipment)
- Training/refresher course undertaken

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

Exhaust Systems

- All exhausts need to be in good working order
- A spark arrestor must be fitted and operational
- This modification applies to the Stihl 066 or MS 660

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
- 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 ongoing 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

Remember: personal safety and ongoing risk assessment will determine how much or how little you may be able to accomplish.