

FIRE SALVAGE OPERATIONS

What you should know!



A photograph of a forest with many tall, thin trees and a ground covered in brown pine needles. The trees are mostly bare, with some brown leaves still on the branches. The ground is covered in a thick layer of brown pine needles and some small green plants are starting to grow. The text "Do not over-respond – take stock – plan properly, then get going!" is overlaid in yellow.

**Do not over-respond – take
stock – plan properly, then
get going!**

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GENERAL OBSERVATIONS IN FIRE SALVAGE OPERATIONS

- No weeds
- Less slash/debris (maybe)
- Carbon
- Dust
- Production pressure
- Trees last longer than expected (pines)
- Harvesting system mismatch



PLANNING

- Assessments (1-4)
 - Age class distribution
 - Severity and type of damage
 - Terrain/Slope limitations
- Scheduling & sequencing:
 - Harvesting system options
 - Transport options
 - Clients constraints
- Capacities
 - Machines
 - People
 - Skills
 - Other resources
- Markets/Clients/Storage



CARBON & DUST

- Carbon particles: 0.2 – 10 μm
- Carbon melting point – 3500 $^{\circ}\text{C}$
- Normal air-bourn dust - <100 μm
- 1 kg of dust in typical 100 mhr off-road application
- Standard air filters 25-60 microns
- Carbon ingress leads to excessive wear, low power, high fuel consumption, failure

Size	Material
$\frac{1}{2}$ –1 mm	Coarse sand
$\frac{1}{4}$ – $\frac{1}{2}$ mm	Medium sand
125–250 μm	Fine sand
62.5–125 μm	Very fine sand
3.90625–62.5 μm	Silt
< 3.90625 μm	Clay
0.2 - 3 μm	Burning wood

EQUIPMENT

- Carbon and dust
- High preventative maintenance intensity
 - Pre-cleaner – every 2 hours
 - Air filter(s) - weekly replacement
 - More frequent oil replacement - 100mhrs
- Significant increase in punctures
- Production issues
 - Compartment stocking
 - Productivity assumptions may need adjustments
 - Harvesting system mis-match
- Operational costs increase



CHAINSAWS - IMPLICATIONS

- Fit pre-filters - wash 2x / day with petrol
- **Running costs – double**
- Reasons:
 - Chain - 30% of normal life
 - Cutter-bar and sprocket – 50%
 - Piston rings – 30%
 - Pistons and bearings – 50%
 - Brakes – 75%
 - Main filter – 50%
 - Pre-filter – 1 per month



CHAIN SAWS – OPERATIONAL ADJUSTMENTS

- What to do differently during fire salvage operations:
 - Clean around stem (remove loose carbon)
 - Cut stump a bit higher – less carbon blown up
 - Extract tree lengths to the landing(s)
 - Drag the trees
 - Extract to landing further away
- Scrape of as much carbon as possible**
- Process on roadside landing – not in-field



PEOPLE

- Safety
 - Production pressure
 - Burnt stumps
 - Spikey carbonised biomass
- Operating conditions
 - No shade
 - Dust
 - Fine carbon particles – gets in everywhere
- Sustenance
 - Water and food
- Motivation
 - Create a common cause
 - Incentives (conditional)



ROADS AND TRANSPORT

- ROADS

- Much higher traffic concentration than usual
 - Dust problem (safety & maintenance)
 - Muddy when the rains come
- Need dedicated maintenance focus
 - Drainage control
 - Pot holing
 - Constant blading and rolling



- TRANSPORT

- Bottlenecks
 - Scheduling
 - Customers
- Dedicated loading (no 3-wheelers)



ENVIRONMENTAL

- Maintain FSC
- Erosion hazard
 - Increased run-off due to
 - Less absorption
 - No water energy brakes
 - Heavy transport
- Prevent landslides
 - Re-establishment of grass
 - Erosion barriers
- Protect SMZ - natural forests





GENERAL GUIDELINES:

- Plan properly.
- Safety first – don't compromise.
- Stay within FSC approved principles.
- Comply with legal requirements.
- Prioritize for value! Remember, timber does not degrade immediately.
- Increase maintenance frequency.
- Store excess burnt timber (in wet decks) until required.
- Harvesting costs increase.
- Core project team to meet frequently.
- Regular communication to everyone.



Look after the people
Look after the environment
Look after the equipment
and
FOCUS!

THANK YOU
