# FIRE SALVAGE OPERATIONS

What you should know!





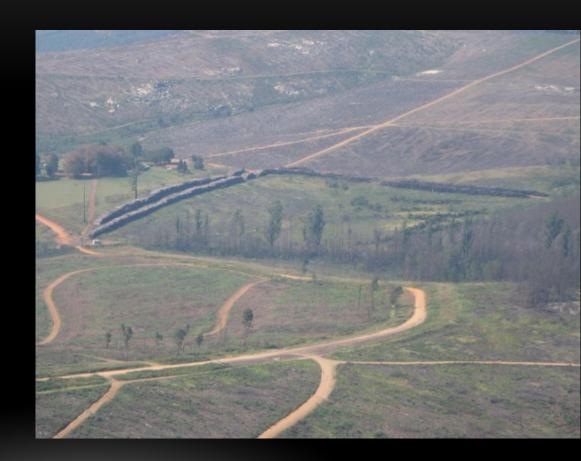
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# GENERAL OBSERVATIONS IN FIRE SALVAGE OPERATIONS

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



# **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 °C
- Normal air-bourn dust <100 µm</li>
- 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	Materiai
½–1 mm	Coarse sand
1⁄4−1⁄2 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

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#### **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