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Oilfield Explosives Safety and Security forum
Marathon Oil
New Safe and Secure detonators for the Industry’s consideration.

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(Orica Australia Pty. Ltd. – Down Under)
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- Orica is an Australian-owned, publicly-listed global company with over A$4 billion in annual revenue and a market capitalisation of approximately A$4 billion.

- We have around 10000 skilled and enthusiastic people operating in over 30 countries in all continents.

- Our four businesses – Mining Services, Fertilisers (Incitec Pivot), Chemicals and Orica Consumer Products – are all leaders in their chosen markets, globally in mining services and locally in fertilisers, chemicals and paints.
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- This business is run globally with a leading presence in Australia, Asia, Europe, North America and Latin America.
- Mining Services is Orica’s largest business and is the world’s largest provider of explosives products, supplying explosives, detonating systems and blast management services to the mining, quarrying, construction and seismic industries.
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- Key themes

- Security and safety - risk minimisation
- productivity
- sourcing integrity

- Means risk management to increase profit and reduce immediate and long term losses
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- Safety and Security

Safety

- loss of core competence in explosives handling
- hazardous areas eg stray electrical
- high dependence on the individual

Results in loss and disruption including regulatory intervention
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- Safety and Security
- Terrorism
- Miscreants
- Anti oil

Results in loss and disruption including regulatory intervention
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- Safety and Security

  Management goals

- improved control and insurance
- reduce liability
- corporate governance and image - doing the right thing
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- Product and systems opportunity
- Electronic initiating systems
- Biodegradable explosives
- Active disarming explosives
- Application techniques
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- Product opportunities
- Electronic initiating systems - electrical safety requirements
- No initiation by:
  - 12 V batteries
  - 50V direct
  - 400V standard seismic shooters
  - 110 V AC
  - Safer against RF EMC
  - Safer against Static
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Risk product opportunities

- electronic initiation system - verification test
- car battery - cannot fire 12V & 24 V
- 50 V - cannot fire 24 hrs test
- 400V I/O Shot Pro exploder 100 samples - no fire (Detonator subjected to 100 repeat pulses - no fire)
- 120V AC 5 minutes (30 samples)
- 120V 1.5 hours later no fire (5 samples)
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- Product opportunities

- Electronic initiating system

- Safe against RF EMC
  Resistance to at least 10 V/m over frequency range of 10kHz - 3GHz

- Safe against Static
  No ignition at 30 kV, 2500 pF
  (electric detonator typically 11 KV, 2000pF)

- MSHA shunting variance
Seismic shooting

Dog Box

Pelton Shooter

Seismic electric det
Seismic system

Dog Box

Pelton Shooter

OSEIS detonator

Seismic electric det

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- Product opportunities
- Electronic initiating system
- Meets all safety and security requirements for seismic exploration
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Risk management product opportunities

- Oilwell production

- electronic initiating systems - do they have an application in downhole product substitution or augmentation

- stray electrical safety
- unique coded signal for initiation
- isolation through security coded PIN system
- control through unique identification
- communicable - system readiness and verification
- links to inventory management and control systems
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Overview: Safety and Security

- Risk management
- Explosive Based Products
- Security
  - Liability
  - Controls
- Productivity
  - Safety
  - Downtime
- Sourcing
  - Regulatory
  - Reliability

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- Benefits

- Protects against accidental or unintended detonation through inherent security;
- Protects against accidental detonation caused by static electricity or electric fields;
- Fires within the sampling rate of most seismic acquisition systems;
- Assures superior performance in the toughest of environments;
- Ensures initiation reliability with all detonator-sensitive explosives, even at low temperatures;
- Enables tracking and inventory control of detonators via a unique identification number for every detonator;
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- Features

- Security system in place requiring PIN codes for use.
- System can communicate bi-directionally with detonators;
- Several built-in electrical hazard avoidance features.
- Cannot be fired by conventional means including batteries;
- Highly accurate timing. Constant reaction time to within 0.1 ms;
- High strength detonator design;
- Every detonator has a unique electronic identity.
- Detonators cannot be programmed to fire without the dedicated shooting systems;
- Legwire insulation that is not adversely affected by low temperatures, water immersion or extended storage at high humidity;