FW: Quote: Under vehicle inspection camera

From: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

novationengineering@bigpond.com To: Date: Thu, 29 Oct 2015 09:38:03 +1100

Hi Steve,

These are the under-vehicle cameras we are after. Could you pls source a quote from the vendor

Below is the email trail from our last purchase from the vendor for your reference.

Samer Soliman

Manager Heavy Vehicle Programs Compliance Operations

From: Konstantin Ordin [mailto:konstantin@meditinc.com]
Sent: Tuesday, 17 March 2015 5:13 PM
To: SINGH Jai; SOLIMAN Samer

Subject: Re: Quote: Under vehicle inspection camera

I am sorry for the mistake in description. I confirm that this is really a camera with the following features -

• 3.5" TFT monitor SONY CCD camera sensor

- Rechargeable Lithium Battery Protection
- Wide Angle Lens: 120 degree Perspective
- Infrared Distance: 3-5 Meters (9.8-16.4ft)
- Adjustable camera position

best regards,

Konstantin Ordin Sales Manager, Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Mar 17, 2015 at 9:10 AM, Konstantin Ordin < konstantin@meditinc.com > wrote:

I am sorry for the mistake in description. I confirm that this is really a camera with the following features -

3.5" TFT monitor

SONY CCD camera sensor

- Rechargeable Lithium Battery Protection
- Wide Angle Lens: 120 degree Perspective
- Infrared Distance: 3-5 Meters (9.8-16.4ft)
- Adjustable camera position

best regards,

Konstantin Ordin Sales Manager, Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Mar 17, 2015 at 2:47 AM, SINGH Jai < Jai.SINGH@rms.nsw.gov.au > wrote:

Hi Konstantin,

Thanks for that.

Just want to confirm that this is for the under vehicle inspection camera? In the invoice it states under vehicle inspection mirror.

Regards

<u>Jai</u>

From: Konstantin Ordin [mailto:konstantin@meditinc.com] Sent: Monday, 16 March 2015 5:33 PM

To: SINGH Jai Subject: Re: Quote: Under vehicle inspection camera

Hello

Please see proforma invoice with our bank details. Please check if all is ok or i need to change Konstantin Ordin Sales Manager, Medit, Inc ? Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com Address: 96 Sherbrook St., Winnipeg, MB, Canada Get a signature like this: Click here! best regards, Konstantin Ordin Sales Manager, Medit, Inc ? Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com Address: 96 Sherbrook St., Winnipeg, MB, Canada On Mon, Mar 16, 2015 at 1:28 AM, SINGH Jai <Jai.SINGH@rms.nsw.gov.au> wrote: Hi Konstantin, The quote is OK. Can you please send me the invoice and have it billed to "Roads and Maritime Services" Regards, <u>Jai</u> From: Konstantin Ordin [mailto:konstantin@meditinc.com]
Sent: Tuesday, 10 March 2015 11:10 PM To: SINGH Jai Subject: Re: Quote: Under vehicle inspection camera Hello Recently I sent a quote for under vehicle cameras. Please tell me if you need my assistance. best regards. Konstantin Ordin Sales Manager, Medit, Inc. ? Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.medifinc.com Address: 96 Sherbrook St., Winnipeg, MB, Canada On Fri, Mar 6, 2015 at 9:57 AM, Konstantin Ordin <konstantin@meditinc.com> wrote:

Hello

I am sorry.

Please see attached quote.

best regards,
Konstantin Ordin Sales Manager, Medit, Inc



Phone: +1 (204) 977-4634 ext.704

Email: konstantin@meditinc.com

Website: www.medifinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Fri, Mar 6, 2015 at 1:17 AM, SINGH Jai <Jai.SINGH@rms.nsw.gov.au> wrote:

Hi Konstantin,

Thanks for that.

I noticed the item listed in the quote is not the device I'm after.

I'm interested in the under vehicle inspection camera that's listed on your website - http://www.fiberscope.net/under-vehicle-inspection-

Can you provide a quote for this item please (same quantity)?

Regards,

Jai

From: Konstantin Ordin [mailto:konstantin@meditinc.com] Sent: Thursday, 5 March 2015 5:09 PM

To: SINGH Jai Subject: Re: Quote: Under vehicle inspection camera

Hello

I am sorry. I am trying again.

best regards, Konstantin Ordin Sales Manager, Medit, Inc



Phone: +1 (204) 977-4634 ext.704

Email: konstantin@meditinc.com

Website: www.medifinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Thu, Mar 5, 2015 at 1:28 AM, SINGH Jai <Jai.SINGH@rms.nsw.gov.au> wrote:

Hi Konstantin,

Thank you for your assistance on this.

I don't see a quote attached to your email...can you resend it please?

Regards,

<u>Jai</u> -

From: Konstantin Ordin [mailto:konstantin@meditinc.com]
Sent: Wednesday, 4 March 2015 5:04 PM
To: SINGH Jai
Subject: Re: Quote: Under vehicle inspection camera

-

<u>Hello</u>

Thank you for contacting Medit Inc. My name is Konstantin and I will help you

Currently we don't have brochures for under vehicle inspection camera. However I will give you here some details and you can see its characteristics, video presentation and photos here: http://www.fiberscope.net/utility-inspection-system-strahl.html

I attached quotation for two pole cameras with shipping costs and your special discount.

We accept only advance payments by bank wire or credit cards.

Some important features:

- Waterproof Camera to IP68 Standard
- Intercom (rescue/security) Camera
- Telescopic Pole with Interchangeable Camera Options
- 5m (16) Total Length
- 8 High-output LED Lights
- 30m (98') Cable for Underwater Applications
- Built-in 4" TFT LCD Color Display with 180 Degree Rotation
- Image Capturing and Video Recording
- Intercom Feature, Headphones Induded
- Long-lasting Rechargeable Lithium Battery
- Micro SD Card and Mini-USB connectivity

You can ask me any questions and I will send proforma invoice with our bank information

best regards,
Konstantin Ordin Sales Manager, Medit, Inc



Phone: +1 (204) 977-4634 ext.704

Email: konstantin@meditinc.com

Website: www.medifinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Wed, Mar 4, 2015 at 7:31 AM, SINGH Jai <Jai.SINGH@rms.nsw.gov.au> wrote:

Hi Sergey/Konstantin,

-

My name is Jai and I work for a state government agency in New South Wales, Australia; where we're responsible for building/maintaining road infrastructure and managing compliance/safety for roads and waterways. I work specifically in compliance for heavy vehicles and am interested in procuring the under vehicle inspection camera for our inspectors to trial.

Can you assist with the following questions?

- Do you have any datasheets, brochures, videos etc that we can view for this device?
- Can you provide a quote for 2 under vehicle inspection cameras including shipping to Australia (State: New

4

	South Wales, Postcode: 2150)?
	- Do you accept purchase orders?
	-
	Let me know if you need more information.
	Regards.
	-
	Jai Singh Business Systems Analyst Compliance Operations Safety & Compliance T +612 8849 2215 M +61475 834 412
	www.rms.nsw.gov.au Every journey matters
	Roads and Maritime Services Level 10 27 Argyle Street Parramatta NSW 2150
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FW: Under-vehicle Cameras

SOLIMAN Samer <samer.soliman@rms.nsw.gov.au> From:

novationengineering@bigpond.com To: Date: Thu, 29 Oct 2015 09:39:10 +1100

image of the under-vehicle camera to make sure they are quoting you for the correct thing

Samer Soliman

Manager Heavy Vehicle Programs Compliance Operations

From: SOLIMAN Samer
Sent: Wednesday, 28 October 2015 12:19 PM
To: DAVEY Walter S; JENKINS Raymond D; JOHNSTONE Hugh R; ROMANO Michael A
Cc: PATTERSON Brett; SINGH Jai; STEYN Craig G
Subject: Under-vehicle Cameras

Good Morning Wally, Ray, Hugh, Mike,

FYI - We have been trialling a simple and inexpensive under-vehicle inspection camera at Mt White HVSS which has shown this simple tool has great benefits(reduced WHS risks and reduced inspection times for under vehicle inspections).

The major benefits of this tool would be for **on-road inspections**, so I would like to extend the trial to several vehicles in every sector.

Im thinking ~5 vehicles in every sector should get this unit to extend the trial.

Could you each pls respond with how many you would like for your respective sectors?

Note: We will be modifying the camera extension arm shown above so the camera can slide far enough under the truck.

Samer Soliman

Manager Heavy Vehicle Programs
Compliance Systems | Compliance Operations Branch | Safety & Compliance Division
T 02 8849 2631 | M 0416185434 www.rms.nsw.gov.au

Roads and Maritime Services 27 Argyle Street Parramatta NSW 2150

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FIBERSCOPE.NET

Re: Qoute: SKU:KVBS3-30m

From: Konstantin Ordin <konstantin@meditinc.com>

To: novationengineering@bigpond.com

Date: Thu, 29 Oct 2015 10:43:03 +0300

Attachments: Quotes_1446104548543.pdf (122.44 kB); dealer.pdf (195.22 kB)

Hello

?

Thank you for your RFQ

Please see attached quote for 21 pole cameras. We can also ship with your account of any forwarder, if you have. Just a formality - if these pole cameras are for reselling, we can offer 20% discount (already in the quote). Please fill attached dealer form for that.

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Thu, Oct 29, 2015 at 2:30 AM, < novationengineering@bigpond.com > wrote:

Hi Konstantin.

This is Stephen Thammiah, Director at Novation Engineering Pty Ltd (Australia). I need a qoute for 21 units of the STRAHL Telescopic Utility Inspection System (SKU:KVBS3-30m) as shown here http://www.fiberscope.net/utility-inspection-system-strahl.html. Shipped to Sydney Australia. Please let me know approximate delivery times, payment methods etc, this qoute is required ASAP.

Please let me know if you require any other information for the qoute.

Thanks,

Steve



Toll Free Phone: 1-800-239-9934 C EXHIBIT Local Phone: 1-204-977-4634 Toll Free Fax: 1-888-686-8660 International Fax: 1-613-822-5255

MEDIT INC

96 Sherbrook street, suite 202 Winnipeg MB, R3C2B3 Canada Quote Valid Till: 30.11.2015 Quote #: Q-32885 Stage: Draft

Quote To:

Stephen Thammiah Novation Engineering Ship To:

Stephen Thammiah Novation Engineering

Sidney, Australia

Terms:	PO #:	Ship Via:	Courier Acct #:	Acct. #:	Rep:
Full Payment in Advance		FEDEX	Acct-12801 Konsta		Konstantin Ordin

Product Code/Description .	Qty	List Price	Tota
(VBS3-30M	21	\$ 3,290.00	\$ 69,090.0
Pole camera, Deep water CCD camera with prolong pipe 1/3" Sony Super HAD CCD with 3.6mm board lens, 540TVL. Built in 8pcs highlight white LED (73mm) around camera lens. 1" color TFT LCD screen, for real time video watching 1.264 video compression, 720x480 / 640x480 video out. Audio recording and two-way talkback function. Underwater inspection tools (30M cable).			
Discount	1	\$ -13,800.00	\$ -13,800.0
Special sales discount			
Shipping	1	\$ 3,500.00	\$ 3,500.0
Shipping and Handling Fees. Shipping and Handling Charges DO NOT INCLUDE CUSTOMS DUTIES OR TAXES. These are to be paid by the Receiver to their Customs department.			
pank charges	1	\$ 50.00	\$ 50.0
		Sub Total	\$ 58,840.0
		Tax	\$ 0.0
		Grand Total	\$ 58,840.0

Additional Comments

Return Policy

All Medit Inc products come with a 1 year limited warranty, which covers manufacturer's defects. We accept returns for refund within 14 days after the item is received by you. All returns are subject to a 20% restocking fee. Shipping and handling fees are not refundable. Any customs and transportation charges are to be paid by the customer. Returns Must Be Re-Packaged in Original Shipping Materials - The instrument must be returned in the original packing material and received in 'like new' condition. Using other packing may result in additional charges. Instruments Must Be Received in 'Like New' Condition. Instruments showing marks, such as scratches, dents, etc., due to usage will have up to 50% deducted from the refund. You are welcome to send back the goods for exchange or refund via the following courier services: US Postal Service (USPS), Canada Xpresspost, EMS or FedEx Express. All shipments sent via TNT, FedEx Ground or UPS will be denied and returned back to the sender. Before you ship please call 1-800-239-9934 X 703 and our team will provide you with the shipping details and a RMA form. YOUR RETURN MAY NOT BE PROCESSED WITHOUT A RMA FORM. If you order custom item, please remember that it is made just for you; therefore, you must pay for it at the time of order. We do not carry these items in our stock, so once ordered, we cannot cancel or change custom orders. If you must cancel your custom order for any reason, we will charge you 40% of the item's price to handle and resell the item.



Medit Inc. 96 Sherbrook str, Winnipeg, Manitoba, R3C 2B3, CANADA PHONE: 204.9774634 FAX: 888.6868660 E-MAIL: office@meditinc.com

www.meditinc.com

Dealer Application Form

Thank you for your interest in Medit Inc. We only offer our resources to genuine resellers.

To start your relationship with Medit Inc., just follow the simple steps below The application can then be faxed, mailed or personally delivered to our office (Unfortunately electronic documents cannot be substituted at this time.

Medit Inc. requires your signature on file with the application). We require that you submit pages 2-4 of this application along with Step A and B.

Step A

Photocopy of your Ministry of Finance License or your Resellers Business License.

Step B

Along with the completed and signed Dealer Application, we require an Initial Purchase Order of a Minimum of \$199.00 to open your dealer account.

Medit Dealer Application Form

Page 1 of 4

Dealer Profile

General Information

Legal Company Name:		
Doing Business as:		
Address:		
City:Sta		
Phone: () Fax: (_) Em	ail Address:
Owners/Principal's Name:		
Home Address:		
City:Sta	ate/Province:	Postal Code:
Home Phone: ()	Do You OOwn	or ORent/Lease your home?
Business Information		
Type of Company: Sole Proprietor	Partnership	Limited Company/Corporation
Years In Business: Number of	f Employees:	_ Number of Locations:
Are Purchase Order Numbers requir	red: Yes 1	No
PST #:	GST #:	
Business Description:		
Are Other Employees Authorized to	Purchase: Ye	s □No
Authorized Purchaser(s):		
Bank Reference		
Principal Bank:	Branch #:	Phone: ()
Contact Person:		
Account Name:		

Medit Dealer Application Form

Page 2 of 4

Dealer Profile

Terms And Conditions

These Terms and Conditions are effective as of January 1, 2008 and are applicable to all new and current dealers. Medit Inc. reserves the right to change, modify or remove any or all of these terms and conditions at any time and without further notice. Documentation between Medit Inc. and dealer shall prevail in the event of any discrepancy between these Terms and Conditions and dealer's documentation.

It is the dealer's responsibility to remain up to date with any changes to our policy or terms and conditions. We will notify all dealers of any important changes to the dealer terms and conditions by email.

All dealer applications are subject to current and ongoing verification.

1. Ordering Terms

- 1. There is a minimum order requirement of USD\$199.
- 2. There are no monthly or periodic minimum purchase requirements.
- 3. Dealers must be a registered business with proof of business registration.
- 4. Payment must be made in full before any order is shipped out.

2. Agreement Terms

- 1. Dealer agreements may be terminated at anytime and without notice.
- 2. Dealer must read and acknowledge the terms and conditions in this dealer application.
- 3. Dealer prices are only valid for 30 days and subject to chance due to changes in global exchange rates and transportation costs.
- 4. Dealer must respect all copyrights, trademarks and patents of Medit Inc. brand, logo and product design. Copyright infringement is subject to legal prosecution in the court of law.

3. Ordering Procedure

1. All instock items will be shipped within 2 weeks upon payment.

4. Payment Information

- 1. All prices are in US dollars.
- 2. We accept payment from oversees dealers by BANK WIRE TRANSFERS only! From USA and Canada dealers we allow certified checks as a payment. (Visa, Mastercard allowed for small demo orders)
- 3. Cheques & Bank Drafts must be made payable to Medit Inc.
- 4. Paypal payments should be sent to paypal@meditinc.com
- 5. Full payment must be received in full with all funds cleared before any order is shipped out.

5. Shipping Information

- 1. All orders are shipped via FedEx, UPS or otherwise agreed.
- 2. We are not responsible for lost or damaged items due to shipping unless insurance was explicitly requested or purchased.

6. Warranty Policy

- 1. All products include a one year manufacturer's warranty against defects in materials and workmanship.
- 2. Dealers must provide basic troubleshooting and problem diagnosing before any product is shipped back to for warranty service or claim.
- 3. No Merchandise can be returned without a pre-approved RMA#.

Medit Dealer Application Form

Page 3 of 4

I/we certify that the information in this application is true and correct. I/we also certify that I/we have read and understood the terms and conditions.

I/we consent to the obtaining of bank and/or personal information as may be required at any time in connection with this Dealer Application.

Authorized Signature:	
Name (Please Print):	
Title:	
Date:	

Re: Qoute: SKU:KVBS3-30m

From: Konstantin Ordin <konstantin@meditinc.com>

To: novationengineering@bigpond.com

Date: Tue, 3 Nov 2015 09:23:50 +0300

Attachments: Quotes_1446531747396.pdf (119.44 kB)

Hello

Tlehaenaeerk oyen.ofn RrFQn Ps efn ecdQenPaFeQdoPrQnq efh

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

?

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Nov 3, 2015 at 2:41 AM, < novationengineering@bigpond.com > wrote:

Apologies Ordin,

The following is the under inspection equipment that I need qouted. Please provide a new qoute based on 21 units of the following.

Cheers,

Steve

Under Vehicle Inspection Camera

SKU:UVC

Product highlights:

Introducing Medit's Auto-Cam: Under vehicle inspection cam. The Auto-Cam is great for a wide range of inspections which require the ability to see under a vehicle or trailer. Inspections such as border security, road side safety inspections, even to inspect the body work under a vehicle are all possible thanks to this infrared lighted camera unit.

- 265 Million colour pigmentation 7 in. TFT LCD Display
- Adjustable light strength
- Sony CCD Camera Sensor
- Infrared Lighted
- Complete portability



From: konstantin@meditinc.com

Date: Thu, 29 Oct 2015 10:43:03 +0300 Subject: Re: Qoute: SKU:KVBS3-30m To: novationengineering@bigpond.com

Hello

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The have meet myth Q estrik overnofme. Refoler Quq efhainwer QuPhhlaonacc Fri, do no fith Que Py outh Pronof, his efwalthough not he eight and hoperature easer Foler Quq efhath fennof feaell Provide from the deal of the Pyr (his properties over) in The have not his properties of the properties of th

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

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Address: 96 Sherbrook St., Winnipeg, MB, Canada

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Please let me know if you require any other information for the qoute.

Thanks,

Steve



Toll Free Phone: 1-800-239-9934 C EXHIBIT Local Phone: 1-204-977-4634

Toll Free Fax: 1-888-686-8660 International Fax: 1-613-822-5255

MEDIT INC

96 Sherbrook street, suite 202 Winnipeg MB, R3C2B3 Canada

Quote Valid Till: 04.11.2015 Quote #: Q-32885 Stage: Draft

Quote To:

Stephen Thammiah Novation Engineering Ship To:

Stephen Thammiah Novation Engineering

Sidney, Australia

	Terms:	PO #:	Ship Via:	Courier Acct #:	Acct. #:	Rep	p:
Full Payment in Advance		FEDEX		Acct-12801	Konstanti	in Ordin	
	Product Code/Description				. Q	ty List Price	Total

Product Code/Description .	Qty	List Price	Total
uvc	21	\$ 389.00	\$ 8,169.00
Under Vehicle Inspection Mirror: Portable Monitor, Camera, Control Box, Handle with universal wheel, Connection Cable, Power Adapter 5V, miniUSB Connector, Power Adapter 13.8V User's manual			
Discount	1	\$ -1,630.00	\$ -1,630.00
Special sales discount			
Shipping	1	\$ 3,500.00	\$ 3,500.00
Shipping and Handling Fees. Shipping and Handling Charges DO NOT INCLUDE CUSTOMS DUTIES OR TAXES. These are to be paid by the Receiver to their Customs department.			
bank charges	1	\$ 50.00	\$ 50.00
		Sub Total	\$ 10,089.00
		Tax	\$ 10,089.00
		Grand	
		Total	\$ 10,089.00
			USD

Additional Comments

Return Policy

All Medit Inc products come with a 1 year limited warranty, which covers manufacturer's defects. We accept returns for refund within 14 days after the item is received by you. All returns are subject to a 20% restocking fee. Shipping and handling fees are not refundable. Any customs and transportation charges are to be paid by the customer. Returns Must Be Re-Packaged in Original Shipping Materials - The instrument must be returned in the original packing material and received in 'like new' condition. Using other packing may result in additional charges. Instruments Must Be Received in 'Like New' Condition. Instruments showing marks, such as scratches, dents, etc., due to usage will have up to 50% deducted from the refund. You are welcome to send back the goods for exchange or refund via the following ocurier services: US Postal Service (USPS), Canada Xpresspost, EMS or FedEx Express. All shipping service (USPS), Canada Vpresspost, EMS or FedEx Express. All STORENT ST

FW: New Contractor in CM21

SOLIMAN Samer <samer.soliman@rms.nsw.gov.au> From: steve2ng@gmail.com, novationengineering@bigpond.com To:

Date: Mon, 9 Nov 2015 12:26:07 +1100 Attachments: CM21_Request_Form1.doc (77.82 kB)

Update this form with the new info and send it back to me? So i can submit it in the contracts system.

Samer Soliman

Manager Heavy Vehicle Programs Compliance Operations

From: SOLIMAN Samer Sent: Wednesday, 23 September 2015 12:29 PM To: 'rms-cm21.help@au.fujitsu.com' Subject: New Contractor in CM21

Hi.

Could you pls process the attached CM21 new contractor and advise once ready?

Samer Soliman
Manager Heavy Vehicle Programs
Compliance Systems | Compliance Operations Branch | Safety & Compliance Division
T 02 8849 2631 | M 0416185434
www.rms.nsw.gov.au

Roads and Maritime Services 27 Argyle Street Parramatta NSW 2150



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			CM21 Request form		
			email: rms-cm21.help@au.fujitsu.com		
Nan	ne of requestor :	Samer Solir			
	f number:	963135	nan		
Star	T number:	903135			
		Не	elp required – please select the appropriate section		
1.	Reset password		□ Yes		
2.	Unlock contract/work	order	Contract / work order number :		
			* Details:		
3.	Contract permissions				
			* Contract number: * Contract description:		
4.	Add Contractor detail	Is	✓ New □ Change		
4.1	* Company name		Novation Engineering		
4.2	* Trading as or office		Novation Engineering		
4.3	* ABN		ABN: 27 604 979 723		
			(For Property acquisition/sale from/to Private Individuals, see below)		
			Tick one of the boxes below, which will make Private individual a contractor with a system generated ABN		
			☐ Property acqusition by RMS ☐ Property sale by RMS		
4.4	ACN (Can not be differe ABN)	nt from			
4.5	* Street address (not PC	D Box)	10 Falcon way Glenwood 2768		
4.6 * Mailing address (If different from above)		erent from	PO Box 451 Kings Langley 2147		
4.7	* Phone		02 9629 1826		
4.8 Mobile (If mobile number is required,			number:		
	then a contact name is ma	indatory.	* Contact name: Stephen Thammiah		
4.9					
Note			ests, please fill and send this form to CM21 help desk in the same format (Please do not scan		
	or convert completed form to PDF).				
	* Denotes a mandato		information on Turata & Turat ADNs on Contracts		
	Please use the link to find out more information on Trusts & Trust ABNs on Contracts Trustees and Trust ABNs On Contracts				

FW: New Vendor form

From: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

novationengineering@bigpond.com To: Date: Mon, 23 Nov 2015 09:56:10 +1100

Attachments: EFT Form+Statement.pdf (1.21 MB); Quote 090 - Under vehicle Camera.doc (79.87 kB)

request sent today to add you as a new vendor. will be a couple days to process then I will submit the purchase order.

Samer Soliman

Manager Heavy Vehicle Programs Compliance Operations

From: SOLIMAN Samer Sent: Monday, 23 November 2015 9:55 AM To: COB_finance@rms.nsw.gov.au Subject: New Vendor form

Good Morning Ladies

Could you pls process the attached new vendor and let me know? Ive attached the EFT form, bank statement and quote with company letterhead.

Samer Soliman

Manager Heavy Vehicle Programs
Compliance Systems | Compliance Operations Branch | Safety & Compliance Division
T 02 8849 2631 | M 0416185434

www.rms.nsw.gov.au

Roads and Maritime Services 27 Argyle Street Parramatta NSW 2150



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SOLIMAN Samer <samer.soliman@rms.nsw.gov.au> From:

novationengineering@bigpond.com To: Date: Thu, 3 Dec 2015 13:20:24 +1100

use this spreadsheet as a template for your trials of the mobile ANPR camera

Samer Soliman

Manager Heavy Vehicle Programs
Compliance Systems | Compliance Operations Branch | Safety & Compliance Division
T 02 88370610 | M 0416185434
www.rms.nsw.gov.au

Roads and Maritime Services 99 Phillip st Parramatta NSW 2150



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Fwd: thermal camera report

From: Sam <ducktape69@gmail.com> To: novationengineering@bigpond.com Date: Mon, 11 Jan 2016 12:19:00 +1100

Attachments: STHV4P Marulan Trial Summary.pdf (1.92 MB)

Sent from my SAMSUNG Galaxy S6 Edge on the Telstra Mobile network

- Original message

From: SINGH Jai <Jai.SINGH@rms.nsw.gov.au>

Date: 11/01/2016 11:50 am (GMT+10:00)
To: "ducktape69@gmail.com" <ducktape69@gmail.com>

Subject: thermal camera report

Jai Singh

Business Systems Analyst Compliance Operations | Safety & Compliance T 02 8837 0396 M 0475 834 412

www.rms.nsw.gov.au

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Roads and Maritime Services

Octagon Building, Pod G Level 6 99 Phillip Street Parramatta NSW 2150



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Capability Gap Specialists

STHVP4 – Portable Thermal Heavy Vehicle Inspection Trial Marulan June 22nd –24th 2015

ABN - 191 615 365 36 ACN - 161 536 536

Introduction

The STHVP4 has been developed for portable detection of defective brakes, tyres and hubs for Heavy Vehicles. We developed this system based on previous trials of a single Thermal Camera at Marulan in January 2015. Following the trial, a request was made for a system to be constructed to view both sides of the vehicle.

The STHVP4 trial was conducted June 22nd-June 24th with a 55% success rate of detecting faults in braking systems.

The STHVP4 includes 4x Cases with a Thermal Camera and Networking equipment inside to enable the camera locations to be altered. There is also control room equipment including an antennae, network switch, wireless access point, monitor and recorder.

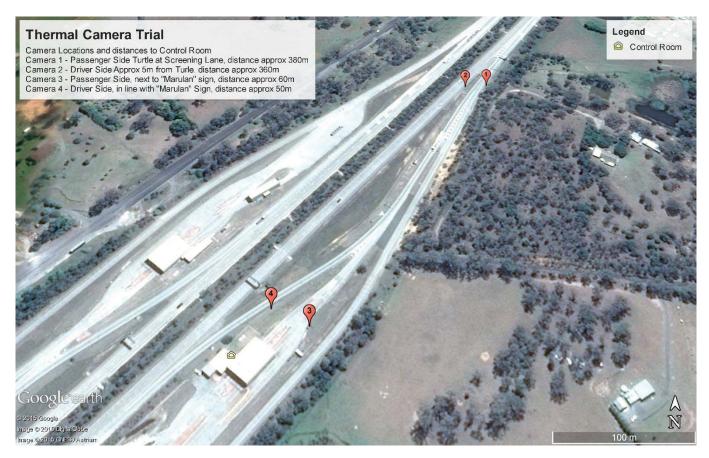








The camera locations were selected at a previous date with assistance from Samer Soliman from RMS, the image below shows the camera locations and distances from the control room.



Camera 1 Location and Captured Image





Camera 2 Location and Captured Image





Camera 3 Location and Captured Image





Camera 4 Location and Captured Image







Operation Details

The footage was viewed live in the control room on a laptop with a quad split screen and all 4 cameras visible.



The configuration of the cameras allowed for the footage to be viewed in order of Camera number with a slight delay between images. This allowed the user to view both sides of the whole vehicle and decide whether to advise the RMS operator to manually bring the vehicle in for a secondary examination.

As the vehicle passed Camera 1 and 2, there was around a 3-5 second window to manually signal the vehicle to enter the weigh station.

If the vehicle travelled too far, it would be too late for the vehicle to enter the weigh station. A great number of vehicles were detected but the manual trigger was not switched quickly enough, or there was no RMS operator at the desk to switch the trigger. This happened numerous times throughout the trial and greatly affected the total number of vehicles scanned and inspected. This occurred on approximately 25% of vehicles detected on cameras 1 & 2.

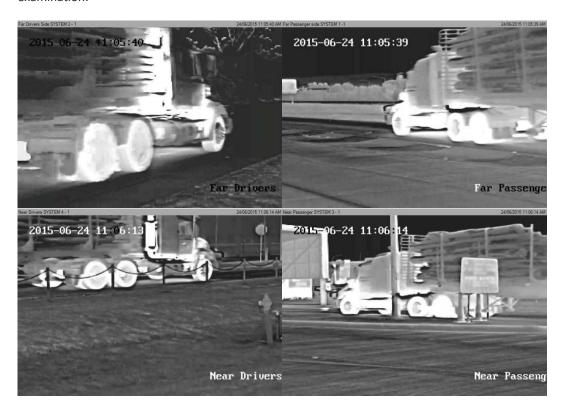
If a vehicle was suspected of having a fault, a secondary examination would be conducted by cameras 3 & 4 and a decision would be made to inspect the vehicle.



Results

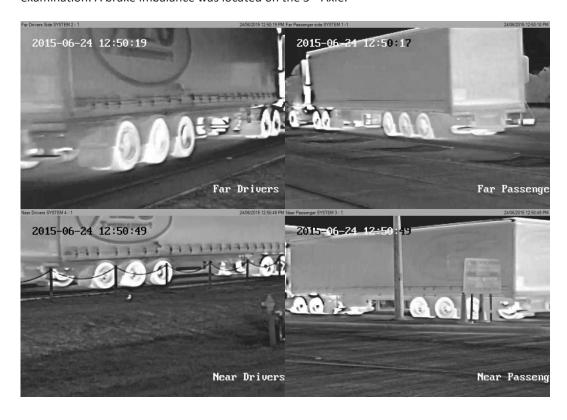
Example of an inactive brake on 2^{nd} Axle, prime mover.

The 3rd axle was showing as very hot on the passenger side compared to Axle 2, this was confirmed on secondary examination.



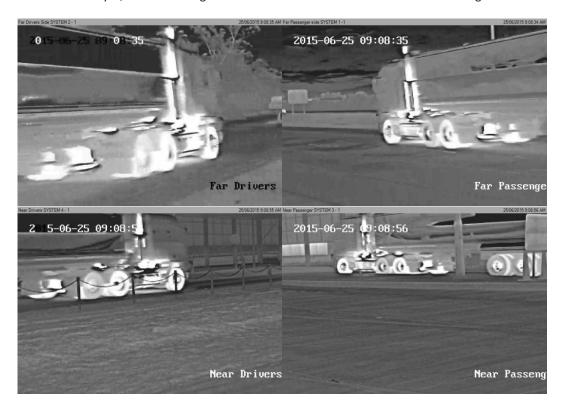
Example of Brake Imbalance

The middle Axle in the rear trailer, Driver's side is much hotter than the neighbouring axles, this was confirmed on secondary examination. A brake imbalance was located on the 3rd Axle.



Example Brake Force Low

There is a cold tyre, Axle 2 Passenger side and Axle 3 Driver's side. Axle 3 was working twice as hard in this example.



Statistics

Statistics were not tracked on Monday 22nd as the system was being tested and ideal camera location and angles identified.

- Overall strike rate was 11 faults out of 20 inspected vehicles (55%).
- Tuesday 23rd June had a strike rate of 4 faults out of 10 inspected vehicles (40%).
- Wednesday 24th June had a strike rate of 7 out of 10 inspected vehicles (70%).
- There was a total of 39 vehicles detected at the far turtle location (Cameras 1 & 2), 12 of these vehicles missed the manual override trigger.
- There was 1 vehicle each day inspected where there was no suspected fault, these vehicles has been omitted from the totals.
- 25 Vehicles were triggered for a secondary examination.
- 20 Vehicles were inspected after a secondary examination.
- 11 Vehicles were found to have issues with their brake systems.
- The most common suspected fault location was Axle set 3, Passenger side (12).
- The most common confirmed fault location was Axle set 3, Passenger side (4).
- 3 total suspected faults on Axle Set 1 & 2, with 5 total faults found (167%)
- 18 total suspected faults Axle set 3, with 6 total faults found (33%)
- 1 total suspect fault Axle set 4, with 0 faults found (0%)
- Suspected faults on the 1st and 2nd Axle set, resulted in a fault 100% of the time.
- Suspected faults on Axle set 3 had a 33% success rate.
- Suspected faults on Axle set 4 had a 0% success rate.
- Empty trailers had a much lower strike rate of 25% found faults.
- 1 Vehicle with Cattle on board was detected, this vehicle was unable to be tested.
- 1 Vehicle with suspected fault was accidentally released without inspection.
- 2 Vehicles had brake slight imbalances where no defect was able to be issued.

Conclusion

As a first time system, there was a learning curve for all involved resulting in improving strike rate as the trial progressed.

There were considerations that affected the number of vehicles scanned and issued fault rate such as:

- HR factors when a vehicle was selected for inspection, this would take on average 30min. During this time additional vehicles were unable to be inspected resulting in fewer detections.
- Operator experience RMS staff were unfamiliar with hearing a verbal trigger from Strategic Innovations staff to manually direct a vehicle for inspection. This resulted in 12 suspected faults missing a secondary examination and inspection. As the trial progressed, this ran much smoother, resulting in a lower rate of vehicles missing the manual trigger.
- Operator experience Strategic Innovations staff were also inexperienced at visible cues which resulted in a higher number of false positives in the first few days of the trial.
- Empty trailer false positives There was a high occurrence of empty trailer showing as faulty on the rear of the trailer. As the trial progressed, these vehicles were not being inspected due to low defect rate.

The overall strike rate was 55%, the last day of the trial had a strike rate of 70%.

Due to increased experience operating the system, I would expect an ongoing strike rate of 70%.

To keep this higher strike rate, there are two main changes I would make.

- 1. Empty trailers with suspected faults on Axle 3 or 4 would not be inspected the majority of the time.
- 2. There is a high occurrence of faults when the suspected fault is on Axle set 2, so moving forward I would ensure more of these vehicles are inspected.

mobile ANPR camera scoping study as at 28/01/16

From: Sam Sol <ducktape69@gmail.com>
To: novationengineering@bigpond.com
Date: Thu, 28 Jan 2016 13:57:17 +1100

Attachments: Mobile ANPR Scoping Study.doc (892.93 kB)

update



Mobile ANPR Camera

Scoping Study



Novation Engineering Pty Ltd 10th February 2016 Prepared for Roads and Maritime Services Commercial-in-confidence

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Novation Engineering Pty Ltd. Mobile ANPR – Scoping Study. P $a g \in /2$

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EXECUTIVE SUMMARY

ABBREVIATIONS

- 1. PROJECT BACKGROUND
- 2. STAKEHOLDER ENGAGEMENT (RMS MANAGEMENT, RMS INSPECTOR ENFORCEMENT OPERATIONS, CAMERA TECHNOLOGY VENDORS (MULTIPLE).
- 3. SCOPING STUDY
 - 3.1. MOBILE ANPR WORLD BEST PRACTICE REPORT
 - 3.2. TATTILE MOBILE ANPR CAMERA FIELD TRIAL REQUIREMENTS
 - 3.3. TATTILE MOBILE ANPR CAMERA FIELD TRIAL RESULTS
 - 3.4. CONCLUSION
- 4. REGULATORY APPLICATIONS
- 5. APPENDIX

Novation Engineering Pty Ltd. Mobile ANPR – Scoping Study. P $a \ g \ e \ / 3$

Executive Summary

This scoping study was commissioned to examine the efficacy, accuracy and potential vehicle regulation applications of a selected mobile ANPR camera for the purposes of vehicle regulation by Roads and Maritime Services.

The research undertaken draws attention to the fact that the mobile ANPR market is currently in its infancy compared to fixed ANPR technology. The Tattile mobile ANPR camera which was selected, on-paper, had the best performance in all required RMS key performance indicators. However, the results of the field trials have proven otherwise. To achieve the vendor stated performance figures, the camera must be mounted, setup, and angled within very restrictive specifications which essentially make this unit a poor choice for RMS to implement in their numerous enforcement vehicles. The major restriction is the angle at which the camera must be pointed at vehicles to achieve the required vehicle detection and ANPR accuracy KPI's.

The scoping study evaluates the Tattile mobile ANPR camera and concludes that RMS should not proceed with this current model for the purpose of vehicle enforcement. The two out of three failed KPI's could be improved by further development by Tattile, however, the lower cost of the unit is likely also due to the lack of current development investment with this model.

Abbreviations

RMS: Roads and Maritime Services

ANPR: Automatic Number Plate Recognition

KPI: Key Performance Indicator WHS: Work Health and Safety KM/H: Kilometres per hour NSW: New South Wales

Project Background

This scoping study is created for Roads and Maritime Services (RMS). A scoping study has been performed to trial a selected mobile Automatic Number Plate Recognition (ANPR) camera to prove concept for potential use/suitability for RMS regulatory applications mounted in/on RMS enforcement vehicles in future.

The Tattile mobile ANPR camera (figure 1.0) was recommended to be trialed, as its rich features (on paper) enable it to be the best new fit-for-purpose (vehicle regulation purposes) mobile ANPR technology currently available. Other factors in the decision to select the Tattile unit were the low procurement cost and minimal maintenance requirements when compared with other available mobile ANPR units. These are both major factors for Roads and Maritime Services. The camera unit is a very well built device; the hardware has a lifetime warranty, guaranteed to handle severe hot and cold weather conditions. The camera, coupled with an intelligent ANPR engine served from the attached processing unit, the cubietruck (figure 1.1) is also small and light-weight compared to all other comparable mobile ANPR technology packages currently in the market which meet RMS requirements and KPI's on paper.

Novation Engineering performed an extensive in-field study of this mobile ANPR camera unit according to best practice standards and WHS requirements dictated by RMS. RMS provided several requirements and KPI's for which the mobile ANPR camera technology was to be tested to ensure best fit-for-purpose recommendations.

Stakeholder Engagement

RMS:

Compliance Systems - Heavy Vehicle Programs Unit Manager. Enforcement Operations Inspectors.

External:

Tattile technical operations.
Tattile management.
Tattile research and development officer.
TESS product manager

Scoping Study

2.1 Mobile ANPR World Best Practice Report

XXXXXX

2.2 Tattile Mobile ANPR camera - Field Trial Requirements

Following several meetings and discussions with RMS stakeholders, the following is a list of key performance indicator's (KPI's), requirements and considerations for the field trial of the Tattile Mobile ANPR unit.

KPI's and minimum camera performance requirements:

- 1) Camera Up-time > 99.9%
- 2) Vehicle Detection Rate > 95%
- 3) ANPR engine accuracy > 95%

Camera operating requirements to be tested:

- Stationary In-Vehicle Camera Trial:
 The stationary enforcement vehicle would be parked at least 2metres from the roadside curb.
- 2) Moving In-vehicle Camera Trial:

The moving enforcement vehicle would be travelling at speeds ranging from 1km/h – 110km/h.

- 3) Camera Mounting trial Requirements:
 - a. Vehicle dash.
 - b. Vehicle roof.
- 4) Adverse weather conditions including:
 - a. Rain.
 - b. Fog.
 - c. Low ambient lighting conditions (night).

2.3 Tattile Mobile ANPR camera - Field trial results summary

KPI	Trial Results
Camera Uptime	100.00%
Vehicle Detection Rate	????
ANPR Engine Accuracy	????

KPI 1 Camera Up-time: Passed

The Tattile camera performed as described by the vendor with no perceived faults in hardware, software etc. A 100% hardware up-time was observed and the build quality of the hardware is excellent. It should be noted however, that the vehicle must have the engine running if operating the camera device for long periods of time to avoid vehicle battery drainage.

The trial lasted for a period of two months with many different weather conditions exposed to the camera unit, including severe prolonged heat with no obvious damage or failure to any component. The ANPR software/control unit also saw no obvious defects or bugs and was easy to navigate and perform tuning on camera parameters. Hence, this KPI has been given an overall pass outcome.

	Stationary In- Vehicle Camera	Moving Invehicle Camera	Vehicle dash mounted	Vehicle roof mounted	Rain	Fog	Low ambient lighting conditions (night)
Camera Up- time.	100%	100%	100%	100%	100%	100%	100%

KPI 2: Vehicle Detection Rate: Failed

The Tattile camera detection rate in single lane environments is excellent and on-par with other world leading camera technologies only if the camera is angled at the vehicle at less than an angle measured to be 15° during the field trials. The field trials proved that for a single lane environment, to achieve an angle of less than 15° to the passing vehicle being viewed, the enforcement vehicle would be required to be parked at less than one metre from the roadside curb essentially meaning that this camera failed to meet the RMS required 95% vehicle detection rate key performance indicator due to the fact that the RMS WHS requirements forbid an enforcement vehicle to be parked within this one metre distance from the roadside curb. Additionally, to achieve the required 95% detection rate performance, it was found that the maximum linear distance to the vehicle being read is 10metres. As the linear distance increases, the detection rate falls accordingly. This usually implies that this particular mobile ANPR technology was specially designed for applications such as automated vehicle parking enforcement rather than for road transport enforcement required by RMS.

Hence, this KPI has been given an overall fail outcome.

With camera angle < 15° (less than 15°)

	Stationary In- Vehicle Camera	Moving Invehicle	Vehicle dash mounted	Vehicle roof mounted	Rain	Fog	Low ambient lighting conditions
Vehicle Detection Rate	???	???	???	???	???	???	(night)

With camera angle > 15° (greater than 15°)

	Stationary In- Vehicle Camera	Moving Invehicle Camera	Vehicle dash mounted	Vehicle roof mounted	Rain	Fog	Low ambient lighting conditions (night)
Vehicle Detection Rate	???	???	???	???	???	???	???

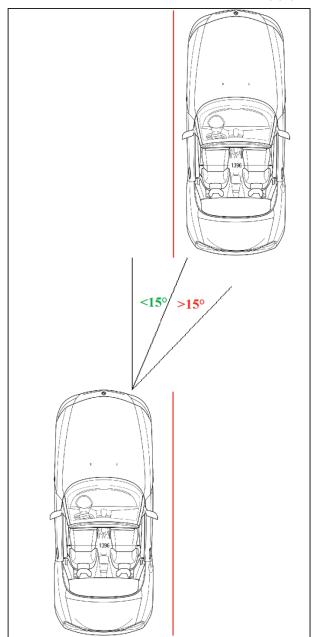


Figure xxx shows the restrictive camera angle required(less than 15 degrees) to achieve vendor stated performance figures.

KPI 3: ANPR Accuracy: Failed

As with the vehicle detection rate KPI, this ANPR accuracy KPI was again dependent on the angle at which the camera was angled towards the vehicle being imaged. The Tattile camera ANPR accuracy rate in single lane environments is excellent and on-par with other world leading camera technologies only if the camera is angled at the vehicle at less than an angle measured to be 15° during the field trials. Additionally, to achieve the required 95% ANPR accuracy performance, it was found that the maximum linear distance to the vehicle being read is 10metres. As the linear distance increases, the ANPR accuracy rate falls accordingly.

Hence, this KPI has been given an overall fail outcome due to this severe restriction.

With camera angle < 15°(less than 15°)

With carriera angle 1 to (1868 than 18			/				
	Stationary In-	Moving In-	Vehicle	Vehicle	Rain	Fog	Low
	Vehicle	vehicle	dash	roof			ambient
	Camera	Camera	mounted	mounted			lighting conditions (night)
Vehicle	???	???	???	???	???	???	???
Detection							
Rate							

With camera angle > 15° (greater than 15°)

	Stationary In- Vehicle Camera	Moving In- vehicle Camera	Vehicle dash mounted	Vehicle roof mounted	Rain	Fog	Low ambient lighting conditions (night)
Vehicle Detection Rate	???	???	???	???	???	???	???

NSW ICAC EXHIBIT

E18-0281-Ember-GS0005-00-00 R18/1374

Captured images (refer to KPIS)

Research world best practice mobile(vehicle mounted) ANPR systems for the following agreed key performance indicators;

Conclusion

The Tattile mobile ANPR camera proved to be a very reliable device, with excellent results while vehicle is stationary or moving, for camera up-time, vehicle detection rates (when camera mounted within vendor requirements and within very restrictive specifications) in all weather conditions, both dash and roof mounted. However, the camera has failed to meet two of the three RMS required key performance indicators; vehicle detection and ANPR accuracy, respectively. When taking into consideration the fact that, if installed into RMS enforcement vehicles parked stationary on the side of major highways, the camera angle mounting that would be required is 30° or more, which this Tattile mobile ANPR camera has not been able to perform up to these requirements. With this 30° or higher camera angle, the camera had a poor overall detection rate and poor ANPR engine accuracy compared with what the vendor stated was expected. Tattile have advised a new version of the ANPR engine will soon be released in the near future which potentially improves this technology, however, with this in mind, it would not be recommended that the RMS proceeds with the current version of this Tattile ANPR camera for regulatory functions until Tattile development of the new ANPR engine is complete and meets the required RMS key performance indicators.

Regulatory Applications

- 1) RMS Enforcement Vehicles:
 - Mobile ANPR camera technology has the potential to be implemented into the ~120 RMS on-road-enforcement vehicles. RMS Enforcement Operations section have ~120 enforcement vehicle assets which, if mounted with mobile ANPR technology, can greatly enhance heavy vehicle targeting based on risk assessed by the RMS TruckScan system when an ANPR results of a vehicle is processed from a mobile ANPR technology. This enhanced targeting creates efficiencies in the Enforcement Operations business, leading to lower operating costs.
- 2) Asset replacement of existing fixed asset programs:
 - Replace or enhance the current RMS high-cost fixed asset regulatory programs with these evolving low-cost, and more importantly, mobile technology solutions such as the Tattile Mobile ANPR unit:
 - Current RMS fixed-asset regulatory programs to potentially apply mobile ANPR technology:
 - Fatigue management: Safe-T-Cam.
 - Speed management: Point-to-Point.
 - Traffic/transport Management: Bus Lane Enforcement Program.
- 3) New consolidated regulatory programs:
 - RMS could consider using such next-generation mobile technology to enable multi-program data collection and enforcement via a single piece of hardware.

ie/ unregistered vehicle enforcement and speed enforcement via a single camera unit.

Overall, having regulatory assets which are mobile with a lower procurement cost and lower operating cost enables the RMS to cover and successfully regulate a larger road network in NSW and potentially into neighbouring jurisdictions.

APPENDIX

Figure 1.0.
Tattile Mobile ANPR Camera

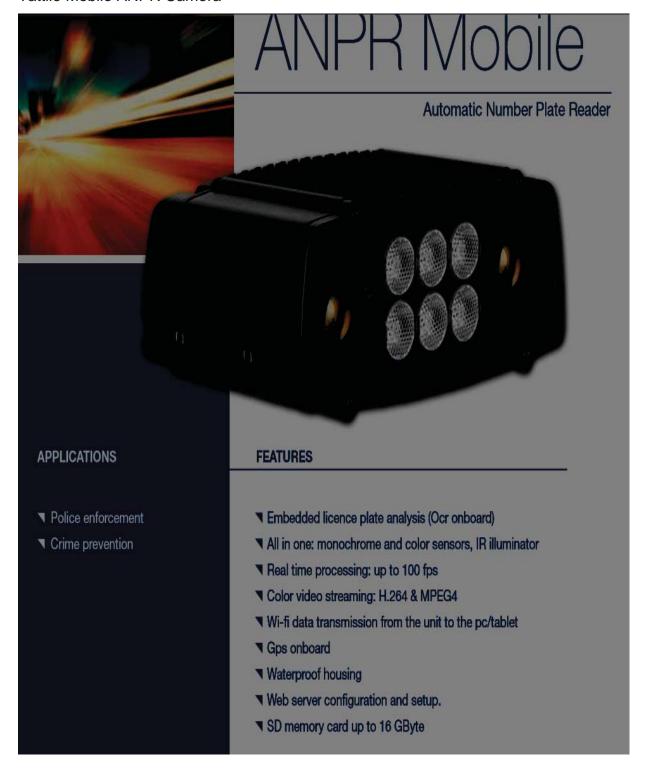


Figure 1.1.
Cubietruck (image and ANPR processing/storage unit)

48

Company:

File Size: 892,928
File Type: Microsoft Word Document
GUID: 14721512-a988-495c-85d1-fcb67f7774eb
Item Date: Thursday, January 28, 2016 at 1:57:17 PM Australian Eastern Daylight Time
MD5 Digest: 10c18fe301ca4b930d4d9bcae71e35f3
Path Name: /E18-0281-Ember-GS0005-00-00/E18-0281-Ember-GS0005-00-00.ad1/GS0005-00-00.zip/275_68.txt
Shannon Entropy: 7.678329430761453
Property Source: E18-0281-Ember-GS0005-00-00
Application Version: 730,895
AppName: Microsoft Office Word
Author: solimans
Char Count: 11,598
Char Count with Spaces: 13,605
CLSID: {00020906-0000-0000-C000-00000000046}
Comment Authors: Unknown
Comments:

Contains Comments: false
Contains Hidden Text: false
Contains Track Changes: false
Contains White Text: false
Content-Disposition: attachment; filename="Mobile ANPR Scoping Study.doc"
Content-Transfer-Encoding: base64
Content-Type: application/msword; name="Mobile ANPR Scoping Study.doc"
Created: Thursday, January 21, 2016 at 12:03:00 PM Australian Eastern Daylight Time
DocSecurity:
Edit Time: 147 hours, 28 minutes, 0 seconds
Embedded Field Codes: PAGE
Hyperlinks Changed: false
Keywords:
Last Author: solimans
Last Saved: Thursday, January 28, 2016 at 1:55:00 PM Australian Eastern Daylight Time
Lines: 96
Links Dirty: false

Name:

Mobile ANPR Scoping Study.doc

Page Count:

1

Paragraphs:

27

Revision Number:

15

Scale Crop:

false

Shared Document:

false

Subject:

Template:

template-word.dot

Title:

PowerPoint Template

Word Count:

2,034

X-Attachment-ID:

f_ijxo6u3n0

address of fabricator for under vehicle cameras

From: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

To: novationengineering@bigpond.com Date: Mon, 1 Feb 2016 12:18:40 +1100

UVC's to be sent directly to fabricator. address below. call ashley on the day you're taking them.

Samer Soliman

Manager Heavy Vehicle Programs Compliance Operations

From: STEYN Craig G Sent: Monday, 1 February 2016 12:17 PM To: SOLIMAN Samer Subject:

Ashley Alexander

Unit 3/8Wainwright Rd Mt Druitt NSW 2770 0407 285 296

Thanks

Craig Steyn Heavy Vehicle Maintenance & Program Compliance Operations | Safety & Compliance T 02 8837 0613 M 0438 455 724

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Volume 18 52

RE: Fedex-Resolved

From: novationengineering@bigpond.com

To: Konstantin Ordin <konstantin@meditinc.com>

Date: Tue, 1 Mar 2016 08:44:58 +0000

Can you please confirm firstly that your company has been refunded the full amount of \$1868.60 and also 50% of the initial shipping cost (\$1150 as per your invoice)
This was suppose to have been completed on Friday.

You need to provide me a refund of 50% of the intial shipping cost because I paid for the shipping as it was included in your invoice as a seperate line item.

So again, please confirm with your accounts that you have recieved those refunds from FEDEX.

Regards, Stephen Thammiah

From: konstantin@meditinc.com
Date: Tue, 1 Mar 2016 10:28:46 +0400

Subject: Re: Fedex-Resolved

To: novationengineering@bigpond.com

Hello

I don't understand something please explain -

We fulfilled our agreement and provided cameras and shipped to your address. Then goods were returned and we paid \$1868.60 to FEDEX. Then goods went back to you. And why must we refund 50% to you from any sum? It is not our fault that FEDEX couldn't bring. We will wait for refund 1868.60 from any source (FEDEX, UN or any)

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Mar 1, 2016 at 5:45 AM, <novationengineering@bigpond.com> wrote:

Hi Konstantin,

Just finished speaking with FEDEX who have finally delivered all packages and provided a 50% refund on the shipping charges as per the original invoice. On top of a full refund for returning the package to the US (circa \$1800).

As per your invoice for shipping charges, I would expect a 50% refund of the \$2,300. Please transfer \$1150,at your earliest convenience. (currency is in US dollars)

Bank Transfer

ANZ, Stephen Alan Thammiah, BSB 012246, A/C 2207-88725

This has been quiet the drama and thankfully the trial will continue as planned and you will hear from me regarding a much more substantial order of UVC's. Perhaps we will skip Fedex next time.

Regards, Stephen Thammiah

From: konstantin@meditinc.com

Date: Tue, 23 Feb 2016 08:48:10 +0300

Subject: Re: Fedex-Resolved

To: novationengineering@bigpond.com

Hello

Your goods are in Australia. Would you like taking them? What about why FEDEX charges us?

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

?

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Wed, Feb 10, 2016 at 9:08 AM, Konstantin Ordin < konstantin@meditinc.com > wrote:

Hello

Your goods came back. Please advise what to do next

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

?

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Mon, Feb 8, 2016 at 4:21 AM, <novationengineering@bigpond.com> wrote:

Hi,

Quick update. Fedex have stopped the package in the US. It will be delivered again due to their error.

I also spoke to them about recompensation for the trouble caused.

Let you know what the new tracking number is once I get their commfirmation Bit of a mess but we nearly there.

Regards,

Stephen Thammiah

From: novationengineering@bigpond.com

To: konstantin@meditinc.com

Subject: RE: Qoute: SKU:KVBS3-30m Date: Thu, 4 Feb 2016 07:04:33 +0000

HI.

I have no idea why goods have been returned. This is the first I'm hearing of it occuring. I am on the phone with FEDEX to try and find out what is going on. I was waiting on confirmation of invoices from customs.

Regards, Stephen Thammiah

From: konstantin@meditinc.com
Date: Thu, 4 Feb 2016 07:23:50 +0300
Subject: Re: Qoute: SKU:KVBS3-30m
To: novationengineering@bigpond.com

Hello

Please tell me why goods are returned to us. Can we help anyhow?

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

?

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Wed, Jan 6, 2016 at 3:21 AM, <<u>novationengineering@bigpond.com</u>> wrote:

Perfect Thanks. My contact is (+61) 449015185.

Regards.

Stephen Thammiah

From: konstantin@meditinc.com

Date: Tue, 5 Jan 2016 09:55:14 +0300

Subject: Re: Qoute: SKU:KVBS3-30m To: novationengineering@bigpond.com

Thank you for payment, we will check and start manufacturing. Please confirm your contact phone number for courier

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

?

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Jan 5, 2016 at 2:48 AM, < <u>novationengineering@bigpond.com</u>> wrote:

Thanks Konstantin,

Payement made today. Should come through within 48 hours. I await your confirmation of payment and estimated delivery times once the neccessary preparations are complete.

Regards, Stephen Thammiah

From: konstantin@meditinc.com

Date: Mon, 4 Jan 2016 09:10:49 +0300

Subject: Re: Qoute: SKU:KVBS3-30m To: novationengineering@bigpond.com

Hello

Thank you for your order and filled form.

We need advance payment, and I attached proforma invoice with our bank info. Please remit payment and we start your order. Please let us have some time for the order, about 2-3 weeks to complete, test and send.

best regards,

Konstantin Ordin Sales Manager, Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com

Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Mon, Jan 4, 2016 at 8:52 AM, < novationengineering@bigpond.com > wrote:

Hi Konstantin,

Can we please go ahead with this qoute for 22 Pieces inclusive of Delivery. I have attached my dealer form and certificate of registration. Please let me know if there are any other details required.

Regards,

Stephen Thammiah

From: konstantin@meditinc.com

Date: Wed, 23 Dec 2015 19:10:05 +0300

Subject: Re: Qoute: SKU:KVBS3-30m To: novationengineering@bigpond.com

Hello

Please see attached quote for 22 pcs UVC with shipping costs to Sydney by FEDEX

best regards,

Konstantin Ordin Sales Manager , Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com

Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Wed, Dec 23, 2015 at 6:00 AM, <<u>novationengineering@bigpond.com</u>> wrote:

Hi Konstantin,

Can you please send a revised qoute with 22 as the total and shipping included please.

Soon as I get this, I'll start the paperwork.

Thanks,

Regards,

Stephen Thammiah

From: novationengineering@bigpond.com

To: konstantin@meditinc.com

Subject: RE: Qoute: SKU:KVBS3-30m Date: Mon, 23 Nov 2015 22:48:15 +0000

Hi Konstanin,

Is that the absolute best price you can do?
I would like to increase the number of UVC's to 22 aswell.
Please send through an updated qoute when possible.

Cheers,

Steve

From: konstantin@meditinc.com

Date: Mon, 23 Nov 2015 15:30:17 +0300 Subject: Re: Qoute: SKU:KVBS3-30m To: novationengineering@bigpond.com

Hello

Recently I sent quotation for under vehicle inspection cameras. Please tell me if you need my further assistance

best regards,

Konstantin Ordin Sales Manager , Medit, Inc



Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Nov 3, 2015 at 9:23 AM, Konstantin Ordin konstantin@meditinc.com> wrote:

Hello

Please see quote for 21 pcs under vehicle inspection camera

best regards,

Konstantin Ordin Sales Manager , Medit, Inc.



Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com

Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Tue, Nov 3, 2015 at 2:41 AM,

<novationengineering@bigpond.com> wrote:

Apologies Ordin,

The following is the under inspection equipment that I need qouted. Please provide a new qoute based on 21 units of the following.

Cheers,

Steve

Under Vehicle Inspection Camera

SKU:UVC

Product highlights:

Introducing Medit's Auto-Cam: Under vehicle inspection cam. The Auto-Cam is great for a wide range of inspections which require the ability to see under a vehicle or trailer. Inspections such as border security, road side safety inspections, even to inspect the body work under a vehicle are all possible thanks to this infrared lighted camera unit.

- 265 Million colour pigmentation 7 in. TFT LCD Display
- Adjustable light strength
- Sony CCD Camera Sensor
- Infrared Lighted
- Complete portability



From: konstantin@meditinc.com
Date: Thu, 29 Oct 2015 10:43:03 +0300 Subject: Re: Qoute: SKU:KVBS3-30m To: <u>novationengineering@bigpond.com</u>

Hello

Thank you for your RFQ

Please see attached quote for 21 pole cameras. We can also ship with your account of any forwarder, if you have. Just a formality - if these pole cameras are for reselling, we can offer 20% discount (already in the quote). Please fill attached dealer form for that.

best regards,

Konstantin Ordin Sales Manager, Medit, Inc

Phone: +1 (204) 977-4634 ext.704 Email: konstantin@meditinc.com

Volume 18 58 Website: www.meditinc.com

Address: 96 Sherbrook St., Winnipeg, MB, Canada

On Thu, Oct 29, 2015 at 2:30 AM, <novationengineering@bigpond.com> wrote:

Hi Konstantin,

This is Stephen Thammiah, Director at Novation Engineering Pty Ltd (Australia).

I need a qoute for 21 units of the STRAHL Telescopic Utility Inspection System (SKU:KVBS3-30m) as shown here http://www.fiberscope.net/utility-inspection-system-strahl.html.

strahl.html.
Shipped to Sydney Australia. Please let me know approximate delivery times, payment methods etc, this qoute is required ASAP.

Please let me know if you require any other information for the goute.

Thanks,

Steve

FW: Novation Engineering- EFT details update

From: Vendor Management <tss.vendors@transport.nsw.gov.au>

To: novationengineering@bigpond.com

Cc: Vendor Management <tss.vendors@transport.nsw.gov.au>

Date: Wed, 2 Mar 2016 14:53:26 +1100

Hi Stephen,

In order to update your banking details in our system, you will need to type up on company letter head stating the new bank details or any other changes.

Once we receive the email with your company letter head attached we can amend the bank details.

Regards

Tina Galouzis

SSC Supplier Enablement Transport Shared Services People and Corporate Services **Transport for NSW**

T 02 8574 3341 Level 1, 2-14 Elsie Street, Burwood NSW 2134



Use public transport... plan your trip at <u>transportnsw.info</u> Get on board with Opal at <u>opal.com.au</u>

From: SBSC_APquery [mailto:SBSC_APquery@rms.nsw.gov.au]

Sent: Wednesday, 2 March 2016 9:40 AM

To: Vendor Management

Subject: FW: Novation Engineering- EFT details update

From: novationengineering@bigpond.com [mailto:novationengineering@bigpond.com]

Sent: Tuesday, 1 March 2016 4:19 PM

To: SBSC_Readsoft

Subject: Novation Engineering- EFT details update

Hi,

Due to internal governance requirements, Novation Engineering requires an update of banking details.

Can you please inform me of the process or form to update the EFT details.

Regards, Stephen Thammiah



Novation Engineering Pty Ltd ABN: 50 608 485 409 PO Box 451 Kings Langley 2147 Ph: (02) 9629 1826

Email: NovationEngineering@bigpond.com



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FW: Heavy Vehicle Thermal Camera Trial

From: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

To: novationengineering@bigpond.com Date: Mon, 14 Mar 2016 11:04:49 +1100

Attachments: STHV4P Marulan Trial Summary.pdf (770.51 kB)

here is the other thermal trial i did. have a look at what they reported on and include these stats in your scoping study

Samer Soliman Manager Heavy Vehicle Programs Compliance Operations

From: Riki Blok [mailto:riki@strategicinnovations.com.au]
Sent: Friday, 26 June 2015 5:24 PM
To: SOLIMAN Samer
Subject: Heavy Vehicle Thermal Camera Trial

Please see attached written summary on the trial conducted earlier this week, the spreadsheet is 32MB in size so I will need to send it to you a different way. If I send you a Drop Box link will you be able to open it?

I have also attached the invoice for the remaining balance which I have also sent to accounts.

Give me a call if you need to discuss anything.

Regards, Riki Blok

Operations Manager +61 406 319 379 riki@strategicinnovations.com.au www.strategicinnovations.com.au INNOVATIONS

Capability Gap Specialists



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Capability Gap Specialists

STHVP4 – Portable Thermal Heavy Vehicle Inspection Trial Marulan June 22nd –24th 2015

ABN - 191 615 365 36 ACN - 161 536 536

mail@strategicinnovations.com.au

PHONE +61 406 319379 WEB - www.strategicinnovations.com.au

Introduction

The STHVP4 has been developed for portable detection of defective brakes, tyres and hubs for Heavy Vehicles. We developed this system based on previous trials of a single Thermal Camera at Marulan in January 2015. Following the trial, a request was made for a system to be constructed to view both sides of the vehicle.

The STHVP4 trial was conducted June 22nd-June 24th with a 55% success rate of detecting faults in braking systems.

The STHVP4 includes 4x Cases with a Thermal Camera and Networking equipment inside to enable the camera locations to be altered. There is also control room equipment including an antennae, network switch, wireless access point, monitor and recorder.









The camera locations were selected at a previous date with assistance from Samer Soliman from RMS, the image below shows the camera locations and distances from the control room.



Camera 1 Location and Captured Image





Camera 2 Location and Captured Image





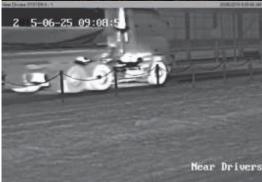
Camera 3 Location and Captured Image





Camera 4 Location and Captured Image







Operation Details

The footage was viewed live in the control room on split screen with all 4 cameras visible.

The configuration of the cameras allowed for the footage to be viewed in order of Camera number with a slight delay between images. This allowed the user to view both sides of the whole vehicle and decide whether to advise the RMS operator to manually bring the vehicle in for a secondary examination.

As the vehicle passed Camera 1 and 2, there was around a 3-5 second window to manually signal the vehicle to enter the weigh station.

If the vehicle travelled too far, it would be too late for the vehicle to enter the weigh station. A great number of vehicles were detected but the manual trigger was not switched quickly enough, or there was no RMS operator at the desk to switch the trigger. This happened numerous times throughout the trial and greatly affected the total number of vehicles scanned and inspected. This occurred on approximately 25% of vehicles detected on cameras 1 & 2.

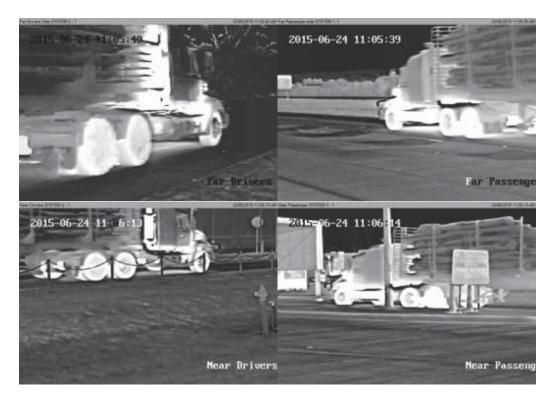
If a vehicle was suspected of having a fault, a secondary examination would be conducted by cameras 3 & 4 and a decision would be made to inspect the vehicle.



Results

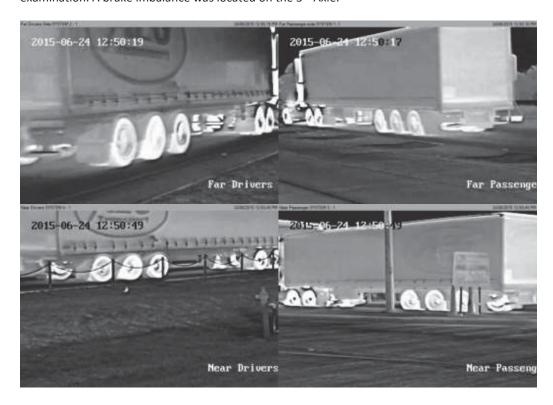
Example of inactive brake on 2nd Axle, prime mover.

The 3rd axle was showing as very hot on the passenger side compared to Axle 2, this was confirmed on secondary examination.



Example of Brake Imbalance

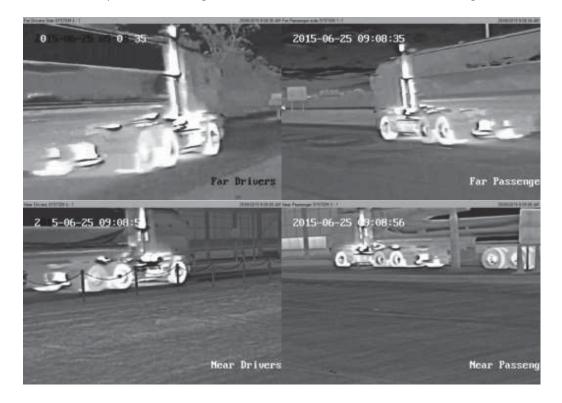
The middle Axle in the rear trailer, Driver's side is much hotter than the neighbouring axles, this was confirmed on secondary examination. A brake imbalance was located on the 3rd Axle.



Page **7** of **10**

Example Brake Force Low

There is a cold tyre, Axle 2 Passenger side and Axle 3 Driver's side. Axle 3 was working twice as hard in this example.



Statistics

Statistics were not tracked on Monday 22nd as the system was being tested and ideal camera location and angles identified.

- Overall strike rate was 11 faults out of 20 inspected vehicles (55%).
- Tuesday 23rd June had a strike rate of 4 faults out of 10 inspected vehicles (40%).
- Wednesday 24th June had a strike rate of 7 out of 10 inspected vehicles (70%).
- There was a total of 39 vehicle detected at the far turtle location (Cameras 1 & 2), 12 of these vehicles missed the manual override trigger.
- There was 1 vehicle each day inspected where there was no suspected fault, these vehicles has been omitted from the totals.
- 25 Vehicles were triggered for a secondary examination.
- 20 Vehicles were inspected after a secondary examination.
- 11 Vehicles were found to have issues with their brake systems.
- The most common suspected fault location was Axle set 3, Passenger side (12).
- The most common confirmed fault location was Axle set 3, Passenger side (4).
- 3 total suspected faults on Axle Set 1 & 2, with 5 total faults found (167%)
- 18 total suspected faults Axle set 3, with 6 total faults found (33%)
- 1 total suspect fault Axle set 4, with 0 faults found (0%)
- Suspected faults on the 1st and 2nd Axle set, resulted in a fault 100% of the time.
- Suspected faults on Axle set 3 had a 33% success rate.
- Suspected faults on Axle set 4 had a 0% success rate.
- Empty trailers had a much lower strike rate of 25% found faults.
- 1 Vehicle with Cattle on board was detected, this vehicle was unable to be tested.
- 1 Vehicle with suspected fault was accidentally released without inspection.
- 2 Vehicles had brake slight imbalances where no defect was able to be issued.

Conclusion

As a first time system, there was a learning curve for all involved resulting in improving strike rate as the trial progressed.

There were considerations that affected the number of vehicles scanned and issued fault rate such as:

- HR factors when a vehicle was selected for inspection, this would take on average 30min. During this time additional vehicles were unable to be inspected resulting in fewer detections.
- Operator experience RMS staff were unfamiliar with hearing a verbal trigger from Strategic Innovations staff to manually direct a vehicle for inspection. This resulted in 12 suspected faults missing a secondary examination and inspection. As the trial progressed, this ran much smoother, resulting in a lower rate of vehicles missing the manual trigger.
- Operator experience Strategic Innovations staff were also inexperienced at visible cues which resulted in a higher number of false positives in the first few days of the trial.
- Empty trailer false positives There was a high occurrence of empty trailer showing as faulty on the rear of the trailer. As the trial progressed, these vehicles were not being inspected due to low defect rate.

The overall strike rate was 55%, the last day of the trial had a strike rate of 70%.

Due to increased experience operating the system, I would expect an ongoing strike rate of 70%.

To keep this higher strike rate, there are two main changes I would make.

- 1. Empty trailers with suspected faults on Axle 3 or 4 would not be inspected the majority of the time.
- 2. There is a high occurrence of faults when the suspected fault is on Axle set 2, so moving forward I would ensure more of these vehicles are inspected.

Page **10** of **10**

Portable Weigh Scale Scoping Study

From: novationengineering@bigpond.com

To: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

Date: Wed, 11 May 2016 11:37:02 +0000

Hi Samer,

I am pleased to submit the final version of the portable weigh scale scoping study. Please do not hesitate to contact me for any further information. Due to the file size limit, please find a google drive link below to reference the document.

https://drive.google.com/open?id=0B6Qv_v71W1UzcUJGdmdhMG1VeWc

Regards, Stephen Thammiah

Under Vehicle Camera Scoping Study

From: novationengineering@bigpond.com

To: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

Date: Tue, 14 Jun 2016 12:40:11 +0000

Hi Samer,

I am pleased to submit the final version of the under vehicle camera scoping study. Please do not hesitate to contact me for any further information.

Regards, Stephen Thammiah



Under Vehicle Camera Scoping Study

N VATION Novation Engineering Pty Ltd

Novation Engineering Pty Ltd 14th June 2016 Prepared for Roads and Maritime Services Commercial-in-confidence

Under Vehicle Camera Scoping Study (2016).

Novation Engineering Pty Ltd.

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Executive Summary

This scoping study was commissioned to investigate the potential use of hand held under vehicle camera technology to inspect the underside of heavy vehicles at heavy vehicle safety stations and on-road enforcement sites in NSW by Roads and Maritime Services.

The under vehicle camera trialled was designed and engineered in conjunction with RMS requirements to mitigate the work health and safety risks associated with enforcement operations inspectors required to visually inspect the under-carriage by physically getting under the heavy vehicle. In addition, most modern heavy vehicles are now designed with a low profile to decrease wind resistance; however this restricts any manual visual inspection of the under-carriage by an inspector. For both these reasons stated, an under vehicle camera was designed and built and twenty units were dispatched to all four enforcement sectors in New South Wales (five units per sector).

The under vehicle cameras proved to be a useful tool for inspectors that have mobility impairments; the camera enabled faster inspection, recording of evidence and mitigation of work health and safety risks. Hence, the under vehicle camera proved to be an effective enforcement tool. A further rollout is not required at this time.

Abbreviations

RMS: Roads and Maritime Services WHS: Work Health and Safety

NSW: New South Wales UVC: Under Vehicle Camera

HVSS: Heavy Vehicle Safety Station

SD Card: Secure Digital Card

Project Background

This scoping study was commissioned to investigate the potential use of hand held under vehicle camera technology to inspect the underside of heavy vehicles at heavy vehicle safety stations and on road enforcement sites in NSW by Roads and Maritime Services.

Currently RMS inspect the under carriage of all heavy vehicles by manual visual examination; requiring all inspectors to get under a heavy vehicle. This adds an unnecessary work health and safety risk to RMS. This was the primary reason for RMS to initiate this scoping study which trials the under vehicle camera as a potential risk mitigation solution. In addition, most modern heavy vehicles are now designed with a low vehicle profile to decrease wind resistance which this restricts any visual inspection of the under carriage by an inspector.

Novation Engineering performed an extensive in-field scoping study in all enforcement sectors to examine the potential benefits to RMS.

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Stakeholder Engagement

RMS:

Compliance Systems - Heavy Vehicle Programs Unit Manager. Enforcement Operations Inspectors. Enforcement Operations Managers.

Scoping Study

Vehicle Dimension Scanner - Field Trial Requirements

Following several meetings and discussions with RMS stakeholders, requirements and considerations for the field trials of the dimension scanner are as follows:

- 1) Efficacy of under-vehicle camera for the applications listed.
 - (a) Mitigate WHS risks associated with RMS Enforcement Operations Inspectors physically getting under heavy vehicles to inspect potential under-vehicle defects.
 - (b) Enable Enforcement Operations Inspectors to inspect the under-body of modern heavy vehicles which are predominantly built with low side-skirts which do not provide enough ground clearance for an inspector to physically fit under.
 - (c) Increase vehicle defect inspection efficiency. le/ reduce overall time taken for an enforcement operations inspector to 'screen' defects on a heavy vehicle.
- 2) Usability of under-vehicle camera for the applications listed above.

Under Vehicle Camera - Field Trial Results Summary

Field trials were conducted at HVSS and on-road enforcement sites in NSW in conjunction with enforcement operations inspectors. The camera was trialed against the business requirements and comparatively against the current manual visual inspection process.



Figure 1.0 depicts the current manual visual inspection process.



Figure 2.0 depicts the use of the UVC.

KPI 1: Efficacy

a. WHS Risks: There are several key WHS risks which this trial attempts to mitigate. These are predominantly repetitive strain knee and back injuries caused by the inspectors having to place their bodies in awkward and potentially dangerous positions under the heavy vehicle. These types of injuries are generally prevalent in mobility impaired inspectors.

<u>Results</u>: The field trials conclusively proved that the use of such under vehicle cameras do mitigate the risks associated with the manual visual inspection of a heavy vehicle. However it was more beneficial for users with a mobility impairment who are unable or unwilling to physically inspect the under carriage of a heavy vehicle.

Users who previously reported common knee and back injuries successfully inspected the under carriage of all heavy vehicles presented with greatly reduced risk to their own safety. In addition the inspector was always visible to the heavy vehicle driver while using the under vehicle camera; this is not the case when the normal visual inspection process is carried out (as depicted in figure 1.0).

b. **Vehicle Under-carriage Access:** Inspectors are restricted from inspecting the under-carriage of most modern heavy vehicles which are predominantly built with a low profile (low side-skirts which do not provide enough ground clearance for an inspector to physically fit under).

Results: The field trials conclusively proved that the use of such under vehicle cameras do increase the operational capacity of inspectors by allowing them to successfully access (and capture potential evidence i.e. photos/video) the under-carriage of heavy vehicles they previously could not be accessed. Hence any non-compliance was not detected. Figure 2.0 depicts an inspector using the under vehicle camera on a low profile heavy vehicle to inspect the differential for any speed-limiter tampering which is a common non-compliance breach.

c. **Operational Efficiency:** A complete under-carriage inspection of a heavy vehicle generally requires five minutes for one inspector. Utilising the under vehicle camera still required some manual visual inspection as well.

Results

The increase in operational efficiency was negligible when using the under vehicle camera. The overall time required to inspect the under-carriage of a heavy vehicle when manually visually inspecting was 5min, compared to 4.5min when inspecting with the under vehicle camera. Hence operational efficiency is not seen as a benefit of using such technologies.

Overall, the efficacy of using such under vehicle cameras is proven in the fact that the key considerations; being WHS risks are successfully mitigated.

KPI 2: Usability

The under vehicle cameras proved to be a well-designed, fit-for-purpose solution for the defined requirements and users. The unit came packaged in a high-visibility orange bag for storage in enforcement vehicles or at HVSS's. The unit weighs in at under 5kg, enabling it to be easily maneuvered with one hand. It has been designed to be folded in half for efficient storage.

All users reported positive feedback with regards to ease-of-use, and overall usability.

Other Considerations

- Day/Night and Adverse weather conditions: The under vehicle camera
 performed well, and was clearly visible in all light conditions including bright
 sunlight and dark night. The onboard illumination enabled the camera to be used in
 all weather conditions trialed.
 In addition, the under vehicle camera was exposed to fog, rain and direct sunlight
 during the field trials with no performance degradation.
- Data Storage: The under vehicle camera enables up to 20 hours of video and photos to be captured on an onboard SD card for any potential evidence capturing required. This proved to be a useful feature during the field trials due to the ability to quickly transfer evidence from the SD card to the RMS heavy vehicle compliance system (TruckScan) for efficient infringement production.

Conclusion

The use of under vehicle cameras has proved to be an effective tool to mitigate the WHS risks discussed. The performance was not impacted by different weather conditions or ambient light conditions. The overall efficacy and usability factors were trialled with a range of inspectors, including the mobility impaired, with both KPI's being given a positive grading and positive feedback.

It is also to be concluded that the current amount of mobility impaired inspectors is under 35 people, hence the current stock of 20 units shared between all four sectors currently satisfies the demand, and no wider rollout should be required.

Hence the recommendation to RMS is to distribute the existing 20 units to the appropriate mobility enforcement inspectors only, rather than equally distributing the units among all sectors. This reaps the highest cost to benefit ratio.

Appendix



File Size:

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Attachments: Vehicle Dimension Scanner Scoping Study.doc (9.26 MB)



Vehicle Dimension Scanner Scoping Study



Novation Engineering Pty Ltd 27th June 2016 Prepared for Roads and Maritime Services Commercial-in-confidence

Vehicle Dimension Scanner Scoping Study (2016).

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Executive Summary

This scoping study was commissioned to investigate the potential use of automated vehicle over-dimension screening technologies to enforce heavy vehicle over-dimension regulations in NSW by Roads and Maritime Services.

The dimension scanner selected to trial was the SICK laser scanner which builds a three dimensional model with coloured oversize on-screen render of height, width and length of the vehicle. In principle, the field trials successfully proved that this type of technology can be utilised by RMS for heavy vehicle over-dimension enforcement. In addition, the SICK dimension scanner performed well within stated tolerances and improved accuracy and efficiency of vehicle dimension measuring practises.

The SICK dimension scanner proved to be an effective over-dimension enforcement tool when taking into consideration the business requirements, costs, and other factors discussed within this scoping study.

Abbreviations

RMS: Roads and Maritime Services

CIC: CIC Engineering

WHS: Work Health and Safety NSW: New South Wales GUI: Graphical User Interface NMI: National Measurement Institute

NMI: National Measurement Institute HVSS: Heavy Vehicle Safety Station LMS: Laser Measurement Scanner

TEMS: Traffic Enhanced Measurement System TEMS Manager: VPS software on Traffic Controller

VPS: Vehicle Profiling System

Project Background

This scoping study is created for Roads and Maritime Services. A scoping study has been performed to trial a vehicle dimension scanner (VPS553 model) selected by RMS to prove concept for potential use/suitability for heavy vehicle over-dimension regulatory applications in NSW. The VPS553 consists of three LMS511 Traffic laser scanners, one Traffic Controller featuring the VPS software, plus the TEMS Manager and TEMS Info sample client software programs.

The current RMS heavy vehicle over-dimension measuring practices are not aligned with current best-practice for dimension measurement; this adds a prosecution risk for RMS, resulting in RMS seeking an enhanced solution. Enforcement operations inspectors currently utilise a ruler and tape-measure to inspect a vehicle's height, width and length. This practice currently takes approximately ten minutes and requires two inspectors. In addition, a RMS prosecution of an over-dimension heavy vehicle court matter in 2015 was dismissed due to the lack of alignment with NMI standards; revealing the need for RMS to investigate alternative heavy vehicle dimension enforcement. This is the primary reason this scoping study has been initiated by RMS.

Novation Engineering performed an extensive in-field study on the dimension scanner selected by RMS according to best practice standards and WHS requirements. RMS provided several requirements for which the technology was to be trialed to ensure appropriate recommendations are provided.

Stakeholder Engagement

RMS:

Compliance Systems - Heavy Vehicle Programs Unit Manager. Enforcement Operations Inspectors. Enforcement Operations Managers.

External:

SICK CIC Engineering NMI

Scoping Study

Vehicle Dimension Scanner - Field Trial Requirements

Following several meetings and discussions with RMS stakeholders, requirements and considerations for the field trials of the dimension scanner are as follows:

- Roof or Gantry mounted:
 The vehicle dimension scanner trialed will be stationary roof mounted at Marulan Southbound HVSS.
- 2) Efficacy:
 - a. Adverse weather conditions.
 - b. Vehicle speed limitations.
 - c. Dimension accuracy.

SICK VPR553 Vehicle Dimension Scanner Specifications Summary

Field of application	System for measurement of vehicle dimensions				
Integrated application	Measurement of dimensions for one vehicle at a time				
Scanner design	3-scanner solution				
	Vehicle dimensions (length, width, height)				
Vahiala data	Vehicle anded				
Vehicle data	Vehicle speed				
	3D measuring points on the vehicle				
Number of covered lanes	1				
Recommended vehicle distance	Vehicles must pass through the measuring station				
Recommended vehicle distance	one by one				
Calibration	Yes				
Accuracy of length measurement	+/-50 mm at a speed of < 7 km/h				
Accuracy of width measurement	+/-30 mm at a speed of < 7 km/h				
Accuracy of height measurement	+/-30 mm at a speed of < 7 km/h				
Driving speed	0.1 – 7 km/h for full coverage				
Minimum object size	1.0 x 0.6 x 0.6 m (L x W x H)				
Maximum object size	30.0 x 5.0 x 5.0 m (L x W x H)				

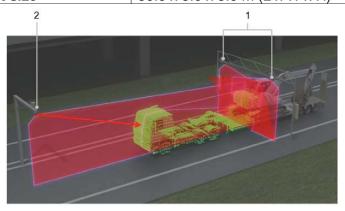
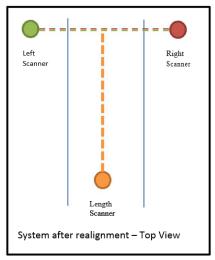


figure 1.0 shows a 3D model created using SICK laser based dimension scanning technology.



figure~1.1~depicts~the~physical~installation~of~the~SICK~VPS553~at~the~Marulan~Southbound~HVSS.

Novation Engineering Pty Ltd. P a g e /9

Vehicle Dimension Scanner - Scoping Study

Vehicle Dimension Scanner - Field Trial Results Summary

Field trials were conducted at the RMS Marulan Southbound HVSS site in conjunction with enforcement operations inspectors. The scanner was trialed against the business requirements and comparatively against the current manual vehicle dimension measuring processes. Three individual scanners were installed on the roof of the HVSS, which were connected to one central controller. Heavy vehicles were intercepted and were automatically measured using this technology as they drove over the weigh bridge, which is where the scanners were installed. These measurements were compared to manual measurements taken by safety station operators and results documented in this scoping study.

KPI 1:Efficacy

1) Adverse weather conditions:

The performance was not impacted by different weather conditions or ambient light conditions.

2) Vehicle speed limitations:

As per appendix 1.3, this SICK VPS553 vehicle dimension scanner has a vehicle speed limitation of up to 7km/h. Of the vehicles scanned, an average vehicle speed of 7km/h was detected (as per table 1.0, 2.0, 3.0) with an average measurement accuracy of 0.22%, 0.44% and 15.49% for length, width and height respectively as expressed in section 3 below. This falls within the maximum allowable vehicle speed of 7km/h. Hence, the dimension scanner is suitable for the application.

3) Dimension accuracy.

a. Length

Vehicle Number	Valid Measurement	VPS Speed (km/h)	VPS Width (m)	RMS Width (m)	Deviation (m)	RMS Accuracy (m)	VPS Accuracy (m)	Error % of Manual Measure
1915	Yes	13.212	17.653	17.59	-0.063	±0.11	±0.05	-0.36%
1916	Yes	6.75	17.335	17.35	0.015	±0.11	±0.05	0.09%
1917	No	9.1548	19.098	19.4	0.302	±0.11	±0.05	1.56%
1918	Yes	5.9904	17.621	17.59	-0.031	±0.11	±0.05	-0.18%
1919	Yes	7.4376	18.964	19	0.036	±0.11	±0.05	0.19%
1920	Yes	7.6932	19.118	19.07	-0.048	±0.11	±0.05	-0.25%
1921	No	7.1712	11.538	11.4	-0.138	±0.11	±0.05	-1.21%
1922	No	3.1824	25.714	25.6	-0.114	±0.11	±0.05	-0.45%
1923	Yes	5.58	20.969	20.89	-0.079	±0.11	±0.05	-0.38%
1924 1925	No No	5.8248 14.5368	25.975 7.967	25.85 7.89	-0.125 -0.077	±0.11 ±0.11	±0.05 ±0.05	-0.48% -0.98%
1926	Yes	16.0884	11.035	10.99	-0.045	±0.11	±0.05	-0.41%
1927	Yes	9.1116	19.142	19.09	-0.052	±0.11	±0.05	-0.27%
1928	Yes	6.5772	18.938	18.94	0.002	±0.11	±0.05	0.01%

Table 1.0 displays a subset of the vehicle length data collated during the trial and associated accuracies.

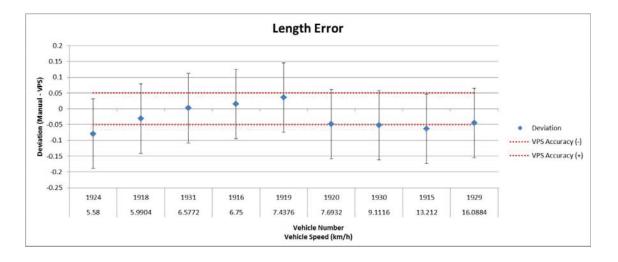




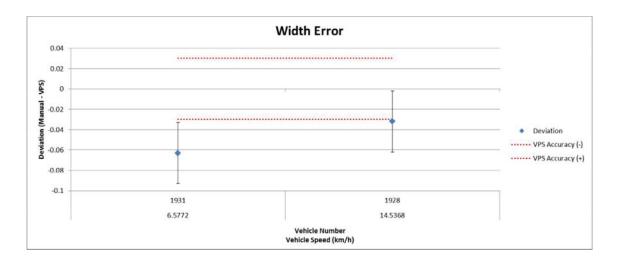


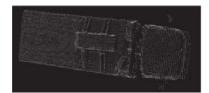
Figure 2.0 shows the length perspective of the 3D rendered model of a vehicle screened during the trial.

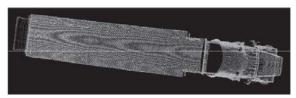
b. Width

Vehicle Number	Valid Measurement	VPS Speed (km/h)	VPS Width (m)	RMS Width (m)	Deviation (m)	RMS Accuracy (m)	VPS Accuracy (m)	Error % of Manual Measure
1915	No	13.212	2.91	2.49	-0.42	±0.03	±0.03	-16.87%
1916	No	6.75	3.503	2.49	-1.013	±0.03	±0.03	-40.68%
1917	No	9.1548	2.825	2.5	-0.325	±0.03	±0.03	-13.00%
1920 1922	No No	7.6932 7.1712	3.854 2.61	2.5 2.485	-1.354 -0.125	±0.03 ±0.03	±0.03 ±0.03	-54.16% -5.03%
1923	No	3.1824	2.613	2.49	-0.123	±0.03	±0.03	-4.94%
1924	No	5.58	3.476	3.27	-0.206	±0.03	±0.03	-6.30%
1925	No	5.8248	3.15	2.5	-0.65	±0.03	±0.03	-26.00%
1926	No	6.2172	2.952	2.455	-0.497	±0.03	±0.03	-20.24%
1928	Yes	14.5368	2.527	2.495	-0.032	±0.03	±0.03	-1.28%
1929	No	16.0884	2.618	2.5	-0.118	±0.03	±0.03	-4.72%
1930	No	9.1116	2.611	2.458	-0.153	±0.03	±0.03	-6.22%
1931	Yes	6.5772	3.393	3.33	-0.063	±0.03	±0.03	-1.89%

Table 2.0 displays a subset of the vehicle width data collated during the trial and associated accuracies.







Figure~3.0~shows~the~width~perspective~of~the~3D~rendered~model~of~two~vehicles~screened~during~the~trial.

c. Height

Vehicle Number	Valid Measurement	VPS Speed (km/h)	VPS Width (m)	RMS Width (m)	Deviation (m)	RMS Accuracy (m)	VPS Accuracy (m)	Error % of Manual Measure
1915	Yes	13.212	4.327	4.3	-0.027	±0.04	±0.03	-0.63%
1916	Yes	6.75	4.319	4.284	-0.035	±0.04	±0.03	-0.82%
1917	Yes	9.1548	4.348	4.338	-0.01	±0.04	±0.03	-0.23%
1918	Yes	5.9904	3.291	3.31	0.019	±0.04	±0.03	0.57%
1919	Yes	7.4376	4.296	4.275	-0.021	±0.04	±0.03	-0.49%
1920	Yes	7.6932	4.308	4.285	-0.023	±0.04	±0.03	-0.54%
1921	No	7.1712	4.042	3.89	-0.152	±0.04	±0.03	-3.91%
1922	Yes	3.1824	4.103	4.085	-0.018	±0.04	±0.03	-0.44%
1923	Yes	5.58	4.463	4.46	-0.003	±0.04	±0.03	-0.07%
1924	Yes	5.8248	4.506	4.485	-0.021	±0.04	±0.03	-0.47%
1925	Yes	6.2172	4.601	4.62	0.019	±0.04	±0.03	0.41%
1926	Yes	14.5368	2.72	2.74	0.02	±0.04	±0.03	0.73%
1927	Yes	16.0884	3.522	3.54	0.018	±0.04	±0.03	0.51%
1928	Yes	9.1116	4.234	4.2	-0.034	±0.04	±0.03	-0.81%

Table 3.0 displays a subset of the vehicle height data collated during the trial and associated accuracies.

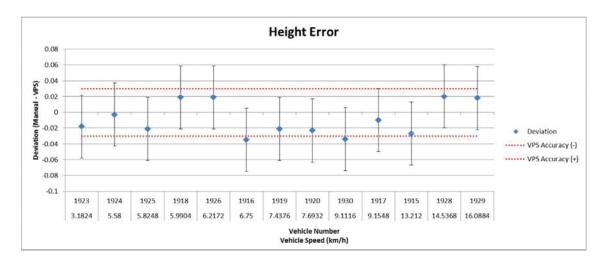






Figure 4.0 shows the height perspective of the 3D rendered model of two vehicles screened during the trial.

Once the sensors were correctly calibrated, the SICK vehicle dimension scanner trialed met the vendor stated accuracy threshold over all conditions specified in the field trial requirements. Refer to appendix 1.3 for vendor stated measurement accuracy tolerances.

	Length	Height	Width
Accuracy	0.22%	0.44%	15.49%

Note: The large deviation in width measurement is due to the sensors detecting the side mirrors of all vehicles. SICK has demonstrated that configuration changes in the software allow for side mirrors to be excluded from measurement to successfully achieve the stated tolerances.

Other Considerations

- Certification for enforcement: It is to be noted that this dimension scanning technology is not currently certified for heavy vehicle over-dimension enforcement in NSW. However it has been confirmed that this technology can be certified for enforcement purposes by using international dimension certification standards currently utilised in Switzerland. SICK have estimated a time frame of 6 months to produce required documentation including calibration procedure and frequency requirements in order to enable this dimension scanner to be legally used for over-vehicle dimension prosecution in NSW.
- **System Integration:** It is recommended that this vehicle dimension scanner be integrated with the current RMS heavy vehicle enforcement system (Truckscan) which would enable seamless infringement workflow by automatically transferring the measured vehicle dimensions into Truckscan.

Conclusion

The SICK vehicle dimension scanner has proven to be suitable and met all key performance indicators specified by RMS. The performance was not impacted by different weather conditions or ambient light conditions. Hence the recommendation to RMS is to proceed with enforcement certification for this device, or other suitable vehicle dimension scanners for use in heavy vehicle safety stations and other high risk assets such as tunnels and bridges in NSW.

The increased efficiency of vehicle inspections utilising such technologies not only enables more vehicles to be screened but also increases the measured accuracy compared to current practises and mitigates the current prosecution risk associated with the current manual measuring method.

Appendix

Title	Attachment
Appendix 1.0: SICK VPS553 Product information	SICK VPS553 Product_information.
Appendix 1.1: SICK VPS553 Operating instructions	SICK VPS553 Operating_instructior
Appendix 1.2: SICK LMS511 laser scanners and controller.	
Appendix 1.3: SICK VPS553 measurement accuracy tolerance	Length ± 50 mm with vehicle speed < 7 km/h Width ± 30 mm with vehicle speed < 7 km/h Height ± 30 mm with vehicle speed < 7 km/h

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GUID:

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983,040

AppName:

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Author:

solimans

Char Count:

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Unknown

Company:

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From: Sam Sol <ducktape69@gmail.com>
To: novationengineering@bigpond.com
Date: Mon, 4 Jul 2016 10:02:37 +1000

Brightness: xplore b10 and cf20 clearest in sun.

Weight: all similiar

Handling: xplore b10 and cf20 and fz-g1 have best hand held strap.

Ruggedness: all similiar. Durabook seems most fragile.

Car dock: all are dockable(all require ADR cert). Xplore b10 and cf20 and fz-g1 easiest.

Keyboard: xplore b10 and cf20 and fz-g1 have detachable keyboard. All others require bluetooth keyboard.

thermal vehicle scanner Scoping Study

From: Sam Sol <ducktape69@gmail.com>
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Date: Tue, 12 Jul 2016 17:58:30 +1000

Attachments: Thermal Vehicle Scanner Scoping Study.pdf (951.15 kB)

Thermal Vehicle Scanner Scoping Study



Novation Engineering Pty Ltd 8th July 2016 Prepared for Roads and Maritime Services Commercial-in-confidence

Thermal Vehicle Scanner Scoping Study (2016).

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KPI 2: Criteria Efficacy	12
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Executive Summary

This scoping study was commissioned by Roads and Maritime Services to investigate the potential use of automated thermal vehicle screening technologies to detect defective brakes and/or tyres on heavy vehicles travelling in NSW

The Optris PI 160 thermal vehicle scanner has proven to be suitable and met all key performance indicators required by RMS. Additionally, a key criteria (differential temperature) has been developed through this scoping study which successfully detected 100% of all brake and tyre defects triggered by the Optris scanner.

Abbreviations

RMS: Roads and Maritime Services WHS: Work Health and Safety

NSW: New South Wales GUI: Graphical User Interface

HVSS: Heavy Vehicle Safety Station

C: Celsius

Project Background

This scoping study is created for Roads and Maritime Services. RMS has expressed interest in such vehicle thermal screening technologies due to the fact that 40-50% of all heavy vehicle defects issued in NSW are related to tyre or brake non-compliance. It is well documented that the temperature of these components is a key indicator of the health and compliance of the tyres and brakes. Additionally, a fatal heavy vehicle crash by a Cootes Pty Ltd fuel tanker in 2013 which was caused by failed brakes triggered further interest from RMS to enable efficient screening of defective vehicles.

The vehicle thermal scanner selected to trial was the Optris PI 160 infrared thermal scanner. This is currently the world leading technology in terms of its ability to precisely measure temperatures on moving vehicles. The scanner comes bundled with intelligent software (Optris PI Connect) which enables both real-time human screening and automated screening by setting up various criteria's such as temperature thresholds and triggers. RMS would intend to utilise such technology at heavy vehicle safety stations and other high-risk sites in NSW such as roads with steep downhill descents.

RMS have advised that the key business objectives of this study are:

1) trial the Optis thermal scanner hardware against vendor stated tolerances, 2) develop criteria that can used to identify potential brake-related problems, 3) develop parameters that can be used as functional requirements for any automated technology that is implemented, 4) demonstrate whether the screening criteria reveals a high level of confidence and therefore has application for RMS at fixed and mobile inspection locations.

Novation Engineering performed an extensive in-field trial of the thermal scanner selected by RMS according to best practice standards and WHS requirements. RMS provided several requirements for which the technology was to be trialed to ensure appropriate recommendations are provided. Additionally, the data collected during the field trials has also enabled Novation Engineering to document screening criteria such as brake and tyre temperature thresholds that can be used to identify potential defective heavy vehicles.

Stakeholder Engagement

RMS:

Compliance Systems - Heavy Vehicle Programs Unit. Enforcement Operations Inspectors. Enforcement Operations Managers.

External:

Temperature Controls Pty Ltd

Scoping Study

Thermal Vehicle Scanner - Field Trial Requirements

Following several meetings and discussions with RMS stakeholders, requirements and considerations for the field trials of the dimension scanner are as follows:

1) Pavement mounted:

The thermal vehicle scanner trialed will be stationary pavement mounted at Picton Rd West-bound on-road enforcement site and Marulan HVSS.

2) Efficacy:

- a. Adverse weather conditions.
 - i. Rain
 - ii. Fog
 - iii. Very high ambient temperatures
 - iv. Low ambient light

Optris PI 160 Thermal Vehicle Scanner Specifications Summary

Basic mode	ı	PI 160
Туре		IR
Detector		FPA, uncooled (25 µm x 25 µm)
Optical resolution	n	160 x 120 pixels
Spectral range		7.5 – 13 µm
Temperature ran	ges	-20 °C 100 °C, 0 °C 250 °C, 150 °C 900 °C, additional range: 200 °C 1500 °C (option) *
Frame rate		120 Hz
Lenses (FOV)		23° x 17° / f = 10 mm or 6° x 5° / f = 35.5 mm or 41° x 31° / f = 5.7 mm or 72° x 52° / f = 3.3 mm
Thermal sensitivity (NETD))	0.08 K with 23° x 17° FOV / F = 0.8 0.3 K with 6° x 5° FOV / F = 1.6 0.1 K with 41° x 31° FOV and 72° x 52° FOV / F = 1
Option for visual (only for BI-SPE		-
Accuracy		±2 °C or ±2 %, whichever is greater
PC interface		USB 2.0 / optional USB to GigE (PoE) conversion
Process interface	Standard PIF	0 – 10 ∨ input, digital input (max. 24 ∨), 0 – 10 ∨ output
(PIF)	Industrial PIF (optional)	$2 \times 0 - 10$ V inputs, digital input (max. 24 V), $3 \times 0 - 10$ V outputs, $3 \times$ relays $(0 - 30$ V / 400 mA), fail-safe relays
Ambient tempera	ature (TUmg)	0°C50°C
Storage tempera	ture	–40 °C 70 °C
Relative humidity	/	20 - 80 %, non-condensing
Enclosure (size/	rating)	45 mm x 45 mm x 62 mm / IP 67 (NEMA 4)
Weight		195 g, incl. lens
Shock/ vibration		Shock: IEC 60068-2-27 (25 g und 50 g) Vibration: IEC 60068-2-6 (sinus-shaped)/ IEC 60068-2-64 (broadband noise)
Tripod mount		1/4 - 20 UNC
Voltage supply		via USB
Scope of supply (standard)		USB camera with 1 lens USB cable (1 m) Table-top tripod PIF cable with connecting terminal strip (1 m) optris [®] PI Connect software package Aluminium case

Vehicle Thermal Scanner - Field Trial Results Summary

Field trials were conducted at the RMS Picton West-bound enforcement site in conjunction with enforcement operations inspectors. The scanner was installed on the tarmac and provided a 180 degree field of view which enabled both sides/wheels of the vehicle to be scanned to measure temperatures.

The first part of the study collected background brake and tyre temperature for randomly selected heavy vehicles at Marulan HVSS and Picton West-bound enforcement site. This data was analysed to determine a normal brake and tyre operating temperature range for the specific truck classification.

The second portion of the study involved screening brake and tyre temperatures using the scanner and conducting brake inspections on vehicles which breached the normal operating-temperature thresholds determined in the previous step.

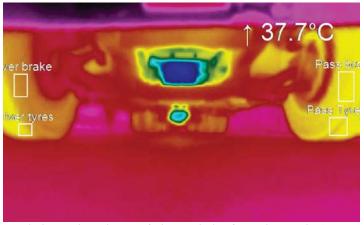


figure 1.0 Pavement Mounted: shows a thermal image of a heavy vehicle's front axle using the Optris PI "PI connect" software. The brake-rotor on the right is clearly visually hotter than the brake-rotor on the left of this image, showing potentially dangerous and defective brake components.

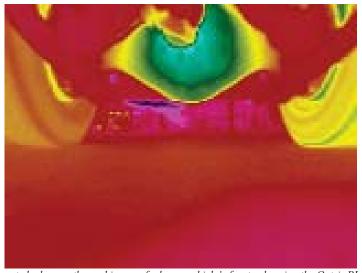


figure 2.0 Pavement Mounted: shows a thermal image of a heavy vehicle's front axle using the Optris PI "PI connect" software. The tyre on the right side is clearly visually hotter than the tyre on the left side of this image, showing a potentially dangerous and defective tyre(s).

The third portion of the study evaluated the ability of the selected screening criteria to identify defective brakes and/or tyres in a separate sample of trucks.

The initial tests resulted in a wide range of normal 'baseline' brake and tyre operating temperatures for heavy vehicles of various weights. There was a trend toward higher average temperatures as axle weight increased; temperatures varied widely within each axle weight group. Screening criteria was developed using the recorded brake and tyre temperature and inspection data. After performing analysis on the data, a low-temperature threshold of lower than 30°C and a higher than 120°C were chosen as the best temperature thresholds. Applying these screening criteria resulted in a brake violation rate of 58 percent.

However, the highest efficacy indicator of a defective brake or tyre on a heavy vehicle was in-fact a 30°C or higher temperature *differential* between *any* tyres or brakes on a heavy vehicle. For example, driver-side axle-1 tyre temperature was 80°C and driver-side axle-3 tyre temperature was 35°C. There was a 100% successful defect rate for vehicles that triggered this criteria for brakes and/or tyres.

KPI 1: Efficacy

· Adverse weather conditions:

The performance was not impacted by any adverse weather conditions or ambient light conditions.

KPI 2: Criteria Efficacy

	temperature too low or too high on any single brake. (<30°C or >120°C)	temperature differential between any two tyres or brakes (>30°C differential)
Intercept →	58%	100%
infringement ratio		

Table 1 shows the efficacy of the different criteria's used during the field trials to intercept heavy vehicles for further brake or tyre inspections. Ie/ the higher the intercept to infringement ratio, the higher the confidence that a vehicle triggering this criteria has a defective tyre or brake, warranting the intercept further investigation.

Other Considerations

- Vehicle speed limitations: During the field-trials, vehicles were screened at low-speeds (1-20km/h at Picton Rd on-road enforcement site) and high-speeds (20-100km/h). The Optris PI 160 scanner successfully detected all vehicles and screened the temperatures accurately. The industry leading frame rate (120Hz) of this scanner enables it to be used for all vehicle speeds.
- **Temperature Detection Range:** During the field-trials, vehicle tyre and brake temperatures were detected ranging from 10°C to 185°C. The Optris PI 160 scanner successfully detected all vehicle brake/tyre temperatures screened and can screen temperatures between -20°C to 1500°C.
- General defect indicator: Although poor brake or tyre conditions often indicated poor conditions of other heavy vehicle components during the field-trials, RMS should continue to use their comprehensive inspection program to identify other vehicle/driver safety violations that are not brake/tyre-related.
- **System Integration:** It is recommended that this thermal vehicle scanner be integrated with the current RMS heavy vehicle enforcement system (Truckscan) at HVSS's which would enable automated intercepts of heavy vehicles which trigger any preset temperature criteria's.

Conclusion

The Optris PI 160 thermal vehicle scanner has proven to be suitable and met all key performance indicators required by RMS. If RMS enforcement operations had the ability to screen heavy vehicles for inspection based on brake and tyre temperatures, a greater percentage of screened/inspected heavy vehicles would be found to have brake and/or tyre violations. This, in conjunction with current Truckscan automated interception criteria's would result in a more effective and efficient use of inspectors' time and resources. It would also allow a greater percentage of heavy vehicles with brakes/tyres in good condition to avoid any delay and inconvenience of an inspection. If such screening technologies were installed at HVSS's and high-risk sites such as roads with down-hill slopes in NSW, the potential for heavy vehicle accidents will also decrease. Hence the recommendation to RMS is to proceed with integration and installation at key enforcement sites.

Appendix

Title	Attachment
Appendix 1.0: Optris PI 160 brochure and specifications	optris PI 160_Brochure.pdf
Appendix 1.1: Optris PI 160 camera/scanner	
Appendix 1.2: Pavement Mounted Trial Installation at Picton Rd West- Bound on-road enforcement site	
Appendix 1.3: Videos of all heavy vehicles screened using Optris PI Connect software during field- trials	Submitted to RMS on USB drive.
Appendix 1.4: Raw Intercept data(spreadsheet) of all heavy vehicles screened and intercepted during field-trials	Submitted to RMS on USB thumb drive.

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File Type:

Portable Document Format

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Tuesday, July 12, 2016 at 6:56:03 PM Australian Eastern Standard Time

Author:

solimans

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Thermal Vehicle Scanner Scoping Study.pdf

Page Count:

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From: Sam Sol <ducktape69@gmail.com>
To: novationengineering@bigpond.com
Date: Mon, 18 Jul 2016 20:51:57 +1000

Attachments: Quote 094 - In-vehicle mounted tablets.doc (83.46 kB)

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From: "SOLIMAN Samer" < Samer.SOLIMAN@rms.nsw.gov.au>

Date: 18 Jul 2016 12:09 PM

Subject: FW: Quote 094 - In-vehicle mounted tablets.doc To: "ducktape69@gmail.com" < ducktape69@gmail.com>

Cc:

-

<u>Samer Soliman</u>

Manager Heavy Vehicle Programs

Compliance Operations

?

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Novation Engineering Pty Ltd
ABN: 50 608 485 409
PO Box 451
Kings Langley 2147
Ph: (02) 9629 1826
Email: NovationEngineering@bigpond.com

Dear Roads and Maritime Services:

ATT: Samer Soliman

Quote 094: In-vehicle mounted tablets – Field Trials and scoping study

Introduction

Further to our recent discussions, Novation Engineering Pty Ltd is pleased to provide a fixed price quotation to Roads and Maritime Services for the below scope of works.

Scope of Works

The following items would be carried out as per this quote:

- .1 **Field Trial** of RMS selected ruggedised tablet options to be mounted in enforcement vehicles at multiple sites.
- .2 **Procurement** of RMS selected ruggedised tablet options.
- .3 Scoping Study In-vehicle mounted tablets. With the understanding that RMS is currently investigating replacing the current Panasonic Toughbook solution in RMS enforcement vehicles with a more cost effective, portable device for IVR's to use as a portable inspection tool.
- .4 In-vehicle mounted tablets field trial requirements:
 - Dash mounted.
 - Outdoor use:
 - Screen to be clearly visible in high sunlight.
 - Water-resistant.
 - Drop-resistant.

.4 Engineering/design and fabrication of:

- Three (3 units) in-vehicle dash-mounting brackets for selected ruggedised tablets in RMS enforcement vehicles (Toyota Hilux).
- .5 Report on:
 - Results of all In-vehicle mounted tablets trialed in the format prescribed by RMS (scoping study report).
 - Provide recommendations on potential enforcement applications based on world best practice research performed.

Inclusions:

The following items are included in the services scope as per this proposal

Scope of works listed above.

Exclusions:

The following items are excluded from the services scope as per this proposal:

System Integration. This quote does not include software integration into existing RMS systems.

<u>Assumptions:</u> This quote assumes the following:

- Novation Engineering will abide by all RMS WHS requirements.
- The trial period is to run for a 3 month period; or until the required sample size (to be agreed with RMS) is met.

Project Deliverables:

The following are deliverables along with the Project Management and testing:

· Scoping Study Report

Payment Milestones:

Date Issued: 08/06/2016

100% upon purchase order creation.

(Upfront payment required to cater for initial procurement required)

Fixed Cost Quotation \$83,950 excluding GST.

Quote Valid until: 08/07/2016 Quote Ref: 094	
This quotation is accepted by: Name:	;
Title:;	Date://
PO Ref:	Signature:

Volume 18 133

File Size:

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File Type:

Microsoft Word Document

GUID:

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Item Date:

Monday, July 18, 2016 at 8:51:57 PM Australian Eastern Standard Time

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AuthorEmail:

Samer.SOLIMAN@rms.nsw.gov.au

AuthorEmailDisplayName:

SOLIMAN Samer

EmailSubject:

Mobile ANPR Trial

ReviewingToolsShownOnce:

Application Version:

730,895

AppName:

Microsoft Office Word

Author:

Steve O

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In-Vehicle Tablets - Scoping Study

From: Sam Sol <ducktape69@gmail.com>
To: novationengineering@bigpond.com
Date: Tue, 19 Jul 2016 13:23:07 +1000

Attachments: In-vehicle tablets Scoping Study.docx (3.47 MB)



In-Vehicle Mounted Tablets Scoping Study



Novation Engineering Pty Ltd 8th July 2016 Prepared for Roads and Maritime Services Commercial-in-confidence

In-Vehicle Mounted Tablets Scoping Study (2016).

Novation Engineering Pty Ltd.

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Novation Engineering Pty Ltd. Page/2

Thermal Vehicle Scanner - Scoping Study

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Executive Summary

This scoping study was commissioned by Roads and Maritime Services to investigate the potential use of In-vehicle mounted tablet technologies to advise on a best-practise hand-held/tablet solution for current Roads and Maritime Services Enforcement Operations requirements.

The Panasonic Toughbook CF-20, Panasonic Toughpad FZ-G1 and the Xplore Xslate B10 tablets have all proven to be the most suitable and met all the operational requirements defined by RMS. This scoping study has performed extensive field trials on the five market-leading ruggedised tablets against all RMS requirements and a detailed analysis has been provided.

Brightness: xplore b10 and cf20 clearest in sun.

Weight: all similiar

Handling: xplore b10 and cf20 and fz-g1 have best hand held strap.

Ruggedness: all similiar. Durabook seems most fragile.

Car dock: all are dockable(all require ADR cert). Xplore b10 and cf20 and fz-g1 easiest.

Keyboard: xplore b10 and cf20 and fz-g1 have detachable keyboard. All others require bluetooth keyboard.

RuggON PX501 Durabook R11 Panasonic toughpad FZ-G1 Panasonic toughbook CF-20 Xplore Xslate B10

Scoping Study – In-vehicle mounted tablets. With the understanding that RMS is currently investigating replacing the current Panasonic Toughbook solution in RMS enforcement vehicles with a more cost effective, portable device for IVR's to use as a portable inspection tool.

In-vehicle mounted tablets field trial requirements:

- 1) Dash mounted.
- 2) Outdoor use:
 - 3) Screen to be clearly visible in high sunlight.
 - 4) Water-resistant.
 - 5) Drop-resistant.

.4 Engineering/design and fabrication of:

• Three (3 units) in-vehicle dash-mounting brackets for selected ruggedised tablets in RMS enforcement vehicles (Toyota Hilux).

Abbreviations

RMS: Roads and Maritime Services WHS: Work Health and Safety

NSW: New South Wales GUI: Graphical User Interface

HVSS: Heavy Vehicle Safety Station IEO: Inspector Enforcement Operations

Thermal Vehicle Scanner - Scoping Study

Project Background

This scoping study is created for Roads and Maritime Services. RMS has expressed interest in such vehicle thermal screening technologies due to the fact that 40-50% of all heavy vehicle defects issued in NSW are related to tyre or brake non-compliance. It is well documented that the temperature of these components is a key indicator of the health and compliance of the tyres and brakes. Additionally, a fatal heavy vehicle crash by a Cootes Pty Ltd fuel tanker in 2013 which was caused by failed brakes triggered further interest from RMS to enable efficient screening of defective vehicles.

The vehicle thermal scanner selected to trial was the Optris PI 160 infrared thermal scanner. This is currently the world leading technology in terms of its ability to precisely measure temperatures on moving vehicles. The scanner comes bundled with intelligent software (Optris PI Connect) which enables both real-time human screening and automated screening by setting up various criteria's such as temperature thresholds and triggers. RMS would intend to utilise such technology at heavy vehicle safety stations and other high-risk sites in NSW such as roads with steep downhill descents.

RMS have advised that the key business objectives of this study are:

1) trial the Optis thermal scanner hardware against vendor stated tolerances, 2) develop criteria that can used to identify potential brake-related problems, 3) develop parameters that can be used as functional requirements for any automated technology that is implemented, 4) demonstrate whether the screening criteria reveals a high level of confidence and therefore has application for RMS at fixed and mobile inspection locations.

Novation Engineering performed an extensive in-field trial of the thermal scanner selected by RMS according to best practice standards and WHS requirements. RMS provided several requirements for which the technology was to be trialed to ensure appropriate recommendations are provided. Additionally, the data collected during the field trials has also enabled Novation Engineering to document screening criteria such as brake and tyre temperature thresholds that can be used to identify potential defective heavy vehicles.

Stakeholder Engagement

RMS:

Compliance Systems - Heavy Vehicle Programs Unit. Enforcement Operations Inspectors. Enforcement Operations Managers.

External:

Temperature Controls Pty Ltd

Thermal Vehicle Scanner - Scoping Study

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Scoping Study

Thermal Vehicle Scanner - Field Trial Requirements

Following several meetings and discussions with RMS stakeholders, requirements and considerations for the field trials of the dimension scanner are as follows:

1) Pavement mounted:

The thermal vehicle scanner trialed will be stationary pavement mounted at Picton Rd West-bound on-road enforcement site and Marulan HVSS.

2) Efficacy:

- a. Adverse weather conditions.
 - i. Rain
 - ii. Fog
 - iii. Very high ambient temperatures
 - iv. Low ambient light

Optris PI 160 Thermal Vehicle Scanner Specifications Summary

Basic model		PI 160		
Туре		IR		
Detector		FPA, uncooled (25 μm x 25 μm)		
Optical resolution		160 x 120 pixels		
Spectral range		7.5 – 13 µm		
Temperature ran	iges	-20 °C 100 °C, 0 °C 250 °C, 150 °C 900 °C, additional range: 200 °C 1500 °C (option) *		
Frame rate		120 Hz		
Lenses (FOV)		23° x 17° / f = 10 mm or 6° x 5° / f = 35.5 mm or 41° x 31° / f = 5.7 mm or 72° x 52° / f = 3.3 mm		
Thermal sensitivity (NETD)		0.08 K with 23° x 17° FOV / F = 0.8 0.3 K with 6° x 5° FOV / F = 1.6 0.1 K with 41° x 31° FOV and 72° x 52° FOV / F = 1		
Option for visual (only for BI-SPE		-		
Accuracy		±2 °C or ±2 %, whichever is greater		
PC interface		USB 2.0 / optional USB to GigE (PoE) conversion		
Process interface	Standard PIF	0 – 10 V input, digital input (max. 24 V), 0 – 10 V output		
(PIF)	Industrial PIF (optional)	2×0 – 10 V inputs, digital input (max. 24 V), 3×0 – 10 V outputs, $3\times$ relays (0 – 30 V / 400 mA), fail-safe relays		
Ambient tempera	ature (TUmg)	0 °C 50 °C		
Storage tempera	iture	–40 °C 70 °C		
Relative humidity	ý	20-80 %, non-condensing		
Enclosure (size/	rating)	45 mm x 45 mm x 62 mm / IP 67 (NEMA 4)		
Weight		195 g, incl. lens		
Shock/ vibration		Shock: IEC 60068-2-27 (25 g und 50 g) Vibration: IEC 60068-2-6 (sinus-shaped)/ IEC 60068-2-64 (broadband noise)		
Tripod mount		1/4 - 20 UNC		
Voltage supply		via USB		
Voltage supply Scope of supply (standard)		USB camera with 1 lens USB cable (1 m) Table-top tripod PIF cable with connecting terminal strip (1 m) optris® PI Connect software package Aluminium case		

Vehicle Thermal Scanner - Field Trial Results Summary

Field trials were conducted at the RMS Picton West-bound enforcement site in conjunction with enforcement operations inspectors. The scanner was installed on the tarmac and provided a 180 degree field of view which enabled both sides/wheels of the vehicle to be scanned to measure temperatures.

The first part of the study collected background brake and tyre temperature for randomly selected heavy vehicles at Marulan HVSS and Picton West-bound enforcement site. This data was analysed to determine a normal brake and tyre operating temperature range for the specific truck classification.

The second portion of the study involved screening brake and tyre temperatures using the scanner and conducting brake inspections on vehicles which breached the normal operating-temperature thresholds determined in the previous step.

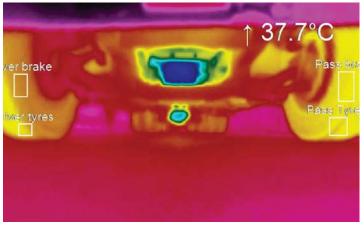


figure 1.0 Pavement Mounted: shows a thermal image of a heavy vehicle's front axle using the Optris PI "PI connect" software. The brake-rotor on the right is clearly visually hotter than the brake-rotor on the left of this image, showing potentially dangerous and defective brake components.

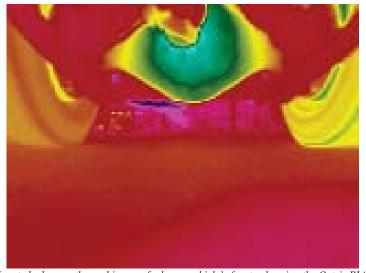


figure 2.0 Pavement Mounted: shows a thermal image of a heavy vehicle's front axle using the Optris PI "PI connect" software. The tyre on the right side is clearly visually hotter than the tyre on the left side of this image, showing a potentially dangerous and defective tyre(s).

Novation Engineering Pty Ltd. P a g e | 11 Thermal Vehicle Scanner - Scoping Study

The third portion of the study evaluated the ability of the selected screening criteria to identify defective brakes and/or tyres in a separate sample of trucks.

The initial tests resulted in a wide range of normal 'baseline' brake and tyre operating temperatures for heavy vehicles of various weights. There was a trend toward higher average temperatures as axle weight increased; temperatures varied widely within each axle weight group. Screening criteria was developed using the recorded brake and tyre temperature and inspection data. After performing analysis on the data, a low-temperature threshold of lower than 30°C and a higher than 120°C were chosen as the best temperature thresholds. Applying these screening criteria resulted in a brake violation rate of 58 percent.

However, the highest efficacy indicator of a defective brake or tyre on a heavy vehicle was in-fact a 30°C or higher temperature *differential* between *any* tyres or brakes on a heavy vehicle. For example, driver-side axle-1 tyre temperature was 80°C and driver-side axle-3 tyre temperature was 35°C. There was a 100% successful defect rate for vehicles that triggered this criteria for brakes and/or tyres.

KPI 1: Efficacy

• Adverse weather conditions:

The performance was not impacted by any adverse weather conditions or ambient light conditions.

KPI 2: Criteria Efficacy

	temperature too low or too high	temperature differential between
	on any single brake.	any two tyres or brakes
	(<30°C or >120°C)	(>30°C differential)
Intercept	58%	100%
\rightarrow		
infringement		
ratio		

Table 1 shows the efficacy of the different criteria's used during the field trials to intercept heavy vehicles for further brake or tyre inspections. Ie/ the higher the intercept to infringement ratio, the higher the confidence that a vehicle triggering this criteria has a defective tyre or brake, warranting the intercept further investigation.

Other Considerations

- Vehicle speed limitations: During the field-trials, vehicles were screened at low-speeds (1-20km/h at Picton Rd on-road enforcement site) and high-speeds (20-100km/h). The Optris PI 160 scanner successfully detected all vehicles and screened the temperatures accurately. The industry leading frame rate (120Hz) of this scanner enables it to be used for all vehicle speeds.
- **Temperature Detection Range:** During the field-trials, vehicle tyre and brake temperatures were detected ranging from 10°C to 185°C. The Optris PI 160 scanner successfully detected all vehicle brake/tyre temperatures screened and can screen temperatures between -20°C to 1500°C.
- General defect indicator: Although poor brake or tyre conditions often indicated poor conditions of other heavy vehicle components during the field-trials, RMS should continue to use their comprehensive inspection program to identify other vehicle/driver safety violations that are not brake/tyre-related.
- **System Integration:** It is recommended that this thermal vehicle scanner be integrated with the current RMS heavy vehicle enforcement system (Truckscan) at HVSS's which would enable automated intercepts of heavy vehicles which trigger any preset temperature criteria's.

Conclusion

The Optris PI 160 thermal vehicle scanner has proven to be suitable and met all key performance indicators required by RMS. If RMS enforcement operations had the ability to screen heavy vehicles for inspection based on brake and tyre temperatures, a greater percentage of screened/inspected heavy vehicles would be found to have brake and/or tyre violations. This, in conjunction with current Truckscan automated interception criteria's would result in a more effective and efficient use of inspectors' time and resources. It would also allow a greater percentage of heavy vehicles with brakes/tyres in good condition to avoid any delay and inconvenience of an inspection. If such screening technologies were installed at HVSS's and high-risk sites such as roads with down-hill slopes in NSW, the potential for heavy vehicle accidents will also decrease. Hence the recommendation to RMS is to proceed with integration and installation at key enforcement sites.

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solimans

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Samer

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tablets trial

From: Sam Sol <ducktape69@gmail.com>

To: novationengineering@bigpond.com, Steve Yeah <steve2ng@gmail.com>

Date: Fri, 29 Jul 2016 21:24:04 +1000

add tables for all kpi's comment on outstanding issues with each unit for each kpi graphs

http://laptops.specout.com/l/6003/XPS-13-DNCWT5128B

http://www.zdnet.com/product/panasonic-toughbook-cf-20/

In-Vehicle Mounted Tablet Scoping Study

From: novationengineering novationengineering <novationengineering@bigpond.com>

To: SOLIMAN Samer <samer.soliman@rms.nsw.gov.au>

Date: Thu, 11 Aug 2016 13:13:19 +1000 (AEST)

Attachments: In-Vehicle Mounted Tablets - Scoping Study-1-.pdf (1.06 MB)

Hi Samer,

I am pleased to submit the final version of the In-Vehicle Mounted Tablets scoping study. Please do not hesitate to contact me for any further information.

Regards, Stephen Thammiah





In-Vehicle Mounted Tablets Scoping Study



Novation Engineering Pty Ltd 8th July 2016 Prepared for Roads and Maritime Services Commercial-in-confidence

In-Vehicle Mounted Tablets Scoping Study (2016).

Novation Engineering Pty Ltd.

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Executive Summary

This scoping study was commissioned by Roads and Maritime Services to investigate the potential replacement of current In-vehicle mounted tablet technologies and provide advice on a best-practise hand-held/tablet solution for current Roads and Maritime Services Enforcement Operations requirements.

The Panasonic Toughbook CF-20, Panasonic Toughpad FZ-G1 and the Xplore Xslate B10 tablets have all proven to be the most suitable and met all the operational requirements defined by RMS. This scoping study has performed extensive field trials on the five market-leading ruggedized tablets against all RMS requirements and a detailed analysis has been provided.

Abbreviations

RMS: Roads and Maritime Services WHS: Work Health and Safety

NSW: New South Wales GUI: Graphical User Interface

HVSS: Heavy Vehicle Safety Station IEO: Inspector Enforcement Operations

IPS: In-Plane Switching

Nit: Is a unit of visible-light intensity, is equivalent to one candela per square meter.

PPI: Pixels per inch

IEC: International Electrotechnical Commission

OS: Operating System

Project Background

This scoping study was commissioned by Roads and Maritime Services to investigate the potential use of In-vehicle mounted tablet technologies to advise on a best-practise handheld/tablet solution for current Roads and Maritime Services Enforcement Operations requirements. The ruggedized tablets selected to trial were the RuggON PX501, Durabook-R11, Panasonic Toughpad FZ-G1, Panasonic Toughbook CF-20 and the Xplore Xslate B10 respectively. These tablets represent world leading technology in their fields while being cost effective. RMS would mount such technology within RMS enforcement vehicles as a replacement for the current Panasonic Toughbook fleet which will be end-of-life within 2 years and require replacement; this is the primary reason that RMS instigated this scoping study.

Novation Engineering has provided commentary for the following subject areas and field-trials for all five tablets trialled:

- a) The tablets are to be dash mounted, and allow for docking in the rear of the enforcement vehicle.
- b) The Screen to be clearly visible in high sunlight (high ambient light).
- c) Water-resistance.
- d) Battery life.
- e) Ruggedness (Drop/impact-resistance).

Novation Engineering performed an extensive in-field trial of the ruggedised tablets selected by RMS according to best practice standards and WHS requirements. RMS provided several requirements for which the technology was to be trialed to ensure appropriate recommendations are provided.

Stakeholder Engagement

RMS:

Compliance Systems - Heavy Vehicle Programs Unit. Enforcement Operations Inspectors. Enforcement Operations Managers.

External:

Panasonic

RuggON

Xplore

Durabook

Scoping Study

In-Vehicle Mounted Tablets - Field Trial Requirements

Following several meetings and discussions with RMS stakeholders, requirements and considerations for the field trials are as follows:

- 1) In-vehicle mounted tablets field trial requirements:
 - a. The tablets be dash mounted, and allow for docking in the rear of the enforcement vehicle.
 - b. The Screen to be clearly visible in high sunlight (high ambient light).
 - c. Water-resistance.
 - d. Battery life.
 - e. Ruggedness (Drop/impact-resistance).
- 2) Engineering/design and fabrication of:
 - Three (3 units) in-vehicle dash-mounting brackets for selected ruggedised tablets in RMS enforcement vehicles (Toyota Hilux).

Ruggedised Tablets Specifications Summary

	RuggON PX501	Durabook R11	Panasonic FZ-G1	Panasonic CF-20	Xplore Xslate B10
Image			I A A A A A A A A A A A A A A A A A A A		
Processor	Intel Core i5- 5350U	Intel i5- 5200U	Intel Core i5- 4310U	Intel Core m5-6Y57	Intel Core i5- 5350u
CPU Speed	1.8GHz (2.9GHz turbo)	2.2GHz	2.00 GHz (3.0GHz Turbo Boost)	1.1GHz (2.8GHz turbo)	1.80GHz (2.90GHz turbo)
os	Windows 7 Pro/WES7P, Windows Embedded 8.1 Industry Pro, WES8	Windows 7,Windows 8.1 or Windows 10	Windows 8.1 Pro 64-bit with Windows 7 downgrade option	Microsoft Windows 10, optional Windows 7 Pro downgrade	Windows 7 Professional or Windows 8.1 Professional
Keyboard	Onscreen or Optional wireless keyboard	Onscreen or Optional wireless keyboard	Onscreen or Optional wireless keyboard	Backlit 82- key, pressure- sensitive touchpad with multi touch & Onscreen or Optional wireless keyboard	Backlit 82- key, pressure- sensitive touchpad with multi touch & Onscreen or Optional wireless keyboard
Cameras	Rear: 5- megapixel AF with LED flash, front: 2-megapixel webcam	Front: 2- megapixel webcam; rear: 5- megapixel with LED illuminator	Front: 720p; rear: 8mp	1080p webcam and dual mic; optional 8mp AF rear camera with LED flash	Front: 1.2- megapixel webcam; rear: 8- megapixel with LED illuminator
Weight	3.00 pounds	2.73 pounds	2.43 pounds	2.1 pounds	2.55 pounds

In-Vehicle Mounted Tablets - Field Trial Results Summary

Field trials were conducted at an enforcement site in conjunction with enforcement operations inspectors. The tablets were installed with the Truckscan software which is used by inspectors, enabling genuine feedback based on real-world practise.

The first part of the study collected feedback from users concerning general hardware specifications such as the weight, visibility in sunlight, general usability, handling (look and feel).

The second portion of the study involved screening trucks using the tablets running Truckscan and conducting inspections on vehicles as per normal process; feedback was collated for analysis during and post the trial.

The tablets all had a relatively comparable weight, and all felt durable and rugged. In terms of handling, the Xslate B10, Panasonic CF-20 and Panasonic FZ-G1 were stand out favourites due to their ergonomic rear hand-held strap; all other units were not as ergonomic to hold. Additionally, the Xslate B10 and Panasonic CF-20 come equipped with detachable keyboards which users all confirmed is an advantage over wireless keyboards used by the other devices.



Figure 1.0 Tablets Trial: shows an enforcement officer conducting a routine inspection of a heavy vehicle using the Panasonic FZ-G1.



Figure 2.0 Tablet Trials: shows the five units trialed. From left to right: Durabook-R11, Xplore Xslate B10, Panasonic Toughbook CF-20, Panasonic Toughpad FZ-G1 and the RuggON PX501.

KPI 1: Dash Mounted

All tablets have the ability to be in-vehicle mounted (with power and wired/wireless communications) however they require an Australian Design Rules certification to ensure best practice safe mounting standards are adhered to.

KPI 2: Visibility in sunlight

There was a distinct difference between the tablets when it came to visibility under direct sunlight, the Xslate B10 and the Panasonic CF-20 performed the best with little to no reduction in screen visibility. These tablets support graphical depictions and can provide crisp visual representations of tablet-optimized applications. The Panasonic FZ-G1 was a close runner-up, also meeting outdoor use requirements.

	RuggON PX501	Durabook R11	Panasonic FZ-G1	Panasonic CF-20	Xplore Xslate B10
Maximum brightness	1000 nits	730 nits	800 nits	800 nits	500 nit
Screen resolution Pixels per inch	1920 x 1200 pixels 224 ppi	1366 x 768 pixels 216 ppi	1920 x 1200 pixels 224 ppi	1920 x 1200 pixels 224 ppi	1366 x 768 pixels 155 ppi
Screen size	10.1-inch	11.6-inch	10.1-inch	10.1-inch	10.1-inch
Display Type	IPS LCD	IPS LCD	IPS LCD	IPS LCD	IPS LCD

Table 1.0 Tablets Trial: Compares the display specifications of tablets chosen for the trial

KPI 3: Water-resistant

All five of the trialed ruggedised tablets have an IP65 rating, which means it is protected against dust and low pressure water (splash-proof) from all directions. The following tests were performed to validate the IP65 rating.

- The units were placed outside for 30min in rain.
- The units were exposed to a splash of water.

IP codes are a standard set forth by the IEC. The codes are designed as a system for classifying the degrees of protection provided by the enclosures of electrical equipment. The first number of the IP code refers to the device's solid protection rating, whereas the second number refers to the device's moisture protection rating.

Solid Protection Rating

IP Code	Devices	Protection
6	Durabook-R11, Xplore Xslate B10, Panasonic Toughbook CF- 20, Panasonic toughpad FZ-G1, RuggON PX501.	Protection from contact with harmful dust

Table 2.0 Tablets Trial: states the current solid protection rating for all tablets

Moisture Protection Rating

IP Code	Devices	Protection	Test duration	Usage
5	Durabook- R11, Xplore Xslate B10, Panasonic Toughbook CF-20, Panasonic toughpad FZ-G1, RuggON PX501.	Protection from low pressure water projected from a nozzle with a 6.3mm diameter opening in any direction	3 minutes from a distance of 3 meters	Rain, splashing and direct contact with most kitchen/bathroom faucets

Table 3.0 Tablets Trial: depicts the current moisture protection rating for all tablets

KPI 4: Drop/Shock resistant

MIL-STD-810; is an equipment testing standard set by the United States Department of defense. This tests a device's ability to survive a variety of impacts and shocks. The MIL-STD-810 method defines the purpose of the shock test to provide a degree of confidence that tablets can physically and functionally withstand the relatively infrequent, non-repetitive shocks encountered in handling, transportation and operational environments.

The drop resistance of all the tablets met RMS requirements but the Panasonic CF-20 was the standout; achieving the highest shock resistance at 6 feet.

Shock Test Compliance

	RuggON PX501	Durabook R11	Panasonic FZ-G1	Panasonic CF-20	Xplore Xslate B10
MIL-STD810 compliance	√	✓	√	✓	✓
Drop test height	5 feet	4 feet	5 feet	6 feet	4 feet

Table 4.0 Tablets Trial: Shows the MIL STD compliance and testing drop height rating for all tablets

KPI 5: Battery Life

All five of the recommended tablets had an adequate battery life of at least 6 hours of operation at highest brightness and performance. All devices came with an optional hot-swappable battery which would be able to double the operational use. This enables inspectors to replace a depleted battery with a fresh battery without ever shutting down applications or Windows OS.

Battery Life Comparison

	RuggON PX501	Durabook R11	Panasonic FZ-G1	Panasonic CF-20	Xplore Xslate B10
Standard Battery life	6.5 I	7.5	10	10	10
Extended Battery life (hot swappable)	13	15	20	20	20

Table 5.0 Tablet Trial: shows the difference in battery life for each respective tablet

As the above data predicted, the Xslate B10, Panasonic CF-20 and Panasonic FZ-G1 performed the best in terms of battery life during the field-trials.

Other Considerations

- Operating System: The default operating system of the tablet should be compatible with the current RMS IT systems to reduce any integration issues. RMS currently uses Windows 7 OS.
- Security: The issue of security concerning these devices should be considered as well as most of the features are optional. Features available include Password (supervisor, user, HD lock), 2 x Kensington cable lock slots, Data and Device Security in BIOS; optional fingerprint OR Smartcard OR contactless Smartcard/NFC reader.
- **System Integration:** It is recommended that these tablets be integrated with the current RMS heavy vehicle enforcement system (Truckscan).
- Australian Design Rules (ADR) Certification: Any devices fitted to enforcement
 vehicles must pass stringent ADR regulations and tests to ensure they are suitable
 and safe for in-vehicle mounting. All manufacturers of the five trialled devices
 confirmed their respective devices would soon have ADR certified mountings.
 Novation Engineering organised an ADR test for the Xplore Xslate B10 to ensure
 at least one unit can be confirmed to have a vehicle mounting which is currently
 ADR certified. The successful ADR test report of the Xplore B10 is attached in
 Appendix 1.6.

Conclusion

The Xplore Xslate B10 and Panasonic CF20 have proven to be the most appropriate ruggedised tablets in regards to RMS requirements and key performance indicators. RMS enforcement operations would gain the ability to screen and inspect heavy vehicles in a more effective and efficient manner with the use of a hand-held tablet. A hand-held ruggedised tablet would provide access to vehicle history intelligence, image/evidence capturing facilities while an inspector performs standard vehicle inspections. This ensures the most efficient use of inspector's time and resources. It would also allow a greater number of heavy vehicles to be screened per hour.

Hence, the recommendation is for RMS to proceed with replacement of the current fleet of Panasonic Toughbook's when they are end-of-life with either the Xplore Xslate B10 and/or Panasonic CF20 for in-vehicle mounted tablets within RMS enforcement vehicles.

Appendix

Title	Attachment
Appendix 1.0: Panasonic Toughbook CF-20 Brochure	toughbook-20_specs heet.pdf
Appendix 1.1: Xplore Xslate B10 Brochure	XSLATE_B10_Brochu re_ENG.pdf
Appendix 1.2: Panasonic Toughpad FZ-G1 Brochure	FZ-GImk3_Spec_She et_(EN)_2.pdf
Appendix 1.3: RuggON PX501	PX501_datasheet.pdf
Appendix 1.4: Durabook R11	brochure-r11.pdf
Appendix 1.5: In-vehicle mounted tablet	
Appendix 1.6: Xplore Xslate B10 ADR Report	D:\Documents and Settings\solimans\Des

File Size:

1,058,654

File Type:

Portable Document Format

GUID:

8de67f9e-6009-4220-8073-b0b5e5e546de

Item Date:

Thursday, August 11, 2016 at 1:59:29 PM Australian Eastern Standard Time

MD5 Digest:

6c039a2d141ee6b39903fdfa286034ff

Path Name:

 $/E18-0281-Ember-GS0005-00-00/E18-0281-Ember-GS0005-00-00.ad1/GS0005-00-00.zip/275_1036.txt$

Shannon Entropy:

7.838900258796468

Property Source:

E18-0281-Ember-GS0005-00-00

Application Created:

Thursday, August 11, 2016 at 1:59:29 PM Australian Eastern Standard Time

Application Modified:

Thursday, August 11, 2016 at 1:59:29 PM Australian Eastern Standard Time

Author:

solimans

Content-Disposition:

attachment; filename="In-Vehicle Mounted Tablets - Scoping Study-1-.pdf"

Content-Transfer-Encoding:

base64

Content-Type:

application/pdf; name="In-Vehicle Mounted Tablets - Scoping Study-1-.pdf"

Name:

In-Vehicle Mounted Tablets - Scoping Study-1-.pdf

Page Count:

16

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true

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IRD meeting

From: Sam Sol <ducktape69@gmail.com> To: novationengineering@bigpond.com Date: Sun, 14 Aug 2016 17:24:17 +1000

business prospectus: strategic technology and innovation company based in sydney. focusing in ITS.

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^{*}procurement: ITS.
*development: fabrication, ITS technology trials, engineering.
*maintenance: local 24/7 hardware support across Australia and expanding to QLD + contracts with 3rd party fabricators and engineers.
*legal certification: vehicle dimension scanner + ADR certification + under-vehicle cameras.

Novation-Prospectus

From: novationengineering novationengineering <novationengineering@bigpond.com>

To: rish <rish.malhotra@irdinc.com>

Date: Sat, 20 Aug 2016 09:23:10 +1000 (AEST)

Attachments: Novation Engineering Prospectus.pdf (43.6 kB)

Hi Rish,

Please find attached a brief prospectus of Novation Engineering. Please don't hesitate to contact me if you have any further questions.

Kind Regards,

Steve



...Tomorrow's Innovation, Today...



novationengineering@bigpond.com +61449144125 www.novationengineering.com.au

Clients

12/2012 - Present

New South Wales, Australia

Roads & Maritime Services

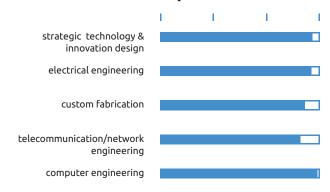
Compliance Operations

Enforcement Programs managed/delivered for RMS:

- Enforcement-vehicle computers Scoping Study and delivery.
- Under-Vehicle enforcement camera Program Delivery, maintenance, calibration, legal certification
- Thermal Vehicle Scanner Delivery, maintenance, calibration, legal certification
- Portable Weigh Scales Scoping Study
- Vehicle Dimension Scanner Delivery, maintenance, calibration, legal certification

RMS Contact: Samer Soliman - +61416185434

Business Skills & Competences



Business Services

Strategic ITS technology & innovation: design, engineering and fabrication

ITS Program Management: 24/7 ITS hardware maintenance, calibration and legal certification

ITS consultancy

ITS procurement

The Future...

Expanding into Queensland, Australia in 2017

RE: RE: Novation-Prospectus

From: Rish Malhotra <rish.malhotra@irdinc.com>

novationengineering novationengineering novationengineering bigpond.com> To:

Date: Tue, 23 Aug 2016 16:40:15 +0000

Thank you for the additional information Steve. Please advise when we can have a conversation over the phone. Wednesday morning 8 am my time is midnight 12 am for you in Sydney so perhaps later tonight (Tuesday) my time which will be Wednesday morning for you may be more convenient once you get into Sydney. I will wait to hear from you

Kind Regards,

Rish Malhotra Vice President, International Business IRD (International Road Dynamics Inc.) 702-43rd Street, Saskatoon, SK, S7K 3T9 Canada Phone: +1-306-653-6825

Fax: +1-306-242-5599 E-Mail: Rish.Malhotra@irdinc.com

Web: www.irdinc.com



Skype: rish.malhotra







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From: novationengineering novationengineering [mailto:novationengineering@bigpond.com] Sent: Tuesday, August 23, 2016 7:17 AM

To: Rish Malhotra < Rish. Malhotra@irdinc.com >

Subject: Re: RE: Novation-Prospectus

Hi Rish.

Happy to provide more information. To be more clear regarding the scope of those 5 projects listed below, RMS engages us to perform scoping studies and field trials on new ITS technologies to prove concept for their enforcement applications. I should be clear in saying that we are not suppliers/distributors for any of these technologies (except project 2 which is a custom designed and manufactured solution by Novation), we simply test and trial new ITS technologies to implement in a consultative non-

Project 2 below is a custom designed and manufactured solution for RMS, and has no 'supplier'. Novation manage and maintain these national assets on behalf of RMS.

Project 4 below(portable weigh scales) is a scoping study/field-trial to provide advise to RMS regarding mass measurement accuracy of market leading portable weigh scales(including the current IRD model that RMS utilise). As I understand this was required by RMS primarily to provide them with confidence on their portable weigh scales after apparent recent issues with their portable scale fleet; i'm unsure of the exact issues.

- 1)Enforcement-vehicle computers. 2)Under-Vehicle enforcement camera Program. 3)Thermal Vehicle Scanner.
- 4)Portable Weigh Scales.
- 5)Vehicle Dimension Scanner.

Regarding the Novation team, we are a 8 person extended team with various capabilities/skill-sets as listed in the Novation prospectus sheet (computer engineering, telecommunications engineering, business management etc). Novation engages a panel of contracted 3rd-party vendors such as electricians, fabricators etc for reliable and efficient management of the above mentioned under vehicle camera assets.

The primary point of contact for IRD will be myself

I hope I've given you enough detailed information to assist you Rish. Feel free to contact me anytime Wednesday morning your time. I'll be flying back to Sydney tomorrow morning and will miss you afternoon timing.

Cheers.

Steve

- Original Message --

From: "Rish Malhotra" < Rish. Malhotra@irdinc.com>

To: "novationengineering novationengineering" <<u>novationengineering@bigpond.com</u>>Sent: Tuesday, 23 Aug, 2016 At 7:15 AM

Subject: RE: Novation-Prospectus

Hi Steve.

Thank you for your email and the introduction to Novation Engineering.

Can you please provide me with more details on the different products provided by Novation within the 5 bullets mentioned in your prospectus, i.e. Enforcement — vehicle computers; Under-vehicle enforcement camera program; Thermal vehicle scanner; Vehicle Dimension Scanner; etc. Are these products/systems/technologies manufactured by Novation or are they distributed by Novation in Australia in which case I will like to understand the other suppliers that you work with who supply these products to you in Australia since these technology areas are complementary to our business. Attached in this email is our corporate profile.

Specifically, I am interested in understanding more about your involvement with the portable weigh scales scoping study since that is of direct relevance to our discussion with RMS using the IRD portable axle weighers.

Volume 18 180 Further, can you please provide me with more details on the Novation team, i.e. team size, competencies and capabilities as well as the background of the individual(s) who will be our (IRD's) direct point of contact for the portable scale business. I will like to review this to discuss the training plan and next steps. I am also attaching in this email our specification sheets for the SAW scales for operation in static and dynamic mode.

Lastly, are you available for us to speak on Wednesday morning 7 am Sydney time? This will be 3 pm in Saskatoon tomorrow (Tuesday) and would have given me the opportunity to review the additional information that you provide. I look forward to hearing from you Steve and our further discussions before our next call with Samer. Thank you again.

Kind Regards,

Rish Malhotra Vice President, International Business IRD (International Road Dynamics Inc.) 702-43rd Street, Saskatoon, SK, S7K 3T9 Canada Phone: +1-306-653-6825 Fax: +1-306-242-5599

E-Mail: Rish.Malhotra@irdinc.com Web: www.irdinc.com

Skype: rish.malhotra



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From: novationengineering novationengineering [mailto:novationengineering@bigpond.com]

Sent: Friday, August 19, 2016 5:23 PM

To: Rish Malhotra < Rish.Malhotra@irdinc.com >

Subject: Novation-Prospectus

Hi Rish.

Please find attached a brief prospectus of Novation Engineering. Please don't hesitate to contact me if you have any further questions.

Kind Regards,

Steve

Regards, Stephen Thammiah

Volume 18 181

Re: RE: Novation-Prospectus

From: novationengineering novationengineering <novationengineering@bigpond.com>

To: Rish Malhotra <rish.malhotra@irdinc.com>
Date: Tue, 23 Aug 2016 23:16:40 +1000 (AEST)

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Steve

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To: "novationengineering novationengineering" <novationengineering@bigpond.com>

Sent: Tuesday, 23 Aug, 2016 At 7:15 AM

Subject: RE: Novation-Prospectus

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Kind Regards,
Rish Malhotra
Vice President, International Business
IRD (International Road Dynamics Inc.)
702-43 rd Street, Saskatoon, SK, S7K 3T9 Canada
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Kind Regards,

Steve

Regards, Stephen Thammiah

Re: RE: RE: Novation-Prospectus

From: novationengineering novationengineering <novationengineering@bigpond.com>

To: Rish Malhotra <rish.malhotra@irdinc.com> Date: Thu, 1 Sep 2016 17:03:29 +1000 (AEST)

Attachments: IRD-Novation NDA.pdf (150.76 kB)

Hi Rish,

Apologies I read that as the titles for the IRD infomation to the right. Please find the updated document attached. I look forward to hearing from you soon.

Cheers,

Steve

-- Original Message ---

From: "Rish Malhotra" <Rish.Malhotra@irdinc.com>
To: "novationengineering novationengineering" <novationengineering@bigpond.com>

Sent: Tuesday, 30 Aug, 2016 At 7:49 AM Subject: RE: RE: Novation-Prospectus

Hi Steve,

Can you please also fill out the company name, address and location on page 4 of the NDA and re-send to me. Thank you.

Per our discussion with Samer, I understand that the immediate focus is for Novation to be able to re-sell IRD's portable scales to RMS in Australia. We certainly need to plan for a detailed training session at our factory in Switzerland once we get into discussions on Novation servicing and maintaining our portable scales for RMS in Australia.

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Kind Regards,
Rish Malhotra
Maniocra
Vice President, International Business
IRD (International Road Dynamics Inc.)
702-43 rd Street, Saskatoon, SK, S7K 3T9 Canada
Phone: +1-306-653-6825
Fax: +1-306-242-5599
E-Mail:
Rish.Malhotra@irdinc.com
Web:
www.irdinc.com

Skype: rish.malhotra









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From:

novationengineering novationengineering [mailto:novationengineering@bigpond.com]

Sent: Saturday, August 27, 2016 5:07 PM

To: Rish Malhotra < Rish. Malhotra@irdinc.com

>

Subject: Re: RE: Novation-Prospectus

Hi Rish,

Please find attached a signed copy of the NDA. Please let me know what our next steps are and a trip to Switzerland sounds like fun, if its still required.

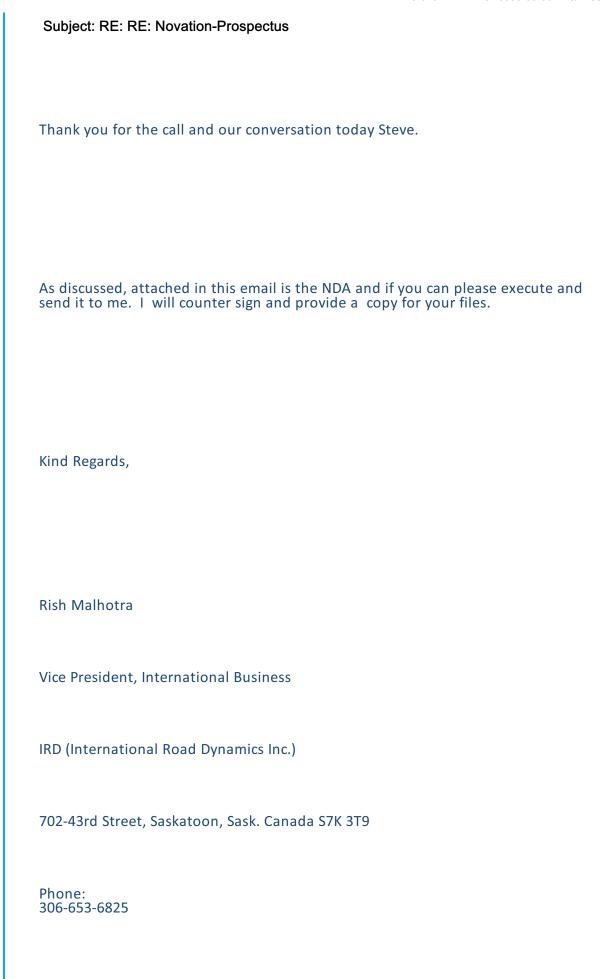
Cheers,

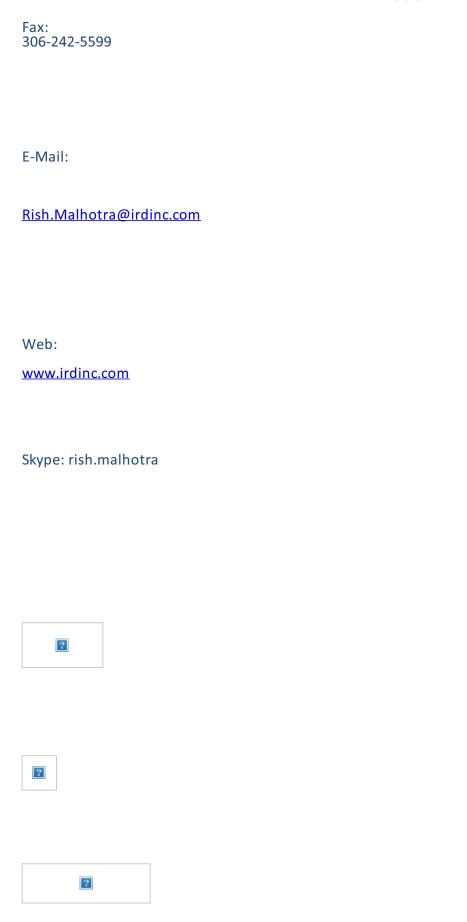
Steve

```
----- Original Message -----
From: "Rish Malhotra" <
Rish.Malhotra@irdinc.com
```

To: "novationengineering novationengineering" < novationengineering@bigpond.com

Sent: Thursday, 25 Aug, 2016 At 9:50 AM







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From:

Rish Malhotra

Sent: August 23, 2016 10:40 AM

To: novationengineering novationengineering <

novationengineering@bigpond.com

>

Subject: RE: RE: Novation-Prospectus

Thank you for the additional information Steve. Please advise when we can have a conversation over the phone. Wednesday morning 8 am my time is midnight 12 am for you in Sydney so perhaps later tonight (Tuesday) my time which will be Wednesday morning for you may be more convenient once you get into Sydney. I will wait to hear from you. Kind Regards, Rish Malhotra Vice President, International Business IRD (International Road Dynamics Inc.) 702-43rd Street, Saskatoon, SK, S7K 3T9 Canada Phone: +1-306-653-6825 Fax: +1-306-242-5599

E-Mail:

Rish.Malhotra@irdinc.com

Web: www.irdinc.com

Skype: rish.malhotra



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From:

novationengineering novationengineering [mailto:novationengineering@bigpond.com] **Sent:** Tuesday, August 23, 2016 7:17 AM

To Dieh Malhatra

To: Rish Malhotra <

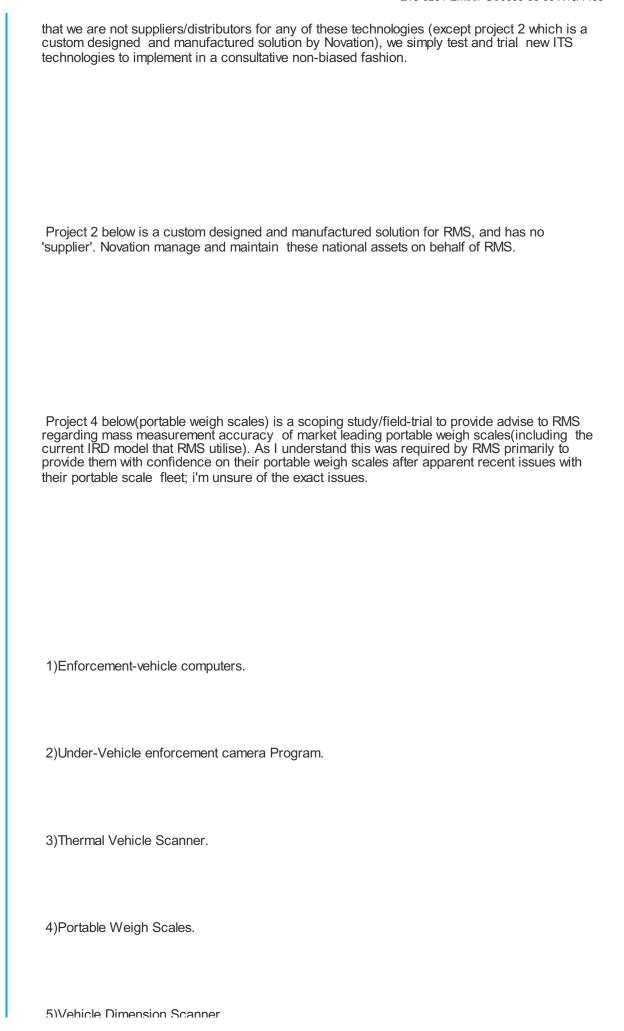
Rish.Malhotra@irdinc.com

>

Subject: Re: RE: Novation-Prospectus

Hi Rish,

Happy to provide more information. To be more clear regarding the scope of those 5 projects listed below, RMS engages us to perform scoping studies and field trials on new ITS technologies to prove concept for their enforcement applications. I should be clear in saying



Regarding the Novation team, we are a 8 person extended team with various capabilities/skillsets as listed in the Novation prospectus sheet (computer engineering, telecommunications engineering, business management etc). Novation engages a panel of contracted 3rd-party vendors such as electricians, fabricators etc for reliable and efficient management of the above mentioned under vehicle camera assets. The primary point of contact for IRD will be myself. I hope I've given you enough detailed information to assist you Rish. Feel free to contact me anytime Wednesday morning your time. I'll be flying back to Sydney tomorrow morning and will miss you afternoon timing. Cheers, Steve

----- Original Message ------From: "Rish Malhotra" <

Rish.Malhotra@irdinc.com

To: "novationengineering novationengineering" <

novationengineering@bigpond.com

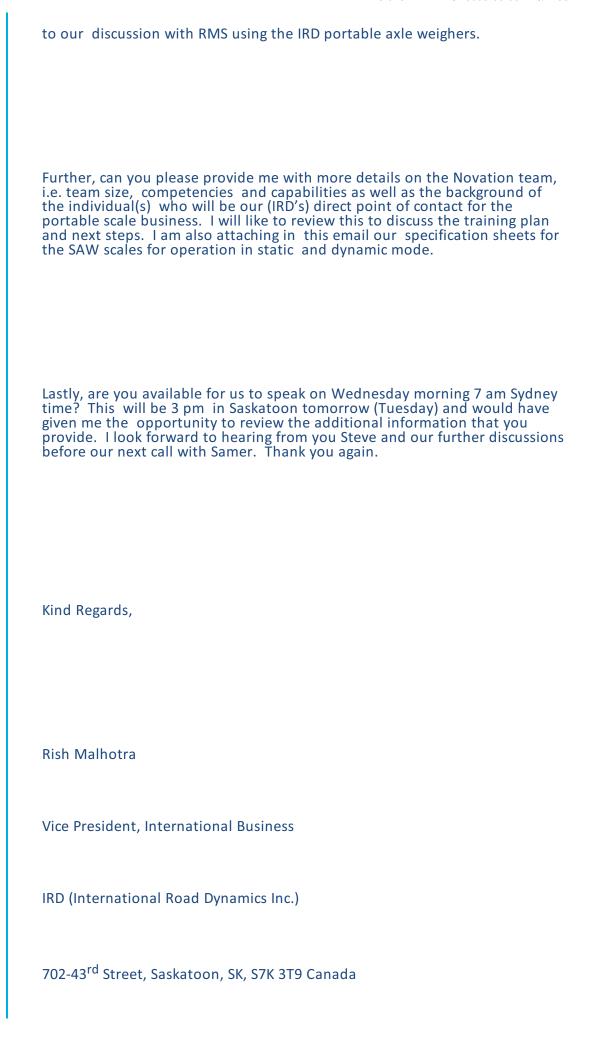
Sent: Tuesday, 23 Aug, 2016 At 7:15 AM Subject: RE: Novation-Prospectus

Hi Steve,

Thank you for your email and the introduction to Novation Engineering.

Can you please provide me with more details on the different products provided by Novation within the 5 bullets mentioned in your prospectus, i.e. Enforcement — vehicle computers; Under-vehicle enforcement camera program; Thermal vehicle scanner; Vehicle Dimension Scanner; etc. Are these products/systems/technologies manufactured by Novation or are they distributed by Novation in Australia in which case I will like to understand the other suppliers that you work with who supply these products to you in Australia since these technology areas are complementary to our business. Attached in this email is our corporate profile.

Specifically, I am interested in understanding more about your involvement with the portable weigh scales scoping study since that is of direct relevance







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From:

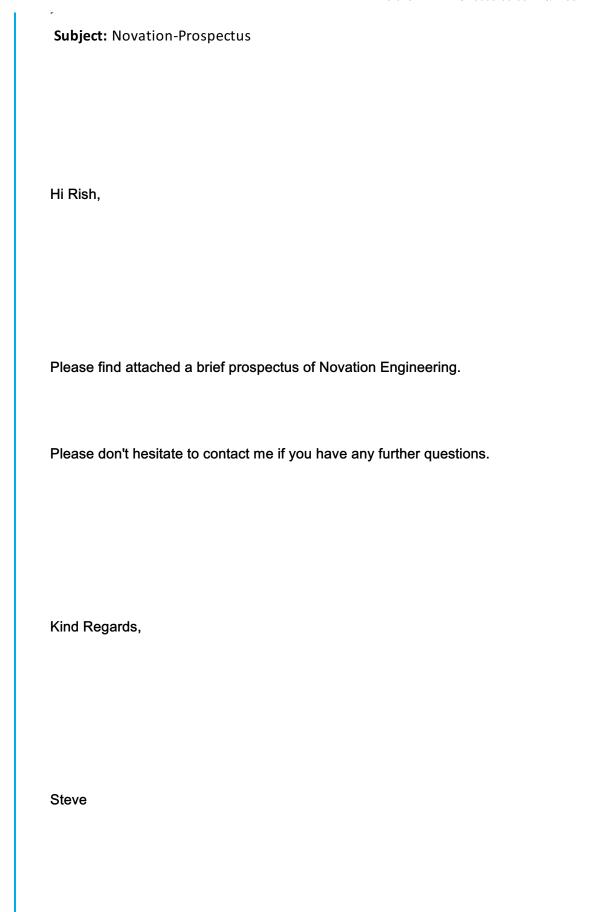
novationengineering novationengineering [mailto:novationengineering@bigpond.com]

Sent: Friday, August 19, 2016 5:23 PM

To: Rish Malhotra <

Rish.Malhotra@irdinc.com

>



Regards, Stephen Thammiah

Regards, Stephen Thammiah

Regards, Stephen Thammiah



CONFIDENTIALITY NON-DISCLOSURE AGREEMENT

THIS AGREEMENT is made effective this 8/28/2016 day of Sunday between International Road Dynamics Inc. ("IRD"), with its principal place of business at 702- 43rd Street East Saskatoon, Saskatchewan CANADA S7K 3T9 and Novation Engineering with its principal place of business at Sydney Australia 2000 referred to collectively as "Parties" and individually as "Party".

The Parties agree as follows:

- 1. IRD and <u>Novation</u> wish to discuss and evaluate the possibility of working together to pursue business opportunities in the Intelligent Transportation Systems (ITS) Industry. In the course of these discussions, the Parties may exchange information and data which is confidential and proprietary, and in such event the Parties agree that such information shall be governed by this Agreement.
- 2. "Confidential Information" shall mean all technical, economic, business or descriptive information, data, concepts, or know-how relating to the business, products or technology of either Party or to a proposed or actual project, which one Party (the "Disclosing Party") discloses to the other Party (the "Receiving Party") in documentary form marked as being confidential, or which a Party discloses orally, identifies as being confidential at the time of disclosure, except any portion of such information which:
 - a. The Receiving Party can show that was in its possession prior to the earliest disclosure by the Disclosing Party; or
 - b. Is generally available to the public through no breach of this Agreement; or
 - c. Is furnished to a third party by the Disclosing Party without restriction of confidentiality or use; or
 - d. Is developed independently by the Receiving Party without access to, or knowledge of, the Confidential Information of the Disclosing Party; or
 - e. Is ordered disclosed by the Receiving Party by order of a court of competent jurisdiction and, where lawfully permitted to do so, the Receiving Party has informed the Disclosing Party, within a reasonable time after being required to make the disclosure, of the requirement to disclose and the information required to be disclosed.
- 3. In the event the Receiving Party is required by operation of law to disclose any Confidential Information, where lawfully permitted to do so, the Receiving Party shall promptly notify the Disclosing Party so that the Disclosing Party may seek appropriate means to protect the confidentiality of its Confidential Information and the Receiving Party shall use reasonable efforts to delay any such disclosure until the Disclosing Party has had an opportunity to oppose such disclosure.

IRD and Novation Engineering CONFIDENTIALITY NON-DISCLOSURE AGREEMENT

8/28/2016 PAGE 1

- 4. Specific Confidential Information shall not be deemed to be within the exceptions of paragraph 2 above merely because such specific Confidential Information may be construed as being within broader, non-confidential information which is either in the public domain or in the possession of the Receiving Party at the time of its disclosure. Neither shall a combination of features that form Confidential Information be deemed to be non-confidential merely because the individual features, without being combined, are non-confidential.
- 5. Each Party agrees to use Confidential Information received from the other Party only (a) to evaluate its interest in collaborating with the other Party on a particular project, and (b) to collaborate on projects after the Parties have agreed to do so, but not for any other purpose. Upon termination of this Agreement or at the written request of the Disclosing Party all copies of Confidential Information of the Disclosing Party shall be destroyed (with confirmation to the Disclosing Party) or returned within a reasonable period of time but, in any event, within ten days.
- 6. Each Party agrees to use all reasonable efforts to prevent disclosure to any third party, including its affiliates or shareholders, of Confidential Information received from the other Party without first obtaining the Disclosing Party's written authorization. Each Party shall safeguard such Confidential Information in the same manner the Receiving Party treats its own Confidential Information. Each party shall effect and maintain adequate security measure to safeguard such Confidential Information from unauthorized use, copying, or disclosure and to provide all reasonable assistance to terminate such unauthorized use or disclosure.
- 7. Each Party agrees to use all reasonable efforts to (a) limit disclosure within its organization of Confidential Information received from the other Party to only those employees who need to use Confidential Information for a purpose authorized in paragraph 5, and who are obligated by an agreement with terms concerning disclosure and use at least as restrictive as those herein, and (b) advise each of those employees of the Receiving Party's obligations under this Agreement.
- 8. Nothing contained herein shall limit a Receiving Party's right to use (a) any information disclosed to it by a third party so long as the Receiving Party does not know or have reason to know such third party acquired that information directly or indirectly from the Disclosing Party under an obligation of confidentiality, provided the Receiving Party's use of such information is in accordance with the terms under which it is received, or (b) any design, data or information developed by employees of the Receiving Party without any direct or indirect use of or reliance upon Confidential Information. However, a Receiving Party shall not in any event disclose to any other party any similarity between Confidential Information and information falling under the provisions of this paragraph 8.
- 9. The rights in the Confidential Information are and will at all times remain the property of the Disclosing Party and nothing in this Agreement grants a Receiving Party any right, title, or interest in the Confidential Information. Nothing in this Agreement and no action performed under this Agreement shall transfer any interest in intellectual property of either Party. Without limiting the generality of the foregoing, no license, title or right with respect to any intellectual property in the Confidential Information, including but not limited to any

IRD and Novation Engineering CONFIDENTIALITY NON-DISCLOSURE AGREEMENT

8/28/2016 PAGE 2

patents, patent applications, trademarks, copyrights or trade secrets, is granted by either Party to the other Party through disclosure of the Confidential Information under this Agreement. Nothing in this Agreement shall be construed as creating any partnership, association, joint venture, agency or fiduciary relationship or any other form of business association between the Parties except as may be expressly stated herein. Nothing in this Agreement shall be construed as obligating either Party to engage in further discussions or negotiations or enter into any transaction with the other Party.

- 10. The Parties' obligations concerning non-disclosure and use of Confidential Information contained in the above paragraphs shall continue for five (5) years from the date of each disclosure, and then terminate.
- 11. This Agreement sets forth the full and complete understanding of the Parties as of the date hereof, and there are no other representations, covenants or agreements expressed or implied other than those expressly set forth herein. No amendments or modifications hereof shall be valid unless evidenced in writing and executed on behalf of both of the Parties.
- 12. For two (2) years from the date of this Agreement, either Party agrees not to hire, not to solicit for employment, and not to enter into any kind of service/employment agreement with any of the officers, management, full-time employees or other employees (or consultants) of the other party or any affiliates thereof. Notwithstanding the foregoing, this obligation shall not apply to any such officer, employee or consultant who is hired or retained as a result of such person responding to a general public advertisement for employment made by Parties where no prior solicitation for employment had taken place.
- 13. The Parties each acknowledge that disclosure of the Confidential Information of the other or other breach of this Agreement would cause serious and irreparable damage and harm to the other and that the remedies at law would be inadequate to protect against breach of this Agreement. As such, the Parties agree in advance that each Party, without proof of actual damages and without necessity to post a bond, is entitled to injunctive relief in its favour and specific enforcement of the terms of this Agreement in addition to any other remedy to which it would be entitled in the event of any anticipated unauthorized disclosure of the Confidential Information of that Party by the other Party or other breach of this Agreement.
- 14. This Agreement shall not be assignable (by operation of law or otherwise) by either Party without the prior written consent of the other Party.
- 15. The rights and obligations of the Parties under this Agreement are binding on the parties and their respective heirs, successors and any permitted assigns and shall survive the termination or cancellation of this Agreement or the termination of the Agreement.

IRD and Novation Engineering CONFIDENTIALITY NON-DISCLOSURE AGREEMENT

8/28/2016 PAGE 3

NSW ICAC EXHIBIT

E18-0281-Ember-GS0005-00-00 R18/1438

16. This Agreement shall be governed by the laws of the Province of Saskatchewan and the parties irrevocably attorn to the jurisdiction of the courts of the Province of Saskatchewan. However, the parties acknowledge that the foregoing shall not be construed so as to preclude either of the parties hereto from seeking injunctive or other relief in any court of competent jurisdiction.

IN WITNESS WHEREOF, the PARTIES have executed this Agreement effective on the date set forth below.

Novation Engineering Pty Ltd

Unit 2/44 Carrington Road, Castle Hill 2154 Sydney, New South Wales, Australia

INTERNATIONAL ROAD DYNAMICS INC.

702 - 43rd Street East Saskatoon, Saskatchewan CANADA S7K 3T9

BY:	Stephen Thammiah	BY:	
TITLE	Director	TITLE:	
DATE:	28/8/2016	DATE:	

IRD and Novation Engineering CONFIDENTIALITY NON-DISCLOSURE AGREEMENT 8/28/2016 PAGE 4

Fwd: PortableWeighScaleREF

From: Sam Sol <ducktape69@gmail.com> To: novationengineering@bigpond.com Date: Mon, 12 Sep 2016 12:11:07 +1000

Attachments: ATT00001.htm (216 bytes); PortableWeighScaleREF.doc (247.81 kB);

PortableWeighScaleREF.doc (100.35 kB); ATT00002.htm (216 bytes); PortableWeighScaleREF.doc (254.46 kB); ATT00003.htm (168 bytes)

contact NMI to see what you need to do to issue the portable scales VERIFICATION certificate.

- Forwarded message

From: SOLIMAN Samer < Samer.SOLIMAN@rms.nsw.gov.au>

Date: Mon, Sep 12, 2016 at 11:58 AM Subject: Fwd: PortableWeighScaleREF

To: "ducktape69@gmail.com" <ducktape69@gmail.com>

Sent from my iPhone

Begin forwarded message:

From: "Ange Fenech" <<u>aaajj@bigpond.com</u>>
To: "SOLIMAN Samer" <<u>Samer.SOLIMAN@rms.nsw.gov.au</u>>

Subject: PortableWeighScaleREF

Hi Samer,

I had a quick look at some of my personal records which I kept on my computer at home and found these two docs....They may be of assistance to you although I know they were reviewed and amended prior to me leaving.

I definitely had placed up to date versions of these docs and others in Objective prior to leaving and I am sure Alex Dubois could direct you to their locations to provide you with the latest versions...

In due course I would like to organize a catch up with you to get a understanding on your plans for establishing a revised scales maintenance program post 2016.

Cheers

Ange



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Intelligent Transport Systems Projects

Portable Weigh Scale Maintenance Programme

September 2012

Printed copies of this document are uncontrolled

About this release

Procedure Number:

Title: Intelligent Transport Systems Projects

- Portable Weigh Scale Maintenance Programme

Author: Ange Fenech

Revision	Date	Modified By	Revision Description
I			
2			

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- 13. Dead Weigh Tester
- 14. Contacts

Purpose

The purpose of this document is to outline the servicing, maintenance and verification process for the Portable Weigh scales used by the IVR Inspectors throughout the state of NSW.

Personnel involved in the management and operation of Portable Weighing Scales shall be capable of:

- arranging for annual verification of the weighing scales.
- establish an annual servicing programme.
- arrange for the renewal of the verification of the Weighing scales.
- monitor the verification status of all portable weigh scales under there control.

Scope

The scope of this document is as a guideline only. If uncertain about any procedures, contact the Project Manager, ITS Projects for further advice.

This document applies to all RMS personnel involved in the management and usage of Portable Weighing scales..

ITS Projects is responsible for the management of the database for the verification records.

The Regions shall be responsible for the management and usage of the Portable weigh scales and should ensure that only Verified Portable Weigh scales are used in the field.

Requirements

This document refers to the following terms:-

- Portable weigh scales database is managed by ITS Projects to control Verification and maintain a history of individual portable weigh scales. ie location, date of verification and service history and make of scale.
- Portable Weigh Scales are electronic measurement devices used by RMS IVR Inspectors for enforcing Weights and Loads Regulations. Each scale has a unique Serial No. to identify it.
- Dead Weigh Tester is a testing rig owned by RMS which is used to undertake verifications of the Portable weigh scales annually in the presence of an NMI Trade measurements inspector. The Dead Weigh Tester is a reference machine that is decommissioned and dismantled bi annually to undergo NMI testing of the 26 x 500Kg which makes up the testing unit.
- **Service contractors** are companies engaged to perform servicing and arrange Verifications of the portable weigh scales.
- NMI Trade measurements inspector are required onsite at the Rockdale
 Office to witness the reverification process for each scale. The NMI inspector will
 then ensure that the scales are marked/labelled indicating compliance and the NMI
 office will then organise for a certificate to be created and forwarded to RMS
 confirming the verification.
- Regional annual service monthly reports is the standard process for preparing
 a monthly report generated by ITS Projects using information obtained from the
 portable weigh scales database to indicate to each metropolitan and regional VR
 office which of there responsible scales were becoming due for annual servicing.
- Overdue/Exception report is issued when scales overdue for there Annual servicing are sent to the Sector Manager and the Regional VR Manager to highlight the fact that scales are overdue for annual servicing and to ensure that the required scales under no circumstances should be used for enforcement or infringement purposes.

Dictionary

Abbreviation	Definition



Portable Weigh Scales

The portable weigh scales database is used to manage the location, servicing, repairs and verification of each of the RMS portable weigh scales as well as generate due and overdue reports for the annual verification programme.

Each scale has a unique Serial No. to differentiate one from another and each scale is designated to a certain responsible area that may be in either Sydney metropolitan or Regional NSW. Currently there are approximately 600 portable weigh scales predominantly made up of old and newer versions of a German PAT SAW 10 scale. All PATs are currently serviced and maintained by Electronic Load Weighing Co. of Australia who is the Australasia/Asia Pacific agent for PAT sourced equipment. There are also 15 HAENNI scales used by our Botany Offices and these are serviced by HAENNI AUST which is based in Ashmore in Queensland.

As portable scales are routinely serviced and re verified the Portable weigh scales database needs to be updated to maintain an accurate history of works and servicing done for each scale. This ongoing maintenance and reporting is undertaken by the Contracts and Projects Officer in ITSP Projects who is currently responsible for managing this programme.

The distribution of portables weigh scales throughout NSW are done through three Sectors being the Sydney, Southern and Northern Sectors.

The Sydney Sector is made of three offices and they are located at Botany (East Sydney) Central Sydney (Wetherill Park) and Western Sydney based at Penrith.

The Southern Sector incorporates the Wollongong and Wagga Wagga VR Operations areas.

The Northern Sector covers all areas north of Sydney from West Gosford to the Queensland border and includes areas to the west of Sydney such as Parkes, Bathurst and Dubbo.

Portable scales monthly reports

At the beginning of each month two reports are generated from the Portable weigh scales database. One report identifies which scales are becoming due for Annual servicing within the following two month period and the second report is an Overdue report indicating any scales that have become overdue for annual servicing and potentially could still be in circulation by IVR Inspectors and being used for infringement purposes. The problem that exist in this case is if a scales NMI verification has lapsed and those scales have been used for infringement purposes then if the matter was to end up in a court of law for deliberation then without the backing of NMI certification then the matter would not be able to be pursued in a court of law.

The importance and accuracy of the monthly reports cannot be underestimated. Although the Regional VR Offices monitor the verifications of there own dedicated portable weigh scales they do depend on the monthly reports prepared by ITSP Section confirming the list of scales from there area which were becoming due for Annual Servicing. The database has

been set up to provide two reminders for each VR office for each scale over a period of two months prior to the due date. On receipt of the reports indicating which scales are due the field managers normally would arrange for the listed scales to be either couriered or dropped off to the Rockdale Work Centre Store before there due date elapsed. Reports need to be regularly reviewed by the Contracts and Projects Officer during the course of each month to identify scales that were becoming due. Email reminders or contact with the field managers need to be made once scales verification dates have elapsed to ensure the scales are not being used for infringement purposes.

Scale servicing and maintenance

Once the Regional Managers are made aware of their due scales it is there responsibility to determine the most appropriate time for them to be forwarding the scales to the servicing contractor. At all times it is critical that the scales are forwarded prior to there verification due date or assurances received that the scales are not be used for infringement purposes.

On receipt of the scales from the Regions advice must be provided to the Contract and Project Officer by the Field Managers indicating which scales have been sent as well as any issues with the scales that may need further investigation.

Once aware of the Serial No.s of the scales forwarded to the contractor a check needs to be made by the Contracts & Projects Officer to ensure that the correct scales have been forwarded for annual servicing and an Order No. needs to be raised and provided to the Servicing contractor indicating the service required.

An annual service of the scale generally means that the electrical and mechanical features of each scale are checked and serviced. An error messages that the scale may be presenting need to be rectified. Mechanical components such as base feet, spacers, washers, connecting bolts handle rubbers and spacers are checked and serviced. Batteries are generally replaced with like batteries which usually are either rechargeable or alkaline batteries.

NMI Certification

On completion of the servicing by the contractor an appointment is arranged with the the NMI Inspector to undertake the re verification of each individual scale at the RMS Dead Weigh Testing Unit situated at Rockdale. The scales are generally done in sets of six scales and this re verification is done in the presence of a an Inspector from NMI who will view the testing and note the scales Serial No.s that have successfully been tested and then place a Legal mark on the scale indicating the verification.

The Legal Mark that is placed on a scale by the NMI Inspector should not be removed or tampered with until the next scheduled service/ re verification due date. Normally these stickers are placed over a holding screw or two separate edges of the scale so that prevents any persons from tampering with the scale. The Legal mark contains relevant references which are placed on there by the NMI Inspector. An alphabetical letter and a number are placed on the mark as well as a three digit number representing the Inspectors No. The alphabetical letter is a reference to the month that the verification was undertaken (A=January, B=February, C=March and so forth) Along side the letter appears a number which corresponds to the last number of the year that the verification has been done. For example a scale verified in August 2012 will have the following reference place on it "H2"as well as a three digit number representing the NMI Inspectors No.

Post verification testing

Once the re verification process has been completed the contractor will generally leave the scales at Rockdale for the Contracts and Projects Officer to undertake some post

verification inspections and then he will arrange for the return of the scales to there correct location.

Issues which require inspection or testing are listed as follows:

- 1. Switch on scale and ensure that the digital display zero,s.
- 2. Ensure no Error messages are evident.
- 3. Ensure the battery charge of the scale is good.
- 4. Ensure the Legal mark has been placed on the scale and check that the Inspectors marking on this label corresponds to the month / year of the testing.
- 5. While scale is on do a slight drop test of the handle to ensure no loose wiring or faulty electronics.
- 6. Prepare a scale verification Test sheet and attach to the scale handle.
- 7. Ensure the scales are returned back to there respective Metropolitan or Regional owner.

After the inspection and testing is completed the scales are returned to there owners by the Contracts and Projects Officer. This is done either by TNT courier or delivered if the scales are based in Sydney. On some occasions scales are collected by there Sydney or Regional owners if they have pre-arranged this with the contractor or the Contract and Project Officer.

When scales are returned to there Regional owners they need to be individually placed in a carton with an address label placed on it and then a TNT consignment note is completed and the scales dropped off at the Rockdale Store for collection. When returning large numbers of scales they can be put on pallets obtained from the store and arrangements can be made with the Storeman to collect these pallets with a forklift so as to minimize excessive lifting and handling of the scales.

Types of Portable Weigh Scales

Two types of portable weigh scales are used by the IVR Inspectors to undertake heavy vehicle enforcement. The majority of the scales owned and operated by the RMS are PAT scales which are sourced from Germany and distributed by Electronic Load Weighing Co. of Australia Pty. Ltd. based at 93 Cecil Avenue Castle Hill.

RMS also have 14 HAENNI scales which are sourced from Switzerland and these scales are all located at the one office being Botany VR. The organisation that services these scales for RMS is based in Ashmore in Queensland so arrangements have to be made annually to forward these scales to the Ashmore workshop for there Annual Service. On completion of the servicing they are returned to the Rockdale Work Centre for verification. A technician normally flies down from Queensland for a day and the scales are reverified in the presence of an NMI Inspector.

Scale Error messages

PAT scales have some basic Error messages which provide the operator with some information regarding the performance of the scale.

E00 usually indicates that the scale is off zero and requires attention by the servicing agent.

E02 usually indicates that the charge of the batteries has exceeded 9.3 (probably as a result of a new set of alkaline batteries being installed). This issue can be resolved by removing one of the six batteries and replacing it with a battery that is not new or low in charge.

E04 check battery spring tension.

HAENNI Scale Error messages

E01 indicates the battery voltage is too low

E02 indicates the temperature is beyond the limits

E03 indicates a transmission error

E04 Initial zero setting error

E05 Zero point error usually caused by extreme temperature fluctuations over a short period

OL The load is beyond the capacity of the scale.

Scale Chargers and spare parts

Portable weigh scales are used through out the state of NSW and cars used to transport the scales have had specially made racking installed in them for safe storage of the scales. Scale charging units which are purchased with the scales are used in these vehicles with leads to plug into and recharge the scales. It is essential that when the scales are being charged within the vehicles that the batteries fitted to the scales must be the rechargeable nicad type. Scales fitted with alkaline batteries should never be placed on charge as they have a tendency to heat up expand and leak causing expensive damage to the boards in the scales.

If the scale chargers are faulty then repairs or replacements can be organized with the servicing agent. Service exchange units are available as well as brand new units should they be required.

Generally each VR office keeps stock of parts for the scales that can be replaced easily without interfering with the verification of the scale. Handle rubbers and sockets and batteries are the items normally stocked by each VR office to prevent down time in returning the scales back to Sydney when a simple repair can be undertaken in the field.

Packaging

For convenience of transportation a purpose made carton has been developed for the PAT portable weigh scales. As scales are based throughout NSW it is recommended that when the scales are transported from the Regions to Rockdale or Rockdale to the Regions then the scales should be placed in a carton for protection as well as reducing the possibility of tampering or misuse while in transit.

Generally the cartons are recycled and reused numerous times and only disposed of when they are in a poor state. Packaging can be reordered through Corrugated Carton Products based at St Clair NSW and the measurement of the carton is 530x70x760.

TNT is the dedicated courier company used for transportation of scales to the Regional Offices and the Account No. is 90432902.

Dead Weigh Testing Unit

All RMS portable weigh scales verifications are undertaken on the RMS Dead Weigh Testing Unit situated at Rockdale Works Centre. The purpose of this equipment is to place varying

weight increments ranging from 500KG to 13000KG on each scale to determine there accuracy.

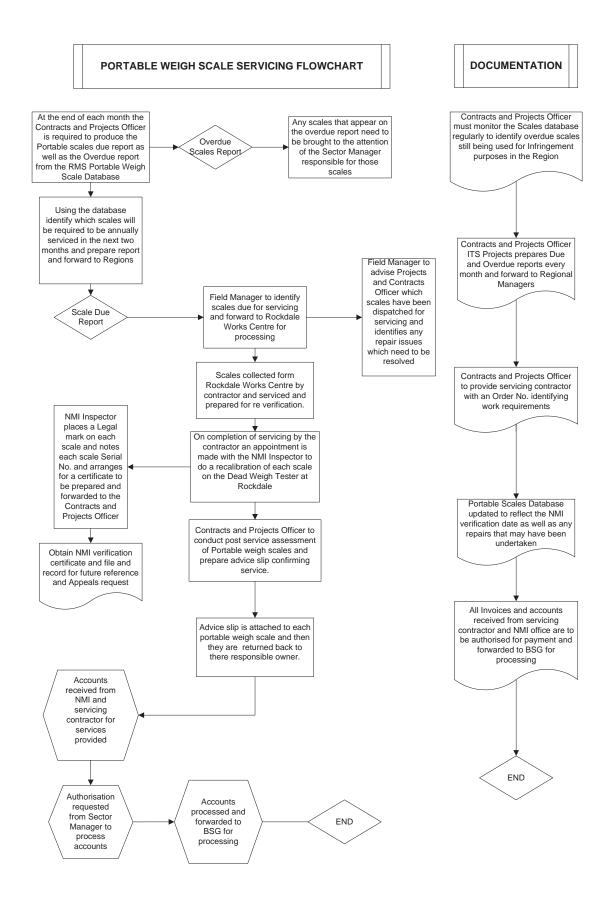
Adjustments, should they be required can be made by the contractor to the scales when the dead weights are being placed on the units to ensure accuracy and compliance.

As this dead weigh testing equipment is a reference standard it must be subjected to a biannual verification which necessitates the decommissioning, dismantling and transportation of the 26 x 500kg plates to the NMI Laboratory situated at Lindfield. On completion of the verification by NMI the plates are returned back to Rockdale by the contractor engaged to carry out the re-verification and recommissioning of the Unit. As the re verification of the DWT unit requires a fork lift for the dismantling and movement of the weights onto a semi trailer approval must be sought from the Manager of the Rockdale Works Centre prior to the decommissioning for a semi trailer and forklift to be parked in front of the main office for around four hours on the day of disassembling and reassembling.

Contacts

All enquiries regarding the use of portable weigh scales should be directed to the Statewide Manager or one of the three Sector managers who reports to the Statewide Manager. If the issue is only minor/local then these matters can be resolved through discussions with the Field Managers.

For any enquiries regarding the annual maintenance and re verification program of the portable weigh scales including the verification certificates supplied by NMI should be directed to the Contracts and Projects Officer in Intelligent Transport Systems Projects Section, Parramatta.



PORTABLE WEIGH SCALE DATABASE			
WHAT	The portable weigh scale database monitors scale verifications and maintains a history of individual portable weigh scales. Reports are generated monthly indicating scales which are due for Annual servicing and verification or identifying scales which may have become overdue for Annual Servicing. Scales listed in the database are identified by unique Serial No. and type. The database also identifies the location of the scale as well as the maintenance history during its service life.		
WHO	Maintained by the Contracts and Projects Officer		
WHEN	Updated weekly		
WHY	This database needs to be updated regularly to maintain accuracy of the information as the scales are used as an enforcement tool by the RMS Heavy Vehicle Inspectors. Reports are generated monthly and distributed to all the relative metropolitan and regional Vehicle Regulations Sectors indicating the scales which are either becoming due or may be overdue for there Annual Servicing and re-verification by the National Measurements Institute. The database is also used to identify which NMI certificates that cover nominated scales so that they can be presented at Legal hearings regarding weigh of load infringements.		
WHERE	The Scales database is located in the following location: G:\Ops\ITSP\Programs\Portable Weigh scales\scales_updated.mdb		
HOW	On opening the database in the "Objects" Section select "Forms" then to update database click on "frm_Scale_Actions"		
	To locate particular scale go to the "View" tab at the top of the screen and open and click on "Datasheet View". This will produce a list of all scales identified by there Serial No. and highlight /select the scale serial No. you want to update and then go back to "View" at the top of the page and then click on "Form View".		
	In the "Form View" screen is where the scale history is updated. eg. When an Annual Service has been completed it is essential that the date of verification is updated in this screen. To do this in the "Actions:" section go to the last Action Type box at the bottom of the listed history and the last box will come up with an empty Action Box that can be changed to "Verified" and the "Timestamp" needs to be amended to the date that the verification was carried out. After this is done the "Date Verified" at the top of the page also needs to be amended to the date that the scale was verified. This is important as when monthly reports are generated they are based on the accuracy of the date in this location. On completion of the changes or updating "Save" the updates so this maintenance is recorded.		
	Other changes that will need to be updated to the Database are		
	1. Repairs to scales In this instance the database only needs to reflect the date the scale was received and the date the scale was returned back to the region. The Action Type selected for the repair is noted as "At Contractors". The "Date Verified" does not need to be amended if the repair is basically mechanical but if a reverification is required due to adjustments or repairs undertaken whereby the NMI seal is broken then the scale needs to undergo reverification and then the "Date Verified" needs to be updated again.		
	2. Addition of new scale Serial No.s to the database Then new scales are purchased they need to be added to the database. In the "Form View" page at the bottom left of the screen there is a forward button with a asteric next ti it and by clicking on this the a new screen will come up which needs to be populated with the details of the new scaleie Scale Serial No.and Type, Location, Date Verified and verification Time stamp then Save.		
	Cont.		

PORTABLE WEIGH SCALE DATABASE

HOW

3. Removal of scales from the database due to retirement of equipment or as a result of unrepairable damage.

If a portable scale is retired from service or has been damaged beyond repair the history of the scale is still kept on the database for future reference. By removing the date from the "Date Verified" location in the database the scale serial no. will still appear in reports that are generated but as the Date Verified appears in the database as a blank this clearly identifies it as a scale that has been removed from service.

4. Transfer of scales from one office to another office

When scales are transferred from one Region to another the only update that needs to be carried out to the database is the change of the location in the Scale Actions from the previous to the new location and in the "Comments" section of the database a date /reason of transfer and previous location needs to be noted.

MONTHL	MONTHLY REPORTS		
WHAT	Two monthly reports are generated for distribution to the three Regional Vehicle Regulation Sectors. One report indicates scales that are becoming due for Annual Servicing within a two month period. The other report indicates which scales are overdue for Annual Servicing and these listed scales need to be brought to the attention of the respective Field Manager to ensure these scales are not being used for infringement purposes.		
WHO	The reports are prepared by the Contracts and Projects Officer and forwarded to the Sector Managers as well as the respective Field Managers who are responsible for the listed scales.		
WHEN	Reports are prepared monthly usually in the first week of a new month.		
WHY	To ensure that scales that are being used for infringement purposes by IVR inspectors are NMI verified and compliant should a breach situation end up in a court of law.		
WHERE	The reports are generated from the Portable Weigh Scales database situated at: G:\Ops\ITSP\Programs\Portable Weigh scales\scales_updated.mdb		
HOW	Prior to generating any reports an update of all recent scale activities must be carried out to the database to provide the most up to date scales due and scales overdue reports. Prior to generating these reports keep in mind any scales currently with the contractor for A/Servicing but not yet completed as these scales will be listed on the reports but do not have to be referenced in the monthly reports.		
	To run a Scales due report access the Database in the G/Drive. In the Objects column on the left click on "Reports"		
	From the list of reports select "rpt_Scale_Renewal_Due" report for a list of all scales due over the next two months or select "rpt_Scale_Renewal_Overdue" to determine the scales which are considered overdue for servicing and reverification but have not been dispatched by the scale custodian. It is necessary to bring the overdue scales to the attention of the manager or Team leaders responsible for that scale as unverified scales should not be used by IVRs for Infringement purposes.		
	The "rpt_Scale_Renewal_Due" report lists all the scales becoming due and the locations of the scales as well as the due by date. Using this information from this report the Contracts and Projects Officer then prepares a memo style document for each Regional Sector listing the Scale Serial No. Location and Due By date which is then forwarded to The Sector Manager, and The Team Leaders responsible for the listed scales.		

ANNUAL SERVICING			
WHAT	On receipt of the portable weigh scale due report the appropriate Regional or Field Manager responsible for those scales will arrange for the listed scales to be forwarded to the Rockdale Works centre store prior to the due verification date. Scales are normally collected by the contractor who advices the Contract & Project Officer of the scale Serial No.s to ensure that the correct scales have been forwarded and an Order No. is issued for the programmed work. The contractor carries out an Annual Service to each scale ensuring that all the mechanical and electrical functions are in good working order and all necessary repairs are undertaken. On completion of the servicing the contractor organises for the set of scales to be verified by the NMI inspector.		
WHO	PAT scales are serviced by ELWC Co. of Aust. Pty. Ltd. Castle Hill (Tony Doherty 9899 3468) Haenni scales are serviced by Haenni Aust. P/L who are based in Ashmore Queensland. (Peter 07 5539 4444)		
WHEN	Annual services are undertaken annually just prior to re-verifications.		
WHY	To ensure the portable scales are in good working order prior to NMI verification.		
HOW	On receipt of the due scales at Rockdale or them being directly dropped off at Castle Hill scale Serial No.s are checked to ensure the correct scales have been returned for Annual Servicing. The contractor is required to advise the C & P officer of the scales serial no.s received or collected Upon confirmation of the correct scales being forwarded by the Region an Order No. is issued to the contractor so that any associated accounts regarding the servicing has the Order No. referenced on it. The task of taking out an Order No. and monitoring the servicing and carrying out the post verification check of the scale is managed by the Contracts and Projects Officer. The post verification check requires the Contract and Projects Officer to arrange a trip to Rockdale to check the following undertakings were carried out by the contractor during the servicing process: Switch the scale on to ensure it zeros. ie "00" Check to ensure the battery charge of the scale is 8.0 +. While the scale is on do a slight drop test of the handle to ensure no Error messages are present and the battery holding spring is correctly tensioned. Ensure that the NMI Legal mark has been renewed by the Inspector and that the id notations placed on the sticker are correctly referenced. ie the Alphabetical letter relating to the corresponding month and the numerical		
	 reference identifying the year of verification is correct. Ensure the scales servicing has been undertaken as required. Upon the completion of the post verification checks scales are dispatched back to the Regions were they originated from. Fill out a Scale Service report indicating the verification date and confirmation of the servicing. These reports are attached to the scales. On completion of these checks the Contracts and Projects Officer would then place each scale in a carton and label it and organise for a courier to collect the scales from the Rockdale Store. The courier company engaged to transport scales is TNT and the account No. is 90432902. Contact No. to arrange pick up is 131150. Scales are transported using the Road Express service. 		

VERIFICATIONS		
WHAT	After scales have been serviced by the contractor arrangements are made with the NMI Inspector for the scales to be recalibrated on the RMS Dead Weigh Testing rig. This process involves the servicing contractor placing each scale in the tester were it undergoes the application of weights of 26 x 500kg to determine the scales accuracy. Scales that have been successfully verified have a legal mark/sticker placed on them by the NMI Inspector. This sticker has two references placed on it by the NMI Inspector. One indicates year/month of the verification and the other reference states the NMI Inspectors No. who witnessed the calibration.	
WHO	Verifications/recalibrations are undertaken by the contractor in the presence of a NMI Inspector who witnesses the calibrations and notes down the scale Serial No.s and provides RMS with a certificate confirming verification usually issued within a few months of the actual verification.	
WHEN	Each scale is re-verified annually every 12 months and is preferably done before the due by date.	
WHY	Verification of each scale is a legislated requirement because the scales are used for enforcement purposes therefore should an overweight matter end up in a court hearing proof of the scales verification will need to be presented to our Legal personnel by way of NMI certificates.	
WHERE	The verifications are undertaken at the RMS Rockdale Works Centre were the Dead Weigh Testing Unit is located.	
NOTE	NMI have recently (February 2013) contacted RMS stating that they are no longer interested in providing the verification /certification service for portable weigh scales and weighbridges. They have advised that this service could be carried out by a registered NMI Trade Measurements licensee as it is done in othere states. Legislation has been checked by our legal people and confirmed that this is correct. As this decision by NMI effects not only the portable weigh scales but also RMS weighbridges a small contract is likely to be created for RMS to have a panel of NMI licensees that would be able to provide this service.	

NMI CERTIFICATION		
WHAT	NMI certificates are normally forwarded to the Contracts and Projects Officer every few months confirming the re verification of portable weigh scales. These certificates are printed off and stored should a request come from the Appeals and Prosecution Unit for relevant copies of the certificates required for a hearing. A copy of each certificate is filed in the G:\OPS\ITSP\Programs\Vehicle Regs Certif.	
WHO	NMI certificates are stored and maintained by the Contracts and Projects Officer.	
WHEN	Certificates are forwarded electronically in batches usually covering scales verified over a three month period.	
WHY	NMI certificates confirm the verification process undertaken by the NMI Inspector.	
WHERE	Original certificates are stored with the Contracts and Projects Officer in ITSP Section in the Octagon Building at Parramatta. All current certificates are being forwarded electronically and these certificates are being stored on the G/Drive.	

HOW

The Contracts & Projects Officer is responsible for storing the NMI portable weigh certificates to ensure that firstly the RMS has a formal recognition that our scales are being tested annually and reverified to indicate that they are weighing accurately

On receipt of these certificates the C& P Officer must file copies of the certificates in the G/Drive in the appropriate folder as well as print of a copy of the certificates for reference should enquiries be received from the Field Offices or the Appeals and Prosecutions area which occurs regularly.

The C & P Officer must ensure there are no discrepancies with the NMI certificates raised especially with references to Serial No.s as if these certificates need to be presented at a court hearing the information on them has to be accurate. Any mis quoted serial No. issues will need to be addressed with NMI as a matter of urgency.

If a request for a certificate is made from within or outside RMS but NMI have not yet issued the certificates then the person to contact at NMI to obtain these certificates is Deepika Kalra on 8467 3553 or

Deepika.Kalra@measurement.gov.au

DEAD WEIGH TESTER		
WHAT	This testing rig is the equipment that is used to undertake the annual recalibration of all of the RMS portable weigh scales. The rig is made up of 26 x 500kg plates that can be hydraulically applied to each scale when they undergo there Annual NMI reverification. The Dead Weigh Testing Unit is reverified Bi annually by the NMI Laboratory. This means arrangements have to be made for a contractor to dismantle the DWT and arrange for the 26 plates to be delivered to the NMI Laboratory at Lindfield for Testing. The dismantling and recommissioning of the DWT needs to be authorised by the Manager of the Rockdale Works Centre as the operation requires the need for a semi trailer as well as a forklift to be onsite for around 4-6 hours while the decommissioning and recommissioning take place.	
WHO	Contract and Projects Officer arranges the re verification of the the DWT unit.	
WHEN	NMI verification done bi- annually (ie every two years or prior to its due date)	
WHY	To ensure its accuracy since it is used as a trade measurement reference unit.	
WHERE	Located at the RMS Rockdale Works Centre.	
HOW	Prior to the Dead Weigh Testing Units Bi annual NMI verification due date expiry arrangements need to be made by the Contracts and Projects Officer to decommission the DWT and organise the transport of the 26 weigh plates to the NMI Laboratory at Lindfield. It is suggested that the DWT unit is dismantled and recalibrated at a time when not many portable weigh scales are due for servicing as generally the downtime for dismantling, transporting, reverification and re-commissioning of the DWT can usually be around 2-3 weeks duration. Prior to the decommissioning it is also recommended that the Regional Managers responsible for managing the portable weigh scales are advised of the expected downtime of the DWT unit. Quotes can be obtained from three different weighing companies to decommission, dismantle and transport the weights to Lindfield and then on completion of the verification of the weights by NMI they are picked up and transported back to Rockdale for the reassembling and recommissioning of the DWT unit. The dismantling and recommissioning of the DWT needs to be authorised by the Manager of the Rockdale Works Centre as the operation requires the need for a semi trailer as well as a forklift to be parked onsite for around 4-6 hours while the decommissioning and recommissioning take place. For any servicing, maintenance or breakdown issues experienced with the dead weigh testing unit generally the two points of contract are firstly the plant mechanics based at Rockdale (contact Bruce Tressider 9598 7704) or the external servicing contractor Craig 0402145910.	

REGIONAL LOCATIONS AND CONTACTS		
WHAT	Scales are located in three Regional sectors each of which is split into separate Field Offices located in that Sector.	
	These are as follows:	
	Sydney Sector has three offices:	
	East Sydney (Botany)	
	Central Sydney (Wetherill Park)	
	Western Sydney (Penrith)	
	Northern Sector has offices at Tamworth, Armidale, Grafton, Lismore Carrington, West Gosford, Coffs Harbour, Kempsey, Tweed Heads, Parkes, Dubbo, Bathurst.	
	Southern Sector has offices in Wollongong, Nowra, Batemans Bay, Queanbeyan, Bega, Wagga Wagga, Leeton, Albury and Young.	

WHO	The Statewide Sector Manager is currently Brett Patterson.(02 8588 5399)	
	The Sydney Sector manager is currently Ray Jenkins. (94336 6124)	
	The Northern Sector Manager is currently Terry Stuart. (02 6644 3124)	
	The Southern Sector Manager is currently Hugh Johnstone (02 4220 0618)	

ACCOUNTS			
WHAT	In managing the Portable weigh scale maintenance programme accounts are received from the following groups.		
	 Contractors undertaking the annual servicing ie ELWC for PAT scales & HAENNI Australia P\L for the Haenni scales. 		
	National Measurements Institute forward an account for undertaking the verifications.		
	TNT Express are used to courier the scales back to the Regions so monthly charges are received for this service.		
	 Purpose made cartons for the scales are ordered generally once a year for the use in packaging the scales and distributing around the state. These are ordered from Corrugated Carton Products/ Penrith 4721 8766. 		
	5. Quotations are called every two years for a contractor to oversee the decommissioning and recommissioning of the RMS Dead Weigh Tester for re-verification purposes. The last successful company to under take this work was Accuweigh P/L and it was last done in November 2011 and therefore due again in November 2013		
WHO	Contract & Projects Officer arranges the IMS Purchase Order Request Forms which get forwarded to the Sector Managers for approval. Purchase Orders are created after receipt of the approvals and service entries and account payable coversheets are prepared for the accounts to be processed.		
BILLING	All portable weigh scale accounts are charged to three different WBS created for the three different sectors. These are		
	Sydney Sector: 0VRMCSY Southern Sector: 0VRMCST		
	Northern Sector: 0VRMCNT		

Intelligent Transport Systems Projects

Portable Weigh Scale Maintenance Programme

September 2012

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About this release

Procedure Number:

Title: Intelligent Transport Systems Projects

- Portable Weigh Scale Maintenance Programme

Author: Ange Fenech

Revision	Date	Modified By	Revision Description
1			
2			

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Purpose

The purpose of this document is to outline the servicing, maintenance and verification process for the Portable Weigh scales used by the IVR Inspectors throughout the state of NSW.

Personnel involved in the management and operation of Portable Weighing Scales shall be capable of:

- arranging for annual verification of the weighing scales.
- establish an annual servicing programme.
- arrange for the renewal of the verification of the Weighing scales.
- monitor the verification status of all portable weigh scales under there control.

Scope

The scope of this document is as a guideline only. If uncertain about any procedures, contact the Project Manager, ITS Projects for further advice.

This document applies to all RMS personnel involved in the management and usage of Portable Weighing scales..

ITS Projects is responsible for the management of the database for the verification records.

The Regions shall be responsible for the management and usage of the Portable weigh scales and should ensure that only Verified Portable Weigh scales are used in the field.

Requirements

This document refers to the following terms:-

- Portable weigh scales database is managed by ITS Projects to control Verification
 and maintain a history of individual portable weigh scales. ie location, date of
 verification and service history and make of scale.
- Portable Weigh Scales are electronic measurement devices used by RMS IVR Inspectors for enforcing Weights and Loads Regulations. Each scale has a unique Serial No. to identify it.
- **Dead Weigh Tester** is a testing rig owned by RMS which is used to undertake verifications of the Portable weigh scales annually in the presence of an NMI Trade measurements inspector. The Dead Weigh Tester is a reference machine that is decommissioned and dismantled bi annually to undergo NMI testing of the 26 x 500Kg which makes up the testing unit.
- **Service contractors** are companies engaged to perform servicing and arrange Verifications of the portable weigh scales.
- NMI Trade measurements inspector are required onsite at the Rockdale Office to
 witness the reverification process for each scale. The NMI inspector will then ensure
 that the scales are marked/labelled indicating compliance and the NMI office will
 then organise for a certificate to be created and forwarded to RMS confirming the
 verification.
- **Regional annual service monthly reports** is the standard process for preparing a monthly report generated by ITS Projects using information obtained from the portable weigh scales database to indicate to each metropolitan and regional VR office which of there responsible scales were becoming due for annual servicing.
- Overdue/Exception report is issued when scales overdue for there Annual servicing are sent to the Sector Manager and the Regional VR Manager to highlight the fact that scales are overdue for annual servicing and to ensure that the required scales under no circumstances should be used for enforcement or infringement purposes.

Dictionary

Abbreviation	Definition

Portable Weigh Scales

The portable weigh scales database is used to manage the location, servicing, repairs and verification of each of the RMS portable weigh scales as well as generate due and overdue reports for the annual verification programme.

Each scale has a unique Serial No. to differentiate one from another and each scale is designated to a certain responsible area that may be in either Sydney metropolitan or Regional NSW. Currently there are approximately 600 portable weigh scales predominantly made up of old and newer versions of a German PAT SAW 10 scale. All PATs are currently serviced and maintained by Electronic Load Weighing Co. of Australia who is the Australasia/Asia Pacific agent for PAT sourced equipment. There are also 15 HAENNI scales used by our Botany Offices and these are serviced by HAENNI AUST who is based in Ashmore in Queensland.

As portable scales are routinely serviced and re verified the Portable weigh scales database needs to be updated to maintain an accurate history of works and servicing done for each scale. This ongoing maintenance and reporting is undertaken by the Contracts and Projects Officer in ITSP Projects who is currently responsible for managing this programme.

The distribution of portables weigh scales throughout NSW are done through three Sectors being the Sydney, Southern and Northern Sectors.

The Sydney Sector is made of three offices and they are located at Botany (East Sydney) Central Sydney (Wetherill Park) and Western Sydney based at Penrith.

The Southern Sector incorporates the Wollongong and Wagga Wagga VR Operations areas.

The Northern Sector covers all areas north of Sydney from West Gosford to the Queensland border and includes areas to the west of Sydney such as Parkes, Bathurst and Dubbo.

Portable scales monthly reports

At the beginning of each month two reports are generated from the Portable weigh scales database. One report identifies which scales are becoming due for Annual servicing within the following two month period and the second report is an Overdue report indicating any scales that have become overdue for annual servicing and potentially could still be in circulation by IVR Inspectors and being used for infringement purposes. The problem that exist in this case is if a scales NMI verification has lapsed and those scales have been used for infringement purposes then if the matter was to end up in a court of law for deliberation then without the backing of NMI certification then the matter would not be able to be pursued in a court of law.

The importance and accuracy of the monthly reports cannot be underestimated. Although the Regional VR Offices monitor the verifications of there own dedicated portable weigh scales they do depend on the monthly reports prepared by ITSP Section confirming the list of scales from there area which were becoming due for Annual Servicing. The database has been set up to provide two reminders for each VR office for each scale over a period of two months prior to the due date. On receipt of the reports indicating which scales are due the field managers normally would arrange for the listed scales to be either couriered or dropped off to the Rockdale Work Centre Store before there due date elapsed. Reports need to be regularly reviewed by the Contracts and Projects Officer during the course of each month to identify

scales that were becoming due. Email reminders or contact with the field managers need to be made once scales verification dates have elapsed to ensure the scales are not being used for infringement purposes.

Scale servicing and maintenance

Once the Regional Managers are made aware of their due scales it is there responsibility to determine the most appropriate time for them to be forwarding the scales to the servicing contractor. At all times it is critical that the scales are forwarded prior to there verification due date or assurances received that the scales are not be used for infringement purposes.

On receipt of the scales from the Regions advice must be provided to the Contract and Project Officer by the Field Managers indicating which scales have been sent as well as any issues with the scales that may need further investigation.

Once aware of the Serial No.s of the scales forwarded to the contractor a check needs to be made by the Contracts & Projects Officer to ensure that the correct scales have been forwarded for annual servicing and an Order No. needs to be raised and provided to the Servicing contractor indicating the service required.

An annual service of the scale generally means that the electrical and mechanical features of each scale are checked and serviced. An error messages that the scale may be presenting need to be rectified. Mechanical components such as base feet, spacers, washers, connecting bolts handle rubbers and spacers are checked and serviced. Batteries are generally replaced with like batteries which usually are either rechargeable or alkaline batteries.

NMI Certification

On completion of the servicing by the contractor an appointment is arranged with the the NMI Inspector to undertake the re verification of each individual scale at the RMS Dead Weigh Testing Unit situated at Rockdale. The scales are generally done in sets of six scales and this re verification is done in the presence of a an Inspector from NMI who will view the testing and note the scales Serial No.s that have successfully been tested and then place a Legal mark on the scale indicating the verification.

The Legal Mark that is placed on a scale by the NMI Inspector should not be removed or tampered with until the next scheduled service/ re verification due date. Normally these stickers are placed over a holding screw or two separate edges of the scale so that prevents any persons from tampering with the scale. The Legal mark contains relevant references which are placed on there by the NMI Inspector. An alphabetical letter and a number are placed on the mark as well as a three digit number representing the Inspectors No. The alphabetical letter is a reference to the month that the verification was undertaken (A=January, B=February, C=March and so forth) Along side the letter appears a number which corresponds to the last number of the year that the verification has been done. For example a scale verified in August 2012 will have the following reference place on it "H2"as well as a three digit number representing the NMI Inspectors No.

Post verification testing

Once the re verification process has been completed the contractor will generally leave the scales at Rockdale for the Contracts and Projects Officer to undertake some post verification inspections and then he will arrange for the return of the scales to there correct location.

Issues which require inspection or testing are listed as follows:

- 1. Switch on scale and ensure that the digital display zero,s.
- 2. Ensure no Error messages are evident.
- 3. Ensure the battery charge of the scale is good.

- 4. Ensure the Legal mark has been placed on the scale and check that the Inspectors marking on this label corresponds to the month / year of the testing.
- 5. While scale is on do a slight drop test of the handle to ensure no loose wiring or faulty electronics.
- 6. Prepare a scale verification Test sheet and attach to the scale handle.
- 7. Ensure the scales are returned back to there respective Metropolitan or Regional owner.

After the inspection and testing is completed the scales are returned to there owners by the Contracts and Projects Officer. This is done either by TNT courier or delivered if the scales are based in Sydney. On some occasions scales are collected by there Sydney or Regional owners if they have pre-arranged this with the contractor or the Contract and Project Officer.

When scales are returned to there Regional owners they need to be individually placed in a carton with an address label placed on it and then a TNT consignment note is completed and the scales dropped off at the Rockdale Store for collection. When returning large numbers of scales they can be put on pallets obtained from the store and arrangements can be made with the Storeman to collect these pallets with a forklift so as to minimize excessive lifting and handling of the scales.

Types of Portable Weigh Scales

Two types of portable weigh scales are used by the IVR Inspectors to undertake heavy vehicle enforcement. The majority of the scales owned and operated by the RMS are PAT scales which are sourced from Germany and distributed by Electronic Load Weighing Co. of Australia Pty. Ltd. based at 93 Cecil Avenue Castle Hill.

RMS also have 14 HAENNI scales which are sourced from Switzerland and these scales are all located at the one office being Botany VR. The organisation that services these scales for RMS is based in Ashmore in Queensland so arrangements have to be made annually to forward these scales to the Ashmore workshop for there Annual Service. On completion of the servicing they are returned to the Rockdale Work Centre for verification. A technician normally flies down from Queensland for a day and the scales are reverified in the presence of an NMI Inspector.

Scale Error messages

PAT scales have some basic Error messages which provide the operator with some information regarding the performance of the scale.

E00 usually indicates that the scale is off zero and requires attention by the servicing agent.

E02 usually indicates that the charge of the batteries has exceeded 9.3 (probably as a result of a new set of alkaline batteries being installed). This issue can be resolved by removing one of the six batteries and replacing it with a battery that is not new or low in charge.

E04 check battery spring tension.

HAENNI Scale Error messages

E01 indicates the battery voltage is too low

E02 indicates the temperature is beyond the limits

E03 indicates a transmission error

E04 Initial zero setting error

E05 Zero point error usually caused by extreme temperature fluctuations over a short period OL The load is beyond the capacity of the scale.

Scale Chargers and spare parts

Portable weigh scales are used through out the state of NSW and cars used to transport the scales have had specially made racking installed in them for safe storage of the scales. Scale charging units which are purchased with the scales are used in these vehicles with leads to plug into and recharge the scales. It is essential that when the scales are being charged within the vehicles that the batteries fitted to the scales must be the rechargeable nicad type. Scales fitted with alkaline batteries should never be placed on charge as they have a tendency to heat up expand and leak causing expensive damage to the boards in the scales.

If the scale chargers are faulty then repairs or replacements can be organized with the servicing agent. Service exchange units are available as well as brand new units should they be required.

Generally each VR office keeps stock of parts for the scales that can be replaced easily without interfering with the verification of the scale. Handle rubbers and sockets and batteries are the items normally stocked by each VR office to prevent down time in returning the scales back to Sydney when a simple repair can be undertaken in the field.

Packaging

For convenience of transportation a purpose made carton has been developed for the PAT portable weigh scales. As scales are based throughout NSW it is recommended that when the scales are transported from the Regions to Rockdale or Rockdale to the Regions then the scales should be placed in a carton for protection as well as reducing the possibility of tampering or misuse while in transit.

Generally the cartons are recycled and reused numerous times and only disposed of when they are in a poor state. Packaging can be reordered through Corrugated Carton Products based at St Clair NSW and the measurement of the carton is 530x70x760.

TNT is the dedicated courier company used for transportation of scales to the Regional Offices and the Account No. is 90432902.

Dead Weigh Testing Unit

All RMS portable weigh scales verifications are undertaken on the RMS Dead Weigh Testing Unit situated at Rockdale Works Centre. The purpose of this equipment is to place varying weight increments ranging from 500KG to 13000KG on each scale to determine there accuracy.

Adjustments, should they be required can be made by the contractor to the scales when the dead weights are being placed on the units to ensure accuracy and compliance.

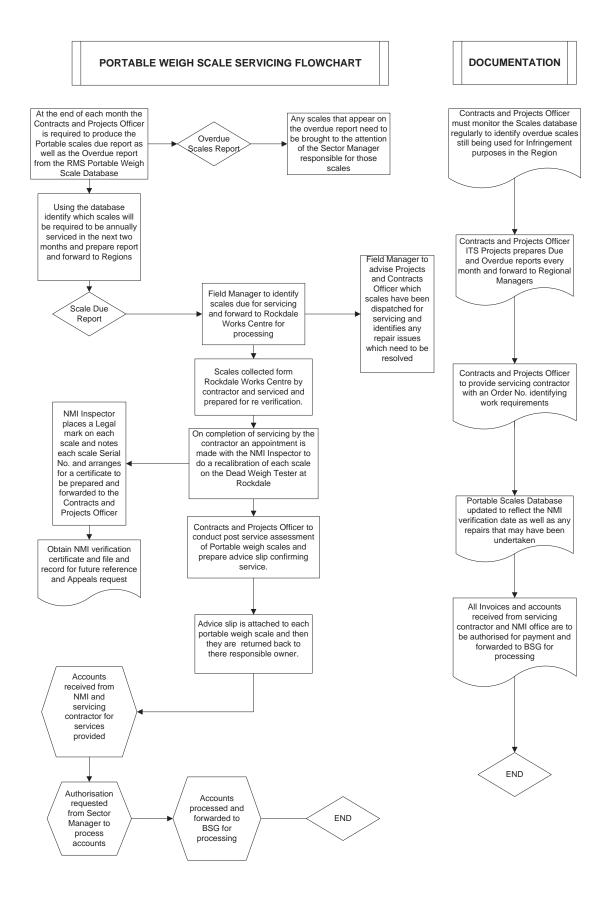
As this dead weigh testing equipment is a reference standard it must be subjected to a biannual verification which necessitates the decommissioning, dismantling and transportation of the 26 x 500kg plates to the NMI Laboratory situated at Lindfield. On completion of the verification by NMI the plates are returned back to Rockdale by the contractor engaged to carry out the re-verification and recommissioning of the Unit. As the re verification of the

DWT unit requires a fork lift for the dismantling and movement of the weights onto a semi trailer approval must be sought from the Manager of the Rockdale Works Centre prior to the decommissioning for a semi trailer and forklift to be parked in front of the main office for around four hours on the day of disassembling and reassembling.

Contacts

All enquiries regarding the use of portable weigh scales should be directed to the Statewide Manager or one of the three Sector managers who reports to the Statewide Manager. If the issue is only minor/local then these matters can be resolved through discussions with the Field Managers.

For any enquiries regarding the annual maintenance and re verification program of the portable weigh scales including the verification certificates supplied by NMI should be directed to the Contracts and Projects Officer in Intelligent Transport Systems Projects Section, Parramatta.



Re: FW: DAW300

From: novationengineering novationengineering <novationengineering@bigpond.com>

To: Rish Malhotra <rish.malhotra@irdinc.com>
Date: Thu, 29 Sep 2016 14:56:18 +1000 (AEST)

Hi Rish,

Discussed and agreed that is the requirement. How soon can you provide me with a quote? Apologies for the late notice, chang of email servers.

cheers, Steve

----- Original Message ------ On Tuesday, 20 Sep, 2016 At 9:16 AM, Rish Malhotra<Rish.Malhotra@irdinc.com> wrote:

Hi Steve,

Hope you are doing well. Please advise if you have discussed this with Samer as well as the delivery timelines. Thank you.

Kind Regards,

Rish Malhotra

Vice President, International Business

IRD (International Road Dynamics Inc.)

702-43rd Street, Saskatoon, Sask. Canada S7K 3T9

Phone: 306-653-6825

Fax: 306-242-5599

E-Mail: Rish.Malhotra@irdinc.com

Web: www.irdinc.com

Skype: rish.malhotra



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From: SOLIMAN Samer [mailto:Samer.SOLIMAN@rms.nsw.gov.au]

Sent: September 14, 2016 6:46 PM **To:** novationengineering@bigpond.com

Cc: Rish Malhotra < Rish. Malhotra@irdinc.com >

Subject: DAW300

Hi Novation,

RMS has a requirement to use some DAW 300's. Can you pls provide me with a quotation for a set(2 x scales and ramps)

http://www.irdinc.com/public/uploads/products_document/34/DAW300PC-Bluetooth 1108.pdf

Samer Soliman

Manager Heavy Vehicle Programs

Compliance Systems | Compliance Operations Branch | Compliance and Regulatory Services T 02 88370687 | M 0416185434

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10C/III vs SAW 15C/III

From: Sam Sol <ducktape69@gmail.com>

To: Steve Yeah <steve2ng@gmail.com>, novationengineering@bigpond.com

Date: Tue, 11 Oct 2016 21:57:44 +1100

Attachments: IRD_DynamicSAWIII_C.pdf (807.56 kB)

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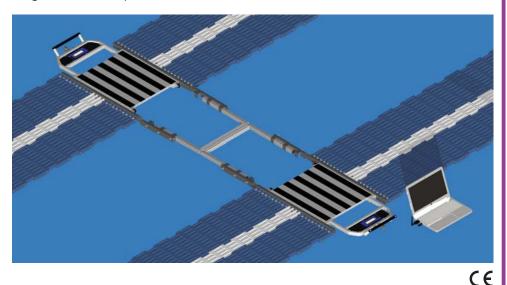


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SAW III Axle Scale System Portable Dynamic Weighing

The popular, field proven, and very durable SAW wheel load scale is now available for dynamic weighing. With the SAW's user-friendly software it is possible to efficiently pre-select overloaded trucks. Two SAW scales are paired and connected with a PC via Bluetooth®. The vehicle drives over the scales at slow speed and the weighing result (wheel/axle weights and gross vehicle weight) is displayed on the screen. For weight enforcement with the highest accuracy the system can be switched to static operation mode.

The system guarantees high vehicle throughput, especially when using two sets of SAW scales (one set in dynamic mode for pre-selection and one in static mode for weight enforcement).



SAW III Advantages

- Application of SAW scales for static and dynamic weighing operation
- · Pre-selection of overloaded trucks
- · High vehicle throughput
- · High accuracy
- · Very efficient weight enforcement





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SAW III - Technical Data

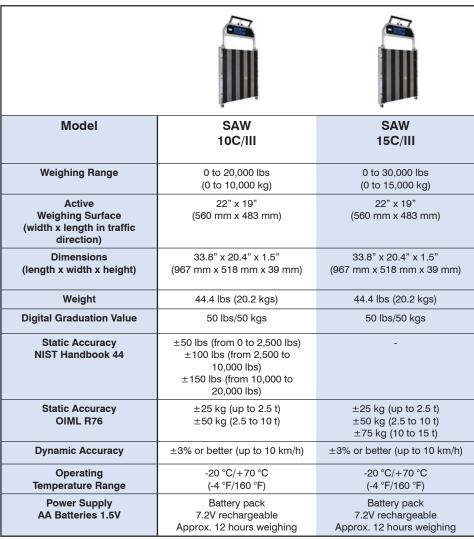
Features:

- · Low profile, lightweight
- · Rugged design, corrosion resistant
- · Twin-tire weighing
- · Flex frame for higher accuracy
- Designed to meet OIML R134

Applications:

- · Dynamic measurement for overload indication
- Dual-scale system configuration with computer based processing for reporting, protocol printing and data archiving

More than 12,000 SAW units sold worldwide!



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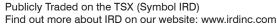
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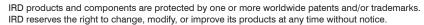
Email: info@irdinc.com

U.S. Office

2402 Spring Ridge Drive, Suite E Spring Grove, IL USA 60081

Tel: +1(815) 675-1430 Fax: +1(815) 675-1530







Fwd: last ones

novationengineering <novationengineering@bigpond.com> From:

To: ducktape69@gmail.com

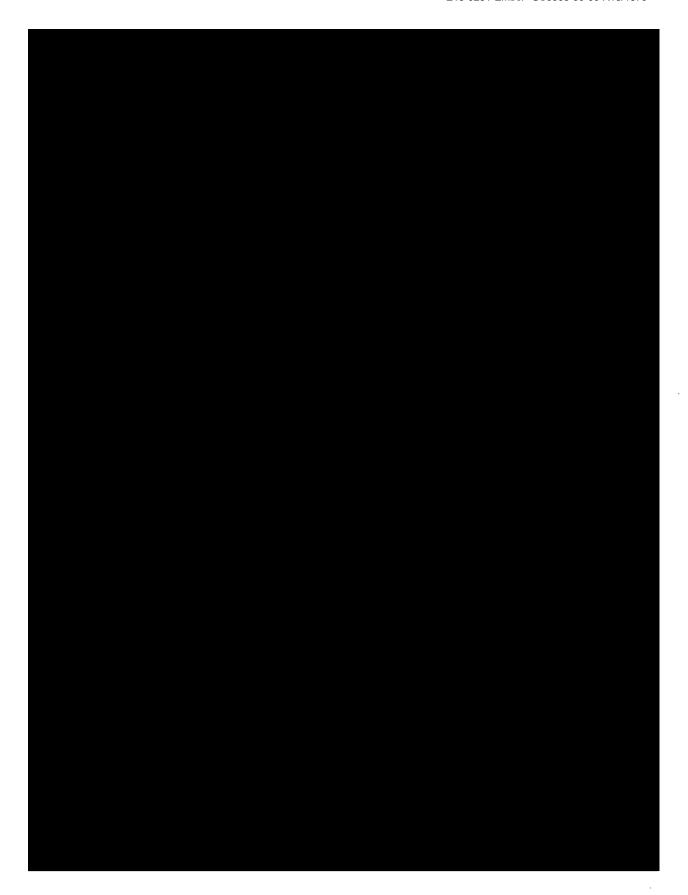
Mon, 28 Nov 2016 20:00:59 +1100 Date:

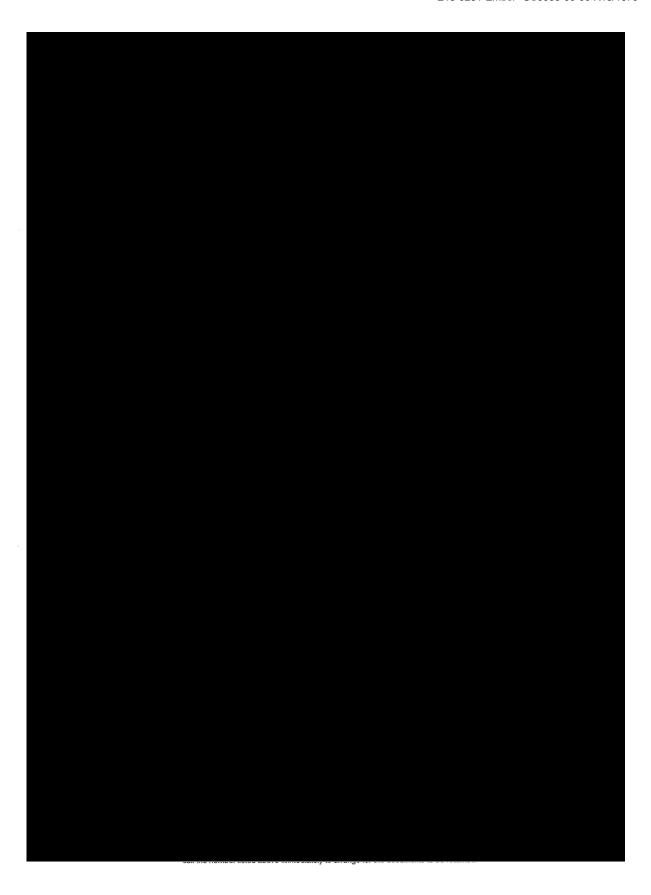
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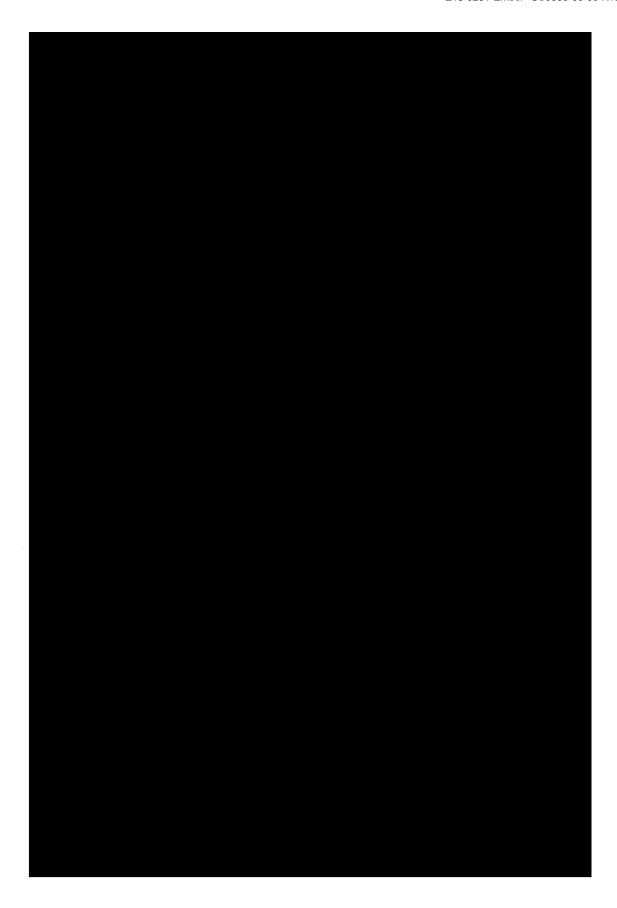
Unnamed Attachment (43 bytes); Unnamed Attachment (0 bytes); Unnamed Attachment (7.18 kB); Unnamed Attachment (1.39 kB); SAW 10A II Aus V1.pdf (210.79 kB); SAW 10A II V1.pdf (448.05 kB); Operator Manual Australia new SeriesII 81100106_in.pdf (0 bytes); image002.gif (0 bytes);

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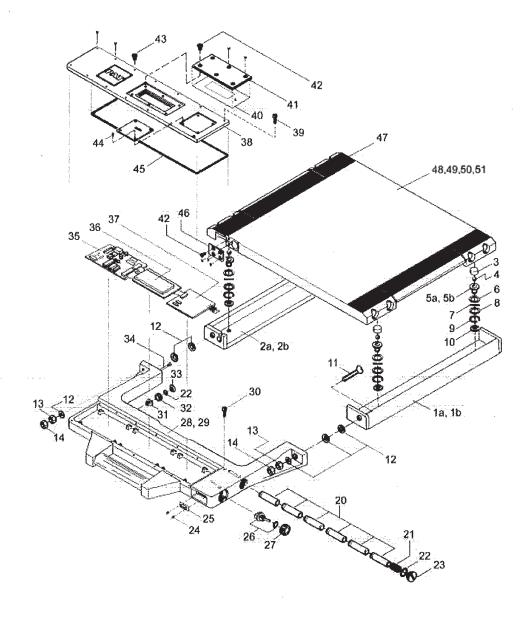
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5.3 EXPLODED DRAWING OF SAW XX A / II



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SAW SERIES II MAINTENANCE MANUAL, TECHNOLOGY PAGE 5-2

5.2 SPARE PARTS LIST SAW SERIES

ltem	R/3 Number	Description	SAW 1A/II	SAW 2A/II	SAW 6A/II	SAW 10A/II Aluminum	SAW 10A/II Steel	SAW 10C/II Aluminum	SAW 10C/II Steel	SAW 15C/II
1a	52551 7	Aluminum Base Board, right	-	-	-	•	-	-	-	-
1b	52302 7	Steel base board, right	•	•	•	-	•	-	-	-
1c	52547 1	Aluminum Base Board, right	-	-	-	-	-	•	-	•
1d	52377 8	Steel base board, right	-	-	-	_	-	-	•	-
2a	52551 8	Aluminum Base Board, left	-	-	-	•	-	•		•
2b	52302 8	Steel base board, left	•	•	•	-	•	-	•	-
2c	52547 2	Aluminum Base Board, left	-	-	-	-	-	•	-	•
2d	52377 9	Steel base board, left	-	-	-	-	-	-	•	-
3	52186 9	Upper ball socket	•	•	•	•	• '	•	•	•
4	30381 4	Ball	•	•	•	•	•	•	•	•
5a	52186 8	Lower ball socket	-	-	-	•	-	-	-	-
5b	52187 1	Lower ball socket	•	•	•	-	•	-	-	-
5c	30909	Lower ball socket	-	-	-	-		•	-	•
5d	52186 7 52199	Lower ball socket	-	-	-	-	-	-	•	-
6	3 30258	Shim ring	•	•	•	•	•	-	-	-
7	6 52230	Wavy washer	•	•	•	•	•	-	-	-
8	1 31945	Shim ring	•	•	•	•	•	-	-	-
9	1 30230	Locking ring	•	•	•	•	•	•	•	•
10	0 32071	Spring washer	•	•	•	•	•	•	•	•
11	1 30230	Flat Head Screw M8x40	•	•	•	•	•	•	•	•
12	2	Spring washer		•	•	•	•	•	•	•

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SAW SERIES II MAINTENANCE MANUAL,

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13	30211 0	Hexagon nut M8		•	•	•	•	•	•	•
14	30214 8	Self fitting nut M8	•	•	•	•	•	•	•	•
15	30909	Fixing	-	-	-	-	-	•	•	•
16	30912 3	Locking ring 17x1	-	-	-	-	_	•	•	•
17	30406 6	Spring base board fixing	-	-	-	-	-	•	•	•
18	30911 4	Locking ring 22x2,5	-	•	-	-	-	•	•	•
19 a	30178 5	Flat Head Screw M8x16	-	-	-	-	-	•	-	•
19 b	30178 3	Flat Head Screw M8x12	-	-	-	-	-	-	•	-
20	30740 8	NiCd Accumulator	•	•	•	•	•	•	•	•
21	30407 8	Spring accu shelf screw	•	•	•	•	•	•	•	•
22	30265 2	O-ring 17x2.0	•	•	•	•	•	•	•	•
23	31393 1	Accu shelf screw	•	•	•	•	•	•	•	•
24	30474 3	Bolt for DBM	•	•	•	•	•	•	•	•
25	52804 2	Connector, DBM, handle, complete	•	•	•	•	•	•	•	•
26	52340	Switch on/off handle, complete	•	•		•	• ,	•	•	•
27	30916 4	Locking ring switch	•	•	•	•	•	•	•	•
28	52366 8	Housing for electronics (short)	•	•	•	•	•	•	•	٠
29	51071 5	Housing for electronics (long)	-	-	•	•	•	- ·	-	-
30	51314 4	Sealing screw	•	•	•	•	•	•	•	•
31	52840 2	Calibration switch	•	•	•	•	•	•	•	•
32	30909 9	Locking ring calibration button	•	•	•	•	•	•	•	•
33	30909 8	Cover calibration button	•	•	•	•	•	•	•	•
34	52340 3	Connection cable		•	•	•	•	•	•	•
35	51077 4	CPU board	•	•	•	•	•	•	•	•
36	51077 6	Display board	•	•	•	•	•	•	•	•
37	51077 5	Power supply board	•	•	•	•	•	•	•	•
38	51073 9	Cover, cpl.	•	•	•	•	•	•	•	•

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TECHNOLOGY PAGE 5-4

,								,		
39	51332 2	Sealing screw	•	•	•	•	•	•	•	•
40	51075 7	Insert "kg"	•	•	•	•	•	•	•	•
41	30910 4	Cover for display	•	•	•	•	•	•	•	•
42	30170 0	Flat head screw M3x6	•	•	•	•	•	•	•	•
43	30174 0	Flat head screw M4x12	•	•	•	•	•	•	•	•
44	30166 4	Grooved drive stud	•	•	•	•	•	•	•	•
45	30262 0	Rubber seal	•	•	•	•	•	•	•	• .
46	52519 7	Cover plate for connection cable	•	•	•	•	•	•	•	•
47	10026 8	Safety walk	•	•	•	•	•	•	•	•
48	51077 2	Weigh Pad 1A	•	-	-	-	-	-	1	-
49	51077 9	Weigh Pad 2A	-	•	-	-	-	-	-	-
50	51078 9	Weigh Pad 6A	_	-	•	-	-	<u>-</u>	-	-
51	51087 3	Weigh Pad 10A	-	-	-	•	•	-	-	- ,
52	52519 1	Weigh Pad C	-	-	-	-	-	•	•	•
53	55275 2	Gliding skid	-	-	-	-	•	-	•	-
54	30177 3	Screw M6x10	-	-	-	-	•	-	•	-

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INTERNATIONAL ROAD DYNAMICS INC.

SAW SERIES II - Australia OPERATORS MANUAL







INTERNATIONAL ROAD DYNAMICS INC.

QUALITY IN MOTION

SAW SERIES II - Australia

OPERATORS MANUAL

Part No. 81100106 Revision A Date: Date: 10/6/2011

For further information or assistance, call IRD's Customer Service Hotline at (306) 653-6626 or Toll Free at (877) 444-4IRD (4473)

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1.0 Introduction

1.1 SAW TECHNICAL DESCRIPTION

The SAW (Static Axle Weigher) Series II scale is a compact, lightweight, low profile wheel load weighpad for the determination of wheel loads of up to 10,000 Kg.

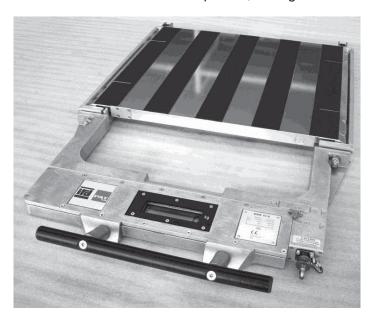


Figure 1 -SAW 10A/II scale

The weighpad material is high strength aluminum alloy with integrated strain gauges. The electronics and display are built into the aluminum housing.

The rugged design allows the weighing of single or dual tyres on any road surface without damaging the scale. Longevity is achieved by using high quality, corrosion resistant materials.

The electronics are powered by rechargeable Nickel Metal Hydride (NiMH) batteries located in the housing. The batteries may be recharged using either a 12 volt automotive battery or a 12 V DC battery charger.

The SAW is easy to operate, with automatic zeroing, power on test routines, and built in error messaging. The display has switchable background illumination for use in low light conditions.

Two SAW units can be connected to form an axle load scale. Optional equipment such as a battery charger distributor, access ramps, dummy plates, etc. provide flexibility in the weighing procedures.

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1.2 PREPARATION FOR USE

The SAW wheel load scale is supplied completely assembled. The batteries are pre-charged but may lose their charge after several months of storage, therefore, it is recommended to charge them prior to commissioning the scales (refer to section 4.2 Charging Batteries).

Carefully remove the protective film over the display screen.

1.3 IMPORTANT NOTE

Use only NiMH batteries! Make sure the batteries are inserted in the correct orientation in the battery compartment. Observe the label instructions!

DO NOT use or attempt to recharge Zinc-Carbon or Alkaline batteries in this device. Zinc-Carbon or Alkaline batteries may explode or leak if an attempt is made to recharge them. This may cause personal injury and/or damage the device.

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2.0 OPERATION

2.1 ROAD SURFACE

The SAW can be used on any road surface without special precautions, other than that they be reasonably level and clear of irregularities. Uneven road surfaces should have a minimum clearance of 5 mm under the weighpad. The surface should be swept clean of any small stones or debris. This will help to minimize the risk of damage to the scale. It will also ensure the scale remains stable during the weighing. A clearance of less than 5mm under the weigh pad may lead to the scale under-recording the weight of the wheel being weighed.

2.2 ROAD INCLINATION

2.2.1 LONGITUDINAL GRADIENTS

Weighing sites with gradients exceeding 2 % are not suitable for weighing procedures, as it is practically impossible to carry out measurements without having the brakes applied, and all weighing should be performed without the brakes on.

2.2.2 TRANSVERSE SLOPES

Weighing sites with a transverse slope will affect the measuring results. Depending on the height of the center of gravity, the wheel loads of an axle are shifted when measurements are made on a side slope; the uphill wheel load is measured to be less and the downhill wheel greater than when the vehicle is weighed on a level surface.

2.2.3 MEASUREMENT ERRORS FOR INCLINED ROADS

The following tables show the measuring error due to longitudinal gradient (table 1) or the transverse slope (table 2) of the measuring site.

The values in the tables refer to a "worst case" 2-axle vehicle with an (unfavorably high) assumed height of the center of gravity of 2.5 m, an average axle spacing of 1.6 m and an (unfavorably short) wheel base of 3 m. The wheel weight deviations become less if the center of gravity is lower or if the axle spacing is larger. Deviations in the gross weight are independent of the axle spacing or the position of the center of gravity.

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SAW SERIES II - AUSTRALIA OPERATORS MANUAL

Table 1: Measuring error to be expected for longitudinal gradients

all figures in %		Wheel	load left	Wheel load right		Axle	Gross	
		front	rear	front	rear	front	rear	weight
Downhill	-1%	+3.27	-3.28	+3.27	-3.28	+3.27	-3.28	-0.01
Gradient	-2%	+6.43	-6.47	+6.43	-6.47	+6.43	-6.47	-0.02
	-3%	+9.47	-9.56	+9.47	-9.56	+9.47	-9.56	-0.05
	-4%	+12.40	-12.56	+12.40	-12.56	+12.40	-12.56	-0.08
	-5%	+15.22	-15.47	+15.22	-15.47	+15.22	-15.47	-0.13
Uphill Gradient	+1%	-3.28	+3.27	-3.28	+3.27	-3.28	+3.27	-0.01
	+2%	-6.47	+6.43	-6.47	+6.43	-6.47	+6.43	-0.02
	+3%	-9.56	+9.47	-9.56	+9.47	-9.56	+9.47	-0.05
	+4%	-12.56	+12.40	-12.56	+12.40	-12.56	+12.40	-0.08
	+5%	-15.47	+15.22	-15.47	+15.22	-15.47	+15.22	-0.13

Table 2: Measuring error to be expected for transverse slopes

Table 2. Measuring error to be expected for transverse slopes								
all figures in %	all figures in %		Wheel load left		Wheel load right		Axle load	
		front	rear	front	rear	front	rear	weight
Transverse	1%	-6.06	-6.06	+6.05	+6.05	-0.01	-0.01	-0.01
slope	2%	-11.78	-11.78	+11.68	+11.68	-0.02	-0.02	-0.02
to the right	3%	-17.17	-17.17	+17.08	+17.08	-0.05	-0.05	-0.05
	4%	-22.27	-22.27	+22.11	+22.11	-0.08	-0.08	-0.08
	5%	-27.09	-27.09	+26.84	+26.84	-0.13	-0.13	-0.13
Transverse	1%	+6.05	+6.05	-6.06	-6.06	-0.01	-0.01	-0.01
slope	2%	+11.68	+11.68	-11.78	-11.78	-0.02	-0.02	-0.02
to the left	3%	+17.08	+17.08	-17.17	-17.17	-0.05	-0.05	-0.05
	4%	+22.11	+22.11	-22.27	-22.27	-0.08	-0.08	-0.08
	5%	+26.84	+26.84	-27.09	-27.09	-0.13	-0.13	-0.13

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2.3 SITE LAYOUTS

A vehicle weighing site can be laid out using SAW scales (and dummy plates if required) in a variety of configurations:

- single SAW for the measuring of one wheel weight at a time.
- · a pair of SAW scales for axle weight measurement.
- in groups of 4 scales (two pairs) for measuring the gross vehicle weight of a 2 axle vehicle in one single weighing procedure, or axle group weights of vehicles with more than 2 axles.
- in groups of 6 scales (three pairs) for measuring the gross vehicle weight of a 2 or 3 axle vehicle in one single weighing procedure, or axle group weights of vehicles with more than 3 axles.

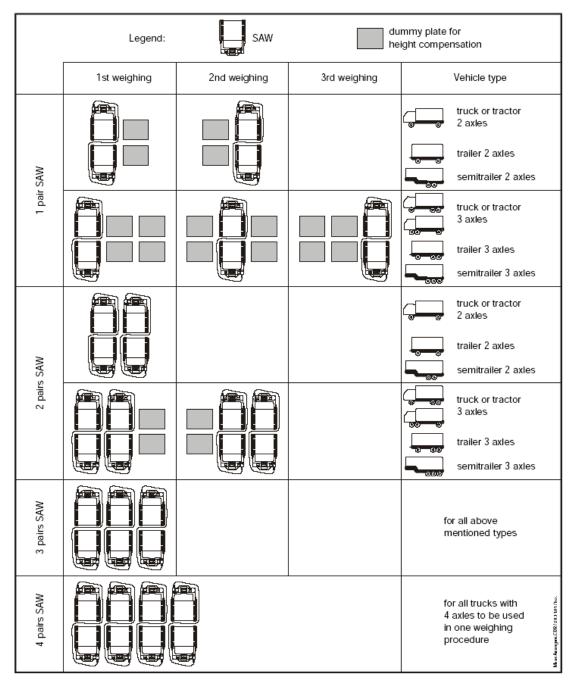
To prevent measuring errors due to the static friction in a vehicle's suspension, it is recommended that all wheels of a vehicle segment (tractor, trailer, etc.) be measured simultaneously using the corresponding number of weighpads.

If the arrangement of SAW scales does not permit weighing all the axles of a tandem or triple axle group simultaneously, in order to obtain accurate weights the height of each axle in the group must be brought up to the same level by means of dummy plates (refer to section 7.0, Optional Equipment). Alternatively, the scales may be placed in recesses dug into the surface, so that the top surface of the SAW is level with the surrounding area.

The table on the following page shows the arrangement of scales and dummy plates that can be used for weighing different vehicle types:

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2.4 MEASURING ARRANGEMENT FOR DIFFERENT VEHICLE TYPES



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2.5 CABLING

Cables are available to connect the SAW to an external power source, to another SAW (for axle weighing operations) and to make a serial connection to a computer for calibration and data collection (for a list of cables available, refer to section 7.0 Optional Equipment).

To make a cable connection, remove the cap on the connector socket on the right corner of the handle (when facing the display). Connect the units by inserting the female six pin military type connector on the cable firmly into the matching socket of the SAW and turning the knurled collar clockwise to lock the connector in place.

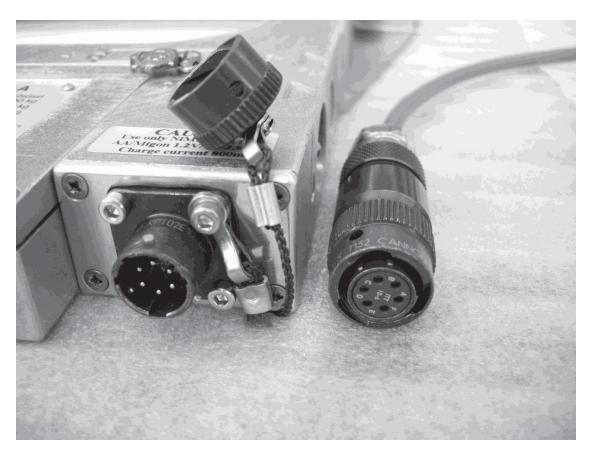
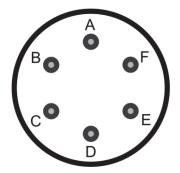


Figure 2 - Cable connector, socket and cap

Route the cables such that they cannot be pinched by the edges of the SAW or run over by the wheels of the vehicle being weighed or pose a tripping hazard to anyone in the area.

Whenever the cable is not in use, replace the socket cap to cover the scale socket.

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Pin	SIGNAL
А	RXD
В	RTS
С	CTS
D	VCC
Е	GND
F	TXD

Figure 3 - Connector Pin Diagram

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3.0 OPERATION

3.1 SAW II PARTS DIAGRAM

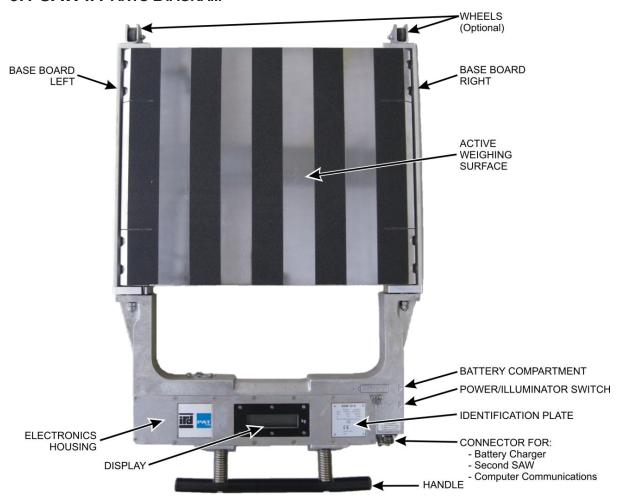


Figure 4 - SAW parts

3.2 Power On

The power switch is in a recess on the right side of the housing when looking at the display. To switch the SAW ON, toggle the momentary switch to the right (refer to Figure 5 - Power On below). Make sure that the SAW is completely unloaded when powering up the SAW; failure to do so will result in an error or incorrect weights.

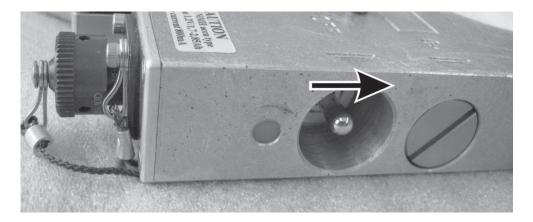


Figure 5 - Power On

3.2.1 SELF TEST

The scale starts with the self test. The SAW must be completely unloaded when switched on, as the power up self test assumes that there will be no weight on the scales.

During this test sequence, the following messages are displayed on the screen:

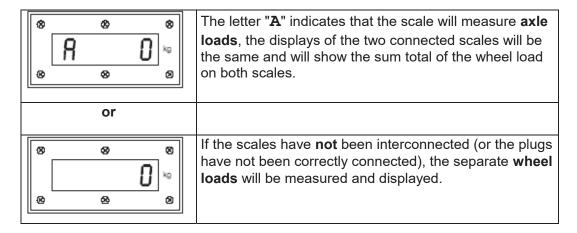
88888 × ×	Display Self-Test. Check that all segments are displayed. Display will last approximately 5 seconds. (refer to 3.2.3 for extended test)
*	The software version number. Display will last approximately 3 seconds.
* 3 * 8 * 1.3 * 8	The battery voltage, which indicates the charge state of the batteries. Normal operating voltage is between 7.4 and 9.2 Volts. If the voltage is below 7.2 V, the batteries should be recharged (refer to section 4.1) Display will last approximately 3 seconds.

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3.2.2 OPERATING DISPLAY

Upon completion of the self test, the zero point is automatically tracked and the scale is ready for operation. One of the following two displays should appear:



If a display other than **A 0** or **0** is displayed after the self-test, refer to section 5.0 for troubleshooting procedures.

3.2.3 EXTENDED SEGMENT TEST FUNCTION

In addition to the display test, it is possible to carry out an extended segment test which runs through all the digits in the LCD display. To activate this function, hold switch to the right for about 2 seconds when switching on the scale.

The display will sequentially display **000000**, **111111**, ... up to **999999**. Following the segment test, the normal self test will be carried out.

3.3 WEIGHING PROCEDURE

The number of separate measurements required to weigh a vehicle will depend on the site arrangement and the number of SAW used.

- Make sure that the scales are level and placed with their active measurement surfaces directly in front of the tyres to be weighed.
- Direct the vehicle onto the scale(s) and stop it with the tyre(s) in the middle of the active measuring surface(s) (Figure 6 – Tyre position on scale).
- Disengage the vehicle's brakes and, when the weight display is stable, read the weight.
- Record the weight and proceed with weighing the remaining wheels or axles as required by the measuring arrangement.
- When weighing vehicles with dual tyres, the tyres should be centered across the scale and may overhang the inner and/or outer edges of the SAW (i.e the edges next to the handle and away from the handle). Make sure, however, that neither tyre touches the ground.

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When weighing vehicles with extra large diameter tyres make sure that the tyre is only on the active weighing surface and does not extend onto the two black strips at the edge of the SAW, otherwise a measurement will be inaccurate.



Figure 6 - Tyre position on scale

Vehicles may cause movement of the scales as they roll on and off the weighpads, so check the position of the scales and of the connecting cable(s) frequently during operations.

If the weight on the scale exceeds the maximum weight that the SAW can measure by more than 5%, the weight display fades out and an **OULOAd** error warning appears (overload).

3.4 DISPLAY ILLUMINATION

The display can be illuminated to view readings in low light conditions The scale must be turned on before switching on the illuminator. To turn on the display illumination, push the switch to the left:

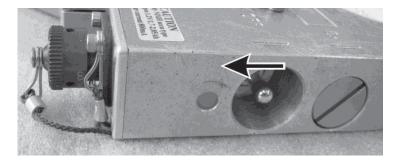


Figure 7 - Display illumination

To toggle the illuminator off, press the switch to the left again.

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SAW SERIES II - AUSTRALIA OPERATORS MANUAL E18-0281-Ember -GS0005-00-00 R18/1379 OPERATION PAGE 3-5

3.5 TURN OFF THE SCALES

To preserve battery life, the scales automatically switch off after 10 minutes of inactivity. You can also manually turn off the SAW by pressing the switch to the right.

NOTE: It is not possible to turn off the SAW during the self test.

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MAINTENANCE

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4.0 MAINTENANCE

The SAW is virtually maintenance-free. Any buildup of dirt should be removed from the scale; refer to section 4.4 for cleaning instructions.

The installed batteries are low maintenance but do require periodic recharging as described below.

4.1 CHARGE INDICATOR

When the batteries have discharged to 20% of their capacity (7.2 volts), a low battery indicator message will be displayed to indicate that the internal NiMH batteries will soon need to be recharged:



If operations are continued, the low battery message alternates with the weight display. The remaining charge is sufficient for approximately 2 hours of operation at normal temperatures.

If the batteries are discharged below the cutoff voltage (6.6 volts), the scale will automatically turn off. To continue weighing operations after this occurs, either replace the batteries with a set of freshly charged ones or connect the scales to an external power source.

4.2 CHARGING PROCEDURE

To recharge the installed batteries, connect the SAW to a 12 to 14 V DC power source using the charging cable. Since the scales are mostly used in pairs, it is recommended that the optional multi output battery charging distributor be used to recharge the batteries.

The charging current for each SAW is approximately 800 mA.

Battery charging distributors with 2, 4 and 6 outlets are available, depending on the number of scales to be charged simultaneously.

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MAINTENANCE

PAGE 4-2



Figure 8 - Battery Charging Distributor

The charging distributor can use a 12 volt DC or 240 volt AC power supply.

- Plug the connector of the charging distributor to the sockets of the SAW.
- Connect the power cable from the distributor into the external power source.

Upon connection to the external voltage source press START; all scales connected to the charging distributor are automatically turned on.

The charging time varies depending on the state of discharge, but is typically about 3 hours. Charging current is approximately 800 mA per SAW (approximately 4.8A for 6 scales) with NiMH charging controller. The yellow LED in the display window indicates active charging procedure. When charging is finished, the yellow LED will switch off. After time-limit (max 3.5 hours) charging procedure will switch off automatically.

Minimum Voltage for charging is 12 V. Lower voltage will disable the charge monitor which can result in overcharging the batteries and will increase charger current draw to 10A. Do not interrupt the of supply of power as this will disable and restart the timer, which can overcharge the batteries.

4.3 REPLACEMENT OF BATTERIES

If the operating time is considerably diminished even after the batteries have been charged, the batteries have reached the end of their operating life and must be replaced. This normally occurs after approximately 500 recharges.

The battery compartment is on the right side of the electronics housing next to the switch.

Use a screw driver or a coin to open.

Turn battery compartment screw cap counterclockwise to open

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MAINTENANCE

PAGE 4-3

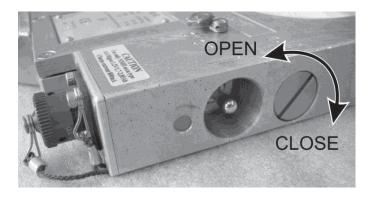


Figure 9 - Battery compartment

- Remove the old batteries
- Insert 6 new NiMH batteries, observing the correct polarity
- Insert the battery compartment cap and turn the screw clockwise to close
- Observe label instruction

WARNING: Use batteries only of type indicated on the label:



Note: Observe applicable procedures for the proper disposal of batteries in your locality.

4.4 CLEANING THE SAW

To clean the weighpad, use a nylon brush (do not use a wire brush) and clean water.

Note: never use a high pressure washer for cleaning! Water may be forced into the electronics enclosure and damage the device.

Clean the gap between baseboards and weighing surface below the weighpad. Gravel and dirt must be removed from this area. Dirt in the slots and between the weighpad and baseboards can result in weight readings below actual weight.

Tar and oil stains can be removed with a cloth sparingly dampened with solvent.

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TROUBLE SHOOTING
PAGE 5-1

5.0 TROUBLE SHOOTING

5.1 Error Messages

The message HELP and the error code E with a code number or another message are displayed on the screen in case of a recognized user error or a system failure.

Table 2 describes the messages, the possible causes and the service procedure:

Display	Possible Cause	Service Procedure
	Weighpad has been turned on or off when loaded, resulting in a zero point beyond the reset range.	Completely unload the scale.Turn the scale off and on again.
E010 %	The SAW are used in pairs which have different measuring units (Kg/Lb).	When using the SAW in pairs, make sure to use identical measuring units (Kg or Lb).
© OULORd &	Overload - the weight on the scale exceeds the maximum range of the weighpad by more than 9 scale steps.	Observe the maximum weight range of the SAW (listed on the type plate)

An error message which is not listed in the table is not serviceable by the user.

Check whether the fault can be eliminated by turning the SAW off and on. If not, please contact the distributor citing the error code and the software version number.

The following message informs you that you should recharge the batteries. This is not a functional error:



Batteries are low. The remaining power will last for approximately 2 more operating hours

The following checklist serves the purpose of identifying and eliminating faults which cannot be recognized by the SAW:

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TROUBLE SHOOTING
PAGE 5-2

5.2 PROBLEM SOLVING CHECKLIST SAW



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6.0 SAW II TECHNICAL DATA

Model	SAW 10A/II - A/NZ
Specification	Aluminum
Weighing Range (t)	10
Weighing Surface (mm)	400 X 382
Dimensions LxWxH (mm)	786 X 518 X 40
(Height of spring handle mm)	50
Weight (Kg) (with wheels)	17.3
(without wheels)	17.2
Scale Division (Kg) [official approval]	20
Minimum Load (Kg)	200
Accuracy up to 50 divisions (Kg)	±10
50 to 200 divisions (Kg)	±20
above 200 divisions (Kg)	±30
Temperature Range (C°)	-20/+40
Power Supply batteries NiMH 1.2 V	6
Approvals	PTB and NMI

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OPTIONAL EQUIPMENT
PAGE 7-1

7.0 OPTIONAL EQUIPMENT

Description	Part No.
NiMH battery set (6 pieces)	100147
Dummy plate (rubber) Type A	309153
Access ramp (rubber)	510838
Plastic grid and access ramp of 3m length	321710

parts list - in progress

From: Sam Sol <ducktape69@gmail.com>
To: novationengineering@bigpond.com
Date: Mon, 28 Nov 2016 21:18:28 +1100

Attachments: Quote 101- Portable Weigh Scales Parts.doc (1.14 MB)

complete series 2 and series 2.5 listings



Novation Engineering Pty Ltd ABN: 50608485409 PO Box 451 Kings Langley 2147 Email: NovationEngineering@bigpond.com

Dear Roads and Maritime Services;

ATT: Jai Singh

Quote 101: Parts and Servicing - Portable Weigh Scales – PAT SAW Scales

Introduction

Further to our recent discussions, Novation Engineering Pty Ltd, as the sole provider of PAT portable weigh scale goods and services in NSW is pleased to provide a fixed price list to Roads and Maritime Services for the below parts for the PAT SAW Series 1, 2 and 2.5 portable weigh scales:

PAT SAW 10A Series 1 Parts Packages (all prices are not inclusive of GST)

PAT SAW TUA Series I Parts Packages	
Package 1A	N/A(not applicable)
wheels assembly	
Package 1B	\$260
Handle-Weighpad coupling hardware	
Package 1C	N/A(not applicable)
Operational Mini Access Ramps R+L w/coupling hardware	
Doolroop 2A	\$7370
Package 2A Aluminium Baseboards R+L w/coupling	\$7370
hardware	
nardware	
Package 2AA	\$8530
Steel Baseboards R+L w/coupling	φ0330
hardware	
Package 2B	\$20780
Weighpad platform board only	
Package 3A	\$1950
Sprong Plastic sub-handle w/coupling	
hardware	
Deales as 2D	Discontinued
Package 3B	Discontinued
Protection caps	
Package 3C	N/A
Rubber buffer for electronic boards &	μ ٧/ / Σ
screws	
BOLOWB	

Package 3D	\$600
Battery pack(6 NiCad Batteries)	
Package 3E/3F/3G	Discontinued
Integrated electronic display/charger/CPU	
Board	
Dl 211	(01150)
Package 3H	\$1150
Complete electronics cover with electronics cover, rubber seal, keypad-display cover, sealing screws and	
electronics cover, rubber seal, keypad-	
hardware	
naruware	
Package 3I	\$440
Rettery compartment cover with rubber	Ψ++0
Battery compartment cover with rubber seal and hardware	
scar and nardware	
Package 3J	N/A
Rubber seal for electronics and rubber	1 1/2 1
seal for battery compartment cover	
sour for outery compartment cover	
Package 3K	\$340
Display covers	
· · ·	

SAW 10A Series I	SAW 10A	SAW 10 A	Qty per	package
Part No. Description	Aluminum	Steel	scale	#
SAW10A I BASEBOARD Components	6.916			
PT510890 Steel Base Board, Right		*	1	2aa
PT525517 Aluminum Base Board Right	t *		1	2a
PT510891 Steel Gliding Skid, Left		*	1	2aa
PT525518 Aluminum Base Board, Left	*		1	2a
PT303814 Ball bearing RB10/III		*	4	2a/2aa
PT521869 Upper Ball Socket	*	*	4	2a/2aa
PT521871 Lower Ball Socket		*	4	2aa
PT521868 Lower Ball Socket	*		4	2a
PT522301 Shim Ring 1.0mm	*	*	4	2a/2aa
PT521993 Shim Ring 0.5mm	*	*	4	2a/2aa
PT302479 Locking Ring	*	*	4	2a/2aa
PT302586 Wavy Washer	*	*	4	2a/2aa
PT302300 Spring Washer	*	*	4	2a/2aa
PT301433 Flat Head Screw M8x40	*	*	2	1b
PT302110 Hexagon Nut M8	*	*	2	1b
PT302145 Hexagon Nut M8	*	*	2	1b
PT302302 Spring washer	*	*	6	1b
SAW 10A I Handle Components				
PT307409 NiCad Battery	NA	NA	Innerson catalog as	والترادا المساد الدوا
PT304078 Spring batt shelf screw	*	*	1	3i
PT302652 O-Ring 17x2.0	*	*	1	3i
PT313931 Battery Shelf Screw	*	*	1	3i
PT550021 Spring	*	*	2	3a
PT510835 Plastic Sprong Sub Handle	*	*	1	3a
PT301778 Flat Head Screw M6x16	*	*	2	3a
PT302820 Socket Protection Cap	· NA	NA	1	Caller ingebri
PT305048 Socket	*	*	1	3h
PT301941 Pan Head Screw M3x14	*	*	1	3h
PT313924 Plastic Cover/Display 3x56x	*	*	1	3h/3k
PT301700 Flat Head Screw M3x6	*	*	6	3h
PT510842 Electronics cover	NA	NA	1	
PT513322 Sealing Screw	*	*	4	3h
PT301741 Flat Head Screw M4x12	*	*	15	3h
PT313925 Plastic Cover/Display 3x30x	*	*	1	3h/3k
PT510873 Wired 10A pad w/o handle	*	*	1	2b
SAW CPU/LCD/Display integ	grated electro	nic board and	d H/W	ASK

NSW ICAC EXHIBIT

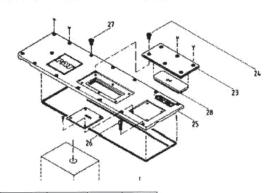
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E ENVANTA I MILLINGO PARETE ITIMO AT			constitution in	
PT313924 Plastic Cover/Display 3x56x:	*	*	1	3h/3k
PT301700 Flat Head Screw M3x6	*	*	6	3h
PT510842 Electronics cover	NA	NA	1	
PT513322 Sealing Screw		*	4	3h
PT301741 Flat Head Screw M4x12	*	*	15	3h
PT313925 Plastic Cover/Display 3x30x5		*	1	3h/3k
PT510873 Wired 10A pad w/o handle	*	*	1	2b
SAW CPU/LCD/Display integra	ted electro	nic board an	d H/W	ASK

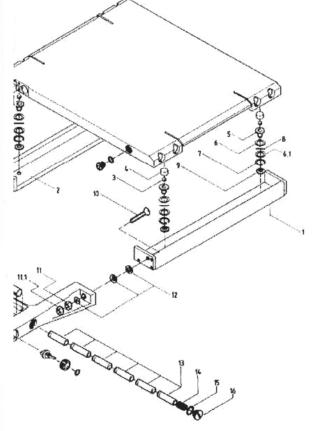
	5110-02
15	3h
1	3h/3k
1	2b
/W	ASK

SAW SERIES I MAINTENANCE MANUAL, TECHNOLOGY PAGE 4-2

4.2 EXPLODED ASSEMBLY - SAW 10A



	A Series I	SAW 10A	SAW 10 A	Qty per	package
	Description	Aluminum	Steel	scale	#
the state of the s	BASEBOARD Components			1	2aa
	Steel Base Board, Right			0 0 m of 1 m on 1 m	
	Aluminum Base Board Right	•		1	2a
	Steel Gliding Skid, Left		•	1	2aa 2a
	Aluminum Base Board, Left			1	
	Ball bearing RB10/III			4	2a/2aa
	Upper Ball Socket	•		4	2a/2aa
	Lower Ball Socket			4	2aa
	Lower Ball Socket	•		4	2a
	Shim Ring 1.0mm		*	4	2a/2aa
	Shim Ring 0.5mm	•	*	4	2a/2aa
	Locking Ring	•	*	4	2a/2aa
PT302586	Wavy Washer		*	4	2a/2aa
T302300	Spring Washer		*	4	2a/2aa
T301433	Flat Head Screw M8x40	*	*	2	1b
PT302110	Hexagon Nut M8	*	*	2	1b
T302145	Hexagon Nut M8		*	2	1b
PT302302	Spring washer	*	*	6	1b
SAW 10A	Handle Components				
PT307409	NiCad Battery	NA	NA		
T304078	Spring batt shelf screw		*	1	3i
PT302652	O-Ring 17x2.0	*	*	1	3i
T313931	Battery Shelf Screw		*	1	3i
PT550021	Spring	•	*	2	3a
T510835	Plastic Sprong Sub Handle		*	1	3a
T301778	Flat Head Screw M6x16		*	2	3a
T302820	Socket Protection Cap	NA	NA	1	
T305048	Socket		*	1	3h
T301941	Pan Head Screw M3x14		*	1	3h
T313924	Plastic Cover/Display 3x56x:	*	*	1	3h/3k
T301700	Flat Head Screw M3x6		*	6	3h
PT510842	Electronics cover	NA	NA	1	
T513322	Sealing Screw		*	4	3h
	Flat Head Screw M4x12		*	15	3h
PT313925	Plastic Cover/Display 3x30x1		*	1	3h/3k
	Wired 10A pad w/o handle		*	1	2b
	SAW CPU/LCD/Display integr		ata bassad ass	A LI DAY	ASK



SAW SERIES I MAINTENANCE MANUAL, TECHNOLOGY PAGE 4-3

4.3 SPARE PARTS LIST - 10A

	No. Description	Part No.	Baseboards		
No.		Part No.	10A Steel	10A Aluminum	
1	Steel Base Board, Right	PT510890	•	-	
1	Aluminum Base Board, Right	PT525517	4	•	
2	Steel Gliding Skid, Left	PT510891	•		
2	Aluminum Gliding Skid, Left	PT525518		•	
3	Ball	PT303814	•	:-	
4	Upper Ball Socket	PT521869	•	•	
5	Lower Ball Socket	PT521871	•		
5	Lower Ball Socket	PT521868	-	•	
6	Shim Ring 1.0mm	PT522301	•	•	
6.1	Shim Ring 0.5mm	PT521993	•	•	
7	Locking Ring	PT319451	•	•	
8	Wavy Washer	PT302586	•	•	
9	Spring Washer	PT302300		•	
10	Flat Head Screw M8x40	PT301433	•	•	
11	Hexagon Nut M8	PT302110	•	•	
11.1	Hexagon Nut M8	PT302145	•	•	
12	Spring	PT302302	•	•	
13	NiCd Battery	PT307409	•	•	
14	Pressure Spring	PT304078	•	•	
15	O-Ring 17x2.0	PT302652	•	•	
16	Battery Shelf Screw	PT313931	•	•	
17	Spring	PT303298?	•	•	
18	Plastic Handle	PT510835	•	•	
19	Flat Head Screw M6x16	PT301778	•	•	
20	Socket Protection Cap	PT302820	•	•	
21	Sockey	PT305048	•	•	
22	Pan Head Screw M3x14	PT301941?	•	0	
23	Plastic Cover for Display	PT313924	•	•	
24	Flat Head Screw M3x6	PT301700	•	•	
25	Cover	PT510842	•	•	
26	Sealing Screw	PT513322	•	•	
27	Flat Head Screw M4x12	PT301741	•	•	
28	Plastic Cover for Display	PT313925	•	•	

PAT SAW 10A Series 2 Parts Packages (all prices are not inclusive of GST)

 $\underline{\text{Inclusions:}}$ The following items are included in the services scope as per this proposal

- Prices as listed above are valid until 31 June 2017.
- Prices include duties, customs or local taxes.

 $\underline{\textbf{Exclusions:}}$ The following items are excluded from the services scope as per this proposal:

- System Integration. This quote does not include software integration into existing RMS systems.
- Prices do not include freight.

Payment Milestones:

100% upon invoice receipt.			
Date Issued: 29/11/2016 Quote Valid until: 30/06/2017 Quote Ref: 101			
This quotation is accepted by: Name:			_;
Title:	;	Date://	
PO Ref:		Signature:	

Volume 18 288

File Size: 1,140,736

File Type:

Microsoft Word Document

GUID:

02e1ccc4-8192-4f5e-8125-a586221431e6

Item Date:

Monday, November 28, 2016 at 9:18:28 PM Australian Eastern Daylight Time

MD5 Digest:

fea70c22084df66df460db005a8134a7

Path Name:

 $/E18-0281-Ember-GS0005-00-00/E18-0281-Ember-GS0005-00-00.ad1/GS0005-00-00.zip/275_334.txt$

Shannon Entropy:

7.79559722330963

Property Source:

E18-0281-Ember-GS0005-00-00

Application Version:

983,040

AppName:

Microsoft Office Word

Author:

Samer

Char Count:

2,382

Char Count with Spaces:

2,794

CLSID:

{00020906-0000-0000-C000-000000000046}

Comment Authors:

Unknown

Company:

Contains Comments:

false

Contains Hidden Text: false
Contains Track Changes: false
Contains White Text: false
Content-Disposition: attachment; filename="Quote 101- Portable Weigh Scales Parts.doc"
Content-Transfer-Encoding: base64
Content-Type: application/msword; name="Quote 101- Portable Weigh Scales Parts.doc"
Created: Monday, November 28, 2016 at 8:26:00 PM Australian Eastern Daylight Time
DocSecurity: 0
Edit Time: 42 minutes, 0 seconds
Embedded Field Codes:
Hyperlinks Changed: false
Keywords:
Last Author: Samer
Last Saved: Monday, November 28, 2016 at 9:16:00 PM Australian Eastern Daylight Time
Lines: 19
Links Dirty: false
Name: Quote 101- Portable Weigh Scales Parts.doc

Page Count:

8

Paragraphs:

5

Revision Number:

3

Scale Crop:

false

Shared Document:

false

Subject:

Template:

Normal

Title:

Word Count:

417

X-Attachment-ID:

f_iw1x8e1o0

TEST

From: novationengineering novationengineering <novationengineering@bigpond.com>

To: steve2ng@gmail.com

Date: Tue, 29 Nov 2016 09:56:27 +1100 (AEDT)

Attachments: Quote 101- Portable Weigh Scales Parts.doc (1.5 MB)

Regards, Stephen Thammiah



Novation Engineering Pty Ltd ABN: 50608485409

PO Box 451

Kings Langley 2147

Email: NovationEngineering@bigpond.com

Dear Roads and Maritime Services;

ATT: Jai Singh

Quote 101: Parts and Servicing - Portable Weigh Scales - PAT SAW Scales

Introduction

Further to our recent discussions, Novation Engineering Pty Ltd, as the sole provider of PAT portable weigh scale goods and services in NSW is pleased to provide a fixed price list to Roads and Maritime Services for the below parts for the PAT SAW Series 1, 2 and 2.5 portable weigh scales:

PAT SAW 10A Series 1 Parts Packages (all prices are not inclusive of GST)

PAT SAW 10A Series I Parts Packages	(all prices are not inclusive of GST)
Package 1A	N/A(not applicable)
wheels assembly	
·	
Package 1B	\$260
Handle-Weighpad coupling hardware	
Package 1C	N/A(not applicable)
Operational Mini Access Ramps R+L	
w/coupling hardware	
Package 2A	\$7370
Aluminium Baseboards R+L w/coupling	
hardware	
Deales as 2 A A	\$9520
Package 2AA	\$8530
Steel Baseboards R+L w/coupling hardware	
nardware	
Package 2B	\$20780
Weighpad platform board only	\$20780
Weighpad platform board omy	
Package 3A	\$1950
Sprong Plastic sub-handle w/coupling	φ1/30
hardware	
Package 3B	Discontinued
Protection caps	
1	
Package 3C	N/A
Rubber buffer for electronic boards &	
screws	

	T
Package 3D Battery pack	\$600
Dattery pack	
Package 3E/3F/3G Integrated electronic display/charger/CPU	Discontinued
Board	
Dourd	
Package 3H	\$1150
Complete electronics cover with electronics cover, rubber seal, keypaddisplay cover, sealing screws and	
display cover sealing screws and	
hardware	
nardware	
Package 3I	\$440
Battery compartment cover with rubber seal and hardware	
Package 3J	N/A
Rubber seal for electronics and rubber	1 1/11
seal for battery compartment cover	
Package 3K	\$340
Display covers	

SAW 10A Series I	SAW 10A	SAW 10 A	Qty per	package
Part No. Description	Aluminum	Steel	scale	#
SAW10A I BASEBOARD Components	Acres (1
PT510890 Steel Base Board, Right		*	1	2aa
PT525517 Aluminum Base Board Right	*		1	2a
PT510891 Steel Gliding Skid, Left		*	1	2aa
PT525518 Aluminum Base Board, Left	*		1	2a
PT303814 Ball bearing RB10/III		*	4	2a/2aa
PT521869 Upper Ball Socket	*	*	4	2a/2aa
PT521871 Lower Ball Socket		*	4	2aa
PT521868 Lower Ball Socket	*		4	2a
PT522301 Shim Ring 1.0mm	*	*	4	2a/2aa
PT521993 Shim Ring 0.5mm	*	*	4	2a/2aa
PT302479 Locking Ring	*	*	4	2a/2aa
PT302586 Wavy Washer	*	*	4	2a/2aa
PT302300 Spring Washer	*	*	4	2a/2aa
PT301433 Flat Head Screw M8x40	*	*	2	1b
PT302110 Hexagon Nut M8	*	*	2	1b
PT302145 Hexagon Nut M8	*	*	2	1b
PT302302 Spring washer	*	*	6	1b
SAW 10A I Handle Components				
PT307409 NiCad Battery	NA	NA	Innerson calletin 1 - 45	
PT304078 Spring batt shelf screw	*	*	1	3i
PT302652 O-Ring 17x2.0	*	*	1	3i
PT313931 Battery Shelf Screw	*	*	1	3i
PT550021 Spring	*	*	2	За
PT510835 Plastic Sprong Sub Handle	*	*	1	3a
PT301778 Flat Head Screw M6x16	*	*	2	3a
PT302820 Socket Protection Cap	· NA	NA	1	College of the colleg
PT305048 Socket	*	*	1	3h
PT301941 Pan Head Screw M3x14	*	*	1	3h
PT313924 Plastic Cover/Display 3x56x:	*	*	1	3h/3k
PT301700 Flat Head Screw M3x6	*	*	6	3h
PT510842 Electronics cover	NA	NA	1	
PT513322 Sealing Screw	*	*	4	3h
PT301741 Flat Head Screw M4x12	*	*	15	3h
PT313925 Plastic Cover/Display 3x30x!	*	*	1	3h/3k
PT510873 Wired 10A pad w/o handle	*	*	1	2b
SAW CPU/LCD/Display integ	rated electro	nic board and	d H/W	ASK

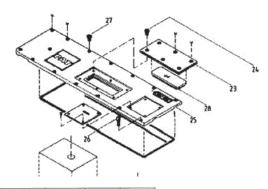
E18-0281-Ember-GS0005-00-00 R18/1414

LINNANTA LIMITTINAN VALSTITINANAT			-	
PT313924 Plastic Cover/Display 3x56x:	*	*	1	3h/3k
PT301700 Flat Head Screw M3x6	*	*	6	3h
PT510842 Electronics cover	NA	NA	1	
PT513322 Sealing Screw		*	4	3h
PT301741 Flat Head Screw M4x12		*	15	3h
PT313925 Plastic Cover/Display 3x30x5		*	1	3h/3k
PT510873 Wired 10A pad w/o handle	*	*	1	2b
SAW CPU/LCD/Display integra	ted electro	nic board an	d H/W	ASK

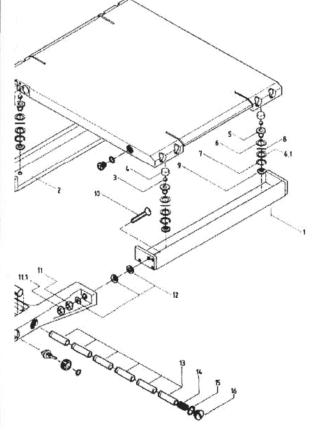
	510 02
15	3h
1	3h/3k
1	2b
/W	ASK

SAW SERIES I MAINTENANCE MANUAL, TECHNOLOGY PAGE 4-2

4.2 EXPLODED ASSEMBLY - SAW 10A



	A Series I	SAW 10A	SAW 10 A	Qty per	package
	Description	Aluminum	Steel	scale	#
the state of the s	BASEBOARD Components				
	Steel Base Board, Right	100	•	1	2aa
	Aluminum Base Board Right	•		1	2a
	Steel Gliding Skid, Left		•	1	2aa
	Aluminum Base Board, Left	*	720	1	2a
	Ball bearing RB10/III		•	4	2a/2aa
	Upper Ball Socket	•	•	4	2a/2aa
	Lower Ball Socket		•	4	2aa
PT521868	Lower Ball Socket			4	2a
PT522301	Shim Ring 1.0mm		*	4	2a/2aa
PT521993	Shim Ring 0.5mm	•	*	4	2a/2aa
PT302479	Locking Ring	*	*	4	2a/2aa
PT302586	Wavy Washer		*	4	2a/2aa
PT302300	Spring Washer		*	4	2a/2aa
PT301433	Flat Head Screw M8x40	*	*	2	1b
PT302110	Hexagon Nut M8	*	*	2	1b
PT302145	Hexagon Nut M8		*	2	1b
PT302302	Spring washer	*	*	6	1b
SAW 10A	Handle Components				
PT307409	NiCad Battery	NA	NA		
PT304078	Spring batt shelf screw		*	1	3i
PT302652	O-Ring 17x2.0		*	1	3i
PT313931	Battery Shelf Screw	•	*	1	3i
PT550021	Spring	•	*	2	3a
PT510835	Plastic Sprong Sub Handle		*	1	3a
PT301778	Flat Head Screw M6x16		*	2	3a
PT302820	Socket Protection Cap	NA	NA	1	
T305048	Socket		*	1	3h
T301941	Pan Head Screw M3x14		*	1	3h
PT313924	Plastic Cover/Display 3x56x:	*	*	1	3h/3k
PT301700	Flat Head Screw M3x6		*	6	3h
PT510842	Electronics cover	NA	NA	1	
PT513322	Sealing Screw		*	4	3h
	Flat Head Screw M4x12		*	15	3h
T313925	Plastic Cover/Display 3x30x1		*	1	3h/3k
	Wired 10A pad w/o handle		*	1	2b
	SAW CPU/LCD/Display integr	rated electro	nic hoard an	WAH	ASK



SAW SERIES I MAINTENANCE MANUAL, TECHNOLOGY PAGE 4-3

4.3 SPARE PARTS LIST - 10A

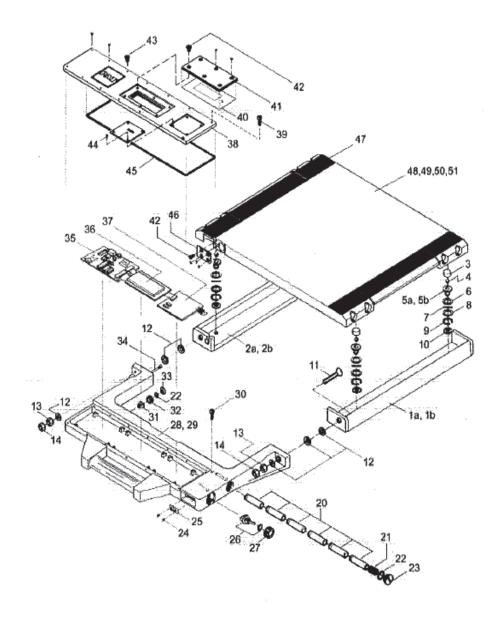
	Description.	Part No.	Bas	seboards
No.	Description	Part No.	10A Steel	10A Aluminum
1	Steel Base Board, Right	PT510890	•	-
1	Aluminum Base Board, Right	PT525517	4	•
2	Steel Gliding Skid, Left	PT510891	•	=
2	Aluminum Gliding Skid, Left	PT525518		•
3	Ball	PT303814	•	: - · ·
4	Upper Ball Socket	PT521869	•	•
5	Lower Ball Socket	PT521871	•	=
5	Lower Ball Socket	PT521868	-	•
6	Shim Ring 1.0mm	PT522301	•	•
6.1	Shim Ring 0.5mm	PT521993	•	•
7	Locking Ring	PT319451	•	•
8	Wavy Washer	PT302586	•	•
9	Spring Washer	PT302300		•
10	Flat Head Screw M8x40	PT301433	•	•
11	Hexagon Nut M8	PT302110	•	•
11.1	Hexagon Nut M8	PT302145	•	•
12	Spring	PT302302	•	•
13	NiCd Battery	PT307409	•	•
14	Pressure Spring	PT304078	•	•
15	O-Ring 17x2.0	PT302652	•	•
16	Battery Shelf Screw	PT313931	•	•
17	Spring	PT303298?	•	•
18	Plastic Handle	PT510835	•	•
19	Flat Head Screw M6x16	PT301778	•	•
20	Socket Protection Cap	PT302820	•	•
21	Sockey	PT305048	•	•
22	Pan Head Screw M3x14	PT301941?	•	•
23	Plastic Cover for Display	PT313924	•	•
24	Flat Head Screw M3x6	PT301700	•	•
25	Cover	PT510842	•	•
26	Sealing Screw	PT513322	•	•
27	Flat Head Screw M4x12	PT301741	•	
28	Plastic Cover for Display	PT313925	•	•

PAT SAW 10A Series 2 Parts Packages (all prices are not inclusive of GST)

Package 1A wheels assembly	N/A(not applicable)
	0240
Package 1B Handle-Weighpad coupling hardware	\$240
Package 1C	N/A(not applicable)
Operational Mini Access Ramps R+L w/coupling hardware	TVA(not applicable)
Package 2A Aluminium Baseboards R+L w/coupling hardware	\$7360
Package 2AA Steel Baseboards R+L w/coupling hardware	\$8700
Package 2B Weighpad platform board only	\$20780
Package 3A Spring Plastic sub-handle w/coupling hardware	NA
Package 3B Protection caps	N/A
Package 3C Rubber buffer for electronic boards & screws	N/A
Package 3D	\$600
Battery pack	
Package 3E Integrated electronic display board	\$4250
Package 3F Integrated electronic charger board	\$8200
Package 3G Integrated electronic CPU board	\$6750
Package 3H	\$3570
Complete electronics cover with electronics cover, rubber seal, keypaddisplay cover, sealing screws and hardware	
Package 3I Battery compartment cover with rubber seal and hardware	\$440
Package 3J	\$60
Rubber seal for electronics and rubber seal for battery compartment cover	
Package 3K	\$910
Display covers and cover plate for connection CBL & H/W	
Package 3L	\$800

Switch w/locking Ring	
Package 3M	\$1040
Complete Calibration button assembly	
Complete Calibration button assembly and bolts for DBM connector	
Package 3N	\$230
Grip Tape sold per meter	

5.3 EXPLODED DRAWING OF SAW XX A / II



SAW 10A Series II		SAW 10A II	SAW 10A II	Qty	Package
Part No. Description		Aluminum	Steel	perscale	code
SAW 10 A II BASEBOARD Com	ponents	19.00			
PT525517 Aluminum Base Bo		*		1	2a
PT523027 Steel Base Board, I			*	1	2aa
PT525518 Aluminum Base Bo		*		1	2a
PT523028 Steel Base Board, I			*	1	2aa
PT521869 Upper Ball Socket		*		4	2a/2aa
PT303814 Ball bearing RB10/	Ш	•	*	4	2a/2aa
PT521868 Lower Ball Socket		*		4	2a
PT521871 Lower Ball Socket			*	4	2aa
PT522301 Shim Ring 1.0mm		*	*	4	2a/2aa
PT521993 Shim Ring 0.5mm		*	*	4	2a/2aa
PT302586 Wavy Washer		*	*	4	2a/2aa
PT522005 Locking Ring		*	*	4	2a/2aa
		*	*	4	2a/2aa
PT302300 Spring Washer	narmatarl	*		1	3n
PT100268 Safety Walk Tape (*	1	2b
PT510873 Wired 10A pad w/c	nandie			8	2aa
PT301773 Screw M6x10	-4-				2.00
SAW 10A II Handle Componer		*	*	2	1b
PT320711 Flat Head Screw M	8X4U		*	6	1b
PT302302 Spring Washer					1b
PT302110 Hexagon Nut M8				2	
PT302148 Self Fitting Nut M8		*		2	1b
PT307408 NiMh Battery			-	6	
PT304078 Spring Accu Shelf S	crew	•		1	31
PT302652 O-ring17x2.0				1	3i/3m
PT313931 Accu Shelf Screw		-		1	3i
PT304743 Bolt for DBM		*		2	3m
PT528042 Connector, DBM, H			•	1	
PT523400 Switch On/Off Han		*	*	1	3L
PT309164 Locking Ring Switch		*	*	1	3L
PT523668 Housing for Electro		*	*	1	
PT510715 Housing for Electro	nics (long)	*	*	1	
PT513144 Sealing Screw		*	*	1	1b
PT528402 Calibration Switch		*	*	1	3m
PT309099 Locking Ring Calibr	ation Button	*	*	1	3m
PT309098 Cover Calibration E	Button	*	*	1	3m
PT523403 Connection Cable		*	*	1	
PT510774 CPU Board		*	*	1	3g
PT510776 Display Board		*	*	1	3e
610191 NiMh Battery Char	ger Controller	*	*	1	3f
PT510739 Electronics Cover P	late	*	*	1	3h
PT513322 Sealing Screw		*		1	3h
PT510757 Insert "kg"			*	1	3h/3k
PT309104 Cover for Display		*	*	1	3h/3k
PT301700 Flat Head Screw M	3x6	•	*	6	3h/3k
PT301740 Flat Head Screw M-		*	*	14	3h
PT301664 Grooved Drive Stud			*	4	3h
PT302620 Cover Plate Rubbe	-	*		1	3h/3j
PT525197 Cover Plate for Cor		•	*	1	3k
PT100268 Safety Walk Tape (*		1	3n
PT510873 Wired 10A pad w/o		*	*	1	2b
PT301773 Screw M6x10				8	2aa

5.2 SPARE PARTS LIST SAW SERIES

Item	R/3 Number	Description	SAW 1A/II	SAW 2A/II	SAW 6A/II	SAW 10A/II Aluminum	SAW 10A/II Steel	SAW 10C/II Aluminum	SAW 10C/II Steel	SAW 15C/II
1a	52551 7	Aluminum Base Board, right	-	-	-	•	-	-	-	-
1b	52302 7	Steel base board, right	•	•	•	-	•		-	-
1c	52547 1	Aluminum Base Board, right	-	-	-	-	-	•	-	•
1d	52377 8	Steel base board, right	-	-	-	-	-	-	•	-
2a	52551 8	Aluminum Base Board, left	-	-	-	•	-	•	-	•
2b	52302 8	Steel base board, left	•	•	•	-	•	-	•	-
2c	52547 2	Aluminum Base Board, left	-	-	-	-	-	•	-	•
2d	52377 9	Steel base board, left	-	-	-	-	-	-	•	-
3	52186 9	Upper ball socket	•	•	•	•	•	•	•	•
4	30381 4	Ball	•	•	•	•	•	•	•	•
5a	52186 8	Lower ball socket	-	-	-	•	-	-	-	-
5b	52187 1	Lower ball socket	•	•	•	-	•	-	-	-
5c	30909 3	Lower ball socket	-	-	-	-	-	•	-	•
5d	52186 7	Lower ball socket	-	-	-	-	-	-	٠	-
6	52199 3	Shim ring	•	•	•	•	•	-		-
7	30258 6	Wavy washer	•	•	•	•	•	-	-	-
8	52230 1	Shim ring	•	•	•	•	•	-	-	-
9	31945 1	Locking ring	•	•	•	•	•	•	•	•
10	30230 0	Spring washer	•	•	•	•	•	•	•	•
11	32071 1	Flat Head Screw M8x40	•	•	•	•	•	•	•	•
12	30230 2	Spring washer	•	•	•	•	•	•	•	•

Inclusions:

The following items are included in the services scope as per this proposal

- Prices as listed above are valid until 31 June 2017.
- Prices include duties, customs or local taxes.

Exclusions:

The following items are excluded from the services scope as per this proposal:

- System Integration. This quote does not include software integration into existing RMS systems.
- Prices do not include freight.

Payment Milestones:

100% upon invoice receipt.			
Date Issued: 29/11/2016 Quote Valid until: 30/06/2017 Quote Ref: 101			
This quotation is accepted by: Name: _			;
Title:	;	Date: / /	
PO Ref:		Signature:	_

File Size: 1,499,136

File Type:

Microsoft Word Document

GUID:

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Item Date:

Tuesday, November 29, 2016 at 9:56:27 AM Australian Eastern Daylight Time

MD5 Digest:

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Shannon Entropy:

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Property Source:

E18-0281-Ember-GS0005-00-00

Application Version:

786,432

AppName:

Microsoft Office Word

Author:

Samer

Char Count:

3,497

Char Count with Spaces:

4,102

CLSID:

{00020906-0000-0000-C000-000000000046}

Comment Authors:

Unknown

Company:

Contains Comments:

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Contains Hidden Text:

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Contains Track Changes:

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Contains White Text:

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Content-Disposition:

attachment; filename="Quote 101- Portable Weigh Scales Parts.doc"

Content-Transfer-Encoding:

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application/msword; name="Quote 101- Portable Weigh Scales Parts.doc"

Created:

Tuesday, November 29, 2016 at 9:55:00 AM Australian Eastern Daylight Time

DocSecurity:

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2 hours, 37 minutes, 0 seconds

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Hyperlinks Changed:

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29

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Quote 101- Portable Weigh Scales Parts.doc

Page Count:

10

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8

Revision Number:

2

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Template:

Normal

Word Count:

613



From: novationengineering <novationengineering@bigpond.com>

To: ducktape69@gmail.com

Date: Mon, 28 Nov 2016 19:57:48 +1100

Attachments:

Unnamed Attachment (43 bytes); Unnamed Attachment (0 bytes); Unnamed Attachment (7.96 kB); Unnamed Attachment (1.47 kB); SAW 10A I V1.pdf (293.84 kB); SAW 10A III V1.pdf (550.36 kB); SAW 10C 15C III V1.pdf (601.3 kB); image001.jpg (0 bytes); image002.gif (0 bytes); image003.jpg (0 bytes)

Sent from my Samsung Galaxy smartphone.

Volume 18 306 ----- Original message -----

From: Fernando Garza <fernando.garza@irdinc.com>

Date: 25/11/2016 8:47 AM (GMT+10:00)

To: novationengineering <novationengineering@bigpond.com>

Cc: Rish Malhotra < Rish. Malhotra@irdinc.com>

Subject: Parts Lists

Hi Steve,

As promised.

Enclosed you will find 3 Parts Lists which enclose all the hardware we are able to supply

SAW 10A Series 1 (please disregard the previous one you have)

SAW 10A Series 3

SAW 10C and 15C Series 3

I will send you Lists of the Series 2 and 2.5 soon.

Sincerely,

Fernando Garza

International Product Manager

IRD (International Road Dynamics Inc.)

702-43rd Street, Saskatoon, Sask. Canada S7K 3T9

Phone: 306-653-9719

Fax: 306-242-5599

E-Mail: fernando.garza@irdinc.com

Web: www.irdinc.com





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Hi Steve,
As promised.
Enclosed you will find 3 Parts Lists which enclose all the hardware we are able to supply
1)
SAW 10A Series 1 (please disregard the previous one you have) 2)
SAW 10A Series 3
3)
SAW 10C and 15C Series 3
I will send you Lists of the Series 2 and 2.5 soon.
Sincerely,
Fornando Carzo
Fernando Garza International Product Manager
IRD (International Road Dynamics Inc.)
702-43rd Street, Saskatoon, Sask. Canada S7K 3T9
Phone: 306-653-9719
Fax: 306-242-5599
E-Mail:
fernando.garza@irdinc.com
Web:
www.irdinc.com

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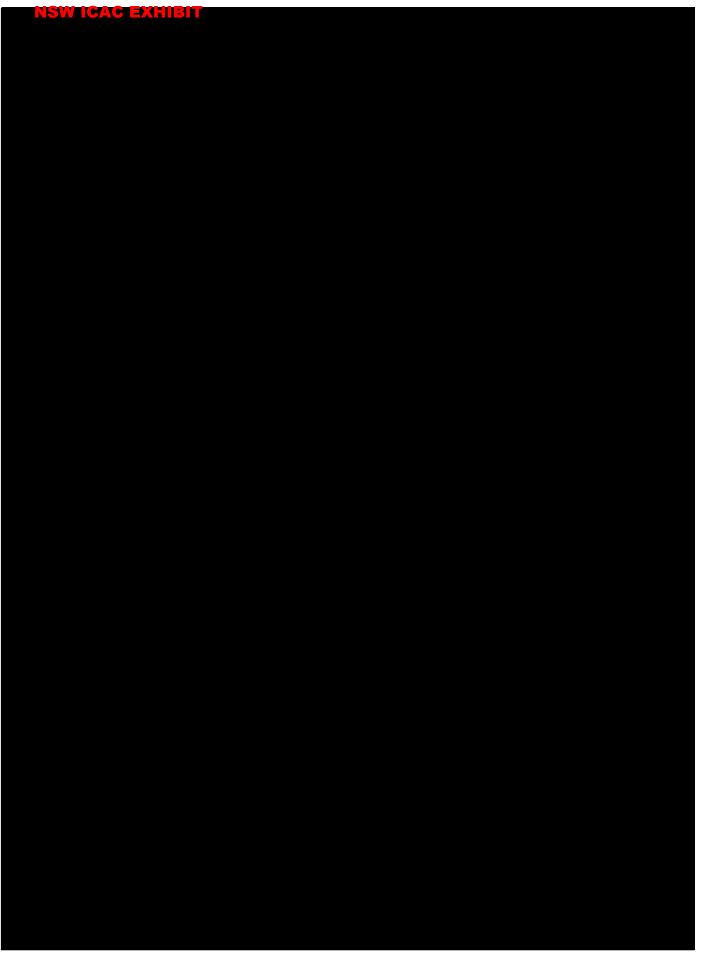
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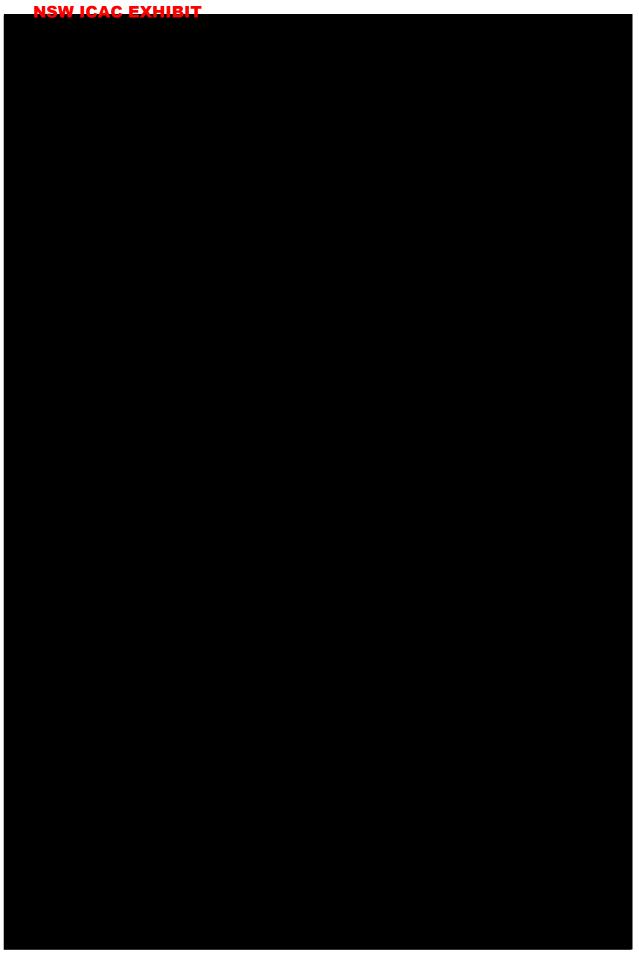
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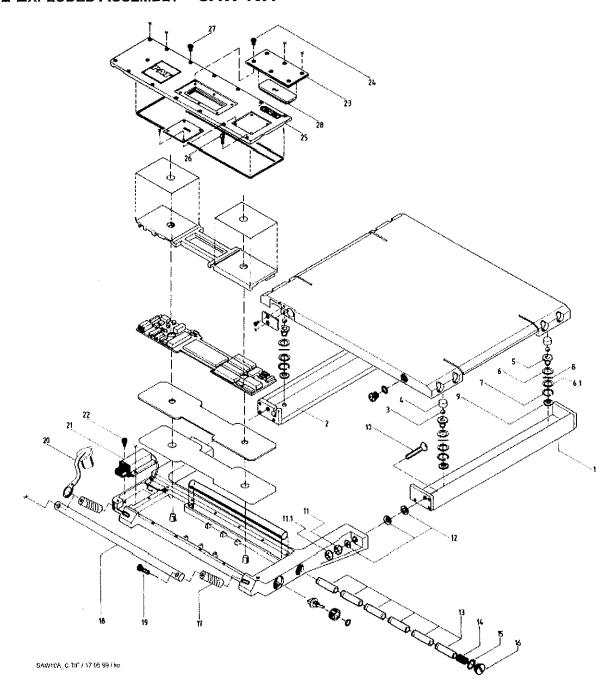
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TECHNOLOGY PAGE 4-2

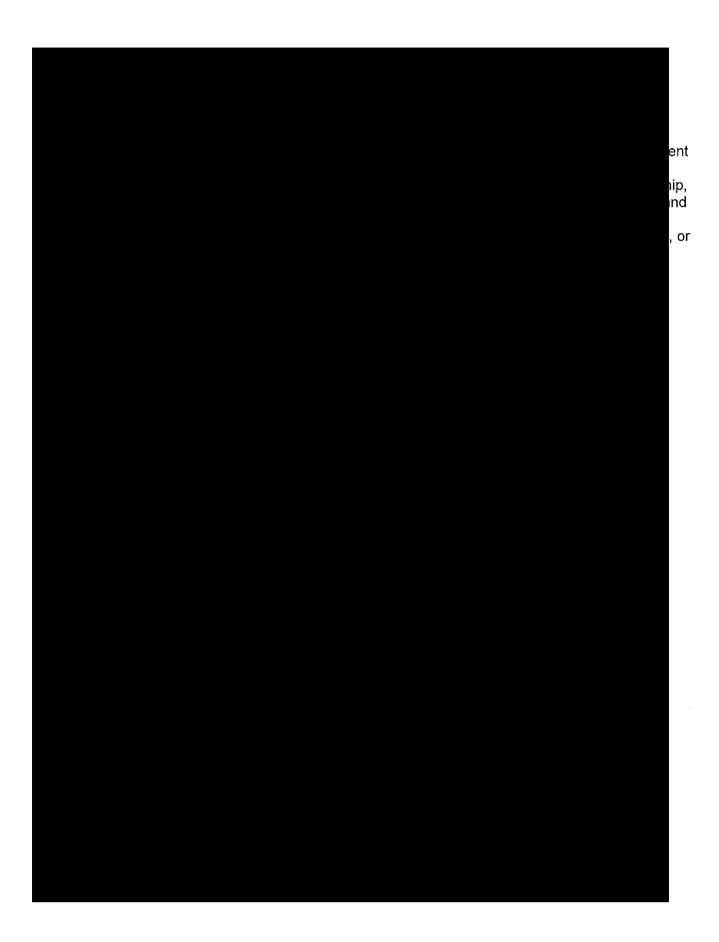
4.2 EXPLODED ASSEMBLY - SAW 10A



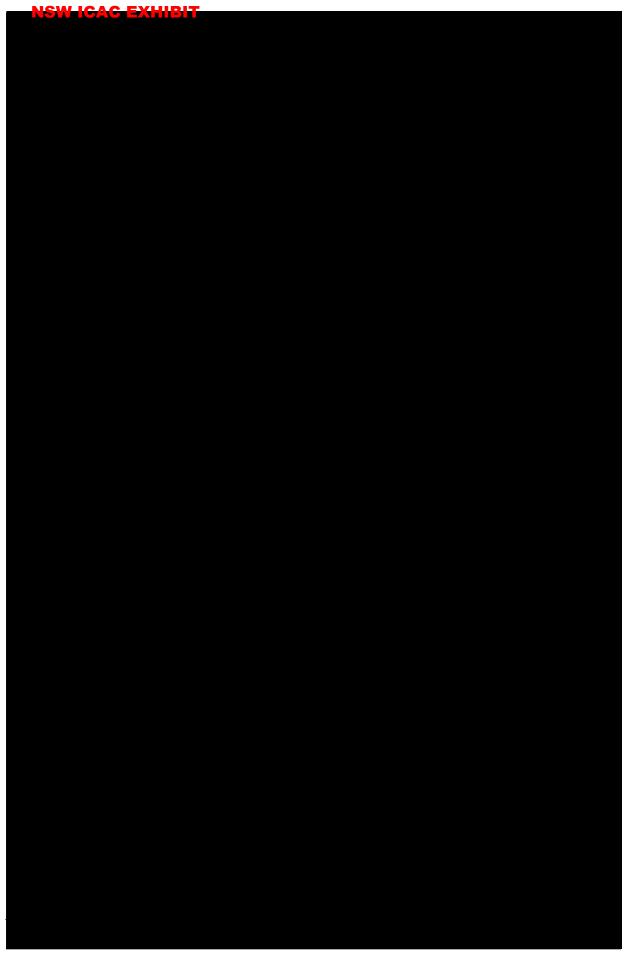
SAW SERIES I MAINTENANCE MANUAL, TECHNOLOGY PAGE 4-3

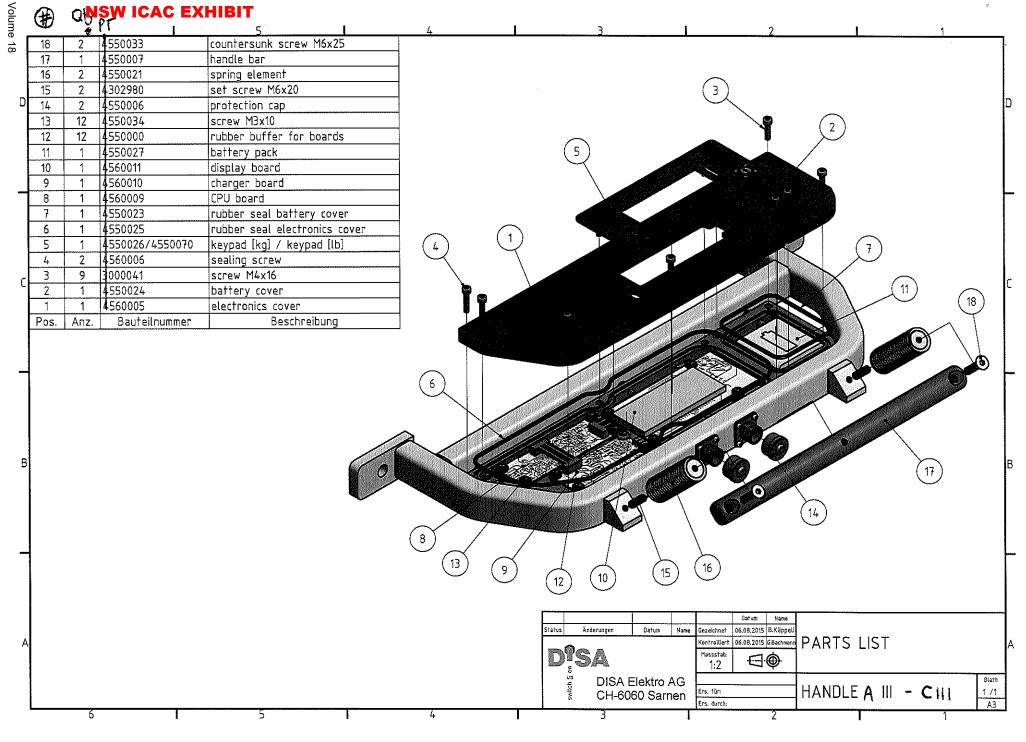
4.3 SPARE PARTS LIST - 10A

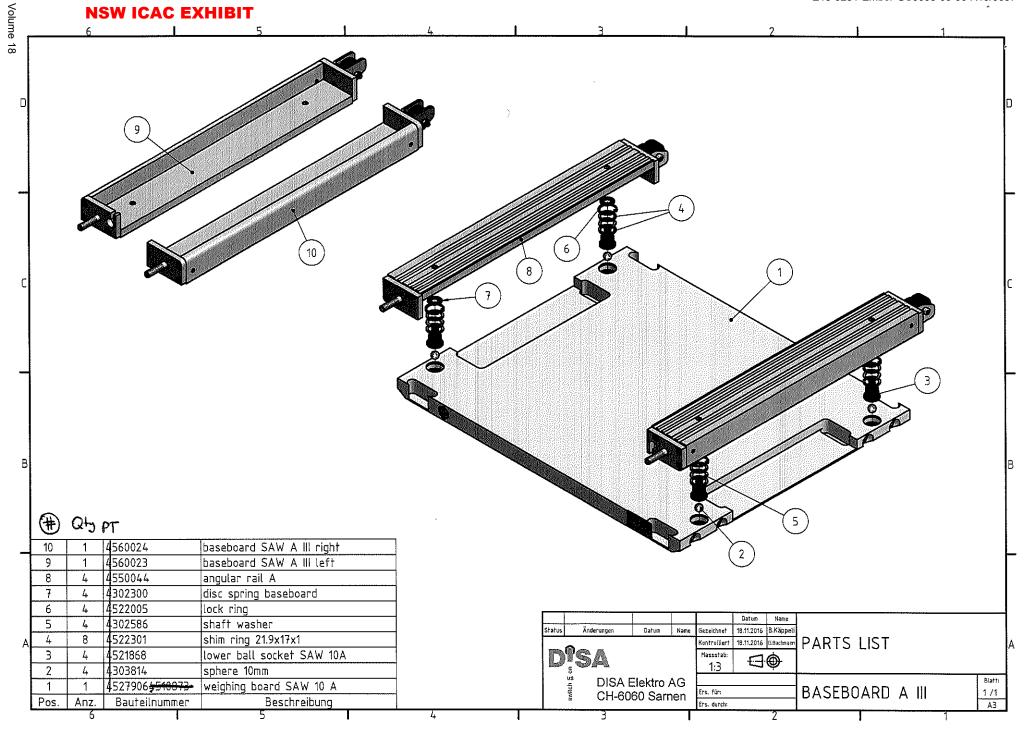
No.	Description	Dorf No	Bas	seboards
		Part No.	10A Steel	10A Aluminum
1	Steel Base Board, Right	PT510890	•	
1	Aluminum Base Board, Right	PT525517	-	•
2	Steel Gliding Skid, Left	PT510891	•	-
2	Aluminum Gliding Skid, Left	PT525518	-	•
3	Ball	PT303814	•	-
4	Upper Ball Socket	PT521869	•	•
5	Lower Ball Socket	PT521871	•	-
5	Lower Ball Socket	PT521868	_	•
6	Shim Ring 1.0mm	PT522301	•	•
6.1	Shim Ring 0.5mm	PT521993	•	•
7	Locking Ring	PT319451	•	•
8	Wavy Washer	PT302586	•	•
9	Spring Washer	PT302300	•	•
10	Flat Head Screw M8x40	PT301433	•	•
11	Hexagon Nut M8	PT302110	•	•
11.1	Hexagon Nut M8	PT302145	•	•
12	Spring	PT302302	•	•
13	NiCd Battery	PT307409	•	•
14	Pressure Spring	PT304078	•	•
15	O-Ring 17x2.0	PT302652	•	•
16	Battery Shelf Screw	PT313931	•	•
17	Spring	PT303298?	•	•
18	Plastic Handle	PT510835	•	•
19	Flat Head Screw M6x16	PT301778	•	•
20	Socket Protection Cap	PT302820	•	•
21	Sockey	PT305048	•	•
22	Pan Head Screw M3x14	PT301941?	•	•
23	Plastic Cover for Display	PT313924	•	•
24	Flat Head Screw M3x6	PT301700	•	•
25	Cover	PT510842	•	•
26	Sealing Screw	PT513322	•	•
27	Flat Head Screw M4x12	PT301741	•	•
28	Plastic Cover for Display	PT313925	•	•

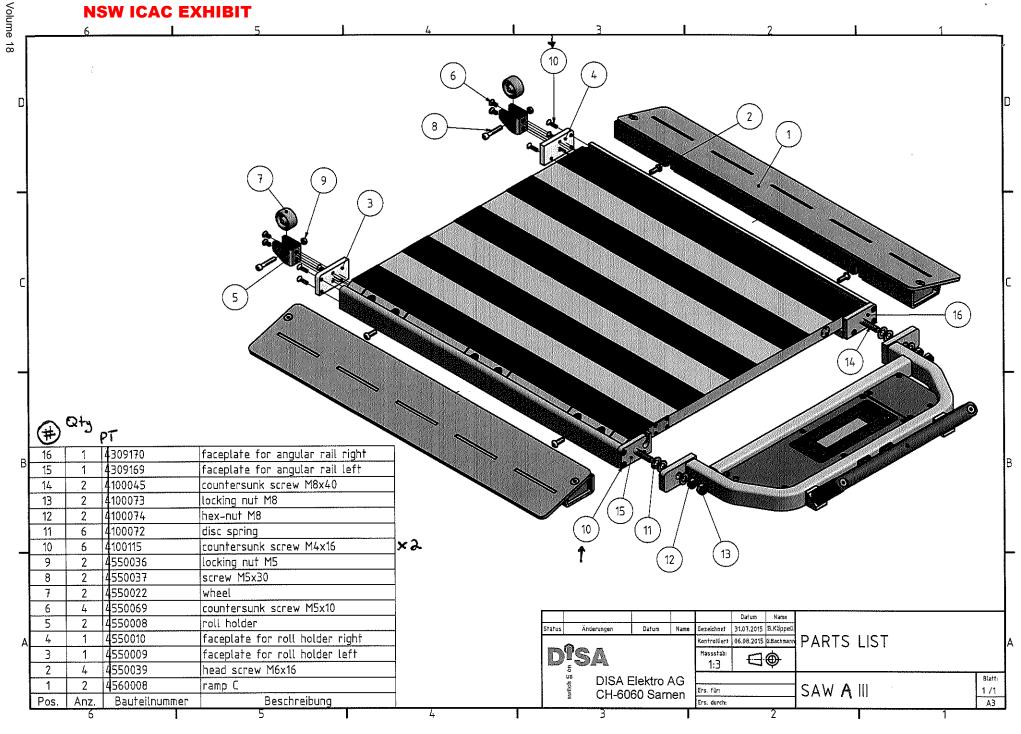


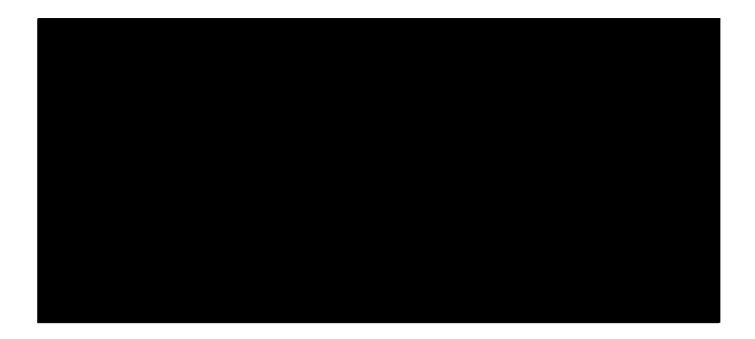
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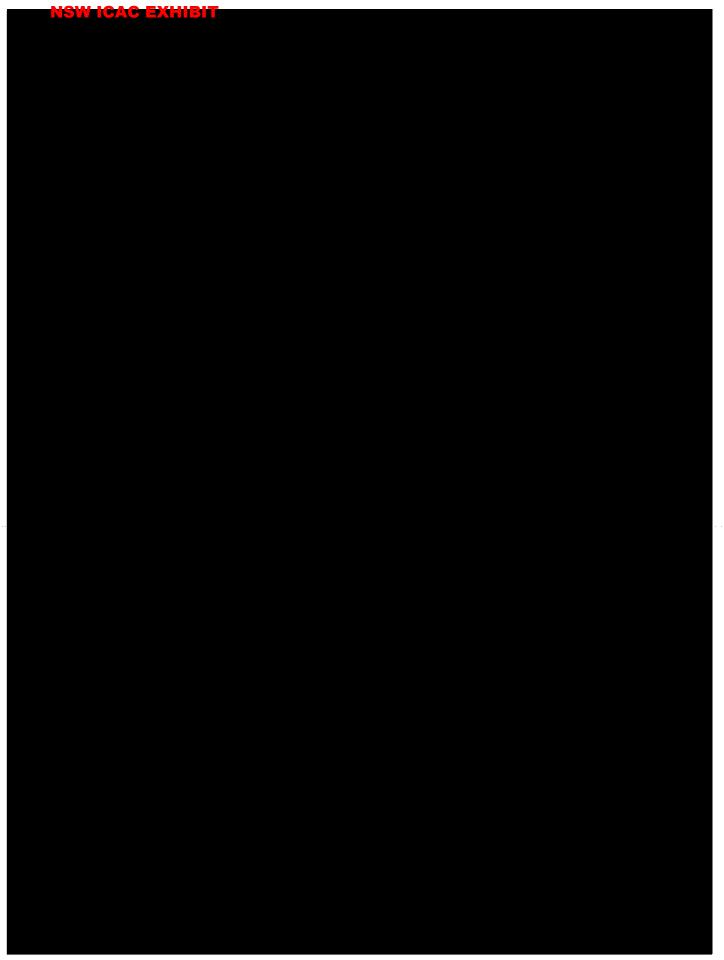


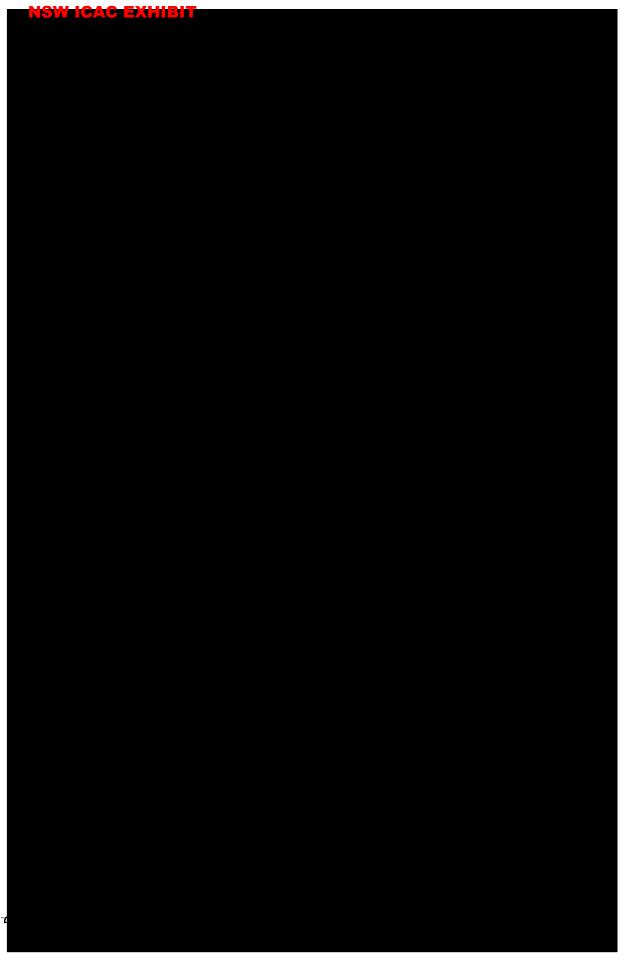


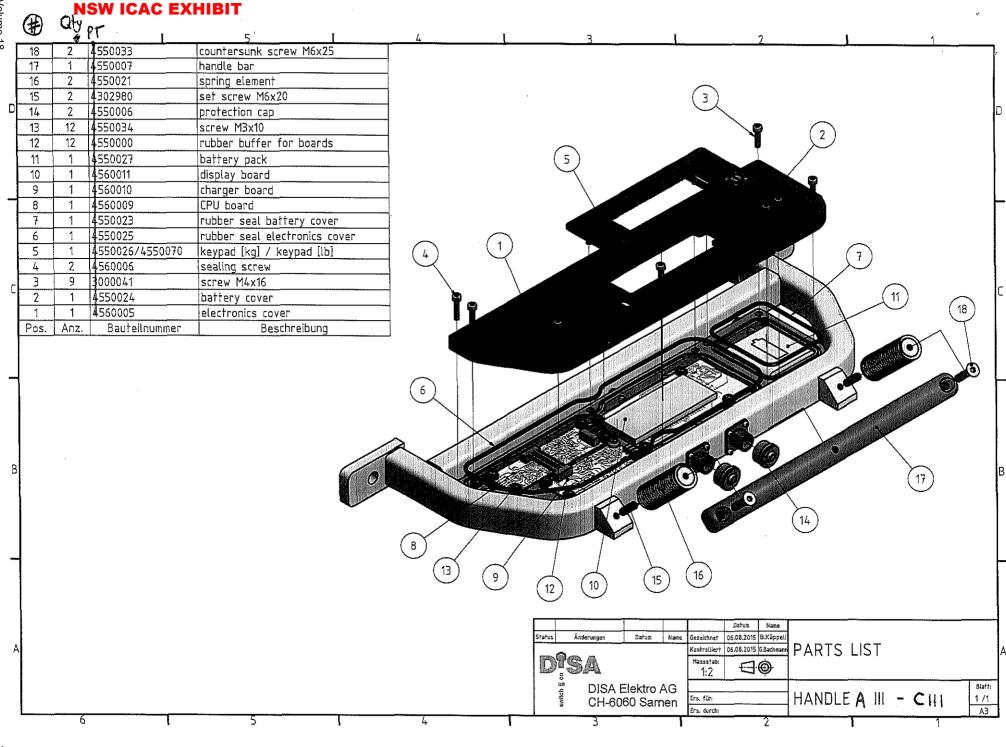
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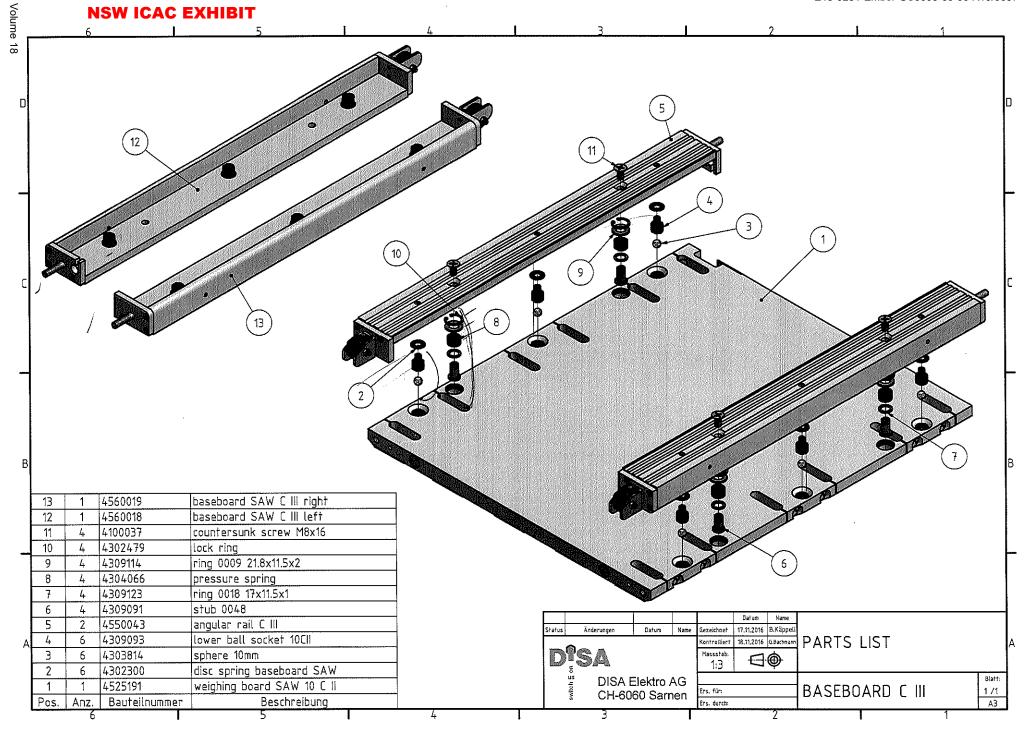
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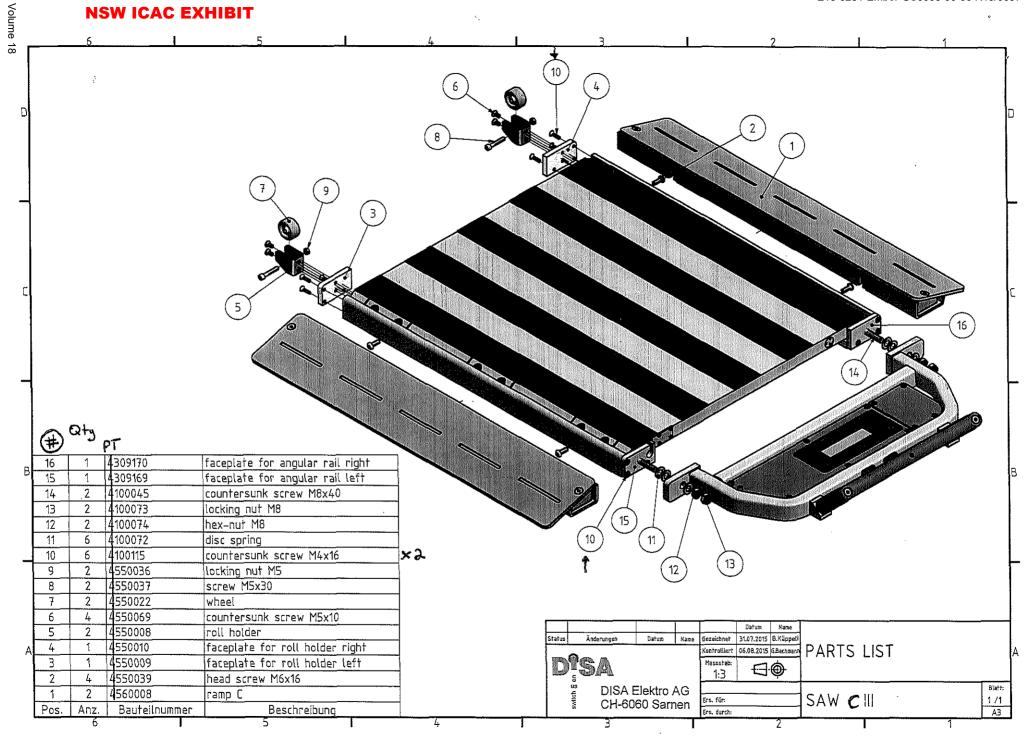


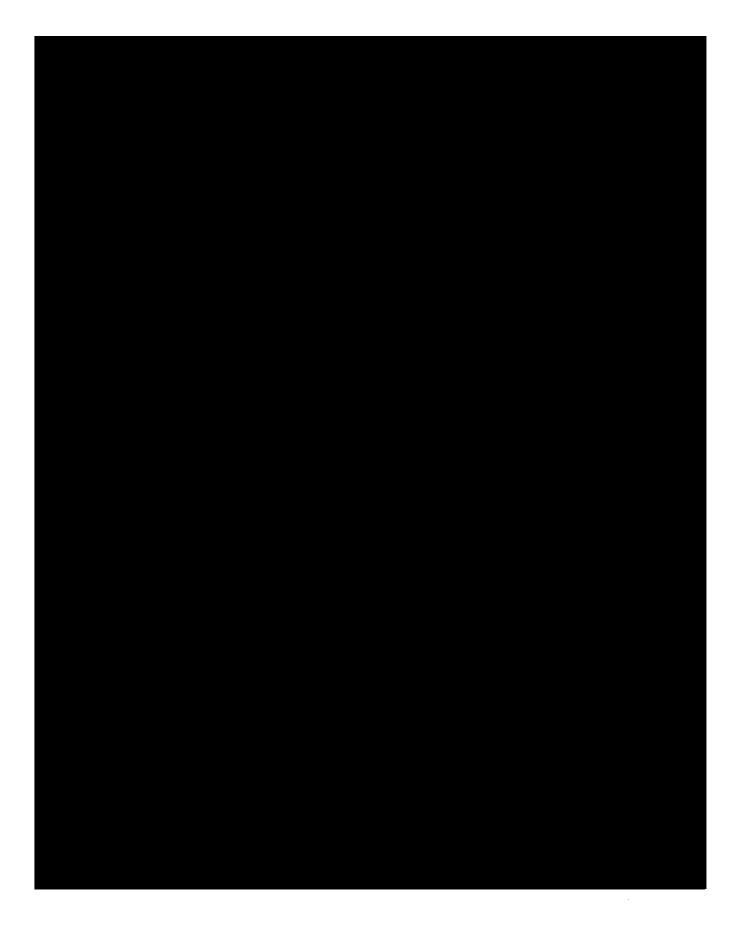












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