#### **STOP ENERGY THEFT – GET THE BASICS RIGHT**



SARPA CONVENTION JOHANNESBURG JULY 2008



## **PRESENTATION OVERVIEW**

- Introduction
- Situational analysis
- Implications
- Definition of a seal
- •Case study
- •Reasons for lack of sealing
- •Progress?
- •Summary of NRS 096
- •Putting the solution spend into perspective
- •Departure point



•Conclusion





## **INTRODUCTION**

•Meter equipment tampering and associated energy theft, is a major, widespread problem

•Supply authorities experience losses relating to tampering ranging from 1.25% to 58% of total revenue

- •As the cost of energy increases, incidents of tampering & theft WILL increase
- •Energy thieves and meter equipment tampering MUST be stopped or at least deterred
  - •Why are so few doing anything proactive about it?
  - •Why is there such a reluctance to get the basics in place ...?





## **SITUATIONAL ANALYSIS**

- 1. There are no non-criminal reasons for meter equipment tampering
- 2. Someone wants to consume energy but doesn't want to pay his share
- 3. If he gets away with it, the devious behaviour will be repeated
- 4. Having no deterrent mechanisms or generic ones, will yield no benefit
- 5. This refers to no seals or lead seals and ferules
- 6. Anybody can manipulate, find, buy or borrow these accessories
- 7. Accepting these as a form of adequate sealing, is an oversight of the soon to be published NRS 096
- 8. The supply authority has no reliable recourse for action
- 9. The criminal is victorious and the crime cycle is perpetuated
- 10. Simply put a uniquely numbered seal is a physical, visual control, a warning mechanism and a deterrent







## IMPLICATIONS OF THIS PERPETUATED ENERGY THEFT

•Plunged into a recent energy crisis, it may not be so far fetched to attribute some portion of the crisis to the ineffective manner in which energy theft, wasteful usage or non-payment has been handled by policy makers & supply authorities

•Reference to an earlier paper by Chris Yelland, managing editor of EE Publishers.

•'...the impact of lost revenue of the electricity distribution industry due to theft and unpaid electricity of about 12 934 Gwh per annum, is about R5.34 billion per annum.'

•This is more than the cost of building a new power station

•Non-technical losses are equivalent to the Eskom target saving of 3Gw.

•Even when the generation capacity problem is solved, the financial shortfall created by this theft cycle, will not miraculously go away

•Do these frightful statistics shake us up?

•Should meter sealing with appropriate seals deserve a slightly more elevated rank of importance in the strategy of municipal managers and industry leaders?







## **BRAIN TEASER**

## QUESTION: WHAT IS THIS ...?



#### **MULTIPLE CHOICE**

Answer (A): A plastic accessory which costs more than lead seals & ferules

Answer (B): A *thing* that brings a whole host of control responsibilities

Answer (C): A uniquely numbered tamper indicative seal

Answer (D): A simple, cost effective way to help deter tampering & recover revenue

Answer (E): All of the above





## **DEFINITION OF A SEAL**

- A security seal is a passive, one time locking device, with a unique number / identification / bar-code that is used to provide a reliable indication of tampering (unauthorized removal or attempted removal) or entry.
- By virtue of its construction, the security seal provides limited resistance to an intentional, pre-meditated attempt to open it and gain access to the meter or metering equipment that is sealed with the seal.
- Quality security seals are not able to be manipulated to construct a secondary functional seal from the tampered component parts, without clear visual evidence thereof.
- Seals require inspection to indicate whether tampering has occurred or entry has been attempted.





# **DANGER** no trespassing

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#### DEFINITIONS FROM USERS OF UNIQUELY NUMBERED SEALS:

'A seal is a watch dog which triggers secondary actions'
'A seal is a visible, unmistakable warning'
'The seal draws the line in the sand'
'The seal is the 'finger-point' to say WHO DID IT'
'A seal is a control mechanism that has to be managed'
'A seal may not stop the entire problem, but it's the vital step to containing the problem'

'The seal says **STOP**, don't try to get in there. It is irrefutable proof that someone is acting fraudulently and which helps us to prosecute and recover our revenue'

'The seal is like a mouse trap, if it is breached, we have proof and can take action'

'The seal is a psychological deterrent'



### THE CASE STUDY

•19 utilities & supply authorities in Southern, Eastern & Central Africa (customers of ICS and non customers)

- •Conducted over a period of 4 months
- •Responses as at 16 June 2008

•Questions essentially cover: size of the customer base, classification of customer base, annual consumption, annual revenue, split between conventional and prepaid meters, the prevalence of tampering and energy theft, % of energy loss attributed to meter tampering & illegal connections, the % this constitutes of annual revenue, the monetary value of the NTL, who is likely to engage in tampering, whether there is a dedicated revenue protection programme, whether a formal sealing policy exists, what method of sealing is used, what are the advantages & disadvantages of this, whether legislation addresses energy theft with adequate severity, are seal numbers recorded in a database, what is the quality of the database, would a seal tracking system be of benefit, what is the extent of community training & awareness, familiarity with sealing options, their benefits & disadvantages, criteria influencing the purchasing of seals

- •Quantifiable 'before' & 'after' scenario difficult to document
- •Yielded some interesting feedback



## **FINDINGS**

- 100 % experience meter equipment tampering and energy theft The reported percentage of annual revenue loss due to energy theft ranges between 1.25% and 58 % of total revenue
- 100 % reported that consumers are most likely to engage in fraudulent activities, in addition
- 16 % reported that their own staff are most likely to engage in fraudulent activities
- 16 % reported that contractors are also likely to engage in fraudulent activities
- 84 % of utilities & supply authorities have dedicated Revenue Protection programmes
- 37 % have formal sealing policies in place to control the use of uniquely numbered seals
- 91% of users of lead seals & ferules confirm the ineffectiveness of this sealing method
- 42 % are currently utilizing plastic, uniquely numbered seals
- 100 % of users of uniquely numbered seals feel that tampering is deterred more successfully than when using ferules, lead seals or no seals
- 58 % are using uniquely numbered seals (plastic, metal or self adhesive seals)
- 29 % of users using uniquely numbered seals, have no or inadequate databases in which unique seal numbers and associated information is recorded
- 100 % feel a seal tracking system would be of benefit (either a simple paper based system or web based)
- 61 % feel the current legislation is inadequate in addressing the severity of energy theft
- 53 % place an emphasis on community awareness training and education



## **CONCLUSIONS**

- 1. The primary conclusion one draws from this research is that supply authorities who utilize lead seals or generic ferules are more vulnerable to non-technical losses than those supply authorities who have stringent sealing policies in place, and who use plastic, uniquely numbered seals.
- 2. The secondary conclusion is that strong leadership and focus in management, underpins the success of any revenue protection endeavour.
- 3. Thirdly, community awareness training enhances buy-in and cooperation in terms of energy theft prevention and resource conservation
- 4. Fourthly, the old adage of 'what you can't measure, you can't manage' was echoed. If your data is unavailable or inaccurate, this has to be a starting point in any attempt to contain non-technical revenue loss.



### REASONS CITED FOR THE LACK OF METER SEALING WITH APPROPRIATE SEALS & SEAL CONTROL

- 1. No dedicated revenue protection initiative
- 2. Ignorant to the problems associated with old ineffective methods of sealing
- 3. Ignorant to the steps that can be implemented to ensure better management control
- 4. No budget allocated for quality, uniquely numbered seals
- 5. Apathy in implementation of the necessary controls
- Sealing ranks low in importance requiring management focus
- 7. Apathy in people management discipline
- 8. Lack of ownership, *who's problem is it anyway...?*





### **HAS THERE BEEN ANY PROGRESS?**

•SARPA Convention, July 2006, panel discussion: What are the benefits of sealing and what are the preferred options?

•Confirmation, need for uniquely numbered seals (both conventional and prepayment)

•Preference for plastic or paper uniquely numbered seals

- •Need expressed for a working group to establish a sealing standard
- •Request for the development of a system to help control uniquely numbered seals

•Subsequently NRS 096: Sealing standard for electricity metering equipment was developed – in finals stages of editing

•System request: no industry norm but pursued in our private capacity to develop a tool which will benefit the industry



So the answer is yes!



## A SUMMARY OF NRS 096

•Sets out the requirements for sealing of electricity meters & ancillary metering equipment

- •Provides guidelines on the roles & responsibilities related to the management of seals
  - •It emphasizes the need to establish strict sealing standards
  - •It details the steps in implementing an effective sealing policy
- •It explores various sealing options; their advantages & disadvantages

 It proposes a colour code to be used to identify various tasks performed on metering equipment or to signify the status of that particular meter





## **THE OVERSIGHT**

- 1. NRS 096 is certainly a positive and much needed development, but it is not mandatory
- 2. Non-uniquely numbered ferules are still viewed as 'acceptable'
- 3. Erroneous perception that lead seals and / or ferules are uniquely numbered
- 4. Definition of unique: one of its kind
- 5. Crimping tool or pliers may have uniquely marked jaws, but as soon as more than one application is executed using these tools, the number on the seal, is no longer a singular, reserved unique number which serves to differentiate one sealing activity from another and which subsequently obscures the certainty of who applied it or who breached it
- 6. Every seal looks the same in that application chain no recourse for action
- 7. When pliers fall into the wrong hands, the audit trail is equally nullified



 Lead seals and ferules should be ruled out, as they are outdated, inadequate and a waste of time, money and resource to apply them



#### PUTTING THE ESTIMATED SOLUTION SPEND INTO PERSPECTIVE

Name	Total Annual Revenue	Size of customer base	The tamp prev	eft & ering alent	% Energy loss due to	Annual value	Cost of Seals	Potential Recovery	Actual % Recovery on losses
		Total	Yes	No	theft and tampering	011035	3.50	70%	
ENTITY 1	R 1,320,000,000	507,950	1		4.8%	R 63,360,000	R 3,555,650	R 41,863,045	66.07%
ENTITY 6	R 10,000,000	1,500	1		5%	R 500,000	R 10,500	R 342,650	68.53%
ENTITY 9	R 91,000,000	16,884	1		2.31%	R 2,102,100	R 118,188	R 1,388,738	66.06%
ENTITY 13	R 4,000,000,000	314,893	1		2.5%	R 100,000,000	R 2,204,251	R 68,457,024	68.46%
ENTITY 19	R 2,433,500,000	683,000	1		58%	R 1,411,430,00 0	R 4,781,000	R 984,654,300	69.76%

19

100%

Many acknowledge the existence & impact of the problem, but struggle to quantify it and resource & capability are real challenges.

Outsource to a consultancy who specialise in revenue improvement & revenue turnaround strategies



## **DEPARTURE POINT**

#### ACKNOWLEDGE REALITY & MAGNITUDE OF THE PROBLEM: TAKE OWNERSHIP!!!!

- Establish a Revenue Protection Programme (Reference NRS 055)
- Establish a Sealing Policy (Reference NRS 096) be alerted to the oversight!

#### TOOL KIT

- 1. Quantify the risk & identify priority areas for seal implementation roll-out
- 2. Set achievable objectives
- 3. Allocate time frame for roll-out
- 4. Choose appropriate seal (risk, conditions, functionality, industry preference)
- 5. Obtain specifications from supplier
- 6. Standardise seals to be used
- 7. Agree on name, colour /s, numbering format (see paper for more details)
- 8. Establish quantity requirements
- 9. Procurement process (initial / ongoing)
- 10. User training
- 11. Customer awareness & responsibility transfer
- 12. Web based seal management system / SILO™ (Seals In & Log Out)
- 13. Manage the strategy internally or appoint suitable consultancy
- 14. Measure the results over a pre-determined time frame
- 15. Review benefits of sealing strategy over period of time



### **CONCLUSION**

No supply authority is immune to the prevalence of meter tampering & subsequent energy theft

There is a very definite correlation between entities who take a firm stand to reduce their losses by getting the basics right and following four steps:

- Management commitment to addressing the problem adopt a zero tolerance policy
- 2. Implementing a dedicated revenue protection programme with measurable objectives
- 3. Replacing archaic lead and ferule sealing methods with plastic, tamper indicative, uniquely numbered seals
- 4. A dedication to community awareness training and education



Draw the line...implement that little watchdog and start taking small steps to curbing this debilitating plague called *undetected energy theft* 







# THANK YOU FOR YOUR ATTENTION & INTEREST

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