



NULCA NEWS

Volume 1, Issue 2

November 2005

From the President



Thanks to all Members that have renewed their subscriptions, and welcome to the new Members.

It is an exciting time for us all as we finalise the standards for the association.

Once we have all the comments and suggestions back, these shall be addressed and the final draft given to our solicitor to review.

Where to from there, you may ask? Once again I shall be knocking on the doors of Dial Before You Dig, Telstra, Water Authorities, Gas, WorkSafe and asking for their support for our Members.

The next stage will be to approach training authorities, for quotations to design a training program which incorporates the standards.

Thank you for your continued support.

Shirlee Cook

President ■

NULCA Annual General Meeting 2005



President Shirlee Cook and Vice-President John Croxson

The 2005 Annual General Meeting of NULCA was held at the City Park Hotel in South Melbourne on Friday 29 July 2005. It was pleasing to see a good roll-up of Members in attendance



from around Australia, which led to lively discussion and debate. A further eighteen Members lodged apologies, and it is hoped these people can attend next year.

Vice-President Shirlee Cook (Environmental Location Systems) officiated over proceedings in the absence of President Mick Winterton who was unable to attend. Shirlee advised that the current President Mick Winterton was unable to attend the AGM and passed on his apologies and acknowledged the effort he made in the early stages of establishing and promoting NULCA. In December 2004 Mick had a career and lifestyle change which meant that he was no longer able to fulfill his role as President at this time.

Shirlee Cook delivered her Vice-President's Report, and reviewed the previous year's activities. She recalled the first meeting in April of the previous year, when over thirty people got together to discuss the idea of an association for Locators. At that meeting concern was expressed about: the lack of support for the locating industry; inadequate training; absence of standards and competencies; and the difficulties in obtaining affordable professional indemnity insurance.

She advised that considerable advancement had been made in the past year including the appointment of a part-time Secretariat to assist the Committee of Management undertake

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Matt Keppich-Arnold from Australian Underground Services (left) and Mark Edwards from Underground Locating Services

their work on behalf of Members. Shirlee then outlined some of the significant issues she believes NULCA needs to deal with in the year ahead: NULCA Member competency standards; preferred professional indemnity insurance rates for NULCA Member Locators; profession specific listing in the Yellow Pages; recognition and higher levels of communication and liaison with Utilities; and increased educational programs by manufacturers.

Election of Office Bearers

An election of Office Bearers for the Year 2005/2006 was held as all positions were declared vacant. The following Committee of Management was elected:

President	Shirlee Cook (Environmental Location Systems)
Vice-President	John Croxson (J B Hunter Technology)
Secretary	Stephen McConnell (Scantek Pipe & Cable Locating)
Treasurer	Wendy Murray (Radio-tech)
Committee Member	Glen Blackmore (Tron Civil Engineering)
Committee Member	Jeff Finnegan (Mactek)

Subsequent to the AGM, Jeff Finnegan left Mactek, and therefore is ineligible to be a Committee Member at present. The Committee of Management will continue in its remaining structure at the present time without seconding a replacement Committee Member.

Professional Indemnity Insurance



David Federici from AON Insurance

Following the AGM, a presentation was made by David Federici of AON Insurance, followed by a constructive Open Forum session where Members had a chance to raise issues of interest or concern to them.

In terms of professional indemnity insurance for NULCA Members, David Federici advised that there are reasons why other insurers may have found the 'locator' a difficult profession to insure in the past. He explained that by definition,

professional indemnity insurance is cover for financial loss occurring as a result of professional advice/service and where a duty of care hasn't been exercised. He defined public liability insurance as relating to bodily injury/accidents and suggested that a package for NULCA Members would incorporate both public and professional liability insurance, as there is some cross-over.

To progress the development of an insurance package for NULCA, David advised the meeting that AON needs to view NULCA minimum standards/training documents in order to get insurers interested. It was agreed that NULCA would develop a minimum competency standard to demonstrate that locator professional risks have been examined and minimised.

Once an appropriate Standard is in place and submitted to AON, an insurance plan can be developed, available only to NULCA Locator Members, therefore giving non-member locators further reason to join.

Open Forum Session

During the open forum session a range of issues were raised and a set of priorities established as follows:

- 1 Minimum Standards/Procedures to be developed to include:
 - radiodetection
 - vacuum excavation
 - consideration of new or future technology i.e. ground penetration radar
- 2 Membership drive to be undertaken/membership subscriptions to be sent
- 3 Action taken to enable the establishment of a Professional Indemnity insurance plan for Members
- 4 Association insurance to be negotiated on behalf of the Committee of Management
- 5 Groundwork/contacts and other information to be obtained from previous President
- 6 A strategy developed and put in place in relation to utilities/utility associations
- 7 Determine whether Yellow Pages category for locators can be updated on line. ■

NULCA Member Locator Competency Standards

Following the 2005 AGM, quotes were obtained to write a Minimum Competency Standards for NULCA which will provide a consistent guideline for Members across Australia; and the basis for accreditation and recognition from other organisations such as insurance companies, WorkSafe, DBYD, and Utilities.

On reviewing the quotes it was thought that the cost of using an outside consultant to write the Competency Standards document was prohibitive. Consequently, the Committee of Management undertook to re-work some existing Standards prepared by the American NULCA.

The finalised document has now been adopted by the Committee of Management and circulated to all Members for comment. The document will be available on the member only section of the webpage, and will be distributed to a wide range of NULCA stakeholders including Utilities, AON Insurance, WorkCover, Dial Before You Dig.

The Committee of Management are now meeting with training organisations to determine the most effective and economical way to develop and deliver training based on the NULCA Member Locator Competency Standards.

The completion of this phase of the project is a real achievement for our association and one of the first steps we have needed to make to get recognition for member Locators.

Following a Member Survey on Ground Marking, the Committee of Management is also working on a first draft of a NULCA Ground Marking Standards and has initially agreed upon the seven principle colour codes as follows:

Telstra, Communications	White
Electrical	Orange
Gas	Yellow
Portable Water	Blue
Waste Water, Sewer, Storm Water	Green or Black
Oil or Steam	Red
Proposed excavation outline of work	Pink or fluro colours

Tips for Locators

Did you know.....

It is possible to purchase good quality second hand locating equipment through E-Bay. Some Members have purchased old analog equipment out of the USA that has proven to be excellent quality at a very reasonable price. Of course, as always with E-Bay purchases check the credibility of the seller through past buyers listed on the site.

Did you know.....

Mobile broad band can be of great assistance to locators. Based on an inexpensive casual plan per month, locators can dial up on site and have plans emailed to the site, which can enable immediate clearance.

[Please send us your tips or information on new technology for next issue] ■

Lane Cove Flats Collapse

A convincing argument why Councils should employ NULCA Member Locators to provide current location maps of major underground assets.

It is a miracle that there were no fatalities in the Lane Cove flats collapse this month in Sydney.

A total of 47 residents of the units in Sydney's north were evacuated on November 3 when a section of tunnel in the Lane Cove tunnel project collapsed, creating a large hole in front of it. One corner of the three-storey building is perched over the massive hole near the Pacific Highway exit ramp on Longueville Road.

Police commented that engineers are continuing their inspection of the site and that the residents, who were given hotel accommodation by the tunnel operators, are entitled to compensation. The operator, a Thiess John Holland joint venture, said it was covered by insurance.

The exhaust ventilation tunnel that collapsed was originally planned to be built 65 metres away. The air pollution shaft for the Lane Cove Tunnel had been designed to run under a

traffic island near the Pacific Highway, but instead it was built to sit directly under the Kerslake units, a critical report by the local council reveals.

But it says neither the residents nor Lane Cove Council were given clear warning of the changes in April 2004, when the decision was made. As late as last week, an artist's design - displayed in the offices of the tunnel builders, Thiess John Holland - showed the ventilation tunnel in the position of the original plans, where it would not have undermined the block of units.

In a report presented at a council meeting last night, staff said they had no idea the ventilation exhaust shaft had been shifted until it collapsed. But a spokesman for Thiess John Holland insisted community committees, which included council representatives, were told of the changes last year.

The Minister for Roads, Joe Tripodi, said the company had sent letters to residents outlining the year-old changes about six weeks ago. The company said this letter included a map showing the new position of the shaft.

The Roads and Traffic Authority had examined the changes and found they were consistent with planning approval. ■



Results of NULCA Member Benefit Survey

Thank you to Members who participated in the NULCA Member Benefit Survey. The results have been collated, and it is clear the priority benefits that Members want to receive from their association.

The survey invited Members to rate the level of importance of a range of potential member benefits so that the Committee of Management could prioritise activities for the coming year or so.

High Priority Benefits

The benefits that Members identified as most important to their business are:

Access to latest industry news

- Quarterly newsletter – NULCA News
- Website
- Electronic member updates

Development of national industry standards

- Australian Standards for locators
- Codes of Practice/Guidelines i.e. colour coding for cables, annotation, national symbols, crisis action plan, excavation

Training and accreditation

- NULCA developed/accredited training programs specific to locators
- Manufacturer based training
- Utility based training

Representation to government/regulatory activities

- Assist government in formulating a regulatory framework for locators
- Lobby government for the benefit and recognition of member locators
- Seek regulatory uniformity across states and territories

Liaison and networking

- Annual conference/seminar
- Forum for discussion with like-minded locator professionals
- Ability to have a say in the direction and focus of NULCA

Member product and service discounts

- Professional indemnity insurance

Public Relations

- Enhance community and stakeholder knowledge of NULCA and the role of locators
- Promote NULCA as the peak industry body for the locating industry
- Promote the message that the public should only trust a NULCA Member locator

Secondary Benefits

The benefits that Members identified as a second priority.

Liaison and networking

- Directory of Members, suppliers and manufacturers

Access to professional resource bank

- Access to industry research results
- Access to international associations and papers from around the world

Job Placement and career opportunities

- Forum for Members seeking employment
- Classified advertisements

Non-priority Benefits

The benefits that Members believe are not a priority at present.

Member product and service discounts

- Travel, petrol and vehicle discounts
- Generic client brochures ■

Techniques for Better Locating

Line locating is not rocket science. A little common horse sense should tell you that some of the information being taught by so-called experts is not true. They teach what they think to be true because that's what they were taught. 'Always place your ground rod 90 degrees from the route of the line being

located' or 'direct hook up is the preferred method of placing signal on a line' are a couple of examples that are not true.

1. Always place the Ground Rod at 90 degrees from the route of the line being traced

How do you know where 90 degrees is? You don't know where the line is, that's why you're out there. If you knew where 90 degrees was, you may not have to trace the line because you already know where it is.

On a direct hook up, the transmitter signal injected into the line must come back to the ground rod to close the circuit loop. You cannot have current flow unless you have a closed loop and current is what produces the magnetic wave your receiver is looking for. It is far more important to have a good ground than a ground at some remote distance. Pouring water on the ground rod will also help a 'locate' in dry soil. A good ground next to where the hook up is being made will do several other things that could improve a locate.

a) You have less chance of inducing signal into some other utility by crossing it with your ground rod.

b) It will help reduce the error in the locate near the transmitter from a distorted radio wave created by your direct output wires. If it is true that two radio waves can repel each other as I will prove later in this article, where the direct output leads and the ground rod wire can repel the signal on the line being traced creating an error in the locate.

You can demonstrate this by finding the line under test. Move your ground rod out four or five feet in the direction the line is running and install it two or three feet off to one side of the line you have located. Turn your transmitter on and see if the line is in the same place. Since I have never seen a line move just because I moved a ground rod, I will have to assume the ground wire signal is pushing the locate off to one side.

2. Direct hook up is the preferred method to make a locate

The preferred method is the method that works on the locate in question and the direct method will not always do this. Those who make these statements should take the time to learn more about instruments and other methods of using it.

One method that is often overlooked is the Inductive Coupler. When a telephone or cable TV pedestal is opened, try placing the Inductive Coupler around the cable to be located. The 'Signal-Divide-Down' phenomenon will allow the locate to be made without grounds being removed. If available, the service drop or meter riser at the house will allow a trace back to the pedestal or transformer with ease and much faster than trying to set up a good ground or removing ground bonds.

Contract locators cannot open some enclosures and as a result, they are limited to where and how they place signal on a line to be traced. Their life would be made a lot easier if they would learn to use their locators in all the ways that are available. When we focus one or two methods of using a locator, we limit our ability to make some locates. Even though the instruction manual tells you three basic methods of inducing signal, there are numerous variations of each method. The instrument you are using is nothing but a tool, you are the locator. How you use the tool is what will make the difference. In other words, it is time to start making the instrument do things the way you want them done instead of accepting what it has been doing for you.

The following information will explain how the radio wave can distort and throw your locate off to one side of the actual position.

When utilities were in the ground by themselves, locating was easy. Even a good set of welding rods would work for some people. With the advent of joint trenching where a multitude of pipes and cables are in the same trench, a whole new set of problems came forth in trying to produce a good locate and we manufacturer's are part of the problem

Just because we design and produce line locators and have been making locates for a number of years does not necessarily qualify us to teach utility locating. I hear salesmen telling customers they can teach you everything you need to know in 30 minutes. I wish it were that easy. My job would be a lot easier if that were trues.

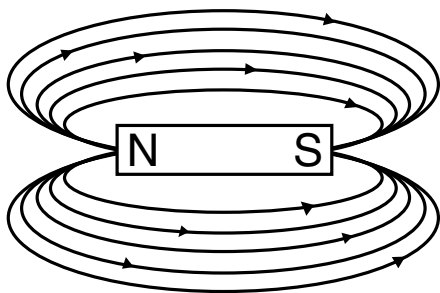
First of all, there has never been a pipe or cable locator that ever located a pipe or a cable. The locator you use can only locate a radio magnetic wave that radiates above ground. The instrument has no idea of what is below ground or where the signal is coming from. It only reproduces the information it detects above ground.

Like a wrench we purchase to take a nut off a bolt, the electronic instrument we use to make a locate is nothing but a tool. The nut will not come off the bolt until we make the wrench do something. In other words, we are the locator and the instrument is nothing more than a tool.

To use the tool to your best advantage means you need to take command of the instrument and make it do what you want it to do instead of it taking command of the locate. To do this will require a little more information that the average company is providing to the operator. A basic understanding of what the instrument can and most of all cannot do is an absolute must.

In Figure 1, we show a magnet. You cannot see them, but magnetic lines are radiating around the magnet from the North Pole to the South Pole. By placing a piece of paper on top of the magnet and sprinkling iron filings on the paper, we can see what the magnetic lines look like. When two north poles approach each other, we can see what happens to the magnetic lines as the two poles oppose each other. The iron filings will show how distorted the magnetic lines become. The magnetic lines around a magnet would be like a magnetic wave around a conductor if we place a D.C. voltage on that conductor.

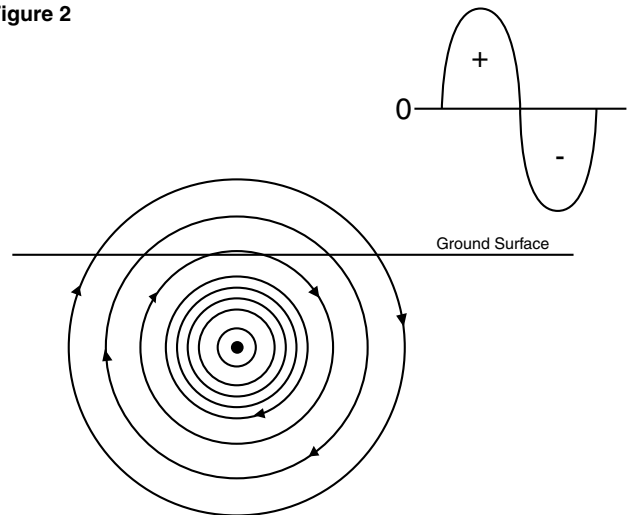
Figure 1



In other words, the lines only travel in one direction.

In figure 2, we show what the radio magnetic wave looks like when an A.C. signal is placed on a conductor. Because an A.C. sine wave has a polarity above and below a zero reference line, the radio wave not only increases from the zero reference line, it decreases back to the zero reference line and then repeats the increase and decrease in the opposite direction. This is what makes a line locator work.

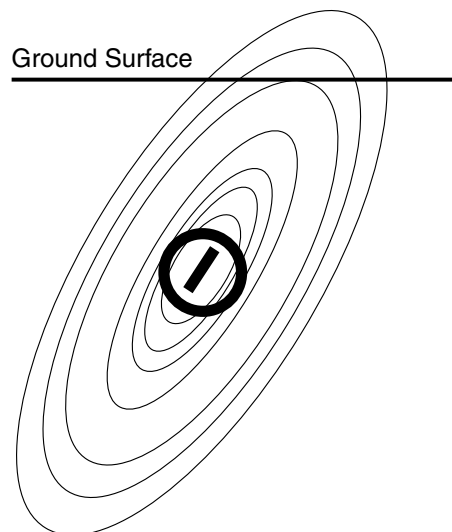
Figure 2



When we place a conductor in a moving magnetic field, we induce a voltage into that conductor just like a transformer induces voltage from a primary to secondary winding. By placing your receiving antenna in the moving magnet field, voltage is induced into the antenna wire in the conductor (receiving antenna wire) we then amplify it and display it to the operator by means of sound and some type of video display. All line locators operate the same way.

If we were to place a metal fish tape in a plastic pipe as in figure 3, we could place a signal on the fish tape and locate that plastic pipe. Notice the magnetic waver took the shape of the conductor and the magnetic wave above ground is off to one side. Every line locator on the market would locate the crest of the wave off to one side and the locate would be wrong.

Figure 3



In figure 4, two cables are side by side and they are connected together at the house to the same ground rod. When signal is placed on one, signal is on both of them. Since the rotation of the magnetic wave is the same on both cables, the magnetic lines fight each other just like two north poles of a magnet. As they repel each other, the net resulting wave becomes distorted. If the two cables were at different depths as shown in figure 5, the radio wave above ground would be like the fish tape and the locate would be wrong.

World Locator News

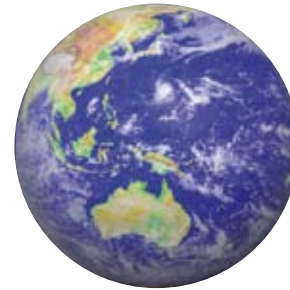


Figure 4

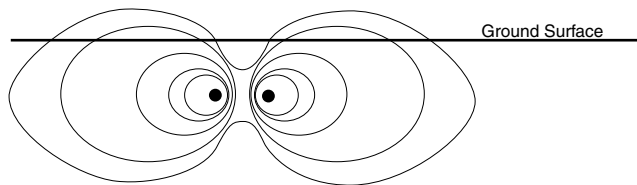


Figure 5

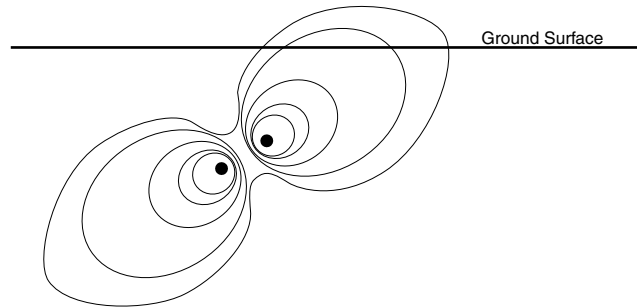
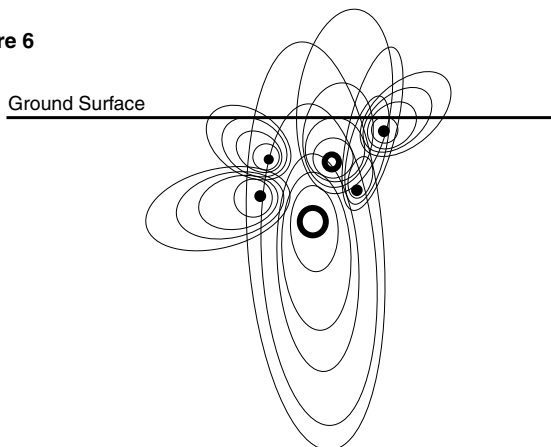


Figure 6 shows what a real joint trench locate might look like to the operator and to make sense out of this type of locate will require a little more than 'here are the keys to the 18 wheel truck, now go drive it'.

Figure 6



Most instruments will be talking to the operator and will tell the operator when an error in a locate is being made. Few operators are listening to what their instrument is telling them. When used correctly, almost every instrument on the market knows when it is making an error if the operator knows how to check for the error. In most cases, the instrument will even tell the operator how much of an error in the locate is being made.

Bells and whistles do not locate. You the operator, you are the locator. Your instrument is nothing but a monkey wrench and the nut will not come off a bolt when you set a wrench on the nut. You the operator must make something happen. If you do not apply the proper technique, you either break the bolt or you take skin off your knuckles. It is a pure matter of how you use the tool as to what kind of job the tool can do for you.

Merrill K. Haddon

President/CEO Aqua-Tronics Inc. (USA)

(NULCA received permission from Aqua-Tronics Inc. to reproduce this article. This generous company has also offered to share some of their training video's with us.) ■

Oklahoma USA 29/8/05

A campus of the Justus-Tiawah school district was evacuated after a backhoe operator cut a large gas line. No injuries were reported and the 319 students were taken to a local community centre. The gas line was cut shortly before 10.30am during utility work on the expansion of the campus and the campus and all campus offices were evacuated and closed.

Wodonga 16/6/05

About 1,000 homes and businesses were isolated from the long distance network when a contractor cut a fiber optic cable. The outage lasted 24 hours and was the second loss of phone service in recent weeks due to excavator damage.

Gilroy USA 26/8/05

A two inch rupture in a gas line underneath the Santa Teresa Boulevard could cost up to \$100,000 to repair city officials said. The gas line was damaged when crews working to widen the boulevard inadvertently hit the line with a backhoe. Repairing the tear wasn't a matter of slapping some duct tape on the distribution line. It took two hours to close down the line and service wasn't restored for seven hours.

The Public Gas and Electricity authority (PG&E) evacuated homes, traffic was blocked and Emergency personnel called to the scene to help keep the area clear. The PG&E crew followed its usual safety protocol, digging around the broken portion, isolating the damaged line by clamping each end, cutting out about four feet of line and then replacing it with new line. All of these costs will be factored into the final tab estimated at over \$100,000 (US). ■



NULCA Mission Statement

The mission of NULCA Australia is to define, establish and maintain best work practices performed by the underground utility locating industry. To establish work standards and competencies which will assist in providing a safer work environment for the general public, excavators, and all people in the civil works and underground service locating industry.

As an association we will fulfill our mission by partnering with utility companies, excavators, 'Dial before you Dig', suppliers, manufacturers and regulatory bodies, as well as other interested parties passionate to provide leadership roles, to assist in the reduction of underground facility and environmental damages.

NULCA Vision Statement

The vision of NULCA Australia is to provide world's best practices in a constantly evolving environment, developing new work place standards, using new improving technology with regard to Health, Safety and the Environment to all.