IS Geophones
Installation Procedure
100718 Revision 0

Prepared: G. Wylie Date: 28/11/11 Approved: GW Date: 29/11/11 Implemented: 29/11/11
Revision History:

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Supporting Documentation

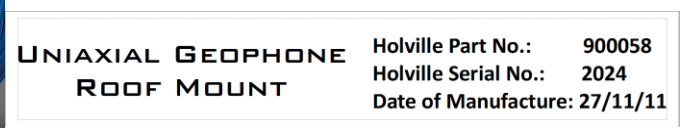
1. Schedule Documents
   1.1. 100669R0 (ISG11R04 IS Geophones - Instructions for Use)
   1.2. IECEx SIM 10.0011X

2. Parts List

Qty	Part No.	Description	Qty	Part No.	Description
1	900051	IECEX Uniaxial IS Geophone Type GS11D-IS-1 Floor Mount	1	900060	Cable for connection from MTL7761Pac barrier to Kelunji Data Logger
1	900052	IECEx Triaxial Element IS Geophone Type GS20DX-IS-3 Floor Mount	1	900061	Uniaxial Geophone Cable Assembly
1	900058	IECEX Uniaxial IS Geophone Type GS11D-IS-1 Roof Mount	1	900063	Triaxial Geophone Cable Assembly
1	900059	IECEx Triaxial Element IS Geophone Type GS20DX-IS-3 Roof Mount			MTL7761Pac Zener Safety Barriers

3. Installation Procedure

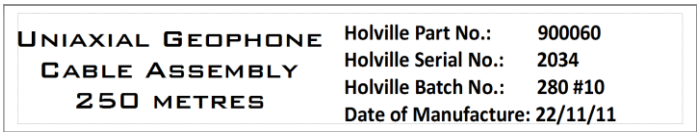
3.1. Read document 100669R0 (ISG11R04 IS Geophones - Instructions for Use).
3.2. Identify the geophones to be floor mounted and those to be roof mounted. Identify the uniaxial and triaxial geophones. The identification label (see below :)



with the serial number on the geophone will indicate whether the geophone is a floor or roof

mount version and whether it is uniaxial or triaxial. If a roof mount geophone is installed in the floor, or if a floor mount geophone is installed in the roof - **IT WILL NOT WORK** – as the vertical elements rely on a single spring under the magnet and are polarised as a result.

3.3. Connect the geophone to its matching cable assembly (these have their length marked on the label attached to either end, see below:) by mating the connectors.



3.4. While the geophone and the cable end are close to each other, test the connected geophone assembly with a meter approved for use in the area the test is being performed in. A possible test form format is shown in Appendix One at the end of the document.

3.4.1. Measure the resistance across the wire pair – it should be in the range 350 – 450 Ohms. It is difficult to get a steady, accurate reading because the current from the meter causes the magnet to move. (Meter auto ranging causes the geophone magnet to oscillate producing an oscillating resistance reading.) An approximately correct meter reading is good enough to confirm that there is continuity through the geophone element, cable and connector.

3.4.2. Confirm that the geophone element is still working by measuring the AC voltage across each wire pair (pairs #1, #2 and #3 for a triaxial geophone) when the geophone is **gently** shaken. If the geophone is being held in its correct orientation (for roof or floor) an AC voltage reading of a few tenths of a volt will be generated. If the geophone element has an open circuit (or upside down if it is a vertical element) then the AC voltage will be steady and close to zero.

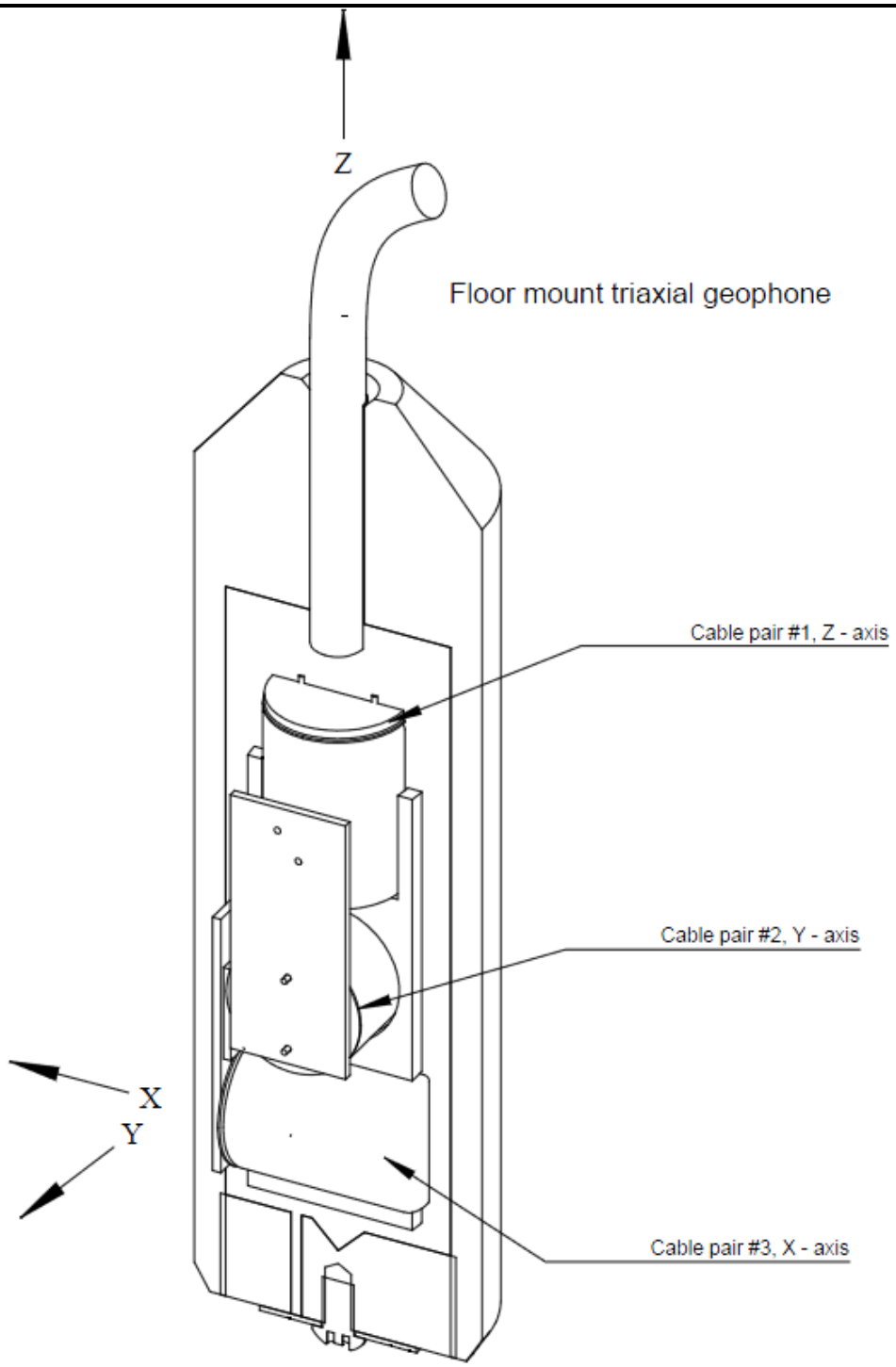
3.5. After unrolling the geophone cable, wire the free end into the hazardous area side of the MTL7761Pac Zener Safety Barriers (see table below :). Record the barrier no. against the Geophone Serial No / wire pair no.

3.6. The Kelunji connector is wired to the safe area side of the MTL7761Pac Zener Safety Barriers (see table below). Record the Kelunji logger channel against the Geophone Serial No / wire pair no.

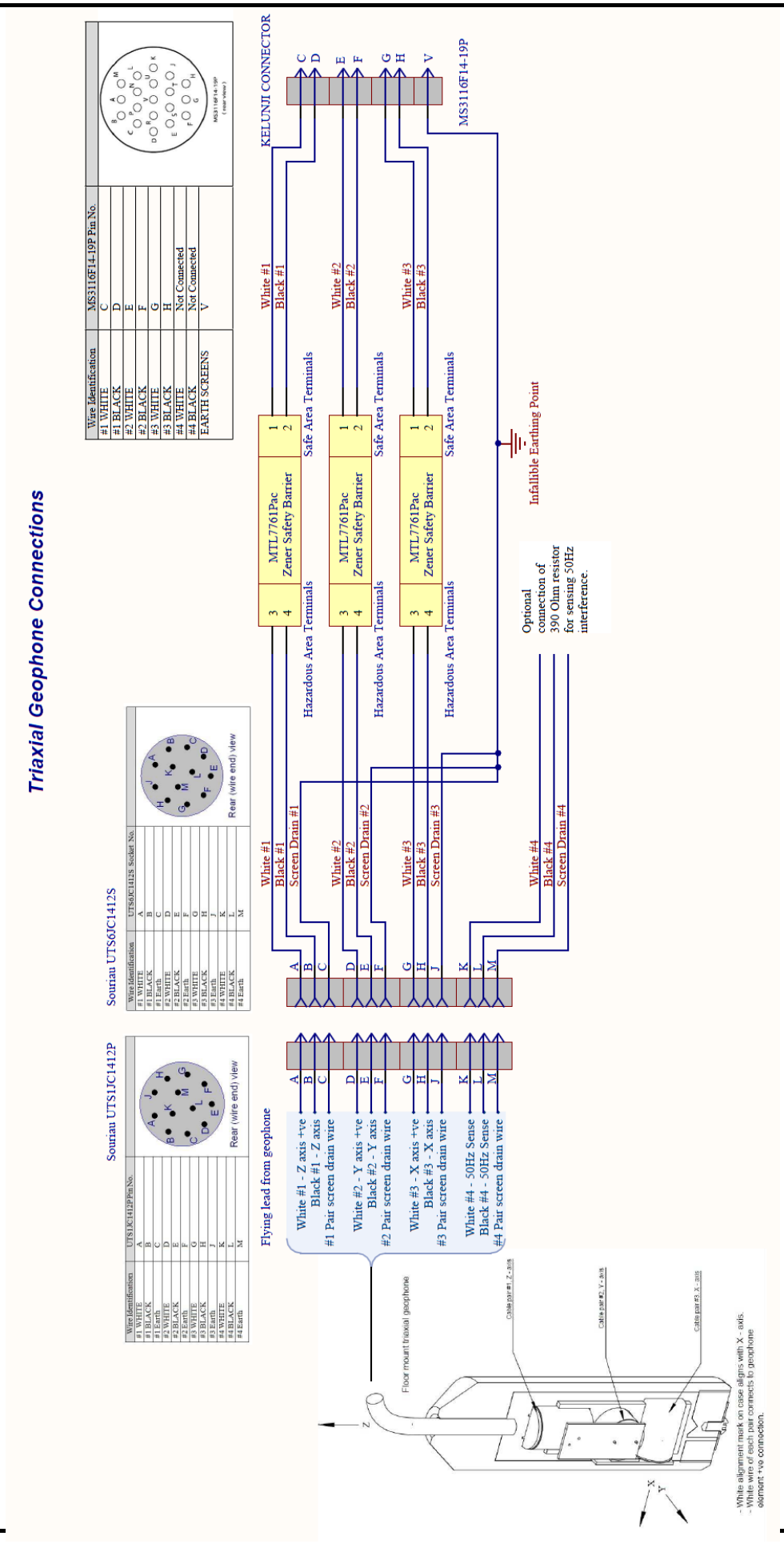
Screened cable pair with screen drain wire from geophone element	MTL7761Pac Hazardous Area terminals	MTL7761Pac Safe Area terminals	Cable to Kelunji Seismic Logger input channel (#1, #2 or #3)
White wire	Terminal #3	Terminal #1	White wire
Black wire	Terminal #4	Terminal #2	Black wire
Earth drain	Earthing bar	Earth terminal	Green/yellow Earth

3.7. The white wire in each cable pair connects to the positive terminal on the geophone element.

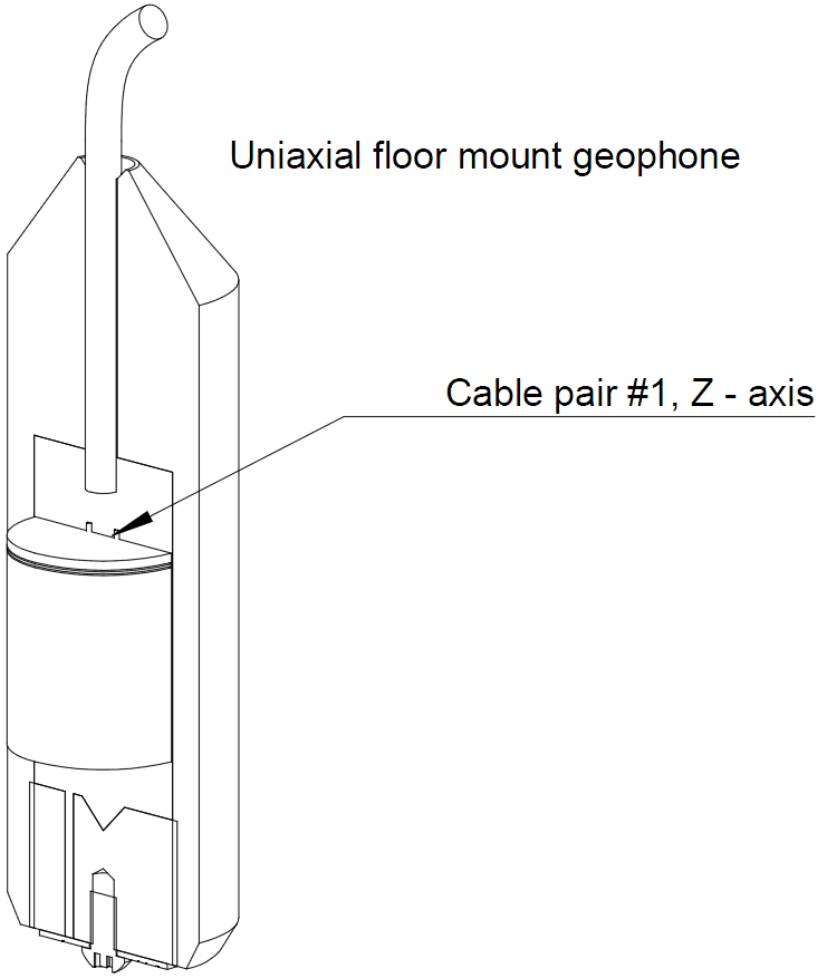
3.8. The diagram below shows the geophone element orientation for a triaxial floor mounted geophone. When a 4th wire pair is optionally fitted with a 390 Ohm resistor for sensing 50Hz interference, this resistor is located adjacent to the cable entry point in the geophone housing.

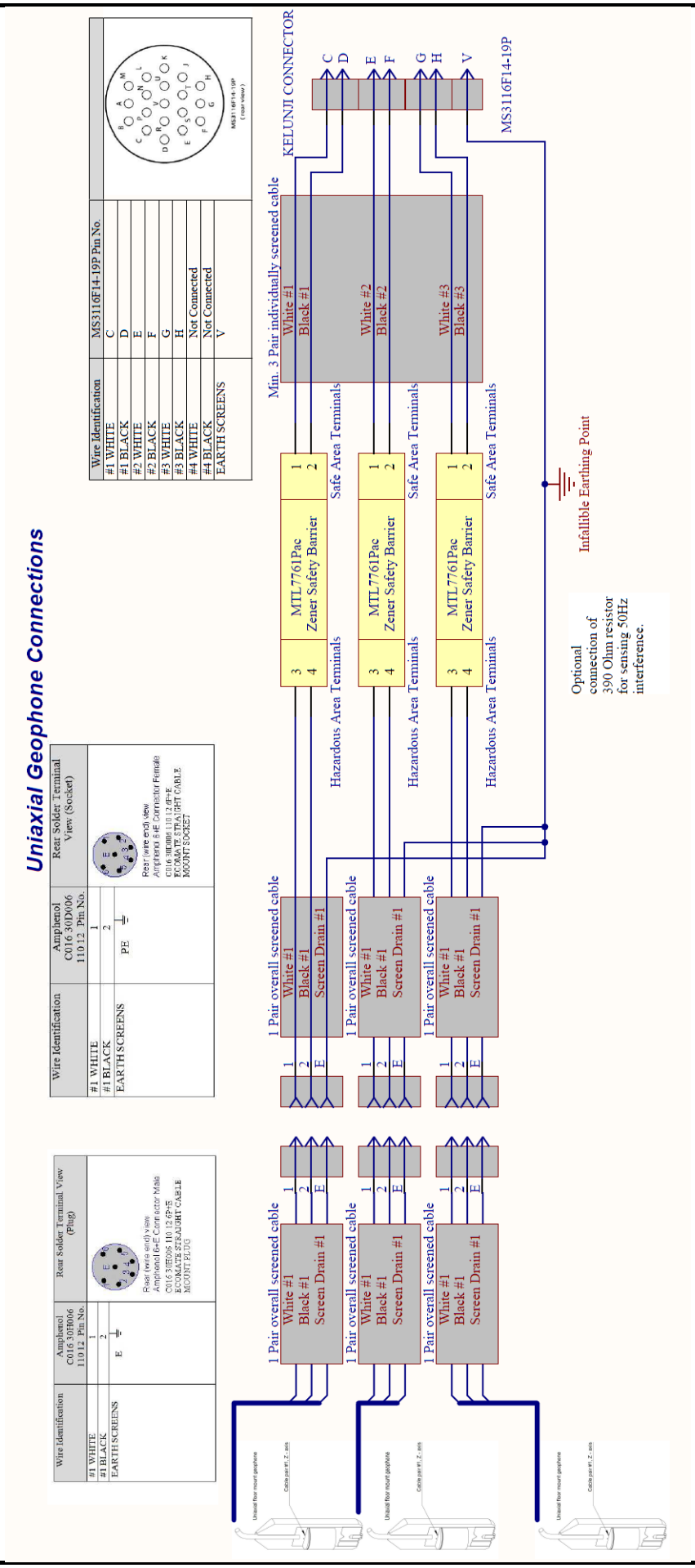


- White alignment mark on case aligns with X - axis.
- White wire of each pair connects to geophone element +ve connection.


Triaxial Geophone Connections
Souriau UTS1JC1412P
Souriau UTS6JC1412S
Flying lead from geophone
KELUNJI CONNECTOR
MS3116F14-19P
MTL7761Pac Zener Safety Barrier
Hazardous Area Terminals
Safe Area Terminals
Infallible Earthing Point
Optional connection of 390 Ohm resistor for sensing 50Hz interference.
Floor mount triaxial geophone
- White alignment mark on case aligns with X - axis.
- White wire of each pair connects to geophone element +ve connection.

3.9. The uniaxial geophone is shown below:
The white wire connects to the +ve terminal on the geophone element.




Uniaxial Geophone Connections
Rear Solder Terminal View (Socket)
Amphenol C016 30D006 110 12 Pin No.
Wire Identification
#1 WHITE
#1 BLACK
EARTH SCREENS
Rear face end view
Amphenol 6-4E Connector Female
C016 30D006 110 12 6P-E
ECOMATE STRAIGHT CABLE MOUNT SOCKET
Rear Solder Terminal View (Plug)
Amphenol C016 30F006 110 12 Pin No.
Rear face end view
Amphenol 6-4E Connector Male
C016 30F006 110 12 6P-E
ECOMATE STRAIGHT CABLE MOUNT PLUG
MS3116F14-19P Pin No.
#1 WHITE C
#1 BLACK D
#2 WHITE E
#2 BLACK F
#3 WHITE G
#3 BLACK H
#4 WHITE Not Connected
#4 BLACK Not Connected
EARTH SCREENS V
MS3116F14-19P (rear view)
KELUNJI CONNECTOR
MS3116F14-19P
Min. 3 Pair individually screened cable
White #1
Black #1
White #2
Black #2
White #3
Black #3
MTL7761Pac Zener Safety Barrier
Safe Area Terminals
Hazardous Area Terminals
1 Pair overall screened cable
White #1
Black #1
Screen Drain #1
Infallible Earthing Point
Optional connection of 390 Ohm resistor for sensing 50Hz interference.
Uniaxial floor mount geophone
Cable pair #1, Z - axis

Appendix 1. Geophone assembly test form

Location	Geophone Serial No	Floor or Roof Mount?	Cable Serial No	Cable Length (m)

Wire Pair (pair #1 only for uniaxial)	Resistance at zener safety barrier end of cable.	AC voltage on excitation Test Result (Pass/Fail)	Tested By	Date	MTL7761P ac Barrier No.	Datalogger Channel Number
#1						
#2						
#3						

Location	Geophone Serial No	Floor or Roof Mount?	Cable Serial No	Cable Length (m)

Wire Pair (pair #1 only for uniaxial)	Resistance at zener safety barrier end of cable.	AC voltage on excitation Test Result (Pass/Fail)	Tested By	Date	MTL7761P ac Barrier No.	Datalogger Channel Number
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#2						
#3						