


Division of Mines and Mineral Resources — Report 1990/23

Unidata installations at Hone Road and Officer Street, Rosetta (Stage 1)

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INTRODUCTION

Land in the Hone Road – Officer Street area of Rosetta is subject to landslide movement. To monitor some of the cause and effect of this movement Unidata data loggers have been installed on various houses in this area. A variety of transducers have been installed to measure parameters such as rainfall, groundwater level, and displacement of cracks and walls. A description of each installation and the method of retrieving data from the loggers is given.

INSTALLATIONS

15 Hone Road

The Unidata data logger is situated on the east-facing wall inside the garage at 15 Hone Road, and is mounted inside a grey weatherproof enclosure. Four displacement gauges are located on this wall to monitor varying degrees of movement.

Transducer	Location	Unidata Connector No.	Title
Variable resistor	East wall (x-movement)	39 (analog 0)	Wall X
Variable resistor	East wall (y-movement)	36 (analog 1)	Wall Y
Variable resistor	East wall (pillar movement)	33 (analog 2)	Pillar
Variable resistor	East wall (slab movement)	30 (analog 3)	Slab
Rain gauge	Boundary fence (rainfall)	9 (counter 0)	Rainfall

The X and Y movement transducers are mounted across a cracked section of brickwork inside the east wall of the garage. Both transducers measure the change in size of the gap between the mortar joints. The pillar movement transducer is mounted on a support pillar inside the garage and measures the distance between the east wall and the pillar itself. The slab movement transducer is mounted on the slab floor and measures the distance between the slab floor and the east wall. A rain gauge is mounted on the rear south boundary fence; this is mounted approximately 3 m above the ground so as not to be affected by building shadows and sprinkler systems.

17 Hone Road

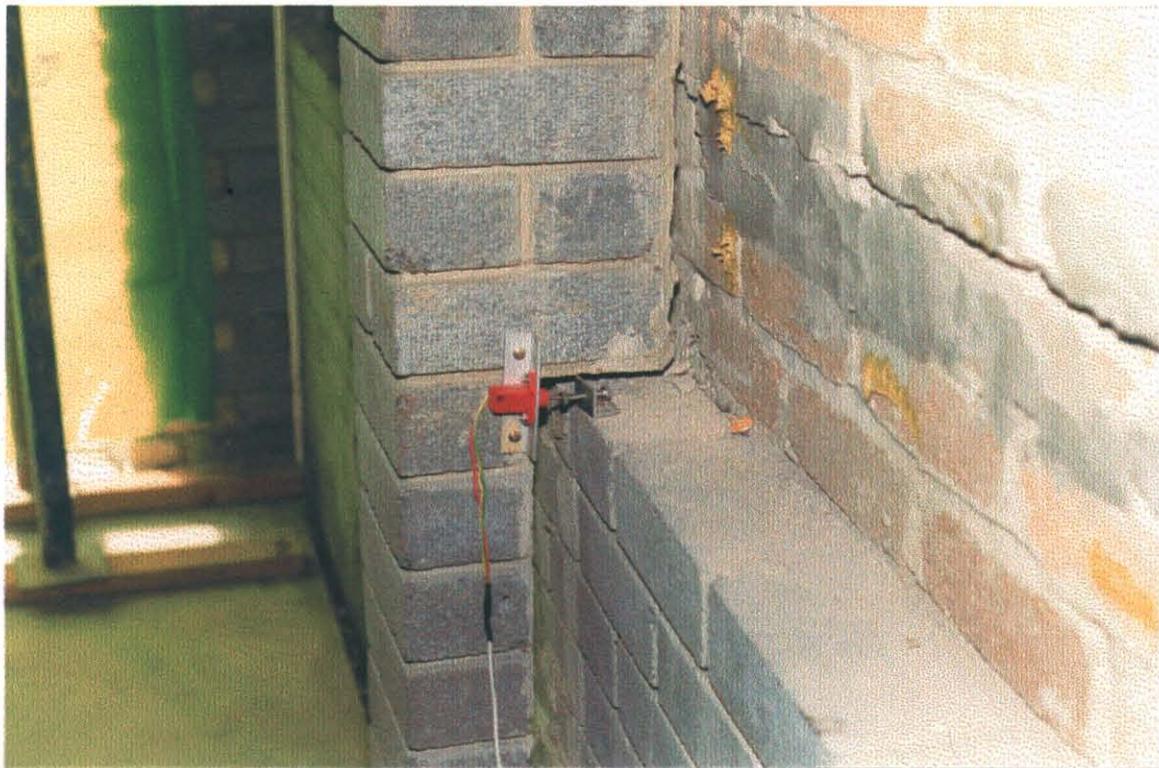
Two displacement gauges are mounted on a cracked section of brickwork on the western wall of 17 Hone Road. The connecting cables are run through conduit to the Unidata located at 15 Hone Road.

Transducer	Location	Unidata Connector No.	Title
Variable resistor	West wall (x-movement)	27 (analog 0)	Wall X
Variable resistor	West wall (y-movement)	24 (analog 1)	Wall Y

The X and Y movement transducers are mounted across a cracked section of brickwork on the west wall of the house. Both transducers measure the change in size of the gap between the mortar joints.



Unidata data logger and slab movement transducer in garage, 15 Hone Road.



Pillar movement transducer in garage, 15 Hone Road.



X and Y movement transducers mounted across crack in eastern wall of garage, 15 Hone Road.



Rain gauge at 15 Hone Road.

13 Hone Road

A Unidata data logger enclosed in a grey waterproof enclosure, with two displacement gauges connected, is mounted on the slab floor inside the carport/patio area of 13 Hone Road. The two displacement gauges measure the movement of the support wall relative to the concrete slab in a X (north-easterly) and Y (south-westerly) direction.

Transducer	Location	Unidata Connector No.	Title
Variable resistor	NE wall (x-movement)	39 (analog 0)	Wall X
Variable resistor	SW wall (y-movement)	36 (analog 1)	Wall Y

2 Officer Street

A Unidata data logger is mounted in a grey weatherproof enclosure located on the concrete foundation wall next to the pathway below the front entrance to the house. Two displacement gauges are mounted on the brickwork at the base of the NE-facing brick wall. The X and Y movement transducers are mounted across the cracked section of brickwork on this external wall of the house. Both transducers measure the change in size of the gap between the mortar joints.

A 5 m water depth probe was placed in Borehole 3 to monitor the variation in the water table. The connecting wires to this probe have been placed in protective conduit and extended to the data logger connected to the house at 2 Officer Street.

Transducer	Location	Unidata Connector No.	Title
Variable resistor	NE wall (x-movement)	39 (analog 0)	Wall X
Variable resistor	NE wall (y-movement)	36 (analog 1)	Wall Y
Water depth	Borehole No. 3 (water depth)	33 (analog 2)	Water depth
Thermistor	Borehole No. 3 (water temperature)	30 (analog 3)	Temperature

USER GUIDE

To retrieve data from the data logger the following instructions are to be followed to the letter; any variation could cause loss of data.

At this point in time you should have read, or be reading, the Field Manual for the Toshiba laptop computer (Sedgman and Weldon, 1990) to be able to operate the retrieval program.

For each installation the following instructions are to be carried out:-

Instructions for 15 Hone Road

At the prompt:

INSTALLATION >

type:

15HONE<CR>

the screen display should look like this:

INSTALLATION>15HONE<CR>

Instructions for 13 Hone Road

At the prompt:

INSTALLATION >

type:

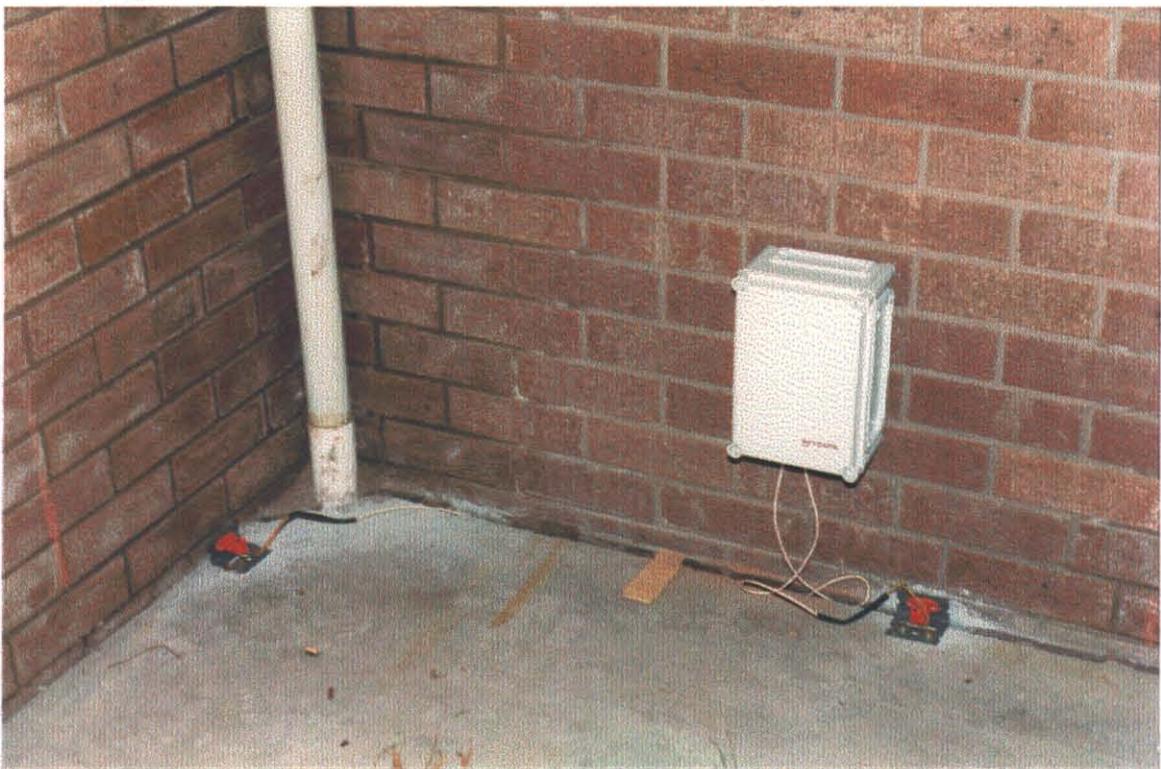
13HONE <CR>

the screen display should look like this:

INSTALLATION>13HONE<CR>



Displacement gauges mounted over crack in western wall, 17 Hone Road.



Unidata data logger and two displacement gauges in the carport area, 13 Hone Road

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Instructions for 2 Officer Street

At the prompt:

INSTALLATION>

type:

2OFFICER<CR>

the screen display should look like this:

INSTALLATION>2OFFICER<CR>

This will start the data retrieval and resetting of the data logger. Follow the instructions in the field manual and you should have no problems.

REFERENCES

SEDGMAN, R. J.; WELDON, B. D. 1990. Field manual for the Toshiba laptop computer with Version 2.02 software. Revision 1. *Rep. Div. Mines. Miner. Resour. Tasm.* 1990/24.

WELDON, B. D. 1990. Investigation of a landslide, Hone Road – Officer Street, Rosetta. *Rep. Div. Mines. Miner. Resour. Tasm.* 1990/20.

[8 October 1990]

APPENDIX 1

Transducers Used

Radio Spares variable resistor 5k Ω movement transducer Part No. 317-780
Green ground (0 volts)
Yellow power (2.5 volts) (connected from unidata 5 volt supply via 4.7 k Ω resistor)
Red signal (0 to 2.5 volts)
Unidata water depth probe Part No. 6508c
Green ground (0 volts)
Red power (+5 volts)
Yellow thermistor
Blue signal (depth)
Unidata rain gauge Part No. 6506a

APPENDIX 2

Scheme Definition — 15 and 17 Hone Road

Serial #3283 Version 2.021

Scheme Name: 15HONE

Description: Complete installation, 15 & 17 Hone Rd

Directory For Data is B:\15HONE

Store a Comment with Data: No

Logger to Computer Communication is Direct using serial port com1 at 9600 baud

Site Identification Option is Fitted

Logger Model used is 6003 (Version 11,12)

Instrument: 7018 Variable Resistance

Transducer on a0 measures Variable Resistance (15 Wall X)

Instrument: 7018 Variable Resistance

Transducer on a1 measures Variable Resistance (15 Wall Y)

Instrument: 7018 Variable Resistance

Transducer on a2 measures Variable Resistance (15 Pillar)

Instrument: 7018 Variable Resistance

Transducer on a3 measures Variable Resistance (15 Slab)

Instrument: 7018 Variable Resistance

Transducer on a4 measures Variable Resistance (17 Wall Y)

Instrument: 7018 Variable Resistance

Transducer on a5 measures Variable Resistance (17 Wall X)

Instrument: 6506A Rainfall Gauge 0.2 mm

Transducer on c0 measures Rainfall 0.2 (15 Rain)

Logger Memory Size is 32K

Logger Scan Rate is 5 seconds

Logger Buffer Type is LINEAR (stop when full)

Logger Program Type is Fixed

Log Interval Log Interval is 3 hours

Log 15 Wall X Variable Resistance

Log 15 Wall Y Variable Resistance

Log 15 Pillar Variable Resistance

Log 15 Slab Variable Resistance

Log 17 Wall Y Variable Resistance

Log 17 Wall X Variable Resistance

Log TOT115 Rain Rainfall 0.2

Total of 7 entries, 7 bytes logged, 4681 log entries giving a max logging time of 585 days 3 hours

A battery pack will last approximately 12 months

Plot to scrn:

Mode: CGA 640 x 200 B/W

Title: 15 Hone Rd – wall X

Time Format: hh:mm:ss mth dd, 19yy

Time Base (X Axis): Autoscale

Plot Description: Time (X Axis) Vs.

15 Wall X Variable Resistance

Plot to scrn:

Mode: CGA 640 x 200 B/W

Title: 15 Hone Rd – wall Y

Time Format: hh:mm:ss mth dd, 19yy

Time Base (X Axis): Autoscale

Plot Description: Time (X Axis) Vs.

15 Wall Y Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W

Title: 15 Hone Rd – pillar

Time Format: hh:mm:ss mth dd, 19yy

Time Base (X Axis): Autoscale

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Plot Description: Time (X Axis) Vs.
15 Pillar Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
Title: 15 Hone Rd - slab
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
15 Slab Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
Title: 17 Hone Rd - wall Y
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
17 Wall Y Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
Title: 17 Hone Rd - wall X
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
17 Wall X Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
Title: 15 Hone Rd - rainfall
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
TOT15 Rain Rainfall 0.2

Plot to scrn: Mode: CGA 640 x 200 B/W
Title: 15 Hone Rd - all displacements
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
15 Wall X Variable Resistance
15 Wall Y Variable Resistance
15 Pillar Variable Resistance
15 Slab Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
Title: 17 Hone Rd - all displacements + rain
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
17 Wall Y Variable Resistance
17 Wall X Variable Resistance
TOT15 Rain Rainfall 0.2

Report to scrn:
Title: 15 & 17 Hone Rd - screen
File Format: Print
Time Format: hh:mm dd-mo-yy

Report to B:\15hone\15hone\$z.wk0
Title: 15 & 17 Hone Rd - spreadsheet
File Format: Lotus
Time Format: hh:mm mo/dd/yy

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Scheme Definition — 13 Hone Road

Serial #3283 Version 2.021

Scheme Name: HONE13
Description: 13 Hone Rd displacement

Directory For Data is B:\HONE13
Store a Comment with Data: No
Logger to Computer Communication is Direct using serial port com1 at 9600 baud
Site Identification Option is Fitted
Logger Model used is 6003 (Version 11,12)

Instrument: 7018 Variable Resistance
 Transducer on a0 measures Variable Resistance (slab x)
Instrument: 7018 Variable Resistance
 Transducer on a1 measures Variable Resistance (slab y)

Logger Memory Size is 32K
Logger Scan Rate is 5 seconds
Logger Buffer Type is LINEAR (stop when full)
Logger Program Type is Fixed
Log Interval Log Interval is 3 hours
Log slab X Variable Resistance
Log slab Y Variable Resistance
Total of 2 entries, 2 bytes logged, 16383 log entries giving a max logging time of 2047 days 21 hours
A battery pack will last approximately 12 months

Plot to scrn: Mode: CGA 640 x 200 B/W
 Title: 13 Hone Rd – slab x
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 slab X Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
 Title: 13 Hone Rd – slab y
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 slab Y Variable Resistance

Plot to scrn: Mode: CGA 640 x 200 B/W
 Title: 13 Hone Rd – x and y
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 slab X Variable Resistance
 slab Y Variable Resistance

Report to scrn:
 Title: 13 Hone Rd – screen report
 File Format: Print
 Time Format: hh:mm dd-mo-yy

Report to B:\hone13\hone13\$.wk0
 Title: 13 Hone Rd – spreadsheet
 File Format: Lotus
 Time Format: hh:mm mo/dd/yy

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Scheme Definition — 2 Officer Street

Serial #3283 Version 2.021

Scheme Name: 2OFFCR
Description: 2 Officer Street

Directory For Data is B:\2OFFCR
Store a Comment with Data: No
Logger to Computer Communication is Direct using serial port com1 at 9600 baud
Site Identification Option is Not fitted
Logger Model used is 6003 (Version 11,12)

Instrument: 7018 Variable Resistance
 Transducer on a0 measures Y movement (Y wall)
Instrument: 7018 Variable Resistance
 Transducer on a1 measures X movement (X wall)
Instrument: 6508C Water depth 5 m
 Transducer on a2 measures Depth 5 m (Depth)
 Transducer on a3 measures Red Therm 15k (Temp)

Logger Memory Size is 32K
Logger Scan Rate is 5 seconds
Logger Buffer Type is LINEAR (stop when full)
Logger Program Type is Fixed
Log Interval Log Interval is 3 hours
Log Y wall Y movement
Log X wall X movement
Log Depth Depth 5 m
Log Temp Red Therm 15k
Total of 4 entries, 4 bytes logged, 8191 log entries giving a max logging time of 1023 days 21 hours
A battery pack will last approximately 12 months

Plot to scrn:
 Mode: CGA 640 x 200 B/W
 Title: 2 Officer Street
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 Y wall Y movement

Plot to scrn:
 Mode: CGA 640 x 200 B/W
 Title: 2 Officer Street
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 X wall X movement

Plot to scrn:
 Mode: CGA 640 x 200 B/W
 Title: 2 Officer Street
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 Depth Depth 5 m

Plot to scrn:
 Mode: CGA 640 x 200 B/W
 Title: 2 Officer Street
 Time Format: hh:mm:ss mth dd, 19yy
 Time Base (X Axis): Autoscale
 Plot Description: Time (X Axis) Vs.
 Temp Red Therm 15k

Plot to scrn:

Mode: CGA 640 x 200 B/W
Title: 2 Officer Street
Time Format: hh:mm:ss mth dd, 19yy
Time Base (X Axis): Autoscale
Plot Description: Time (X Axis) Vs.
Y wall Y movement
X wall X movement
Depth Depth 5 m
Temp Red Therm 15k

Report to scrn:

Title: 2 Officer Street
File Format: Print
Time Format: hh:mm dd-mo-yy

APPENDIX 3

Contol Program — 15 and 17 Hone Road

```

echo off
cls
echo:
echo: *****
echo: * CONNECT BATTERY TESTER TO LOGGER NOW *
echo: * IF BATTERY VOLTAGE SHOWS LESS THAN 7 *
echo: * REPLACE LOGGER WITH A REPLACEMENT *
echo: * AND TEMINATE PROGRAM. *
echo: *****
echo:
echo IF THE BATTERY IS O.K THEN SIMPLY
pause
cls
if "%1"=="load" goto one
pdlio 15hone_u
echo:
echo: *****
echo * WARNING *
echo *****
echo:
echo:
echo If a **Timeout on input** error has occurred you must exit from the
echo program immediatly. To do this press the CTRL and SCROLL LOCK keys
echo together. At the subsequent 'Terminate batch job (Y/N)?' prompt
echo respond with a Y. Check the cable connections and start again.
echo:
echo If there is no **Timeout on input** error then simply
pause
cls
if not "%1"=="display" goto one
echo 15 Hone Road data logger display
pdliout 15hone.dcf #
:one
cls
pdlio 15hone_L
pause
autoexec

```

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Contol Program — 13 Hone Road

```

echo off
cls
echo:
echo:
echo: *****
echo: * CONNECT BATTERY TESTER TO LOGGER NOW *
echo: * IF BATTERY VOLTAGE SHOWS LESS THAN 7 *
echo: * REPLACE LOGGER WITH A REPLACEMENT *
echo: * AND TEMINATE PROGRAM. *
echo: *****
echo:
echo IF THE BATTERY IS O.K THEN SIMPLY
pause
cls
if "%1"=="load" goto one
pdlio hone13_u
echo:
echo:
echo *****
echo * W A R N I N G *
echo *****
echo:
echo:
echo If a **Timeout on input** error has occurred you must exit from the
echo program immediately. To do this press the CTRL and SCROLL LOCK keys
echo together. At the subsequent 'Terminate batch job (Y/N)?' prompt
echo respond with a Y. Check the cable connections and start again.
echo:
echo If there is no **Timeout on input** error then simply
pause
cls
if not "%1"=="display" goto one
echo 13 Hone Road data logger display
pdliout hone13.dcf #
:one
cls
pdlio hone13_L
pause
autoexec

```

K/A

Contol Program — 2 Officer Street

```
echo off
cls
echo:
echo:
echo: *****
echo: * CONNECT BATTERY TESTER TO LOGGER NOW *
echo: * IF BATTERY VOLTAGE SHOWS LESS THAN 7 *
echo: * REPLACE LOGGER WITH A REPLACEMENT *
echo: * AND TEMINATE PROGRAM. *
echo: *****
echo:
echo IF THE BATTERY IS O.K THEN SIMPLY
pause
cls
if "%1"=="load" goto one
pdlio 2offcr_u
echo:
echo:
echo *****
echo * W A R N I N G *
echo *****
echo:
echo:
echo If a **Timeout on input** error has occurred you must exit from the
echo program immediately. To do this press the CTRL and SCROLL LOCK keys
echo together. At the subsequent 'Terminate batch job (Y/N)?' prompt
echo respond with a Y. Check the cable connections and start again.
echo:
echo If there is no **Timeout on input** error then simply
pause
cls
if not "%1"=="display" goto one
echo 2 Officer Street data logger display
pdliout 2offcr.dcf #
:one
cls
pdlio 2offcr_L
pause
autoexec
```