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DIVISION OF
OIL, GAS & MINING

SUBSIDENCE MONITORING REPORT

1988

STAR POINT MINES

ACT/007/006

CYPRUS PLATEAU MINING CORPORATION

P. O. DRAWER PMC

PRICE, UTAH 84501

Introduction

During the months June through November, subsidence monitoring was conducted on surface lands above underground mining. The land surface above all full extraction mining was visually searched for evidence of surface disturbance. Monitoring points above the longwall mining areas were surveyed for vertical movement and Points U1, U2, U3, and U4 were surveyed for horizontal and vertical movement.

Mining in 1988 consisted of development mining for longwall panels 8 and 9, and longwall mining in panels 6, 7, and 8, as shown on Map 61, enclosed.

Monitoring of the cliff located in Section 18, T15S, R8E, was done in conjunction with a special permit with the U.S. Fish and Wildlife Service. A report of that monitoring has been submitted to the Division previously, entitled "Annual Report, 1988, Permit No. PRT-719890." Figures 1-4 from that report are included with this submittal.

Surface Effects

Surface cracks (as shown on Map 61) over longwall mining in Section 12, T15S, R7E, are associated with east-west trending faults. These cracks vary in width from hairline to 6 inches, and displacement across the cracks varies from none to one foot.

Subsidence contours have been plotted using computer programs named Eagles, by Morrison Knudsen, and Zycor, by Zycor Inc. As can be seen on Map 61, subsidence contours show a definite reaction to the east-west trending faults. No surface effects (cracks) have been found associated with the north-south faults on the east and west sides of Section 12.

Overburden in this area ranges from 800 feet to 1500 feet. The area consists of a mounded ridge with a steeply incised canyon on the north end. There are no exposed rock outcrops.

A cross-section through longwall panels 1-7 is included as Section A-A showing surface drop from a base of 0.

In Section 18, T15S, R8E, the topography is much different than the Section 12 area; the area mined is at the top of a very steep drainage with an unconfined condition southward. An exposed cliff exists in the northeast corner of the section.

Surface cracks have developed at the northern edge of longwall panel 8, as shown on Map 61. A small rock outcrop collapsed near the southern edge of this same panel, causing some vegetation loss as shown on Map 61.

Surface cracks in Section 18 vary in width from hairline to 8 inches wide, and displacement across the cracks varies from none to nearly one foot.

Two methods of ground searches were conducted in 1988. The old mining areas (pre-1984) were searched from the air by helicopter. The longwall areas in Sections 12 and 13 were searched from the air by helicopter and on foot.

No new subsidence was found in the pre-1984 mining areas.

Vegetation

The surface cracks shown on Map 61 have caused minimal vegetation loss. Vegetation adjacent to the cracks shows no obvious stress.

As mentioned previously, some vegetation (grasses and approximately four fir trees) was destroyed when a small outcrop at the south edge of longwall panel 8 collapsed.

When this area has stabilized and is safe to traverse on foot, the area will be seeded by hand to revegetate the disturbed area to prevent erosion.

Surface Water and Groundwater

There are no problems being caused with surface drainages as a result of subsidence. No perennial streams exist in the Section 12 and 13 mining areas, or in the pre-1984 mining areas. There has been no observed impact on the stream in Section 18 above longwall panel 8 mining.

A complete discussion of hydrologic data and effects from mining is included in the CPMC 1988 Hydrology Report.

An extensive investigation is underway in the Section 18 area to study the effects of subsidence on groundwater and surface water in conjunction with the U.S. Geological Survey and the Division. Results of this investigation will be reported to the Division as they become available.

Surface Structures

The only impact to surface structures has been some settlement in a U.S. Forest development road in Section 12 above longwall panel 4. Repair efforts were undertaken during the summer with approval of the Manti-LaSal Forest engineer.

Projected Mining -- 1989

Longwall mining will be conducted in Section 18, T15S, R8E, in the Wattis Seam. Continuous miner mining will be conducted in the north half of Section 12, T15S, R7E, in the Third Seam during 1989.

Monitoring

Monitoring in 1989 will include those commitments outlined in the approved permit as follows:

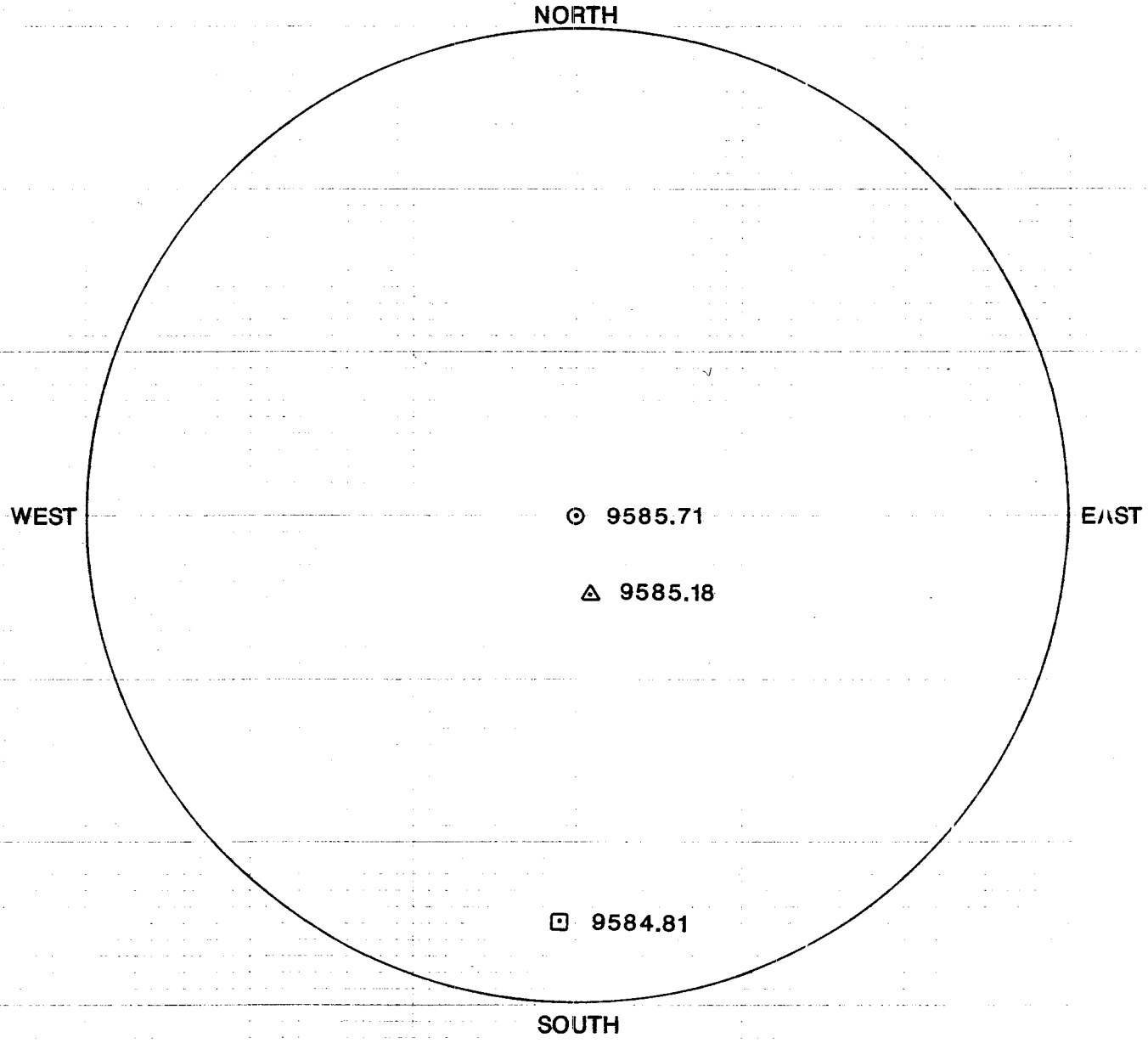
1. Field survey monitoring points above the longwall mined areas (panels 1-7) for horizontal and vertical movement.

2. Field survey monitoring points above longwall mining in Section 18, T15S, R8E, according to the MRP approved plan and the Special Permit with the U.S. Fish and Wildlife Service (Exhibit 41 of the MRP).

3. Taking ground based photographs of the cliff in Section 18 as detailed in Exhibit 41.

4. Visual observations of the ground surface above all mined areas for surface effects of mining.

FIGURE 1
U-NORTH CLIFF SUBSIDENCE MONITORING
STATION U1
HORIZONTAL MOVEMENT PLOT



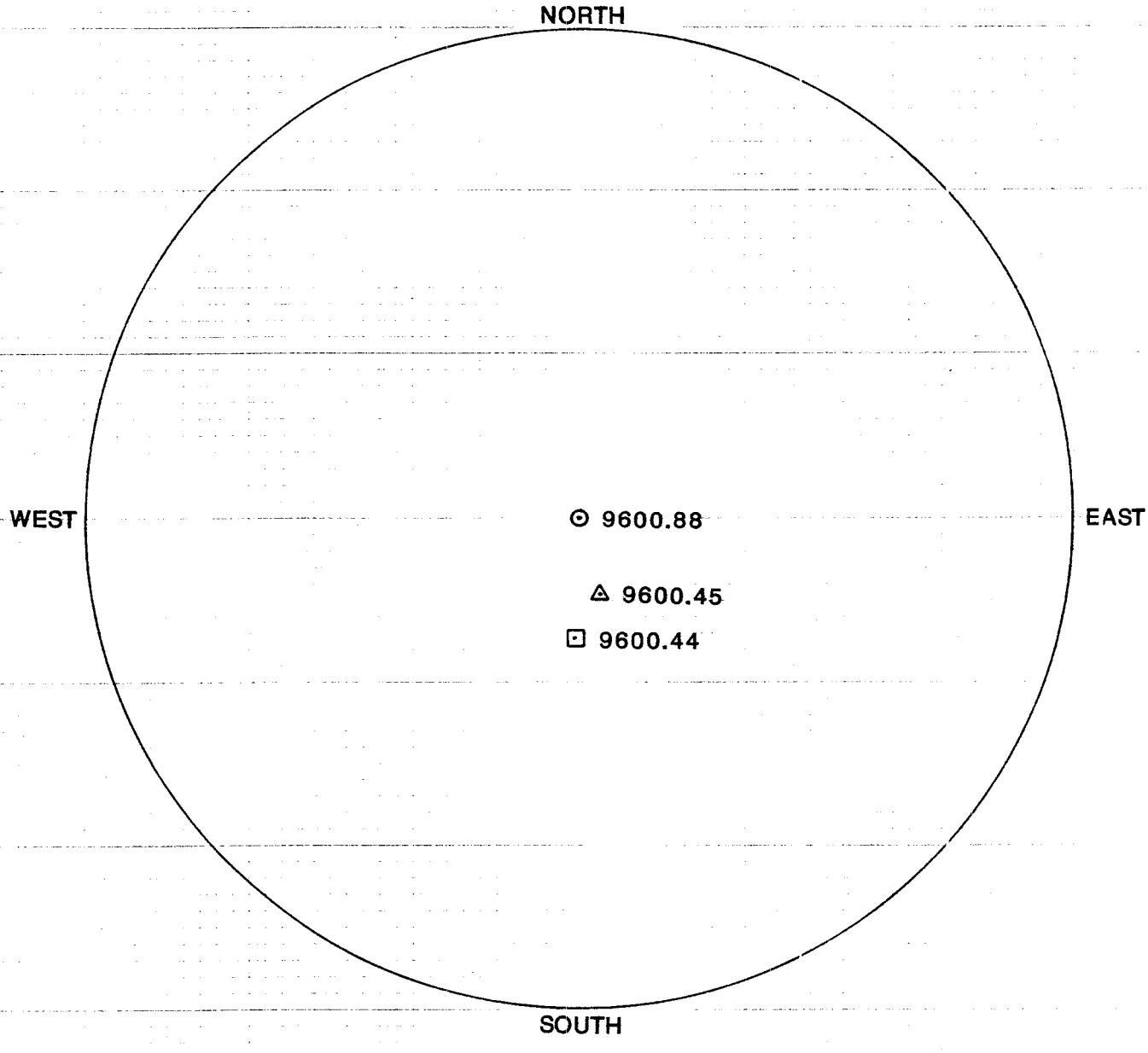
LEGEND

- ⊙ PREMINING JULY 7,1988
- △ SEPTEMBER 23,1988
- ⊡ NOVEMBER 1,1988

TOTAL VERTICAL SUBSIDENCE -0.90 FEET

SCALE = 1"=1'

FIGURE 2
U-NORTH CLIFF SUBSIDENCE MONITORING
STATION U2
HORIZONTAL MOVEMENT PLOT



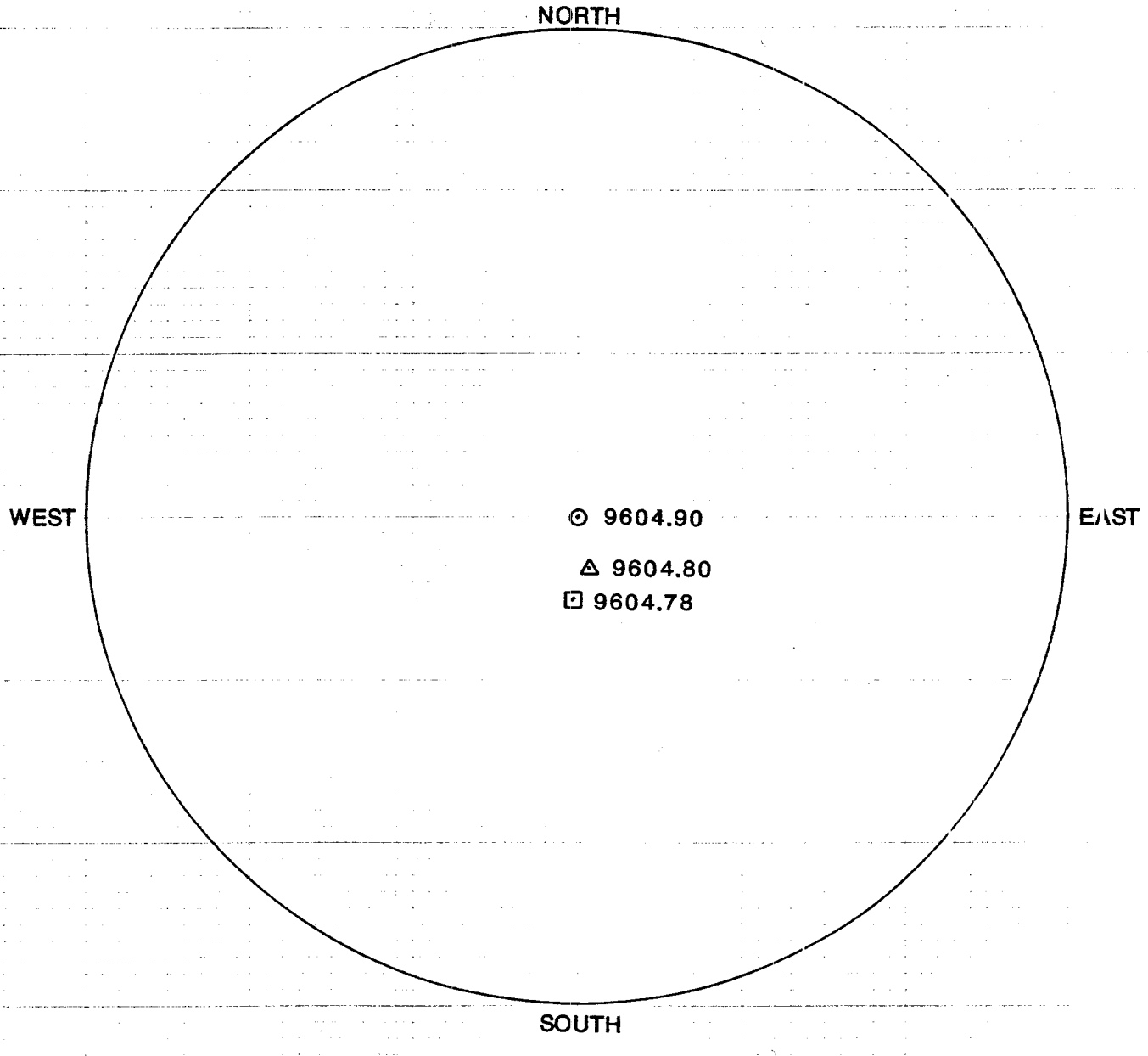
LEGEND

- ⊙ PREMINING JULY 7,1988
- △ SEPTEMBER 23,1988
- ⊡ NOVEMBER 1,1988

TOTAL VERTICAL SUBSIDENCE -0 44 FEET

SCALE = 1"=1'

FIGURE 3
U-NORTH CLIFF SUBSIDENCE MONITORING
STATION U3
HORIZONTAL MOVEMENT PLOT



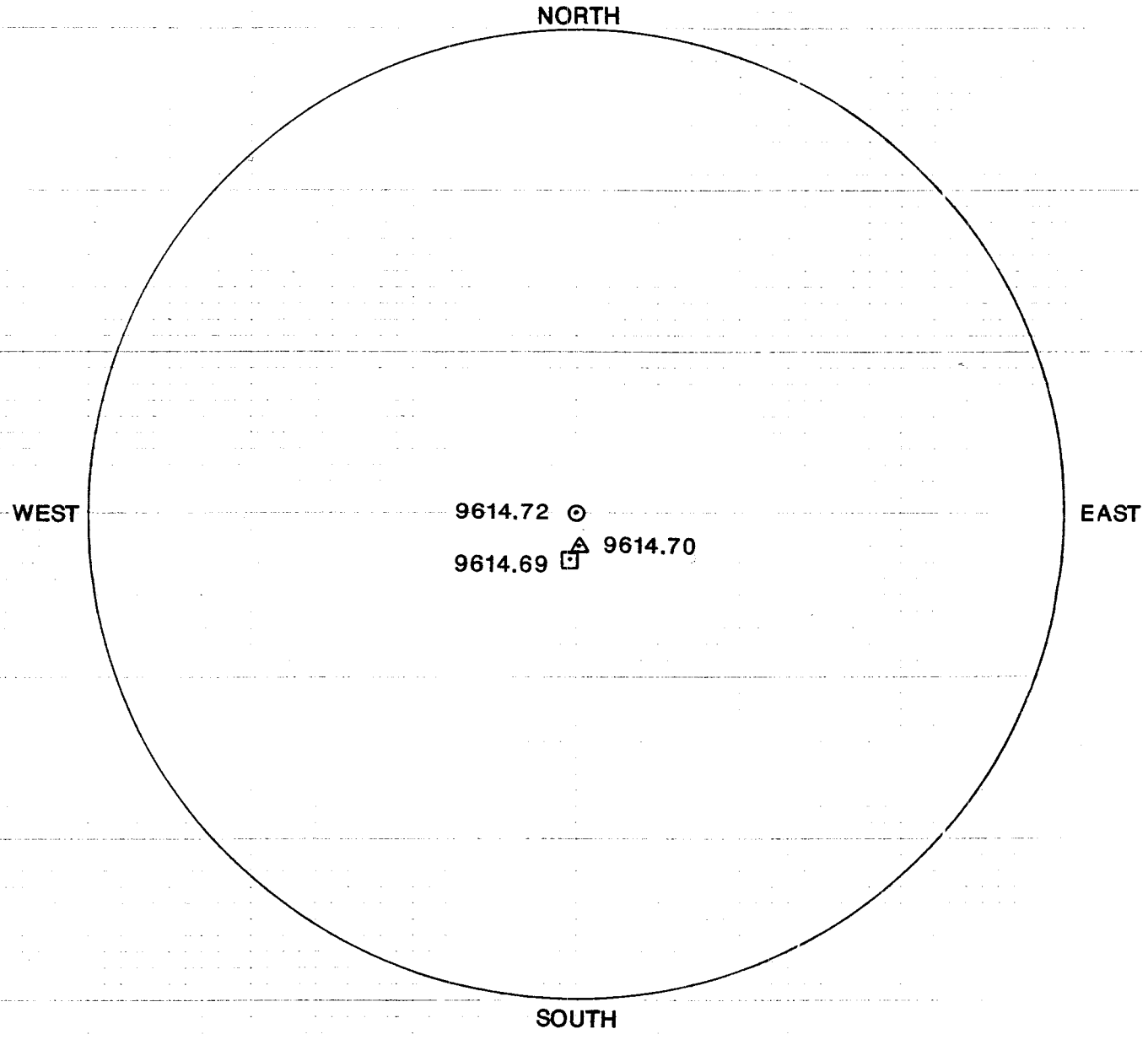
LEGEND

- ⊙ PREMINING JULY 7,1988
- △ SEPTEMBER 23,1988
- ⊡ NOVEMBER 1,1988

TOTAL VERTICAL SUBSIDENCE -0.12 FEET

SCALE = 1"=1'

FIGURE 4
U-NORTH CLIFF SUBSIDENCE MONITORING
STATION U4
HORIZONTAL MOVEMENT PLOT



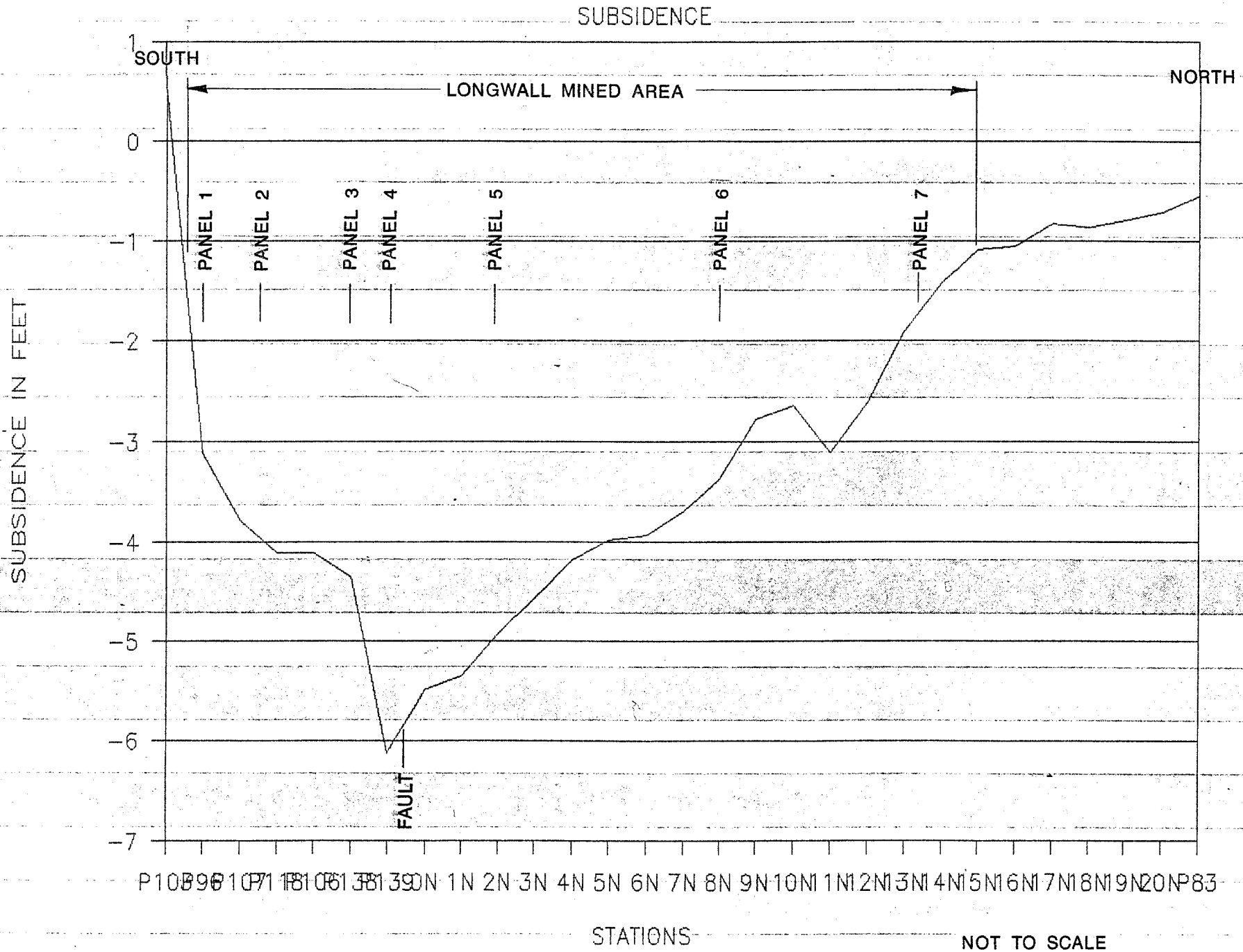
LEGEND

- ⊙ PREMINING JULY 7,1988
- △ SEPTEMBER 23,1988
- ⊡ NOVEMBER 1,1988

TOTAL VERTICAL SUBSIDENCE -0.03 FEET

SCALE = 1"=1'

SECTION A-A
PANELS 1 - 7 PROFILE



NOT TO SCALE