

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. AMENDMENT/MODIFICATION NO. Three (3)	2. EFFECTIVE DATE 7/31/80	3. REQUISITION/PURCHASE REQUEST NO. RES-78-228 dtd. 4/16/80	4. PROJECT NO. (If applicable)
5. ISSUED BY U. S. Nuclear Regulatory Commission Division of Contracts Washington, DC 20555		6. ADMINISTERED BY (If other than block 5)	

7. CONTRACTOR NAME AND ADDRESS STATE OF IOWA IOWA GEOLOGICAL SURVEY 123 North Capitol Street Iowa City, IA 52242	8. AMENDMENT OF SOLICITATION NO. DATED _____ (See block 9)	MODIFICATION OF CONTRACT/ORDER NO. NRC-04-78-228 DATED 05/01/78 (See block 11)
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9. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in block 12. The hour and date specified for receipt of Offers is extended, is not extended.

Offerors must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended, by one of the following methods:

(a) By signing and returning _____ copies of this amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If, by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided such telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

10. ACCOUNTING AND APPROPRIATION DATA (If required)

B&R No. 60-19-12-01 FIN B6312 INCREASE - \$79,280.00

11. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS

(a) This Change Order is issued pursuant to _____
The Changes set forth in block 12 are made to the above numbered contract/order.

(b) The above numbered contract/order is modified to reflect the administrative changes (such as changes in paying office, appropriation data, etc.) set forth in block 12.

(c) This Supplemental Agreement is entered into pursuant to authority of mutual agreement of the parties
It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

The following changes are hereby made to the contract:

ARTICLE III - PERIOD OF PERFORMANCE, the period is hereby extended for an additional year, through July 31, 1981.

ARTICLE II - STATEMENT OF WORK

The workscope for the third year shall include the following:

1. Continue gravity data collection.
2. Continue operation of seismic array.
3. Continue seismic refraction/reflection profiling.
4. Continue ground magnetics data collection.
5. Utilize local quarry blasts for seismic investigation.
6. Continue data collection for Hertha Limestone structure contour map.
7. Begin detailed study of Paleozoic and Pleistocene deposits along areas of Precambrian faults mapped from geophysical data plus continued updating and modification of Precambrian fault patterns.

Except as provided herein, all terms and conditions of the document referenced in block 8, as heretofore changed, remain unchanged and in full force and effect.

13. <input type="checkbox"/> CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT		<input checked="" type="checkbox"/> CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN <u>4</u> COPIES TO ISSUING OFFICE	
14. NAME OF CONTRACTOR/OFFEROR BY <u>Donald L. Koch</u> (Signature of person authorized to sign)		17. UNITED STATES OF AMERICA BY <u>Kellogg V. Morton</u> (Signature of Contracting Officer)	
15. NAME AND TITLE OF SIGNER (Type or print) Donald L. Koch Acting Director	16. DATE SIGNED 5-7-80	18. NAME OF CONTRACTING OFFICER (Type or print) Kellogg V. Morton	19. DATE SIGNED 5-16-80

METHODS

1. During the 1979-80 contract period 309 stations were added to southwest Iowa gravity network. Field work was concentrated along the southeast flank of the Midcontinent Geophysical Anomaly to permit more precise location of associated faulting along that flank. Gravity data collection during the 1980-81 field seasons will be concentrated along the northwest flank of the MGA and over a magnetic low that is present long the crest of the MGA (Figure 1). Field work, data reduction, three-dimensional modeling, and map preparation will continue with NRC funding.
2. The five-station seismic array will continue to be operated and data analyzed. All data is being telemetered to IGS laboratories in Iowa City. The main cost for this system now is for telephone line charges and salaries for data analyses.
3. Delay in equipment delivery prevented the start of seismic refraction/reflection profiling during the 1979 field season. However, IGS now has a 6-channel Geometrics Model ES-1210 F signal-enhancement seismograph. Seismic profiles will be conducted across the more intense gravity and magnetic gradients on the flanks of the MGA. By this method we expect to more precisely define the faults described by gravity and magnetic data interpretations, and determine if basement faulting has continued into younger sediments. To accomplish this will require NRC funding for field expenses, field technicians and data reduction.

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SOUTHWEST IOWA SEISMICITY STUDY

IOWA GEOLOGICAL SURVEY

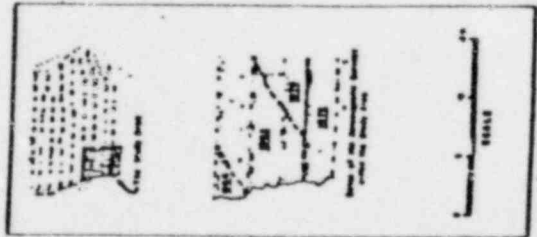
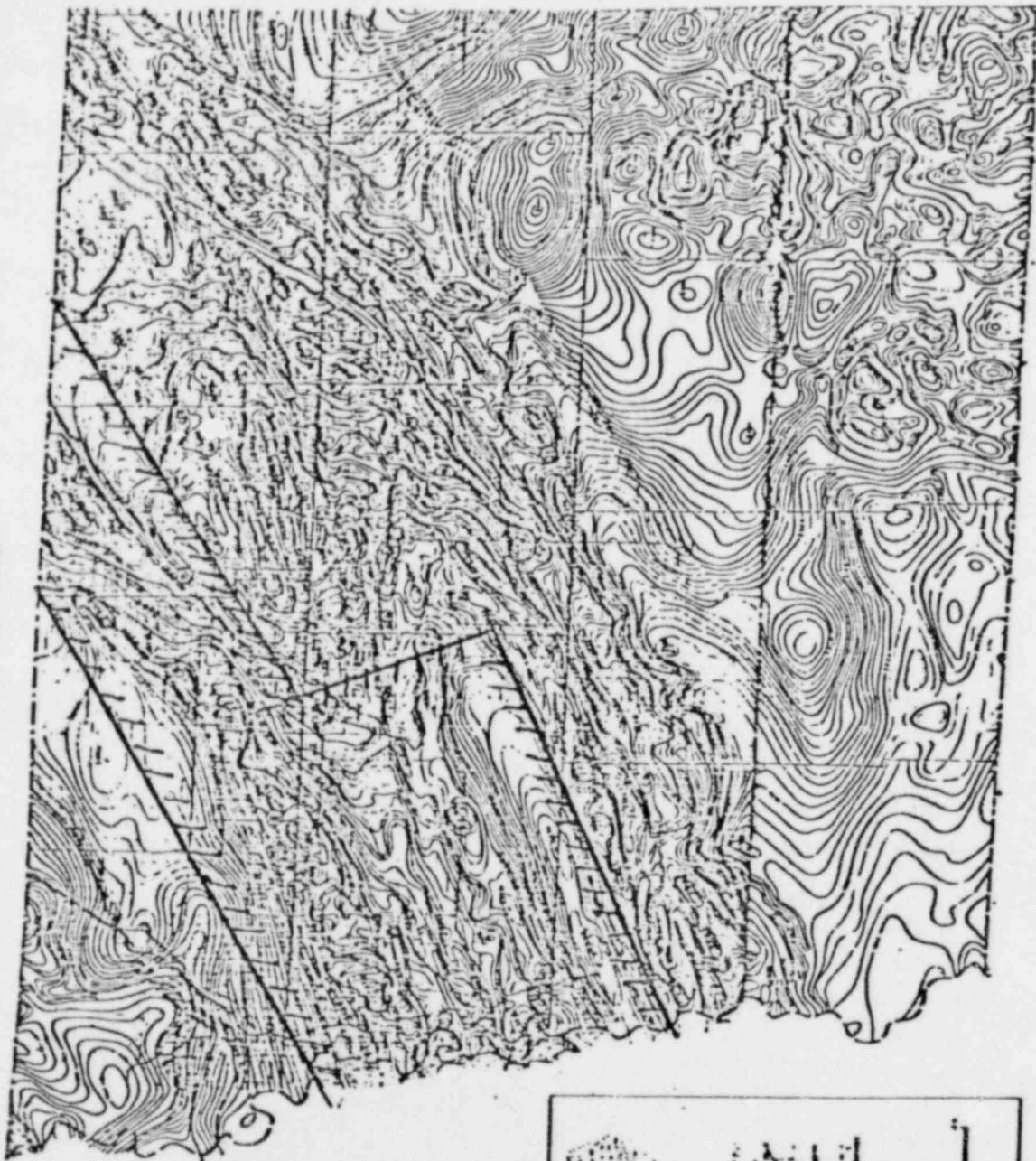


FIGURE 7. AEROMAGNETIC MAP

*Area of 1960-81
Gravity survey*

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4. Although Iowa has complete aerial magnetic coverage, there are areas where we believe more detailed station information would be beneficial. We will utilize the IGS Askania magnetometer to acquire such information in conjunction with the gravity data. The only added funding required is for data reduction.
5. To gain as much information as possible from seismic data it is important to determine seismic travel time in the geologic sequence of the study area. To do this we will attempt to utilize local quarry blasts. We propose to do this by developing a time-controlled firing mechanism along with the signal-enhancement seismograph and the 5-station seismic array. We believe this will provide much valuable information.
6. We will continue efforts to obtain new data from well drillers and quarry exploration companies for further refinement of the Hertha Limestone structure map (Figure 2). It is also expected that the Hertha horizon will be recognizable on the data gathered from the refraction/reflection profiling. This will be a tremendous aid in refining the structure map.
7. We believe one of the crucial questions to be answered by ongoing investigations is whether or not the faults recognized by various means has moved during or after the Pleistocene Period. We recognize that evidence of such movement may be rather obscure in most instances. However, with data now available that more closely pin-points the deeper faults in some areas, we feel it important to conduct detailed field studies of those areas where deeper faulting has been mapped. The funding required for those studies will be largely for field expenses.

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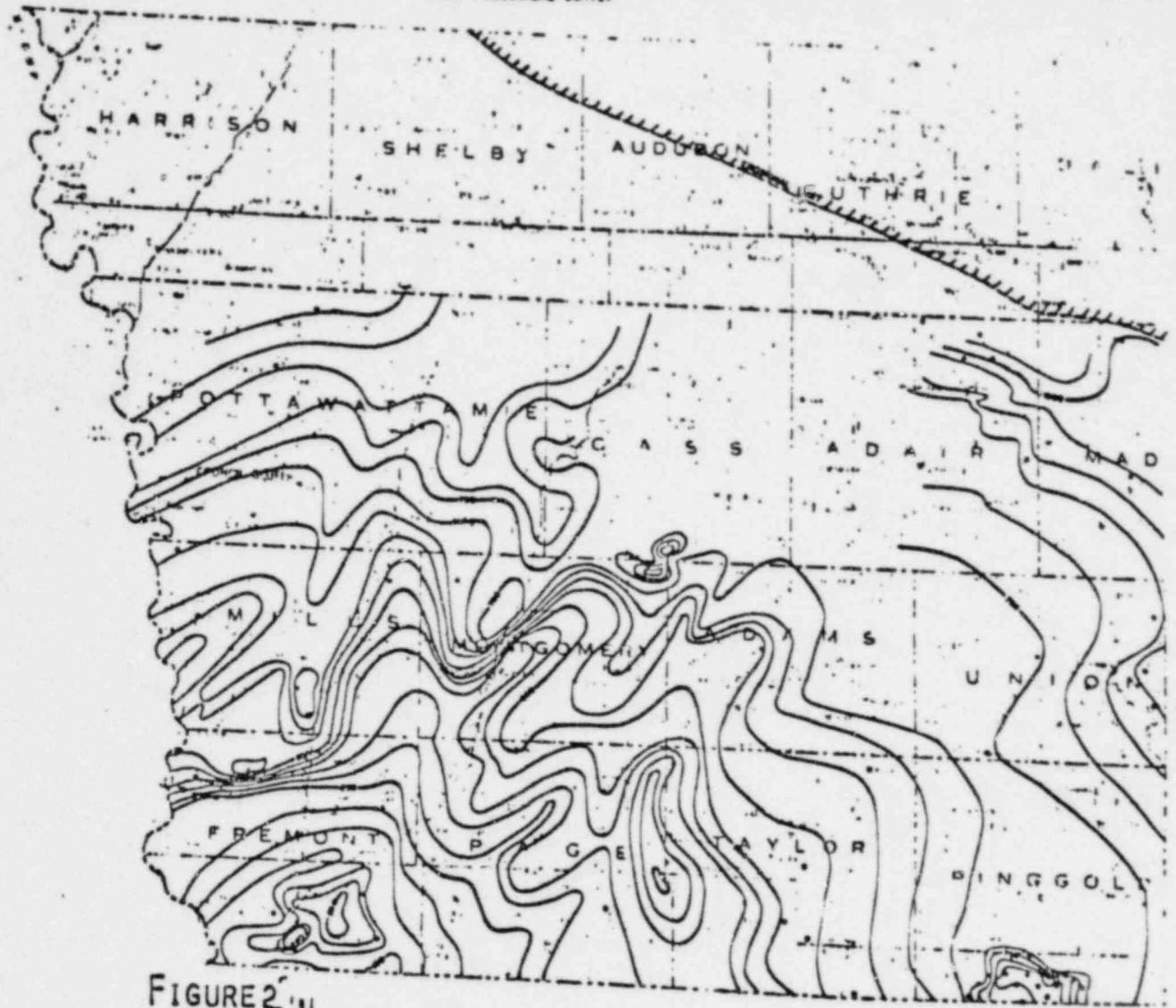
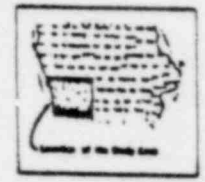
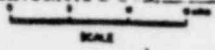


FIGURE 2

STRUCTURAL FEATURES OF SOUTHWEST IOWA
 (Contours drawn on Base of Hertha)
 Contour Interval 50 Feet, Datum Mean Sea Level

EXPLANATION

- • Wells penetrating the Hertha
- Structural Contours



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ARTICLE IV - TOTAL ESTIMATED COST AND OBLIGATION OF FUNDS

Paragraph 1 Total Estimated Cost

The total estimated cost of the work to be performed under this contract is increased by \$105,961.00 from "\$192,349.00" to "\$298,310.00."

The total estimated cost to the Commission is increased by \$79,280.00 (added by this modification) from "\$157,433.00" to "\$236,713.00."

The total estimated cost to the State of Iowa is increased by \$26,681.00 from "\$34,916.00" to "\$61,597.00."

Paragraph 2 Obligation of Funds

The amount presently obligated by the Commission with respect to this contract is increased by \$79,280.00 from "\$157,433.00" to "\$236,713.00."

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