

1. AMENDMENT/MODIFICATION NO. **Four (4)**

2. EFFECTIVE DATE **2/1/80**

3. REQUISITION/PURCHASE REQUEST NO. **RES-77-145 dated 5/7/80**

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

**Southwest Research Institute
 6220 Culebra Road
 P. O. Box 28510
 San Antonio, TX 78284**

8. AMENDMENT OF SOLICITATION NO. _____

DATED _____ (See block 9)

MODIFICATION OF CONTRACT/ORDER NO. **NRC-04-77-145**

DATED **9/12/77** (See block 11)

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. 60311105	FIN No. B7019(\$30,000.00)	(Total Increase)
B&R No. 60191105	FIN No. B5605(\$245,500.00)	\$275,500.00

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 **the mutual agreement of both parties**

It modifies the above numbered contract as set forth in block 12.

12. DESCRIPTION OF AMENDMENT/MODIFICATION

1. Under Article II, Period of Performance, the Period of Performance is extended from "January 31, 1980" thru "July 31, 1981."
2. The purpose of this contract extension is to allow completion of the statement of work described in Article I of the Contract No. NRC-04-77-145, as amended on 9/12/78. Accomplishment of this objective requires the completion of the following tasks according to the attached schedule.
 - (1) Improve the signal-to-noise ratio of the current SAFT UT examination system. This will be accomplished by improving ultrasonic search units and by obtaining an improved display method; and, if necessary, improvements will be made to processing algorithms and the SAFT UT scan mechanism.

POOR ORIGINAL

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. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN **4** COPIES TO ISSUING OFFICE

14. NAME OF CONTRACTOR/OFFEROR

BY *[Signature]* (Signature of person authorized to sign)

17. UNITED STATES OF AMERICA

BY *[Signature]* (Signature of Contracting Officer)

15. NAME AND TITLE OF SIGNER (Type or print)
John F. Sprencel, Bus. Mgr. QA Sys. & Engrg. Div.

16. DATE SIGNED **8/20/80**

18. NAME OF CONTRACTING OFFICER (Type or print)
Kellogg V. Morton

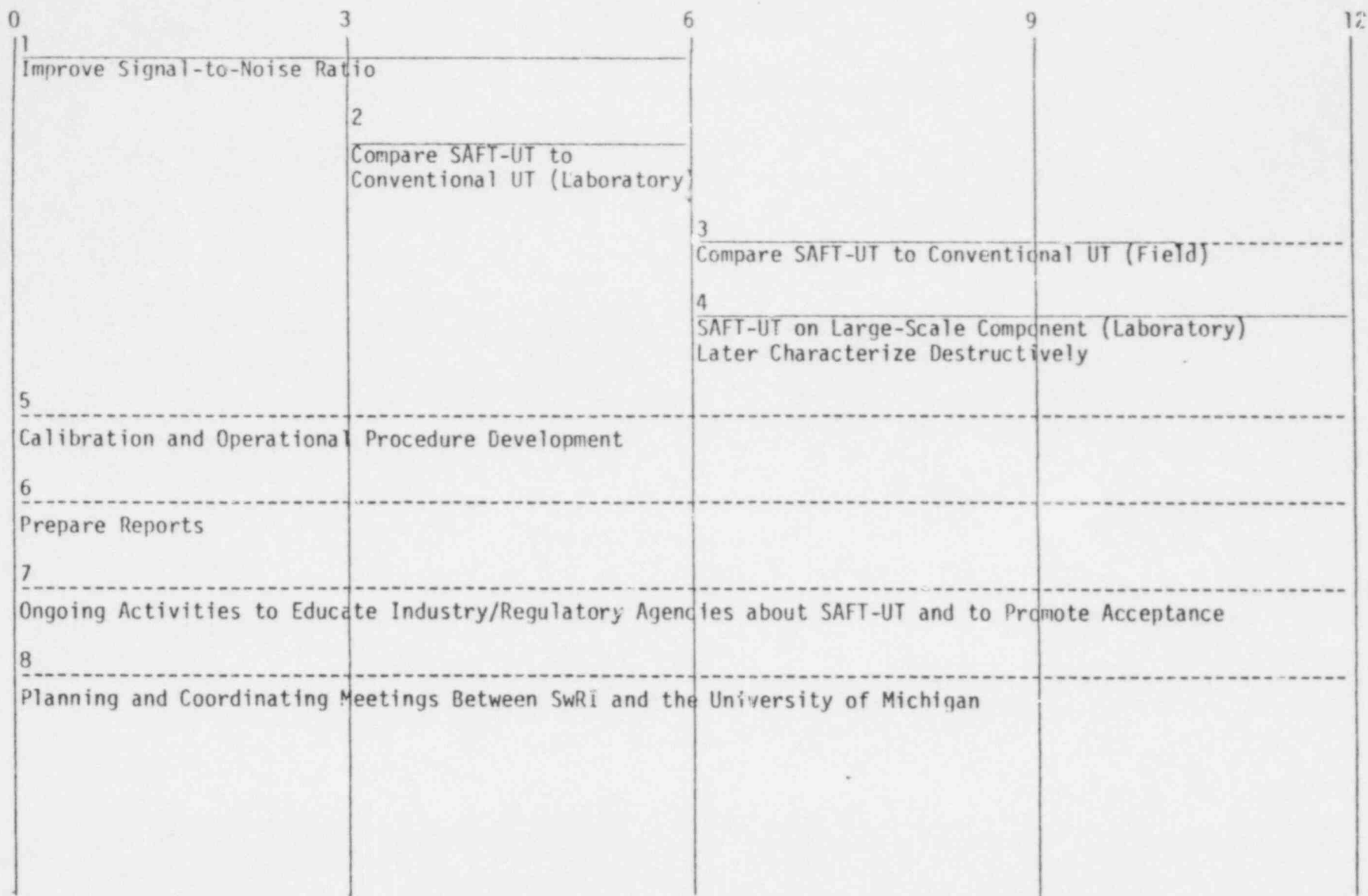
19. DATE SIGNED *[Signature]*

- (2) Subject the improved SAFT UT system to a test matrix to conclusively demonstrate its performance for characterizing flaws contained in structures representing nuclear power reactor pressure vessels and components. In these tests, SAFT UT results will be compared to the results of conventional ultrasonic examinations to determine the relative performance of the two methods.
- (3) Following the laboratory test described in (2) above, the improved SAFT UT system will undergo a series of field tests conducted at commercial nuclear power reactors in coordination with scheduled examinations conducted by SwRI personnel. SAFT UT results will be compared and evaluated against results obtained from conventional UT.
- (4) A series of laboratory tests will be conducted to continue evaluation and validation of SAFT UT. In these tests, SAFT UT will be compared with conventional UT on large-scale components containing real flaws that are subsequently characterized by destructive examination.
- (5) Experience accrued through the preceding activities will be used in formulating calibration and operational procedures. These guidelines will be continually updated as experience is gained.
- (6) Topical reports will be prepared for each of the activities listed. These reports will be useful for a Code case presentation. The Institute will also cooperate with ASME to establish the acceptance of SAFT UT into the Code for flaw characterization during inservice inspection.
- (7) Throughout the program, SwRI will present topical reports and presentations at various NDE conferences. These activities are intended to educate industry and regulatory persons as to the capabilities and advantages of SAFT UT in order to promote widespread acceptance of the method.
- (8) Throughout the program, SwRI and the University of Michigan will hold periodic meetings for coordinating the SAFT UT activities of the two groups. The purpose of these meetings is to provide prompt transfer of experimental results and coordinating planning sessions to maximize the useful results obtained from the two programs. Tentative plans call for meetings at 6-week intervals to be held at the two facilities on an alternating schedule. Representatives from the NRC will participate in these meetings to whatever extent they desire.

3. Under Article III, Consideration, A., Estimated Cost and Fixed Fee, make the following changes:
 - Paragraph 1 - Delete "\$260,924.00" and substitute in lieu thereof "\$518,424.00."
 - Paragraph 2 - Delete "\$18,265.00" and substitute in lieu thereof "\$36,265.00."
 - Paragraph 3 - Delete "\$279,189.00" and substitute in lieu thereof "\$554,689.00."
4. The contract amount is hereby increased by \$275,500.00 from "\$279,189.00" to "\$554,689.00."
5. The total estimated amount for this additional year of effort is \$297,354.00. It is estimated that the amount currently allotted by this modification (\$275,500.00) will cover performance thru December 31, 1980.

PROGRAM SCHEDULE

MONTHS



————— Solid lines denote intense activity.

- - - - - Dashed lines denote intermittent activities.

Activities are numbered according to task statements.