Battelle
Pacific Northwest Laboratories
P.O. Box 999
Richland, Washington U.S.A. 99352
Telephone (509) 375-2157
Telex 15-2874

September 22, 1982

Dr. Joe Muscara
Materials Engineering Branch
Engineering Technology Division
Nuclear Regulatory Commission
Mail Stop 5650NL
Washington, D.C. 20555

Dear Joe:

MONTHLY LETTER REPORT - AUGUST, 1982
ACOUSTIC EMISSION CHARACTERIZATION OF
FLAW GROWTH IN A533B PRESSURE VESSEL STEEL
FIN. NO. B2088

ACCOMPLISHMENTS

- Completed and laboratory tested the AE monitor system for the ZB-1 test.
- Shipped all equipment for ZB-1 test.
- Conduit for signal leads is being installed at Watts Bar Unit 1.
- Started long term stress corrosion cracking test.

VESSEL TEST

The complete AE monitor system for use on the ZB-1 test has been completed (hardware and software) and tested in the laboratory. The data acquisition/source location system demonstrated the capability to process 15 signals/second from three arrays without saturating. As a safeguard against loss of data, the data acquisition front end records raw data on a high density cartridge recorder in parallel with sending the data to the source location unit.

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The ZB-1 test vessel was in place in the test bunker at GKM, Mannheim, West Germany at the end of August. All PNL equipment for the ZB-1 test has been shipped to Mannheim.

REACTOR MONITORING

Contact with TVA construction established that installation of conduit for permanent AE signal lead wires inside containment at Watts Bar Unit 1 reactor is in process. Hot functional testing which is the next activity to be AE monitored is currently scheduled for March 1983.

PIPE MATERIAL CHARACTERIZATIO

A long term stress corrosion cracking test was started 8/23/82. The specimen is 4 inch, Schedule 80, 304 stainless steel pipe with post weld sensitization. Test conditions are internal pressurization with 550°F water at 1400 psig and containing 6 ppm O_2. No external load is being applied. Under these conditions, it is expected to require 6 months to initiate stress corrosion cracking (SCC). This will provide an opportunity to compare AE data from a long term SCC test and the short term test presently being held in abeyance until a waveform recorder is available.

SCHEDULE AND FUNDING

Emphasis continues to focus on the ZB-1 vessel test to make every effort to avoid any further schedule delays. Activity on pipe material characterization and development of an engineering prototype monitor system should resume in October when the ZB-1 test is under way.

Table 1 gives the funding status as of September 1 and Figures 1 and 2 show the schedule status.

PLANS FOR SEPTEMBER

- Complete all preparation for start of ZB-1 vessel testing. This includes installation and check out of the AE system plus all peripheral equipment such as COD gauges and flow noise simulator.
- Continue the long term stress corrosion cracking test of pipe material.

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- Review the program status for NRC.

Yours very truly,

P. H. HUTTON
Project Manager

PHH:kw

Attachments

Table 1

AE/FIAW CHARACTERIZATION PROGRAM

SUMMARY OF FY82 COSTS

Total Funding:	Expense	- FY82 (Fin. No. B2088)	$750.0K
		- FY81 carryover (Fin. No. B2088)	12.0K
		- FY81 carryover (Fin. No. B2411-1)	48.0K
		Total	$810.0K
	Capital	- FY82	$150.0K
		- FY81 carryover	-1.6K
		Total	$148.4K
Cost to 9/1/82:	Expense	- Spent	$501.0K
		- Balance	309.0K
	Capital	- Spent	$ 7.4K
		- Balance	141.0K

Major FY82 Cost Elements to Date

EXPENSE

ZB-1 Vessel Test and Analysis	$179.0K
Reactor Testing	
- TVA Costs	7.5K
- Preservice Reactor Test Monitoring	86.5K
Piping Material Characterization	
- Stress Corrosion Cracking Tests	16.0K
- Fatigue Crack Growth Tests	45.0K
Code Case Preparation	5.0K
AE Monitor System & Pattern Recognition	88.5K
Irradiated Fracture Tests	3.5K
Program Management, Reporting, Miscellaneous	70.0K
Total	$501.0K

CAPITAL

Support Components for ZB-1 Vessel Test	$ 7.4K
Total	$ 7.4K

Table 1

(Cont'd)

Projected Application of Remaining FY82 Funds

EXPENSE

ZB-1 Vessel Test and Analysis		$ 70.0K
Reactor Testing		
- TVA Costs		135.0K
- Preservice Reactor Test Monitoring		5.0K
Piping Material Characterization		
- Stress Corrosion Cracking Tests		18.0K
- Fatigue Crack Growth Tests		29.0K
Code Case Preparation		6.0K
AE Monitor System & Pattern Recognition		10.0K
Irradiated Fracture Tests		6.0K
Program Management, Reporting, Miscellaneous		30.0K
	Total	$309.0K

CAPITAL

Engineering Prototype AE System		$130.0K
Support Components for ZB-1 Vessel Test		11.0K
	Total	$141.0K

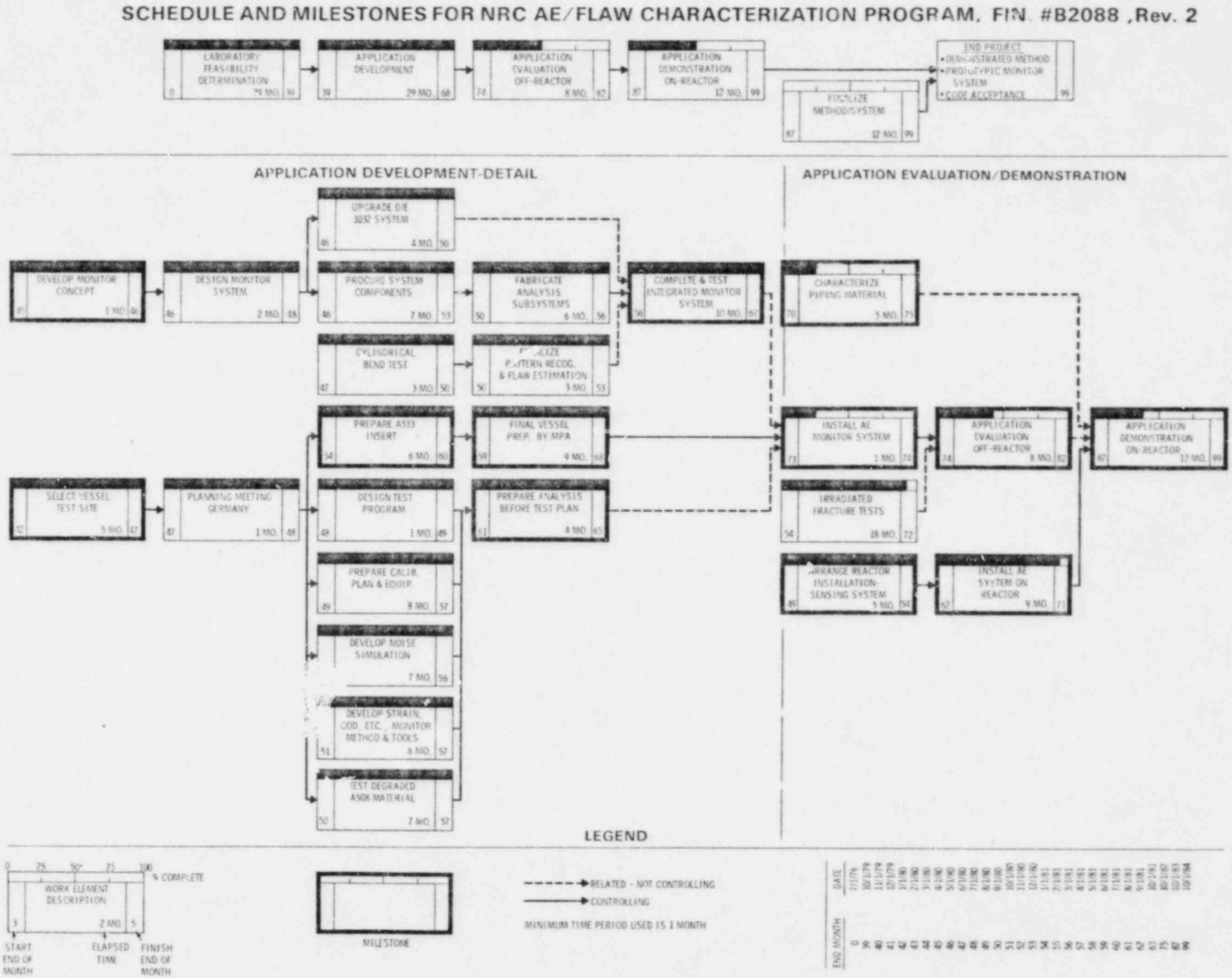

Figure 1. Program Schedule and Milestones.

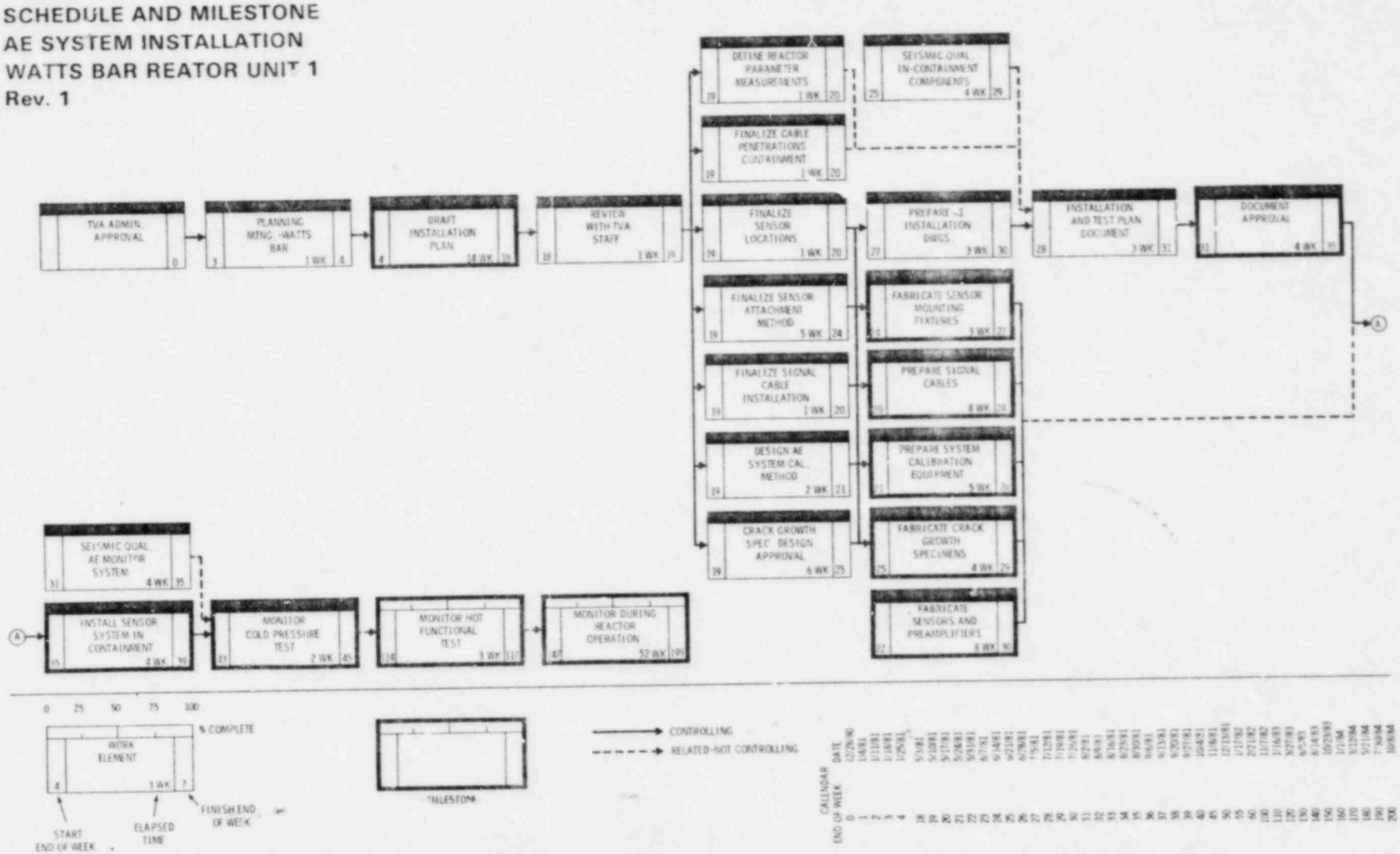

Figure 2. Reactor Testing - Schedule and Milestones

NRC Research and/or Technical Assistance Rept

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INTERIM REPORT

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Responsible NRC Individual and NRC Office or Division:
Dr. Joe Muscara
Materials Engineering Branch
Engineering Technology Division

BATTELLE
Pacific Northwest Laboratory
P. O. Box 999
Richland, WA 99352

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