SUPERFUND
DESIGN
and
CONSTRUCTION
Update

From: Hazardous Site Control Division
To: EPA Regional Offices

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SITE FIELD DEMONSTRATIONS

The results are in for 10 field demonstrations conducted under the aegis of the Superfund Innovative Technology Evaluation (SITE) Program. The demonstrations were conducted by Soliditech, Inc., Ultrox International, Inc., Chemfix Technologies, Inc., Hazcon, Inc., American Combustion, Inc., TerraVa Inc., International Waste Technologies, Inc., Haztech-Shirco Infrared Systems, Inc., and C.F. Systems Corp. SITE was created to promote the development and use of innovative technologies.

In this issue of the Update, the Pyreton™ oxygen-air-fuel burner, developed by American Combustion, Inc., will be presented.

The Pyreton™ oxygen-air-fuel burner, developed by American Combustion, Inc. of Norcross, Georgia, was demonstrated at EPA's Combustion Research Facility (CRF) in Jefferson, Arkansas. The primary objective of the demonstration, conducted between November 1987 and January 1988, was to evaluate the performance of the Pyreton™ oxygen burner at throughputs higher than those of a conventional air-based incineration system. For this comparison, conventional air burners were represented by the CRF rotary kiln system. Eight comparison tests were conducted using a mixture of contaminated soil from the Stringfellow Acid Pit Superfund site, California, and a decanter of tank tar sludge (listed waste K087). Preliminary results indicate the potential for significant cost savings using the Pyreton™ burner to clean up Superfund sites could save money.

For the conventional rotary kiln system, the optimum feed charge was 21 pounds at a charging interval of 12 minutes. Higher feed rates destabilized the process. Oxygen depletion in the conventional kiln resulted in flameouts, excessive carbon monoxide (CO) exiting the kiln, and CO breakouts from the afterburner. While attempts were made to increase air flow and provide additional oxygen, residence times were reduced below levels necessary for complete combustion.

During testing of the Pyreton™ oxygen burner, the mass charge remained 21 pounds; however, throughput was doubled because the charge interval was reduced from 12 minutes to 6 minutes. At this rate, tests show that the Pyreton™ oxygen burner provided temperature control in both the kiln and afterburner. Oxygen levels at the kiln exit were maintained at sufficiently high levels, and CO levels were kept to a minimum, with no indication of CO in the stack. Results from this test show that the Pyreton™ burner maintained sufficient oxygen concentration in the kiln. CO levels at the kiln exit were well within the capacities of the afterburner.

In addition, destruction and removal efficiencies (DRE) exceeded 99.99 percent for all tests.

Reports on the test results of all ten completed demonstrations will become available throughout the next year. SITE information is available to the general public on the Superfund Hotline, 202-382-3000 or 1-800-424-9346.

For additional information on the program, contact John Kingscott, EPA Headquarters, 202-382-4362.

To be put on the mailing list to receive SITE demonstration project reports, write to:

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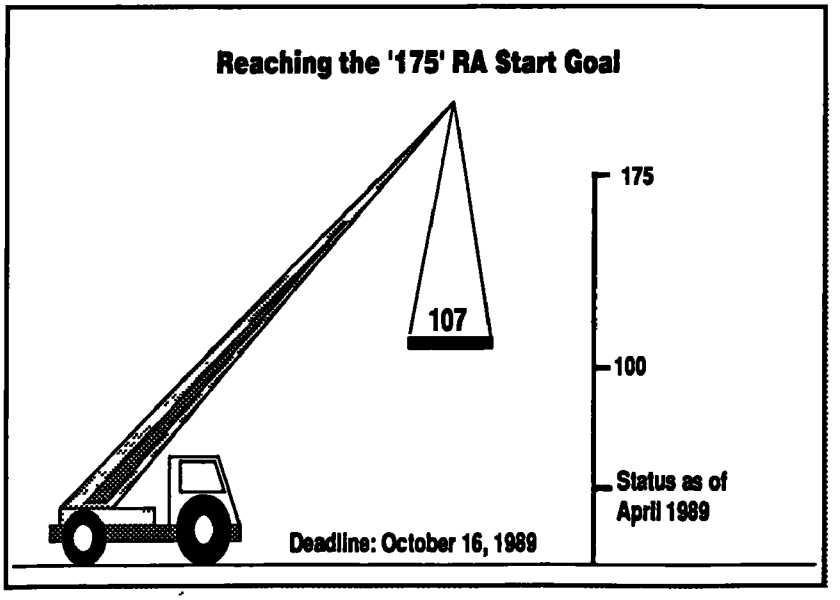
USEPA/CERI
26 West Martin Luther King Drive
Cincinnati, Ohio 45268 ■



SOLICITATION OF SEALED BIDS

Most major construction projects are procured either through the solicitation of sealed bids or through a negotiated procurement. Sealed bidding is used when the required work is well defined and of a kind that is familiar to the construction community. Negotiated procurement is used when the work is less well defined or when there is a desire to develop alternative technologies. A third method of solicitation—two-step sealed bidding—combines features of both sealed bidding and negotiated procurement and is an alternative means of procuring construction activities. However, the decision to use one method or another is not cut and dried, and the methods figure prominently in the procurement of clean-up activities in the Superfund program. Below is a description of the salient features of the sealed bidding method. A description of the negotiated procurement method will be presented in a subsequent issue of the Update.

Sealed bidding is a method of procurement that gives all qualified contractors an opportunity to compete for contracts on the basis of price. The work desired under the contract must be described in sufficient detail to enable bidders to understand fully what is required of them for the prices of their bids. The description of the work must also be clear to ensure that all bidders will be bidding on the same work and therefore be on an equal basis. For these reasons, sealed bidding is usually done on the basis of design specifications that contain detailed plans and specifications for all aspects of the work.

PRESOLICITATION

The plans and specifications are developed before work is advertised. They are included in an "Invitation for Bids" (IFB), which also contains the terms and conditions that will, along with the plans and specifications, become the basis of the contract upon award to the successful bidder.

SOLICITATION AND RECEIPT OF BIDS

The IFB is advertised publicly to create as much competition as possible. Bidders submit bids in sealed envelopes at a prescribed location no later than a specified date and time set for a public bid opening. At that time, the bids are opened and read. The apparent low bid is announced. After the announcement, and before award, the bids are evaluated.

BID EVALUATION

The low bid is evaluated to ensure that it is responsive and that it conforms to all the terms and conditions of the IFB. All cost and price information is checked for mistakes, oversights, and omissions. The responsibility of the bidder is then evaluated. Responsibility refers to the bidder's ability and capacity to accomplish the work as required under the bid. Items of responsibility include financial resources, bonding, facilities and equipment, record of performance, and ability to comply with the required schedule. (See Vol. 2, No. 5 of the Update for a detailed discussion of responsiveness and responsibility.)

AWARD

The contract is awarded to the lowest cost responsive and responsible bidder. At the time of the award, or shortly thereafter, a notice to proceed is issued containing dates for the period of performance. From this point, the contractor is responsible for performing the work as described in the contract. Changes in the work must be accomplished through "change orders" while the work is in progress.

CONTRACT ADMINISTRATION

Counting from the date of the notice to proceed, the contractor has a specified number of days to complete the work. Administration of the contract involves monitoring progress to ensure that the schedule is adhered to and to verify the quality of work completed so that partial payments can be made. Construction inspection also monitors compliance with the plans and specification. Change orders, and the resulting cost adjustments, are processed without interruption of the work or the schedule. As the work is completed, prefinal and final inspections are performed. When the government or the owner's engineers and construction inspectors are satisfied that all work has been completed within the terms of the contract, the project is accepted and final payment is made.

ADVANTAGES OF SEALED BIDDING

One advantage of sealed bidding is that the method encourages price competition. All responsive and responsible bidders are placed on an equal basis through the bidding process. In addition, sealed bidding shifts the risk

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SCHEDULED TRAINIING

Hazardous Materials Incident Response Operations (FTS 8-684-7537)

May 15 to May 19	Edison, NJ
May 22 to May 26	Cincinnati, OH
June 5 to June 9	Cincinnati, OH
June 19 to June 23	Edison, NJ
July 10 to July 14	Cincinnati, OH
July 10 to July 14	Edison, NJ

Personnel Protection and Safety (FTS 8-684-7537)

May 15 to May 19	Region V
June 5 to June 9	Region III
June 12 to June 16	Region X
July 10 to July 14	Region X

Air Surveillance for Hazardous Materials (FTS 8-382-2997)

May 22 to May 26	Region I
June 19 to June 23	Region X
July 17 to July 21	Region II

Introduction to Ground-Water Investigation (FTS 8-382-2997)

May 23 to May 25	Region VII
June 13 to June 15	Region VIII

Environmental Risk Assessment (FTS 8-382-2997)

June 13 to June 16	Region VII
July 18 to July 20	Region II

Sampling for Hazardous Materials (FTS 8-255-2270)

June 20 to June 22	Region I
July 18 to July 20	Region X

Advanced Air Sampling for Hazardous Materials (FTS 8-629-2353)

June 26 to June 30	Cincinnati, OH

Hazardous Materials Treatment Technologies (FTS 8-382-2997)

July 11 to July 14	Region V

Solicitation of Sealed Bids continued from p. 2

involved in the construction of the project to the construction contractor. The contractor's bid is a promise to accomplish the required work for a specific dollar amount. Because the agency has taken the time and effort up front to describe the work in great detail, through detailed engineering plans and specifications, the contractor knows precisely what is required when submitting a bid. Any changes are handled through change orders, but the work that was bid on must be accomplished as bid. The contractor is allowed relief, however, if unusual site conditions are encountered. Sealed bidding is the preferred method of solicitation in Superfund projects when the work is relatively easy to define. For example, contracts for installing drinking water wells and water mains are usually solicited under sealed bids. Excavation and hauling projects will also be considered for sealed bid solicitation. More complex jobs, such as thermal destruction, are more likely to be solicited through negotiated procurements.□

– Jack Taylor
Hazardous Site Control Division

BUREAU OF RECLAMATION PROVIDES TECHNICAL ASSISTANCE

The Memorandum of Understanding between the U.S. Bureau of Reclamation (BOR) and the EPA, signed on October 9, 1987, provides for BOR engineering, technical, and management services to be made available to the EPA in accomplishing Superfund objectives. By the end of 1988, 19 Interagency Agreements (IAGs) had been signed in nine states through four EPA Regional offices. These IAGs provide for technical review, training, design, and construction oversight services.

The BOR is a water-resources management agency having a full range of capabilities in planning, design, construction management, research, and operations. An example of the type of services available to the Superfund program is illustrated by the work the BOR has done at the Smuggler Mountain Superfund site in Aspen, Colorado. Smuggler Mountain was the first EPA remedial action project to be designed by the BOR.

The site contains old mine and smelter tailings produced during the 1880-1915 silver mining period. The tailings, which were moved around extensively during the development of the Aspen community, are contaminated with heavy metals, principally lead and cadmium. Houses, condominiums, and mobile homes are located on top of the contaminated tailings.

The BOR's team of scientists and engineers conducted geotechnical and hydrogeologic investigations to evaluate the potential for waste repositories at the site. The BOR's design responsibility includes removing approximately 60,000 cubic yards of contaminated tailings from residential areas, followed by placement of tailings in two capped, permanent repository cells for containment and control. Plans for moving a 4-foot-diameter irrigation pipeline that lies beneath one of the cells will be implemented this summer.

The BOR's central point-of-contact is Gerald F. Bowles, Denver, Colorado, FTS 776-8646. The liaison between EPA and the BOR is Jack Taylor, EPA Headquarters, FTS 475-8246.□

CORPS OF ENGINEERS' PAYMENT METHOD TEST

Since entering into a Memorandum of Understanding with EPA in 1988, the U.S. Army Corps of Engineers (COE) has performed an ever-increasing design and construction role in the Superfund program. COE's increasing role has created the necessity to streamline the process for its reimbursement for in-house costs and for its payments to contractors. For almost 2 years, both COE and EPA have been working to revise the payment procedures. As a result of their efforts, a simplified payment procedure is being pilot tested at two sites: New Lyme, Ohio, and Moyer's Landfill, Pennsylvania. These sites are in Regions V and III, respectively.

Under the current payment system, COE pays all in-house costs and contractor payments out of its non-Superfund appropriations and then requests reimbursement from EPA. During the reimbursement process, in-house costs and contractor payments must be consolidated on one invoice prior to submission. Due to the time needed to process payments within COE and then submit invoices to EPA, the RPM often receives the invoices several months after the fieldwork has been completed. These consolidated invoices, combined with delays in processing, have caused problems in interpreting and paying COE invoices. The current payment system also has drawn criticism during audits of COE Superfund projects.

Under the procedures being pilot tested, two methods of payment are used in dealing with COE projects. All in-house costs are paid by allocation transfer. This means that the COE estimates in-house costs for all projects on a monthly basis, and EPA transfers the funds to them. The COE is responsible for documenting all costs for cost-recovery. Contractors still submit invoices to the COE, but the COE project manager only certifies the progress payment request and then forwards it to the EPA Finance Office in Cincinnati for payment. EPA then pays the contractor directly. The COE project manager also forwards a copy of the progress payment request to the EPA RPM for his review and records. Both project managers meet on a routine basis to discuss the progress payments and reconcile any differences.

Pilot testing began in November 1988, at the New Lyme, Ohio site, and in February, 1989, at the Moyer's Landfill site. Both tests will be evaluated in June of this year, and a report will be issued with recommendations for adopting the procedures for all COE assignments initiated in fiscal year 1990.

If you would like additional information or have questions about these pilot tests, please call Bill Zobel, EPA Headquarters, at FTS 382-2347.■

BRUIN LAGOON BID TABULATION

Bruin Lagoon in Bruin Borough, Pennsylvania, contains acidic sludge from white oil production waste. The work bid involved:

- Excavating the sludge to bedrock
- Neutralizing the sludge with hydrated lime
- Placing a 1-foot layer of lime on the bedrock
- Replacing the sludge in the lagoon area after the sludge and bedrock have been stabilized
- Compacting the sludge
- Capping the area
- Installing monitoring wells and gas vents

Sealed bids were solicited and five bids were received and opened on October 6, 1988. The low bidder, GEO-CON, was awarded the contract. The bids ranged in price from $3,982,387 to $9,474,427.■

BID TABULATION

			Government Estimate		GEO-CON, INC. Pittsburgh, PA		LT Corporation Monroeville, PA	
Item	Unit	Quantities	Unit Cost	Item Cost	Unit Cost	Item Cost	Unit Cost	Item Cost
Miscellaneous	LS	1	$1,437,116	$1,437,116	$700,911	$700,911	$1,000,670	$1,000,670
Groundwater Diversion Ditch	LS	1	$86,160	$86,160	$100,443	$100,443	$158,850	$158,850
Pre-Construction Gas Vent Wells	LS	1	$58,734	$58,734	$137,825	$137,825	$304,660	$304,660
Sludge Excavation and Stabilization (1V:1H Side Slopes)								
a. Excavation								
(1) 1st 73,250 CY	CY	73,250	$14.74	$1,079,705	$15.02	$1,100,215	$17.00	$1,245,250
(2) Over 73,250 CY	CY	8,140	$13.95	$113,553	$10.56	$85,958	$17.00	$138,380
b. Hydrated Lime (extra 30%)								
(1) First 2,940 tons	TON	2,940	$76.90	$226,086	$75.81	$222,881	$110 00	$323,400
(2) Over 2,940 tons	TON	320	$72.90	$23,328	$75.81	$24,259	$110.00	$35,200
Bedrock Neutralization								
a. Crushed Aggregate								
(1) 1st 3,970 tons	TON	3,970	$13 80	$54,786	$14 22	$56,453	$23.00	$91,310
(2) Over 3,970 tons	TON	440	$13 05	$5,742	$14.22	$6,257	$23.00	$10,120
b. Agricultural Limestone (Extra 15%)								
(1) 1st 60 tons	TON	60	$25.65	$1,539	$18.74	$1,124	$500 00	$30,000
(2) Over 60 tons	TON	10	$24.20	$242	$18.74	$187	$430.00	$4,300
Dike Work	LS	1	$278,470	$278,470	$353,639	$353,639	$343,250	$343,250
Final Cover	LS	1	$706,390	$706,390	$636,496	$636,496	$677,750	$677,750
Access Road/Storage Area Regrading/ Seeding and Mulching	LS	1	$41,111	$41,111	$14,734	$14,734	$46,100	$46,100
Construction Water Treatment								
a. First 738,000 gals.	GAL	738,000	$0.42	$309,960	$0.30	$221,400	$0.46	$339,480
b. Over 738,000 gals.	GAL	82,000	$0.40	$32,800	$0.30	$24,600	$0.44	$36,080
Monitoring, Sampling and Testing	LS	1	$383,568	$383,568	$117,370	$117,370	$138,000	$138,000
Demobilization	LS	1	$140,142	$140,142	$168,569	$168,569	$281,700	$281,700
One-Year Site Maintenance	LS	1	$18,839	$18,839	$9,064	$9,064	$9,064	$95,000
Total Bid				$4,998,271		$3,982,387		$5,299,500

ABOUT THE UPDATE

For comments, ideas, submissions, or questions about the Update, please contact Karen Locke at FTS 8-382-7997 or commercially at (202) 382-7997. For copies, contact EPA's Public Information Center at FTS 8-382-2080 or commercially at (202) 382-2080.