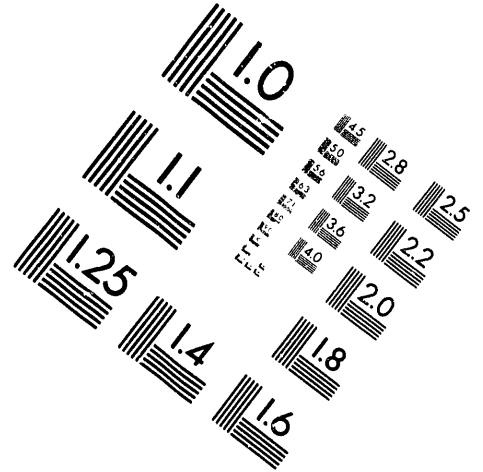
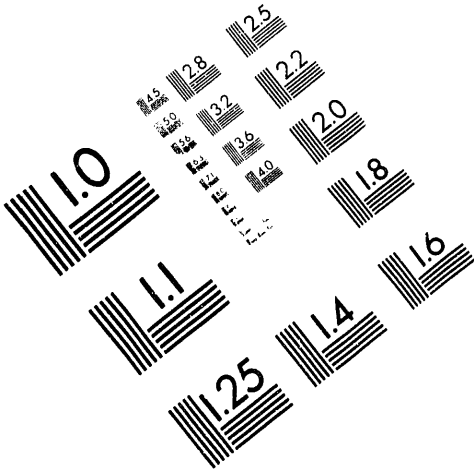




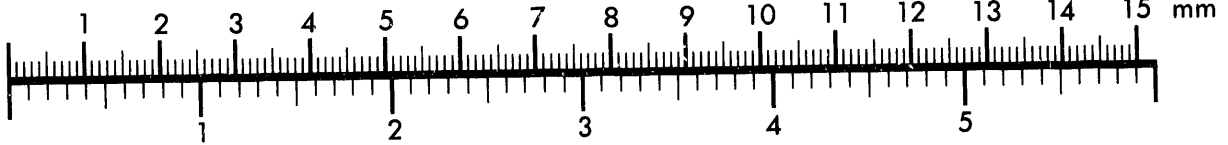
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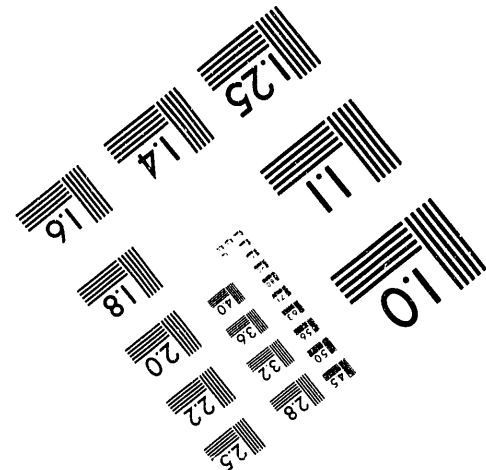
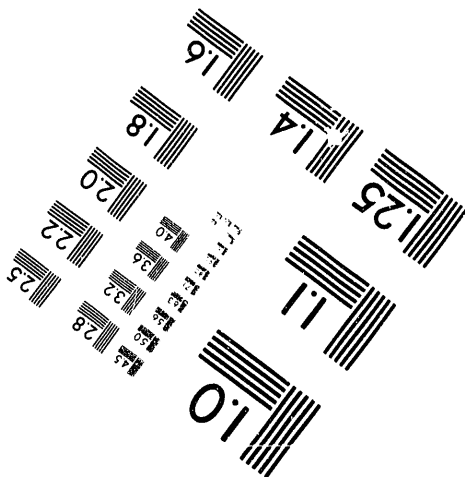
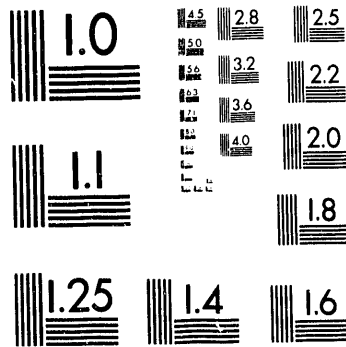
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Quarterly Technical Report
for the Period
February 1, 1988 to April 30, 1988

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MASTER

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1.0 INTRODUCTION & BACKGROUND

Under the Department of Energy's Advanced Combustor Technology Program, approximately 11 combustor contractors are developing combustion systems (during 1987-1989) for use in residential, commercial, light industrial and industrial retrofit markets. Sufficient quantities of well-characterized, coal-based fuels possessing specific, appropriate specifications are required by the contractors for their developmental test programs. Fuels may be dry pulverized coal or coal liquid fuels. In support of these equipment development efforts, Energy International, Inc. is providing such fuels (under DOE Contract DE-AC22-86PC90258 within the PETC Alternate Energy Program).

Nearly a third of the total energy use in the U.S. is in the residential, commercial, and light industrial sectors. Of this, about half of the energy is supplied by the direct consumption (not including electricity) of conventional oil and gas resources. Thus, there is a significant energy use component for which coal is not currently a viable user option.

For coal to significantly penetrate this important market sector, it must be demonstrated that:

- Premium coal-based fuels can be made, combusted, and used in low maintenance, automatic use systems to which such users are accustomed, i.e., by a direct replacement for conventional fuels and require only a simple installation changes.
- Advanced coal fuel combustion systems can effectively combust coal based fuels while meeting economic, environmental, and performance standards.
- Coal fuels, combustion systems and service support are well matched, reliable, cost effective, and are anticipated to be available over the projected lifetime of the installation.

The key to the development of fuel and combustor technologies for future application to the use of premium coal-based fuels in these market sectors is to make representative coal fuels available for developmental testing. Current coal cleaning and processing technologies in early development stages offer the promise to meet the market, the performance and the environmental acceptability that are expected to be required. They are not economically competitive now and production facilities are presently limited to experimental and pilot-scale operations which do not offer the economy of scale to reduce costs to the minimum. This is not likely to change with the current plentiful supplies of relatively low cost fuels.

The developmental testing of advanced combustion equipment systems requires fuels for testing. Test experience and performance measures are needed to identify cost competitiveness in the market and specific market niches for early commercialization; and, commercial market opportunities are needed to justify and specify the development and installation of advanced fuels facilities for supplying the developmental testing needs.

The capability to produce significant quantities of coal based fuels cannot be supported in the current economic and energy use situation. Once these pieces of experience and information begin to fall into place, the market driven needs will more clearly identify the suite of coals that will satisfy the markets and the performance requirements (i.e., cost, maintenance, energy efficiency, environmental). For now, it is important to provide sufficient quantities of surrogate fuels to enable development testing to proceed. To serve as surrogate fuels, the fuels should have chemical and physical characteristics (ash, sulfur, volatiles, fusion temperature, heat content, particle size distribution, slurry formulation, etc.) that are consistent with projected performance and environmental standards. In addition, these surrogates are to be produced using readily available conventional types of cleaning and processing so as to not promote a particular fuel technology or create a reliability on an uncertain fuel technology.

While the definitions of the market and performance are not finalized nor quantitatively fixed and the eventual, economically acceptable fuel processes are not yet determined, it is possible to make use of current understanding of coal resources, markets, combustor and environmental requirements and specific available coal properties and characteristics to make reasonable selections of coals for fuels representative of future advanced fuels. With selected coals, conventional beneficiation methods can be used to prepare current versions of advanced premium coal-based fuels. The associated excessive grinding, special processing, low energy recoveries, and process economics are not expected to be acceptable for eventual commercial operations. However, these current advanced premium fuels can at this time meet the needs of developmental testing with acceptable costs.

The analysis of fuel needs, the selection of candidate coals, the characterization and supply in this contract are to be accomplished with the above in mind. The best choices of those available have been made based upon the available information, coal and processes. This will at least provide the developmental test fuels that will enable the DOE-PETC advanced combustion and fuels program to move forward. Following the fuels and combustor development activities that this supply contract will support, it is expected that additional optional candidate coals will become evident based on the new experience. In the meantime, these coal fuels will enable the program to proceed.

During the sixth quarter of this contract (February 1, 1988 through April 30, 1988) the primary activities were involved with:

- Termination and closeout of the subcontract with Dravo Engineers, Inc.
- Transfer of the coal inventory from Dravo's Neville Island facilities to Energy International's facilities.
- Surveying the needs of the combustion contractors and updating their fuel specifications, fuel requirements and delivery schedules.
- Preparation of the final report on the bench scale froth flotation cleaning studies intended to optimize the yield of specification grade coal using the Upper Elkhorn #3 coal.

- Preparation and presentation of a paper entitled "Supplying Premium Quality Coal-Based Fuels for Development of Clean Combustion", at the 13th International Conference on Coal & Slurry Technology on April 14, 1988 in Denver, Colorado.
- Continuation of the coal procurement, fuel preparation and delivery activities.

2.0 OBJECTIVES AND SCOPE OF WORK

2.1 Contract Objectives

Contract objectives are as follows:

- Develop fuel specifications to serve combustor requirements.
- Select coals having appropriate compositional and quality characteristics as well as an economically attractive reserve base.
- Provide quality assurance for both the parent coals and the fuel forms.
- Deliver premium coal-based fuels to combustor developers as needed for their contract work.

2.2 Contract Scope of Work

Energy International, Inc. will perform the following:

- From information obtained both from the combustor PRDA and from the combustor contractors, develop fuel specifications and schedule.
- Using published reports and databases, perform a market assessment and a resource assessment in order to identify acceptable coals within reasonable proximity to markets. In other words, determine the availability and applicability of a wide range of coals in order to produce premium coal-based fuels for specific markets.
- From all coal ranks and all domestic resources select coals which satisfy the requirements of combustion systems being developed.
- Procure premium coals having the ability to be processed to contain <0.8 lb ash per million Btu and <0.5 lbs sulfur per million Btu.
- Procure coals and produce coal liquid mixtures or dry pulverized coal and deliver these premium fuels to combustor contractors.

2.3 Task 1 Objectives

The objectives of Task 1, "Analysis of Fuel Needs", are as follows:

- To provide analyses, information and evaluation of coal resources, coal properties, and market opportunities to support the selection of coals for characterization, processing and supply.
- To assure that coals used in developmental testing are representative of future potential coal used in those applications and are:

- Available as U.S. domestic resource in sufficient quantity.
- Geographically proximate to the regional markets.
- Capable of being processed into premium coal-based fuels that have the properties to satisfy the combustor needs and market constraints (such as environmental).
- To evaluate, interpret and assess the available information on coal reserves, market opportunities, performance requirements, environmental acceptability, coal properties and specific characteristics to provide guidance in the selection of candidate coals for characterization and supply for developmental testing of advanced combustors for residential, commercial and light industrial applications.
- To collect, review and evaluate information about specific, currently available coals that can be procured from existing mining operations to provide contracted quantities of development test fuels that satisfy the reserves, market, geographic, property, performance and environmental criteria.
- To recommend candidate coals and then select specific coals to be purchased, processed into coal-based premium fuels, and supplied to DOE selected users.
- To coordinate the performance requirements of combustor developers under DOE-PETC contract and in-house efforts with the selection and supply of coals.

2.4 Task 2 Objectives

The objectives of Task 2, "Characterization of Coal Based Fuels", are as follows:

- To procure representative samples of the coals selected in Task 1 and prepare them for characterization studies.
- To obtain baseline analytical data for each of the parent coals.
- To carry out bench-scale froth flotation cleaning test on each of the candidate coals to determine the yield of specification coal attainable from each.
- To carry out detailed washability studies for each coal to determine the effect of particle size reduction on mineral matter liberation as well as the coal yield as a function of the specific gravity of the separation.
- Using the available results of the characterization studies, to select a coal or suit of coals suitable for the preparation of the fuels to meet the specifications of the combustor contractors.

2.5 Task 3 Objectives

The objectives of Task 3, "Fuel Supply", are as follows:

- To arrange for the capability, availability, and operation of suitable deep-cleaning coal wash circuit, coal/water slurry preparation plant, and micronizing/grinding facilities.
- To purchase and arrange for the delivery of the appropriate coals for fuel preparation.
- To clean the coals to meet the specifications necessary for the specific fuel needs, i.e., quality categories, such as slagging, non-slagging, industrial retrofit, residential/commercial.
- To prepare the coal based fuels according to the specifications of the PRDA and as modified or requested by the combustor contractors.
- To deliver the fuel to the combustor contractor on schedule.
- To characterize each fuel prior to shipment to assure that the specifications are being met.

3.0 EXECUTIVE SUMMARY

Under the Department of Energy's Combustor Technology Program, approximately 11 combustor contractors are developing combustor systems (during 1987-1989) for use in residential, commercial, light industrial and industrial retrofit markets. Sufficient quantities of well-characterized coal based fuels possessing appropriate specifications are required by the contractors for their developmental test programs. Fuels may be dry pulverized coal or coal-liquid fuels. In support of these equipment development efforts, Energy International is providing such fuels under DOE Contract No. DE-AC22-86PC90258.

During the sixth quarter of this contract (February 1, 1988 through April 30, 1988) the primary activities were involved with:

- Termination and closeout of the subcontract with Dravo Engineers, Inc.
- Transfer of the coal inventory from Dravo's Neville Island facilities to Energy International's facilities.
- Surveying of the combustion contractors and updating the fuel specifications, fuel requirements and delivery schedule.
- Preparation of the final report on the bench scale froth flotation cleaning studies intended to optimize the yield of specification grade coal using Upper Elkhorn #3 coal.
- Preparation and presentation of a paper entitled "Supplying Premium Quality Coal-Based Fuels for Development of Clean Combustion" at the 13th International Conference on Coal & Slurry Technology on April 14, 1988 in Denver, Colorado.
- Continuation of the coal procurement, fuel preparation and delivery activities.

A brief summary of these activities follows:

During the previous quarter (November 1987 to January 1988) a major review of the combustor contractors' current and projected fuel needs was conducted by PETC. This led to significant changes in the amount, the specifications and delivery schedules of the coal-based fuels required under this contract.

The amount of fuel needed was reduced. The ash specification for some fuel users was relaxed. This resulted in reductions of the total quantity of fuel required and the amount of deep-cleaned coal needed. Also, some of the program activities were delayed into the next fiscal year causing significant changes in the delivery schedules.

After reviewing the projected needs and comparing them to the current coal inventories, it was determined that the inventory of deep-cleaned coal was sufficient to meet the fuel delivery needs through the end of fiscal year 1988 and the presently anticipated needs for early deliverables in fiscal year 1989. On that basis, neither further operation of the Dravo

pilot cleaning circuit nor its continued maintenance on a stand-by basis could be justified. Since the administration, coordination, procurement, coal analysis and testing functions, ordinarily handled by Dravo, could be satisfactorily carried out by Energy International, action was taken to terminate the subcontract with Dravo. An orderly closeout of the contract was conducted. The coal fuel inventory was transferred from Dravo's Neville Island facilities to Energy International's storage facilities.

As a result of the changes discussed above, a revision of the fuel preparation and delivery schedule was made.

Because of the costs projected during the fall of 1987 for preparing deep cleaned coal for the combustor contractors, Dravo was authorized in December, 1987 to perform bench scale froth flotation studies. The objective was to determine if improvements in pilot scale recovery could be achieved by using either alternative frothing reagents and/or changes in flotation operating conditions. Such yield improvements would offer significant potential to reduce the cost of producing deep cleaned coal. The work was completed in the previous quarter and some of the technical results were reported in the last Quarterly Technical Progress Report. The final report was issued during this quarter. As discussed in last quarters report, it was learned that added flotation capacity along with a change in flotation reagents could increase the yield of specification grade coal from an average of 30-40% to above 60%. Since it was determined that there was no longer any need for additional clean coal, the work necessary to determine the cost improvement based on this new data was not carried out.

A survey of the needs of all combustor contractors was carried out to confirm that our revised fuel delivery schedule accurately reflected the current status of their fuel requirements (amounts, specifications, and delivery dates) for the remainder of this fiscal year and for fiscal year 1989.

4.0 TASK 1 - ANALYSIS OF FUEL NEEDS

4.1 Subtask 1.1 - Project Management, Administration, & Reporting

The schedule of projected fuel deliveries under this contract was revised to incorporate the latest changes in the requirements, specifications and delivery dates as determined and specified by DOE. This enabled the updating of the contract plans for spending and for scheduling the support services. The requirements for coal purchases, technical services (deep cleaning, grinding, slurry preparation, transportation, and analytical) were reviewed against that schedule of delivery needs. A current inventory of coals and data was also reviewed. Based on those reviews, it was determined that the inventory of deep-cleaned coal was adequate to meet the fuel delivery needs through the end of fiscal year 1988 and the presently anticipated needs for early deliverables in fiscal year 1989. The information obtained was used to prepare the revised fuel delivery schedule as shown in Appendix 8.1.

As a follow-up to this review a letter was sent to each contractor describing our understanding of their fuel needs for the remainder of this fiscal year as well as those for fiscal year 1989. This letter was then followed by a telephone call to each contractor to confirm their needs, where possible, or to make any changes in their requirements.

As a result of these changes, neither further operation of the Dravo pilot cleaning circuit nor its continuous maintenance on a standby status could be justified. Action was taken to terminate for convenience the subcontract with Dravo. Dravo was notified of the termination in early February. Closeout actions and deliverables were agreed upon and the contract terminated in an orderly manner.

All existing coal inventory, both deep-cleaned and unprocessed washed run-of-mine coal, was moved from Dravo's Neville Island facilities to leased warehouse space in New Kensington, PA. At Energy International's request the unprocessed run-of-mine coal (about 24 tons) was ground to 1/8 inch topsize, stored in polyethylene lined steel drums and blanketed with nitrogen. Equipment purchased by Dravo under this contract for the pilot froth flotation cleaning circuit was also moved to the warehouse. All leased equipment has been returned to lessors, and Dravo's facilities have been restored to precontract conditions. All the pilot plant run data and the complete coal inventory list have been furnished to EI both on floppy disks and as hard copy. And, finally, the final report on the froth flotation optimization studies was completed and submitted.

The contract between Dravo and Schutz-O'Neill (now a division of Jacobson, Inc.) for pulverizing and micronizing services was terminated as a consequence of the Dravo subcontract termination. Since these services will be needed in the future and the performance and cost experiences with Schutz-O'Neill have been quite satisfactory Energy International reached a new agreement with them. Services will be purchased on an as needed basis at a fixed price over the next two years.

A presentation entitled "Supplying Premium Quality Coal-Based Fuels for Development of Clean Combustion" was prepared and delivered at the 13th International Conference on Coal & Slurry Technology on April 14, 1988.

5.0 TASK 2 - CHARACTERIZATION OF COAL BASED FUELS

5.1 Dravo Pilot Plant Reagent Optimization Study

The report detailing the results of the bench scale froth flotation optimization studies carried out by Dravo during the previous quarter was completed. It was titled "Flotation Reagent Optimization Study for the Dravo Pilot Scale Deep Cleaning Facility". The purpose of the investigation was to evaluate alternative flotation reagents and processing techniques applicable to the Dravo pilot circuit to determine if significant improvements in the yield of specification grade deep cleaned coal could be obtained.

The Task 2 flotation tests reported in the second Quarterly Technical Progress Report (February-April, 1987) under this contract showed that product recoveries in excess of 70% were possible for both 1.2% ash and 1.5% ash products when using a 2.5% ash feedstock coal. Further, those tests showed that a 1% ash product could be achieved with a 60% recovery. Because of the accelerated need to produce usable deep-cleaned product in the pilot plant, a known frother reagent having a high selectivity was chosen and the production operations proceeded without benefit of optimizing the reagent, its dosage, or process conditions. Typically, product yields of 40 to 50% were regularly achieved in producing the deep-cleaned product that met the ash criteria of 1.2% and 1.5% for the two categories of desired product. Thus, there was substantial reason to expect that significant yield improvements could be accomplished via this study. Dravo anticipated overall yield improvement of about 15 additional yield percentage points. This in turn could be expected to reduce the product unit cost.

In the issued report Dravo concluded that the performance of pilot plant operations could be duplicated with the bench flotation units. The tests were reported to show significant improvement in yield. Most of the tests were conducted using a feed coal with an ash content of about 2.4%. Much lesser yields were achieved with tests using higher ash feed to the circuit (i.e., 3% ash). The percent of solids in the feed was shown to significantly affect the yield. It was demonstrated that yields in excess of 60% could be achieved with the reagents and process conditions investigated. Translation of these encouraging results into lowered unit product cost projections and adaptability of the results to other feedstocks was not included in the report, but will need to be assessed should future needs for deep-cleaned coal from this circuit be considered.

6.0 TASK 3 - FUEL SUPPLY

6.1 Fuel Production

6.1.1 Coal-Water Slurry Fuel

The preparation of 15,000 gallons of a micronized coal-water fuel was begun in April, 1988 at OXCE Fuel Co. for delivery to Combustion Engineering on or about June 1, 1988. The slurry is being prepared from washed run-of-mine Upper Elkhorn #3 coal which nominally contains ~2.5% ash.

6.1.2 Dry Pulverized/Micronized Coal

Schutz-O'Neill is in the process of micronizing 1400 pounds of deep cleaned Upper Elkhorn #3 coal (UE3-163-DCC-D) for delivery to Energy and Environmental Research Corporation.

Work is still underway and the University of North Dakota Energy and Materials Research Center (UNDEMRC) to supply Avco Research Laboratory with a dry, ultrafine lignite powder. The coal was to be cleaned by Amax Laboratories in Golden, CO and shipped to UNDEMRC for drying and micronizing. Thus far only 135 lbs of the needed 1000 lbs have been sent to Avco. There have been serious delays in the fuel cleaning step at Amax.

6.2 Shipments

During this quarter the following coal shipments were made to the fuel producers.

UE3-163-DCC-D -- 700 lbs deep-cleaned Upper Elkhorn #3 coal was shipped from inventory to Schutz-O'Neill for micronizing and shipment to Energy & Environmental Research Corporation.

UE3-179-DCC-D -- 53 drums (11,279 lbs) commercial/light industrial grade deep-cleaned coal (1.38% average ash content) was shipped to OXCE Fuel Co. for production of slurry for MTCI.

UE3-180-DCC-D -- 28 drums (5,738 lbs) residential grade deep-cleaned coal (1.22% average ash content) was shipped to OXCE Fuel Co. for production of slurry for Tecogen.

UE3-182-WRM-A -- 46 tons of washed run-of-mine Upper Elkhorn #3 coal from Westmoreland Coal Co.'s Wentz Plant, Virginia, to OXCE Fuel Co. for slurry preparation for Combustion Engineering.

During this quarter the following coal shipments were made from Dravo's Neville Island facilities to Energy International's leased storage facilities at the Logans Ferry Development Co.'s warehouse in New Kensington, PA.

UE3-153-DCC-D -- 53 drums (12,039 lbs) of minus 100 mesh pulverized commercial/light industrial grade coal averaging 1.37% ash and 0.89% moisture, useful for preparation of dry micronized fuel.

UE3-162-DCC-D -- 62 drums (12,578 lbs) of minus 100 mesh pulverized residential grade coal averaging 1.19% ash and 7.04% moisture, useful for preparation of coal water slurry.

UE3-163-DCC-D -- 53 drums (11,704 lbs) of minus 100 mesh pulverized residential grade coal averaging 1.21% ash and 1.72% moisture, useful for preparation of dry micronized fuel.

UE3-0-DCC-D -- 28 drums (5,516 lbs) of minus 100 mesh pulverized "over" specification grade coal averaging 1.76% ash and 10.85% moisture, useful for preparation of higher ash level coal water slurry.

UE3-177-PCO-D -- 18 drums (7,292 lbs) of minus 1/8 inch pulverized ROM washed coal, averaging between 2.5 - 3.5% dry ash, useful for preparation of higher ash level coal water slurry or dry micronized fuel.

UE3-178-PCO-D -- 148 drums of minus 1/8 inch pulverized ROM washed coal, averaging between 2.5 - 3.5% dry ash, useful for preparation of higher ash level coal water slurry or dry micronized fuel.

UE2-181-WRM-D -- 8 drums of minus 1/4 inch pulverized ROM washed coal, averaging between 1.8 - 3.5% dry ash, useful for preparation of higher ash level coal water slurry or dry micronized fuel.

Parent Coals -- 4 drums of minus 1/8 inch as-received ROM washed coal, averaging between 3.5 - 9.0% dry ash, used for Task 2.0 Fuel Characterization Study.

Parent Coals -- 4 drums of minus 1/8 inch crushed ROM washed coal, averaging between 3.5 - 9.0% dry ash, used for Task 2.0 Fuel Characterization Study.

Cooldown Coal -- 4 drums of deep cleaned coal having varying drum moisture levels, up to 10% and averaging between 1.2 and 1.5% dry ash, useful for preparation of coal water slurry.

UE3-015-DCC-H -- Approximately 6 tons of Upper Elkhorn #3 coal which had been cleaned in EPRI's cleaning circuit.

7.0 FUTURE PLANS

Energy International will continue to respond to the fuel preparation and fuel delivery needs of the combustor contractors. Close contact with PETC and the contractors will be maintained in order to implement any changes in the fuel quantities, delivery schedules or specifications. Additionally, investigations will continue in an effort to better understand the relationship between fuel quality (i.e., coal analyses and fuel specifications) and combustion performance and/or combustion needs.

8.0 APPENDIX

8.1 Revised Fuel Delivery Schedule

by RCM 2-4-88
COMBUSTOR DELIVER
TEST CO DATE

DATE	DESCRIPTION	SOURCE	DRAVO	OXCE	TEST CO	DELIVER DATE
1.0	01/w4	UE3-DCC (1.5%)	DRCInv	11 drums		02/w1
1.1	02/w3	UE3-CWF (1.5%)	OXCE		210 gal	Tecogen 02/w3
1.2	02/w3	UE3-CWF (1.5%)	OXCE		55 gal	ARC 02/w3
3.0	03/w1	UE3-DCC (1.5%)	DRCInv	26 drums		03/w2
3.1	03/w4	UE3-CWF (1.5%)	OXCE		200 gal	Tecogen 03/w4
3.2	05/w1	UE3-CWF (1.5%)	OXCE		500 gal	Tecogen 05/w1
4.0	02/w3	UE3-WRM (6%)	HoltonMine (95 tons)	(70 tons)		CoabEngr 03/01
4.1	3Q	UE3-WRM (6%)		(25 tons)		
4.2	3Q	UE3-MicrCWF	OXCE		7500 gal	CoabEngr 3Q
5.0	3Q	UE3-DCCInd (1.5%)	DRCInv	50 drums		
5.1	3Q	UE3-MicrCWF	OXCE		750 gal	MTCI 04/01
5.2	3Q	UE3-PulvCWF	OXCE		750 gal	MTCI 04/01
11.0	4Q	UE3-WRM (6%)	HoltonMine (50 tons)			
11.1	4Q	UE3-PulvCWF	OXCE		15,000 gal	CoabEngr 4Q
13.0	FY89	UE3-WRM (3-4%)	Wentz-Wash (15 tons)			
13.1	FY89	UE3-WRM PulvCWF	OXCE		3000 gal	NavyCEL FY89
13.2	FY89	UE3-WRM MicrCWF	OXCE		1500 gal	Navy/CU FY89
15.0	FY89	UE3-DCCRes (1.2%)	DRCInv	15 drums		FY89
15.1	FY89	UE3-PulvCWF	OXCE		200 gal	MTCI FY89
15.2	FY89	UE3-MicrCWF	OXCE		200 gal	MTCI FY89
15.3	FY89	UE3-MicrCWF	OXCE		200 gal	EER FY89
17.0	FY89	UE3-WRM (6%)	HoltonMine (65 tons)			
17.1	FY89	UE3-PulvCWF	OXCE		20,000 gal	CoabEngr 4Q
19.2	FY89 ?	PA1-LoFeSlagger	PA Coal -(3.25 tons)			
19.2.1	FY89 ?	PA1-LoFeCWF	OXCE		1000 gal	VortecBCR FY89 ?

TOTAL REQUIREMENTS (in gallons of slurry)		FY88Micr	FY88Pulv	FY89Micr	FY89Pulv
DRAVO DEEP CLEAN	UE3-DCCRes (1.2%)	0	0	400	200
DRAVO DEEP CLEAN	UE3-DCCInd (1.5%)	750	1815	0	0
WENTZ WASH PLANT	UE3-WRM (3-4%)	0	0	1500	3000
HOLTON MINE	UE3-WRM (6%)	7500	15000	0	20000
PA COAL	PA1-LoFeSlagger	0	0	0	1000
		8250	16815	1900	24200

SCHEDULE OF COAL FUEL DELIVERIES NEEDING FINE GRINDING

LOTUS 123-DELIVSCH
 by RCM 2-4-88

DATE	DESCRIPTION	SOURCE	DRAVO RES CTR	SCHUTZ -O'NEILL	OTHER GRINDER	COMBUSTOR TEST CO	DELIVER DATE
0	03	UE3-WRM (3-4%)	Wentz-Wash (0.75 tons)				
2.1	03	UE3-WRMPulvPWDR	Schutz-O'Neill	0.75 tons		Navy/CU	03/
0	3Q	UE3-WRM (3-4%)	Wentz-Wash (0.75 tons)				
6.1	3Q	UE3-WRMPulvPWDR	Schutz-O'Neill	0.75 tons		Navy/CU	3Q
0	3Q	UE3-DCCInd (1.5%)	DRCInv	50 drums			
7.1	3Q	UE3-MicrPWDR	Schutz-O'Neill	2.5 tons		MTCI	3Q
7.2	3Q	UE3-PulvPWDR	Schutz-O'Neill	2.5 tons		MTCI	3Q
0	3Q	Sub-bituminous Coal	Keenerer (4 tons) ?				
8.1	3Q	SB1-PulvPWDR	TBN Grinder		4 tons	UTSI	3Q
0	3Q	UE3-WRM (3-4%)	Wentz-Wash (46 tons)				
9.1	3Q-FY89	UE3-WRM-Micr	Schutz-O'Neill	46 tons		UTSI	3,4Q,FY89
0	4Q	UE3-WRM (3-4%)	Wentz-Wash (0.75 tons)				
10.1	4Q	UE3-WRMPulvPWDR	Schutz-O'Neill	0.75 tons		Navy/CU	4Q
0	4Q	UE3-WRM (3-4%)	Wentz-Wash (5 tons)				
12.1	4Q	UE3-WRMicrPWDR	Schutz-O'Neill	5 tons		NavyCEL	10/01/88
0	FY89	UE3-DCCRes (1.2%)	DRCInv	20 drums			
14.1	FY89	UE3-MicrPWDR	Schutz-O'Neill	1 ton		MTCI	FY89
14.2	FY89	UE3-PulvPWDR	Schutz-O'Neill	1 ton		MTCI	FY89
0	FY89	UE3-WRM (3-4%)	Wentz-Wash (7.5 tons)				
16.1	FY89	UE3-WRMPulvPWDR	Schutz-O'Neill	7.5 tons		Navy/CU	FY89
0	FY89 ?	PA1-LoFeSlagger	PA Coal --- (30 tons)				
19.1.1	FY89 ?	PA1-LoFePulvPWDR	Schutz-O'Neill	10 tons		VortecBCR	FY89 ?
19.1.2	FY89 ?	PA1-LoFePulvPWDR	Schutz-O'Neill	10 tons		VortecBCR	FY89 ?
19.1.3	FY89 ?	PA1-LoFePulvPWDR	Schutz-O'Neill	10 tons		VortecBCR	FY89 ?

TOTAL REQUIREMENTS (in tons of coal)			FY88Micr	FY88Pulv	FY89Micr	FY89Pulv
DRAVO DEEP CLEAN	UE3-DCCRes (1.2%)		0	0	1	1
DRAVO DEEP CLEAN	UE3-DCCInd (1.5%)		2.5	2.5	0	0
WENTZ WASH PLANT	UE3-WRM (3-4%)		51	2.25	0	7.5
HOLTON MINE	UE3-WRM (6%)		0	0	0	0
PA COAL	PA1-LoFeSlagger		0	0	0	30
Keenerer	SB1-Sub-bitum		0	4	0	0

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