Federal Assistance Reporting Instructions (05/06)

A. MANAGEMENT REPORTING

Progress Report

The Progress Report must provide a concise narrative assessment of the status of work and include the following information and any other information identified under Special Instructions on the Federal Assistance Reporting Checklist:

1. The DOE award number and name of the recipient.

2. The project title and name of the project director/principal investigator.

3. Date of report and period covered by the report.

4. A comparison of the actual accomplishments with the goals and objectives established for the period and reasons why the established goals were not met.

5. A discussion of what was accomplished under these goals during this reporting period, including major activities, significant results, major findings or conclusions, key outcomes or other achievements. This section should not contain any proprietary data or other information not subject to public release. If such information is important to reporting progress, do not include the information, but include a note in the report advising the reader to contact the Principal Investigator or the Project Director for further information.

6. Cost Status. Show approved budget by budget period and actual costs incurred. If cost sharing is required break out by DOE share, recipient share, and total costs.

7. Schedule Status. List milestones, anticipated completion dates and actual completion dates. If you submitted a project management plan with your application, you must use this plan to report schedule and budget variance. You may use your own project management system to provide this information.

8. Any changes in approach or aims and reasons for change. Remember significant changes to the objectives and scope require prior approval by the contracting officer.

9. Actual or anticipated problems or delays and actions taken or planned to resolve them.

10. Any absence or changes of key personnel or changes in consortium/teaming arrangement.

11. A description of any product produced or technology transfer activities accomplished during this reporting period, such as:

    A. Publications (list journal name, volume, issue); conference papers; or other public releases of results. Attach or send copies of public releases to the DOE Project Officer identified in Block 11 of the Notice of Financial Assistance Award.

    B. Web site or other Internet sites that reflect the results of this project.

C. Networks or collaborations fostered.

D. Technologies/Techniques.

E. Inventions/Patent Applications.

F. Other products, such as data or databases, physical collections, audio or video, software or netware, models, educational aid or curricula, instruments or equipment.

Special Status Report

The recipient must report the following events as soon as possible after they occur. Submit reports by e-mail to the DOE Project Officer identified in Block 11 of the Notice of Financial Assistance Award (NFAA):

1. Developments that have a significant favorable impact on the project.

2. Problems, delays, or adverse conditions which materially impair the recipient's ability to meet the objectives of the award or which may require DOE to respond to questions relating to such events from the public. For example, the recipient must report any of the following incidents and include the anticipated impact and remedial action to be taken to correct or resolve the problem/condition:

   a. Any single fatality or injuries requiring hospitalization of five or more individuals.

   b. Any significant environmental permit violation.

   c. Any verbal or written Notice of Violation of any Environmental, Safety, and Health statutes or regulations.

   d. Any incident which causes a significant process or hazard control system failure.

   e. Any event which is anticipated to cause a significant schedule slippage or cost increase.

   f. Any damage to Government-owned equipment valued in excess of $50,000.

   g. Any other incident that has the potential for high visibility in the media.

B. SCIENTIFIC/TECHNICAL REPORTS

Final Scientific/Technical Report

Content. The final scientific/technical report must include the following information and any other information identified under Special Instructions on the Federal Assistance Reporting Checklist:

1. Identify the DOE award number; name of recipient; project title; name of project director/principal investigator; and consortium/teaming members.

2. Display prominently on the cover of the report any authorized distribution limitation notices, such as patentable material or protected data. Reports delivered without such notices may be deemed to have been furnished with unlimited rights, and the Government assumes no liability for the disclosure, use or reproduction of such reports.

3. Provide an executive summary, which includes a discussion of 1) how the research adds to the understanding of the area investigated; 2) the technical effectiveness and economic feasibility of the methods or techniques investigated or demonstrated; or 3) how the project is otherwise of benefit to the public. The discussion should be a minimum of one paragraph and written in terms understandable by an educated layman.

4. Provide a comparison of the actual accomplishments with the goals and objectives of the project

5. Summarize project activities for the entire period of funding, including original hypotheses, approaches used, problems encountered and departure from planned methodology, and an assessment of their impact on the project results. Include, if applicable, facts, figures, analyses, and assumptions used during the life of the project to support the conclusions.

6. Identify products developed under the award and technology transfer activities, such as:

   a. Publications (list journal name, volume, issue), conference papers, or other public releases of results. If not provided previously, attach or send copies of any public releases to the DOE Project Officer identified in Block 11 of the Notice of Financial Assistance Award;

   b. Web site or other Internet sites that reflect the results of this project;

   c. Networks or collaborations fostered;

   d. Technologies/Techniques;

   e. Inventions/Patent Applications, licensing agreements; and

   f. Other products, such as data or databases, physical collections, audio or video, software or netware, models, educational aid or curricula, instruments or equipment.

7. For projects involving computer modeling, provide the following information with the final report:

   a. Model description, key assumptions, version, source and intended use;

   b. Performance criteria for the model related to the intended use;

   c. Test results to demonstrate the model performance criteria were met (e.g., code verification/validation, sensitivity analyses, history matching with lab or field data, as appropriate);

   d. Theory behind the model, expressed in non-mathematical terms;

   e. Mathematics to be used, including formulas and calculation methods;

f. Whether or not the theory and mathematical algorithms were peer reviewed, and, if so, include a summary of theoretical strengths and weaknesses;

g. Hardware requirements; and

h. Documentation (e.g., users guide, model code).

Electronic Submission. The final scientific/technical report must be submitted electronically via the DOE Energy Link System (E-Link) at http://www.osti.gov/elink-2413.

Electronic Format. Reports must be submitted in the ADOBE PORTABLE DOCUMENT FORMAT (PDF) and be one integrated PDF file that contains all text, tables, diagrams, photographs, schematic, graphs, and charts. Materials, such as prints, videos, and books, that are essential to the report but cannot be submitted electronically, should be sent to the DOE Award Administrator at the address listed in Block 12 of the Notice of Financial Assistance Award.

Submittal Form. The report must be accompanied by a completed electronic version of DOE Form 241.3, "U.S. Department of Energy (DOE), Announcement of Scientific and Technical Information (STI)." You can complete, upload, and submit the DOE F.241.3 online via E-Link. You are encouraged not to submit patentable material or protected data in these reports, but if there is such material or data in the report, you must: (1) clearly identify patentable or protected data on each page of the report; (2) identify such material on the cover of the report; and (3) mark the appropriate block in Section K of the DOE F 241.3. Reports must not contain any limited rights data (proprietary data), classified information, information subject to export control classification, or other information not subject to release. Protected data is specific technical data, first produced in the performance of the award that is protected from public release for a period of time by the terms of the award agreement.

Conference Papers/Proceedings

Content. The recipient must submit a copy of any conference papers/proceedings, with the following information: (1) Name of conference; (2) Location of conference; (3) Date of conference; and (4) Conference sponsor.

Electronic Submission. Scientific/technical conference paper/proceedings must be submitted electronically via the DOE Energy Link System (E-Link) at http://www.osti.gov/elink-2413. Non-scientific/technical conference papers/proceedings must be sent to the URL listed on the Reporting Checklist.

Electronic Format. Conference papers/proceedings must be submitted in the ADOBE PORTABLE DOCUMENT FORMAT (PDF) and be one integrated PDF file that contains all text, tables, diagrams, photographs, schematic, graphs, and charts. If the proceedings cannot be submitted electronically, they should be sent to the DOE Award Administrator at the address listed in Block 12 of the Notice of Financial Assistance Award.

Submittal Form. Scientific/technical conference papers/proceedings must be accompanied by a completed DOE Form 241.3. The form and instructions are available on E-Link at http://www.osti.gov/elink-2413. This form is not required for non-scientific or non-technical conference papers or proceedings.

Software/Manual

Content. Unless otherwise specified in the award, the following must be delivered: source code, the executable object code and the minimum support documentation needed by a competent user to understand and use the software and to be able to modify the software in subsequent development efforts.

Electronic Submission. Submissions may be submitted electronically via the DOE Energy Link System (E-Link) at http://www.osti.gov/estsc/241-4pre.jsp

Energy Science and Technology Software Center
P.O. Box 1020
Oak Ridge, TN 37831

Submittal Form. Each software deliverable and its manual must be accompanied by a completed DOE Form 241.4 "Announcement of U.S. Department of Energy Computer Software." The form and instructions are available on E-Link at http://www.osti.gov/estsc//241-4pre.jsp.

C. FINANCIAL REPORTING

Recipients must complete the financial reports identified on the Reporting Checklist in accordance with the report instructions. These standard forms are available at http://www.whitehouse.gov/omb/grants/index.html. Fillable forms are available at http://grants.pr.doe.gov.

D. CLOSEOUT REPORTS

Final Invention and Patent Report

The recipient must provide a DOE Form 2050.11 , "PATENT CERTIFICATION." This form is available at http://www.directives.doe.gov/pdfs/forms/2050-11.pdf and http://grants.pr.doe.gov.

Property Certification

The recipient must provide the Property Certification, including the required inventories of non-exempt property, located at http://grants.pr.doe.gov.

E. OTHER REPORTING

Annual Indirect Cost Proposal and Reconciliation

Requirement. In accordance with the applicable cost principles, the recipient must submit an annual indirect cost proposal, reconciled to its financial statements, within six months after the close of the fiscal year, unless the award is based on a predetermined or fixed indirect rate (s), or a fixed amount for indirect facilities and administration (F&A) costs.

Cognizant Agency. The recipient must submit its annual indirect cost proposal directly to the cognizant agency for negotiating and approving indirect costs. If the DOE awarding office is the cognizant agency, submit the annual indirect cost proposal to the DOE Award Administrator identified in Block 12 of the Notice of Financial Assistance Award.

Annual Inventory of Federally Owned Property

Requirement. If at any time during the award the recipient is provided with Government-furnished property or aquires property with project funds and the award specifies that the property vests in the Federal Government (i.e. federally owned property), the recipient must submit an annual inventory of this property to the DOE Award Administrator identified in Block 12 of the Notice of Financial Assistance Award no later then October 30th of each calendar year, to cover an annual reporting period ending on the preceding September 30th.

Content of Inventory. The inventory must include a description of property, tag number, acquisition date, location of property, and acquisition cost, if purchased with project funds. The report must list all federally owned property, including property located at subcontractor's facilities or other locations.

As of 9/18/2007 10:00 AM

A. Quarterly Project Description & Analysis (FY08)

...r WBS		Title				Select Current Reporting Period:	FY08_Q1
...ect Information	Name	Phone	Email	Program Element/Area		CID or Laboratory Designation	
...Technology Manager				Project Initiated (dd/mm/yy)		OPS Agreement #	
...C Project Officer				Planned Project Completion Date		Program Value (B&R) Code	
...C Project Monitor							
...mpany Contact or Lab ...lationship Manager						Status	
...ncipal Investigator						Overall Stage of Development	
...Principal Investigator (If ...plicable)				Performing Organization (Only Prime Recipient)		Funding Partner(s) (Any partner or subcontractor who provides cost share)	
...oject Description (Non-...oprietary)							Insert Text File (Word or Other) of Quarterly Report ►►
...r GO & NETL Use Only: ...DE Project Officer ...mmary Analysis							
...r Laboratory Relationship ...anagers (LRM) Use Only: ...TM Summary Analysis							

C. Progress within tasks and milestones for reporting quarter

...Number of Task, Milestone, Deliverable (Included on Novo Decision Points)	Task, Milestone, Deliverable (Including GO/NETL Decision Points)	Completion Criteria	Performer(s)	Status of Progress in Task or Milestone (G,Y,R)	Start Date (Tasks & Subtasks Only)	Original Planned Completion Date (tasks and milestones)	Approved Updated Completion Date	% Completion Planned	% Actual Completion	Schedule Progress Factor	Earned Value	Task or Milestone Completion Criteria (to include cost and performance metrics)	Budget By Task (report for task level only, subtasks are not required): Original (Baseline)	Approved Updated Budget	Actual (Amount spent to date per task)	Comments
								100								
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As of 9/18/2007 10:00 AM

G = On schedule, progress positive or work completed.

Y = Issues with delivery, risk of slippage. Mitigation may be needed.

Project Title: 0
Financial Assistance Recipient: 0
CPS #: 0
CID #: 0
DOE Project Total: $ -

Recipient Comments:

Please put any comments you may have in this field. Thanks.

Project Spend Plan and Estimate of Future Spending (excludes National Laboratory Spending)

Period (by Federal Fiscal Year)			Current Approved Spend Plan			Obligated	Estimated Future Spend Plan			Funds Expended to Date				DOE EFSP	
			DOE Amount	Cost Share	Total	DOE Amount	DOE Amount	Cost Share	Total	DOE Amount Accrued	DOE Amount Invoiced	Cost Share	Total	By Fiscal Year	
	From	To													
FY02 and Prior Years		9/30/2002			0				0				0		
FY03	10/1/2002	9/30/2003			0				0				0		
FY04	10/1/2003	9/30/2004			0				0				0		
FY05	10/1/2004	9/30/2005			0				0				0		
FY06	10/1/2005	9/30/2006			0				0				0		
FY07	10/1/2006	9/30/2007			0				0				0		
FY08 - October	10/1/2007	10/31/2007			0				0				0		
FY08 - November	11/1/2007	11/30/2007			0				0				0		
FY08 - December	12/1/2007	12/31/2007			0				0				0		
FY08 - January	1/1/2008	1/31/2008			0				0				0		
FY08 - February	2/1/2008	2/28/2008			0				0				0		
FY08 - March	3/1/2008	3/31/2008			0				0				0		
FY08 - April	4/1/2008	4/30/2008			0				0				0		
FY08 - May	5/1/2008	5/31/2008			0				0				0		
FY08 - June	6/1/2008	6/30/2008			0				0				0		
FY08 - July	7/1/2008	7/31/2008			0				0				0		
FY08 - August	8/1/2008	8/31/2008			0				0				0		
FY08 - September	9/1/2008	9/30/2008			0				0				0	$ -	$ -
FY09 - October	10/1/2008	10/31/2008			0				0				0		
FY09 - November	11/1/2008	11/30/2008			0				0				0		
FY09 - December	12/1/2008	12/31/2008			0				0				0		
FY09 - January	1/1/2009	1/31/2009			0				0				0		
FY09 - February	2/1/2009	2/28/2009			0				0				0		
FY09- March	3/1/2009	3/31/2009			0				0				0		
FY09- April	4/1/2009	4/30/2009			0				0				0		
FY09 - May	5/1/2009	5/31/2009			0				0				0		
FY09 - June	6/1/2009	6/30/2009			0				0				0		
FY09 - July	7/1/2009	7/31/2009			0				0				0		
FY09 - August	8/1/2009	8/31/2009			0				0				0		
FY09 - September	9/1/2009	9/30/2009			0				0				0	$ -	
FY10 - Qtr 1	10/1/2009	12/31/2009			0				0				0		
FY10 - Qtr 2	1/1/2010	3/31/2010			0				0				0		
FY10 - Qtr 3	4/1/2010	6/30/2010			0				0				0		
FY10 - Qtr 4	7/1/2010	9/30/2010			0				0				0	$ -	
FY11 - Qtr 1	10/1/2010	12/31/2010			0				0				0		
FY11 - Qtr 2	1/1/2011	3/31/2011			0				0				0		
FY11- Qtr 3	4/1/2011	6/30/2011			0				0				0		
FY11 - Qtr 4	7/1/2011	9/30/2011			0				0				0	$ -	
Totals			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

EOFY Estimated Unobsted Amount

Please read the "Instructions & Definitions" worksheet before completing the table(s).

S:\Biomass\FAA-GO 17xx\GO17026 - POET (Formerly Broin)\A000 (Coop Agreement) DAFA docs\reporting templates\MACRO blank Modified_PMP Template_Final_forFY08.xls

A. PMP Project Information

BS		Title					
Information	Name	Phone	Email	Program Element/Area		OID or Laboratory Designation	
nology				Project Initiated (dd/mm/yy)		CPS Agreement #	
oject Officer				Planned Project Completion Date (dd/mm/yyyy)		Program Value (B&R) Code	
oject Monitor							
ty Contact or lationship r				Last Gate or Project Review (dd/mm/yy)		Status	
al Investigator				Next Anticipated Stage Gate or Project Review (mm/yy)		Overall Stage of Development	
cipal ator (if applicable)				Performing Organization (Only Prime Recipient)		Funding Partner(s) [Any partner or subcontractor who provides cost share]	
Description (non lary)							
ary of Project ves & Tasks (at C, etc.level from C of PMP, non-ly)							
Work Plan (typically 1-4 ph lengths of text 1/2 to 3/4 page							
ry of Work to date y 2-6 paragraphs 1-2 pages of text							

cipient (s) Name (Fiel... atch cells AI-AR 8)	Location (zipcode)	Total DOE Funds Obligated to date	Carryover of DOE funding into FY08 (if applicable)	FY08 DOE Spend plan	DOE FY Estimated Spending Plan (if applicable)				Current Approved Spend Plan Total	Comments/Issues
					FY09	FY10	FY11	FY12		

ctors or Lab Partners										

by task number at the k level (A,B,C,D, etc.) as in section C below E-H)		Total Funds to date		FY08 Total Spend plan (DOE & Cost Share)	Fiscal Year Estimated Spending Plan (if applicable, including Cost Share)				Current Approved Spend Plan Total	Comments/Issues
					FY09	FY10	FY11	FY12		

C. Project Plan with tasks, subtasks, milestones, deliverables, Go No/Go decision points and including performance requirements and metrics

Number of Task, Subtask, Milestone, Deliverable including Go No/Go Decision Points	Title - Tasks, Subtasks, Milestones, Deliverables including Go No/Go Decision Pts	For milestones provide type	Performer(s)	Program Pathway C Milestones Link	Start Date (Tasks, Subtasks Only)	Planned Completion Date (Tasks or Milestone)	Relationship to Pathway Milestone(s)	Development stage of task or subtask	Barriers Addressed (Use Barrier numbers from Appendix B to show Barriers Addressed. Separate multiple entries with	Task or Milestone Completion Criteria (to include cost and performance metrics)	Task or Milestone decription (as needed)

udgets allocated for	$	Name	Description and Use
ial facilities required for t (Unique to your			
nt - Both capital & other r the project (over d use (or >1 yr)			
ns required for g the project			
xt File f Full	Insert Gantt Chart (or equivalent)		

Quarterly Progress Report
(Field Office Project Template)

Project Title:
Award Number: [Official Award Number per the agreement]

Recipient:
Project Location: [Location of project activities; if multiple locations, please list all in use.]

Reporting Period: [e.g., January 1, 2006 to March 31, 2006]
Date of Report: [e.g., April 30, 2006]
Written by: [Name]

> **IMPORTANT NOTE:** If any part of your quarterly report contains **proprietary/confidential information**, or details that should not be released to the general public, the specific sections of the report should be marked as such, by clearly marking the beginning and end of the confidential information. The marked sections will not be released to the general public or any unauthorized parties.

Status: [In this section each task, as defined by the Project Management Plan (PMP), should be discussed by following the outline given below. The discussion for each task should include subtasks. Milestones, deliverables, and go/no go decision points covered in Table C of the accompanying excel quarterly report and the PMP may be discussed in more detail in this section; however, please ensure Table C is completely and accurately filled in.]

Task number: [(e.g., A)]

1. **Planned Activities:** [This section should include the planned activities that were stated in the previous quarterly report for the task being discussed, including subtasks, milestones, deliverables, and go/no go decision points.]

2. **Actual Accomplishments:** [The discussion should include all significant work completed in the past quarter to support the project and accomplish the specific task being discussed, including subtasks, milestones, deliverables, or go/no go decision points. When a task-level milestone has been completed, please include a brief explanation of how completion of the task achieves/supports/furthers completion of the C-level milestone as indicated in the PMP (cell X48). Actual work completed should conform to the "Planned Activities" described in the above section. If it does not, an explanation of the variance is required and should be discussed below in section 3. **Explanation of Variances.**]

3. **Explanation of Variance:** [This section should discuss any differences between the planned activities (section 1) and the actual accomplishments (section 2). These differences should be included even if the setback was out of the control of the recipient, such as a change in the availability of equipment and/or facilities. Issues, concerns, successes or requested changes and the resulting impact to the Statement of Project Objectives, budget and/or schedule should be discussed. If progress (Section C, column V of the accompanying excel file) is Y or R, please explain the corrective actions that will be taken to mitigate scope, schedule, and budget changes or shortfalls.]

4. **Plans for Next Quarter:** [Planned activities for this task, to be conducted during the next quarter should be discussed here.]

[REPEAT these discussions for each task in the Project Management Plan (e.g. A, B, C, etc...)]

Patents: [A cumulative list of patents applied for or resulting from the award, including date of application and receipt of patent(s) and date and status of DOE notification.]

Publications / Presentations: [Identify and briefly summarize, in a few sentences, all publications and presentations made for industry or government groups resulting from the project during this quarter and, if possible, include a URL link or other method of accessing the publication or presentation. In addition, please upload the electronic file to the PMC if required (see your "Federal Assistance Reporting Checklist," form 4600.2, for required uploads).]

STATEMENT OF PROJECT OBJECTIVES

POET Project Liberty, LLC
Project LIBERTY

A. PROJECT OBJECTIVES

The LIBERTY project objectives within the scope of the Cooperative Agreement are to prepare for final design, construction, commissioning and start-up of an integrated bio-refinery to be located near Emmetsburg, Iowa. The bio-refinery will convert 700 metric dry tones per day biomass to ethanol. Objectives also consist of those required by the Department of Energy to be included within the scope of the Cooperative Agreement.

NOTE: Pre-NEPA activities include Goal 1.0, 2.0, 6.0, 7.0, 8.0 and 9.0.
Post-NEPA activities include Goal 1.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0 and 9.0.

GOAL 1.0: Mitigate project risk.

Objective 1.1: Execute action plan generated by independent risk assessment review focusing on project management practices.

Deliverables prior to cooperative agreement:

- Risk assessment report regarding POET project management strengths, weakness and recommendations.
- POET project risk mitigation plan.

Deliverables:

- Updated action plan outlining progress of action items in quarterly reports and meeting.

GOAL 2.0: Complete pre-construction environmental engineering requirements.

Objective 2.1: Complete assessments, surveys and documentation required for DOE to make a NEPA determination for the project activities.

Objective 2.2: Obtain all state environmental permits necessary for plant construction and operation.

Deliverables:

- NEPA documentation and reports
- State Air Permit

- State National Pollution Discharge Elimination System (NPDES) permits for both non-contact water and storm water
- Determination if State or Federal wetland (401 or 404) permits will be required
- Modification of any necessary water resource appropriation filings

GOAL 3.0: Provide preliminary engineering and design deliverables.

Objective 3.1: Provide preliminary engineering design for each of the following LIBERTY phases.

- Fiber Feedstock Production
- Cob Feedstock Collection and Processing
- Lignin Incineration and Steam Generation
- Biogas Production and Process Water Recycle
- Cellulose-to-Ethanol Biorefinery

Deliverables: Process Flow Diagrams (PFDs)
Mass and Energy Balances
Site Layout
Equipment Specifications
Process and Instrumentation Diagrams (P&IDs)
Preliminary Process Hazard Analysis (PHA)

Deliverable Milestones: REDACTED EXEMPTION 4 partner review meetings. See WBS.

GOAL 4.0: Facilitate independent engineering reviews.

Objective 4.1: POET will host and schedule in consultation with DOE each phase's Project Delivery "Partner Review" meeting at POET headquarters in Sioux Falls, SD at the following points:

- REDACTED EXEMPTION 4 Engineering Lead Project Review Meeting
- Project Proposal Review Meeting
- Initial Partner Project Meeting

POET will make available to DOE and DOE's independent engineer all materials presented at these project reviews and any supporting materials requested in writing by DOE. All materials may be reviewed at POET's corporate headquarters in Sioux Falls, South Dakota. Materials may not be taken off the POET headquarter campus.

Objective 4.2: POET will make available engineers/project managers to meet with DOE's independent engineer by appointment during the week(s) of the Partner Reviews or at other times as requested in writing by DOE.

Deliverables:

- [EX. 4] design review packages
- Go/No Go recommendation report to DOE following [EX. 4] design reviews

GOAL 5.0: Determine appropriate methods and equipment options for feedstock collection, storage, and transportation.

Objective 5.1: Determine appropriate methods and equipment options with original equipment manufacturers for farmers to harvest, transport [EX. 4] and store corn cob feedstock. Evaluate agronomics of corn cobs and the impacts of removal from the field and storage on the field

Objective 5.2: Educate local farmers on validated corn cob harvesting processes, corn cob specifications, and related economics.

Objective 5.3: Develop a corn cob communication and marketing plan to secure farmer participation [REDACTED EXEMPTION 4]

Deliverables:

- Demonstrations of methods and equipment options [REDACTED EXEMPTION 4]
- [REDACTED EXEMPTION 4]
- Rollout of the communication and marketing plan.

GOAL 6.0: Enzyme Selection and Production

The following objectives prepare for economical commercial-scale enzymes for LIBERTY operations. [ ] sub-contractor through POET Research, Inc. and is [REDACTED EXEMPTION 4] [EX 4]

Objective 6.1: Transfer knowledge regarding specific physical/chemical characteristics of corn fiber/corn stover substrates [REDACTED EXEMPTION 4]

Objective 6.2: Validate the key enzymatic activities required to hydrolyze the polymeric sugars present in the substrates into fermentable, [EX 4] [EX 4]

Objective 6.3: Final selection of potential commercial [REDACTED EXEMPTION 4] combinations for LIBERTY corn fiber/corn stover.

Objective 6.4: Develop enzyme-based Quality Assurance/Quality Control protocols for the design and control adjustments of the [EX4] pretreatment step.

Objective 6.5: Finalize economics for a blend of enzymes required to maximize the production of fermentable sugars at LIBERTY scale.

Objective 6.6: Confirm the optimal process configuration in collaboration with the partners for optimal [EX. 4] cost for LIBERTY.

Objective 6.7: Determine optimal configuration for enzyme delivery [EX 4] [EX. 4]

Deliverable:

- Compositional data for corn fiber/corn stover substrates from [EX 4] Pretreatment to establish composition baseline and variability due to feedstock.
- Defined saccharification process including critical biomass enzyme activities for conversion of LIBERTY unique feedstock, corn fiber/corn stover.
- Protocol for commercial scale saccharification, using unique biomass enzymes for LIBERTY unique feedstock, corn fiber/corn stover.
- Quality Assurance/Quality Control protocols for pretreatment performance.
- Robust cost model for predicting enzyme costs [REDACTED EXEMPTION 4] [EX. 4]
- Robust process model for integration of enzyme supply, pretreatment, saccharification and fermentation.
- [REDACTED EXEMPTION 4]

GOAL 7.0: Provide analytical processes and training.

The following objectives set up analytical quality control and assurance processes and procedures for LIBERTY operations [Ex. 4] is the primary sub-contractor through POET Research, Inc. [REDACTED EXEMPTION 4]

Objective 7.1: [ ] will provide consultation to POET Research, Inc. analytical chemists on [REDACTED EXEMPTION 4]

[REDACTED EXEMPTION 4]
operations.

Objective 7.2: [Ex 4] will provide training in [Ex 4] for POET Research [Ex. 4] and/or chemical engineers in preparation for LIBERTY operations.

Objective 7.3: [Ex 4] will implement an existing procedure for conducting abbreviated compositional analysis methods for characterization of corn cob.

Objectives 7.4: Gain a baseline data for calibration purposes in preparation for quality control/assurance of LIBERTY operations.

Deliverables:

- [REDACTED EXEMPTION 4]
- [ ]
- [analysis support.]
- Baseline analytical calibration.

B. PROJECT SCOPE

The scope of work includes preparatory work for the final design, construction, commissioning and operation of [ ] million-gallon-per-year commercial-scale biorefinery with supporting milling and alternative energy technologies. The biorefinery and alternative energy technologies will be integrated with a 100-million-gallon-per-year starch-to-ethanol facility. The proposed project scope includes:

- Proprietary milling technology, BFRAC™, to produce corn fiber feedstock;
- Corn stover collection, processing [EX 4] and transporation to provide corn stover feedstock;
- Anaerobic digester to convert waste streams to methane for energy conversion and water for plant processes; and
- Biomass solid fuel boiler to provide energy for the plant's [EX. 4]
- [ ] million-gallon-per-year cellulosic ethanol bio-refinery based on corn fiber and stover feedstock;

The LIBERTY Cooperative Agreement scope of work will begin after independent engineering review and approval of project mitigation risk plan. It will end at technology validation of all five phases and concurrent to financial commitment.

C. TASKS TO BE PERFORMED

Task 1.0 Project Management Risk Mitigation Plan

Pre-Award: The Department of Energy (DOE) Golden Field Office (GO) has arranged for an independent risk assessment review focusing on project management practices. The consultant will send a comprehensive workbook to be completed by POET. Assessment personnel will meet LIBERTY expansion director, project manager, engineering team and support personnel to review technical material and project management processes [EX. 4] in POET's corporate headquarters located in Sioux Falls, SD. The assessment consultant will produce a report outlining project management strengths, weaknesses and recommendations. Per confidentiality agreement, POET will review the POET report prior to release to NREL. POET will follow-up on recommendations.

The DOE GO will pay for 100% of the consultant fees for this assessment. The scope of Task 1.0 is to review the project management risk mitigation plan and report progress to DOE GO LIBERTY project team.

Deliverables prior to cooperative agreement:

- Risk assessment report regarding POET project management strengths, weakness and recommendations
- POET project risk mitigation plan

Deliverables:

- Updated action plan outlining progress of action items in quarterly reports and meeting.

Task 2.0 Environmental Engineering

Subtask 2.1 NEPA Determination

Work with the DOE and Oak Ridge National Laboratory to provide all studies and reports necessary to complete the NEPA review process. This includes (a) working with Oak Ridge National Laboratory to assemble and submit to DOE the proposed action and baseline site conditions and (b) hiring a third-party contractor to complete the DOE NEPA review and documentation process (an Environmental Assessment or Environmental Impact Statement). These activities will enable the DOE to make the final NEPA determination for the project. Costs and schedule are based on the assumption that an Environmental Assessment will be sufficient. If an EIS is required, the Cooperative Agreement will be amended to reflect these costs.

Subtask 2.2 Permitting

Revise and obtain all state construction and operating permits or authorizations necessary for modification of the current ethanol production facility. Permits include the State Air Permit, the State National Pollution Discharge Elimination System (NPDES) permits for both non-contact water and storm water, determination if State or Federal wetland (401 or 404) permits will be required, and modification of any necessary water resource appropriation filings. Complete a survey for potential cultural and ecological resources. All documentation will be prepared and submitted to the State and Federal agencies for approval prior to modification of the existing facility.

Potential areas of study in preparation for the NEPA review may include the following:

Air impacts
Land use
Geologic hazards
Vehicle related emissions
Solid and hazardous waste generation and disposal
Odors, noise and visual impact analyses
Surface water impacts due to non-contact cooling water discharge
Surface water impacts due to storm water discharge
Water appropriations
Ecological impacts
Socioeconomic impacts, traffic, jobs, additional development due to the project

Environmental justice
Cumulative impacts from the combined facilities
Viable alternatives to the action including No Action

The specific areas of study will be further refined in conjunction with DOE in the establishment of site baseline conditions and NEPA scoping documentation.

Deliverables:

- State Air Permit
- State National Pollution Discharge Elimination System (NPDES) permits for both non-contact water and storm water
- Determination if State or Federal wetland (401 or 404) permits will be required
- Modification of any necessary water resource appropriation filings

Task 3.0 Engineering and Design [EX 4] **Partner Review Milestone**
Provide preliminary engineering design for each of the following LIBERTY phases:

- Fiber Feedstock Production
- Cob Feedstock Collection and Processing
- Lignin Incineration and Steam Generation
- Biogas Production and Process Water Recycle
- Cellulose-to-Ethanol Biorefinery

The following engineering components will be included within the engineering design component:

- Process Engineering
- Process Automation Engineering
- Milling and Grains Engineering
- Mechanical Engineering
- Electrical Engineering
- Environmental Engineering
- Railroad Engineering
- Civil Engineering
- Structural Engineering
- Building Systems Engineering

The cost in the budget captures the engineering human resource requirements for preliminary engineering. Support functions such as project coordination and drafting are also captured in the cost. Please see budget for further detail.

Deliverables: Equipment Specifications
Process Flow Diagrams (PFDs)
Process and Instrumentation Diagrams (P&IDs)
Mass and Energy Balances
Site Layout
Preliminary Process Hazard Analysis (PHA)

Task 4.0 Independent Engineering Review
The DOE GO office will contract and pay for an independent engineering review of engineering design of Project LIBERTY phases:

- Fiber Feedstock Production
- Cob Feedstock Collection and Processing
- Lignin Incineration and Steam Generation
- Biogas Production and Process Water Recycle
- Cellulose-to-Ethanol Biorefinery

POET will schedule and invite DOE and DOE's independent engineer to POET headquarters in Sioux Falls, SD to attend the LIBERTY Partner Review meetings at the following milestones:

Sub-task 4.1: POET will host and schedule in consultation with DOE each phase's Project Delivery "Partner Review" meeting at POET headquarters in Sioux Falls, SD at the following points:

- [redacted] Engineering Lead Project Review Meeting
- Project Proposal Review Meeting
- Initial Partner Project Meeting

POET will make available to DOE and DOE's independent engineer all materials presented at these project reviews and any supporting materials requested in writing by DOE. All materials may be reviewed at POET's corporate headquarters in Sioux Falls, South Dakota. Materials may not be taken off the POET headquarter campus.

Sub-task 4.2: POET will make available engineers/project managers to meet with DOE's independent engineer by appointment during the week(s) of the Partner Reviews or at other times as requested in writing by DOE.

Deliverables:
- [EX 4] design review packages
- Go/No Go recommendation report to DOE following [EX 4] design reviews

Task 5.0 Biomass Feedstock

LIBERTY start-up is scheduled for [Ex. 4] 2011. The logistics for the feedstock, 60% corn cobs and 40% corn fiber, must be in place by [REDACTED EXEMPTION 4] The corn cob logistics, including harvesting, transportation, [REDACTED EXEMPTION 4] and storing to meet cellulosic ethanol feedstock specifications, is a new business model for [Ex. 4] Information is required on the agronomics of corn cobs and the impacts of cob removal from the field and storage on the field. [REDACTED EXEMPTION 4]

Sub-task 5.1: Work with multiple equipment manufacturers to harvest, transport, [ ] and store corn cob feedstock. Coordinate approved technology demonstrations for [REDACTED EXEMPTION 4]

Sub-task 5.2: Educate [Ex 4] farmers on validated corn cob harvesting processes, corn cob specifications and economics via [Ex. 4] [Ex4] [REDACTED EXEMPTION 4] Several partnerships will be formulated to roll-out education on processes and specifications to support the cellulosic ethanol plant.

Sub-task 5.3: Prepare and begin the rollout of a communications and marketing plan with the goal of supplier delivery of on-spec corn cobs to plant. Primary suppliers targeted include: [REDACTED EXEMPTION 4]

Deliverables:

- Multiple equipment options demonstrated in Emmetsburg area for farmers to evaluate.
- [REDACTED EXEMPTION 4]
- Rollout of the communications and marketing plan.

Task 6.0 Enzyme Selection and Production

The following objectives prepare for economical commercial-scale enzymes for LIBERTY operations. [EX. 4] sub-contractor through POET Research, Inc. and is adjusting their existing enzymes for the LIBERTY feedstock, corn cobs and corn fiber.

Sub-task 6.1: Transfer knowledge (regarding specific physical/chemical) characteristics of corn fiber/corn stover substrates [EX. 4]

[REDACTED EXEMPTION 4]

- Determine the composition of [REDACTED EXEMPTION 4] corn fiber and corn stover after pretreatment
- Determine the compositional variability of the expected [REDACTED EXEMPTION 4]
- Determine solid feedstock particle size expected to enter hydrolysis.

Deliverable: Compositional data for corn fiber/corn stover substrates from POET Pretreatment to establish composition baseline and variability due to feedstock.

Sub-task 6.2: Validate the key enzymatic activities required to hydrolyze the polymeric sugars present in the substrates into fermentable,

- [REDACTED EXEMPTION 4]
- [REDACTED EXEMPTION 4]
- [REDACTED EXEMPTION 4]

Deliverable: Finalized saccharification process including critical biomass enzyme activities for conversion of LIBERTY unique feedstock, corn fiber/corn stover.

Sub-task 6.3: Selection of potential commercial [REDACTED EXEMPTION 4] combinations for LIBERTY corn fiber/corn stover.

- Finalize required mixtures of commercially-available enzymes to meet defined conversion and economic targets at commercial scale.

Deliverable: Design for commercial scale saccharification, using unique biomass enzymes for LIBERTY unique feedstock, corn fiber/corn stover.

Sub-task 6.4: Develop enzyme based Quality Assurance/Quality Control protocols for the adjustment of the [EX 4] pretreatment step.

- Specify design and controls for [REDACTED EXEMPTION 4]

Deliverable: QA/QC protocols for pretreatment performance.

Sub-task 6.5: Confirm economics for a [EX. 4] enzymes required to maximize the production of fermentable sugars at LIBERTY scale.

- [REDACTED EXEMPTION 4] define the [EX 4] commercially-available enzymes that gives the lowest possible cost for enzyme supply

Deliverable: Robust cost model for predicting enzyme costs in terms [EX. 4] [EX. 4]

Sub-task 6.6: Validate the optimal process configuration in collaboration with the partners for [REDACTED EXEMPTION 4] LIBERTY.

- Model at scale process integration procedures to identify the most efficient means of linking pretreatment, hydrolysis and fermentation

Deliverable: An updated robust process model for integration of enzyme supply, pretreatment, saccharification and fermentation.

Sub-task 6.7: Define optimal configuration for enzyme delivery [REDACTED EXEMPTION 4] [EX 4.]

- Perform a cost impact analysis for enzyme production. [REDACTED EXEMPTION 4]

Deliverable: Business case for location of enzyme production

Task 7.0 Analytical Processes and Training

The following objectives set up analytical quality control and assurance processes and procedures for LIBERTY operations. [ ] is the primary sub-contractor through POET Research, Inc. and is [REDACTED EXEMPTION 4]

Sub-task 7.1 [EX 4] *Method Development.* [EX 4] will provide 100+ hours of consultation to POET Research, Inc. [EX 4] chemists on existing advanced [EX. 4] methods developed by [EX 4] researchers for biomass carbohydrate (corn fiber/corn cob) analysis in pretreatment, saccharification and fermentation. These advanced methods involve carbohydrate analyses not covered under current publicly-available methods. This sub-task will include a one day visit to Sioux Falls, SD to discuss current and planned POET lignocellulosic biomass analytic methods and issues the POET Research analytical chemists are confronting in preparation for LIBERTY operations.

Sub-task 7.2: *Training at* [EX 4] *for* [ ] *Chemical Methods.* [EX 4] will provide [EX 4] days of training in [EX 4] at the facility for up to POET Research [EX. 4] chemists and/or chemical engineers. This training will include [REDACTED EXEMPTION 3 REDACTED EXEMPTION 3], will provide all required training materials, equipment, laboratory and class room space. POET Research will provide corn fiber/cob samples to be analyzed in the training.

Sub-task 7.3: *Wet Chemical Analysis.* [EX. 4] will implement an existing procedure for [EX 4

REDACTED EXEMPTION 4

REDACTED EXEMPTION 4

REDACTED EXEMPTION 4

REDACTED EXEMPTION 4

Sub-task 7.4: *Baseline analytical calibration.* POET Research analytical chemists will be running cellulosic samples (cob/fiber mixtures) in order to gain baseline data for calibration purposes in preparation for LIBERTY operations.

Deliverables:

- [Ex. 4] method development on biomass carbohydrate analysis in pretreatment, saccharification and fermentation.
- [Ex 4] chemical methods training.
- [Ex 4] chemical analysis support.
- Baseline analytical calibration.

Task 8.0: DOE Contract Management/Audit

POET will require human resources to coordinate DOE contract negotiations, produce contract deliverables, capture costs and audit performance. POET anticipates a team including executive management, project director, attorneys, environmental engineering, project managers, financial manager and grant development administrator.

POET assumes a team of [Ex 4] people will travel to Golden four times in 2007 and two times in 2008 to negotiate the cooperative agreement and technology investment agreements as well as provide project updates. POET also assumes two people will travel to Washington D.C. once in 2007 and 2008 to provide project and technology updates to the DOE HQ Biomass team.

Deliverables: **Contract Deliverables**

- Punch List Deliverables
- Quarterly Reports
- DOE/POET meeting coordination, agenda and minutes