

# **REQUEST FOR PROPOSAL – NATURAL GAS INDUSTRY ODORIZATION STUDY AND TESTING**

## **Background**

The natural gas industry strives for the highest standard of safety and conducts several operations to maintain that standard. One such activity relates to the “odorization” of natural gas. Daily odorization operations include addition of organic sulfur compounds, such as mercaptans and sulfides, to the natural gas to provide a distinct odor and to serve as a warning of gas leaks. In addition, the gas companies perform periodic gas sampling to ensure the proper level of odor.

Natural gas odorization is a mature technology, but problems with loss of odor due to fading or masking are known to occur. Odor fading is the loss of odorant due to chemical and physical processes, such as adsorption on the surfaces of new pipelines. Odor fading is NOT the subject of this RFP because a separate gas industry program is addressing that issue.

Odor masking, the subject of this RFP, is the CHANGE in perception of the characteristic smell of odorants. Masking can be particularly perplexing because despite injection of odorant at the usual levels, the odor quality may be different or absent. The cause of masking has been assumed to be the interaction of odorant compounds with other trace constituents in the gas stream BUT the causative compounds are usually unknown. Masking problems are frequently transient, but the return of normal odor does not help elucidate the event, prevent recurrence or develop remedial action.

## **Project Plan: Masking Agents for Natural Gas Odorants**

The interaction of natural gas odorants with gas system constituents has not been well studied in olfaction research, and the body of work for odor masking in the natural gas industry is largely anecdotal and dated. The National Institute of Standards and Technology (NIST) has proposed and initiated a comprehensive study including theoretical modeling and clinical testing to evaluate interactions of various odiferous compounds across many industries and applications. An accelerated schedule for the natural gas phase is necessary because of potential issues regarding new natural and renewable gas supplies to the US gas network with different constituents than traditional sources.

NYSEARCH therefore proposes this program to expedite the work on natural gas industry odorization and also to address the clinical testing, which will not be available from NIST. The NYSEARCH work will be conducted in conjunction with the larger project and NIST research team.

## Program Objective

The objective of the proposed program is to identify and characterize the conditions and chemical combinations which create odor masking so that the phenomena can be mitigated without compromise to the intent of the odorization operation.

Phases to address the program objective include:

Phase I. Preliminary work to identify masking potential of natural gas constituents based on molecular and olfactory characteristics of known conjugate pairs. Early work will include

- a) Identification of known conjugate pairs for odorant compounds: ethyl mercaptan and caproic acid, ethyl mercaptan and eucalyptol, natural gas odorants and commercial deodorants containing terpenes, and others
- b) Identification of gas constituents of concern for odor masking, which currently include:
  - o Small molecule mercaptans and sulfides (methyl mercaptan, ethyl mercaptan, dimethyl sulfide, etc)
  - o Hydrogen sulfide
  - o Higher alkanes (C<sub>2</sub>, C<sub>3</sub>, C<sub>6</sub>+)
  - o Cyclic alkanes and alkenes
  - o Other unsaturated hydrocarbons
  - o Aromatic hydrocarbons (e.g., BTEX)
  - o Amines
  - o Alcohols and Glycols
  - o Terpenes
  - o Wellhead additives (including hydraulic fracturing fluids)
  - o Others
- c) Demonstration of odor mixing effects in the human nose with clinical tests

Phase 2. Development of a list of problematic constituents in natural/biogas

Phase 3. Enhancement of public safety with guidelines to counteract effects

Bidders to the RFP should focus their detailed response on **Phase I** but should consider the overall plan and determine whether they are qualified to bid on just one or multiple phases of the proposed program.

## Anticipated Deliverables of Initial Phase

- 1) Research report providing full detailed results of modeling and including examples of how model can or has been validated.

2) Clinical test results provided in User Report.

## **Formal Proposal Guidelines**

For proposals to be considered responsive, Participants must comply with the requirements outlined below. Participants are encouraged to submit concise, but complete proposals. Materials, beyond that necessary to present an effective proposal such as elaborate brochures or artwork are discouraged.

### **I. Proposal Format**

A. **Background**: Describe the basis for the Participant's project.

Include a description of the current state of the art, a discussion of the improvements proposed, and the basis for the proposed research. Demonstrate how this work builds on previous research, and how it does not duplicate other efforts, completed or underway.

B. **Project Goals and Primary Objectives**: Description and enumeration of what the project intends to achieve, discover, or demonstrate

C. **Scope of Work**: Description of what work is to be done as a part of this project, the major tasks and project deliverables, and how they relate to the goals and objectives previously enumerated.

All major tasks should be broken down into an appropriate number of subtasks, with expected results.

D. **Technical Approach**: Description of the methodology, explaining how the results will be achieved and how success will be measured.

Include a discussion of the resources required, equipment and personnel to be acquired, and a general description of how the research funds will be expended.

E. **Project Schedule**: The schedule should show start and completion dates for all major tasks and identify all milestones. The milestones shall follow clearly identifiable accomplishments or deliverables. The schedule should include proposed progress reporting, meetings, project decision points, final project report, and technology transfer activities such as workshops, peer review papers, etc.

The schedule should show the manpower allocation schedule showing manhours required for each task and for each category of personnel utilized.

Fully describe future phases required (if any) to bring this project to commercialization capabilities.

F. Deliverables: Provide a list of deliverables to NYSEARCH as they relate to major project tasks and project completion.

G. Project Organization: Provide a description of the participant's background, relevant experience, and qualifications for performing the work proposed.

Provide a project organization chart, showing the project's management structure. Include lines of responsibilities with reference to major tasks and key personnel.

Provide the resumes of the key personnel. Describe the experience, qualifications, and facilities of all participating organizations.

Include co-sponsors, research contractors and subcontractors and describe any co-funding or co-sponsoring arrangements.

Indicate in detail what will be required from NYSEARCH in the way of in-kind services, information, time, equipment, site visits, etc., to accomplish the objectives of this project.

List of utilities and/or industrial customers if any, for whom the Participant performed similar services, including type of services and/or equipment provided, dates and contact persons.

Describe the management systems used to measure and control cost, schedule and technical quality. If a project is a collaboration, outline major project tasks for which each Participant is responsible.

H. Agreement Exceptions: State all exceptions to the proposed RD&D Agreement. Include detailed reasons for requesting specific exceptions (i.e. laws, regulations, requirements, unnecessary provisions, etc.)

I. Technology Transfer Plan: Outline a plan transferring the technology to be developed under the proposed project from the Participant to NYSEARCH. Effective technology transfer must take place for NYSEARCH to fully realize the benefits of RD&D projects. Include a description of all documents, peer review technical papers, reports, manuals, software, workshops and training sessions to be supplied as part of this project.

J. Duplication: Provide an explanation of background research done by the Participant to determine that the proposed project does not duplicate efforts completed or underway elsewhere. NYSEARCH intends to confirm that the RD&D proposed is not duplicative.

- K. Confirmations: Provides evidence that the Participant's representative, with executive authority, reviewed and authorized the submission of the proposal.

## **II. Intellectual Property**

Participants that include confidential and proprietary information in their proposal should indicate such on the respective pages of the proposal. NYSEARCH/NGA will not divulge confidential and proprietary information to non-NYSEARCH personnel. NYSEARCH personnel involved in the review of proposals will release information to other NYSEARCH personnel only for the purpose of evaluating a Participant's proposal.

NYSEARCH's policy for ownership for intellectual is outlined in Article 7 of the proposed Agreement (Attachment A). As indicated in the Agreement, when NYSEARCH funds a project, a Participant will normally assign to NYSEARCH all rights, title and interest in and any and all intellectual property resulting from the Participant's work on the project. However, NYSEARCH recognizes that other factors, including previous and current funding arrangements, business considerations and legal and/or regulatory constraints can warrant negotiated modifications to this policy. Therefore, NYSEARCH will consider altering this general policy regarding ownership of intellectual property on a case by case basis.

Participants requesting exceptions to Article 7 of the proposed Agreement must clearly outline such exceptions in the proposal. Additionally, to the extent a requested exception is based upon any law or regulation that prohibits the Participant from assigning ownership of intellectual property, the proposal must indicate the specific legislative and/or regulatory requirements which form the basis for the requested exceptions.

Participants will be expected to maintain and allow NYSEARCH, at NYSEARCH's sole discretion, to copy all books, records, research, notes, charts, graphs, comments, computations, analysis, recording, photographs and all other graphic or written data produced in connection with the Participant's work under the project.

## **III. Cost Proposal**

In a separate document, please provide the following:

A schedule of expected monthly expenditures for the project term should be provided. Expenditures must be broken down into components and broken down by major tasks over the project term. This shall include all costs pertaining to materials, labor, consulting, insurance, review meetings, travel; everything required for the completion of work.

Include a proposed payment schedule based on milestones identified in the project schedule.

To provide a clearer breakdown of expectations and descriptions of progress NYSEARCH encourages the use of project phasing.

Describe any opportunities for co-funding or cost sharing, identifying the organizations and their levels of contribution.

### **PROPOSAL / CONTRACT PROCESS**

The project proposal submittal and contract award dates are:

Full proposal development will be requested on or before: **December 10, 2011.**

Full proposal selection would be made no later than: **March 1, 2011**

Award of contract notification will be provided on or before: **April 1, 2011.**

## **EXHIBIT A**

### **CONTRACTOR AGREEMENT**

This Agreement, made as of the \_\_\_\_ day of \_\_\_\_\_, 2010, by and between NORTHEAST GAS ASSOCIATION, a Massachusetts not-for-profit corporation, (hereinafter referred to as "NGA"), and [*Name of CONTRACTOR*], a [*State of Incorporation*] corporation (hereinafter referred to as "CONTRACTOR"). NGA and CONTRACTOR are sometimes herein referred to individually as a "Party" and collectively as "Parties".

#### **WITNESSETH THAT**

WHEREAS, NGA is a trade association created by the merger of New England Gas Association and New York Gas Group, representing local distribution companies, interstate pipeline companies, LNG importers and associate companies involved in supporting the natural gas industry in the seven-state region of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island and Vermont; and,

WHEREAS, NGA, acting through its NYSEARCH Committee and representing a select group of NGA members, desires to participate in the implementation of and provide funding for the Project as hereinafter set forth through its NYSEARCH Committee which is fostering and supporting a collaborative research and development project entitled [*name of project*]; and

WHEREAS, CONTRACTOR has represented that it is equipped and qualified to perform such research and development; and

WHEREAS, the NGA Participating Companies have agreed to make contributions to NGA to the extent necessary to permit NGA to meet its obligations under this Agreement.

NOW, THEREFORE, in consideration of the promises and the mutual covenants and agreements hereinafter set forth, the parties do hereby agree with each other, for themselves and for their successors and assigns, as follows:

#### **ARTICLE 1**

##### **SCOPE OF WORK; PERIOD OF PERFORMANCE**

1.1 Definitions. Unless the context otherwise requires, the terms defined below shall have, for all purposes of this Agreement, the respective meanings set forth below, the

following definitions to be equally applicable to both the singular and plural forms of any of the terms defined:

Agreement. This Agreement and Exhibits A and B hereto, all of which are made a part hereof as though herein set forth in full.

Effective Date. This Agreement shall become effective upon the written acceptance by NGA of all Background Intellectual Property.

Estimated Cost. The Estimated Cost as set forth in Article 3.1.

Final Report. The Report required by Article 6.2 hereof.

Project. All of the Work and other performance obligations of CONTRACTOR hereunder.

Statement of Work. The Scope of Work described in Exhibit A.

Subcontract. An agreement for the performance of Work by a Subcontractor, including any purchase order for the procurement of permanent equipment or expendable supplies in connection with the Work.

Subcontractor. A person who performs Work directly or indirectly for or on behalf of CONTRACTOR (and whether or not in privity of contract with CONTRACTOR), but not including any employees of CONTRACTOR or of Subcontractors.

Work. The work described in the Exhibit A (including the procurement of equipment and supplies in connection therewith) and the performance of all other requirements imposed upon CONTRACTOR under this Agreement.

1.2 Addenda. The following exhibits and/or addenda are a part of this Agreement and are hereby incorporated by reference:

Exhibit A

Exhibit B

1.3 Performance of Work. CONTRACTOR agrees to perform the Work set forth in Exhibit A annexed hereto and made a part hereof.

1.4 Key Personnel. The following named members of CONTRACTOR's and Subcontractors' organizations are considered to be "Key Personnel" and they shall perform the services ascribed to them in the Statement of Work; provided, that CONTRACTOR may substitute such key personnel with others of comparable

experience and expertise, subject to the consent of NGA, which consent shall not be unreasonably withheld:

*[Names of Key Personnel]*

Nothing herein shall be construed to prevent CONTRACTOR from permitting any Key Personnel from taking regularly scheduled vacation during the term of this Agreement, if such term is not longer than three months and such vacation will not interfere with the timely and proper performance of the Work.

1.5 Schedule. The Project shall be performed and completed in accordance with the schedule contained in Exhibit A.

1.6 Force Majeure. Neither party hereto will be liable to the other for default or delay in the performance of any of its obligations hereunder (except for the obligation of payment) due to act of God, accident, fire, flood, storm, riot, war, sabotage, explosion, strike, labor disturbance, national defense requirement, governmental law, ordinance, rule or regulation, whether valid or invalid, inability to obtain electricity or other type of energy, raw material, labor, equipment or transportation, or any similar or different contingency beyond its reasonable control whether or not the contingency is of the same class of those enumerated above, it being expressly agreed that such enumeration shall be non-exclusive. The party whose performance is delayed by any such contingency shall have the right to extend any periods during which performance is required hereunder for a period of time equal to the period of time during which such performance is delayed by the contingency.

1.7 No Conflict With Other Agreements. CONTRACTOR represents that its performance of the Work and the fulfillment of its other obligations hereunder will not conflict with any other agreement to which it is a party.

1.8 Approval of Subcontracts. Any Subcontract in excess of \$5,000 shall be submitted to NGA for prior approval.

## **ARTICLE 2**

### **CONTRACT ADMINISTRATION**

CONTRACTOR's performance of the Work shall be under the general technical direction of NGA' Project Manager who is *[Name of NGA Staff Member Involved in Project]*. The Project

Manager is authorized to exercise technical direction of the Project within the general scope of the Project. NGA, at any time, may designate a new or alternate Project Manager by written notice to CONTRACTOR. The Project Manager is not authorized to obligate NGA to pay CONTRACTOR any amount greater than the Estimated Cost specified in Article 3 hereof nor to authorize changes in the Project or the Work which may increase the Estimated Cost.

**ARTICLE 3**  
**COMPENSATION**

3.1 Compensation. In consideration for this Agreement and as full compensation for the performance of all Work and in respect of all costs, direct and indirect, charges, or expenses incurred in connection therewith, NGA shall pay to CONTRACTOR the actual cost incurred as set forth in Exhibit B up to a maximum amount of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) (herein, the "Estimated Cost"), subject to the provisions and restrictions contained herein. Such amount shall be paid only to the extent that costs are incurred by CONTRACTOR in performance of the Work in accordance with the provisions of this Agreement and Exhibit B. If Exhibit B includes a provision for fee compensation to CONTRACTOR, such compensation shall be deemed included within the Estimated Cost for purposes of this Agreement and its payment limits.

3.2 Title to Equipment. Title shall vest in NGA to all equipment purchased by CONTRACTOR the cost of which is more than fifty percent (50%) paid by NGA hereunder. Upon request of NGA, CONTRACTOR will execute, acknowledge, deliver and perform, or cause to be executed, acknowledged, delivered or performed, all such bills of sale, assignments, conveyances or other documents or acts as NGA may reasonably request in order to assure the better vesting in and confirming to NGA, its successor and assigns, of title to and possession of such equipment. If requested by NGA, CONTRACTOR shall sell or otherwise dispose of such equipment in accordance with NGA's directions and at NGA's expense. If, after six (6) months following the completion of the Work or the termination of this Agreement, NGA has not removed any such equipment, it will be deemed abandoned and become the property of CONTRACTOR. Any such removal of equipment by NGA shall be at NGA's expense.

**ARTICLE 4**  
**PAYMENT**

4.1 Invoices. CONTRACTOR may submit invoices once each month for costs incurred in performing Work during the previous month plus any applicable fee compensation as provided in Exhibit B. Each such invoice shall be accompanied by a progress report as specified in Article 6 and shall contain a cost breakdown by task and major budget category of the various items of cost and/or fee as indicated in Exhibit B. Invoices shall be submitted by CONTRACTOR to the Project Manager.

4.2 Progress Payments. NGA shall pay to CONTRACTOR, within thirty (30) days after receipt of an invoice, the amount so invoiced, less ten percent (10%) which shall be held as a reserve until final payment. If CONTRACTOR finds that a submitted invoice contains an error and reports the same to NGA in writing within fifteen (15) days after invoice submission, NGA will pay, within the aforementioned time period, the amount as corrected (subject to the aforementioned retention provision).

4.3 Final Payment. Upon approval and acceptance of the Final Report pursuant to Article 6 hereunder, CONTRACTOR shall submit a request for final payment with respect to the Project. Unless this Agreement shall be terminated prior to completion of the Project pursuant to Article 12, NGA shall pay to CONTRACTOR, within thirty (30) days after receipt of such request for final payment, the total of all costs incurred by CONTRACTOR (plus the total fee, if any, payable) in accordance with Exhibit B up to, but in no event greater than, the Estimated Cost, less all payments previously made to CONTRACTOR hereunder.

4.4 Accounts. The costs to be paid hereunder shall be determined on the basis of CONTRACTOR's normal accounting procedures and in accordance with good accounting practices.

## **ARTICLE 5**

### **AUDIT**

CONTRACTOR shall maintain detailed and accurate accounting books and records relating to the Project and this Agreement. Upon the request, and at the expense of NGA, such books and records shall be subject to audit by an independent public accounting firm acceptable to both parties. Such audits shall be performed not more frequently than once each year during the performance of the Project. If this Agreement is terminated prior to completion of the Project, NGA shall be entitled to have the accounting firm conduct a close-out audit. If, as a result of any audit, it is determined that NGA has paid CONTRACTOR an amount greater than

the total costs which CONTRACTOR has actually incurred hereunder plus any applicable fee, CONTRACTOR shall promptly repay to NGA any such excess amount.

## **ARTICLE 6**

### **REPORTS**

6.1 **Monthly Report.** Subject to the provisions of Article 8, CONTRACTOR shall submit to NGA during the performance of the Project monthly progress reports describing the progress of the Work. The reports shall be critical and cover Work status, Work progress, percent of completion (with reference to Work plan and Schedule), difficulties encountered during the reporting period, remedial action taken, and a statement of activity planned to be conducted during the subsequent reporting period. Insofar as it has a right to do so, and without disclosing information deemed to be proprietary, CONTRACTOR will endeavor to keep the Project Manager generally informed as to development work performed by CONTRACTOR for its own account, or in connection with contracts in effect with others, when such work is pertinent to or may affect the Work to be performed under this Agreement.

6.2 **Final Report.** Subject to the provisions of Article 8, and upon the completion or termination of the Project, CONTRACTOR shall submit to NGA a final report summarizing all Work accomplished and results achieved under this Agreement, and including critical conclusions and recommendations derived therefrom (herein the "Final Report"). The Final Report shall include a complete disclosure of all materials, processes, specifications, and equipment employed and shall be in such full, clear, concise, and exact detail, including data such as mathematical, graphic and written descriptive materials and other means of disclosure appropriate in the circumstances to enable any person skilled in the art to achieve the results of the Work performed under this Agreement. Where appropriate, the Final Report shall also include recommendations for further work which would advance the future state-of-the-art based on knowledge acquired in the performance of the Project. The Final Report shall also include an executive summary that may be used for publications. A draft of the Final Report shall be submitted to NGA. NGA will provide its comments thereon to CONTRACTOR within thirty (30) days after receipt of such draft. CONTRACTOR shall prepare the Final Report in final form satisfactory to NGA within thirty (30) days after receipt of comments.

6.3 **Dissemination of Report Information.** No report, or any information contained therein, or any results obtained from this Project shall be published or otherwise disseminated

outside NGA by CONTRACTOR until (a) such materials have been prepared in final form and delivered to the NGA Project Manager and (b) the NGA Project Manager, on behalf of NGA, has given his prior written consent to CONTRACTOR to do so. NGA agrees that it shall not unreasonably withhold such consent. A request for consent to publication should be submitted not less than ninety (90) days prior to the date by which such consent is desired to be received, in order to allow NGA to review the potential impact of such publication upon its rights under Article 7.

6.4 Legal Notice. The following legal notice shall be affixed to each report furnished by CONTRACTOR to NGA hereunder and to any report resulting from this Agreement which may be distributed outside of NGA (with NGA approval):

**"LEGAL NOTICE**

1. Feasibility Studies---Disclaimer

This Feasibility Study report is one of a series of reports on studies sponsored and/or managed by Northeast Gas Association (“NGA”) that are designed to evaluate whether certain technology or engineering developments have application to the gas industry. This study was performed by an independent contractor.

Neither NGA, nor any of its members, warrant directly or indirectly, in any way or in any manner, the accuracy of the information contained in this study report or whether the technology or engineering development that is the subject of the study report has application to the gas industry.

NGA, its members, and those acting on behalf of NGA, hereby expressly disclaim any and all liability, responsibility, damages or claims, of any kind or any nature, that may result from the use of this study report or the information contained therein. Any individual, corporation or other entity which uses this study report or the information contained therein, does so at its own risk, without reliance on the fact that NGA and/or its members sponsored this study report. Such individual, corporation or other

entity assumes any and all liability that may result from its use of this study report and or the information contained therein.”

## 2. Market Studies----Disclaimer

This Market Study report is one of a series of reports on market studies sponsored and or managed by Northeast Gas Association (“NGA”). These market studies are designed to address a wide range of issues. The studies are theoretical in nature and any conclusion reached or findings made, are projections based on market assumptions which may or may not be true or which may change dramatically based on external factors.

Neither NGA, nor any of its members, warrant directly or indirectly, in any

way or in any manner, the accuracy of the information contained in this study report or the accuracy of the findings or conclusions reached.

NGA, its members, and those acting on behalf of NGA, hereby expressly disclaim any and all liability, responsibility, damages or claims, of any kind or of any nature, that may result from the use of this study report or the information contained therein. Any individual, corporation or other entity which uses this study report or the information contained therein, does so at its own risk, without reliance on the fact that NGA and/or its members sponsored this study report. Such individual, corporation or other entity assumes any and all liability that may result from its use of this study report and or the information contained therein.”

## 3. Product Development and Field Testing----Disclaimer

Periodically Northeast Gas Association (“NGA”) sponsors product development and field testing efforts by providing funds or input for projects involving product specifications, design, prototype development,

and laboratory or field testing. This activity is designed to assist the gas industry by providing new information to all interested parties. Neither NGA, nor any of its members, warrant directly or indirectly, in any way or in any manner, that the reports, products, test results or information from these activities are accurate, effective or have application to the gas industry in any particular field setting, if at all. NGA, its members, and those acting on behalf of NGA, hereby expressly disclaim any and all liability, responsibility, damages or claims, of any kind or of any nature, that may result from use of these reports, products, test results or information related thereto. Any individual, corporation or other entity which uses these reports, products, test results or the information related thereto, does so at its own risk, without reliance on the fact that NGA and/or its members sponsored these activities. Such individual, corporation or other entity assumes any and all liability that may result from such use.”

#### 4. Demonstration Products and Technology---Disclaimer

Periodically Northeast Gas Association (“NGA”) funds RD&D projects that result in the development of new products or technologies that may have gas industry applications. NGA, its members, and the contractors involved may display these demonstration products and or new technologies to the industry and invite interested parties to further test these products and technologies.

These products or technologies may not be ready for use in an operational setting. Interested parties that volunteer to test these demonstration products or technologies, in either a laboratory setting or in the field, do so at their own risk.

Neither NGA, nor any of its members, warrant directly or indirectly, in any

way or in any manner, that the demonstration products or technologies are safe, effective, or have gas industry applications.

NGA, its members, and those acting on its behalf, hereby expressly disclaim any and all liability, responsibility, damages, or claims, of any kind or of any nature, that may result from use of these demonstration products or technologies. Any individual, corporation, or other entity which tests or uses these demonstration products or technologies, does so at its own risk, without reliance on the fact that NGA and/or its members sponsored the development of these demonstration products and technologies. Such individuals, corporations or other entities assume any and all liability that may result from s use of these demonstration products or technologies.”

6.5 Copies of Reports. CONTRACTOR will provide the Project Manager each with at least one reproducible copy of each report submitted under this Agreement along with an electronic copy (preferably in Microsoft Word) and such additional copies of each such report as they may reasonably request. In the case of the Final Report and draft thereof, the CONTRACTOR shall provide twenty (20) copies and an electronic copy (preferably in Microsoft Word) in addition to the reproducible master.

6.6 Project Review Meeting. CONTRACTOR shall schedule a Project review meeting to be conducted at NGA in New York City during the course of the Project. Such meeting shall be coordinated with the Project Manager.

## **ARTICLE 7**

### **INTELLECTUAL PROPERTY RIGHTS**

7.1 Definitions. For purposes of this Article, the following terms shall have the meanings indicated:

"Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code;

"Subject Invention" means any invention of CONTRACTOR conceived or first actually reduced to practice in the performance of Work under this Agreement;

"Copyright" means any right in a work subject to protection under the copyright laws of the United States (United States Code, Title 17), including but not limited to, software and firmware and including also, but not limited to, a work subject to protection under the Semi-conductor Chip Protection Act (United States Code, Title 17, Chapter 9);

"Subject Copyright" means any work subject to "Copyright" authorized or otherwise created in the performance of Work under this Agreement;

"Trade Secret" means any technical or business information developed by or for CONTRACTOR in the performance of Work under this Agreement and which is not generally available to the public;

"Intellectual Property Rights" means "Subject Inventions," "Subject Copyrights" and/or "Trade Secrets."

"Background Intellectual Property Rights" means all knowledge, information, inventions, materials subject to or able to become subject to copyright, and trade secrets, the ownership of which was already vested in CONTRACTOR prior to the execution of this Agreement.

7.2 Allocation of Intellectual Property Rights. The entire right, title and interest in and to all "Intellectual Property Rights" shall be vested in NGA as the same come into existence, and CONTRACTOR shall, at the written request of NGA, execute or cause to be executed such proper documents as may reasonably be needed to vest title in such Intellectual Property Rights in NGA and/or to comply with the requirements of law in the United States and/or elsewhere to apply for and obtain patent and/or copyright protection for Subject Inventions and/or Subject Copyrights; CONTRACTOR shall maintain in force appropriate agreements with its employees and consultants providing for execution of appropriate documents to implement the foregoing. CONTRACTOR further agrees to take all reasonable steps to protect Trade Secrets against disclosure to third parties unless NGA authorizes such disclosure in writing; the term "reasonable steps" shall be construed to include those steps which CONTRACTOR normally takes to protect its own valuable trade secrets and other valuable trade secrets and other valuable information it desires to retain confidential, together with such other steps, if any, as a reasonably prudent person might take under the circumstances.

7.3 Reports and Cooperation. To the extent reasonably practicable, monthly reports submitted to NGA under Article 6.1 hereof and the Final Report submitted to NGA under Article 6.2 hereof shall identify and describe all Intellectual Property Rights; at the written request of NGA, CONTRACTOR shall supplement such reports to facilitate NGA's evaluation of such Intellectual Property Rights and to facilitate NGA's efforts to obtain patent and/or copyright protection for such Intellectual Property Rights. CONTRACTOR further agrees to cooperate with NGA and its attorneys in seeking patent and/or copyright protection for such Intellectual Property Rights.

7.4 Subcontracts. CONTRACTOR shall include in all Subcontracts granted under this Agreement and which provide for experimental, developmental or research work a provision corresponding in all essential provisions to this Article 7, suitably modified to identify the parties.

7.5 Background Intellectual Property Rights: Upon the execution of this Agreement, CONTRACTOR shall disclose and provide to NGA all Background Intellectual Property. All Background Intellectual Property Rights shall remain vested in CONTRACTOR.

## **ARTICLE 8**

### **PROTECTION OF CONTRACTOR/NGA AND PARTICIPATING COMPANIES**

#### **PROPRIETARY INFORMATION**

8.1 The Parties' Technical Information shall mean any proprietary data, know-how and economic information belonging to CONTRACTOR, any Subcontractor, NGA or its Participating Members.

8.2 The Parties' Technical Information disclosed hereunder shall be considered confidential and the Parties' shall use their best efforts for the period beginning on the date this Agreement was made as first herein above stated and ending five (5) years after the date on which the Final Report is submitted to NGA by CONTRACTOR to keep secret and confidential the Parties' Technical Information received by it and shall not, during said period, permit the disclosure of same to others except as provided under Articles 8.4 and 8.5 and except insofar as a Parties' Technical Information (i) may have been known to the other Party prior to the disclosure of same, as evidenced by the other Party's written records prepared before such disclosure; (ii)

was in or hereafter comes within the public domain without fault on the part of the other Party; or (iii) is made available to the other Party by a third party, who does not have an obligation of secrecy with respect to the Parties' Technical Information. In any documents delivered by CONTRACTOR to NGA or its Participating Members hereunder which contain the Parties' Technical Information, such Information shall be marked, as practicable, to identify its confidential or proprietary nature.

8.3 Subject to Articles 8.4 and 8.5, NGA shall limit the disclosure of the Parties' Technical Information received by it hereunder to those employees of NGA whose skills are needed in the performance of this Agreement and are normally used by NGA in similar matters.

8.4 NGA shall be entitled to disclose the Parties' Technical Information to those of its members which have established procedures for protecting confidential information and which have a binding agreement with NGA providing for the protection of proprietary information disclosed to such members in connection with NGA's research and development program. The scope of such protection shall be at least as great as that provided by NGA under this Article 8.

8.5 CONTRACTOR expects to carry out the Project at its facility in *[geographic location to be determined]*. The Project Manager may visit this facility once in each calendar quarter, during the period in which the Project is carried out by CONTRACTOR, to observe the progress of the Project; provided that the Project Manager shall observe the safety rules and regulations in effect at the facility. The date, time, and length, of each visit shall be arrived at by mutual agreement of the Parties. Any disclosure made during said visit(s) shall be treated by the receiving Party in the same manner as disclosures referred to in Articles 8.2 and 8.3; provided, that any disclosure made orally during a visit shall be memorialized in writing by CONTRACTOR within five (5) days after such disclosure and a copy shall promptly thereafter be sent to the Project Manager.

## **ARTICLE 9**

### **INDEMNIFICATION**

CONTRACTOR agrees to indemnify and hold harmless NGA and its members, and any other Project co-funders, and the officers, directors, employees and agents of

each of them (hereinafter in this Article, "Indemnatee"), from and against liabilities, claims, losses, damages, causes of action, costs and expenses imposed upon, incurred by, or asserted against any Indemnatee for death, personal injury or damage to or loss of property arising out of any negligent acts or omissions or willful misconduct by CONTRACTOR or its employees or Subcontractors in the performance of this Agreement and, to the extent permitted by law, notwithstanding any joint or concurrent negligence on the part of any Indemnatee. CONTRACTOR's obligations hereunder to any Indemnatee shall not apply unless CONTRACTOR is notified in writing by such Indemnatee (i) of the existence of any claim against such Indemnatee for which indemnification hereunder may apply promptly after such claim becomes known to such Indemnatee, or (ii) of the institution of any action, suit, legal proceedings on such claim within ten (10) days after the institution of any such action, suit, legal proceeding or claim becomes known to such Indemnatee. CONTRACTOR shall have the exclusive right, at its option, to defend or settle any such action, suit, legal proceeding or claim with attorneys of its own selection.

## **ARTICLE 10**

### **INSURANCE**

10.1 Insurance Commitment. CONTRACTOR, at no additional cost to the Project, shall maintain or cause to be maintained throughout the term of this Agreement insurance of the types and in the amounts specified in the section hereof Types of Insurance. Each such insurance policy (other than workers' compensation policies) shall:

- (a) name or be endorsed to cover NGA and CONTRACTOR as insureds, as their respective interests in the performance of this Agreement may appear; and
- (b) provide that such policy may not be cancelled or modified until at least thirty (30) days after receipt by NGA of written notice thereof.

10.2 Types of Insurance. The types and amounts of insurance required to be maintained under this Article are as follows:

- (a) Workers' compensation insurance for all employees of CONTRACTOR and the Subcontractors engaged in performing this Agreement, as required by applicable law;

(b) Employer's liability or similar insurance for damages arising from bodily injury, by accident or disease, including death at any time resulting therefrom, sustained by employees of CONTRACTOR, or the Subcontractors while engaged in performing this Agreement, in an amount not less than \$500,000;

(c) Comprehensive general liability insurance for bodily injury liability, including death, and property damage liability, incurred in connection with the performance of this Agreement, with minimum limits of \$1,000,000 in respect of claims arising out of personal injury or sickness or death of any one person, \$3,000,000 in respect of claims arising out of personal injury, sickness or death in any one accident or disaster, and \$1,000,000 in respect of claims arising out of property damage in any one accident or disaster;

(d) Comprehensive automobile liability insurance in respect of motor vehicles owned, licensed or hired by CONTRACTOR and the Subcontractors for bodily injury liability, including death and property damage, incurred in connection with the performance of this Agreement, with minimum limits of \$500,000 in respect of claims arising out of personal injury or sickness or death of any one person, \$1,000,000 in respect of claims arising out of personal injury, sickness or death of any one accident or disaster, and \$500,000 in respect of claims arising out of property damage in any one accident or disaster.

10.3 Delivery of Policies; Insurance Certificates. Prior to commencing the Work, CONTRACTOR shall deliver to NGA certificates of insurance issued by the respective insurers, evidencing the insurance required by this Article. In the event any policy furnished or carried pursuant to this Article will expire on a date prior to acceptance of CONTRACTOR's Work by NGA, CONTRACTOR, prior to such expiration date, shall deliver to NGA certificates of insurance evidencing the renewal of such policies, and CONTRACTOR shall promptly pay all premiums thereon when due.

## **ARTICLE 11**

### **PUBLIC RELEASES**

Public news releases and other public disclosures (such as press conferences, telephone interviews with the press or broadcast media, or personal interviews by the news media) relating to this Agreement shall be coordinated through the NGA Project

Manager. CONTRACTOR shall not issue any such public news releases or other public disclosures without obtaining the prior written consent of NGA.

## **ARTICLE 12**

### **TERMINATION; STOP WORK ORDER**

12.1 Notice; Report. NGA may terminate this Agreement at any time and for any reason (including NGA's convenience) upon written notice to CONTRACTOR. Such notice of termination shall specify the effective date of termination ("Termination Date"), which may be any date on or after the receipt of such notice. Upon receipt of such notice of termination, a Final Report in accordance with the provisions of Article 6.2 containing the information developed up to the Termination Date shall be prepared by CONTRACTOR and submitted to NGA within thirty (30) days after the Termination Date.

12.2 Payment. At the time of submitting the Final Report under Article 12.1 above, or in any event not later than sixty (60) days after the Termination Date, CONTRACTOR shall provide NGA with a statement of costs incurred in accordance with this Agreement up to the Termination Date plus the additional costs, if any, reasonably incurred of (i) terminating any non-cancelable Subcontracts, (ii) preparing the Final Report and (iii) otherwise closing out the Work. Upon receipt of the notice of termination, CONTRACTOR shall provide NGA with an advance estimate of the costs for items (i) through (iii) above. NGA shall pay CONTRACTOR, within thirty (30) days after receipt of the statement of costs, the amount, if any, by which such costs exceed the total payments previously made by NGA hereunder; provided, that the aggregate of all payments made and to be made by NGA under this Agreement shall in no event exceed the Estimated Cost. If the total of payments by NGA hereunder exceeds the costs reflected in such statement, CONTRACTOR shall promptly refund such excess to NGA.

12.3 Stop Work Order. NGA may, at any time, by written notice to CONTRACTOR, require CONTRACTOR to stop all, or any part, of the Work called for by this Agreement for a period of thirty (30) days after the notice is delivered to CONTRACTOR, and for any further period to which the Parties may agree. Any such notice shall be specifically identified as a stop work order issued pursuant to this Article. Upon receipt of such stop work order, CONTRACTOR shall forthwith comply with its

terms and take all reasonable steps to minimize the incurrence of costs allocable to the Work covered by the stop work order during the period of work stoppage. Within a period of thirty (30) days after a stop work order is delivered to CONTRACTOR, or within any extension of that period to which the Parties shall have agreed, NGA shall either:

- (1) cancel the stop work order; or
- (2) terminate the Work covered by such order.

If a stop work order issued under this Article is cancelled or the period of the order or any extension thereof expires, CONTRACTOR shall resume work. An equitable adjustment shall be made in the delivery schedule or Estimated Cost (including the fixed fee, if any) or both, and the Agreement shall be modified in writing accordingly, if:

- (1) the stop work order results in an increase in the time required for, or in CONTRACTOR's cost properly allocable to, the performance of any part of this Agreement; and
- (2) CONTRACTOR asserts a claim for such equitable adjustment within thirty (30) days after the end of the period of Work stoppage, or if acceptable to NGA, at any later time prior to final payment under this Agreement.

If a stop work order is not cancelled and the Work covered by such order is terminated, the provisions of Articles 12.1 and 12.2 shall apply, except that (i) the Termination Date specified in the notice of termination under Article 12.1 may be the effective date of the stop work order and (ii) the statement of costs under Article 12.2 may include any additional costs reasonably incurred in preserving the Work during the suspension period or in otherwise complying with the terms of the stop work order. If such additional costs, together with all other costs subject to reimbursement in accordance with the provisions of Article 12.2, exceed the Estimated Cost, then the Estimated Cost shall be adjusted accordingly.

### **ARTICLE 13**

#### **NOTICES**

13.1 All notices and communications to NGA under this Agreement shall be in writing and given to:

Ms. Daphne C. D’Zurko  
Northeast Gas Association  
20 Waterview Boulevard, 4<sup>th</sup> Floor  
Parsippany, NJ 07054  
Phone: 973-265-1900  
E-mail: ddzurko@northeastgas.org

13.2 All notices and communications to CONTRACTOR under this Agreement shall be in writing and given to:

*[CONTRACTOR’S name]*  
*[CONTRACTOR’S address]*  
*E-Mail: [CONTRACTOR’S e-Mail address]*

13.3 Either Party may change its above address by notice to the other Party in accordance herewith. All notices and communications shall take effect immediately upon mailing or other delivery by the Party giving the notice.

#### **ARTICLE 14**

#### **STATUS OF CONTRACTOR**

CONTRACTOR shall perform its services hereunder as an independent contractor. Neither CONTRACTOR nor any of the persons or Subcontractors employed by it shall be deemed agents, representatives, or employees of NGA.

#### **ARTICLE 15**

#### **MISCELLANEOUS**

15.1 **Binding Effect; Waiver.** This Agreement is binding upon and shall inure to the benefit of the Parties hereto, their representatives, successors and assigns. No failure or successive failures on the part of either Party, or its successors or assigns, to enforce any covenant or agreement, and no waiver or successive waivers on its or their part of any conditions of this Agreement shall operate as a discharge of such covenant, agreement, or condition, or render the same invalid, or impair the right of either Party, its successors and assigns, to enforce the same in the event of any subsequent breach or breaches by the other Party, its successors or assigns.

15.2 **Amendment.** This Agreement constitutes the entire agreement between the Parties and supersedes all previous agreements and understandings relating to the

Project. This Agreement may not be altered, amended or modified except by a written instrument signed by the duly authorized representatives of both Parties.

15.3 Assignment. This Agreement may not be assigned, in whole or in part, by either Party without the prior written consent of the other Party.

15.4 Survival of Provisions. The provisions of Articles 5, 6.3, 6.4, 7, 8.2, 9, 11 and 16 shall survive the expiration or termination of this Agreement.

## **ARTICLE 16**

### **GOVERNING LAW; ARBITRATION**

16.1 Governing Law. This Agreement has been entered into in, and shall be governed by and construed in accordance with the law of the State of Massachusetts.

16.2 Arbitration. Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be settled by arbitration in Massachusetts by one or more arbitrators in accordance with the Commercial Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

**NORTHEAST GAS ASSOCIATION**

**By:** \_\_\_\_\_  
**Thomas M. Kiley, President**

**WITNESS:**

\_\_\_\_\_

*[NAME OF CONTRACTOR]*

**By:** \_\_\_\_\_  
*[Name and Title]*

**WITNESS:**

\_\_\_\_\_

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February 17, 2000