CITY OF CHICAGO
DEPARTMENT OF PROCUREMENT SERVICES
ROOM 403, CITY HALL, 121 N. LA SALLE ST. JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT

COMPLETE THIS SECTION IF NEW CONTRACT
For contract(s) in this request, answer applicable questions in each of the 4 major subject areas below in accordance with the Instructions for Preparation of Non-Competitive Procurement Form on the reverse side.

Request that negotiations be conducted only with Human Performance Systems for the product and/or services described herein. (Name of Person or Firm)

This is a request for Term Agreement or Delegate Agency (Check one). If Delegate Agency, this request is for "blanket approval" of all contracts within the Create Physical Ability Test for CFD (Attach List) Pre-Assigned Specification No.

Pre-Assigned Contract No.

(1st Program Name)

COMPLETE THIS SECTION W/ AMENDMENT OR MODIFICATION TO CONTRACT
Describe in detail the change in terms of dollars, time period, scope of services, etc., its relationship to the original contract and the specific reasons for the change. Indicate both the original and the adjusted contract amount and/or expiration date with this change, as applicable. Attach copy of all supporting documents. Request approval for a contract amendment or modification to the following:

Contract if: ___________________________ Company or Agency Name: ___________________________
Specification if: _________________________ Contract or Program Description:
Mod. ___________________________ (Attach List, multiple)

Karen L. Sanger 745-4186
Originator Name Telephone

Signature Date

Indicate SEE ATTACHED in each box below if additional space needed:

PROCUREMENT HISTORY
1. The physical ability exam is required for part of the hiring process for Firefighter EMT.
2. This is a continuation of previous procurement from this vendor. Human Performance Systems has conducted both the creation and administration of the physical ability exam since approximately 1997. Previously HPS has been a vendor through the Sole Source process.
3. HPS was part of a joint venture with a University based Physiologist.
4. Reviewed the Candidate Physical Ability’s test, a nationally created exam, however it is specific to the title of firefighter only.
5. This is a one time request. Future requests will not be identical to this request.
6. Yes.

ESTIMATED COST
1. $75,789.
2. $75,789. is expected to be expended in 2006.
3. Pricing from the vendor was compared to the 1996 cost for a similar project.
4. DNA
5. This vendor bills at an hourly rate which is comparable to industry standards.

SCHEDULE REQUIREMENTS
1. The schedule is based on department needs.
2. DNA
3. At the release of exam scores the Fire Commissioner would like to announce and approximate date for the first candidate draw, which will require a firm date for performing the ability testing.
4. A delay due to competitive bidding would result in overtime, manpower gaps and emergency response.

EXCLUSIVE OR UNIQUE CAPABILITY
1. See attached.
2. Yes
3. This service has been provided to CFD in the past and other information is included in the documents provided in answer 1.
4. DNA
5. Their knowledge of the CFD and past experience with this project.
6. DNA
7. NO
8. DNA

OTHER
1. DNA
2. This vendor has been a certified WBE vendor with the City of Chicago, in the past and is in the process of renewing that certification.

APPROVED BY: _______________________________ DATE _______________________________ BOARD CHAIRPERSON _______________________________ DATE _______________________________
Human Performance Systems - Work Plan/Physical Ability Test

The work plan for the project consists of four phases.

1. Project Planning
2. Job Analysis
3. Test Validation
4. Implementation and Documentation

Project Planning

Joint planning between the City of Chicago, CFD, and HPS is essential for successful completion of the project. The Project Planning steps include:

1. Formulation of an oversight committee composed of the City of Chicago and CFD representatives. To ensure that the final test meets Chicago' needs, the representatives should include personnel from the fire department, civil service, and legal departments.

2. Obtain updated job materials for the FF/EMT position. Job information will be gathered from the existing job descriptions and training materials. Materials addressing the change in FF/EMT duties with the addition of the EMT function should be provided to HPS.

3. Obtain demographic information for the position. Demographic data will be requested to allow for development of sampling plans for job analysis.

4. Identify requirements for supplying personnel. To provide for efficient site visits and data collections, HPS will review the demographic data to ensure that stratified sampling (e.g., gender, age, ethnic group) is used for the data collection phase in the project.

Job Analysis

The job analysis provides the information upon which fair and valid personnel decisions are based. It forms the basis for establishing the validity of selection standards and procedures. At a minimum, the job analysis provides a detailed description of the work (e.g., tasks, duties) to be performed, the abilities needed to perform the work, and the ergonomic parameters associated with the job tasks. The 1995 firefighter and 1999 paramedic job analyses conducted by HPS will serve as preliminary materials for the job analysis. The steps of the job analysis phase include:

1. Review job-related materials and job analyses. HPS will review the CFD materials and the HPS job analyses. The purpose of this review is to develop a preliminary FF/EMT task list and site visit data collection materials.

2. Site visits, incumbent interviews, and ergonomic data collection. The site visits will consist of interviews with FF/EMT incumbents, ride-alongs, and ergonomic data collection. The interviews will focus on whether the tasks on the preliminary list are accurate and complete, changes in job tasks and duties as of 2006, and equipment used across the department. The ergonomic assessment will collect information related to the weight of equipment, how the equipment is used, and the tasks performed with the equipment. Special attention will be paid to new equipment (e.g., 2000 and forward) in that equipment changes may impact the demands of the job. Further, the equipment used
in the current FF and Paramedic tests should be updated (e.g., hoses, high rise packs, quick response bags, defibrillators).

3. **Task list review by CFD personnel.** Modifications to the task list will be made by HPS based on information collected during the site visit. The revised task list will be sent to CFD for review. Based on input from CFD, the final version of the task list will be generated.

4. **Development a job analysis questionnaire and distribution to a stratified sample of incumbents.** A job analysis questionnaire will be developed by HPS that identifies the essential/critical job tasks. This questionnaire will include (1) instructions on how to complete the questionnaire, (2) background information sheet, (3) task list with rating scales, and (4) working conditions/ergonomic questions. A stratified sampling plan (gender, age, ethnic group), identifying the number of incumbents needed to complete the job analysis questionnaire, will be developed from the demographic information provided by CFD. Questionnaires will be distributed to a sample of incumbents for completion. HPS will work with CFD to ensure an acceptable response rate. Further, CFD will need to determine whether the firefighter completing the questionnaire will come to a central location.

5. **Analyze the job analysis questionnaire results.** Descriptive statistics (mean, standard deviation) will be computed for the task and supplemental questionnaire responses. An essential task criticality algorithm (e.g., frequency, importance) will be used to determine the essential job tasks. The reliability of the task ratings (i.e., inter rater reliability) will be determined. The analyses will also identify specific conditions that are present in the performance of essential job tasks.

6. **Identify the required physical abilities.** To determine these levels the *HPS Task Database* will be used to extract the ability ratings for each essential task. This is possible because this database contains ability data from the previous City of Chicago firefighter and paramedic job analyses, as well as other FF/FMT job analyses. The results of these analyses will yield a physical ability profile of the relative levels of abilities required to perform the physically demanding and essential tasks.

**Test Validation**

If the 2006 job analysis results (essential tasks, abilities) indicate that the 2006 and 1995 firefighter positions are substantially similar and the physical EMS tasks completed are similar to the 1999 paramedic job analysis, the current firefighter and paramedic physical performance test would be valid for use with the current FF/EMT position. If the job analysis results are not similar, the firefighter, paramedic, or both tests are not valid. It is anticipated that the 2006 and 1995 and 1999 analyses will show that the positions are similar and this approach can be used. The validation steps are listed below.

1. **Assess the similarity of the 1995, 1999, and 2006 job analysis results.** HPS will compare the 1995 firefighter and 2006 job analyses to determine the similarity of essential tasks. This comparison will generate a percentage overlap in essential tasks between the two analyses. A high percentage overlap will indicate that the positions are similar. HPS will
also compare the 1995 and 2006 physical ability profiles to determine the similarity in physical demands for the two positions. Similarly, the 1999 paramedic job analysis for the physical aspects of the job will be compared to the 2006 job analysis and physical ability profiles.

2. **Determine whether current firefighter and/or paramedic test is valid for the 2006 position.** Based on the similarity assessments, HPS will determine whether the test components assess the required abilities in 2006 as they did in 1996 and 1999. This will allow for identification of the segments of each test that will be used in the 2006 test.

3. **Compare equipment used in the firefighter and paramedic tests to the equipment currently used in the field.** One of the current firefighter tests (Hose Drag & High Rise Pack Carry) use firefighting equipment. The hose dragged portion uses two 50 foot sections of $2\frac{3}{4}$" hose. The high rise pack carried is made up of two 50 foot sections of 1 3/4" hose rolled together in a donut roll. The Stair Climb test included in the paramedic test battery uses a quick response bag (19 lbs.) and a MRL defibrillator (18 lbs.). HPS will compare this equipment to the current equipment used in the field and determine whether the test equipment needs to be changed. If the equipment is the same, no changes to the test are needed. If the equipment is different, the test equipment will need to be changed and further steps completed. At present it appears that the donut roll and the MRL are no longer used by CFD and have been replaced with other equipment.

If test equipment needs to be changed, new test equipment needs to be identified. HPS and CFD will identify the most common hose sizes, high rise packs, and EMT equipment used by CFD.

4. **Test a sample of incumbents using the old and new test equipment.** Since a change in test equipment may result in a change in test performance, a sample of incumbent FF/EMTs will need to be tested. For example, a sample of incumbents will complete the Hose Drag & High Rise Pack Carry and/or Stair Climb two times (once with the old equipment and once with the new equipment). These data will allow TIPS to compare test performance for both sets of equipment and, if needed, adjust the passing score to reflect test performance differences due to the new equipment.

5. **Develop combined test scoring scheme for the tests.** Separate scoring schemes have been developed for the firefighter and paramedic tests using the original validation data. If the firefighter and paramedic tests are combined into one test, a new scoring scheme may need to be developed. A multiple hurdle approach could be used in which a candidate must pass the firefighter and paramedic tests in order to pass the entire test battery. The multiple hurdle approach would use the existing scoring schemes for both tests. If a compensatory model is used in which all tests are combined into a single score, a new scoring scheme will to be developed. The scoring approach will be discussed with CFD.
Implementation and Documentation
The implementation and documentation steps included in this phase are listed below.

1. **Update/develop test manual.** HPS will update the current test manuals to ensure that the documentation accurately reflects the FF/EMT test.

2. **Demonstrate test and test procedures to CFD.** Although CFD does not administer the firefighter or paramedic physical performance tests, it is important that CFD personnel are knowledgeable about the tests and how they are administered. HPS will conduct a seminar to demonstrate the FF/EMT test to CFD personnel.

3. **Develop DVD of the FF/EMT test.** HPS will assist CFD in developing two DVDs for the FF/EMT test. The first DVD will be similar to the current tape for the firefighter test and will include information about the test and how to prepare for the test. The second DVD will be a shorter version of the first DVD and will include basically the test instruction. This second DVD will be shown to candidates as an introduction on the day of testing.

4. **Generate candidate preparation materials.** HPS will generate materials that describe each of the individual tests in the FF/EMT test battery as well as how these tests are linked to FF/EMT job tasks, how to train for each test, and what to do on the day of testing.

5. **Final report.** A final report will be generated which describes the activities and accomplishments during specific phases of the project. The final report will document the procedures and methods used to conduct the job analysis as well as the validation of the FF/EMT test. The report will conform to the Federal Uniform Guidelines and professional standards.

Project Timeline
Completion of the project and each phase in the time projected will be dependent upon CFD’s responsiveness to data collection requests. The timeline to complete each project phase (in months) are listed below.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Time to Complete (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Project Planning</td>
<td>0.5</td>
</tr>
<tr>
<td>2. Job Analysis</td>
<td>2.5</td>
</tr>
<tr>
<td>3. Test Validation</td>
<td>1.5</td>
</tr>
<tr>
<td>4. Implementation and Documentation</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Project Costs
The project costs include costs in terms of labor, other direct costs (e.g., keypunching, postage, photocopy, telephone, travel) to conduct the project. The cost for producing the DVD that corresponds to the test is presented separately. This quotation includes data that shall not be disclosed outside of the City of Chicago and shall not be duplicated, used, or disclosed in whole
or part for any purposes other than to evaluate this proposal. The time and validity of this offer is 60 days. The total project cost for the combination of current tests is $75,789.00.

**DVD Production Costs**
The costs for HPS to produce two DVDs include costs in terms of labor and other direct costs (e.g., postage, photocopy, telephone, travel). The cost was generated assuming that CFD equipment and personnel will be used to tape and edit the DVDs. In addition, the costs for actors and narrators are not included. This quotation includes data that shall not be disclosed outside of the City of Chicago and shall not be duplicated, used, or disclosed in whole or part for any purposes other than to evaluate this proposal. The time and validity of this offer is 60 days. The cost for producing two DVDs is $25,525.00.
Current CFD Firefighter Physical Performance Tests
The current CFD firefighter test consists of three tests (Arm Lift, Hose Drag & High Rise Pack Carry, and Arm Endurance). This test was developed and validated for CFD by HPS in 1995.

Arm Lift
The Arm Lift test assesses upper body strength. The candidate stands on a platform and holds a bar connected to a chain and load cell. On the command “Go”, the candidate exerts a maximal force in an upward direction with his/her arms for three seconds. A total of three trials are completed. The candidates score is the average of the three trials.

Hose Drag & High Rise Pack Carry
The Hose Drag & High Rise Pack Carry assessments upper and lower body muscular strength and endurance. The candidate stands on the starting line. On the command “Go”, the candidate lifts one end of a 2 ‘/2” uncharged hose (2 — 50 foot sections) and drags the hose a total of 100 feet. Next, the candidate lifts a high rise pack (2 — 50 sections of 1 3/4’ hose) and climbs three floors of stairs. The candidate then places the high rise pack down, picks up a second high rise pack and carries the pack down the stairs. Once the candidate sets the high rise pack on the floor, the test is completed. One trial is completed. The candidate’s score is the time to complete the test.

Arm Endurance
The Arm Endurance test assesses upper body muscular endurance and a level of anaerobic power. The candidate kneels in front of an arm ergometer with his/her hands on the pedals. On the command “Go”, the candidate begins pedaling and completes as many revolutions as possible in the two-minute time period. At the end of two minutes the candidate is told to stop. One trial is completed. The candidate’s score is the total number of revolutions completed in two minutes.

Combined Firefighter Score
The scores for the three tests are combined into a final score. The equation used to combine the scores is based on the regression equation used to validate the test battery. The passing score is 485.

Current CFD Paramedic Physical Performance Tests
The current CFD firefighter test consists of three tests (Stair Climb, Leg Lift, and Arm Endurance). This test was developed and validated for CED by HPS in 1999.

Stair Climb
The Stair Climb assesses lower body muscular endurance and a level of aerobic capacity. The candidate stands on the starting line, facing a stepping platform, and holding a quick response bag in one hand and a MRL defibrillator in the other. On the command “Go”, the candidate begins stepping up and over the platform. Once a crossing is completed, the candidate turns around and crosses the platform again. The candidate continues to stepping up and down across the stepping platform for four minutes, while carrying the equipment. At the end of four minutes the candidate is told to stop. One trial is completed. The candidate’s score is the total number of
crossings completed in four minutes.

**Leg Lift**
The Leg Lift test assesses lower body strength. The candidate stands on a platform and flexes at the hips, knees, and ankles until he/she is able to grasp a bar connected to a chain and load cell. On the command “Go”, the candidate exerts a maximal force in an upward direction with the legs for three seconds. A total of three trials are completed. The candidate’s score is the average of the three trials.

**Arm Endurance**
The Arm Endurance test is the same as the test in the firefighter test.

**Combined Paramedic Score**
The scores for the three tests are combined into a final score. The equation used to combine the scores is based on the regression equation used to validate the test battery. The passing score is 935.
June 2, 2006

Mr. Raymond Orozco  
Fire Commissioner

Ms. Adrianne Bryant  
Chicago Fire Department  
14th Floor  
10 W. 35th St  
Chicago, IL 60616  
abryant@cityofchicago.org

Dear Commissioner Orozco & Ms. Bryant:

In response to your request, Human Performance Systems, Inc. (HPS) is submitting the steps, timeline, and cost to complete the steps needed to conduct a job analysis and validate a physical performance test for selection into the Chicago Fire Department (CFD) Firefighter/EMT (FF/EMT) position. The proposed project is described below and was generated in response to CFD’s needs and timeline. The project will use job analysis data collected during this project and from previous CFD firefighter and paramedic projects to validate the current CFD firefighter and paramedic physical performance tests and generate a combined FF/EMT test and scoring protocol (e.g., Arm Lift, Arm Endurance, Hose Drag & High Rise Pack Carry, Stair Climb). Before describing the project steps, a brief description of the firefighter and paramedic tests are provided.

**Current CFD Firefighter Physical Performance Tests**

The current CFD firefighter test consists of three tests (Arm Lift, Hose Drag & High Rise Pack Carry, and Arm Endurance). This test was developed and validated for CFD by HPS in 1995.

**Arm Lift**

The Arm Lift test assesses upper body strength. The candidate stands on a platform and holds a bar connected to a chain and load cell. On the command “Go”, the candidate exerts a maximal force in an upward direction with his/her arms for three seconds. A total of three trials are completed. The candidate’s score is the average of the three trials.

**Hose Drag & High Rise Pack Carry**

The Hose Drag & High Rise Pack Carry assesses upper and lower body muscular strength and endurance. The candidate stands on the starting line. On the command “Go”, the candidate lifts one end of a 2½” uncharged hose (2 – 50 foot sections) and drags the hose a total of 100 feet. Next, the candidate lifts a high rise pack (2 – 50 sections of 1 ¼” hose) and climbs three floors of stairs. The candidate then places the high rise pack down, picks up a second high rise pack and carries the pack down the stairs. Once the candidate sets the high rise pack on the floor, this test is completed. One trial is completed. The candidate’s score is the time to complete the test.
Arm Endurance
The Arm Endurance test assesses upper body muscular endurance and a level of anaerobic power. The candidate kneels in front of an arm ergometer with his/her hands on the pedals. On the command “Go”, the candidate begins pedaling and completes as many revolutions as possible in the two-minute time period. At the end of two minutes the candidate is told to stop. One trial is completed. The candidate’s score is the total number of revolutions completed in two minutes.

Combined Firefighter Score
The scores for the three tests are combined into a final score. The equation used to combine the scores is based on the regression equation used to validate the test battery. The passing score is 485.

Current CFD Paramedic Physical Performance Tests
The current CFD firefighter test consists of three tests (Stair Climb, Leg Lift, and Arm Endurance). This test was developed and validated for CFD by HPS in 1999.

Stair Climb
The Stair Climb assesses lower body muscular endurance and a level of aerobic capacity. The candidate stands on the starting line, facing a stepping platform, and holding a quick response bag in one hand and a MRL defibrillator in the other. On the command “Go”, the candidate begins stepping up and over the platform. Once a crossing is completed, the candidate turns around and crosses the platform again. The candidate continues to stepping up and down across the stepping platform for four minutes, while carrying the equipment. At the end of four minutes the candidate is told to stop. One trial is completed. The candidate’s score is the total number of crossings completed in four minutes.

Leg Lift
The Leg Lift test assesses lower body strength. The candidate stands on a platform and flexes at the hips, knees, and ankles until he/she is able to grasp a bar connected to a chain and load cell. On the command “Go”, the candidate exerts a maximal force in an upward direction with the legs for three seconds. A total of three trials are completed. The candidate’s score is the average of the three trials.

Arm Endurance
The Arm Endurance test is the same as the test in the firefighter test.

Combined Paramedic Score
The scores for the three tests are combined into a final score. The equation used to combine the scores is based on the regression equation used to validate the test battery. The passing score is 935.

Work Plan
The work plan for the project consists of four phases.
1. **Project Planning**

   Joint planning between the City of Chicago, CFD, and HPS is essential for successful completion of the project. The Project Planning steps include:

   1. **Formulation of an oversight committee composed of the City of Chicago and CFD representatives.** To ensure that the final test meets Chicago’s needs, the representatives should include personnel from the fire department, civil service, and legal departments.

   2. **Obtain updated job materials for the FF/EMT position.** Job information will be gathered from the existing job descriptions and training materials. Materials addressing the change in FF/EMT duties with the addition of the EMT function should be provided to HPS.

   3. **Obtain demographic information for the position.** Demographic data will be requested to allow for development of sampling plans for job analysis.

   4. **Identify requirements for supplying personnel.** To provide for efficient site visits and data collections, HPS will review the demographic data to ensure that stratified sampling (e.g., gender, age, ethnic group) is used for the data collection phase in the project.

**Job Analysis**

The job analysis provides the information upon which fair and valid personnel decisions are based. It forms the basis for establishing the validity of selection standards and procedures. At a minimum, the job analysis provides a detailed description of the work (e.g., tasks, duties) to be performed, the abilities needed to perform the work, and the ergonomic parameters associated with the job tasks. The 1995 firefighter and 1999 paramedic job analyses conducted by HPS will serve as preliminary materials for the job analysis. The steps of the job analysis phase include:

   1. **Review job-related materials and job analyses.** HPS will review the CFD materials and the HPS job analyses. The purpose of this review is to develop a preliminary FF/EMT task list and site visit data collection materials.

   2. **Site visits, incumbent interviews, and ergonomic data collection.** The site visits will consist of interviews with FF/EMT incumbents, ride-alongs, and ergonomic data collection. The interviews will focus on whether the tasks on the preliminary list are accurate and complete, changes in job tasks and duties as of 2006, and equipment used across the department. The ergonomic assessment will collect information related to the weight of equipment, how the equipment is used, and the tasks performed with the equipment. Special attention will be paid to new equipment (e.g., 2000 and forward) in that equipment changes may impact the demands of the job. Further, the equipment used in the current FF and Paramedic tests should be updated (e.g., hoses, high rise packs, quick response bags, defibrillators).
3. Task list review by CFD personnel. Modifications to the task list will be made by HPS based on information collected during the site visit. The revised task list will be sent to CFD for review. Based on input from CFD, the final version of the task list will be generated.

4. Development a job analysis questionnaire and distribution to a stratified sample of incumbents. A job analysis questionnaire will be developed by HPS that identifies the essential/critical job tasks. This questionnaire will include (1) instructions on how to complete the questionnaire, (2) background information sheet, (3) task list with rating scales, and (4) working conditions/ergonomic questions. A stratified sampling plan (gender, age, ethnic group), identifying the number of incumbents needed to complete the job analysis questionnaire, will be developed from the demographic information provided by CFD. Questionnaires will be distributed to a sample of incumbents for completion. HPS will work with CFD to ensure an acceptable response rate. Further, CFD will need to determine whether the firefighter completing the questionnaire will come to a central location.

5. Analyze the job analysis questionnaire results. Descriptive statistics (mean, standard deviation) will be computed for the task and supplemental questionnaire responses. An essential task/criticality algorithm (e.g., frequency, importance) will be used to determine the essential job tasks. The reliability of the task ratings (i.e., interrater reliability) will be determined. The analyses will also identify specific conditions that are present in the performance of essential job tasks.

6. Identify the required physical abilities. To determine these levels the HPS Task Database will be used to extract the ability ratings for each essential task. This is possible because this database contains ability data from the previous City of Chicago firefighter and paramedic job analyses, as well as other FF/EMT job analyses. The results of these analyses will yield a physical ability profile of the relative levels of abilities required to perform the physically demanding and essential tasks.

Test Validation
If the 2006 job analysis results (essential tasks, abilities) indicate that the 2006 and 1995 firefighter positions are substantially similar and the physical EMS tasks completed are similar to the 1999 paramedic job analysis, the current firefighter and paramedic physical performance test would be valid for use with the current FF/EMT position. If the job analysis results are not similar either the firefighter, paramedic, or both tests are not valid. It is anticipated that the 2006 and 1995 and 1999 analyses will show that the positions are similar and this approach can be used. The validation steps are listed below.

1. Assess the similarity of the 1995, 1999, and 2006 job analysis results. HPS will compare the 1995 firefighter and 2006 job analyses to determine the similarity of essential tasks. This comparison will generate a percentage overlap in essential tasks between the two analyses. A high percentage overlap will indicate that the positions are similar. HPS will also compare the 1995 and 2006 physical ability profiles to determine the similarity in physical demands for the two positions. Similarly, the 1999 paramedic job analysis for the
physical aspects of the job will be compared to the 2006 job analysis and physical ability profiles.

2. **Determine whether current firefighter and/or paramedic test is valid for the 2006 position.** Based on the similarity assessments, HPS will determine whether the test components assess the required abilities in 2006 as they did in 1996 and 1999. This will allow for identification of the segments of each test that will be used in the 2006 test.

3. **Compare equipment used in the firefighter and paramedic tests to the equipment currently used in the field.** One of the current firefighter tests (Hose Drag & High Rise Pack Carry) use firefighting equipment. The hose dragged portion uses two 50 foot sections of 2 1/2” hose. The high rise pack carried is made up of two 50 foot sections of 1 3/4” hose rolled together in a donut roll. The Stair Climb test included in the paramedic test battery uses a quick response bag (19 lbs.) and a MRL defibrillator (18 lbs.). HPS will compare this equipment to the current equipment used in the field and determine whether the test equipment needs to be changed. If the equipment is the same, no changes to the test are needed. If the equipment is different, the test equipment will need to be changed and further steps completed. At present it appears that the donut roll and the MRL are no longer used by CFD and have been replaced with other equipment.

If test equipment needs to be changed, new test equipment needs to be identified. HPS and CFD will identify the most common hose sizes, high rise packs, and EMT equipment used by CFD.

4. **Test a sample of incumbents using the old and new test equipment.** Since a change in test equipment may result in a change in test performance, a sample of incumbent FF/EMTs will need to be tested. For example, a sample of incumbents will complete the Hose Drag & High Rise Pack Carry and/or Stair Climb two times (once with the old equipment and once with the new equipment). These data will allow HPS to compare test performance for both sets of equipment and, if needed, adjust the passing score to reflect test performance differences due to the new equipment.

5. **Develop combined test scoring scheme for the tests.** Separate scoring schemes have been developed for the firefighter and paramedic tests using the original validation data. If the firefighter and paramedic tests are combined into one test, a new scoring scheme may need to be developed. A multiple hurdle approach could be used in which a candidate must pass the firefighter and paramedic tests in order to pass the entire test battery. The multiple hurdle approach would use the existing scoring schemes for both tests. If a compensatory model is used in which all tests are combined into a single score, a new scoring scheme will to be developed. The scoring approach will be discussed with CFD.

**Implementation and Documentation**
The implementation and documentation steps included in this phase are listed below.
1. **Update/develop test manual.** HPS will update the current test manuals to ensure that the documentation accurately reflects the FF/EMT test.

2. **Demonstrate test and test procedures to CFD.** Although CFD does not administer the firefighter or paramedic physical performance tests, it is important that CFD personnel are knowledgeable about the tests and how they are administered. HPS will conduct a seminar to demonstrate the FF/EMT test to CFD personnel.

3. **Develop DVD of the FF/EMT test.** HPS will assist CFD in developing two DVDs for the FF/EMT test. The first DVD will be similar to the current tape for the firefighter test and will include information about the test and how to prepare for the test. The second DVD will be a shorter version of the first DVD and will include basically the test instruction. This second DVD will be shown to candidates as an introduction on the day of testing.

4. **Generate candidate preparation materials.** HPS will generate materials that describe each of the individual tests in the FF/EMT test battery as well as how these tests are linked to FF/EMT job tasks, how to train for each test, and what to do on the day of testing.

5. **Final report.** A final report will be generated which describes the activities and accomplishments during specific phases of the project. The final report will document the procedures and methods used to conduct the job analysis as well as the validation of the FF/EMT test. The report will conform to the Federal Uniform Guidelines and professional standards.

### Project Timeline

Completion of the project and each phase in the time projected will be dependent upon CFD's responsiveness to data collection requests. The timeline to complete each project phase (in months) are listed below.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Time to Complete (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Project Planning</td>
<td>0.5</td>
</tr>
<tr>
<td>2. Job Analysis</td>
<td>2.5</td>
</tr>
<tr>
<td>3. Test Validation</td>
<td>1.5</td>
</tr>
<tr>
<td>4. Implementation and Documentation</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### Project Costs

The project costs include costs in terms of labor, other direct costs (e.g., keypunching, postage, photocopy, telephone, travel) to conduct the project. The cost for producing the DVD that corresponds to the test is presented separately. This quotation includes data that shall not be disclosed outside of the City of Chicago and shall not be duplicated, used, or disclosed in whole.
or part for any purposes other than to evaluate this proposal. The time and validity of this offer is 60 days. The total project cost for the combination of current tests is $75,789.00.

**DVD Production Costs**

The costs for HPS to produce two DVDs include costs in terms of labor and other direct costs (e.g., postage, photocopy, telephone, travel). The cost was generated assuming that CFD equipment and personnel will be used to tape and edit the DVDs. In addition, the costs for actors and narrators are not included. This quotation includes data that shall not be disclosed outside of the City of Chicago and shall not be duplicated, used, or disclosed in whole or part for any purposes other than to evaluate this proposal. The time and validity of this offer is 60 days. The cost for producing two DVDs is $25,525.00.

If you need additional information or have any questions, please contact me (610) 530-8464 or Debby Gebhardt (301) 595-9509.

Sincerely,

[Signature]

Todd A. Baker, Ph.D.
Research Scientist

Human Performance Systems, Inc.
DEBORAH L. GEBHARDT, PH.D.

Education
Ph.D., Biomechanics and Anatomy, University of Maryland, 1979
M.Ed., Kinesiology, University of Arizona, 1971
B.S., Health and Physical Education, East Stroudsburg State College, 1969

Professional Activities and Awards
M. Scott Myers Award for Applied Research in the Workplace 2006 – Society for Industrial and Organizational Psychology
Innovations in Assessment Award 2003 – International Public Management Association – Assessment Council
Fellow, American College of Sports Medicine.
Fellow, Research Consortium of American Alliance of Health, Physical Education, Recreation, & Dance
Advisory Board – Ford Foundation – The Employment Justice Research Center Grant
American College of Sports Medicine, Chairperson for 20+ Professional Interest Groups (e.g., Occupational Physiology, Biomechanics)
Reviewer, Human Factors (Journal of Human Factors & Ergonomics Society), 1995-present
Reviewer, Human Performance, 2001 -present
Reviewer, Medicine & Science in Sport & Exercise, 2003-present
Reviewer, Journal of Applied Psychology, 2002 -present
Reviewer, Personnel Psychology, 2004 -present
Who's Who in American Colleges and Universities.
Red Cross Service Award.
Phi Alpha Epsilon (Academic Honorary).
American Cancer Society, 1985 - Present.

Experience

Human Performance Systems, Inc.
Human Performance Systems, Inc. 1988 - present
  • President, 1988 - present

University Research Corporation - ARRO Group, 1988
  (Note: ARRO Group was purchased from Response Analysis Corporation January 1, 1988.)
  • Project Director

Response Analysis Corporation, 1979 - 1988
Advanced Research Resources Organization (ARRO) Division
  • Vice President, 1986 - 1988
  • Program Manager/Senior Research Scientist, 1985 - 1986
  • Senior Research Scientist, 1981 - 1985
  • Research Scientist, 1979 - 1981

University of Maryland, 1976 - 1979
  • Graduate Assistant.

Purdue University, 1973 - 1976
  • Instructor

University of California, Berkeley, 1970 - 1973
  • Instructor

Selected Publications


Human Performance Systems, Inc.


Technical Reports

Note: Technical reports are divided into three categories:

- Job analysis, physical performance, and fitness/wellness
- Medical and psychological standards and guidelines
- Cognitive test development & validation & other HR interventions (e.g., job evaluation)

Job Analysis, Physical Performance and Fitness/Wellness


Human Performance Systems, Inc.


Human Performance Systems, Inc.


Human Performance Systems, Inc.


Corporation.


Human Performance Systems, Inc.
Organization.


Medical and Psychological Standards and Guidelines


Human Performance Systems, Inc.


Human Performance Systems, Inc.


Human Performance Systems, Inc.


Cognitive Test Development & Validation & Other HR Interventions (e.g., Job evaluation)


Human Performance Systems, Inc.

**Presentations**


Human Performance Systems, Inc.


Human Performance Systems, Inc.


Human Performance Systems, Inc.


Human Performance Systems, Inc.
Association Assessment Council, Las Vegas, NV.


Gebhardt, D. L. (1980). *Biomechanics in the industrial sector*. Seminar presented at University of

Human Performance Systems, Inc.
California, Berkeley.


**Professional Memberships**

- American College of Sports Medicine—Fellow Status.
- Society of Industrial/Organizational Psychology
- International Personnel Management Association-Assessment Council.
- American Society of Biomechanics.
- Personnel Testing Council of Metropolitan of Washington.
- American Psychological Society
- American Alliance of Health, Physical Education, Recreation, and Dance (AAHPERD)—Fellow status
- Mid-Atlantic Regional Chapter - American College of Sports Medicine.

**Litigation Experience**

Served as expert witness in Title VII litigation and arbitrations for private (e.g., Detroit Edison) and public (e.g., State of New Jersey) sector clients and for the Department of Justice.

Human Performance Systems, Inc.
Todd Baker, PH.D.

Education

Ph.D., Industrial/Organizational Psychology, Old Dominion University, 1989.
M.S., Psychology, Old Dominion University, 1986.

Professional Activities and Awards

M. Scott Myers Award for Applied Research in the Workplace 2006 – Society for Industrial and Organizational Psychology

Innovations in Assessment Award 2003 – International Public Management Association – Assessment Council

U.S. Army Research Institute Performance Cash Award 1990.

Self Directed Research Assistant, Old Dominion University 1986 - 1989.

President of the Graduate Association of Psychology Students 1987.


Experience

Human Performance Systems, Inc. 1990 - present
- Senior Research Scientist 2004-present
- Research Scientist, 1994 -2003
- Associate Research Scientist, 1990 – 1994


 Battelle Columbus Laboratories, 1988 - 1989
- Research Assistant, 1988 – 1989

Sentara Health System, Inc., 1988 - 1989
- Personnel Consultant, 1988 - 1989

BellSouth Corporation, 1987
- Intern, 1987

- Research Assistant, 1985 - 1987

Old Dominion University, 1986 - 1989
- Instructor, 1986 - 1989
Publications


Technical Reports

Note: Technical reports are divided into three categories:
Job analysis, physical performance, and fitness/wellness
Medical and psychological standards and guidelines
Cognitive test development & validation & other HR interventions (e.g., job evaluation)

Job Analysis, Physical Performance and Fitness/Wellness


Beltsville, MD: Human Performance Systems, Inc.


Performance Systems, Inc.


Hyattsville, MD: Human Performance Systems, Inc.


Medical and Psychological Standards and Guidelines


Cognitive Test Development & Validation & Other HR Interventions (e.g., job evaluation)


Performance Systems, Inc.


Presentations


presented at the American College of Sports Medicine, San Francisco, CA.


Human Performance Systems, Inc.
physical selection test. Paper presented at the American Psychological Society, Chicago, IL.


---

Professional Memberships

Society for Industrial and Organizational Psychology
International Public Management Association for Human Resources
Personnel Testing Council of Metropolitan Washington
American Psychological Society

Litigation Experience

Human Performance Systems, Inc.
Served as expert in selection and promotion test litigation and Fair Labor Standards Act executive exemption.