PRACTICAL APTITUDE TESTS
Wholetime Firefighter

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Version 1 – 29/09/2016 presented to Director of HR and Head of HR Advisory
Wholetime Firefighter Practical Aptitude Tests (PATs)

A detailed Wholetime Recruitment Project Plan has been developed for a proposed new exercise. This paper provides supporting information with respect to the proposed job related PATs.

Section 1: Benchmarking Information - Overview

9 UK Fire & Rescue Services were contacted by the Resourcing Team and the following is a summary of the information received:

1. The Services contacted use a variation of the 6 national Firefighter PATs and tailor these to suit their own needs, e.g. the weights, heights and timings relating to the details of each test to be performed vary across each Service.

2. Typically, the same PATs are used for Retained as for Wholetime Firefighter, with some variations.

3. The Services contacted require their candidates to complete the tests wearing full Personal Protection Equipment (this is not the approach in NIFRS). It was noted that the number of candidates participating were significantly lower than NIFRS.

4. 3 of the Services contacted carry out a ladder extension test, similar to NIFRS. However, the detail of each ladder extension test varies across each of the Services. For example, the ladder length varies with some at 10 metres and others 13.5 metres.

5. The majority of Services in their candidate information packs did not provide specific timings but indicated tests were to be completed within a specified time. For those Services who did provide specific timings, the times allocated varied across each Service.

6. All of the Services contacted carry out a Casualty Evacuation Test. The national test requires the candidate to drag a dummy by means of a strap secured to the dummy’s neck. NIFRS have not used this test historically due to concerns relating to time, volume, personal hygiene, safety and role relatedness.

7. The Services contacted carry out the Equipment Assembly national test, designed to test manual dexterity, the detail of which varied across each Service. NIFRS currently do not carry out an equivalent test. This was carried out in the past by NIFRS. Information gathered regarding pass rates raised significant concerns regarding female performance in the test.
## Summary of PATs used by UK Fire & Rescue Services

<table>
<thead>
<tr>
<th>PAT Description</th>
<th>South Yorkshire FRS</th>
<th>Surrey FRS</th>
<th>Merseyside FRS</th>
<th>Shropshire FRS</th>
<th>Westmidlands FRS</th>
<th>Cheshire FRS</th>
<th>Scottish FRS</th>
<th>Essex FRS</th>
<th>Norfolk FRS</th>
<th>Northern Ireland FRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enclosed Space</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2. Ladder Climb / Ascent &amp; Descent</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>3. Ladder Lift</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4. Ladder Extension</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5. Casualty Evacuation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>6. Equipment Carry / Hose Running*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>7. Equipment Assembly</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>8. Dead Lift</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*NIFRS use hose running as a variation of equipment carry in order to test aerobic fitness, stamina, continuous strength, flexibility and co-ordination.
Section 2: Review of Previous Experience within NIFRS

2.1 2011 Wholetime Recruitment

Five PATs were carried out in 2011 as follows:
- BA & Confined Space
- Ladder Ascent and Descent
- Ladder Extension
- Hose Running
- Dead Lift

Due to the high number of candidates and tight timescale, performance figures were not recorded separately for each individual test at that time. However, overall figures were recorded as follows:

- 630 candidates took part in PATs: 42 female, 628 male
- Female fail rate: 81%
- Male fail rate: 55%

2.2 Retained (RDS) Recruitment

Since 2013 NIFRS has conducted 4 RDS recruitment processes. There were 2514 applicants across these exercises and out of these 1379 took part in the PATs. An overview of performance is provided in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Female Applicant Rate</th>
<th>Female Pass Rate at PATs</th>
<th>Male Pass Rate at PATs</th>
<th>Female Appointment Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>12.5%</td>
<td>9%</td>
<td>38%</td>
<td>53%</td>
</tr>
<tr>
<td>2015/16</td>
<td>12%</td>
<td>62%</td>
<td>58%</td>
<td>14%</td>
</tr>
<tr>
<td>2016</td>
<td>9%</td>
<td>60%</td>
<td>69%</td>
<td>-</td>
</tr>
</tbody>
</table>

The numbers who took part in the PATs during the RDS processes are as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Candidates</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>853</td>
<td>88</td>
<td>765</td>
</tr>
<tr>
<td>2015/16</td>
<td>290</td>
<td>29</td>
<td>261</td>
</tr>
<tr>
<td>2016</td>
<td>236</td>
<td>25</td>
<td>211</td>
</tr>
</tbody>
</table>

Section 3: Review of Previous Experience within NIFRS

The PATs used during the RDS recruitment process are similar to the tests within the Wholetime process but not identical. A comparison of each of the tests is provided in Appendix 1 along with the pass/fail rates for each of the individual tests.

Section 4: Proposed Tests for next Wholetime Process

A table outlining the proposed job related tests for the next Wholetime process is provided in Appendix 2. It is proposed that the same tests which are used for RDS candidates should be used for the Wholetime exercise. The exception is the removal of the ‘dead lift’ test as this consistently shows a 100% pass rate for all candidates.
## Appendix 1: NIFRS Job Related Practical Aptitude Tests: RDS & Wholetime Comparison

<table>
<thead>
<tr>
<th>RDS</th>
<th>Wholetime</th>
<th>RDS 2013 Fail Rates (853* candidates took part, 88 female, 765 male)</th>
<th>RDS 2015/16 Fail Rates (526* candidates took part, 54 female, 472 male)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ladder Extension</strong></td>
<td>Candidate to raise a weight equivalent to a proportion of the weight required to extend a 9 metre ladder and lower it under control to the grounded position. Candidate to raise weight to the full working height of the simulator within twenty (20) seconds.</td>
<td>Overall no. candidates failed: 38 (4%)</td>
<td>Overall no. candidates failed: 18 (3%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. female candidates failed: 2 (2%)</td>
<td>No. female candidates failed: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. male candidates failed: 36 (5%)</td>
<td>No. male candidates failed: 18 (4%)</td>
</tr>
<tr>
<td><strong>Ladder Ascent &amp; Descent</strong></td>
<td>Candidate to ascend a fully extended 13.5 metre ladder to a marked point, take a leg lock, remove hands from the ladder and look down to the assessor to identify the symbol being held aloft. The must safely descend the ladder to ground level. Candidate to ascend ladder, take leg lock, identify symbol held aloft and descend ladder within sixty (70) seconds.</td>
<td>Overall no. candidates failed: 78 (9%)</td>
<td>Overall no. candidates failed: 65 (12%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. female candidates failed: 8 (9%)</td>
<td>No. female candidates failed: 4 (7%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. male candidates failed: 70 (9%)</td>
<td>No. male candidates failed: 61 (13%)</td>
</tr>
<tr>
<td><strong>Hose Running</strong></td>
<td>Candidate to run out and roll up three (3) lengths of 25 metre 70 mm hose. Candidate to run out and roll up three (3) lengths of hose in five (5) minutes</td>
<td>Overall no. candidates failed: 99 (11.5%)</td>
<td>Overall no. candidates failed: 34 (6.5%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. female candidates failed: 21 (24%)</td>
<td>No. female candidates failed: 8 (15%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. male candidates failed: 78 (10%)</td>
<td>No. male candidates failed: 16 (3%)</td>
</tr>
<tr>
<td>RDS</td>
<td>Wholetime</td>
<td>RDS 2013 Fail Rates (853 candidates took part, 88 female, 765 male)</td>
<td>RDS 2015/16 Fail Rates (526 candidates took part, 54 female, 472 male)</td>
</tr>
<tr>
<td>-----</td>
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<td>---------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>BA Confined Space</strong> - Candidate to follow a pre laid Breathing Apparatus (BA) guide line to negotiate walk and crawl-ways whilst wearing a BA face mask. Stage one the candidate will be wearing a mask which is un-obscured and they must complete the route within two (2) minutes. Stage two the candidate will be wearing a mask which is obscured and they must complete the same route within three (3) minutes and fifteen (15) seconds.</td>
<td><strong>BA Confined Space</strong> - Candidate to follow a pre laid Breathing Apparatus (BA) guide line to negotiate walk and crawl-ways whilst wearing a BA face mask. Stage one the candidate will be wearing a mask which is un-obscured and they must complete the route within two (2) minutes. Stage two the candidate will be wearing a mask which is obscured and they must complete the same route within three (3) minutes and fifteen (15) seconds.</td>
<td>Overall no. candidates failed: 192 (22.5%)</td>
<td>Overall no. candidates failed: 80 (15%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. female candidates failed: 22 (25%)</td>
<td>No. female candidates failed: 10 (18.5%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. male candidates failed: 170 (22%)</td>
<td>No. male candidates failed: 70 (15%)</td>
</tr>
<tr>
<td><strong>Dead Lift Test</strong> - Candidate to raise a raise the lifting rig incorporating a weight (25 kg) to the upright standing position and lower it to the grounded position. Candidate to raise weight to the upright lock out position within five (5) seconds and hold weight for five (5) seconds.</td>
<td><strong>Dead Lift Test</strong> - Candidate to raise a raise the lifting rig incorporating a weight (25 kg) to the upright standing position and lower it to the grounded position. Candidate to raise weight to the upright lock out position within five (5) seconds and hold weight for five (5) seconds.</td>
<td>Overall no. candidates failed: 0</td>
<td>Overall no. candidates failed: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. female candidates failed: 0</td>
<td>No. female candidates failed: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. male candidates failed: 0</td>
<td>No. male candidates failed: 0</td>
</tr>
</tbody>
</table>

*Note – Accurate information on candidates numbers who actually took part in each test is not available and therefore pass/fail rates are based upon the number who attended the practical aptitude tests*
Appendix 2: Recommended Job Related Practical Aptitude Tests for Wholetime Recruitment Process

The recommended tests to be used for the Wholetime Recruitment Process are outlined below along with the justification for using these tests and the test description.

<table>
<thead>
<tr>
<th>Test</th>
<th>Test Description</th>
<th>Justification</th>
<th>Elements Being Assessed</th>
</tr>
</thead>
</table>
| **BA & Confined Space**     | In this test candidates are required to follow a pre laid Breathing Apparatus (BA) guide line to negotiate walk and crawl-ways whilst wearing a BA face mask.  
On the first test the candidate will be wearing a mask which is un-obscred and they must complete the route within a predetermined time.  
On the second test the candidate will be wearing a mask which is obscured and they must complete the same route within a predetermined time. | Firefighters are required to work in hot, confined, smoke filled compartments and irrespirable atmospheres whilst wearing Breathing Apparatus (BA).  
This task of following a pre laid guide line within the confined spaces of a BA Pod, whilst wearing firstly a BA face mask with clear vision and secondly with obscured vision, is to simulate the work that a firefighter has to undertake when carrying out search and rescue and/or firefighting operations within a compartment/building, during training and at operational incidents. | • Ability to follow a guide line make satisfactory progress in confined and obscured conditions  
• Remain calm whilst working in confined and obscured conditions  
• Undertake tasks in confined and obscured conditions.                                                                                                                                                                                                                                      |
| **Ladder Ascent & Descent** | In this test candidates will be required to climb a 135m ladder to a marked round, take a leg lock, release their hands from the ladder, outstretched their arms to the side, turn round, lean clear of ladder and look down to identify a symbol held by an assessor at ground level.  
They then must safely descend the ladder to ground level.  
This must be completed within a time of: 70 seconds | Ladders are used to reach access/egress points and/or locations above ground level.  
Firefighters are required to enter buildings through upper level access points, carry out rescues from upper levels and perform tasks at the head of a ladder therefore firefighters need to be confident when working above ground level.  
This task simulates what a firefighter would be required to do when having to perform tasks above ground level. | • Complete tasks in a safe, controlled and timely manner  
• Confidence in performing a ladder ascent and descent  
• Ability and confidence to perform a simple task at height.                                                                                                                                                                                                                               |
<table>
<thead>
<tr>
<th>Test</th>
<th>Test Description</th>
<th>Justification</th>
<th>Elements Being Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ladder Extension</td>
<td>In this test, candidates must extend a weighted ladder extension pawling carriage simulator to a marked height and then lower it in a controlled manner, by use of the extending line.</td>
<td>Ladders are used to reach access/egress points and/or locations above ground level.</td>
<td>• Complete tasks in a safe, controlled and co-ordinated manner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This task of extending and lowering the weighted pawling carriage, of the ladder simulator, by use of the extending line is to simulate what a firefighter would be required to do as a member of a ladder crew when having to raise and lower the upper section and the pawling carriage of a fire service ladder.</td>
<td>• Sufficient hand coordination</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Sufficient hand grip strength</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Sufficient arm strength</td>
</tr>
<tr>
<td>Hose Running</td>
<td>In this test candidates are required to run out and roll up a number of lengths of fire service hose correctly and consecutively within a set time. 3 lengths in 5 minutes</td>
<td>Fire Hose carries water from the water supply to the fire appliance and onto the scene of operations. To cover this distance, may require several lengths of hose to be run out by hand. This task of quickly running out several lengths of fire service hose and rolling them up again, ready for redeployment, is to simulate the work that a firefighter has to undertake when required to lay and make up a hose line within training and operational incidents.</td>
<td>• Sufficient strength and stamina</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Sufficient flexibility and dexterity</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Ability to work under pressure</td>
</tr>
</tbody>
</table>

**Key Considerations**

- Tests are role related
- No candidates failed the Dead Lift test and NIFRS are the only FRS which uses this test therefore this is to be removed from the practical aptitude tests
- Timings for the tests will be those used for the recent RDS recruitments
- In relation to the job related practical aptitude tests used in the RDS recruitment processes no significant equality impact identified for Section 75 groups.