

Title	Research Report 194: Human factors assessment model validation study																																																																		
Publisher/Author	HSE																																																																		
Publication Date	2004																																																																		
Executive Summary	<p>This document contains the final report of work performed for the Health and Safety Executive, Offshore Safety Division (HSE OSD) under contract number D3989. The purpose of the work was to validate a provisional Human Factors Capability Maturity Model for the oil and gas Industry (HFCMM). The provisional model was prepared in an earlier feasibility study, reported in reference 1. The current document builds on the work presented in reference 1. Specifically, the study set out;</p> <ul style="list-style-type: none"> <li>• to validate the various elements of the provisional model</li> <li>• to evaluate the practicality and potential usefulness of the model by applying it to exemplar organisations or projects from across the offshore industry</li> <li>• to assess what changes would be needed to make the model applicable to other safety-critical industries, in particular the railway industry</li> <li>• to produce supporting material and guidance to assist in using the model.</li> </ul> <p>This report and the work it describes were funded by the Health and Safety Executive (HSE). Its contents, including any opinions and/or conclusions expressed, are those of the authors alone and do not necessarily reflect HSE policy.</p>																																																																		
Table of Contents	<table> <tr> <td>1. INTRODUCTION .....</td> <td>1</td> </tr> <tr> <td>    A1.1 Structure of the document .....</td> <td>1</td> </tr> <tr> <td>    A1.2 Acknowledgements .....</td> <td>2</td> </tr> <tr> <td>    A1.3 References .....</td> <td>3</td> </tr> <tr> <td>2. RATIONALE AND OBJECTIVES .....</td> <td>5</td> </tr> <tr> <td>    A2.1 Background .....</td> <td>5</td> </tr> <tr> <td>    A2.2 Scope: interpretation of 'Human Factors' .....</td> <td>6</td> </tr> <tr> <td>        2.2.1 The socio-technical systems view .....</td> <td>6</td> </tr> <tr> <td>        2.2.2 The behaviour-centred view .....</td> <td>6</td> </tr> <tr> <td>        2.2.3 Interpretation for the study .....</td> <td>7</td> </tr> <tr> <td>    A2.3 Requirements .....</td> <td>7</td> </tr> <tr> <td>3. THE HUMAN FACTORS ASSESSMENT MODEL .....</td> <td>9</td> </tr> <tr> <td>    A3.1 What is 'good practice' .....</td> <td>9</td> </tr> <tr> <td>    A3.2 What is reasonably practical? .....</td> <td>10</td> </tr> <tr> <td>    A3.3 The Model .....</td> <td>11</td> </tr> <tr> <td>        3.3.1 Levels .....</td> <td>11</td> </tr> <tr> <td>        3.3.2 Elements .....</td> <td>12</td> </tr> <tr> <td>        3.3.3 Weightings .....</td> <td>13</td> </tr> <tr> <td>        3.3.4 Conducting an assessment .....</td> <td>14</td> </tr> <tr> <td>4. THE GAP WITH CURRENT PRACTICE .....</td> <td>21</td> </tr> <tr> <td>    A4.1 Scope .....</td> <td>21</td> </tr> <tr> <td>    A4.2 Results .....</td> <td>22</td> </tr> <tr> <td>        4.2.1 General overview of the companies .....</td> <td>22</td> </tr> <tr> <td>        4.2.2 Observations .....</td> <td>25</td> </tr> <tr> <td>    A4.3 Summary and conclusions .....</td> <td>28</td> </tr> <tr> <td>5. CASE STUDIES .....</td> <td>31</td> </tr> <tr> <td>    A5.1 Sources .....</td> <td>31</td> </tr> <tr> <td>    A5.2 Incident 1: Non-standard materials .....</td> <td>32</td> </tr> <tr> <td>    A5.3 Incident 2: Crane wire rope failure .....</td> <td>33</td> </tr> <tr> <td>    A5.4 Incident 3: Breach of electrical procedures .....</td> <td>34</td> </tr> <tr> <td>    A5.5 Incident 4: Hand-held remote control unit .....</td> <td>35</td> </tr> <tr> <td>    A5.6 Incident 5: Use of wrong plug types .....</td> <td>36</td> </tr> <tr> <td>    A5.7 Incident 6: Operator distracted by alarms .....</td> <td>37</td> </tr> </table>	1. INTRODUCTION .....	1	A1.1 Structure of the document .....	1	A1.2 Acknowledgements .....	2	A1.3 References .....	3	2. RATIONALE AND OBJECTIVES .....	5	A2.1 Background .....	5	A2.2 Scope: interpretation of 'Human Factors' .....	6	2.2.1 The socio-technical systems view .....	6	2.2.2 The behaviour-centred view .....	6	2.2.3 Interpretation for the study .....	7	A2.3 Requirements .....	7	3. THE HUMAN FACTORS ASSESSMENT MODEL .....	9	A3.1 What is 'good practice' .....	9	A3.2 What is reasonably practical? .....	10	A3.3 The Model .....	11	3.3.1 Levels .....	11	3.3.2 Elements .....	12	3.3.3 Weightings .....	13	3.3.4 Conducting an assessment .....	14	4. THE GAP WITH CURRENT PRACTICE .....	21	A4.1 Scope .....	21	A4.2 Results .....	22	4.2.1 General overview of the companies .....	22	4.2.2 Observations .....	25	A4.3 Summary and conclusions .....	28	5. CASE STUDIES .....	31	A5.1 Sources .....	31	A5.2 Incident 1: Non-standard materials .....	32	A5.3 Incident 2: Crane wire rope failure .....	33	A5.4 Incident 3: Breach of electrical procedures .....	34	A5.5 Incident 4: Hand-held remote control unit .....	35	A5.6 Incident 5: Use of wrong plug types .....	36	A5.7 Incident 6: Operator distracted by alarms .....	37
1. INTRODUCTION .....	1																																																																		
A1.1 Structure of the document .....	1																																																																		
A1.2 Acknowledgements .....	2																																																																		
A1.3 References .....	3																																																																		
2. RATIONALE AND OBJECTIVES .....	5																																																																		
A2.1 Background .....	5																																																																		
A2.2 Scope: interpretation of 'Human Factors' .....	6																																																																		
2.2.1 The socio-technical systems view .....	6																																																																		
2.2.2 The behaviour-centred view .....	6																																																																		
2.2.3 Interpretation for the study .....	7																																																																		
A2.3 Requirements .....	7																																																																		
3. THE HUMAN FACTORS ASSESSMENT MODEL .....	9																																																																		
A3.1 What is 'good practice' .....	9																																																																		
A3.2 What is reasonably practical? .....	10																																																																		
A3.3 The Model .....	11																																																																		
3.3.1 Levels .....	11																																																																		
3.3.2 Elements .....	12																																																																		
3.3.3 Weightings .....	13																																																																		
3.3.4 Conducting an assessment .....	14																																																																		
4. THE GAP WITH CURRENT PRACTICE .....	21																																																																		
A4.1 Scope .....	21																																																																		
A4.2 Results .....	22																																																																		
4.2.1 General overview of the companies .....	22																																																																		
4.2.2 Observations .....	25																																																																		
A4.3 Summary and conclusions .....	28																																																																		
5. CASE STUDIES .....	31																																																																		
A5.1 Sources .....	31																																																																		
A5.2 Incident 1: Non-standard materials .....	32																																																																		
A5.3 Incident 2: Crane wire rope failure .....	33																																																																		
A5.4 Incident 3: Breach of electrical procedures .....	34																																																																		
A5.5 Incident 4: Hand-held remote control unit .....	35																																																																		
A5.6 Incident 5: Use of wrong plug types .....	36																																																																		
A5.7 Incident 6: Operator distracted by alarms .....	37																																																																		

	A5.8 Incident 7: Drill hole operations .....	38
	A5.9 Incident 8: Error in operating control panel .....	39
	A5.10 Incident 9: Residual hazards following operations .....	40
	A5.11 Incident 10: Electrical pump isolation .....	41
	A5.12 Incident 13: Exhaust fan lid .....	42
	A5.13 Incident 14: Thread tape fitted the wrong way round .....	43
	A5.14 Incident 15: Unsecured electrical isolation .....	44
	A5.15 Incident 16: Positioning of valves .....	45
	A5.16 Affordances offered by design .....	46