Human performance learning pathway for the energy sector

What is the 'human performance pathway'?

The human performance pathway is a self-taught training course, to be done in your own time at your place of work, where you will learn how to manage human performance **by actually doing it**.

The pathway is a way for those without a human factors/ergonomics academic background to learn how to apply relevant human performance tools and techniques in their organisation - and gain an industry qualification from the Energy Institute (EI) and Chartered Institute of Ergonomics and Human Factors (CIEHF) in the process!

The pathway consists of:

- Introductory module (awareness level)
- Level 1 (Basic)
- Level 2 (Practitioner)
- Level 3 (Specialist)

For each module and at each level, the learning objectives of the course are to:

- **Know** about the human performance issues, core concepts and techniques.
- **Apply** the human performance techniques in an industry environment.
- **Compare** current work practices against human performance good practice.
- **Suggest** improvements to current work practices in line with basic human performance principles.

You will be awarded a certificate at every level, and so can stop at the level that is right for you. However, if you complete all 3 levels, you can apply to become a **Technical Member** of the CIEHF.

Whilst the levels could be completed individually, it is strongly recommended that they are completed in order. This is because the levels become progressively harder, and you will also specialise in a smaller number of topics as you progress from level 1 to level 3.

The pathway can be accessed here: Full Human Performance Learning Pathway for the Energy Sector | Energy Institute

*See **Annex D** for an overview of each of the levels in the pathway.

Introductory module
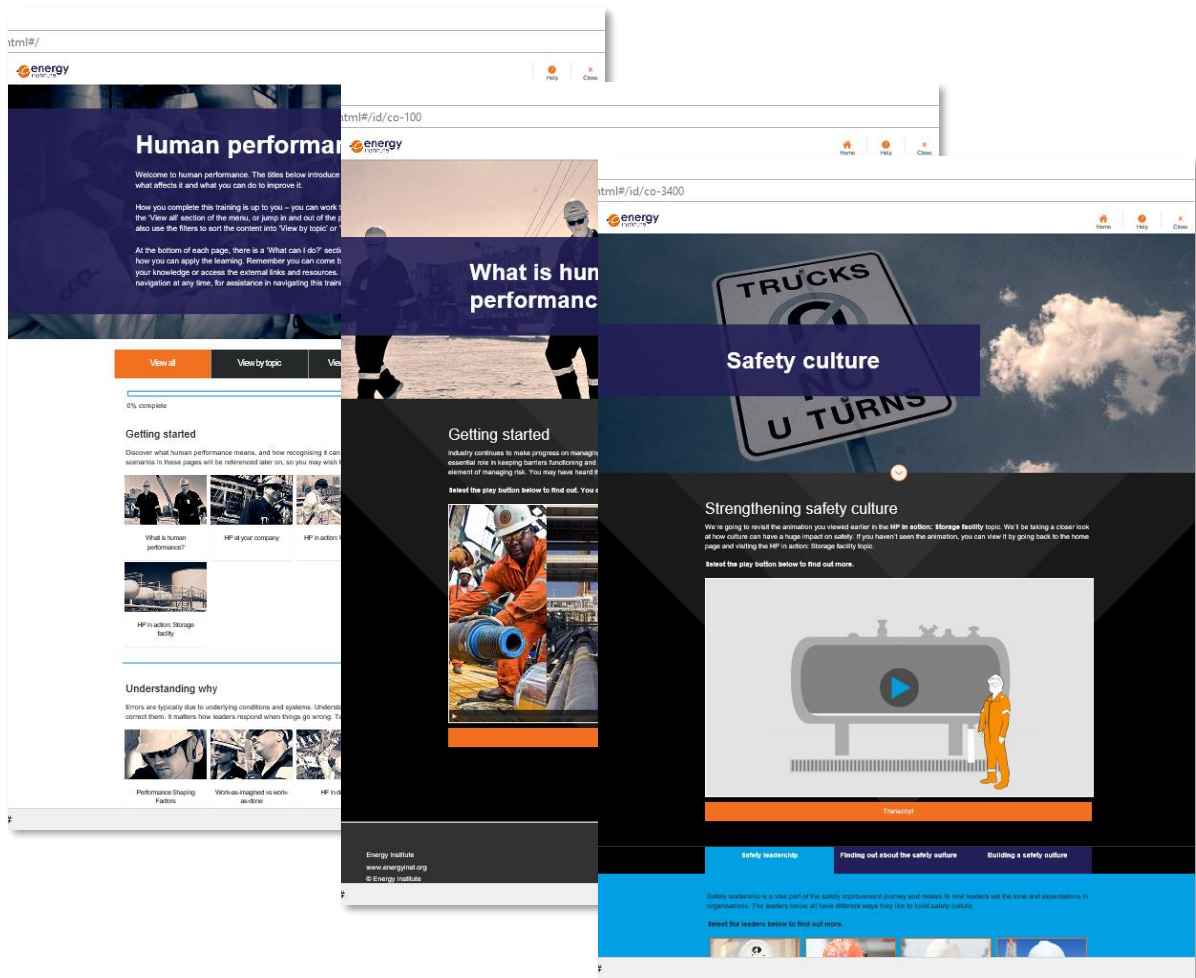
Price: £20.00

Who is it for: Everyone

Where to access:

[Full Introductory Module - Human Performance for the Energy Sector | Energy Institute](#)

Description

This introductory module is suitable for everybody in the organisation. It will give you an awareness of what human performance means, what are the things that can affect human performance, and how human performance can be managed through design, people, and processes.

The introductory module can be completed in around 2 hours. It is fully interactive, and you will learn about human performance by exploring two incidents. You will learn how the following human performance topics contributed to, or can help us to understand and avoid, incidents:

- Performance shaping factors
- Work as imagined vs. work as done
- Design
- Workload, stress and fatigue
- Safety culture
- Hazard identification

- Situation awareness
- Procedures
- Communication
- Incident investigation
- Task analysis
- Behaviour-based safety
- Crew resource management (teamwork)

What we can do

Plant, tools and activities can be designed to reduce errors and manage risk better. We prefer to improve existing tools and processes before adding new. Leaders help shape the conditions that influence what people do.

| Human factors in incident investigation | Introduction to the Task Improvement Process (TIP) | Behaviour-Based Safety (BBS) | Crew Resource Management (CRM) |

Level 1

Price: £450.00 (EI members) or £500.00 (non-members)

Who is it for: Supervisors, managers, engineers and others with a role in managing safety
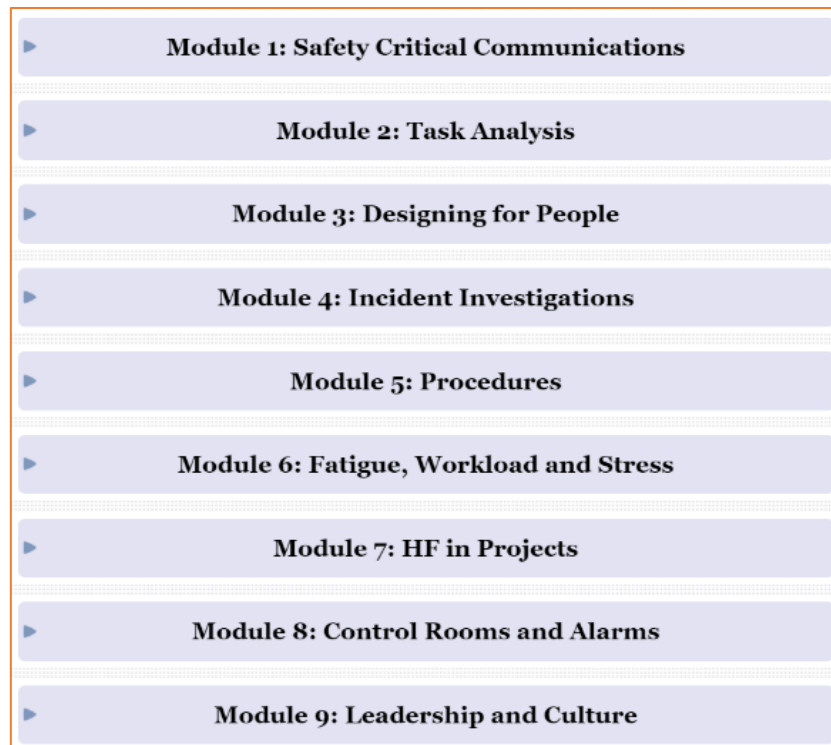
Where to access:

[Level 1 - Human Performance Learning Pathway for the Energy Sector | Energy Institute](#)

Description

Level 1 consists of the following:

- Pre-read (basic level, including the EI HF briefing notes)
- Desktop and practical exercises
- End of module exams

There are 9 modules within Level 1, and they are all required to be completed. They can be completed in any order and each module will typically take you approximately 1 day to complete.

> ▸ **Module 1: Safety Critical Communications**
>
> ▸ **Module 2: Task Analysis**
>
> ▸ **Module 3: Designing for People**
>
> ▸ **Module 4: Incident Investigations**
>
> ▸ **Module 5: Procedures**
>
> ▸ **Module 6: Fatigue, Workload and Stress**
>
> ▸ **Module 7: HF in Projects**
>
> ▸ **Module 8: Control Rooms and Alarms**
>
> ▸ **Module 9: Leadership and Culture**

For each module, you will be required to carry out basic assessments of equipment and tasks, talk with colleagues about their work, carry out other activities within your organisation, and upload your findings for assessment. You will be working from basic human performance tools and checklists. The course includes easy to follow instructions so that you know what to do next:

What You Need to Do

Follow the instructions below in order.

1. Download the Activity Report - Task Analysis

   Follow the **Instructions** in the Activity Report. **Download and read** the reading material listed in the Activity Report

2. Upload your Activity Report - Task Analysis

   Carry out the exercises in the Activity Report and write your answers in document. **Upload your completed document** here. A tutor will mark your work.

3. Take the Task Analysis - Assessment (Quiz)

   Complete this short quiz. You can retake the quiz multiple times. You can only attempt the quiz once you have uploaded your Activity Report for this module.

   Not available unless: The activity **2. Upload your Activity Report - Task Analysis** is marked complete

4. Give us your feedback for this module - Task Analysis

   Your feedback will help us improve the course.

In order to be awarded with a Level 1 completion certificate, you must achieve the following:

- Complete and pass the Activity Reports (i.e. the practical exercises) for all 9 modules
- Complete and pass the exams for all 9 modules

*See Annex D for an overview of level 1 modules and the exercises you will need to carry out. See Annex A for an example Activity Report from a Level 1 module.

Level 2

Price: £950.00 (EI members) or £1050.00 (non-members)

Who is it for: anyone who needs to manage human factors or has responsibility in the subjects covered by the modules (e.g. safety managers, operations managers etc.).

Where to access:

[Level 2 - Human Performance for the Energy Sector | Energy Institute](#)

Description

Level 2 consists of the following:

- Pre-read (intermediate level including relevant industry good practice guidance and standards)
- Desktop and practical exercises
- End of module exams

The available modules in Level 2 are the same as those in Level 1, however you will begin to specialise in topic areas. Therefore, you only need to complete 5 of the modules (and it is your decision on which modules you choose). Each module will involve around 3-4 days of work, including reading, carrying out practical work, and writing up the findings.

For each module, you will be required to review your company's policies and processes for managing human performance issues against industry good practice, carry out assessments of equipment and tasks, talk with colleagues about their work, carry out other activities within your organisation, present your findings to senior management, and upload your findings for assessment.

You will be working from industry good practice and using intermediate level tools. Like with level 1, the course includes easy to follow instructions so that you know what to do next.

In order to be awarded with a Level 2 completion certificate, you must achieve the following:

- Complete and pass the Activity Reports (i.e. the practical exercises) for 5 modules
- Complete and pass the exams for 5 modules

*See Annex D for an overview of level 2 modules and the exercises you will need to carry out.

*See Annex B for an example Activity Report from a Level 2 module.

Level 3

Price: £950.00 (EI members) or £1050.00 (non-members)

Who is it for: Anyone expected to be a human factors manager/champion, subject matter lead or specialist in a chosen topic area (e.g. incident investigator)

Where to access:

[Full Human Performance Learning Pathway for the Energy Sector | Energy Institute](#)

Description

Level 3 consists of the following:

- Pre-read (intermediate level including relevant industry good practice guidance and standards)
- Desktop and practical exercises

The available modules in Level 3 are the same as those in Level 1 and 2, however you will specialise in just 2 topic areas. Therefore, you only need to complete 2 of the modules (and it is your decision on which modules you choose). Each module will involve around 1-3 weeks of work, including reading, carrying out practical work, and writing up the findings.

For each module, you will apply human factors standards and good practice guidance in your company, carry out assessments of tasks, processes and equipment, talk with colleagues about their work, deliver training courses to colleagues, carry out other activities within your organisation, present your findings to senior management, and upload your findings for assessment. At level 3, you will be working with industry standards and 'expert level' tools and techniques.

Like with level 1 and 2, the course includes easy to follow instructions so that you know what to do next.

In order to be awarded with a Level 3 completion certificate, you must achieve the following:

- Complete and pass the Activity Reports (i.e. the practical exercises) for 2 modules

Following completion of levels 1, 2 and 3, you can apply to become a **Technical member** of the CIEHF.

*See Annex D for an overview of level 3 modules and the exercises you will need to carry out.

*See Annex C for an example Activity Report from a Level 3 module.

Human Performance Learning Pathway
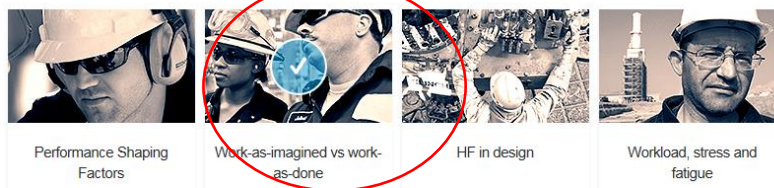## for the Energy Sector

Activity Report: Level 1
Task Analysis

Click in the
box when
done!

☐ A. Refresh yourself on the Human Performance eLearn module that
introduces this topic:

Understanding why

Errors are typically due to underlying conditions and systems. Understanding why errors happen can help us prevent or correct them. It matters how leaders respond when things go wrong. Take the opportunity to learn.

Performance Shaping Factors | Work-as-imagined vs work-as-done | HF in design | Workload, stress and fatigue

☐ B. Read 'HSE Revitalising Procedures' and 'Human Factors briefing note
no.6'.

☐ C. Read this summary on how to do Walk Through Talk Through (WTTT):

1. Pick a task or activity to work through. If you know in advance of the most critical
   phase of a task you could focus on that.
2. You will need:
   a. Someone who normally does the task.
   b. A notebook and pen.
3. Your goal is to understand how the task is really done. Ask the person doing the
   task to walk and talk it through as if they were really doing it.
4. Each task step, no matter how minor, needs to be walked through and make sure
   you include:
   a. Communicating with other people.
   b. Retrieving information from a computer or gauge.
   c. Making decisions on information retrieved.

5. Make a note of what might go wrong if a mistake is made or the step is carried out differently to how it was originally intended.
6. Probe deeper to understand what might make a mistake more likely to happen or the task less easy to perform. (See boiling kettle example, below).
7. At the end of the walkthrough you will have:
   a. An understanding of factors that might increase the potential of a mistake being made.
   b. Tested how the person doing the task could recognise the early signs of an emerging incident and recover the situation.
   c. Potentially identified areas for improvement.

Notes:

- To be effective, the HF walkthrough must be done in the location and on the plant or equipment where the task is carried out in reality.
- If specific personal protective equipment is required for the procedure, then locating and putting on the PPE should be demonstrated at the appropriate point, and the demonstration continued wearing the PPE. This helps to identify actions which might be made difficult by, for example, gauntlets that limit dexterity.
- Likewise, if specific tools or equipment are required for the task, then they should be fetched at the appropriate stage in the procedure. This helps to identify problems with accessing the necessary equipment.
- The equipment or process should not be running at the time, as it may be unsafe to conduct a walkthrough on activities where distraction or delayed action could contribute to an accident or exposure.

☐ D. Read through this example Walk Through / Talk Through.

Example task: Boiling some water to make a hot drink, soup or pot of noodles		
How the task is done	What might go wrong	What makes a mistake more likely or less easy to perform, or what is good
1. Pick up the kettle	Kettles may vary in weight (empty or filled) and not meet expectations of user. The kettle could already be filled with water or it could slip from grip resulting in damage to the kettle or a water spill. Spills on a tiled floor are very slippery.	The gauge on the kettle is not easy to read – kettle design is poor. Lighting in the area can be poor at times, even with lights on. Kettle handle is reasonably well designed, it fits the hand and when full appears to be quite balanced.

		The kettle might have hot water in it already, be hot to touch or might scald if it is dropped.	
2.	Carry kettle to the tap	Slip on tile flooring if contaminated. Kitchen area can be busy - collision is a possibility.	Space is limited in the kitchen. People can be socialising in the kitchen giving scope for distraction or multi-tasking.
3.	Fill it to the required line with cold water from the sink tap	Lever style tap delivers water at a rate that can deflect from the kettle spout and splash the person or go on the tile floor leading to slip potential. The mixer tap could be opened and scalding hot water could come out. The kettle could be filled with too much water (wastes energy) or too little water (will have to refill again).	The lever style tap mechanism is a bit stiff, making it hard to be precise when opening the tap. The mixer tap indication is not clear, or the indication is present but not easily visible. The kettle gauge is not easy to read, sometimes it's easier to open the kettle lid and peer inside to get the level right.
4.	Walk back to kettle point	See 2	See 2 but with water, the kettle will be heavier.
5.	Put kettle back on its base	The kettle could be misaligned on the base and not get power.	Lighting and lack of contrast between black worktops and black kettle could make placing it difficult. There is no tactile feedback or sound to indicate it is in place. But this is not very likely as if the kettle is not sat on the base it will be at an odd angle, and fairly obvious to the operator.
6.	Switch the kettle on by pressing the lever switch at the back of the kettle	The kettle does not have power and does not boil – wastes time.	The kettle button will click down if power is there or not. There is a dim LED light to indicate it has power but it's so routine this signal is not usually checked. The kettle has in the past remained un-powered by mistake because the wall socket was unexpectedly switched off, the socket is hidden partially from view. People do not usually use the socket switch.
7.	Prepare hot drink etc.	NOTE – need to carry out walkthrough specific to type of drink selected, note in a separate record.	
8.	Wait for the kettle to boil and	Miss that kettle has switched off – water cools. Someone	Go and do something while waiting and forget to go back to

switch off automatically	else uses the boiled water before you get to it. The kettle is not powered (see 6). If faulty, the kettle switch could stick on – may continue to boil needing to be manually switched off.	the kettle or are delayed in getting back. Requires person to remain nearby as kettle boils.
9. Pour boiled water into cup etc, as per requirement.	Previous mistake not recognised and so cold water is poured on or water is insufficient. Could overfill or under fill the cup - overfill could result in spill of hot water, hand could be holding cup – could result in a scald.	No easy way to detect heat, without touching kettle body – risks of burn, if missed kettle in process of boiling and switching off. There could be distraction or preoccupation. The cup or bowl needs to be held in place – hand might be in line of fire.
10. Complete / enjoy the drink!	NOTE – need to carry out walkthrough specific to type of drink selected, note in a separate record.	
Opportunities to improve		

1. Select replacement kettle that offers clear feedback and usability to the user, e.g. clear gauge for water level, indication that it has power or not, feedback to make sure its engaged on its cord base and balanced weight when filled.
2. Look at socket position and line of sight so user can easily check socket has power.
3. Have tap repaired so that precise adjustment is restored.
4. Add label to indicate position of mixer tap, hot and cold.
5. Consider kitchen flooring material – could a flooring material with reduced slip potential be used?
6. Consider locating the kettle nearer the tap to reduce the need to carry the kettle across a potentially busy kitchen.

☐ E. Carry out a WTTT. You need to:

a) Choose a simple and routine task (e.g. product sampling, routine draining, part of an operator round, loading a vehicle with product or tools etc.).
b) Walk it Through / Talk it Through, using the approach described above, to identify what can go wrong with each step, and under what conditions mistakes are more likely. Refer to the example (using a kettle).
c) Document your observations in the following template.
d) Embed a photograph in the template.

Level 1 Task Analysis Report

Name of the task you selected.	
Description of the task described in the procedure. Who does it, how often, what's the purpose of the task?	

Steps - *break down the task into individual actions or steps in this column. Make a list with 1 action per line.*	**What might go wrong? (according to the person doing the job)** *Describe what could happen if the task step does not go right, e.g. the person makes a mistake.*	**What error traps increase the likelihood of error? What makes a mistake more likely? What makes the step more difficult to perform? (according to the person doing the job)** *Describe the error traps that could prompt the person to make a mistake.*
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
Opportunities to improve. *Add a brief list of things that could be done to reduce the potential for mistakes to occur.*		

Human Performance Learning Pathway
for the Energy Sector

Activity Report: Level 2
Task Analysis

Click in the box when the task is done!

NOTE: If you plan to also complete the Procedures topic, you need to complete this topic first.

☐ 1. Read the following resources:

- UK HSE Human Factors Roadmap: Background (p3), Topic 1 (pp7-9) and Appendix 3 (p20) in Inspecting Human Factors at COMAH Establishments.
- Chapter 6, 'Human Factors in Risk Management' of Human Factors in the Chemical and Process Industries.
- Refresh your knowledge of the content of Chapters 4 & 5, 'Current regulatory and government focus on human factors' and 'Management frameworks for human factors' of Human Factors in the Chemical and Process Industries.

☐ 2. Refresh your knowledge of Task Improvement Process (TIP):

- Refresh your knowledge of the Introduction to the Task Improvement Process (TIP) section of the HP for All e-Learn.
- Refresh your knowledge of the TIP help sheet, worksheet and the hints and tricks on doing TIP (see Related Content in the Introduction to the TIP section of the HP for All e-Learn).
- Take the Tip eLearn.

☐ 3. Complete Activity A:

A	Following on from the reading, find out how your organisation manages human factors risks proactively. Does it have a policy or procedure on human factors risk management or human reliability analysis? Does your organisation have a definition and process to identify critical tasks for analysis? *Note down your observations and findings.*
Add your answer:	

☐ 4. Complete Activity B:

B	Compare what you found out with the reading (Chapters 4-6 of *Human Factors in the Chemical and Process Industries*) from this topic and the Human Factors Roadmap (p20) and the topic on managing human performance (p7-9) in *Inspecting Human Factors at COMAH Establishments*. *Write down your observations and identified gaps. Why are the gaps present and what would need to happen to close the gaps?*
Add your answer:	

☐ 5. Complete Activity C:

C1	Work with operations and/or maintenance to compile a list of 10 tasks (e.g. finished gasoline tank dewatering task or instrument test and calibration task). Try to pick a cross section of tasks completed (e.g. a mix of complex, simple, routine and infrequently completed tasks). Then for each task apply the 5 screening questions approach described in Table 6.1 of *Human Factors in the Chemical and Process Industries* on p79, to determine the criticality of the tasks. (Note: a critical task is a task that, if not performed to the expected standard, is likely to give rise to a high consequence event). Complete the matrix below based on the results of your screening discussions. *Describe how you identified the tasks. Who did you involve? How easy was it to identify tasks?*
Add your answer:	

Task name and description	Briefly describe task goal and context	Screening tool total score (add score from applying screening tool 0 - 15 possible)	Screening tool criticality rating (high = score 9-15; Medium = 5-8 and low = 1-4)	What makes the task critical? (e.g. operator is opening hydrocarbon system; doing hot work; over ride is applied or perhaps task is complex, novel or has involved incidents in past)	How are human reliability risks managed for the task, currently? (e.g. procedure in place; special training provided; engineering controls; human intervention eliminated)
Task 1 *Add name of task*					
Task 2					
Task 3					
Task 4					
Task 5					

Task 6					
Task 7					
Task 8					
Task 9					
Task 10					
C2	Reflect on the results of the screening exercise. Has the approach helped to identify tasks that have a greater priority? Did you identify tasks that had a low criticality? Test with the operations and/or maintenance person. Does the assessment make sense? How would you approach the list of tasks, rank them by criticality or score, and select a task in the top 3 of your ranking for analysis using TIP, see Activity D. If you are planning on doing the Procedures topic, make sure to select a task with a procedure associated with it. *Add your reflections here and answer each of the questions posed.*				
Add your answer:					

6. Complete Activity D:

D	Find out more about the task you selected, in C, for TIP analysis. Engage with the operator and process engineer (if applicable). Ask them to talk through the task. Brief them on the TIP process and make sure they understand enough about the method to support its completion. As a minimum you should talk them through the TIP help sheet and make sure they understand the purpose of TIP. *Did they ask questions? Write down your reflections on that initial engagement. How might you do things differently next time?*
Add your answer:	

7. Complete Activity E:

E	Conduct TIP on the critical task selected and write up your analysis on the worksheet provided in this Activity Report. Pay close attention to the additional text provided, it will help you perform the analysis effectively. *Complete the worksheet from your written notes from doing the TIP activity. It will help if you print out a worksheet and help sheet to refer to as you complete the walkthrough.*

8. Complete Activity F:

F	Provide feedback on these activities and findings to your organisation to help it continuously improve. Use the PowerPoint template provided to compile your feedback.

Human Performance Learning Pathway
for the Energy Sector

Activity Report: Level 3
Task Analysis

Click in the
box when
the task is
done!

☐ 1. Read and review the following resources:

- Energy Institute guidance on safety critical task analysis.
- Refresh yourself on the role of human reliability analysis in risk management in Chapter 6 of Human Factors in the Chemical and Process Industries and the UK HSE Human Factors Roadmap and managing human performance described in Inspecting Human Factors at COMAH Establishments.
- Gain awareness of the scope and range of Human Reliability Assessment methods through:
    - Review of Human Reliability Assessment Methods
    - Building a Psychological Foundation for Human Reliability Analysis
    - EI guidance on quantified human reliability analysis
- YouTube Video on Cognitive Task Analysis (CTA).

☐ 2. Understand Hierarchical Task Analysis (HTA):

A key part of this module is building your capability to perform Hierarchical Task Analysis (HTA). This brief section is provided to give you an initial understanding of HTA and how to perform it. Read this information carefully……

(Section removed from Annex for brevity)

☐ 3. Complete Activity A:

A	Complete a Hierarchical Task Analysis on a common daily task that you are familiar with (for example this could be something from your home life – operating a lawn mower, preparing a meal, topping up engine oil on a car etc., or something from work – selecting and fitting an item of respiratory protective equipment, arranging with security for someone to visit your site etc.). You should talk to at least one person who is able to do the task so that you practice facilitation. Use Annex 1 and instructions provided in Section 2 to help with this.
Describe the task you identified:	

☐ 4. Complete Activity B:

B	Conduct HTA and HEA (per SCTA EI guidance) on a portion of a complex critical activity (for example unit start up, bringing a boiler into service, calibrating an instrument etc.). The portion of the activity should be a self-contained activity (cover the activity from a convenient starting point and go to a convenient end point) and should comprise at least ten separate steps. For example, it might be an activity within a start-up procedure, such as bringing a vessel into service (making sure the system is hydrocarbon ready, lining up the system, filling it etc.).
	Use Annex 2 to capture your HTA for the activity identified and the table in Annex 3 to capture the structure analysis of the steps drawn out. Have the actions agreed and entered into the organisation action tracking system.
B1	Describe the goals of the activity you have selected, who carries it out and describe what makes the activity critical? *Provide a brief overview based on the questions posed.*
Add your answer:	
B2	Identify the actions identified and agreed from the SCTA activity. *List out the actions arising from completing the SCTA on the activity selected.*
Add your answer:	
B3	Provide three personal reflections on completing the SCTA. *Think about what went well, what did not go so well. These could be related to the methods or your ability to complete the analysis effectively*
Add your answer:	

☐ 5. Complete Activity C:

C	Work with and coach personnel (e.g. five people) in your organisation to facilitate TIP effectively:
	- The individuals should have completed the HP eLearn and TIP eLearn with tips on how to facilitate TIP. - You should devise and deliver a plan to build capability in the people you have identified, this may comprise a face to face classroom briefing session, shadowing while you facilitate a TIP assessment, and/or observation and coaching as the individual facilitates TIP on a task. The precise mix of activities depends on the needs of the learner. Upload a copy of the training plan with a sample of the material you used.
C1	Who did you coach? *Provide brief information on who you coached on TIP, their role, how they will use TIP and describe their experience and capability of human performance and TIP prior to your coaching.*
Add your answer:	

C2	Assess the competence and confidence of the person/s you plan to coach on TIP – ask them about this prior to giving them the training. *Use a simple five point scale (1 being very low to 5 being very high) to gauge their own rating on how confident and competent they are to apply TIP:* Understanding of HF: *(rate from 1 to 5)* Confidence on TIP: *(rate from 1 to 5)* Competence on TIP: *(rate from 1 to 5)*
Add your answer:	
C3	Based on the information you have, how will you proceed to provide them with the training and coaching they need to facilitate TIP? *Outline your plan to build their competence and confidence to apply TIP effectively. Think about how to build key knowledge, how to give them the exposure of how to facilitate TIP (for example shadowing you as you complete TIP) and how to encourage them to take the lead on doing TIP (for example providing supportive coaching during TIP).*
Add your answer:	
C4	Follow up with the people you trained after they have completed the training and coaching and have put the coaching into practice. Find out how they have progressed. Note good examples arising. What issues do they have? Recheck their perceived confidence and competence – have you seen a general improvement? *Note down what the people you coached have done to practice TIP.* *Provide two examples from the group of things that TIP helped them surface and helped improve.* *Provide two main issues or difficulties that the group mentioned that you will need to work with them to resolve.* *Recheck perceived confidence and competence on TIP – how do the ratings compare with the baseline?* Understanding of HF: *(rate from 1 to 5)* Confidence on TIP: *(rate from 1 to 5)* Competence on TIP: *(rate from 1 to 5)*
Add your answer:	

☐ 6. Complete Activity D:

D	Compare the pros and cons of TIP, Safety Critical Task Analysis, and one method of your choice of Quantitative Human Reliability Assessment (per EI guide, for example Petro HRA or HEART). *Use the matrix provided to compare the different methods. Some criteria are provided for you already but you should also add a further three criteria based on the readings for this activity.* *For each criterion have a go at ranking first, second and third place for criteria (you could colour the boxes to indicate your ranking – green is first, yellow is second and orange is third).*		
Criteria for comparison	TIP	SCTA	One Quantitative HRA method of your choice:

			Add the name of the method selected:
	Add short notes for each criterion for each of the three methods and then rank them based on your judgement – time taken to apply is provided as an example.		
Time taken to apply *(provided as an example)*	Quickest of the three to apply – because it is completed at the point of execution during the walkthrough / talk through. Also, the method is simplified compared to SCTA – this helps speed up facilitation and reduces sticking points in discussions (for example the type of human failures are credible).	Requires detailed task analysis in advance of the structured analysis, plus requires separate field walkthrough / talk through – reserve for high criticality activities as it is time consuming.	HEART requires detailed task analysis in advance and complete understanding of the task. Once the task is understood it can be relatively quick to facilitate if using a tool to assist and speed up calculation of error probability, etc. If doing calculations by hand it can be slow going. It can help to build on to another risk analysis, for example fault tree or LOPA – so completing these activities are not included in the time taken.
Training needs to lead / facilitate and level of expertise required?			
Usability and ease of use (for example tools available to help complete analysis)?			
Outputs from analysis (what does it provide for practical risk reduction)?			
How do front line			

personnel get involved?			
How do the methods address error recovery?			
How do the methods address error prevention / mitigation?			
Add your criterion here:			
Add your criterion here:			
Add your criterion here:			
Thinking about the three methods, describe a situation or scenario when you would select the methods to help you manage human error for a critical activity.	*a. I would use TIP for the following situation or scenario:* *b. I would use SCTA for the following situation or scenario:* *c. I would use <insert name of Quantitative HRA method> for the following situation or scenario:*		
	Overall, provide your own reflections on the three methods. Then note down which you would recommend for general implementation in operations and which you might reserve for special applications. *Add your reflections from reviewing the three methods.*		
Add your answer:			
	Which would you recommend for general implementation in your organisation and which might you reserve for special applications? What might those applications be?		
Add your answer:			

☐ 7. Complete Activity E:

E	Provide feedback on these activities and findings to your organisation to help it continuously improve. Use the PowerPoint template provided to compile your feedback.

ANNEX D *(Comparison of levels 1, 2 and 3)*:

	Level 1	Level 2	Level 3
Cost (EI member/non-member)	£450 / £500	£950 / £1050	£950 / £1050
Who is it for?	Anyone who has a role in managing safety – supervisors, managers, engineers	Anyone who needs to manage human factors or with responsibility in the subjects covered by the modules – safety managers, operations managers etc.	Anyone expecting to become a human factors manager or lead, or specialist (e.g. incident investigators)
Completion criteria	✓ Complete all 9 modules	✓ Complete 5 modules	✓ Complete 2 modules
What is involved?	✓ E-learn ✓ Pre-read (basic, EI HF briefing notes) ✓ Desktop and practical exercises ✓ End of module exam	✓ Pre-read (intermediate, relevant parts of industry good practice guidance, standards) ✓ Desktop and practical exercises ✓ End of module exam	✓ Pre-read (advanced, industry good practice guidance) ✓ Desktop and practical exercises
Module			
Designing for people	✓ Review layout and design of a workstation ✓ Ergonomics of workstation design ✓ Assessment of hand tools against checklist	✓ Identify how organisation addresses design of tools and equipment, how human centred design is incorporated ✓ Compare findings against industry good practice. Identify gaps and how to close them ✓ Review of office shelf height using anthropometric data, explaining your workings and conclusions ✓ Review of foot clearance space using anthropometric data, explaining your workings and conclusions ✓ Option 1: Review a piece of equipment that includes a manually operated valve or visual display/gauge, using anthropometric data ✓ Option 2: Develop a hand and power tool checklist based on industry good practice, then apply	✓ Apply design standard ISO 9241-210 to a video case study, and write about some key concepts. ✓ Select 3 principles from ASTM F1166, and apply them to your site/facility ✓ Review the scope of US DoD human factors standards, describe how they interact, write a project requirement statement for each standard, and compare one of the standards against EI/IOGP report 454 ✓ Apply ASTM F1166 to several case studies ✓ Interview supervisors and operators to test the extent that designs consider end users ✓ Design a 30-60 minute training session for people in your organisation responsible for engineering and design

		that to range of tools used in the organisation ✓ Describe steps to make sure equipment is designed for the user ✓ Feedback your findings to the organisation	✓ Identify systematic improvements to how your organisation designs for people, covering training, tools and guidance used, and verification systems/processes ✓ Feedback your findings to the organisation
Communications	✓ Review of communication types used ✓ Review safety critical communications using a checklist ✓ Discover potential miscommunication opportunities on site ✓ 3-way communication ✓ Identify how to improve communications on site	✓ Compare your organisation's management system for communications against industry good practice ✓ Identify, and relate your organisation's communications practices to, incidents that involved communication or shift handover as causes ✓ Option 1: Observe, describe, and analyse communication during a crane lifting activity ✓ Option 2: Discuss shift handovers with supervisors and observe and analyse shift handovers using industry good practice guidance/checklists ✓ Feedback your findings to the organisation	No module at level 3
Applied HF in design	Option 1: Control rooms ✓ Describe the control room ✓ Discover issues using checklist ✓ Compare alarm register vs. EEMUA prioritisation levels ✓ How can alarm management be improved? Option 2: Signs and warnings ✓ Describe the organisation's specification for signs and warning labels	✓ Identify human machine interface (HMI) standards applied in your organisation ✓ Compare HMI practices against industry good practice ✓ Review online retail/shopping website from perspective of 2 different types of user ✓ Review computer software package ✓ Perform an evaluation of a physical control panel/interface	✓ Visit a control room and complete an evaluation of it using the 'advanced control room checklist' ✓ Provide insight into improvements to the console design/HMI, control room layout, environmental conditions, and alarms ✓ Identify other improvements and feedback your findings to leadership ✓ Consider the update of a control room to a

	✓ Compare signs against the specification ✓ Identify issues faced if no specification exists ✓ Review 2 warning signs, talking to those who need to comply ✓ Identify opportunities to improve	✓ Option 1: Visit control room and complete an assessment using a design checklist ✓ Option 2: Apply design checklists to 2 control panels/user interfaces ✓ Based on earlier activities, identify how you can influence systemic improvements to interface design in your organisation ✓ Feedback your findings to the organisation	digital control room. Describe the human factors considerations needed during such a project, list the activities you will need to undertake, list the main standards applicable, and other considerations that may be required once the new system has been implemented ✓ Solve a variety of issues in a hypothetical control room leading to musculoskeletal disorders, including glare, layout of the screens, ventilation and noise ✓ Option 1: Develop an operational concept for a control room upgrade or new control room ✓ Option 2: Participate in or lead a safety critical tasks analysis related to a control room ✓ Option 3: Participate in a control room environmental monitoring or lighting assessment ✓ Feedback your findings to the organisation
HF in projects	✓ Describe how a piece of equipment is used and operated ✓ Compare the equipment against design principles (importance, frequency of use, function, sequence of use, access, consistency) ✓ Identify how the equipment can be improved	✓ Understand how your organisation manages human factors in projects and compare your findings to industry good practice ✓ Identify a recent project or design change and describe what human factors activities were involved ✓ Attend a HF-related design review, and describe your observations and suggestions	✓ Identify an infrastructure project requiring human factors integration. Describe its scope ✓ Participate in the preparation for and delivery of an HF risk screening workshop, using the approach described in IOGP 454. Record the findings of that screening ✓ Participate in at least 2 different human factors activities in the projects, e.g. 3D

		✓ Work with engineering team members to verify that HF aspects have been captured in a design; describe your findings ✓ Feedback your findings to the organisation	model review, valve criticality analysis, critical tasks analysis, etc. Describe what you did ✓ Design, develop and deliver HF awareness training to the project team to help embed HF design principles ✓ Reflect on your work activities supporting the project. Note down findings that can be fed back to improve the HF integration in projects approach in the organisation and report these to appropriate person ✓ Feedback your findings to the organisation
Incident investigation	✓ Participate in or review an investigation/near miss report and carry out behaviour analysis using provided tools (basic analysis tool or 4 step approach) ✓ Identify performance shaping factors that influenced behaviour	✓ Understand the organisation's process for incident investigation and learning, and compare against industry good practice ✓ Analyse a case study of an incident for hindsight bias, judgmental explanations of behaviour and other biases, and suggest alternative explanations for why the incidents occurred ✓ Lead or participate in an investigation, complete a HF analysis of the event and conduct two interviews ✓ Generate a timeline of the incident ✓ Create an Accimap of the incident ✓ Feedback your findings to the organisation	✓ Review investigation reports and data from 15-20 incidents from your organisation and undertake analysis/trending related to the human and organisational factors involved/identified ✓ Find out how unplanned events that may not have a safety implication are investigated. Analyse the HF elements. Build a business case to improve the investigation approach ✓ Coach a small group of incident investigators from your organisation on HF in investigations ✓ Conduct barrier analysis using CHIEF whitepaper on a complex incident investigation. Describe the barriers that failed, and feedback to your organisation on how

			they can improve their investigation process ✓ Lead or participate in an investigation of an incident or unplanned event. Apply a range of methods and skills. Provide the details and findings ✓ Identify ways you could influence a systematic improvement of HF in investigations in your organisation ✓ Feedback your findings to the organisation
Leadership, supervision and culture	✓ Interview front line operators on their views of leadership, supervision and culture on site using provided checklists as guidance ✓ Make recommendations to improve at least the top 3 issues you identified	✓ Understand how leaders' safety leadership is developed in the organisation, and compare your findings against industry good practice ✓ Use behavioural marker observation sheets ✓ Discuss with operations manager or supervisor how decisions are made which impact safety, how safety leadership is addressed and how the organisation learns from failures ✓ Discuss with frontline workforce their views on safety leadership, how and whether management address their concerns, and how leaders engage them on safety ✓ Carry out focus group discussion on safety leadership ✓ Summarise focus group findings ✓ Feedback your findings to the organisation	✓ Psychological safety: interview supervisors and senior managers on the topic of psychological safety. Work with them to identify what they do to foster psychological safety and what can be improved. Facilitate a focus group with front line personnel on 'speak up' and psychological safety. ✓ Safety culture: Gather evidence of the safety culture of the organisation and compare against reading material. ✓ Just culture: Review a case study on why things go wrong. Compare what you read on just culture to your organisation's processes Compare different just culture models ✓ Review an incident involving rule breaking and consider how supervision played a part. Introduce the just culture framework to an operational leader, applying it to the worker and supervisor

			involved in the incident ✓ Generative leadership: Select a specific critical work activity from your organisation. Identify, the key individuals involved with that work activity. Arrange brief interviews with each; you will adopt the appreciative / humble inquiry / generative leadership approach to engaging with the interviewers ✓ Processes and systems: Describe any processes that are in place to drive leadership interactions with the front line. Compare what you find out against the materials provided in this module. ✓ Feedback your findings to the organisation
Procedures	✓ Study a 'walk through/talk through' of a task (provided) ✓ Carry out a 'walk through/talk through' of a procedure on site ✓ Complete a procedure report identifying improvements to be made * Note this must be a different procedure to the Task analysis module	✓ Find out how your organisation manages development of procedures and compare against industry good practice ✓ Review a case study procedure using industry guidance and your own knowledge ✓ Carry out a desktop Task Improvement Process activity on an example procedure ✓ Complete a Task Improvement Process activity on a safety critical procedure in your organisation ✓ Feedback your findings to the organisation	✓ Complete a Hierarchical Task Analysis on a common daily task that you are familiar with. Write a simple step by step procedure ✓ Develop a HTA on the critical portions of a new procedure ✓ Select a variety of procedures in your organisation and complete a desktop review ✓ Use a matrix to compare and contrast the three procedures on style, format and content. Provide 2 examples of issues or improvement to the usability of the procedures that you identified ✓ Conduct interviews with operations leaders, procedure

			end users and procedure developers in your organisation to test the extent of HF integration into procedures ✓ Find out about the process for procedure updates being captured and added into procedures ✓ Develop a short (30mins to 1hr) and engaging training session for people in your organisation responsible for writing or reviewing procedures ✓ Identify ways you could influence a systematic improvement of HF in procedures in your organisation ✓ Feedback your findings to the organisation
Task analysis	✓ Study a 'walk through/talk through' of a task (provided) ✓ Carry out a 'walk through/talk through' of a procedure on site ✓ Complete a procedure report identifying improvements to be made * Note this must be a different procedure to the Procedures module	✓ Understand how your organisation understands HF risks (e.g. human reliability analysis) ✓ Compare your findings against industry good practice ✓ Carry out a HF screening exercise of 10 tasks and prioritise them for further analysis ✓ Lead an operator and process engineer to conduct a Task Improvement Process analysis on one of the tasks ✓ Feedback your findings to the organisation	✓ Complete a Hierarchical Task Analysis on a common daily task that you are familiar with ✓ Conduct HTA and HEA (per SCTA EI guidance) on a portion of a complex critical activity ✓ Work with and coach personnel in your organisation to facilitate Task Improvement Process (TIP) effectively. Assess their competency and follow-up with them after you have trained them ✓ Compare the pros and cons of TIP, Safety Critical Task Analysis, and one method of your choice of Quantitative Human Reliability Assessment ✓ Feedback your findings to the organisation

Workload, Stress and Fatigue	✓ Identify an activity or role prone to stress/fatigue/ workload issues and talk to the person ✓ Compare their experiences against the provided checklists ✓ Identify opportunities for improvement	✓ Understand how stress is managed in your organisation and compare your findings against industry good practices ✓ Prepare an engaging workshop session based on provided slides ✓ Organise and run a workshop on stress, working through actions to reduce stress with the team ✓ Understand how fatigue is managed in your organisation and compare your findings against industry good practices ✓ Complete exercise to assess level of fatigue in self and two other people (provided examples) ✓ Carry out fatigue assessment of 3 people in your organisation ✓ Create a business case for the management of stress and fatigue in your organisation ✓ Feedback your findings to the organisation	✓ Review the incident report from NTSB about a fatal helicopter incident, analysing the HF aspects, particularly related to workload and stress ✓ Pick a task, and carry out walkthroughs, interviews, and timeline analysis, to analyse the workload involved ✓ Using a case study, conduct a staffing assessment using the method in EI safe staffing arrangements guidance ✓ Option 1: Complete physical assessments and a ladder assessment on two different major incident scenarios ✓ Option 2: Undertake a workload assessment of two people engaged in critical roles ✓ Find out how workload and staffing levels are managed in your organisation and compare against good practice ✓ Feedback your findings to the organisation