

RESILIENCE QUESTIONNAIRE



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For major hazard operations

Rev 03

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Resilience questionnaire

FOR MAJOR HAZARD OPERATIONS

Resilience has been defined as: *the ability of a system to adjust its functioning prior to, during or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions (Hollnagel)*

This questionnaire is based on the following four dimensions of resilience:

- Anticipation – Finding out and knowing what to expect
- Response – Knowing what to do and being able to do it
- Monitoring – Knowing what to look for
- Learning – Knowing what has happened

Consideration should be given to daily routine as well as special projects or tasks that are unique or irregular.

1. Can you tell something about your career until now? For example: What education did you follow? What was your first job? Which aspects of your job do you like / not like?

2. Do you regard your job as dangerous?

3. How much (range of) uncertainty (variability) is there:
 - a. In how the plant will behave on a particular day - because of the inherent variability in the process parameters, external conditions or the people who operate the plant?
 - b. In how the plant will behave on a particular day - because of knowledge limitations or limits in what can be measured?

4. What is a typical daily routine for you?
 - a. What do you look out for?
 - b. What communications do you have with other people?
 - c. What planning might be required?
 - d. What sort of decisions do you have to make?

5. Can you tell something about your feelings about/responses to the following change situations (give some concrete examples that you have experienced). E.g. How do you adapt to:
 - a. Changing situations in your team/people
 - b. Changes in the installation/process/new technology
 - c. Changes in methods/standards/requirements
 - d. Changes in the environment/situation

6. What is the trade-off between being efficient and being thorough given that there are always resource limitations? Can you give one or two examples where you have had to make such a trade-offs?
Note: Resources can be time, materials, money, human capacities and limitations (workload, fatigue, competence), manpower, information, tools etc.

7. How important are strict procedures and standardisation. E.g.
 - a. In planning an activity?
 - b. In responding to unexpected events?

8. What is the trade-off between rigid requirements and the need for flexibility? E.g.
 - a. Was it ever necessary to change plans once a job has been started?
 - b. Was it ever necessary to change or adapt a standard procedure
 - c. Was it ever necessary to communicate with people outside your team?

9. How do you keep in touch with what is going on:
 - a. Directly in monitoring the safety of the plant and the behaviour of people in relation to managing the risks
 - b. What is happening in other parts of the organisation

10. Given inherent uncertainties, how easy is it to spot signals that something is not right (with the installation, process, and people)? What are you personally looking for to know if there are dangerous situations?
 - a. Weak signals
 - b. Slow degradation
 - c. Not according to expected
 - d. Indications of increased risk
 - e. Instinctive/gut feelings

11. Did you ever encounter situations you did not anticipate? Can you give examples of how you have had to deal with unexpected events that might arise from the uncertainties talked about earlier?
 - a. Handling doubt
 - b. Golden rules/rules of thumb.
 - c. Common sense
 - d. Drawing a criterion line that should not be crossed
 - e. Getting other opinions/using expertise of others (how easy is that?)
 - f. Using buffers or redundancies e.g. to buy time with decision making
 - g. Clear risk criteria about what is acceptable or not.

12. What have you learnt here since starting here about managing risks and uncertainties
e.g.

- a. Common successes (how to do things right)
- b. Special training to handle risks and uncertainties in your job
- c. Follow-up when things go wrong
- d. Things you have learnt from personal experience – what goes right as well as what goes wrong
- e. Things you have learnt from others inside and outside the organisation (how easily/quickly do you hear)
- f. Information available from membership of a forum or special subject group or professional affiliation
- g. Other sources of information e.g. lessons learnt from accidents on other plants
- h. Are you learning all the time or does it tend to be event driven?

13. Have changes come about as a result of learning?

14. How do you anticipate the future in what you are doing now in terms of possible future scenarios?

- a. To what extent are there scenarios provided that you are expected to consider?
- b. Are new scenarios being added such as new ones for existing situations or new ones as a result of change? (How often)
- c. To what extent do you dream up new scenarios?
- d. Do you discuss possible scenarios with your colleagues?
- e. Do you think about scenarios that are hardly possible?
- f. Is the speed at which things might develop considered?
- g. Are scenarios considered in relation to risk criteria – what is acceptable or not.

15. How much preparation do you put into dealing with these possible futures?

- a. Do you always have a plan?
- b. Do you have the knowledge and expertise to adapt to these possible futures
- c. How fast could you respond to the unexpected?
- d. How do you maintain your alertness and readiness to respond (and not get sucked into the daily routine for example)

16. In handling risks and uncertainty, when dealing with rare and unexpected events and even regular events all sorts of “heuristic traps and cognitive biases” in decision making have been identified [explanation/examples]

- a. Which traps/biases are the most difficult traps for you to handle?
- b. What advice/solutions do you have for dealing with them?

Examples.

Confirmation bias: The tendency of people to favour information that confirms their beliefs or hypotheses.

Optimism bias: The tendency to be over-optimistic, overestimating favourable and pleasing outcomes.

Overconfidence effect: Subjective confidence in one’s judgments is reliably greater than the objective accuracy, especially when confidence is relatively high and in answering more difficult questions.

Sunk cost fallacy: The phenomenon where people justify increased investment in a decision, based on the cumulative prior investment, despite new evidence suggesting that the cost of continuing the decision outweighs the expected benefit.