

Petroleum Engineer interview questions

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What to expect

Petroleum engineering interviews usually combine a technical conversation with a safety and behavioural assessment. Because the role sits close to high-consequence operations, employers want evidence of both analytical rigour and sound judgement on site.

- **Technical and reservoir:** Questions on simulation, reserves, production optimisation and how you use tools such as Petrel, Eclipse, OFM and Prosper.
- **Safety and operational:** Scenarios around well control, permit to work and safety case obligations, framed by NOPSEMA or state regulator requirements.
- **Behavioural:** Past examples of working with drilling crews, asset teams and contractors, answered with STAR.
- **Commercial and planning:** How you build a field development plan, frame uncertainty and justify scope to management.
- **Motivation and industry fit:** Why petroleum engineering, how you keep current across disciplines, and how you see the energy transition affecting the work.

A typical process starts with a screening call with a recruiter, then a technical interview with the asset or subsurface team, often including a short modelling or data exercise. A site or operations panel follows for roles with field time, covering safety scenarios and permit-to-work knowledge. Final rounds are usually with the hiring manager and sometimes the asset general manager, and reference checks tend to focus on how you performed under operational pressure.

1. Walk us through how you would build a reservoir simulation model for a field you have never worked on before.

Why they ask

Tests whether you understand the full workflow rather than just the software, and whether you can explain it to people who know the data better than you do.

How to structure your answer

Walk-through in stages: data review, static model, dynamic setup, history match, prediction runs, uncertainty framing. Say what you check at each stage and what would make you stop and revisit earlier work.

Example answer

"I would start with the data review rather than the software. I would pull the seismic interpretation, core and log data, pressure surveys and production history, and get clear on what is actually measured versus what is assumed. From there I would build the static model in Petrel, upscale the properties, and set up the dynamic model in Eclipse with the fluid and rock data the reservoir description supports. The history match is where the real work sits, so I would match pressure and water breakthrough well by well, adjusting the things I have evidence for first, like relative permeability and aquifer support, and leaving the rest alone. Once the match holds on wells I deliberately held back, I would run the prediction cases and report the range rather than a single number. If the data contradicts my assumptions early, I would go back to the static model before going any further."

2. Tell me about a time new data forced you to change a recommendation you had already put forward.

Why they ask

Tests intellectual honesty and how you handle being wrong in front of people who acted on your advice.

How to structure your answer

STAR. Give the original recommendation briefly, then the new data, then what you did about it and how it landed with the team.

Example answer

"We had recommended a gas lift conversion for a set of wells based on the production history at the time. Six weeks later the pressure survey came back lower than we had modelled, and the economics no longer held for two of the wells. I went back through the nodal analysis in Prosper, reran the cases with the new pressures, and took the revised recommendation to the asset team myself rather than waiting for the next review. We dropped two wells and kept the rest, and the reasoning went into the decision record so the next review could see why the scope had changed. It was awkward, but the alternative was spending on wells that would not pay back."

3. You are the company representative on site and the drilling contractor reports a kick during a trip. What do you do?

Why they ask

Tests judgement under pressure and whether you understand your role on a rig versus the drilling crew's role.

How to structure your answer

Immediate actions first, then escalation and notification, then the review afterwards. Say who you notify and in what order, and be clear that the well is shut in before anything else.

Example answer

"The first priority is people and the well. I would confirm the crew has shut in the well and is holding pressure per the well control procedure, and that everyone is accounted for at the muster point. I do not direct the driller, that is the toolpusher's job, but I make sure the company's well control plan is being followed and that the IWCF-certified person on shift is running the response. I would notify the drilling superintendent and the onshore operations manager straight away, and if we are offshore in Commonwealth waters that flows through to NOPSEMA notification requirements. Once the well is stable I would take part in the after-action review, look at whether our procedures or the trip plan contributed, and make sure the corrective actions are closed out before we resume. I have seen a pit gain caught early on a trip, and the crew's routine shut-in drill practice was the reason it stayed a minor event."

4. How do you estimate recoverable reserves and communicate the uncertainty around them?

Why they ask

Tests both your method and your ability to talk about uncertainty to people who have to make a decision on it.

How to structure your answer

Explain method first, then how you bracket uncertainty, then how you present it to management. Be specific about which methods you would use and why.

Example answer

"I use more than one method and see whether they agree. Volumetrics gives me a starting range, material balance checks it against pressure history, and decline analysis on producing wells tells me what the field has actually delivered. Where the methods disagree, that gap is the interesting part and it usually points at an assumption worth testing. For uncertainty I would use a probabilistic approach rather than three hand-picked cases, then present the result as a range with the key drivers named, for example aquifer strength or recovery factor. When I take it to management I keep the language plain: this is what we are confident about, this is what would move the number, this is what we would need to spend to find out. I would rather be asked a hard question in the room than have the range quietly narrowed later."

5. Describe a time you disagreed with a contractor or operations team on site. How did you handle it?

Why they ask

Tests influence without authority, which matters when the person you disagree with is running the job.

How to structure your answer

STAR, with the emphasis on how you raised the concern and what changed as a result, not on who was right.

Example answer

"We were planning a completion and the service company wanted to run a liner hanger setting sequence I thought was risky given the hole conditions we had seen on the logs. Rather than telling them no in the pre-job meeting, I asked them to walk me through the failure modes and what the contingency was if the hanger did not set. It became clear they had not run the numbers on the worst case, so we sat down with the drilling supervisor, redid the analysis in Prosper and agreed on a modified sequence with a clear decision point. The job ran without a hitch, and more importantly the next pre-job meeting started with the contingency discussion rather than the schedule. Disagreeing well on a rig site comes down to having the data in front of you and keeping it about the well, not the person."

6. How do you see petroleum engineering changing over the next decade, and where do your skills fit?

Why they ask

Tests realism and whether you will stay engaged with a shifting industry rather than waiting for it to stay the same.

How to structure your answer

Give a grounded view without predicting the future with false confidence, then tie it to your own skills and what you want to learn next.

Example answer

"I think the work is shifting toward getting more out of existing fields, and toward carbon capture and storage and decommissioning, which use the same subsurface and well engineering skills. I have been deliberately building the parts that travel: reservoir simulation, production optimisation and data analysis in Python, which apply just as well to a storage project as to an oil field. I would like to work somewhere that treats those as one skill set rather than separate careers, because that is how I see it. I am not going to pretend I know exactly how the mix will look in ten years, but I would rather be in a team that is planning for it than one that is not."