Risk

- For NSF MREFCs, contingency can only be used to address previously identified potential issues
    - Uncertainties in estimates in the RLS
    - Identified risks and responses
- Eg if we need to do another prototype or pre-production cycle but we did not have that risk (or retired it on first occurrence), we cannot use contingency funds to do it
    - Either we don't do it, or we get the funds from scope contingency (or elsewhere)
- This makes risk formulation a delicate matter
    - Broad enough (eg don't try to guess why you may need another prototype round)
    - But specific enough to be credible, and have a sufficiently specific response
        - And not overlap with other risks!
- Of course, risk register *is* a living document
    - But can't add a risk *after* it occurred…

Contingency Simulation

- We switched from @Risk to PRA
  - In @Risk, we had calibrated the cost triangles to be twice as long as the schedule triangles
  - This does not work in PRA: cost and schedule triangles are fully correlated
  - However, phase-1 AND phase-2 experience so far shows that many large contingency draws were not within either uncertainties or identified risks
    - This led us to request (in February!) that people add "more complex than expected" risks
  - Our first round of full project simulation, for the DOE IPR/CD-3a DR, shows that these adjustments get us back to ~where we expect to be, and
    - Risk represents ~50% of contingency (this is good)
    - But there are large discrepancies between systems in the risk contribution

Risk Management

- **Had discussions with some risk experts**
  - Our simulation approach is pretty good
  - But we need to do a better job at identifying and scrutinizing risks
    - Our contingency draws so far are another symptom of this
- **Hence these risk scrubbing sessions**
- **Goals:**
  - Are any risks missing?
  - Is there overlap/duplication between risks?
  - Smell test:
    - Adequate description (broad but not too broad)
    - Impact ranges can be derived from comments + RLS info
    - Phase affected clearly identified
      - If affects multiple tasks, will normally initially "attach" to first one

Risk Probability

- A complex issue; making the move to categories
  - Here's some guidance:

Rating	Description	Interval
Very Low	May occur in rare circumstances	0-10%
Low	Could only occur some time	11-25%
Moderate Low	Might occur some time	26-50%
Moderate	More likely to occur than not	51-75%
High	Is likely to occur	75-100%

  - For the moderate and high categories, mitigation that brings it down to moderate low or lower is required