

Motivation and Objectives

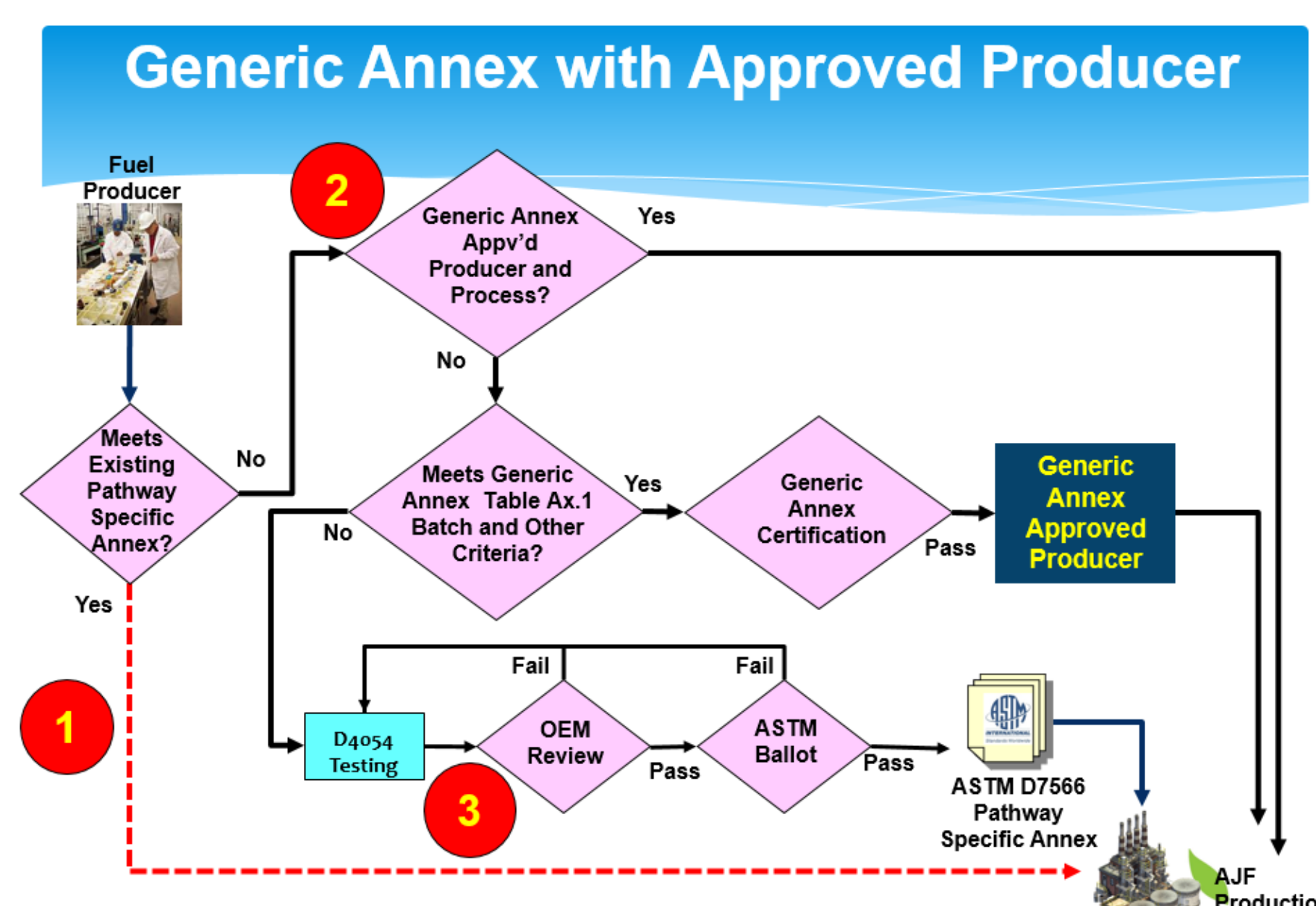
- Coordinate ASTM approval of candidate alternative fuels
- Perform engine, component, rig, or laboratory tests to ASTM D4054
 - Specification tests & fit-for-purpose evaluations
- Obtain data for baseline and alt fuels effects on performance, maintenance, and reliability

Research Report Coordination

- Engine/Airframe OEM Subcontracting
- Honeywell, Rolls-Royce, Boeing, SwRI on subcontract
- Pratt & Whitney and GE nearly done
- Airbus newly started

Development of ASTM D7566 Generic Annex

- Not limited to specific conversion pathway or feedstock
- Producer NOT required to negotiate D4054 process – no OEM approval required
- Blend % limited to 5 – 10%
- Very restricted composition/property limits

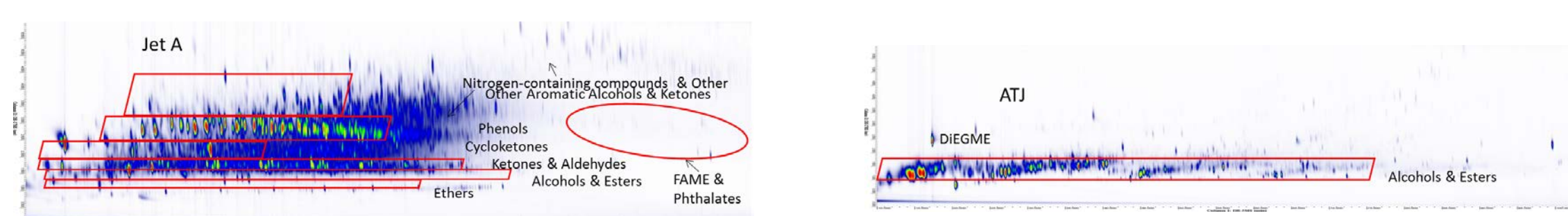


Current & Upcoming Candidate Fuels

- ARA Catalytic Hydrothermolysis (CHJ)
- LanzaTech Alcohol-to-Jet (ATJ)
- Boeing/Neste High Freeze Pt HEFA (HFP-HEFA)
- Virent Synthesized Aromatic Kerosene (SAK)
- Shell IH²
- IHI Bb-oil

Trace Component Specification

- Nitrogen species, oxygenates, & metals



- Polar oxygenates/nitrogen via solid-phase extraction- GCxGC-FID/MS
- Need to finalize limits for oxygenates
 - Total (100 ppm) vs. individual classes (20 ppm)
 - Need to finalize limit for oxygenates

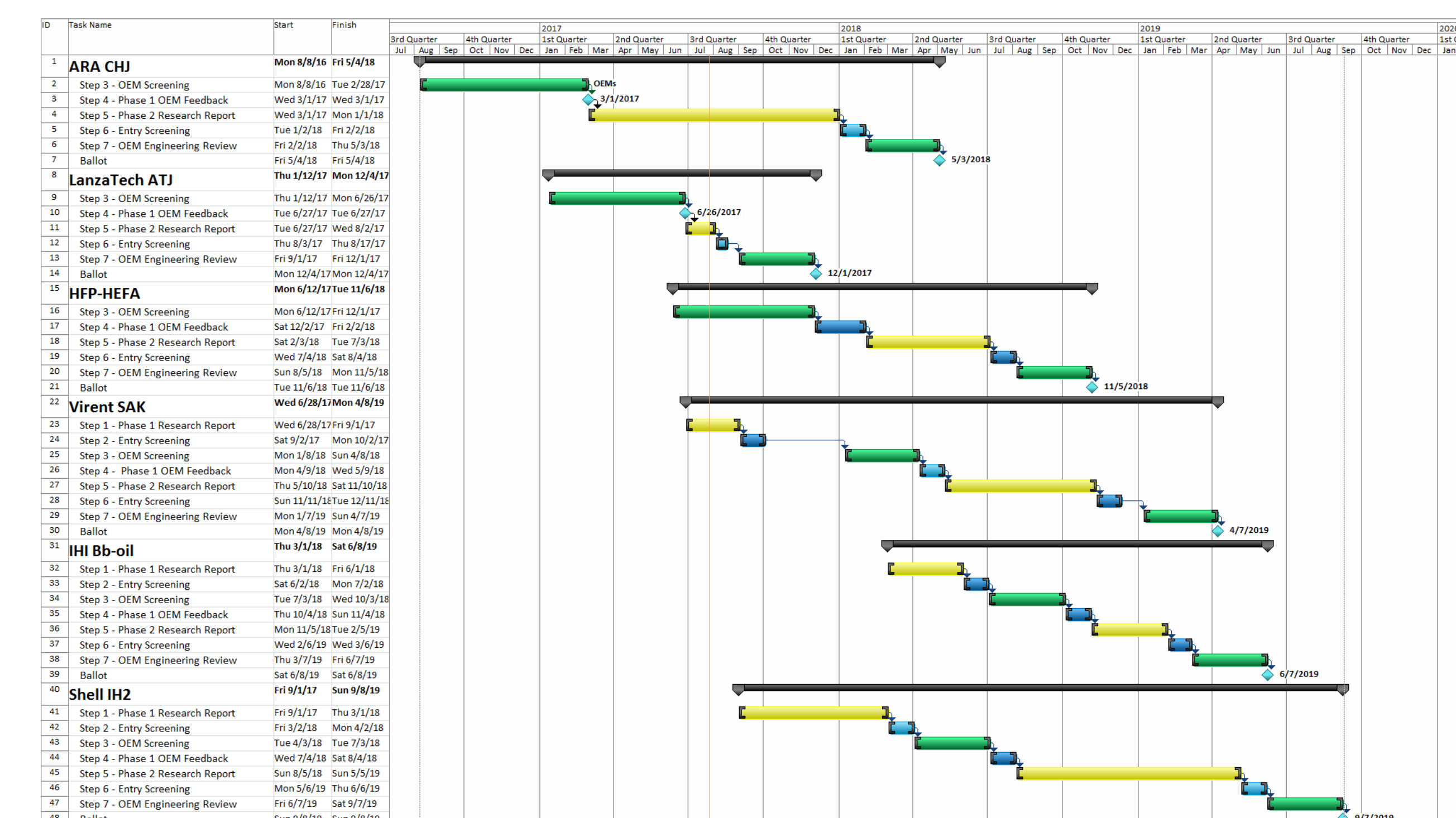
	10301 HEFA-SPK- Camelina	7272 HEFA-SPK- Animal Fat	12368 ATJ-SPK
Polars (mg/L)			
Phenols	<5	<5	<5
Pyridines	<5	<5	<5
Anilines	<5	<5	<5
Quinolines	<5	<5	<5
Indoles	<5	<5	<5
Carbazoles	<5	<5	<5
Alcohols	<5	5*	90**
Ketones	<5	<5	<5
Other	<5	<5	<5
Total	<10	<20	90

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Project manager: C. Shaw, FAA

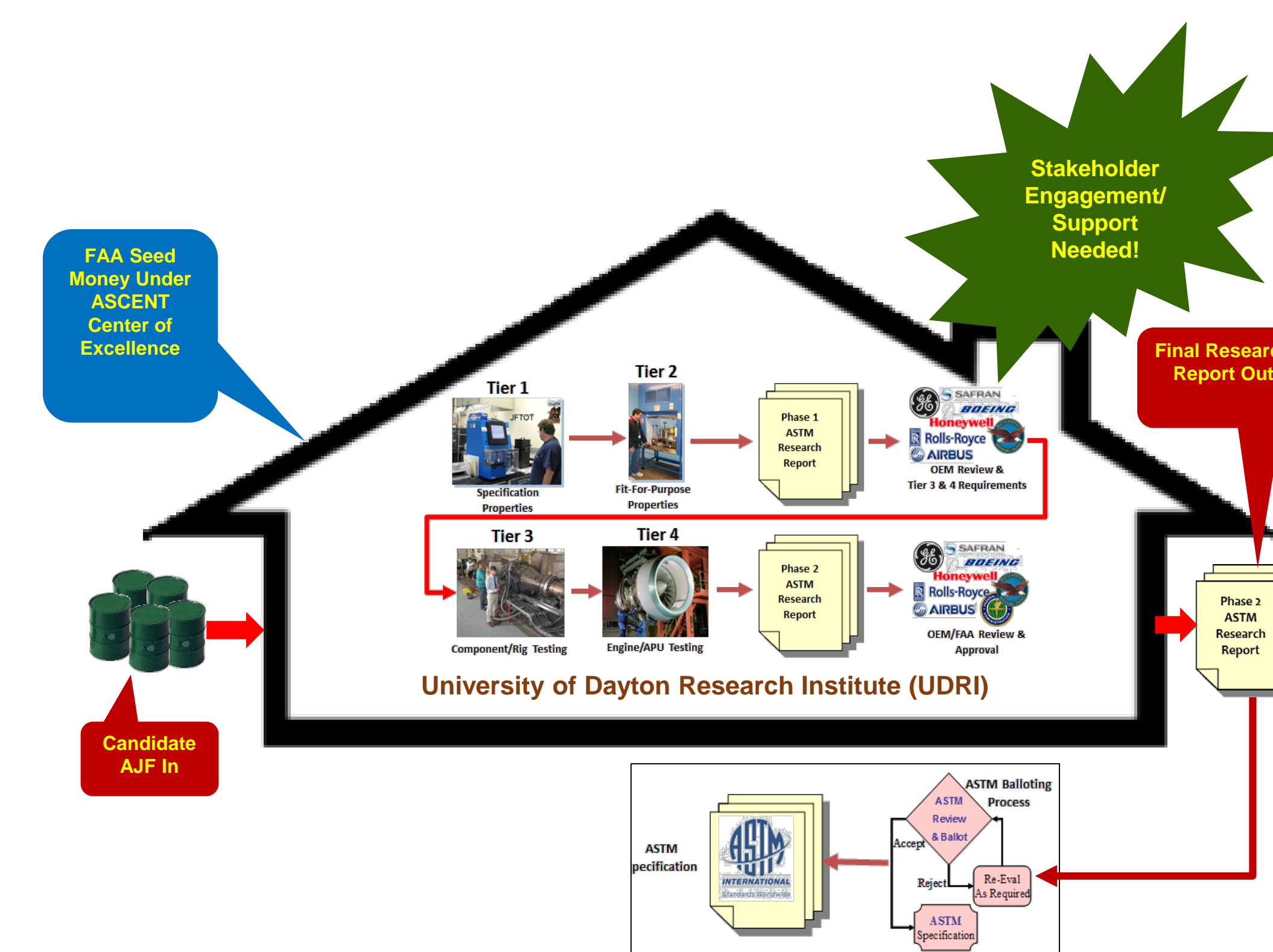
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Candidate Fuel Review Schedule



ASTM D4054 Clearinghouse



Next Steps

- Finish OEM subcontract initiation
- Tier 1 and 2 testing of Shell IH²
- Help with EU D4054 Clearinghouse development (SkyNRG)
- Method documentation for GCxGC techniques for generic annex