

Native Only



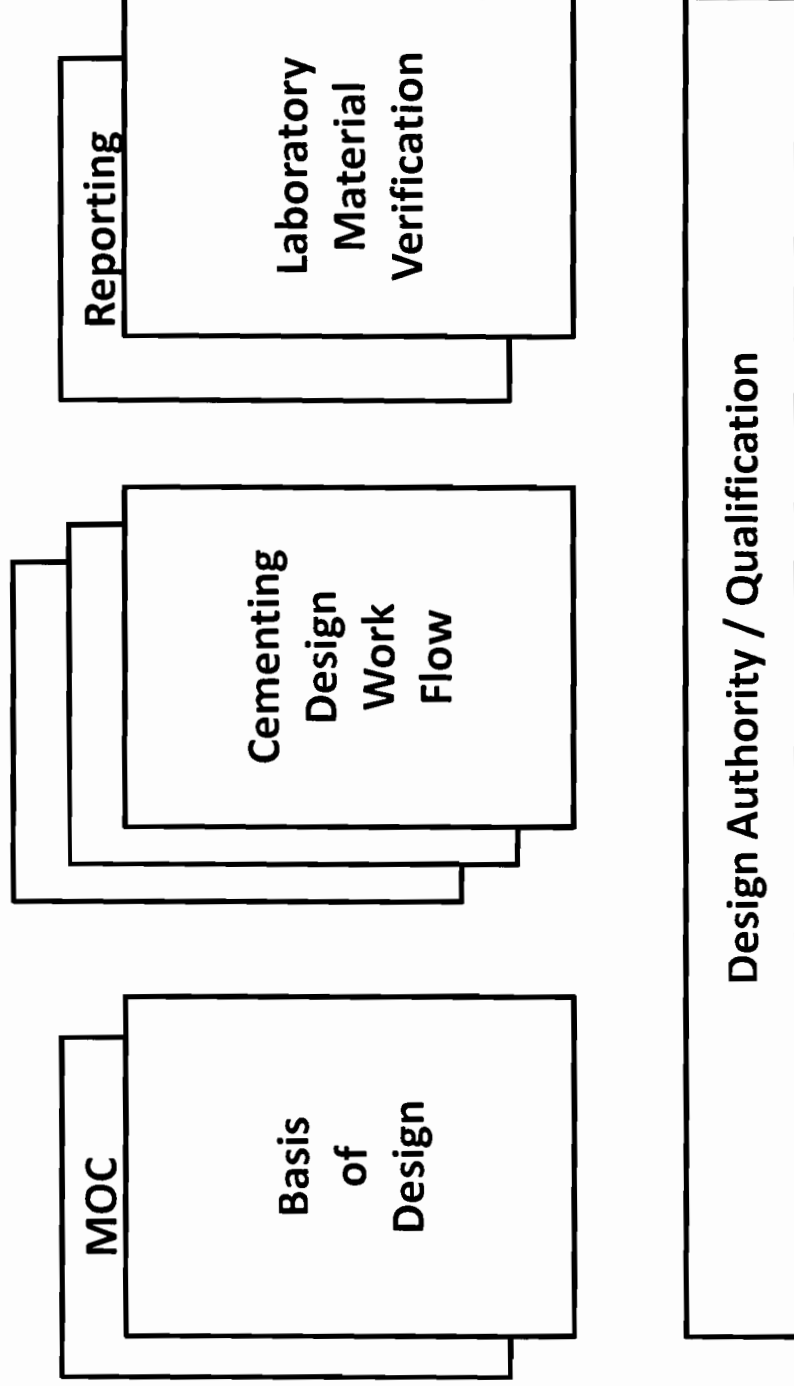
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Observations

Opportunities

- Basis of Design
- Design Authority/Qualification
- Cementing Design Workflow
- Laboratory Material Verification

Design System



Basis of Design

- No formal Basis of Design Standard (BOD) exists today
 - BOD to formalize agreement with client of challenges to be addressed by cementing service recommendation during well planning
 - BOD to provide site for capture and documentation of well hazards (red flags) identified during well construction
- BOD to provide means to continuously assess fitness of purpose of cementing recommendation by engineering interpretation against client challenges and well hazards (red flags) encountered while drilling
- No formal Management of Change Standard (MOC) exists today
 - Where engineering interpretation concludes well challenges or hazards reduce probability of success of cementing service recommendation to unacceptable level, formal MOC action to be taken and documented
- Recommendation:
 - Engage consultant for format, layout, and applicability to complement client well construction plans
 - Consult with customers to comprehend their design documentation and MOC process
 - Recognize varying perspective by market segment (DW IOC, land independent, etc)
 - Develop a flexible standard and build BOD and MOC capability into a comprehensive design process
 - Engage consultant for format, layout, and applicability to complement client well construction plans
- Resources:
 - Initiative leader
 - 60 days consultant time
 - Graphics, communication, and technical writer support
 - Deployment resources

Design Authority/Qualification

- Anyone with access to Halliburton letter head has means to provide cementing service and material recommendations on behalf of the corporation
- Technical staff development is generally completion of 2 year development program – there is no continuing technical education, continuing professional development requirement thereafter
 - Assignment to increasingly demanding projects is generally the development process
- Requirement is for expanded capability in the areas of cementing technology and its application in well construction (barrier theory, well control, etc.)
- Oversight and review of design work is desirable
- US professional registration is desirable
- Recommendation:
 - Develop matrix: tech market segments (DW, HPHT, OS, etc) X required competencies
 - Define and establish qualifications to prescribe cementing service and materials to each market segment
 - Develop course curriculums and continuing development requirements for staff designing and recommending cementing service and material procedures
 - Review local cementing organizations. Ensure that practitioners are competent and that oversight and review of design processes is provided and is in keeping with elements of basis of design – make adjustments as required
- Resources:
 - Initiative leader: curriculum, course design, and continuing education professional development focus
 - 180 days X 3 consultants time
 - Graphics, communication, and course technical writer support
 - Training and deployment resources
 - Oversight/supervision resources

Cementing Design Workflow

- Halliburton maintains great knowledge in the area of cementing service and material design within well construction activities
- Design process is broadly defined within Global HMS, is referenced within tech Manuals, and is highlighted in tech bulletins
- Additional requirements for design are maintained in local work methods that vary from location to location
- Opportunity exists for increased rigor in adherence to standards, processes, and organizational knowledge
- Recommendation:
 - Define work flow to bridge Basis of Design through Laboratory Design Verification
 - Develop phase 1 software to lead practitioners through adherence to the work flow.
 - Develop phase 2 software to incorporate artificial intelligence to apply engineering interpretation and adoption of best practices in well construction and cementing technology.
 - Deploy design software in sync with Basis of Design and Laboratory Design Verification Initiatives
- Resources:
 - Initiative leader
 - Workflow development workers/consultants
 - “Significant” software initiative resources
 - Deploy resources

Laboratory Material Verification

- There exists an array of cementing laboratory capabilities maintained within the organization
- Formal lab reports are the general method for communication of test results
- Many informal methods are used to communicate intermediate test data from lab tech to designer
- Material sampling is a critical element of cement testing
- Recommendation:
 - Establish sampling standards and work methods for obtainment of representative samples of bulk, sack and liquid materials
 - Install a degreed professional laboratory management organization
 - Define laboratory staff roles in execution of materials testing procedures and in interpretation and communication of observations obtained through execution of testing procedures.
 - Develop enhanced laboratory reporting capabilities.
 - Manage intermediate data weigh-up sheets, technician notes, etc.
 - Structure reporting to provide statement of cementing materials fitness for purpose to provide for job requirements defined within basis of design
 - Accelerate adoption of digital test data production
- Resources:
 - Initiative leader
 - 30 days consultant time
 - Graphics, communication, and technical writer support

Order of Address Considerations

- Develop risk matrix
- Assess return / effort ratio
- Recognize change management
- Based on above prioritize deploy:
 - Deepwater
 - Shelf
 - HPHT
 - Extended reach / horizontal
 - etc

Initiative Leadership

