IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

HESS CORPORATION,	§	
	§	
Plaintiff,	§	
	§	
v.	§	CIVIL ACTION NO. H-16-3415
	§	
SCHLUMBERGER TECHNOLOGY CORPORATION,	§	
	§	
Defendant.	§	

MEMORANDUM OPINION AND ORDER

I. Introduction

This is a breach of contract action arising from the failure of four Surface Controlled Subsurface Safety Valves ("SCSSVs") that Hess Corporation ("Hess" or "Plaintiff") purchased from Schlumberger Technology Corporation ("Schlumberger" or "Defendant"). Although Hess asserts claims for breach of contract pursuant to both Texas common law and the Texas Business and Commerce Code § 2.608,[1] the court has already held that the two claims are indistinguishable and that Chapter 2 of the Texas Business and Commerce Code provides the applicable law.[2]

Hess claims that Schlumberger breached the parties' contract by delivering four SCSSVs that did not conform to the terms of the

[1]Third Amended Complaint ("TAC"), Docket Entry No. 71, pp. 29-32 ¶¶ 92-104 (breach of contract pursuant to Texas Business and Commerce Code ¶ 2.608), and ¶¶ 105-109 (breach of contract). Page numbers for docket entries in the record refer to the pagination inserted at the top of the page by the court's electronic filing system.

[2]Memorandum Opinion and Order, Docket Entry No. 40, p. 6 n. 20.

parties' agreement at the time of delivery.[3] Hess claims that the SCSSVs installed in Wells D, B, and C were non-conforming at the time of delivery because they contained Metal Spring Energized ("MSE") Seal Assemblies that were not manufactured in compliance with §§ 6.3.2.2, 7.6.2, and 7.6.3(c) of the Eleventh Edition of Specification 14A published by the American Petroleum Institute ("API 14A, Eleventh Edition").[4] Hess claims that a second, replacement, SCSSV installed in Well B was non-conforming at the time of delivery because it contained MSE Seal Assemblies that were not manufactured in compliance with § 6.3.2.2. of API 14A, Eleventh Edition.[5] Hess claims that the alleged nonconformities caused the SCSSVs to fail, and that the failures shut in the wells, blocked production, and substantially impaired the value of the SCSSVs to Hess.[6] Hess seeks damages totaling $217,900,795.00, consisting of (1) costs to replace the failed SCSSVs, (2) expenses incurred to retrieve and replace the failed SCSSVs, and certain lost profits.[7]

Schlumberger contends that each SCSSV sold to Hess not only met all the requirements of the parties' agreement but also worked

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[3]TAC, Docket Entry No. 71, p. 1 ¶ 1.

[4]Hess's Contentions, Exhibit A to Amended Joint Pretrial Order, Docket Entry No. 163-1, pp. 2-3 ¶¶ 1-12.

[5]Id. at 4 ¶¶ 13-14. See also Trial Testimony ("TT") 3-20:7-20, Docket Entry No. 203, p. 20 (Hess's counsel stating that the only API 14A violation alleged with respect to Well B(2) is a violation of § 6.3.2.2).

[6]Id. at 4 ¶ 15.

[7]Hess's Motion for Judgment, Docket Entry No. 222, p. 45. See also Hess's Contentions, Exhibit A to Amended Joint Pretrial Order, Docket Entry No. 163-1, pp. 4-5 ¶¶ 16-23 (seeking $2.69 million).

downhole for more than the one-year warranty period. Schlumberger contends that the SCSSVS and the MSE Seal Assemblies inside them met or exceeded the requirements of API 14, Eleventh Edition, that the rosette springs inside the MSE Seals could not have caused the SCSSVs to fail, and that the SCSSVs failed because Hess misused them. Schlumberger also contends that Hess's claims are barred, released, and waived.[8]

This case was tried to the court from February 3 - 19, 2020. Pending before the court are Schlumberger Technology Corporation's Renewed Rule 52(c) Motion for Judgment on Partial Findings as to the Well B(2) Valve ("Schlumberger's Rule 52 Motion") (Docket Entry No. 212), and Hess Corporation's Motion for Entry of Judgment ("Hess's Motion for Judgment") (Docket Entry No. 222). After considering the evidence and arguments at trial, the pending motions and the response and replies thereto, the court makes the following findings of fact and conclusions of law pursuant to Federal Rule of Civil Procedure 52(a)(1). Pursuant to the Findings of Fact and Conclusions of Law, Hess's Motion for Judgment will be denied, and Schlumberger's Rule 52 Motion will be denied as moot.

[8]Schlumberger's Contentions, Exhibit B to Amended Joint Pretrial Order, Docket Entry No. 163-2, pp. 2-3.

II. Findings of Fact

A. Background

i. The Parties

1. Plaintiff, Hess Corporation, is a Delaware Corporation engaged in the exploration and production of oil and natural gas with its principal place of business in New York.[9]

2. Defendant, Schlumberger Technology Corporation, is a Texas Corporation with its principal place of business in Texas.[10]

ii. The Wells

3. Hess has completed six wells, named Well A, Well B, Well C, Well D, Well E, and Well H, in the Tubular Bells Field, a development located approximately 135 miles southeast of New Orleans, Louisiana, on the Outer Continental Shelf in the Mississippi Canyon Area of the Gulf of Mexico.[11]

4. The Tubular Bells Field is a co-owned development.[12]

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[9]Agreed Findings of Fact 1 and 2, Joint Proposed Findings of Fact, Exhibit C to Amended Joint Pretrial Order, Docket Entry No. 163-3, p. 2 (agreed findings of fact appear in black, Hess's proposed findings of fact appear in green, and Schlumberger's proposed findings of fact appear in blue). Subsequent references to this instrument will be referred to only as "Agreed Finding of Fact."

[10]Agreed Finding of Fact 3.

[11]Agreed Finding of Fact 5.

[12]Agreed Finding of Fact 8.

5. Hess is the operator owning a 57.14% working interest; Chevron U.S.A., Inc. is the non-operator owning the remaining 42.86% working interest.[13]

6. Pursuant to an October 4, 2011, Production Handling Agreement ("PHA") that Hess entered with The Williams Companies ("Williams"), wells in the Tubular Bells Field process hydrocarbons through the Gulfstar One floating production system.[14]

iii. Federally Required Safety Equipment

7. The Federal Government mandates that oil and gas producers drilling wells on the Outer Continental Shelf of the Gulf of Mexico install safety and pollution prevention equipment ("SPPE") to prevent an uncontrolled well flow in the event of an emergency. 30 C.F.R. § 250.801(a).

8. The Bureau of Safety and Environmental Enforcement, the agency charged with ensuring environmental protection relating to offshore oil and gas operations, generally considers subsurface safety valves and associated safety valve equipment to be an approved type of SPPE. 30 C.F.R. § 250.801(a)(4).[15]

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[13]Agreed Finding of Fact 9.

[14]Agreed Finding of Fact 10.

[15]Agreed Finding of Fact 16.

9. A subsurface safety valve is installed in the upper wellbore. A flapper on the downhole end of the valve controls hydrocarbon flow into the production tubing by stopping production from reaching the surface when the flapper is closed.[16]

10. Failing "safe" – meaning closed – helps prevent hydrocarbons from endangering personnel and equipment on the surface while also preventing potential environmental issues.[17]

11. The subsurface safety valve is an emergency safety device, not intended or designed for operational activities, such as production reduction, production stop, or as a backflow valve.[18]

12. The American Petroleum Institute ("API") publishes the specification API 14A, which provides the minimum acceptable requirements for subsurface safety valves.[19]

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[16]Agreed Finding of Fact 19.

[17]Agreed Finding of Fact 20.

[18]Stephen Dunn, TT 2-36:19-22, Docket Entry No. 203, p. 36 ("The only time we would normally close a safety valve would be for regulatory testing or perhaps for hurricane abandonment where we're abandoning a facility or in some emergency situations.").

[19]Agreed Finding of Fact 87. API 14A, Eleventh Edition, § 1, PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 10 ("This International Standard provides the minimum requirements for subsurface safety valves (SSSVs). . . "). See also David Hirth, TT 3-75:22-23, Docket Entry No. 204, p. 75; Andrew Johansson, TT 7-89:21-90:3, Docket Entry No. 208, pp. 89-90, and Patrick Hyde, TT 8-98:9-16, Docket Entry No. 209, p. 98.

iv. Hess's Request for SCSSV Bids

13. Hess prepared a bid package for SCSSVs for its wells in the Tubular Bells Field.[20]

14. Hess's bid package listed requirements, including that "SCSSVS shall be manufactured, tested, and monogrammed to the latest edition of API 14A."[21]

v. The SCSSVs Schlumberger Offered to Sell to Hess

15. Schlumberger responded to Hess's Bid Request by proposing to supply 5-1/2" TRC-II-15K safety valves, Part Number ("PN") 101091732, for Hess's wells.[22]

16. The TRC-II-15K SCSSV, PN 101091732, that is the subject of this lawsuit was designed in 2012, but most of its components were validated under an earlier valve design, the TRC-DH-15F, PN 23439-000-00001,[23] which passed validation requirements of API 14A, Tenth Edition, for Class 1 and 2 service, as confirmed by Southwest Research Institute ("SWRI") Test Report No. 1662, dated March 29, 2002.[24]

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[20]Agreed Finding of Fact 48.

[21]Agreed Finding of Fact 84. See also GoM - Tubular Bells & Llano 4 Bid SCSSV Requirements, April 16, 2012, p. 9 of 17, PTX 2, Exhibit 2 to Hess's Motion for Judgment, Docket Entry No. 222-2, p. 10.

[22]Agreed Findings of Fact 51-52.

[23]Rebuttal Expert Report of David E. McCalvin ("McCalvin Rebuttal Report"), p. 51, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, p. 58.

[24]Agreed Finding of Fact 152.

17. The design of the 5-1/2" TRC-II-15K SCSSV, PN 101091732, was therefore "grandfathered" from the design of the 5-1/2" TRC-DH-15F as explained in Schlumberger Justification Document, PDM #101134016, dated June 6, 2012.[25]

18. Grandfathering is a common means of interpreting and applying the Design Change section of API 14A for existing products.[26]

19. The Schlumberger 5-1/2" TRC-II-15K SCSSV, PN 101091732, is approximately 15 feet long, about 8-1/2" in diameter, and weighs about 1,600 pounds.[27]

20. The 5-1/2" TRC-II-15K SCSSV, PN 101091732, contains two separate rod piston systems connected to individual hydraulic pressure control lines.[28]

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[25]Andrew Johnston, TT 6-216:9-19, Docket Entry No. 207, p. 216. Hess FF 148 (recognizing that Schlumberger "grandfathered" the 5-1/2" TRC-II-15K safety valve to previously certified safety valves and components). See also Hess's Proposed Finding of Fact 151 (recognizing that "Schlumberger represented that it grandfathered the safety valve itself from the 'exceptionally reliable' TRC-DH safety valve, which Schlumberger designed and certified for a different client in the early 2000s.").

[26]McCalvin Rebuttal Report, pp. 25-27, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, pp. 32-34 ("Bridging and Grandfathering under API 14A").

[27]David Hirth, TT 2-101:10-13, Docket Entry No. 203, p. 101.

[28]David Hirth, TT 2-110:24-111:4, Docket Entry No. 203, pp. 110-111 (describing 2 pistons on the TRC-II-15K SCSSV).

21. By applying hydraulic pressure through the control lines, the rod piston systems may be used simultaneously or independently to open and close the valve.[29]

22. Each rod piston system includes five (5) Metal Spring Energized ("MSE") Seal Assemblies for a total of ten (10) in each SCSSV.[30]

23. The MSE Seal Assembly is cylindrical in shape and smaller in diameter than a quarter-dollar coin.[31]

24. When fitted onto a piston the MSE Seal Assembly is capable of holding pressure from one direction by creating a seal between the rod piston system and the bore through which the rod piston moves as the valve opens and closes.[32]

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[29]David Hirth, TT 2-111:13-25, Docket Entry No. 203, p. 111.

[30]David Hirth, TT 2-112:9-121:7, Docket Entry No. 203, pp. 112-121 (describing the MSE Seals in the TRC-II-15K SCSSV). See also Field Return Analysis Revision 7, p. 18 of 55, Exhibit 49 to Hess Corporation's Motion for Judgment, Docket Entry No. 222-51, p. 19.

[31]David Hirth, TT 2-117:18-21, Docket Entry No. 203, p. 117 (describing MSE seal as "cylindrical"). See also McCalvin Rebuttal Report, pp. 175-76, DX 71, Exhibit 28 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-31, pp. 62-63 (photos comparing size of MSE Seal and MSE Seal component parts to a quarter dollar coin).

[32]David Hirth, TT 2-119:22-120:12, Docket Entry No. 203, pp. 119-20.

25. MSE Seal Assemblies are comprised of the following four components: (1) a hat ring, (2) a MSE Assembly, (3) a V-ring, and (4) a female adapter.[33]

26. The MSE Assembly[34] consists of four components: (1) a jacket enclosing two metal rosette springs, (2) an inner (nose) rosette spring and (3) an outer (tail) rosette spring, and (4) a support ring separating the two rosette springs.[35]

27. When operating correctly the rosette springs press outward against the jacket forcing the outer surface of the jacket against the inner surface of the piston bore to form a seal between the piston and the piston bore.[36]

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[33]David Hirth, TT 2-115:18-119:17, Docket Entry No. 203, pp. 115-19 (describing MSE seals). See also Plaintiff's Demonstrative Exhibit 4 (demonstrative photo of MSE seal showing component parts); Andrew Johnston, TT 8-7:14-23, Docket Entry No. 209, p. 7; Field Return Analysis Revision 7, p. 18 of 55, Exhibit 49 to Hess Corporation's Motion for Judgment, Docket Entry No. 222-51, p. 19; Greene Tweed MSE Seal Assembly Drawings, DX 27 (MSE Seal with Teflon V-Ring), and DX 28 (MSE Seal with Chemraz V-Ring).

[34]An MSE Seal Assembly differs from an MSE Assembly which is a component of an MSE Seal Assembly.

[35]David Hirth, TT 2-116:16-117:8, Docket Entry No. 203, pp. 116-17. See also Plaintiff's Demonstrative Exhibit 4 (demonstrative photo of MSE seal showing component parts).

[36]David Hirth, TT 2-117:11-118:12, Docket Entry No. 203, pp. 117-18. See also David McCalvin, TT 8-215:22-24, Docket Entry No. 209, p. 215 (stating that the MSE jacket component of the MSE seal assembly is the actual seal).

28. The MSE Assembly jacket is graphite filled Teflon.[37]

29. The V-ring is a secondary sealing element.[38]

30. V-rings are made of either (1) Chemraz, a type of rubber resistant to chemicals; or (2) PTFE, a rigid plastic also known as Teflon.[39]

31. The MSE Seal Assembly with Chemraz V-ring is PN 100066417.[40]

32. The MSE Seal Assembly with PTFE (Teflon) V-ring is PN 23550-028-0001.[41]

33. Apart from the V-ring material, MSE Seal Assemblies PN 100066417 and PN 23550-028-00001, are the same.[42]

34. The sealing surfaces of the MSE Seal Assemblies PN 100066417 and PN 23550-028-00001 are composed entirely of non-metallic substances.[43]

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[37]Agreed Finding of Fact 162. See also David Hirth, TT 2-118:5-6, and 2-203:5-9, Docket Entry No. 203, pp. 118 and 203 (stating that MSE jackets are made of PTFE, a rigid plastic also known as Teflon).

[38]David Hirth, TT 2-119:1-2, Docket Entry No. 203, p. 119.

[39]David Hirth, TT 2-155:24-156:7, Docket Entry No. 203, pp. 155-56.

[40]Andrew Johnston, TT 6-214:1-3, Docket Entry No. 207, p. 214. See also David McCalvin, TT 8-186:22-187:4, Docket Entry No. 209, pp. 186-87.

[41]Andrew Johnston, TT 6-213:24-214:1, Docket Entry No. 207, pp. 213-14. See also David McCalvin, TT 8-186:22-187:4, Docket Entry No. 209, pp. 186-87.

[42]Andrew Johnston, TT 6-214:4-7, Docket Entry No. 207, p. 214.

[43]Patrick Hyde, TT 8-88:22-89:8, Docket Entry No. 209, pp. 88-

(continued...)

35. Schlumberger successfully completed API 14A dynamic qualified testing of MSE Seal Assemblies, PN 100066417 and PN 23550-028-00001, in February of 2004, as documented in a report numbered ET20049950.[44]

36. The Bill of Materials listing all of the components needed to build a SCSSV, PN 101091732, lists both types of MSE Seal Assembly, Chemraz, PN 100066417, and Teflon, PN 23550-028-00001.[45]

B. The Parties' Agreement for SCSSVs

37. Hess agreed to purchase Schlumberger's 5-1/2" TRC-II-15K SCSSVs, PN 101091732, for $572,430.00 per valve.[46]

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[43](...continued)
89. See also David Hirth, TT 2-203:5-9, Docket Entry No. 203, p. 203 (**Q**: Now, the seal in this case is the plastic jacket that we talked about, correct? **A**. That is correct. **Q**. It's obviously, a non-metallic seal? **A**. Correct.").

[44]Andrew Johnston, TT 6-213:12-214:10, Docket Entry No. 207, pp. 213-14. See also David McCalvin, TT 8-186:17-187:4, Docket Entry No. 209, pp. 186-87; McCalvin Rebuttal Report, pp. 65-71, DX 71, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-20, pp. 73-78 (describing validation of MSE Seals used in Schlumberger TRC-II-15K SCSSV); DX 29, Test Plan/Report - TRC SCSSV Hydraulic Seal Dynamic Test, ET # ET20049950, February 6, 2004, Exhibit 21 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-23; and David Hirth, TT 2-180:11-13, Docket Entry No. 203, p. 180 (acknowledging that the MSE Seal Assemblies were API qualified in 2004).

[45]Andrew Johnston, TT 6-217:24-218:5, TT 7-18:17-20:10, 7-44:20-45:4, Docket Entry No. 207, pp. 217-18, and Docket Entry No. 208, pp. 18-20, 44-45 (explaining what a Bill of Materials is and how the industry uses part numbers to maintain control over various designs). See also, DX 33, Bill of Materials for 5-12" TRC-II-15K SCSSV, PN 101091723.

[46]Jason Sapp, TT 5-70:1-22, Docket Entry No. 206, p. 70.

i. The Commercial Agreement

38. The parties memorialized their agreement regarding Schlumberger's sale of 5-1/2" TRC-II-15K SCSSVs to Hess in Commercial Agreement Number 46000010410, effective April 18, 2012.[47]

39. The Commercial Agreement required Schlumberger to provide Hess with SCSSVs that met "the latest editions of" certain specifically enumerated and other generally identified industry standards and specifications, including American Petroleum Institute Specification for Subsurface Safety Valve Equipment ANSI/API Specification 14A ("API 14A") — a commonly accepted industry specification for subsurface safety valve equipment.[48]

40. The Commercial Agreement is an unambiguous, valid, and enforceable contract between the parties.[49]

ii. Exhibit A to the Commercial Agreement—Scope of Work

41. Exhibit A to the Commercial Agreement titled "Scope of Work General" incorporates by reference Revision Five of the Tubular Bells Bid Request dated April 16, 2012.[50]

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[47]Commercial Agreement, PTX 1, Exhibit 1 to Hess's Motion for Judgment, Docket Entry No. 222-1.

[48]Agreed Finding of Fact 64.

[49]Agreed Finding of Fact 63.

[50]Agreed Finding of Fact 83. See also Commercial Agreement (continued...)

42. Revision Five of the Tubular Bells Bid Request states that "SCSSVs shall be manufactured, tested, and monogrammed to the latest edition of API 14A."[51]

iii. Exhibit J to the Commercial Agreement-Quality Standards

43. Exhibit J to the Commercial Agreement sets out general Quality Standards agreed upon by the parties.[52]

44. Section 2.4 of Exhibit J to the Commercial Agreement states that Schlumberger "shall demonstrate its Quality Assurance of activities through all stages of the Agreement in a contract specific Quality Plan which upon [Hess's] request shall be submitted for [Hess's] review within 4 weeks of contract award."[53]

iv. The Quality Control Plan

45. The Quality Control Plan ("QCP"), 101087146 Revision AA, for the Tubular Bells safety valves was approved by Schlumberger and Hess on March 22, 2012.[54]

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[50](...continued)
Exhibit A, PTX 1, Exhibit 1 to Hess's Motion for Judgment, Docket Entry No. 222-1, p. 12.

[51]Agreed Finding of Fact 84. See also GoM - Tubular Bells & Llano 4 Bid SCSSV Requirements, p. 9 of 17, PTX 2, Exhibit 2 to Hess's Motion for Judgment, Docket Entry No. 222-2, p. 10.

[52]Commercial Agreement, Exhibit J, PTX 1, Exhibit 1 to Hess's Motion for Judgment, Docket Entry No. 222-1, pp. 71-81.

[53]Id. at § 2.4, Docket Entry No. 222-1, p. 75.

[54]Agreed Finding of Fact 128. See also Quality Control Plan, DX 16, Exhibit 15 to Schlumberger's Response to Hess's Motion for (continued...)

46. The QCP states that "CHPC [Completions Houston Product Center] Quality Management Systems are certified to ISO 9001 and ISO 29001. CHPC is also certified by the American Petroleum Institute to API Spec Q1 and authorized to apply the API monogram to products manufactured in accordance with API Specs 14A, 14L, and 11D1. This QCP includes all standard manufacturing requirements."[55]

47. Peter Koopmans approved the QCP on behalf of Hess.[56]

v. The Inspection Matrix

48. The Inspection Matrix for QCP 101087146 Revision AA for the Tubular Bells SCSSVs was approved by Schlumberger and by Hess on June 3, 2013.[57]

49. Chad Brasseaux approved the Inspection Matrix on behalf of Hess.[58]

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[54](...continued)
Judgment, Docket Entry No. 223-16.

[55]Agreed Finding of Fact 129. See also Quality Control Plan, DX 16, Exhibit 15 to Schlumberger's Response to Hess's Motin for Judgment, Docket Entry No. 223-16, p. 2; Andrew Johnston, TT 6-207:24-208:12, Docket Entry No. 207:207-08 (defining "CHPC" as Schlumberger's Completions Houston Product Center).

[56]Agreed Finding of Fact 130.

[57]Agreed Finding of Fact 131. Inspection Matrix, DX 17, Exhibit 16 to Schlumberger's Motion for Judgment, Docket Entry No. 223-17.

[58]Agreed Finding of Fact 132.

50. The Inspection Matrix assigns a Class to each part and identifies the possible Class designations as 1. Critical, 2. Non-Critical, 3. Elastomer, or 4. Hardware.[59]

51. The Inspection Matrix identifies the MSE Seal Assemblies used in the SCSSVs purchased by Hess as PN 100066417 and PN 23550-028-0001.[60]

52. The Inspection Matrix designates MSE Seal Assembly, PN 10006417, as Class 3, Elastomer, not as Class 1, Critical.[61]

53. The Inspection Matrix designates MSE Seal Assembly, PN 23550-028-00001, as Class 3, Elastomer, not as Class 1, Critical.[62]

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[59]Inspection Matrix, p. 1, DX 17, Docket Entry No. 223-17, p. 2. See also Andrew Johnston, TT 7-33:13-34:21, and 7-39:25-40:5, Docket Entry No. 208, pp. 33-34, and 39-40 (stating that Schlumberger's clients have full control as to these class definitions).

[60]Inspection Matrix, DX 17, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17. See also Andrew Johnston, TT 7-44:20-45:7, Docket Entry No. 208, pp. 44-45.

[61]Inspection Matrix, p. 2, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17, p. 3. See also Andrew Johnston, TT 7-40:14-41:1, Docket Entry No. 208, pp. 40-41.

[62]Inspection Matrix, p. 1, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, , Docket Entry No. 223-17, p. 2. See also Andrew Johnston, TT 7-34:22-35:4, Docket Entry No. 208, pp. 34-35.

vi. The Master Service Contract

54. The Commercial Agreement incorporates by reference Master Service Contract No. 7525 ("MSC") entered into by Hess and Schlumberger effective February 6, 2000.[63]

55. The MSC is an unambiguous, valid, and enforceable contract between the parties.[64]

56. The MSC states that it "shall control and govern all work performed by [Schlumberger] for [Hess], and shall be deemed to be incorporated in full in every subsequent oral and/or written work or purchase order, service agreements or other project documents."[65]

57. The MSC contains the following express warranty:

> [Schlumberger] warrants that all equipment, products, materials and other items furnished hereunder shall: (1) be new if specified by [Hess]; (2) be free from defects in design, materials, fabrication and other workmanship; and (3) conform to [Hess]'s specifications, drawings or other descriptions contained in the applicable service agreement, purchase order, work order or other project document. [Schlumberger] warrants that all work and other services performed hereunder (whether by [Schlumberger], its subcontractors or other parties for whom it is responsible) shall be free from all faults and defects and of a quality consistent with the prevailing standards of workmanship for experienced contractors with expertise in the particular type of work or service being performed In the event of a breach of any of the foregoing warranties, [Schlumberger] shall, promptly after receipt of written notice thereof from

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[63]Agreed Finding of Fact 69-70. See also Commercial Agreement, § 2, PTX 1, Exhibit 1 to Hess's Motion for Judgment, Docket Entry No. 222-1, pp. 4-5.

[64]Agreed Finding of Fact 68.

[65]MSC, § 1, Exhibit 68 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-72, p. 3.

> [Hess] and at [Schlumberger]'s sole cost, repair or replace (as determined by Schlumberger) all applicable equipment, products, materials, work, services, and other items necessary to cure the breach of warranty, as confirmed by [Hess], whose approval shall be unreasonably withheld.[66]

58. The MSC limits Schlumberger's warranties to "a period of one (1) year after [Schlumberger]'s delivery and/or installation (if performed by Schlumberger) . . ."[67]

59. The MSC expressly and conspicuously disclaims all other express or implied warranties:

> [SCHLUMBERGER] MAKES NO OTHER WARRANTY AS TO PRODUCTS, WORKMANSHIP OR MERCHANTABILITY, WHETHER EXPRESSED OR IMPLIED (INCLUDING, WITHOUT LIMITATION, THAT THE PRODUCTS OR SERVICES SHALL BE FIT FOR ANY PARTICULAR PURPOSE), EXCEPT AS EXPRESSLY STATED HEREIN OR IN AN EXPRESS AMENDMENT HERETO.[68]

60. Section 13 of the MSC contains a series of indemnity and release provisions.[69]

61. Section 13(b) of the MSC provides that both Hess and Schlumberger agreed that the "release" and "indemnity obligations" were:

> Without regard to the negligence . . . breach of warranty . . . [or] defective condition (whether pre-existing or otherwise) of any . . . equipment, materials, tools, or other item whatsoever" and that "it is the specific and expressed intent and agreement of the company and the contractor that all release, defense, hold harmless and

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[66]Id., Docket Entry No. 223-72, pp. 3-4.

[67]Id., Docket Entry No. 223-72, p. 4.

[68]Id.

[69]Agreed Finding of Fact 76.

> indemnity obligations and other liabilities assumed by [Hess] and [Schlumberger] respectively under Sections 13(c) and (d) shall be without regard to the negligence (whether sole, joint, or concurrent, active or passive), breach of warranty, strict liability, premises liability, defective condition (whether pre-existing or otherwise) of any facilities, equipment, materials, tools, or other item whatsoever, the unseaworthiness of any vessel or unairworthiness of any aircraft and appurtenant equipment furnished, chartered, operated or otherwise utilized hereunder or any other fault of the indemnified parties or any other party excepting only the gross negligence, recklessness or willful misconduct of the [Hess] group or [Schlumberger] group.[70]

62. Section 13(c)(1) of the MSC provides in relevant part that Hess

> SHALL FULLY RELEASE, DEFEND, INDEMNIFY AND HOLD [SCHLUMBERGER] HARMLESS FROM AND AGAINST ALL CLAIMS BROUGHT BY OR ON BEHALF OF ANY PARTY OR PERSON FOR ANY AND ALL:
>
> . . .
>
> (iii) DAMAGE TO OR LOSS OF PROPERTY OF [HESS] AND ITS EMPLOYEES, WHETHER REAL OR PERSONAL (INCLUDING, WITHOUT LIMITATION, PRODUCTION AND DRILLING EQUIPMENT, WELLBORE, CASING, SUBSURFACE RESERVOIRS AND ANY OIL AND GAS OR OTHER HYDROCARBON SUBSTANCES LOCATED THEREIN) WHENEVER AND WHEREVER OCCURRING, ARISING DIRECTLY OR INDIRECTLY OUT OF OR IN ANY WAY INVOLVING [SCHLUMBERGER]'S WORK AND OTHER OPERATIONS (INCLUDING ACTS AND OMISSIONS), THE PRESENCE AT [HESS]'S WORK LOCATIONS HEREUNDER OF [SCHLUMBERGER]'S EMPLOYEES AND ALL VEHICLES, VESSELS, EQUIPMENT, TOOLS, MATERIALS, AND OTHER ITEMS WHATSOEVER FURNISHED, DELIVERED, STORED, OR OTHERWISE HANDLED BY [SCHLUMBERGER] (INCLUDING ALL TRANSPORTATION OF PERSONNEL AND PROPERTY TO AND FROM THE WORK LOCATIONS AND LOADING AND UNLOADING OPERATIONS), WITHOUT LIMIT AND REGARDLESS OF CAUSE OR FAULT, AS PARTICULARLY DESCRIBED IN SECTION 13(b) ABOVE. . . .[71]

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[70]Agreed Finding of Fact 51 (quoting MSC, § 13(b), Docket Entry No. 223-72, p. 7).

[71]MSC, § 13(c)1, Docket Entry No. 223-72, pp. 7-8.

63. Section 13(c)(2) provides in relevant part that Hess

SHALL FULLY RELEASE, DEFEND, INDEMNIFY AND HOLD [SCHLUMBERGER] HARMLESS ON ACCOUNT OF LOSS OF OR DAMAGE TO [SCHLUMBERGER]'S PROPERTY, EQUIPMENT, MATERIALS, OR PRODUCTS WHEN SUCH LOSS OR DAMAGE OCCURS:

(i) IN THE WELLBORE OR BELOW THE ROTARY TABLE (E.G. IF [SCHLUMBERGER]'S EQUIPMENT OR OTHER PRODUCT BECOMES IRRETRIEVABLE, AS DETERMINED BY [HESSS] AS OPERATOR OF THE WELL)[;]

. . .

(iv) WHILE LOCATED AT THE WELL SITE WHEN [SCHLUMBERGER] PERSONNEL AR ENOT PRESENT; OR

(v) WHILE BEING USED BY ANY PERSON OTHER THAN A MEMBER OF [SCHLUMBERGER] GROUP, WHETHER IN AN EMERGENCY OR OTHERWISE;

. . .

In the event any of Contractor's tools, instruments or other equipment are damaged, lost or determined to be irretrievable by [Hess], as operator of the well, [Hess] shall reimburse [Schlumberger] for the reasonable, documented costs to repair or replace said equipment, whichever is less (or if said equipment is lost or otherwise determined to be irretrievable by [Hess], the costs to replace same). . .[72]

64. Section 13(i) provides that

IN THE EVENT THAT EITHER PARTY HERETO IS REQUIRED TO SEEK JUDICIAL ENFORCEMENT OF THE CONTRACTUAL INDEMNITIES AND OTHER OBLIGATIONS AND LIABILITIES OF THE OTHER PARTY, THE PARTY ENTITLED TO SUCH PROTECTION HEREUNDER SHALL RECOVER ALL REASONABLE ATTORNEYS' FEES, COURT COSTS AND OTHER EXPENSES INCURRED IN CONNECTION WITH PURSUING THAT CLAIM THROUGH LITIGATION OR OTHERWISE.[73]

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[72]Id. § 13(c)2, Docket Entry No. 223-72, p. 8.

[73]Id. § 13(c)2(i), Docket Entry No. 223-72, p. 13.

C. Hess Failed to Establish by a Preponderance of the Credible Evidence that It Justifiably Revoked Its Acceptance of the Four SCSSVs

65. The SCSSVs at issue are Serial Numbers: (1) H13S-0010 installed in Well D; (2) H13S-0011 installed in Well B; (3) H13S-0022 installed in Well C; and (4) H13S-0025, the second SCSSV installed in Well B after H13S-0011 failed.

i. Hess Established by a Preponderance of the Credible Evidence that Its Acceptance of the SCSSVs was Induced by Schlumberger's Assurances that They Complied with API 14A, and by the Inherent Difficulty of Discovering the Alleged Non-Conformities

a. Hess's 2013 Acceptance of the Four SCSSVs

66. Schlumberger produced each of the SCSSVs sold to Hess in Houston, Texas, at its CHPC facility.[74]

67. A Valve Data Book maintained for each SCSSV documents the production of each SCSSV: (1) H13S-0010 (Well D);[75] (2) H13S-0011 (Well B);[76] (3) H13S-0022 (Well C);[77] and (4) H13S-0025 (Well B(2)).[78]

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[74]Agreed Finding of Fact 165.

[75]DX 23, Excerpts included in Exhibit 19 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-20.

[76]DX 37, Excerpts included in Exhibit 23 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-25.

[77]DX 39, Excerpts included in Exhibit 24 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-26.

[78]DX 46, Excerpts included in Exhibit 25 to Schlumberger's (continued...)

68. Each SCSSV Schlumberger produces undergoes three screening tests before being installed in a well: (1) a Functional or Factory Acceptance Test ("FAT") performed at Schlumberger's CHPC in Houston, Texas; (2) a make-up test performed in Schlumberger's service center in Houma, Louisiana; and (3) a deck test performed on site prior to installation in the well.[79]

69. Each of the SCSSVs at issue passed a FAT as follows: (1) H13S-0010 (Well D) on April 20, 2013;[80] (2) H13S-0011 (Well B) on April 9, 2013;[81] (3) H13S-0022 (Well C) on May 15, 2013;[82] and (4) H13S-0025 (Well B(2)) on September 13, 2013.[83]

70. Schlumberger stamped the API 14A monogram on each SCSSV as follows: (1) H13S-0010 (Well D) on April 22, 2013;[84] (2) H13S-

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[78](...continued)
Response to Hess's Motion for Judgment, Docket Entry No. 223-27.

[79]Dwayne May, TT 4-9:21-10:12, Docket Entry No. 205, pp. 9-10 (listing the screening tests Schlumberger performed on each SCSSV).

[80]Valve Databook, DX 23, Excerpts included in Exhibit 19 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-20, p. 4.

[81]Valve Databook, DX 37, Excerpts included in Exhibit 23 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-25, p. 5.

[82]Valve Databook, DX 39, Excerpts included in Exhibit 24 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-26, p. 4

[83]Valve Databook, DX 46, STC-00255935.

[84]Agreed Finding of Fact 176.

0011 (Well B) on April 11, 2013;[85] (3) H13S-0022 (Well C) on May, 17, 2013;[86] and (4) H13S-0025 (Well B(2)) on September 13, 2013.[87]

71. Schlumberger issued a Certificate of Compliance for each SCSSV: (1) H13S-0010 (Well D) on April 24, 2013;[88] (2) H13S-0011 (Well B) on April 12, 2013;[89] (3) H13S-0022 (Well C) on May, 16, 2013;[90] and (4) H13S-0025 (Well B(2)) on September 17, 2013.[91]

72. By stamping the API 14A monogram onto each SCSSV, and providing Hess a Certificate of Compliance for each SCSSV, Schlumberger assured Hess that each SCSSV complied with API 14A.

73. Once each SCSSV was stamped with the API 14Am monogram, Schlumberger sent Hess a field ticket indicating that the SCSSV had been completed, and that the risk of loss passed from Schlumberger to Hess as follows: (1) H13S-0010 (Well D) on April 25, 2013;[92] (2) H13S-0011 (Well B) on April 18, 2013;[93] (3) H13S-0022 (Well C)

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[85]Agreed Finding of Fact 208.

[86]Agreed Finding of Fact 238.

[87]Agreed Finding of Fact 421.

[88]Agreed Finding of Fact 175.

[89]Agreed Finding of Fact 207.

[90]Agreed Finding of Fact 237.

[91]Agreed Finding of Fact 420.

[92]Hess Finding of Fact 178; Schlumberger Finding of Fact 179.

[93]Hess Finding of Fact 211; Schlumberger Finding of Fact 210.

on September 18, 2013;[94] and (4) H13S-0025 (Well B(2)) on October 9, 2013.[95]

74. Hess accepted each SCSSV by acknowledging receipt of the field tickets as follows: (1) H13S-0010 (Well D) on April 25, 2013;[96] (2) H13S-0011 (Well B) on April 18, 2013;[97] (3) H13S-0022 (Well C) on September 18, 2013;[98] and (4) H13S-0025 (Well B(2)) on October 9, 2013.[99]

75. Following Hess's acknowledgment of each field ticket, Schlumberger invoiced Hess, and Hess paid Schlumberger $572,430.00 for each of the four SCSSVs.[100]

76. Hess's acceptance of the SCSSVs was induced by Schlumberger's assurance that each SCSSV complied with API 14A by passing a Functional Acceptance Test, bearing a stamped API 14A monogram, and receiving a Certificate of Compliance.

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[94]Hess Finding of Fact 240; Schlumberger Finding of Fact 241 (placing date of acceptance on September 17, 2013).

[95]Agreed Finding of Fact 424.

[96]Hess Finding of Fact 178; Schlumberger Finding of Fact 179.

[97]Hess Finding of Fact 211; Schlumberger Finding of Fact 210.

[98]Hess Finding of Fact 240; Schlumberger Finding of Fact 241 (placing date of acceptance on September 17, 2013).

[99]Agreed Finding of Fact 424.

[100]Agreed Findings of Fact 197 (SCSSV H13S-0010 installed in Well D); 227 (SCSSV H13S-0011 installed in Well B); 267 (SCSSV H13S-0022 installed in Well C), and 425 (SCSSV H13S-0025 installed in Well D).

77. Hess's acceptance of each of the four SCSSVs manufactured in 2013 was also induced by the difficulty of discovering the alleged non-conformity with the MSE Assemblies because the MSE Assemblies could not have been dimensionally inspected without disassembling the entire SCSSV.

b. Hess's Second Acceptance of SCSSV H13S-0025 Following Retrofit of MSE Seal Assemblies

78. In January 2016 Schlumberger issued a worldwide recall of TRC-II 10K and 15K safety valves in inventory for retrofit with reproductions of MSE Seal Assemblies PN 23550-028-00001 and PN 100066417 manufactured to new drawings.[101]

79. The recall included SCSSV H13S-0025, which Hess had in inventory and later became the second SCSSV installed in Well B, i.e., Well B(2).[102]

80. The retrofit of SCSSV H13S-0025 was performed at Schlumberger's CHCP in Houston under Return Authorization Number ("RAN") 02284.[103]

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[101]A. LaDouceur, TT 5-37:20-38:24, 5-55:21-56:10, Docket Entry No. 206, pp. 37-38, and 55-56.

[102]Agreed Finding of Fact 427-28. See also Andrew Johnston, TT 7:131:6-16, Docket Entry No. 208, p. 131.

[103]Agreed Finding of Fact 426. See also Andrew Johnston, TT 7-155:2-12, Docket Entry No. 208, p. 155 (explaining that RAN is an abbreviation of Return Authorization Number).

81. Schlumberger successfully completed API 14A dynamic qualification testing for Reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, in January and February of 2016 as documented in report numbered ET 201600464.[104]

82. On March 2, 2016, Schlumberger replaced the MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, in SCSSV H13S-0025 with the 2016 reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417.[105]

83. On March 3, 2016, SCSSV H13S-0025 successfully passed a Functional Acceptance Test.[106]

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[104]Andrew Johnston, TT 7-128:1-132:16 (explaining that the 2016 Reproduction MSE Seal Assemblies went through four separate valve qualifications and therefore were validated four separate times), 8-16:23-17:8 (explaining that the effort to reverse engineer the rosette spring resulted in numerous iterations, i.e., drawings), Docket Entry No. 208, pp. 128-32, and Docket Entry No. 209, p. 17. See also David McCalvin, TT 8-186:17-187:4; McCalvin Rebuttal Report, pp. 128-31, DX 71, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, pp. 16-18 (describing validation of MSE Reproduction Seals in 2016); DX 42, MSE Investigation Seal Life Cycle Qualification, ET# 201600464, January 22 to February 16, 2016, p. 15 § 8.1.1 ("The MSE seals have successfully passed a test replicating API 14A 12th edition V1 lifecycle test and will be rated to 15ksi at 40-300°F."); and DX 44, Engineering Report TRC-II MSE Lifecycle Qualification Prepared for bp, p. 15 § 8.1.1 ("The MSE seals have successfully passed a test replicating API 14A 12th edition V1 lifecycle test and will be rated to 15ksi at 40-300°F."); David Hirth, TT 3-21:4-6, Docket Entry No. 204, p. 21 ("Schlumberger performed an API qualification test on this reproduction seal and spring. And according to Schlumberger, it passed.").

[105]Agreed Findings of Fact 428-29.

[106]Valve Databook, DX 46, STC-00255787-00255790, Exhibit 25 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry (continued...)

84. On March 5, 2016, Schlumberger issued and Hess received a Certificate and Shipping Form for SCSSV H13S-0025, which identifies API 14A, Eleventh Edition, as the reference standard for retrofit of the SCSSV installed in Well B(2).[107]

85. On March 5, 2016, Hess accepted delivery of the retrofit SCSSV H13S-0025.[108]

86. Hess's acceptance of the retrofit SCSSV H13S-0025 was induced by Schlumberger's assurance that the retrofit SCSSV complied with API 14A, Eleventh Edition, by passing a Functional Acceptance Test, and receiving a Certificate and Shipping Form assuring Compliance with API 14A, Eleventh Edition.

87. Hess's acceptance of retrofit SCSSV H13S-0025 was also induced by the difficulty of discovering the alleged failure of the MSE Seal Assemblies to conform with API 14A, Eleventh Edition.

ii. Hess Established by a Preponderance of the Credible Evidence that It Timely Revoked Acceptance of the SCSSVs

a. SCSSV H13S-0010 Installed in Well D

(I) Installation, Production, and Failure

88. On April 7, 2014, SCSSV H13S-0010 was installed in Well D at a depth of approximately 8,700 feet below sea level.[109]

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[106](...continued)
No. 223-27, pp. 4-7.

[107]Agreed Findings of Fact 446-47. See also Certificate and Shipping Form, DX 46, p. STC-00255791.

[108]Agreed Finding of Fact 448.

[109]Agreed Findings of Fact 202-203.

89. Production from Well D began on January 14, 2015.[110]

90. Production from Well D continued until July 22, 2015, when SCSSV H13S-0010 experienced a non-command closure that blocked all production.[111]

(II) Investigation of Failure

91. In January 2016 Schlumberger initiated an investigation into the failure of SCSSV H13S-0010 installed in Well D.[112]

92. On or around January 27, 2016, SCSSV H13S-0010 was retrieved from Well D and delivered to Schlumberger's CHPC.[113]

93. Schlumberger's investigation into the failure of SCSSV H13S-0010 resulted in eight separate drafts (an initial draft and seven revised drafts) of an investigative report titled Field Return Analysis ("FRA").

94. The FRA only addressed the failure of SCSSV H13S-0010 installed in Well D.

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[110]Agreed Finding of Fact 204.

[111]Field Return Analysis Revision 7 ("FRA Rev. 7"), p. 4 of 55, PTX 556, Exhibit 49 to Hess's Motion for Judgment, Docket Entry No. 222-51, p. 5.

[112]Agreed Finding of Fact 301.

[113]Agreed Findings of Fact 299-300.

95. The seventh and final revision of the FRA is dated April 29, 2016 ("FRA Rev. 7).[114]

96. FRA Rev. 7 concluded that "[t]he primary root cause of the failure is the quality of the MSE Seal."[115]

97. "Root cause" is the cause that initiated the failure.[116]

98. FRA Rev. 7 explained its conclusion as follows:

> On July 23, 2015, a Valve (not H13S-0010) experienced a leak coming from the bore into hydraulic port A. Once the Valve returned to CHPC the leakage was replicated and the Valve was then disassembled. Various MSE Seal Sets, specifically, the MSE Seal Sets that seal against bore pressure, were found to be extruded and allowed a free flow of fluid.
>
> Extensive testing was performed in search for the root cause. The root cause identified was that the quality of the seal, specifically the spring within the MSE seal, delivered by the supplier has been compromised.
>
> It was found that the supplier was no longer providing the same qualified spring as to the 2004 MSE Seal Set qualification. The non-conformance in the spring altered the performance of the MSE and compromised the sealing capability of the seal stack. Corrective action has been implemented to ensure the quality of the product through a controlled manufacturing and quality process at the supplier, as well as at CHPC. These critical components now all require 100% dimensional inspection. The 100% critical dimension check of the MSE Assembly is performed by both Greene Tweed and [Schlumberger]. The dimensional check by [Schlumberger] is documented and recorded in

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[114]FRA Rev. 7, p. 40 of 55, PTX 556, Exhibit 49 to Hess's Motion for Judgment, Docket Entry No. 222-51, p. 41.

[115]FRA Rev. 7, p. 3 of 55, Docket Entry No. 222-51, p. 4. See also id. at 28 of 55 ("The primary root cause is the MSE Seal Spring."), and 39-40 of 55 (same), Docket Entry No. 222-51, pp. 29, 40-41.

[116]Dwayne May, TT 4-14:2-13, Docket Entry No. 205, p. 14.

> eQuality ([Schlumberger]'s internal traceability system). Greene Tweed provides their inspection documentation to us as well. [Schlumberger] previously only performed a visual inspection. Greene Tweed performed sample inspections on each production batch. The results were not documented for traceability.
>
> In this particular Valve, H13S-0010, it was determined that the seals were using the suspect spring. As seen in Figure 20, the Spring was not matching the required dimensions. This would decrease the reliability of the MSE Seal, allowing for leak into the back pressure zone and cause secondary damage through extrusion. Once extruded, the seals are compromised.
>
> We know that the MSE seals from 2014 and 2015 were not per our specifications based on physical analysis of the seal. Based on the ongoing MSE Seal investigation, the dates for the suspect MSE Seals now includes 2012 and 2013. Because this was only discovered during this investigation, this has not been shared previously with HESS. Continued investigation is in process to identify the exact timeline, however as a precautionary measure, [Schlumberger] has recalled all non-installed TRCs for retrofit of MSE Seals.[117]

99. FRA Rev. 7 was qualified by the statement that "[t]his is the final report based on all the information [Schlumberger] had access to. If any information, or questions, are provided in the future, [Schlumberger] will make all efforts to provide proper analysis and answers."[118]

100. The parties both knew that FRA Rev. 7 was not complete.[119]

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[117]FRA Rev. 7, pp. 28-29 of 55, Docket Entry No. 222-51, pp. 29-30.

[118]FRA Rev. 7, p. 40 of 55, Docket Entry No. 222-51, p. 41.

[119]Andrew Johnston, TT 7-144:3-8, Docket Entry No. 208, p. 144. See also May 17, 2016, Well D and B Revocation Letter, pp. 1-2, PTX 313, Exhibit 38 to Hess's Motion for Judgment, Docket Entry (continued...)

101. The FRA was not complete because Schlumberger repeatedly asked Hess for the complete operational history and environmental data for Wells D and B for the period from the SCSSVs' installation through retrieval, but Hess failed to provide the complete operational history or environmental data for either well.[120]

(III) Hess's Revocation of Acceptance

102. On May 17, 2016, eighteen days after FRA Rev. 7 issued, Hess sent Schlumberger a notice revoking acceptance of SCSSV H13S-0010 installed in Well D pursuant to § 2.608 of the Texas Business and Commerce Code.[121]

103. Asserting that the SCSSV "did not conform to the requirements of the contract with Schlumberger," Hess's Notice of Revocation stated "[b]ased on the Schlumberger report, [i.e., FRA Rev. 7], the Schlumberger safety valves were defective at the time of delivery. Hess was not aware of the defects at that time. . .[122]

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[119](...continued)
No. 222-38, pp. 2-3 ("Schlumberger provided Hess with Revision 7 of its report on April 29, 2016, which Schlumberger has indicated it may still revise further with respect to the closing pressure on the defective valve.").

[120]Andrew Johnston, TT 7-138:2-142:9, Docket Entry No. 208, pp. 138-42.

[121]Revocation Letter, PTX 313, Exhibit 38 to Hess Corporation's Motion for Entry of Judgment, Docket Entry No. 222-38.

[122]Id. at p. 2, Docket Entry No. 222-38, p. 3.

104. Hess sent the Notice of Revocation because it reasonably believed that SCSSV H13S-0010 was non-conforming when delivered.

105. By revoking acceptance of SCSSV H13S-0010 less than three weeks week after Schlumberger issued FRA Rev. 7 concluding that the root cause of the SCSSV's failure was the non-conforming MSE Seal Assembly, Hess's revocation occurred within a reasonable time.

b. SCSSV H13S-0011 Installed in Well B

(I) Installation, Production, and Failure

106. Around May 8, 2014, SCSSV H13S-0011 was installed in Well B at a depth of approximately 8,400 feet below sea level.[123]

107. Production from Well B began on December 14, 2014.[124]

108. Production from Well B continued until January 30, 2016, when SCSSV H13S-0011 experienced a non-command closure that blocked all production.[125]

(II) Hess's Revocation of Acceptance

109. On May 17, 2016, Hess sent a Notice of Revocation under § 2.608 of the Texas Business and Commerce Code to Schlumberger revoking acceptance of SCSSV H13S-0011.[126]

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[123]Agreed Findings of Fact 232-33.

[124]Agreed Finding of Fact 234.

[125]Agreed Finding of Fact 310.

[126]Agreed Finding of Fact 709.

110. Asserting that the SCSSVs "did not conform to the requirements of the contract with Schlumberger," Hess's Notice of Revocation stated "[b]ased on the Schlumberger report, [i.e., FRA Rev. 7], the Schlumberger safety valves were defective at the time of delivery. Hess was not aware of the defects at that time. . .[127]

111. Hess sent the Notice of Revocation because it reasonably believed that SCSSV H13S-0011 was non-conforming when delivered.

112. By revoking acceptance of SCSSV H13S-0011 less than three weeks week after Schlumberger issued FRA Rev. 7 concluding that the root cause of SCSSV H13S-0010's failure was the non-conforming MSE Seal Assembly, Hess's revocation occurred within a reasonable time.

c. SCSSV H13S-0022 Installed in Well C

(I) Installation, Production, and Failure

113. On or around April 15, 2015, SCSSV H13S-0022 was installed in Well C at a depth of approximately 8,700 feet below sea level.[128]

114. Production from Well C began on July 21, 2015.[129]

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[127]Revocation Letter, p. 2, PTX 313, Exhibit 38 to Hess Corporation's Motion for Entry of Judgment, Docket Entry No. 222-38, p. 3.

[128]Agreed Findings of Fact 272-73.

[129]Agreed Finding of Fact 274.

115. Production from Well C continued until July 17, 2016, when SCSSV H13S-0022 experienced a non-command closure that blocked all production.[130]

(II) Hess's Revocation of Acceptance

116. On July 29, 2016, Hess sent a Notice of Revocation under § 2.608 of the Texas Business and Commerce Code to Schlumberger revoking acceptance of SCSSV H13S-0022.[131]

117. Asserting that the SCSSVs "did not conform to the requirements of the contract with Schlumberger," Hess's Notice of Revocation stated "[b]ased on the Schlumberger report, [i.e., FRA Rev. 7], the Schlumberger safety valves were defective at the time of delivery. Hess was not aware of the defects at that time. . .[132]

118. Hess sent the Notice of Revocation because it reasonably believed that SCSSV H13S-0022 was non-conforming when delivered.

119. By revoking acceptance less than two weeks week after SCSSV H13S-0022's failure, Hess's revocation of SCSSV H13S-0022 occurred within a reasonable time.

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[130]Agreed Findings of Fact 321-22.

[131]Agreed Finding of Fact 715. See also Revocation Letter, PTX 329, Exhibit 39 to Hess Corporation's Motion for Entry of Judgment, Docket Entry No. 222-39.

[132]Revocation Letter, p. 2, PTX 329, Docket Entry No. 222-39, p. 3.

d. SCSSV H13S-0025 Installed in Well B(2)

(I) Installation, Production, and Failure

120. On or around May 20, 2016, SCSSV H13S-0025 was installed as a replacement for the failed Well B safety valve at a depth of approximately 8,680 feet below sea level.[133]

121. Production from Well B resumed on June 14, 2016.[134]

122. Production from Well B continued until March 18, 2018, when SCSSV H13S-0025 experienced a non-command closure and blocked all production.[135]

(II) Hess's Revocation of Acceptance

123. On March 23, 2018, Hess sent a Notice of Revocation under § 2.608 of the Texas Business and Commerce Code to Schlumberger revoking acceptance of SCSSV H13S-0025.[136]

124. Hess sent the Notice of Revocation because it reasonably believed that SCSSV H13S-0025 was non-conforming when delivered.

125. By revoking acceptance less than one week after SCSSV H13S-0025 failed, Hess's revocation of SCSSV H13S-0025 occurred within a reasonable time.

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[133]Agreed Findings of Fact 456-457.

[134]Stephen Dunn, TT 2-18:19-24, Docket Entry No. 203, p. 18.

[135]Agreed Finding of Fact 461.

[136]Agreed Finding of Fact 721.

iii. Hess Failed to Establish by a Preponderance of the Credible Evidence that the SCSSVs Did Not Conform to API 14A, Eleventh Edition

Hess claims that the SCSSVs did not conform to API 14A, Eleventh Edition, as required by the parties' agreement, because the MSE Seal Assemblies in the SCSSVs were not substantially the same as the MSE Seal Assembly that Passed the API 14A validation test in 2004.[137] Alternatively, Hess claims that the SCSSVs did not conform to API 14A, Eleventh Edition, because neither Schlumberger nor Greene Tweed had dimensional drawings of the MSE seal assembly that passed the API 14A validation test in 2004.[138]

a. Hess's Claims that the SCSSVs Were Not Manufactured in Conformity with API 14A, Eleventh Edition, Are Based on Schlumberger's Investigations of the Failure of SCSSV H13S-0010 Installed in Well D, and of the Failure of a Valve Owned by British Petroleum to Pass a Pre-Installation Make-Up Test

(I) Investigation of H13S-0010 Failure

126. Hess's claim that the MSE Seal Assemblies were not API qualified is based on the conclusion reached in FRA Rev. 7 that "[t]he primary root cause of the failure is the quality of the MSE Seal."[139]

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[137]Hess's Motion for Judgment, Docket Entry No. 222, p. 16.

[138]Id. at 18-21 (Wells D, B, and C), and pp. 25-26 (Well B(2)).

[139]FRA Rev. 7, p. 28 of 55, Docket Entry No. 222-51, p. 29 ("The primary root cause is the MSE Seal Spring."). See also (continued...)

127. FRA Rev. 7 neither addressed API 14A, nor concluded that the SCSSV H13S-0010 installed in Well D or any its components were not API 14A qualified.

128. FRA Rev. 7's conclusion that the MSE Seal was the primary root cause for the failure of SCSSV H13S-0010 installed in Well D was nearly identical to the conclusion reached in Schlumberger's investigation of a TRC-II valve manufactured in 2015 for British Petroleum ("BP") that leaked during a pre-installation make-up test in July of 2015.[140]

(II) Investigation of BP Valve Failure

129. Schlumberger's investigation of the BP valve leak lasted more than five months and is documented by the January 15, 2016, TRC MSE Investigation Presentation prepared for BP ("BP Presentation"),[141] and by the February 13, 2016, engineering report prepared for BP titled, "TRC-II MSE Seal Qualified and Reproduction Bridging Document" ("BP Bridging Document").[142]

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[139](...continued)
("The primary root cause is the MSE Seal Spring."). See also Revocation Letters, PTX 313 (for SCSSVs installed in Wells D and B, H13S-0010 and H13S-0011), PTX 329 (for SCSSV H13S-0022 installed in Well C), and PTX 358 (for SCSSV H13S-0025 installed in Well B(2)).

[140]Dwayne May, TT 4-10:13-22, Docket Entry No. 205, p. 10.

[141]PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 223-24.

[142]PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket (continued...)

130. Schlumberger's investigation of the BP valve leak concluded that:

> The root cause identified was that the quality of seal, specifically the spring within the MSE seal, delivered by Greene Tweed has been compromised.
>
> It was found that the supplier was no longer providing the same qualified spring as to the 2004 MSE seal set qualification. The non-conformance in the spring altered the performance of the MSE and compromised the sealing capability of the seal stack.[143]

131. The term "qualified" as used in the BP Presentation and Bridging Document means the 2004 "Original MSE seal set design."[144]

132. The term "non-conformance" as used in the BP Presentation and Bridging Document means non-conformance with drawings provided by Greene Tweed; not non-conformance with API 14A.[145]

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[142](...continued)
Entry No. 222-5, p. 4. The BP Bridging Document is dated February 13, 2015, but that is a typographical error as its actual date is February 13, 2016. Alexander LaDouceur, TT 5-13:15-23, Docket Entry No. 206, p. 13.

[143]BP Bridging Document, pp. 3 and 16, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, pp. 4 and 17.

[144]BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 223-24, p. 5; BP Bridging Document, p. 4, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 5. See also Dwayne May, TT 4-59:16-21, Docket Entry No. 205, p. 59.

[145]Alexander LaDouceur, TT 5-15:2-20, Docket Entry No. 206, p. 15; Andrew Johnston, TT 7-212:5-8, Docket Entry No. 208, p. 212.

133. The term "Recent" as used in the BP Presentation and Bridging Document means "[s]eals delivered by Greene Tweed between 2014 and 2015."[146]

134. The term "seals" means MSE Seal Assemblies.

135. The term "Reproduction" used in the BP Presentation and Bridging Document means "seals delivered by Greene Tweed in 2016 [intended to] replicate the QUALIFIED seals."[147]

136. The purpose of the BP Bridging Document was to evaluate whether the Reproduction MSE Seal Assemblies produced in 2016 could be used without being independently qualified to API 14A.[148]

137. Ultimately, Schlumberger decided to qualify the Reproduction MSE Seal Assemblies to API 14A independently, negating the need for the BP Bridging Document.[149]

138. Schlumberger successfully completed API 14A dynamic qualification testing of the 2016 Reproduction MSE Seal Assemblies,

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[146]BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 223-24, p. 5; BP Bridging Document, p. 4, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 5. See also Dwayne May, TT 4-59:22-23, 4-61:11-13Docket Entry No. 205, pp. 59 and 61.

[147]BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 223-24, p. 5; BP Bridging Document, p. 4, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 5. See also Dwayne May, TT 4-59:24-4-60:3, Docket Entry No. 205, pp. 59-60.

[148]Andrew Johnston, TT 7-212:9-12, Docket Entry No. 208, p. 212.

[149]Andrew Johnston, TT 7-212:13-15, Docket Entry No. 208, p. 212.

PN 23550-028-00001 and PN 100066417, in January and February of 2016, as documented in report numbered ET 201600464.[150]

139. Schlumberger's investigation of the BP valve leak involved comparing information contained in the validation package for the original MSE Seal Assembly qualification test performed in 2004 with inspection drawings provided by Greene Tweed, and various tests performed on MSE Seal Assemblies delivered by Greene Tweed in 2008 and 2015.[151]

140. Schlumberger determined that "[t]he Recent design features the dimensions that were part of the original design package from Greene Tweed.[152]

141. But comparison of dimensions recorded in the 2004 validation package to inspection drawings provided Greene Tweed lead Schlumberger to conclude that "the [MSE Seal Assemblies] that were originally qualified did not conform to the inspection drawings provided by Greene Tweed."[153]

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[150]Andrew Johnston, TT 7-128:1-132:16, 7-212:9-15, 8-16:23-17:8, Docket Entry No. 208, p. 128-32, and 212, and Docket Entry No. 209, pp. 16-17. See also David Hirth, TT 3-21:4-6, Docket Entry No. 204, p. 21 ("Schlumberger performed an API qualification test on this reproduction seal and spring. And accordingly to Schlumberger, it passed."); McCalvin Rebuttal Report, pp. 128-31, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, pp. 16-18.

[151]BP Bridging Document, p. 6, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 7.

[152]BP Bridging Document, p. 9, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 10.

[153]BP Bridging Document, p. 6, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 7. See also Dwayne

(continued...)

142. The validation package from the original qualification test performed in 2004 contained both the MSE Seal Assemblies tested and hand written records of their outer and inner dimensions before and after testing.[154]

143. MSE Seal Assemblies that are tested are "spent" and no longer dimensionally comparable to untested MSE Seal Assemblies because the test changes the geometry of the MSE Seal Assembly.[155]

144. The 2004 validation package did not contain any untested, i.e., unused, MSE Seal Assemblies delivered in 2004.[156]

145. Comparison of dimensions of Recent, i.e., 2015, MSE Seal Assemblies to dimensions recorded in the 2004 validation package caused Schlumberger to conclude that "[t]he outer dimension of the

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[153](...continued)
May, TT 4-41:10-11, Docket Entry No. 205, p. 41 ("The dimensions were deviant from the drawings that were available.").

[154]BP Bridging Document, p. 6, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 7. See also PTX 126, Email from A. Johnston to H. Kohli re Critical Topics - November 20th Update, Exhibit 15 to Hess's Motion for Judgment, Docket Entry No. 222-15, p. 12 (STC_00126234_0005, slide showing "Inspection Record for 2004 Certification MSE Seals").

[155]Dwayne May, TT 4-46:17-20, Docket Entry No. 205, p. 46 ("Once a seal goes through a qualification test, its considered spent or used. At that point, there's no comparison to the original document -- or the original seal itself. There is no way to compare it because it changes geometry.").

[156]Andrew Johnston, TT 7-105:15-17, Docket Entry No. 208, p. 105 ("We did not have a 2004 seal. So, we were physically comparing a 2008 seal that was unused to a 2015 seal that was unused. So, that was the comparison that we used at the time.").

Recent[, i.e., 2015] MSE seals were . . . approximately .033" smaller than the Qualified[, i.e., 2004] . . . seals."[157]

146. Schlumberger reasoned that "[t]he smaller O[uter] D[imension] of the Recent[, i.e., 2015] seals results in lower squeeze of the seal in the piston bore."[158]

147. The outer dimension of the MSE Seal Assembly is driven by two sub-components: the MSE jacket and the rosette springs enclosed in the jacket.[159]

148. Finding that "[t]he MSE jacket conforms to the qualified standard,"[160] Schlumberger "narrowed the [cause of the] resulting difference in O[uter] D[imension] to the MSE jacket spring."[161]

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[157]BP Bridging Document, p. 6, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 7. See also Dwayne May, TT 4-61:9-16, Docket Entry No. 205, p. 61; Alexander LaDouceur, TT 5-17:14-18:9, Docket Entry No. 206, pp. 17-18 (when used in the BP Bridging Document, the term "recent seals" meant seals made in 2014 and 2015); Andrew Johnson, TT 7-105:4-6, Docket Entry No. 208, p. 105 ("The outer dimension of the seal that we had in 2015 was different from the outer dimension of the seal from 2004.").

[158]BP Bridging Document, p. 6, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 7. See also BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 223-24, p. 13.

[159]BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 222-24, p. 13. See also Dwayne May, TT 4-61:17-4-62:3, Docket Entry No. 205, pp. 61-62 (stating the same).

[160]BP Bridging Document, p. 8, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 9. See also BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 222-24, p. 13 ("MSE jacket are the same between Recent and Qualified").

[161]BP Bridging Document, p. 9, PTX 58, Exhibit 5 to Hess's
(continued...)

149. "Through a process audit at Greene Tweed," Schlumberger determined that "the base rosette used to form the spring was of the correct material and dimensions[, but that g]aps were found in the forming and inspection process at the Greene Tweed Houston facility that allowed the spring radius, and subsequent dimensions to deviate from nominal."[162]

150. "Base rosette" is the flat rosette that is pressed to form a spring.[163]

151. "Spring radius" is the bend made when the base rosette is pressed to form a spring.[164]

152. Once a rosette spring is pressed into an MSE jacket, the only way to determine the spring radius and other spring dimensions is to preserve the MSE Assembly in acrylic, cross section it, i.e., cut it in half, use an optical comparator to project an image of the cross section, and measure the image.[165]

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[161](...continued)
Motion for Judgment, Docket Entry No. 222-5, p. 10. See also id. at 7, Docket Entry No. 222-5, p. 8 (recognizing that "the main component in the MSE stack driving the outer dimension of the MSE jacket is the MSE spring"); Dwayne May, TT 4-62:8, Docket Entry No. 205, p. 62 ("The jacket did not change.").

[162]BP Bridging Document, p. 8, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 9.

[163]Alexander LaDouceur, TT 5-24:17-20, Docket Entry No. 206, p. 24.

[164]See BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 222-24, p. 14.

[165]See Colloquy between the Court and Schlumberger's Counsel, TT 4-185:11-14, Docket Entry No. 205, p. 185.

153. Before the process audit Schlumberger only required — and Greene Tweed only performed — Acceptable Quality Limit ("AQL") inspections of a predefined number of springs from each batch.[166]

154. Following the process audit Schlumberger implemented "[c]orrective action . . . to ensure the quality of the product . . . [by] requir[ing] 100% documented dimensional inspection."[167]

155. Schlumberger decided to address the difference found between the dimensions recorded in the 2004 validation package and Greene Tweed's inspection drawings by creating new MSE Seal Assembly drawings.

156. Because the 2004 validation package did not contain any new, i.e., untested, MSE Seal Assemblies delivered in 2004, and because the earliest MSE Seal Assemblies Schlumberger had were delivered in 2008, Schlumberger cross sectioned 2008 MSE Seal Assemblies as proxies for 2004 Qualified MSE Seal Assemblies.[168]

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[166]Defense Counsel's Colloquy with the Court confirmed by witness, TT 7-22:15-27:8, Docket Entry No. 208, pp. 22-27.

[167]BP Bridging Document, p. 3, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 4. See also id. at 8, Docket Entry No. 222-5, p. 9 ("[All springs at the G[reene] T[weed] facility are 100% inspected."), and id. at 15, Docket Entry No. 222-5, p. 16 ("• All seal components are 100% inspected; • MSE jacket spring is 100% inspected at the time of manufacture at Greene Tweed.").

[168]David Hirth, TT 2-180:8-10 (acknowledging "they didn't have any new 2004 seals with springs in them"); Dwayne May, TT 4-182:4-16, 4-189:24-4-191:1, Docket Entry No. 205, pp. 182 and 189-91; Alexander LaDouceur, TT 5-56:16-57:22, Docket Entry No. 206, pp. 56-57; Andrew Johnston, TT 7-105:15-17, Docket Entry No. 208, (continued...)

157. Comparison of cross sections performed on MSE Seal Assemblies delivered in 2008 and 2015 indicated that the spring radius had increased over time from a V- to a U-shape, and that the increase in radius caused differences in height and leg spacing.[169]

158. "Analysis of the cross sections show[ed] a reduction in leg spacing of the Recent[, i.e., 2015] seals by about .013".[170]

159. In 2015 Schlumberger used recorded MSE Seal Assembly dimensions from the 2004 validation package, and rosette spring dimensions obtained from cross sections performed on seals delivered in 2008, to reverse engineer a Reproduction design, i.e., to create new MSE Seal Assembly drawings intended to replicated the Qualified MSE Seal Assembly.[171]

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[168](...continued)
p. 105 ("We did not have a 2004 seal. So, we were physically comparing a 2008 seal that was unused to a 2015 seal that was unused. So, that was the comparison that we used at the time."). See also Colloquy with Court during Fourth Day of Trial, TT 4-75:6 (Counsel for Hess acknowledges that "2008 was the first new spring they actually had"); PTX 126, Email from A. Johnston to H. Kohli re Critical Topics - November 20th Update, Exhibit 15 to Hess's Motion for Judgment, Docket Entry No. 222-15, p. 11 (slide of MSE Seal Cross-Sections Showing Springs: 2005 vs. 2008 contains the same photographs as seen in BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 222-24, p. 14).

[169]BP Presentation, PTX 156, Exhibit 24 to Hess's Motion for Judgment, Docket Entry No. 222-24, p. 14; BP Bridging Document, p. 9, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 10. See also Alexander LaDouceur, TT 5-42:6-43:20, Docket Entry No. 206, pp. 42-43.

[170]BP Bridging Document, p. 11, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 12.

[171]Alexander LaDouceur, TT 5-57:14-22, Docket Entry No. 206, p. 57 ("Q And so, you had to use the -- you had -- you did have some new '08 seals, and you had to use that as a proxy to try to (continued...)

160. Schlumberger's reverse engineering yielded an asymmetric rosette spring design with a smaller radius and wider leg spacing than found in either the 2008 or the 2015 rosette springs.

161. "[T]he Reproduction seal has a formed [spring] radius of 0.12" whereas the original Recent design featured a 0.14" radius."[172]

162. In 2016 the Reproduction design, i.e., the new drawing, was used to manufacture Reproduction MSE Seal Assemblies.[173]

163. Reproduction MSE Seal Assemblies were used to retrofit the TRC-II 10K and 15K SSVs that were recalled in January of 2016.

164. Failure of SCSSV H13S-0010 installed in Well D in August 2015, which contained MSE Seal Assemblies delivered in 2013 caused Schlumberger to suspect that changes in the rosette spring identified during the BP valve investigation may have occurred in rosette springs that were made before 2015.[174]

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[171](...continued)
figure out what the spring design was originally in '04, correct, sir? A Well, we would have used both because, as we discussed earlier, you can't use a used seal; and so, we would have used the information being the dimensions from the pre- and post-testing that was done on those seals from 2004 as well as the unused seal."). See also PTX 200, February 16, 2016, Email from Alexander LaDouceur to Karl Wong with BP Bridging Document attached; BP Presentation, Exhibit 15 to Hess's Motion for Judgment, Docket Entry No. 222-15, p. 13 (slide showing drawing titled "Reverse-engineered 2004 Spring"); BP Bridging Document, p. 10, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 11 Fig. 7: Reproduction MSE spring design.

[172]BP Bridging Document, p. 10, PTX 58, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 11.

[173]Id. at 9, Docket Entry No. 222-5, p. 10.

[174]Andrew Johnston, TT 7-210:24-211:20, Docket Entry No. 208, (continued...)

b. Schlumberger's Expert Witnesses Were More Qualified than Hess's Expert Witness

165. Schlumberger's experts regarding API 14A and industry standards, David McCalvin and Patrick Hyde, were more qualified to render their opinions than Hess's expert, David Hirth.

166. David McCalvin is an active member of the API 14A task group and has been since the early 1980s.[175]

167. David McCalvin served as Chairman of the API 14A task group for 9 years.[176]

168. Patrick Hyde is an active member of the API 14A task group.[177]

169. David Hirth has never been a member of the API 14A task group, and has minimal experience with API 14A compared to David McCalvin and Patrick Hyde.[178]

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[174](...continued)
pp. 210-11.

[175]David McCalvin, TT 8-172:7-173:18, Docket Entry No. 209, pp. 172-73.

[176]David McCalvin, TT 8-174:3-5, Docket Entry No. 209, p. 174.

[177]Patrick Hyde, TT 8-75:19-76:7, Docket Entry No. 209, pp. 75-76.

[178]David Hirth, TT 3-73:25-74:20, Docket Entry No. 204, pp. 73-74 (admitting no experience drafting API 14A or applying API 14A to the manufacture of safety valves).

c. Application of API 14A, Eleventh Edition

170. API 14A, Eleventh Edition, was issued on October 1, 2005, with an effective date of May 1, 2006.[179]

171. API 14A, Eleventh Edition, was reaffirmed in June 2012.[180]

172. API 14A, Eleventh Edition, was the latest edition of API 14A in effect in 2013 when Schlumberger manufactured the SCSSVs sold to Hess at issue in this case.[181]

173. API 14A governs the processes for designing, manufacturing, and testing SCSSVs by establishing minimum requirements that must be met to apply the API 14A monogram.[182]

174. API 14A is "intended to give requirements and information to both parties in the selection, manufacture, testing and use of subsurface safety valves."[183]

175. API 14A cautions users that "this International Standard addresses the minimum requirements with which the supplier/

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[179]Agreed Finding of Fact 92.

[180]Agreed Finding of Fact 93.

[181]See Memorandum Opinion and Order, Docket Entry No. 158, pp. 56-58. See also Hess's Contentions, Exhibit A to Amended Joint Pretrial Agreement, Docket Entry No. 163-1, p. 3 ¶ 12 (Acknowledging that "[t]he 'latest edition' of API 14A when the Well B2 safety valve was retrofitted was the Twelfth Edition. At the time the Commercial Agreement was entered, however, the 'latest' edition of API 14A was the Eleventh Edition and it governed the retrofit and delivery of the Well B2 safety valve.").

[182]Patrick Hyde, TT 8-98:9-16, Docket Entry No. 209, p. 98.

[183]API 14A, Eleventh Edition, Introduction, PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 8.

manufacturer is to comply so as to claim conformity," and that "requirements above those outlined in this International Standard may be needed for individual applications."[184]

176. Terms that are not defined in API 14A, Eleventh Edition, have their plain, ordinary meaning.[185]

177. Common terms are defined in API 14A "only if they are used with a specific meaning in the relevant context."[186]

(I) Section 6.3.2.2 of API 14A

178. Section 6.3.2.2 of API 14A, Eleventh Edition, states:

> "SSSV equipment conforming to this International Standard shall be manufactured to drawings and specifications that are substantially the same as those of the size, type, and model SSSV equipment that has passed the validation test."[187]

179. "Substantially the same" is not a defined term in API 14A, Eleventh Edition.

180. "Substantially the same" used in § 6.3.2.2 of API 14A, Eleventh Edition, means "for the most part," or "to a large

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[184] Id.

[185] David McCalvin, TT 8-179:9-13, 8-212:8-11. Docket Entry No. 209, p. 179 (referring to "dictionary meaning") and p. 212 (referring to "common meaning").

[186] David McCalvin, TT 8-204:18-8-206:1, Docket Entry No. 209, pp. 204-06.

[187] API 14A, Eleventh Edition, § 6.3.2.2, PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 20.

degree," not "the same" or "nearly exactly the same," or "equivalent."[188]

181. The word "those" used in § 6.3.2.2 of API 14A, Eleventh Edition, refers to "drawings and specifications," not "equipment."[189]

182. Hess's contention that the word "those" used in § 6.3.2.2 refers to equipment is not supported by the evidence that § 6.3.2.2

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[188]David McCalvin, TT 8-179:9-182:1, Docket Entry No. 209, pp. 179-82; McCalvin Rebuttal Report, p. 13, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, p. 20 ("'Substantially the same" is not a defined term in API 14A, Eleventh Edition, and applying the common meaning of the word 'substantially,' the term means 'for the most part,' or 'to a large degree,' not 'the same' or 'nearly exactly the same,' or 'equivalent in its capacity to meet design and performance requirements under the jurisdiction of 14A.'"). See also Patrick Hyde, TT 8-79:15-20, Docket Entry No. 209, p. 79; Expert Report of Patrick C. Hyde ("Hyde Report"), p. 7, DX 246, Docket Entry No. 223-63, p. 10 ("The term 'substantially the same' was never intended to mean identical. When interpreting the term 'substantially the same' the task group hopes sound engineering judgment will be applied, and relies on the commonly understood definition of the term.").

[189]Patrick Hyde, TT 8-81:14-82:22, Docket Entry No. 209, pp. 81-82; Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-63, p. 11 ("[The § 6.2.3.3] requirement is not for the component parts to be substantially the same, but for the manufacturing drawings and specifications to be substantially the same as for the valve passing validation test. While we may not be comfortable with [§] 6.3.2.2, it is the statement in the specification that governs compliance. The other concept that often comes into consideration is the definition of what constitutes 'substantially the same.' When we evaluate furnished goods against qualified goods, there is often the question of substantially the same. We could look at the two MSE seals and ask if one was substantially different from the other, which is the purpose of the visual quality control inspection.").

of API 14A, Eleventh Edition is a design requirement, not a quality control provision.[190]

183. Inspection for compliance with design criteria and specifications is found in § 7.6.2 of API 14A, Eleventh Edition.[191]

184. The phrase "substantially the same as those" used in § 6.3.2.2 of API 14, Eleventh Edition, means that the drawings and specifications used to manufacture new valves are "for the most part" or "to a large degree" the same as the drawings and specifications used to manufacture the validated valve.[192]

185. Compliance with § 6.3.2.2 of API 14A, Eleventh Edition, requires controlling changes to drawings and specifications to ensure that the drawings and specifications remain substantially the same as the drawings and specifications to which the validated valve and its components were manufactured.[193]

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[190]David McCalvin, TT 8-184:19-185:8, Docket Entry No. 209, pp. 184-85; McCalvin Rebuttal Report, p. 30, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, p. 37 ("API 14A governs the design of a compliant SCSSV by identifying design concerns that are typically shared by both the user and the manufacturer (see, for example, API 14A, Eleventh Edition, Section 6.3.2).").

[191]David Hirth, TT 2-202:22-203:4, Docket Entry No. 203, pp. 202-03 ("[Section] 7.6.2 deals with component dimensional inspection.").

[192]David McCalvin, TT 8-179:9-182:1, Docket Entry No. 209, pp. 179-82; McCalvin Rebuttal Report, p. 13, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, p. 20. See also Patrick Hyde, TT 8-82:15-22, Docket Entry No. 209, p. 82; Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-63, p. 11.

[193]Patrick Hyde, TT 8-82:8-14, Docket Entry No. 209, p. 82, (continued...)

(A) Hess Failed to Establish by a Preponderance of the Credible Evidence that Schlumberger Failed to Manufacture SCSSVs H13S-0010 (Well D), H13S-0011 (Well B), and H13S-0022 (Well C) in Conformity with API 14A § 6.3.2.2

186. The Bill of Materials and Inspection Matrix listing all of the components in each SCSSV, PN 101091732, at issue in this case include two types of MSE Seal Assembly, Chemraz, PN 100066417, and Teflon, PN 23550-028-00001.[194]

187. Schlumberger successfully completed API 14A dynamic qualification testing of MSE Seal Assemblies, PN 100066417 and PN 23550-028-00001, in February of 2004, as documented in the report numbered ET20049950.[195]

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[193](...continued)
Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-63, p. 11. See also David McCalvin, TT 8-185:9-186:6, 8-226:12-20, Docket Entry No. 209, pp. 185-86 and 226; McCalvin Rebuttal Report, pp. 12-13, DX 71, Exhibit 28 to Schlumberger's Motion for Judgment, Docket Entry No. 223-30, pp. 19-20.

[194]Inspection Matrix for Hess, DX 17, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17, pp. 2-3; Bill of Materials for PN 101091732, DX 33, pp. STC_00130203, STC_00130215, STC_00130220, STC_00130224, STC_00130226.

[195]Andrew Johnston, TT 6-213:12-214:10, Docket Entry No. 207, pp. 213-14. See also David McCalvin, TT 8-186:17-187:4, Docket Entry No. 209, pp. 186-87; McCalvin Rebuttal Report, pp. 65-71, DX 71, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-20, pp. 73-78 (describing validation of MSE Seals used in Schlumberger TRC-II-15K SCSSV); DX 29, Test Plan/Report - TRC SCSSV Hydraulic Seal Dynamic Test, ET # ET20049950, February 6, 2004, Exhibit 21 to Schlumberger's (continued...)

188. The specifications for MSE Seal Assemblies, PN 100066417 and PN 23550-028-00001, were developed jointly by Schlumberger, which provided parameters such as the environmental conditions and dimensions of the space to be sealed, and by Greene Tweed, who determined the seal dimensions.[196]

189. The MSE Seal Assemblies, PN 100066417 and PN 23550-028-00001, are proprietary parts supplied by Greene Tweed.

190. A proprietary part is a part the supplier sells by part number and maintains the design in its own organization.[197]

191. Section 6.3.2.2 of API 14A, Eleventh Edition, does not require purchasers to possess dimensional drawings of proprietary parts such as the MSE Seal Assemblies that Greene Tweed supplied to

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[195](...continued)
Response to Hess's Motion for Judgment, Docket Entry No. 223-23; and David Hirth, TT 2-180:11-13, Docket Entry No. 203, p. 180 (acknowledging that the MSE Seal Assemblies were API qualified in 2004).

[196]Andrew Johnston, TT 7-17:3-20:10, Docket Entry No. 208, pp. 17-20. See also McCalvin Rebuttal Report, pp. 56-62 (PN 23550-028-0001), 63-64 (PN 100066417), Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, pp. 63-71.

[197]McCalvin Rebuttal Report, p. 194, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, p. 81. See also David McCalvin, TT 8-207:24-209:10 (drafters of API 14A recognize and allow for the use proprietary parts and the practice of letting suppliers hold back some information); Dwayne May, TT 4-36:21-37:1, Docket Entry No. 205, pp. 36-37 ("[E]ven though this is a proprietary seal design where Greene Tweed owns the seal design itself, Schlumberger qualifies and develops this seal for a specific application. So, it's what I would call a joint design in itself even though Greene Tweed specifically owns the design rights.").

Schlumberger, as long as the supplier maintains dimensional drawings of the proprietary part used in the validation test, and supplies the purchaser with a certificate of conformance certifying that the part numbers ordered and supplied were manufactured to drawings and specifications that are substantially the same as the drawings and specifications used to manufacture the SSSV equipment that passed the validation test.[198]

192. A Certificate of Conformity certifies that the part supplied has been manufactured, inspected, and produced to meet the drawings and specifications that supplier has for that product.[199]

(1) MSE Seal Assembly Drawings

193. Greene Tweed provided Schlumberger "high level" drawings of MSE Seal Assemblies, PN 100066417 and PN 23550-028-00001, that contained some but not all dimensions of the MSE Seal Assembly because the MSE Seal Assembly is a proprietary part.[200]

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[198]David McCalvin, TT 8-226:12-25, Docket Entry No. 209, p. 226.

[199]Andrew Johnston, TT 7-54:2-55:3, Docket Entry No. 208, pp. 54-55.

[200]DX 27 (Greene Tweed Drawing No. MSE70-100535-004 depicting PN 23550-028-0001); DX 28 (Greene Tweed Drawing No. Drawing of PN 100066417). See also Andrew Johnston, TT 7-14:19-16:12, Docket Entry No. 208, pp. 14-16. See also id. at TT 7-15:1-4, Docket Entry No. 208, pp. 14-15 (explaining that a high level drawing "doesn't include all the critical dimensions. They consider that proprietary. So, they provide us with a document that we use to verify that we receive the part number that we ordered from (continued...)

194. Greene Tweed maintains dimensional drawings of MSE Seal Assemblies, PN 100066417 and PN 23550-028-00001.[201]

195. Greene Tweed's dimensional drawings show that MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, were manufactured to drawings and specifications that were substantially the same from December 3, 2003, until at least March 3, 2016.[202]

196. Because drawings of MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, remained substantially the same from December of 2003 until March of 2016, the MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, supplied by Greene Tweed to Schlumberger for the SCSSVs that Schlumberger manufactured for Hess in 2013 (H13S-0010 installed in Well D, H13S-0011 installed in Well B, and H13S-0022 installed in Well C), were manufactured to drawings and specifications that are substantially the same as the drawings and specifications of the MSE Seal Assemblies that passed the validation test in 2004.

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[200](...continued)
them.").

[201]Greene Tweed Drawings, DX 55-A, GTC-00064-082, 0514-0545. See also McCalvin Rebuttal Report, pp. 56-62 (PN 23550-028-0001), 63-64 (PN 100066417), Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, pp. 63-71.

[202]McCalvin Rebuttal Report, pp. 56-64, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, pp. 63-71 (describing development of MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417).

(2) MSE Assembly Drawings

197. The Bill of Materials on the drawings of MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, maintained by both Schlumberger and Greene Tweed, specify MSE Assembly, Greene Tweed PN MSE70-100372-A.[203]

198. Greene Tweed maintains dimensional drawings of MSE Assembly, Greene Tweed PN MSE70-100372-A.[204]

199. Greene Tweed's drawings show that MSE Assembly, Greene Tweed PN MSE70-100372-A, was manufactured to the same drawings and specifications from April of 1998 to September of 2015.[205]

200. Because drawings of MSE Assembly, Greene Tweed PN MSE70-100372-A, remained the same from April of 1998 until September of 2015, the MSE Assemblies, Greene Tweed PN MSE70-100372-A, in the SCSSVs that Schlumberger manufactured for Hess in 2013 (H13S-0010 installed in Well D, H13S-0011 installed in Well B, and H13S-0022 installed in Well C), were manufactured to drawings and specifications that are the same as the drawings and specifications of the MSE Assembly that passed the validation test in 2004.

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[203]DX 27, MSE Seal Assembly Drawing - Teflon (PN 23550-028-00001); and DX 28, MSE Seal Assembly Drawing - Chemraz (PN 100066417). See also Andrew Johnston, TT 7-112:25-114:23, Docket Entry No. 208, pp. 112-14.

[204]Greene Tweed MSE Seal Assembly Drawings, DX 55-A, GTC-00520 (April 1998). See also Andrew Johnston, TT 7-114:24-119:3, Docket Entry No. 208, pp. 114-19.

[205]Greene Tweed MSE Seal Assembly Drawings, DX 55-A, GTC-00521 (September 2015).

(3) Rosette Spring Drawings

201. The Bill of Materials on the drawings of MSE Assembly, Greene Tweed PN MSE70-100372-A, specify rosette spring, Greene Tweed PN RS-111-1-E.[206]

202. The drawings and specifications for Rosette Spring, Greene Tweed PN RS-111-1-E, are maintained by Greene Tweed on Drawing Number RS-111-1-X-X/MFG Revision B.[207]

203. Greene Tweed Drawing Number RS-111-1-X-X/MFG Revision B went into effect in April of 2003, and remained in effect until August 20, 2014, when Revision C went into effect.[208]

204. Because Drawing Number RS-111-1-X-X/MFG Revision B for rosette spring, Greene Tweed PN RS-111-1-E, remained the same from April of 2003 until August of 2014, the rosette springs in the SCSSVs that Schlumberger manufactured for Hess in 2013 (H13S-0010 installed in Well D, H13S-0011 installed in Well B, and H13S-0022 installed in Well C), and the rosette springs that passed the

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[206]Andrew Johnston, TT 7-114:24-115:6, Docket Entry No. 208, pp. 114-15. See also Greene Tweed MSE Seal Assembly Drawings, DX 55-A, p. GTC_00520.

[207]Andrew Johnston, TT 7-115:7-116:11, Docket Entry No. 208, pp. 115-16. See also Greene Tweed MSE Seal Assembly Drawings, DX 55-A, p. GTC_00527, Exhibit 26 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-28, p. 5.

[208]Andrew Johnston, TT 7-116:13-118:15, Docket Entry No. 208, pp. 116-18 (explaining that Revision C changed the leg spacing). See also Greene Tweed MSE Seal Assembly Drawings, DX 55-A, p. GTC_00527 (Revision B) and GTC_00526 (Revision C), Exhibit 26 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-28, p. 5 (Revision B).

validation test in 2004 were manufactured to the same drawings and specifications.

205. Alternatively, the geometry of the rosette springs in the SCSSVs sold to Hess at issue in this case (H13S-0010 installed in Well D, H13S-0011 installed in Well B, and H13S-0022 installed in Well C), was substantially the same as the geometry of the rosette springs that passed the validation test in 2004.

206. Hess argues that neither Schlumberger nor Greene Tweed had dimensional drawings of the MSE Seal Assembly that passed the API 14A validation test in 2004 because the recorded dimensions of MSE Seal Assemblies that passed the API 14A validation test contained in the validation package from 2004 differed from dimensions in the inspection drawings provided by Greene Tweed.[209]

207. Hess's argument is not persuasive because the difference between the outer dimension of the MSE Seal Assemblies found recorded in the 2004 validation package and the outer dimension of MSE Seal Assemblies shown on Greene Tweed's drawings and specifications is an insubstantial difference of 0.033".[210]

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[209]Hess's Motion for Judgment, Docket Entry No. 222, pp. 18-19 (Wells D, B, and C), and pp. 25-26 (Well B(2)).

[210]BP Bridging Document, p. 6, Exhibit 5 to Hess's Motion for Judgment, Docket Entry No. 222-5, p. 7 ("The outer dimension of the Recent MSE seals were nominally measured to be approximately .033" smaller than the Qualified and Reproduction seals across many different tests throughout the investigation."). See also Alexander LaDouceur, TT 5-17:6-19:9 (stating that the initial belief was that the .033" difference was significant); PTX 126, (continued...)

208. Hess also argues that the difference in outer dimension was caused by the geometry of the rosette spring, which changed over time as illustrated in Hess's Demonstrative Exhibit No. 6.

209. Hess's argument that the geometry of the rosette spring changed over time is not persuasive for several reasons: (1) When the investigation of the BP and Hess valve failures occurred in 2015 neither Schlumberger nor Greene Tweed had any rosette springs from 2004; (2) the only contemporary record for the geometry of the 2004 rosette springs were the drawings and specifications maintained by Greene Tweed; (3) the drawing that Hess contends represents the geometry of the rosette spring qualified in 2004 was created in 2015 and merely "surmises" to represent the 2004 qualified spring as it was "reverse engineered" from outer dimensions of MSE Seal Assemblies found recorded in the 2004 validation package and cross sections of MSE Seal Assemblies delivered in 2008;[211] and (4) even if the geometry of the 2004 rosette spring was as illustrated in the 2015 drawing that was "reverse engineered," that geometry was substantially the same as the geometry of the rosette springs that were supplied to Schlumberger in 2012 and used to manufacture the SCSSVs sold to Hess in 2013.

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[210](...continued)
Email from A. Johnston to H. Kohli re Critical Topics - November 20th Update, Exhibit 15 to Hess's Motion for Judgment, Docket Entry No. 222-15, p. 12 (STC_00126234_0005, slide showing "Inspection Record for 2004 Certification MSE Seals").

[211]Dwayne May, TT 9-80:14-16, Docket Entry No. 216, p. 80 ("We didn't have the springs for the 2004 seals. So, it was - we surmised only that those probably did not match, the components didn't - may not have matched the actual drawing.").

(4) Certificates of Conformity

210. Greene Tweed provided Schlumberger Certificates of Conformity for each MSE Seal Assembly in the SCSSVs that Schlumberger manufactured for Hess in 2013 as follows:[212] H13S-0010 installed in Well D;[213] H13S-0011 installed in Well B;[214] and H13S-0022 installed in Well C.[215]

211. The Certificates of Conformity that Greene Tweed provided to Schlumberger certify that the MSE Seal Assemblies and their component parts were manufactured in conformance with current specifications for the applicable part numbers.[216]

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[212]Andrew Johnston, TT 7-43:22-44:2 (databooks contain certificates of conformity for each SCSSV).

[213]See McCalvin Rebuttal Report, pp. 82-89, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, pp. 89-96. See also DX 23, Valve Databook for SCSSV H13S-0010, pp. STC_00259883-9886.

[214]See McCalvin Rebuttal Report, pp. 100-104, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-30, pp. 107-111. See also DX 37, Valve Databook for SCSSV H13S-0011.

[215]See McCalvin Rebuttal Report, pp. 114-28, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, pp. 1-15. See also DX 39, Valve Databook for SCSSV H13S-0022.

[216]Andrew Johnston, TT 7-54:4-55:13, Docket Entry No. 208, pp. 54-55 (a certificate of conformity guarantees that the part was manufactured, inspected, and produced to current drawings and specifications). See also id. at 7-19:25-20:9, Docket Entry No. 208, pp. 19-20 (Schlumberger's counsel explaining that "the fundamental nature of the industry is that traceability is tracked by part number. And so, maintaining rigid control over that part number is how the industry maintains control over the various (continued...)

(5) Conclusions

212. Because the MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, and their component parts, MSE Assembly, Greene Tweed PN MSE70-100372-A, and Rosette Spring, Greene Tweed PN RS-111-1-E, with which Schlumberger manufactured SCSSV H13S-0010 installed in Well D, SCSSV H13S-0011 installed in Well B, and SCSSV H13S-0022 installed in Well C, were manufactured to drawings and specifications that are substantially the same as the drawings and specifications of the MSE Seal Assemblies and component parts that passed the validation test in 2004, and because Schlumberger received Certificates of Conformity from Greene Tweed for the MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, and component parts, MSE Assembly, Greene Tweed PN MSE70-100372-A, and Rosette Spring, Greene Tweed PN RS-111-1-E, with which Schlumberger manufactured the SCSSVs at issue (H13S-0010 (Well D), H13S-0011 (Well B), and H13S-0022 (Well C), the credible evidence establishes that the MSE Seal Assemblies and component parts in each of these SCSSVS were manufactured in conformity with the requirements of API 14A, Eleventh Edition, § 6.3.2.2.

213. Hess has therefore failed to carry its burden to establish by a preponderance of the credible evidence that the SCSSVs at issue (H13S-0010 (Well D), H13S-0011 (Well B), and H13S-0022 (Well C), were not manufactured in conformity with the requirements of API 14A, Eleventh Edition, § 6.3.2.2.

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[216](...continued)
designs."); and 7-20:8-9 (Andrew Johnston confirming that what Schlumberger's counsel said is true).

(B) Hess Failed to Establish by a Preponderance of the Credible Evidence that Schlumberger Failed to Manufacture SCSSV H13S-0025 (Well B(2)) in Conformity with § API 14A, § 6.3.2.2

214. In January of 2016 Schlumberger issued a worldwide recall of TRC-II 10K and 15K safety valves in inventory for retrofit with 2016 Reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417.[217]

215. As part of the worldwide recall, Schlumberger retrofitted SCSSV H13S-0025, which Hess had in inventory and planned to use in another Tubular Bells well.[218]

216. SCSSV H13S-0025 was retrofitted with 2016 Reproduction MSE Seal Assemblies under Return Authorization Number ("RAN") 02284 at Schlumberger's CHPC.[219]

217. Greene Tweed produced new drawings for the 2016 Reproduction MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, and their components, the MSE Assembly, PN MSE70-100372-A, and the rosette springs which received a new PN, PN 5670-129897-9759.[220]

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[217]D. Hirth, TT 2-177:2-8, Docket Entry No. 203, p. 177; Alexander LaDouceur, TT 5-36:16-5-38:24, 5-56:3-5-57:22, Docket Entry No. 206, pp. 36-38, and 56-57.

[218]Agreed Finding of Fact 427-28.

[219]Agreed Finding of Fact 426.

[220]DX 55A, GTC_000666-69 (drawings of MSE Assembly PN MSE70-

(continued...)

218. Schlumberger successfully completed API 14A dynamic qualification testing of 2016 Reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, and their components including the rosette springs, PN 5670-12897-9750, in January and February of 2016 as documented in report numbered ET 201600464.[221]

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[220](...continued)
100372-A and jacket PN MSE70J-100372-A dated February 18, 2016), and GTC_00071-72 (drawings of Rosette Spring dated January 27, 2016); and David Hirth, TT 2-182:10-14 ("Schlumberger had Greene Tweed produce new drawings for the [2016 reproduction] springs."), TT 2-188:18-22 (explaining that "the source of that red drawing for the 2016 reproduction spring" on Hess's Demonstrative No. 6, "is from the Greene Tweed manufacturing drawing," and that "[Greene Tweed] made a new drawing for this 2016 reproduction spring."), Docket Entry No. 203, pp. 182 and 188. See also Hess's Demonstrative No. 6, showing citing DX 55-A at GTC_00072, which is Greene Tweed's rosette spring drawing for the 2016 Reproduction MSE Assembly, as the source for the "2016 Reproduction Seal" depicted.

[221]Andrew Johnston, TT 7-128:1-132:16 (explaining that the 2016 Reproduction MSE Seal Assemblies went through four separate valve qualifications and therefore were validated four separate times), 8-17:1-8 (explaining that the effort to reverse engineer the rosette spring resulted in numerous iterations, i.e., drawings), Docket Entry No. 208, pp. 128-32, and Docket Entry No. 209, p. 17. See also David McCalvin, TT 8-186:17-187:25; McCalvin Rebuttal Report, pp. 129-31, DX 71, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, pp. 16-18 (describing validation of MSE Reproduction Seals in 2016); DX 42, MSE Investigation Seal Life Cycle Qualification, ET# 201600464, January 22 to February 16, 2016, p. 15 § 8.1.1 ("The MSE seals have successfully passed a test replicating API 14A 12th edition V1 life cycle test and will be rated to 15ksi at 40-300°F."); and DX 44, Engineering Report TRC-II MSE Life cycle Qualification Prepared for bp, p. 15 § 8.1.1 ("The MSE seals have successfully passed a test replicating API 14A 12th edition V1 life cycle test and will be rated to 15ksi at 40-300°F."); David Hirth, TT 3-21:4-6, Docket Entry No. 204, p. 21 ("Schlumberger performed an API qualification test on this reproduction seal and spring. And according to Schlumberger, it passed.").

219. On March 2, 2016, Schlumberger replaced the MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, in SCSSV H13S-0025 with 2016 Reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417.[222]

220. Greene Tweed's 2016 drawings were used to manufacture both the 2016 Reproduction MSE Seal Assemblies that completed API 14A qualification testing in January and February of 2016, and the 2016 Reproduction MSE Seal Assemblies with which SCSSV H13S-0025 was retrofitted.[223]

221. Greene Tweed provided Schlumberger Certificates of Conformity for each of the 2016 Reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, in SCSSV H13S-0025.[224]

222. The Certificates of Conformity that Greene Tweed provided to Schlumberger for the MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, in SCSSV H13S-0025 that Schlumberger retrofitted in March of 2016 certify that the MSE Seal Assemblies and their

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[222]Agreed Findings of Fact 428-29. See also David Hirth, TT 2-212:11-14 ("Schlumberger had a new valve in inventory with the old seals, the non-conforming seals. They took that valve, and they retrofitted it with the 2016 reproduction seals."); Andrew Johnston, TT 7-155:19-158:4, Docket Entry No. 208, pp. 155-58 (describing the replacement of the MSE seals in SCSSV H13S-0025)).

[223]David Hirth, TT 2-182:15-20, Docket Entry No. 203, p. 182 (**Q** And were the new springs used in the B(2) well? **A** They were.").

[224]See McCalvin Rebuttal Report, pp. 141-49, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, pp. 28-36. See also DX 46, Valve Databook for SCSSV H13S-0025, pp. STC_00255895-8910.

component parts were manufactured in conformance to current Greene Tweed specifications applicable to those part numbers.[225]

223. Because the 2016 Reproduction MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, and their component parts, MSE Assembly, Greene Tweed PN MSE70-100372-A, and Rosette Spring, Greene Tweed PN 5670-12987-9750, with which Schlumberger retrofitted SCSSV H13S-0025, were manufactured to the same drawings and specifications used to manufacture the 2016 Reproduction MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, and component parts that passed validation tests in 2016, and because Schlumberger received Certificates of Conformity from Greene Tweed for the MSE Seal Assemblies, PN 23550-028-0001 and PN 100066417, and component parts, MSE Assembly, Greene Tweed PN MSE70-100372-A, and Rosette Spring, Greene Tweed PN 5670-12987-9750, with which Schlumberger retrofitted SCSSV H13S-0025, the credible evidence establishes that Schlumberger manufactured the MSE Seal Assemblies and component parts in SCSSV H13S-0025 in conformity with the requirements of API 14A, Eleventh Edition, § 6.3.2.2.

224. Hess has failed to establish by a preponderance of the credible evidence that Schlumberger did not manufacture the MSE Seal Assemblies and component parts with which SCSSV H13S-0025 was retrofitted in 2016 in conformity with the requirements of API 14A, Eleventh Edition, § 6.3.2.2.

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[225]Andrew Johnston, TT 7-19:25-20:9, 7-54:4-55:13, Docket Entry No. 208, pp. 19-20, 54-55 (describing certificates of conformity).

225. Hess's argument that the 2016 Reproduction MSE Seal Assemblies with which SCSSV H13S-0025 was retrofitted were not manufactured in conformity with API 14A, Eleventh Edition, § 6.3.2.2 because the rosette springs in the 2016 Reproduction MSE Seal Assemblies differ in size, type, and model from the rosette springs validated in 2004, fails because Hess's expert witness acknowledged that the 2016 Reproduction MSE Seal Assemblies passed API 14A validation testing in 2016,[226] and Hess has failed to present any evidence to the contrary.

226. Hess argues that the 2016 Reproduction MSE Seal Assemblies were not independently qualified as required by API 14A because the qualification tests were performed by Schlumberger not by a third party.

227. Hess's argument is not persuasive because (a) Hess's expert witness, David Hirth, testified that the 2016 Reproduction MSE Seal Assemblies had passed a API 14A qualification test, (b) Schlumberger performed the API 14A qualification test on the MSE Seal Assemblies in 2004, and (c) Hess does not argue that the MSE Seal Assemblies were not properly qualified in 2004.

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[226]See Statement of Hess's Counsel, TT 3-21:14-17, Docket Entry No. 204, p. 21 ("Our argument is going to be that because they are substantially different and are different from size, type, and model of the 2004, that, indeed, they are — they reproduction springs do, indeed, violate API 6.3.2.2), and testimony of Hess's expert, David Hirth, TT 3-21:4-6, Docket Entry No. 204, p. 21 ("Schlumberger performed an API qualification test on this reproduction seal and spring. And according to Schlumberger, it passed.").

(II) Section 7.6.2 of API 14 A

228. Section 7.6.2 of API 14A, Eleventh Edition, states:

> "All traceable components, except non-metallic seals, shall be dimensionally inspected to assure proper function and compliance with design criteria and specifications. Inspection shall be performed during or after the manufacture of the components but prior to assembly, unless assembly is required for proper measurement."[227]

229. Section 7.6.2 exempts non-metallic seals from its dimensional inspection requirement.[228]

230. Non-metals are covered under § 7.6.3 of API 14A.[229]

231. Section 7.6.2 does not apply to the MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, because they have non-metallic sealing surfaces and the entire MSE Seal Assembly is recognized by the industry as a non-metallic seal even though ithas two metal rosette springs inside them.[230]

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[227]Agreed Finding of Fact 99 (quoting API 14A, Eleventh Edition, § 7.6.2, PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 27).

[228]Patrick Hyde, TT 8-88:14-89:3, Docket Entry No. 209, pp. 88-89; Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-63, p. 11.

[229]Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-63, p. 11.

[230]Andrew Johnston, TT 7-71:19-72:4, Docket Entry No. 208, pp. 71-72; Patrick Hyde, TT 8-88:22-89:3, 8-131:5-10, Docket Entry No. 209, pp. 88 and 131; Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-63, p. 11 ("In my opinion, the MSE seal is a non-metallic

(continued...)

232. MSE Seal Assemblies were also considered to be non-metallic seals by both Hess and Schlumberger as evidenced by the MSE Seal Assemblies' designation on the Inspection Matrix of Hess's Quality Control Plan as "Class 3," which stands for "elastomers."[231]

233. The traceable components for purposes of § 7.6.2 are the MSE Seal Assemblies, not the rosette springs.[232]

234. MSE Seal Assemblies supplied by Greene Tweed, PN 23550-028-00001 and PN 100066417, are the lowest level of traceable

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[230](...continued)
seal because the metal part (the spring) is not part of the sealing surface; it is part of the assembly that serves to energize the actual component doing the actual sealing — the jacket assembly."). See also Andrew Johnston, TT 8-10:11-12, Docket Entry No. 209, p. 10; and David McCalvin, TT 8-199:13-15, Docket Entry No. 209, p. 199 ("**Q** Do you agree with Mr. Hyde and Mr. Johnston that the MSE seal is a non-metallic seal? **A** Yes. That's an industry standard.").

[231]Inspection Matrix, DX 17, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17, pp. 2 and 3.

[232]Patrick Hyde, TT 8-89:14-15 ("**Q** Do you believe the rosette spring is traceable? **A** No, I do not."), 8-91:12-15 ("[Section] 7.6.2 . . . talks about traceable components in non-metallic seals. The MSE seal is a non-metallic seal, and the rosette spring is not a traceable component."), Docket Entry No. 209, pp. 89 and 91; David McCalvin, TT 8-198:24-199:10 (identifying the lowest traceable component of the MSE Seal as the MSE Seal Assembly), Docket Entry No. 209, pp. 198-99. See also Andrew Johnston, TT 7-41:20-7-42:6 (the traceable component for Schlumberger is the MSE seal assembly); Bill of Materials, DX 33, p. 4 of 28, (listing MSE Seal Assemblies, PN 23550-028-00001 and PN 100066417, but not listing component parts of either the MSE Seal Assembly, i.e., the V-ring, the female adapter, the hat ring, or the MSE Assembly and its components, i.e., the jacket, the two rosette springs, and the spacer); Inspection Matrix, DX 17, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17, p. 2 line 12.9 and p. 3 line 12.25 (listing MSE Seal Assemblies, but not their components).

component identified both in Schlumberger's Bill of Materials for SCSSVs, PN 101091732, sold to Hess, and in the Inspection Matrix of Hess's Quality Control Plan.[233]

235. Hess could have — but did not — require the rosette spring be a traceable component by identifying it as such in the Inspection Matrix of Hess's Quality Control Plan.[234]

236. Schlumberger requires its suppliers, including Greene Tweed, to have a quality management system pursuant to which they perform dimensional inspections, and provide certificates of conformity certifying that applicable specifications, including dimensional inspections, have been met.[235]

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[233]Andrew Johnston, TT 8-7:4-10, Docket Entry No. 209, p. 8; Patrick Hyde, TT 8-164:25-165:7, Docket Entry No. 209, pp. 164-65. See also Inspection Matrix, DX 17, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17, p. 2 line 17.9 (identifying PN 23550-028-00001 (Teflon MSE Seal Assembly), and p. 3 line 12.25 (PN 100066417 (Chemraz MSE Seal Assembly)); Bill of Materials, DX 33, p. 4 of 28 (identifying MSE Seal Assemblies PN 23550-028-00001 and PN 100066417 but not identifying any component parts of the MSE Seal Assemblies).

[234]Patrick Hyde, TT 8-89:14-24, 8-131:25-132:8, 8-139:2-3, Docket Entry No. 209, pp. 89, 131-32 and 139; David McCalvin, TT 8-198:24-199:12, Docket Entry No. 209, pp. 198-99. See also Inspection Matrix, DX 17, Exhibit 16 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-17, p. 2 line 17.9 (identifying PN 23550-028-00001 (Teflon MSE Seal Assembly), and p. 3 line 12.25 (PN 100066417 (Chemraz MSE Seal Assembly)); Bill of Materials, DX 33, p. 4 of 28 (identifying MSE Seal Assemblies PN 23550-028-00001 and PN 100066417 but not identifying any component parts of the MSE Seal Assemblies).

[235]Andrew Johnston, TT 7-18:5-16, Docket Entry No. 208, p. 18.

237. Greene Tweed provided certificates of conformity to Schlumberger certifying that the MSE Seal Assemblies used to manufacture the SCSSVs sold to Hess were made in conformity with Greene Tweed's applicable drawings and specifications.[236]

238. The credible evidence establishes that Schlumberger manufactured SCSSV H13S-0010 installed in Well D, SCSSV H13S-0011 installed in Well B, and SCSSV H13S-0011 installed in Well C in conformity with the requirements of API 14A, Eleventh Edition, § 7.6.2.[237]

239. Accordingly, Hess has failed to establish by a preponderance of the credible evidence that Schlumberger did not manufacture the SCSSVs H13S-0010 installed in Well D, H13S-0011 installed in Well B, or H13S-0011 installed in Well C in conformity with the requirements of API 14A, Eleventh Edition, § 7.6.2.

(III) Section 7.6.3 of API 14A

240. Section 7.6.3 of API 14A, Eleventh Edition, states:

> a) Sampling procedures and the basis for acceptance or rejection of a batch lot shall be in accordance with ISO 2859-1, general inspection level II at a 2,5 A[cceptance] Q[uality] L[imit] for O-rings and a 1,5 A[cceptance]

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[236]Andrew Johnston, TT 7-19:25-20:3, Docket Entry No. 208, pp. 19-20.

[237]Hess does not contend that SCSSV H13S-0025 installed in Well B(2) was manufactured in violation of § 7.6.2 of API 14A. See TT 3-20:7-20, Docket Entry No. 203, p. 20 (Hess's counsel stating that the only API 14A violation alleged with respect to Well B(2) is a violation of § 6.3.2.2).

> Q[uality] L[imit] for other sealing elements until a documented variation history can be established. Sampling procedures shall then be established based on the documented variation history.
>
> b) Visual inspection of O-rings shall be in accordance with OSP 3601-3. Other sealing elements shall be visually inspected in accordance with the manufacturer's documented specifications. . .
>
> c) Dimensional tolerances of O-rings shall be in accordance with ISO 3601-1. Other sealing elements shall meet dimensional tolerances of the manufacturer's written specifications. . .[238]

241. API 14A defines the term "manufacturer" as the "principal agent in the design, fabrication and furnishing of equipment, who chooses to comply with this International Standard."[239]

242. Schlumberger is the principal agent in the design, fabrication, and furnishing of the TRC-II SCSSVs and is the only entity who chose to comply with API 14A.[240]

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[238]Agreed Finding of Fact 106 (quoting API 14A, § 7.6.3, PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 27).

[239]API 14A, § 3.14, PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 13.

[240]Patrick Hyde, TT 8-92:21-25, Docket Entry No. 209, p. 92. See also Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-63, p. 11 ("For the purpose of API 14A, manufacturer is defined in [§] 3.14 as the 'principle agent in the design, fabrication and furnishing of equipment, who chooses to comply with this international standard.' Since Schlumberger is the 'principle agent i[n] design, fabrication, and furnishing of equipment,' the governing document would be the Schlumberger documented specification.").

243. Schlumberger is the manufacturer of the SCSSVs for purposes of § 7.6.3 of API 14A.[241]

244. Section 7.6.3(b) requires sealing elements other than O-rings, including the MSE Seal Assemblies, to "be visually inspected in accordance with the manufacturer's documented specifications."[242]

245. Schlumberger's procedures required each MSE Seal Assembly to be visually inspected before being put onto a piston as follows: "Using a microscope set to 20X magnification, inspect the MSE piston seals and verify that there are not cuts, scratches, or surface irregularities on the OD and ID of the seal."[243]

246. Schlumberger visually inspected the MSE Seal Assemblies both before and after installing them into a piston.[244]

247. Section 7.6.3(c) requires MSE Seal Assemblies to "meet dimensional tolerances of the manufacturer's written specifications."[245]

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[241]Patrick Hyde, TT 8-92:13-18, Docket Entry No. 209, p. 92; David McCalvin, TT 8-206:18-207:9, 8-227:1-22, Docket Entry No. 209, pp. 206-207, and 227. See also McCalvin Rebuttal Report, pp. 35-36, Exhibit 28 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-30, pp. 42-43.

[242]API 14A, § 7.6.3(b), PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 27.

[243]Andrew Johnston, TT 7-82:4-14, Docket Entry No. 208, p. 82.

[244]Andrew Johnston, TT 7-82:15-7-83:8, Docket Entry No. 208, pp. 82-83.

[245]API 14A, § 7.6.3(c), PTX 3, Exhibit 3 to Hess's Motion for Judgment, Docket Entry No. 222-3, p. 27.

248. Schlumberger did not specify dimensional tolerances of the MSE Seal Assemblies or any of their components in its written specifications.[246]

249. The MSE Seal Assemblies in the SCSSVs sold to Hess are proprietary parts for which Greene Tweed, not Schlumberger determines actual dimensions of component parts.[247]

250. A proprietary part is one for which a supplier holds the design and sells as part numbers manufacturers.[248]

251. API 14A, Eleventh Edition, did not require Schlumberger to specify dimensional tolerances for the MSE Seal Assemblies or their component parts supplied by Greene Tweed.[249]

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[246]David McCalvin, TT 8-207:19-23, Docket Entry No. 209, p. 207. See also Hyde Report, p. 8, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-63, p. 11 ("Whether that Schlumberger specification was adequate or not is not a matter of API 14A compliance. Schlumberger has a documented specification to visually inspect all seals installed in any SCSSV and has evidence of completing that inspection. See, e.g., STC-00257461 (AC-35, Section 3.6) If an operator reviews the Schlumberger specification and judges it to be inadequate, the operator has the right to require whatever inspection they deem necessary and to document that action within the company specific quality [control] plan. It is my impression Hess has an operator specific quality [control] plan, and that reviewed and approved plan does not include any inspection other than the Schlumberger standard.").

[247]McCalvin Rebuttal Report, p. 194, Exhibit 28 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-31, p. 81. See also David McCalvin, TT 8-208:17-209:10 (drafters of API 14A recognize and allow for the use proprietary parts and the practice of letting suppliers hold back some information).

[248]David McCalvin, TT 8-207:24-208:24, Docket Entry No. 209, pp. 207-08.

[249]Patrick Hyde, TT 8-93:6-8, Docket Entry No. 209, p. 93; (continued...)

252. Because Schlumberger did not specify dimensional tolerances for the MSE Seal Assemblies supplied by Greene Tweed, Schlumberger did not have to perform dimensional inspections of the MSE Seal Assemblies or their components to comply with § 7.6.3.[250]

253. As long as Schlumberger received Certificates of Conformity for the MSE Seal Assemblies supplied by Greene Tweed, Schlumberger complied with the requirements of § 7.6.3 for the MSE Seal Assemblies supplied by Greene Tweed.[251]

254. Certificates of Conformity are provided to Schlumberger by a third party suppliers, including Greene Tweed, to certify that the part supplied has been manufactured, inspected, and produced to meet the applicable drawings and specifications for that product.[252]

255. Greene Tweed provided Schlumberger Certificates of Conformity for each of the MSE Seal Assemblies used in the SCSSVs that Schlumberger sold to Hess.[253]

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[249](...continued)
David McCalvin, TT 8-207:19-23, Docket Entry No. 209, p. 207.

[250]Patrick Hyde, TT 8-93:2-95:9, Docket Entry No. 209, pp. 93-95.

[251]David McCalvin, TT 8-226:12-25, Docket Entry No. 209, p. 226.

[252]Andrew Johnston, TT 7-54:2-55:3, Docket Entry No. 208, pp. 54-55.

[253]Andrew Johnston, TT 7-43:22-7-44:2, Docket Entry No. 208, pp. 43-44 (describing databooks maintained for each valve).

256. Greene Tweed's Certificates of Conformity state that all the requirements of the purchase order and of the Greene Tweed requirements that apply to the applicable product have been met.[254]

257. The credible evidence establishes that Schlumberger manufactured SCSSV H13S-0010 installed in Well D, SCSSV H13S-0011 installed in Well B, and SCSSV H13S-0011 installed in Well C in conformity with the requirements of API 14A, Eleventh Edition, § 7.6.3.

258. Hess has failed to establish by a preponderance of the credible evidence that Schlumberger did not manufacture the SCSSVs H13S-0010 installed in Well D, H13S-0011 installed in Well B, or H13S-0011 installed in Well C in conformity with the requirements of API 14A, Eleventh Edition, § 7.6.3.[255]

iv. Hess Failed to Establish by a Preponderance of the Credible Evidence that the Alleged Violations of API 14A, Eleventh Edition, Either Caused the SCSSVs to Fail or Substantially Impaired the Value of the SCSSVs to Hess

Hess alleges that the SCSSVs at issue failed because they were not manufactured in conformance with API 14A, Eleventh Edition, and that the failures substantially impaired the value of the SCSSVs to

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[254]David McCalvin, TT 8-191:7-14, Docket Entry No. 209, p. 191.

[255]Hess does not contend that SCSSV H13S-0025 installed in Well B(2) was manufactured in violation of § 7.6.2 of API 14A. See TT 3-20:7-20, Docket Entry No. 203, p. 20 (Hess's counsel stating that the only API 14A violation alleged with respect to Well B(2) is a violation of § 6.3.2.2).

Hess. Schlumberger argues that the SCSSVs failed because of the way Hess operated the wells not because of any violation of API 14A, Eleventh Edition. For the reasons explained in § III.C, above, the court has already found that Hess failed to establish by a preponderance of the credible evidence that the SCSSVs were not manufactured in conformance with API 14A, Eleventh Edition. For the reasons explained below, the court finds that the alleged violations of API 14A, Eleventh Edition, neither caused the SCSSVs to fail nor substantially impaired their value to Hess.

a. The Alleged Violations of API 14A Did Not Cause the SCSSVs to Fail

(I) The BP Valve Failure During a Pre-Installation Test is Not Comparable to the Post-Installation Hess Valve Failures

259. Hess's argument that the MSE Seal Assemblies caused the SCSSVs at issue to fail is based primarily on the conclusion reached in FRA Rev. 7 that "[t]he primary root cause of the failure is the quality of the MSE Seal."[256]

260. FRA Rev. 7's conclusion that the MSE Seal was the primary root cause for the failure of SCSSV H13S-0010 installed in Well D

[256]FRA Rev. 7, p. 28 of 55, Docket Entry No. 222-51, p. 29 ("The primary root cause is the MSE Seal Spring."). See also Revocation Letters, PTX 313 (for SCSSVs installed in Wells D and B, H13S-0010 and H13S-0011), PTX 329 (for SCSSV H13S-0022 installed in Well C), and PTX 358 (for SCSSV H13S-0025 installed in Well B(2)); Patrick Hyde, TT 8-104:9-22, Docket Entry No. 209, p. 104 (opining that Hess's argument is based solely on conclusions reached in FRA Rev. 7).

was based on and nearly identical to the conclusion reached in Schlumberger's investigation of a TRC-II valve manufactured in 2015 for British Petroleum ("BP") that leaked during a pre-installation make-up test in July of 2015.[257]

261. Following the failure of the BP valve during a pre-installation make-up test and the failure of SCSSV H13S-0010 installed in Well D approximately one month later, Schlumberger feared that a catastrophic number of SCSSV failures could follow, and that fear prompted Schlumberger to issue the world-wide recall of all TRC-II 10K and 15K valves in inventory.

262. The catastrophic number of SCSSV failures that Schlumberger feared never occurred.

263. The successful operation of TRC-II SCSSVs by operators other than Hess throughout the Gulf of Mexico, and data from Hess's operations of Wells D, B, and C show that FRA Rev. 7's conclusion regarding the root cause for the failure of SCSSV H13S-0010 installed in Well D was wrong.

264. The BP valve failure, which occurred during a pre-installation test above ground, was not comparable to the Hess SCSSV failures, which occurred post-installation downhole.[258]

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[257]Dwayne May, TT 9-21:22-22:10, Docket Entry No. 216, pp. 21-22.

[258]Dwayne May, TT 9-22:11-26:4, Docket Entry No. 216, pp. 22-26.

265. Unlike the BP valve, each of the Hess SCSSVs passed multiple pressure tests prior to being run downhole.[259]

(II) Hess Failed to Establish by a Preponderance of the Credible Evidence that the Rosette Springs Caused the SCSSVs to Fail

266. Hess argues that the SCSSVs at issue failed because "the MSE seal assemblies lacked 'sufficient force to initiate . . . an effective seal with the seal bore' when installed, which 'allowed pressure to leak past.'"[260]

267. The purpose of the rosette spring is to initiate a seal at low pressures, which means that rosette springs are significant for opening and closing the SCSSVs above ground where the rosette springs are needed to hold an SCSSV open.[261]

268. Rosette springs lose their significance once the SCSSVs are installed downhole because once the hydraulic system is pressurized, pressure holds an SCSSV open.[262]

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[259]Dwayne May, TT 9-26:5-14, Docket Entry No. 216, p. 26.

[260]Hess's Motion for Judgment, p. 17, Docket Entry No. 222, p. 27 (citing David Hirth, TT 2-210:1-3, Docket Entry No. 203, p. 210, and Dwayne May, TT 4-33:1-3, Docket Entry No. 205, p. 33).

[261]David Hirth, TT 3-133:3-5, Docket Entry No. 204, p. 133; Dwayne May, TT 9-22:14-26:14, Docket Entry No. 216, pp. 22-26 (explaining that a spring provides only 3.2 to 5.7 pounds of force, and helps during testing above ground, where pressure is turned off and on).

[262]Dwayne May, TT 4-157:8-159:2, Docket Entry No. 205, pp. 157-
(continued...)

269. Once energized, the minimum pressure sealing force on the MSE Seal Assembly is significantly – i.e., approximately one hundred times – higher than the spring force of the rosette springs.[263]

270. Hess's expert witness, David Hirth, opined that the rosette spring might be needed downhole if pressure equalized due to "weeping,"[264] but failed to explain how a weeping seal could pass testing above ground, work downhole for over a year before failing, or not cause SCSSVs purchased by other operators to fail.

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[262](...continued)
59, and 9-8:12-14, Docket Entry No. 216, p. 8; Expert Report of Dwayne May ("May Report"), p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7 ("[T]he rosette springs play an insignificant role in MSE performance in a production-mode service application. As a result, the rosette springs in the MSE seals simply cannot be the root cause of the Hess Valve failure."). See also Patrick Hyde, TT 8-112:17-25, Docket Entry No. 209, p. 112 ("The spring is on the inside, and it's pushing out on the walls of the MSE jacket slightly to make contact with the wall. Once you get pressure inside, the pressure force acts on the cup, forces the lips outward at a force much, much greater than the spring could ever place on the seal. And as long as the pressure force pushing the seal outward against the bore is greater than the force the spring can exert, then the spring is redundant. It's redundant, not needed.").

[263]Dwayne May, TT 9-22:14-25:7, Docket Entry No. 216, pp. 22-25 (see especially, p. 9-23:10-16 (describing spring pressure as only 3.2 to 5.7 pounds of force, and needed to help during testing above ground, where pressure is turned off and on), and 9-25:1-2 (describing minimum bore-side pressure as 476 pounds, and minimum hydraulic pressure as approximately 850 pounds).

[264]David Hirth, TT 3-166:10-168:3, Docket Entry No. 204, pp. 166-68.

271. Hirth also acknowledged that his opinion that the rosette springs in the MSE Seal Assemblies caused the SCSSVs to fail is based solely on consideration of Schlumberger documents, and that he did not consider any Hess documents or any factors other than the springs in the MSE Seal Assemblies.[265]

272. The opinions of Schlumberger's experts that the MSE Seal Assemblies played no role downhole once the SCSSV was installed in service are more credible than the opinion of Hess's expert to the contrary.[266]

(III) The Credible Evidence Establishes that Hess's Operating Practices Caused the SCSSVs to Fail

(A) Hess's Operating Practices

273. Hess lacked experience operating safety valves at the Tubular Bells Field, and its offshore operators had inadequate experience and training since a high percentage of them had not previously worked on a live platform.[267]

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[265]David Hirth, TT 3-121:15-122:3, Docket Entry No. 204, pp. 121-22. See also Schlumberger TRC-II 1-1/2" 15k SCSSV Failure Analysis Report Tubular Bells Wells D, B & C by David E. Hirth ("Hirth Report"), PTX 361, Exhibit 47 to Hess's Motion for Judgment, Docket Entry No. 222-47, pp. 71-78 (Appendix M - Material Considered).

[266]See Patrick Hyde, TT 8-112:17-25, Docket Entry No. 209, p. 112; Dwayne May, TT 9-26:3-4, Docket Entry No. 216, p. 26 ("the spring played no role downhole once the valve was installed in service").

[267]Stephen Dunn, TT 2-55:10-56:9, Docket Entry No. 203, pp. 55-56. See also Tubular Bells Operations Phase Lessons Learned from 5-Operator Training held on October 26, 2015, pp. 6-7, DX 118a, (continued...)

274. Hess intentionally closed each of the SCSSVs at least four times per year, despite the fact that the Bureau of Safety and Environmental Enforcement regulations only require that they be closed twice per year.[268]

275. Hess shutdown its wells an "uncommonly high" number of times during periods that the SCSSVs were operating.[269]

276. Hess could not state the number of times that each of the SCSSVs was closed during the "uncommonly high" number of shutdowns because Hess did not track the number of SCSSV closures.[270]

277. When a well is shutdown, it stops flowing, but that does not normally mean that the SCSSV is closed.[271]

278. Well shutdowns and SCSSV closures subject the SCSSVs to significant temperature swings.[272]

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[267](...continued)
Exhibit 42 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-45, pp. 8-9 (detailing deficiencies in the effective transfer of knowledge from design and testing to operations personnel, and in having properly trained and experienced operators who are prepared to operate the asset).

[268]Stephen Dunn, TT 2-45:25-46:6, Docket Entry No. 203, pp. 45-46.

[269]Stephen Dunn, TT 2-39:10-14, Docket Entry No. 203, p. 39; Dwayne May, TT 4-148:13-25, Docket Entry No. 205, p. 148.

[270]Stephen Dunn, TT 2-42:19-43:1, Docket Entry No. 203, pp. 42-43.

[271]Stephen Dunn, TT 2-35:19-36:22, Docket Entry No. 203, pp. 35-36.

[272]Dwayne May, TT 4-148:13-25, Docket Entry No. 205, p. 148.

279. Hess's hydraulic power unit was frequently operated at pressures lower than recommended.[273]

280. Hess contends that the wells were operated at inadequate pressure for only a two-week period and that the inadequate pressure affected only Wells D and B, and could not have affected Wells C and subsequently B(2), which were not on-line during that two-week period.[274] The court is not persuaded by this argument because Schlumberger presented credible evidence that the wells were operated at inadequate pressure for a six-month period that would have affected all of the SCSSVs at issue.[275]

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[273]Stephen Dunn, TT 2-52:6-21, Docket Entry No. 203, p. 52; Patrick Hyde, TT 8-105:5-112:1, Docket Entry No. 209, pp. 105-12. Tubular Bells Operations Phase Lessons Learned from 5-Operator Training held on October 26, 2015, pp. 6-7, DX 118a, Exhibit 42 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-45, p. 8 ("1) HPU [Hydraulic Power Unit] Operating Pressures: HPU was being operated for months at a lower pressure than recommended - may have led to SCSSV closures").

[274]Hess's Closing Argument, TT 10-57:16-59:8, Docket Entry No. 218, pp. 57-59.

[275]Patrick Hyde, TT 8-105:5-112:1, Docket Entry No. 209, pp. 105-12. See also Tubular Bells Operations Phase Lessons Learned from 5-Operator Training held on October 26, 2015, pp. 6-7, DX 118a, Exhibit 42 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-45, p. 8 ("1) HPU [Hydraulic Power Unit] Operating Pressures: HPU was being operated for months at a lower pressure than recommended - may have led to SCSSV closures").

281. Hess's "inadequately experienced and trained" operators who were "not familiar with [d]eepwater operations," destroyed other downhole equipment because they could not control pressure.[276]

282. The "uncommonly high" number of shutdowns combined with low operating pressure, exposed the SCSSVs to debris that scratched and compromised them.[277]

283. Hess did not offer any testimony to show that the SCSSVs would have failed if Hess had operated them properly.

284. Hess's expert witness, David Hirth, never considered how Hess operated its SCSSVs.[278]

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[276]Tubular Bells Operations Phase Lessons Learned from 5-Operator Training held on October 26, 2015, pp. 7, 13, DX 118a, Exhibit 42 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-45, pp. 9 ("Operators unfamiliarity with equipment and processes led to some less than optimal decision-making. These may have contributed to the frequent shut-downs and issues with restarts."); and 15 ("One choke failure on Well B and two failures on Well A. Both of these failures occurred very early in the process of cleaning out or ramping up the wells."). See also Stephen Dunn, TT 2-49:1-51:7, Docket Entry No. 203, pp. 49-51.

[277]Andrew Johnston, TT 7-150:19-154:5, Docket Entry No. 208, pp. 150-54; Dwayne May, TT 9-8:2-11, Docket Entry No. 216, p. 8 ("The failure of the Hess valves was a combination of issues with regard to — of operational issues as well as environmental issues. What happened, the debris in the — from the wellbore migrated into the hydraulic section of the safety valves and actually damaged the MSE seals over time. That, in conjunction with the wide temperature and pressure excursions during the excessive number of Hess shutdowns, facilitated that leakage across those MSE seals and resulted in ultimate valve failure.").

[278]David Hirth, TT 3-121:15-122:3, Docket Entry No. 204, pp. 121-22. See also Schlumberger TRC-II 1-1/2" 15k SCSSV Failure Analysis Report Tubular Bells Wells D, B & C by David E. Hirth (continued...)

(B) Hess's SCSSV Failure Rate Far Exceeded the SCSSV Failure Rate of Other Operators

285. Hess argues that "[w]hen rosette springs lack sufficient sealing force and allow pressure to leak past the [] seal assembly, catastrophic piston, or safety valve, failure almost inevitably results."[279]

286. In 2015 following the failure of the BP valve during a pre-installation make-up test and the failure of SCSSV H13S-0010 installed in Well D approximately one month later, Schlumberger feared that a catastrophic number of SCSSV failures could follow, and that fear prompted Schlumberger to issue the world-wide recall of all TRC-II 10K and 15K valves in inventory.

287. Although the parties disagree about how to count SCSSV failures, regardless of how SCSSV failures are counted, all of the SCSSVs sold to Hess failed while the SCSSVs sold to other operators during the same time period failed at substantially lower rates.[280]

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[278](...continued)
("Hirth Report"), PTX 361, Exhibit 47 to Hess's Motion for Judgment, Docket Entry No. 222-47, pp. 71-78 (Appendix M - Material Considered).

[279]Hess's Motion for Judgment, p. 17, Docket Entry No. 222, p. 27 (citing David Hirth, TT 2-131:23-132:6, Docket Entry No. 203, pp. 131-32).

[280]See Schlumberger's Response to Hess's Motion for Judgment, pp. 3, 21-24, Docket Entry No. 223, pp. 13, 32-34 (arguing that failure rates for other operators were 5.0% or less); Hess's Reply in Support of Motion for Judgment, pp. 8-10, Docket Entry No. 224, pp. 14-16 (arguing that Schlumberger "distorts the data").

288. Schlumberger has presented credible evidence that the high failure rate of the SCSSVs sold to Hess was caused by the way that Hess operated the wells and not by any failure of the SCSSVs or the rosette springs in the MSE Seal Assemblies to have been manufactured in conformity with API 14A, Eleventh Edition.

(C) Hess's Operations of the Wells

(1) Well D

289. SCSSV H13S-0010 was installed in Well D at a depth of approximately 8,700 feet below sea level around April 7, 2014.[281]

290. Production from Well D began on January 14, 2015.[282]

291. Around July 22, 2015, SCSSV H13S-0010 installed in Well D experienced a non-commanded closure and could not be reopened, blocking all production.[283]

292. SCSSV H13S-0010 was installed in Well D for approximately 465 days before it experienced the non-commanded closure that blocked all production.[284]

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[281]Agreed Findings of Fact 202-203.

[282]Agreed Finding of Fact 204.

[283]FRA Rev. 7, p. 4 of 55, PTX 556, Exhibit 49 to Hess's Motion for Judgment, Docket Entry No. 222-51, p. 5.

[284]May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

293. Hess shutdown Well D at least 87 times, subjecting SCSSV H13S-0010 to numerous thermal and pressure transients.[285]

294. The MSE Seal Assemblies in SCSSV H13S-0010 evidenced scratching from downhole debris.[286]

295. Schlumberger provided Hess with minimum recommended hold-open pressure for SCSSV H13S-0010 from 10,000-11,000 psi.[287]

296. From November of 2014 to August of 2015, Hess operated Well D at surface hydraulic pressures that fluctuated between 7,248 and 8,750 psi, i.e., pressures that were much lower than the minimum hold-open pressure recommended by Schlumberger.[288]

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[285]Stephen Dunn, TT 2-42:16-18, Docket Entry No. 203, p. 42.

[286]Dwayne May, TT 9-44:2-47:24, Docket Entry No. 216, pp. 44-47; May Report, pp. 16-18, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 17-19. See also DX 78, Well D Photographs, Exhibit 33 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-36.

[287]Dwayne May, TT 9-68:4-69:6, Docket Entry No. 216, pp. 68-69 (describing minimum operating pressure as 10,000 psi); DX 115, February 9, 2016, Email from Sam Brown to Rob Fast re Initial Inspection H13S0010 (confirming that Hess had been informed of the minimum operating pressure). See also May Report, pp. 22-23, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 23-24 (stating recommended hold-open pressure for Well D was 10,700 psi, and explaining its significance); Patrick Hyde, TT 8-106:2-23 (wells were operated under minimum recommended by the manufacturer's software for the valve for six months), 8-146:2-9 (identifying minimum recommended operating pressure as 11,000 psi at surface), Docket Entry No. 209, pp. 106 and 146.

[288]Stephen Dunn, TT 2-34:21-35:7, 2-52:6-21, Docket Entry No. 203, pp. 21-35 and 52; Patrick Hyde, TT 8-106:2-111:7, Docket Entry No. 209, pp. 106-111; Hyde Report, pp 17-22, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry (continued...)

297. From July 1 to 15, 2015, Hess operated Well D at surface hydraulic pressures that fluctuated between 7,271 and 8,662 psi.[289]

298. Several days later, on July 22, 2015, SCSSV H13S-0010 installed in Well D experienced a non-commanded closure.[290]

299. The hydraulic pressure applied from July 1 to 15, 2015, was not sufficient to hold SCSSV H13S-0010 in the full open position.[291]

300. Hess's inadequate hold-open pressures left the pistons vulnerable to pressure cycling and valve vibrations, conditions

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[288](...continued)
No. 223-63, pp. 17-22. See also May Report, p. 22, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 23 ("The recommended hold-open pressure for the Well D Valve was 10,700 psi. However, Hess operated the Valve at a much lower pressure, fluctuating the surface hydraulic pressures between 7,248 psi and 8,800 psi from November 2014 to August 2015. From July 1, 2015 to July 15, 2015, at a production rate of 16,800 BOBD, Hess applied surface hydraulic pressure from 7271 psi to 8662 psi. Seven days later, on July 22, 2015, the Hess Well D Valve experienced a non-command closure.").

[289]May Report, p. 22, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 23. Seealso Hyde Report, pp. 13-22, DX 246, Exhibit 59 to Schlumberger's Response to Motion for Judgment, Docket Entry No. 223-63, pp. 16-25.

[290]FRA Rev. 7, p. 4 of 55, PTX 556, Exhibit 49 to Hess's Motion for Judgment, Docket Entry No. 222-51, p. 5.

[291]Dwayne May, TT 9-64:1-66:20, Docket Entry No. 208, pp. 64-66; Patrick Hyde, TT 8-109:21-110:25, Docket Entry No. 209, pp. 109-110.

that can compromise the MSE Seal Assemblies' ability to seal and shorten their effective life.[292]

301. The thermal and pressure transients from Hess's operation and the scratching from downhole debris caused the failure of SCSSV H13S-0010 installed in Well D.[293]

(2) Well B

302. SCSSV H13S-0011 was installed in Well B at a depth of approximately 8,400 feet below sea level on May 28, 2014.[294]

303. Production from Well B began on December 14, 2014.[295]

304. On January 30, 2016, SCSSV H13S-0011 installed in Well B failed, blocking all production.[296]

305. SCSSV H13S-0011 was installed in Well B for approximately 575 days before it experienced the non-commanded closure that blocked all production.[297]

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[292]Patrick Hyde, TT 8-103:23-110:25, Docket Entry No. 209, pp. 103-10. See also May Report, pp. 22-23, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, pp. 23-24.

[293]Dwayne May, TT 9-7:24-8:11, and 9-43:2-9, Docket Entry No. 208, pp. 7-8, and 43.

[294]Agreed Findings of Fact 232-233.

[295]Agreed Finding of Fact 234.

[296]Agreed Finding of Fact. 310.

[297]May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

306. Hess shutdown Well B at least 139 times, subjecting SCSSV H13S-0011 to numerous thermal and pressure transients.[298]

307. Hess performed an acid stimulation through SCSSV H13S-0011 on January 4, 2016,[299] which also subjected the SCSSV to thermal and pressure transients.[300]

308. The MSE Seal Assemblies in SCSSV H13S-0011 installed in Well B evidence scratching from downhole debris.[301]

309. From November of 2014 to August of 2015 Well B experienced the same low operating pressures as Well D.[302]

310. The thermal and pressure transients from Hess's operation and the scratching from downhole debris caused the failure of SCSSV H13S-0011 installed in Well B.[303]

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[298]Stephen Dunn, TT 2-42:11-13, Docket Entry No. 203, p. 42.

[299]Agreed Finding of Fact 675.

[300]Dwayne May, TT 9-111:1-16, Docket Entry No. 216, p. 111 (Well B was the only well at issue that Hess acidized).

[301]Dwayne May, TT 9-50:6-23, Docket Entry No. 208, p. 50; Well B Photographs, DX 75, Exhibit 30 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-33.

[302]Dwayne May, TT 9-64:17-65:11, Docket Entry No. 208, pp. 64-65; May Report, p. 23, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 24. See also Hess Tubular Bells Downhole Valve Failure Summary dated July 28, 2016, Slide 4 HESS0159806, DX 299 Slide 4, Exhibit 60 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-64, p. 5.

[303]Dwayne May, TT 9-7:24-8:11, and 9-43:2-9, Docket Entry No. 208, pp. 7-8, and 43.

(3) Well C

311. SCSSV H13S-0022 was installed in Well C at a depth of approximately 8,700 feet below sea level on or around April 15, 2015.[304]

312. Production from Well C began on July 21, 2015.[305]

313. Production from Well C continued until July 17, 2016, when SCSSV H13S-0022 experienced a non-commanded closure that blocked all production.[306]

314. SCSSV H13S-0022 was installed in Well C for approximately 455 days before it experienced the non-commanded closure that blocked all production.[307]

315. Hess shutdown Well C at least 46 times, subjecting SCSSV H13S-0022 to numerous thermal and pressure transients.[308]

316. Schlumberger neither investigated nor issue a report on the failure of SCSSV H13S-0022 installed in Well C.[309]

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[304]Agreed Findings of Fact 272-73.

[305]Agreed Finding of Fact 274.

[306]Agreed Findings of Fact 321-22.

[307]May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

[308]Stephen Dunn, TT 2-42:14-15, Docket Entry No. 203, p. 42.

[309]Andrew Johnston, TT 7-145:7-8, Docket Entry No. 208, p. 145; TT 8-45:1-3, Docket Entry No. 209, p. 45.

317. Hess argues that the periods during which Wells D and B experienced low pressure are not relevant to Well C because Well C was not online then.[310]

318. Well C was connected to the Hydraulic Power Unit on May 17, 2015.[311]

319. On May 22, 2015, and on June 3, 2015, Hess tried to start up H13S-0022, but was unable to so because the FS-2 isolation valve was over pressured.[312]

320. Hess succeeded in starting up H13S-0022 on July 20, 2015.[313]

321. Hess operated Well C well below the recommended operating pressure for the first month that Well C was on line.[314]

322. The MSE Seal Assemblies in SCSSV H13S-0022 evidence scratching from downhole debris.[315]

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[310]Counsel for Hess, TT 8-122:17-19, Docket Entry No. 209, p. 122.

[311]Dwayne May, TT 9-65:14-19, Docket Entry No. 216, p. 65.

[312]Dwayne May, TT 9-65:20-23, Docket Entry No. 216, p. 65.

[313]Dwayne May, TT 9-65:24-66:1, Docket Entry No. 216, pp. 65-66.

[314]Dwayne May, TT 9-66:2-6, 9-142:11-17. Docket Entry No. 216, pp. 66 and 142. See also Hess Tubular Bells Downhole Valve Failure Summary (July 28, 2016), Slide 5, DX 299, Exhibit 60 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-64, p. 5.

[315]Dwayne May, TT 9-50:6-23, Docket Entry No. 208, p. 50; Well C Photographs, DX 77, Exhibit 32 to Schlumberger's Response to (continued...)

323. The thermal and pressure transients from Hess's operation and the scratching from downhole debris caused the failure of SCSSV H13S-0011 installed in Well B.[316]

(4) Well B(2)

324. SCSSV H13S-0025 was installed as a replacement for the failed Well B safety valve at a depth of approximately 8,680 feet below sea level around or about May 20, 2016.[317]

325. Production from Well B(2) resumed on June 14, 2016.[318]

326. Production from Well B(2) continued until March 18, 2018, when SCSSV H13S-0025 experienced a non-command closure and blocked all production.[319]

327. SCSSV H13S-0025 was installed in Well B(2) for approximately 605 days before it experienced the non-commanded closure that blocked all production on March 18, 2018.[320]

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[315](...continued)
Hess's Motion for Judgment, Docket Entry No. 223-35.

[316]Dwayne May, TT 9-7:24-8:11, and 9-43:2-9, Docket Entry No. 208, pp. 7-8, and 43.

[317]Agreed Findings of Fact 456-457.

[318]Stephen Dunn, TT 2-18:19-24, Docket Entry No. 203, p. 18.

[319]Agreed Finding of Fact 461.

[320]May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

328. Schlumberger neither investigated nor issue a report on the failure of SCSSV H13S-0025 installed in Well B(2).[321]

329. The MSE Seal Assemblies in SCSSV H13S-0025 evidenced scratching from downhole debris.[322]

330. The similarities in forensic evidence, i.e., scratches, and failure sequences, i.e., non-commanded closures, experienced by SCSSV H13S-0025 installed in Well B(2), and the three other failed Hess valves, i.e., H13S-0010 installed in Well D, H13S-0011 installed in Well B, and H13S-0022 installed in Well C, persuade the court that SCSSV H13S-0025 failed for the same reasons as did the other Hess SCSSVs.[323]

331. The thermal and pressure transients from Hess's operation and the scratching from downhole debris caused the failure of SCSSV H13S-0025 installed in Well B(2).[324]

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[321]Andrew Johnston, TT 7-145:9-146:3, Docket Entry No. 208, pp. 145-46; TT 8-45:1-3, Docket Entry No. 209, p. 45.

[322]Dwayne May, TT 9-52:15-21, Docket Entry No. 208, p. 52. See also DX 76, Well B(2); Photographs, Exhibit 31 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-34.

[323]Dwayne May, TT 9-35:8-12, Docket Entry No. 208, p. 35 ("Q Did you see similar forensic evidence on the other three safety valves in Wells B, C, and B(2)? A Yes. When I looked at the data, the failure sequence is very similar. I can, basically, mimic the failure modes of those particular seals.").

[324]Dwayne May, TT 9-7:24-8:11, and 9-43:2-9, Docket Entry No. 208, pp. 7-8, and 43.

b. The Alleged Violations of API 14A, Eleventh Edition, Did not Substantially Impair the Value of the SCSSVs to Hess

332. Because the court has found in § III.C, above, that Hess failed to established by a preponderance of the credible evidence that the SCSSVs did not conform to API 14A, Eleventh Edition, and in § III.D.i, above, that Hess failed to establish by a preponderance of the credible evidence that the alleged violations of API 14A, Eleventh Edition, caused the SCSSVs to fail, the court finds that Hess has failed to establish by a preponderance of the credible evidence that the alleged violations of API 14A, Eleventh Edition, substantially impaired the value of the SCSSVs to Hess.

333. The only evidence that the value of the SCSSVs to Hess was substantially impaired is evidence that the SCSSVs were rated for 25-years but that they failed long before the 25-year rating period expired.[325]

334. Alternatively, because the only evidence that the value of the SCSSVs to Hess was substantially impaired is that the SCSSVs failed to perform for the 25-year period for which they were rated, and because the court has already held that Hess may not recover damages arising from the failure of the SCSSVs to perform longer than the one-year warranty period,[326] the court finds hat Hess

[325]Dwayne May, TT 9-100:9-101:12, Docket Entry No. 216, p. 100.

[326]For reasons stated in the June 29, 2017, Memorandum Opinion and Order, Docket Entry No. 40, p. 17, the court has already (continued...)

failed to establish by a preponderance of the credible evidence that the alleged violations of API 14A, Eleventh Edition, substantially impaired the value of the SCSSVs to Hess, even if Hess had established that the SCSSVs did not conform to API 14A, Eleventh Edition, and the alleged violations of API 14A, Eleventh Edition, caused the SCSSVs to fail.

v. Hess Failed to Establish by a Preponderance of the Credible Evidence that Revocation Occurred "before Any Substantial Change in Condition of the [SCSSVs] which [was] Not Caused by Their Own Defects"[327]

335. Hess used each of the SCSSVs for more than one year before they failed.

336. Hess's use of the SCSSVs substantially changed their condition.

337. The substantial change in the SCSSVs' condition was not caused by the alleged defects, i.e., the failure have been manufactured in conformity with API 14A, Eleventh Edition.

338. Citing Deere & Co. v. Johnson, 271 F.3d 613, 620 (5th Cir. 2001), Hess argues that in almost all cases where courts have found that a substantial change occurred, the buyer affirmatively engaged

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[326](...continued)
dismissed Hess's claims for breach of warranty holding that "Hess may proceed with its claims based on the alleged non-conformity of the [SC]SSVs at the time of delivery. Hess may not proceed with its claims based on the failure of the [SC]SSVs to function after the warranty period had expired."

[327]Tex. Bus. & Com. Code Ann. § 2.608(b).

in some unforeseen activity that altered the goods but that "Hess engaged in no such activity here."[328]

339. The credible evidence does not support Hess's argument. Hess altered the SCSSVs by engaging in unforeseen activities, i.e., operating the wells with inexperienced and insufficiently trained personnel, frequently operating the wells at lower than adequate pressure to hold the SCSSVs open, and shutting down the wells an "uncommonly high" number of times.

340. By operating the wells and the SCSSVs with inadequately experienced or trained personnel, and by operating the wells at less than adequate pressure to hold the SCSSVs open, thereby exposing the SCSSVs to "uncommonly high" numbers of shutdowns and thermal swings, Hess routinely exposed the MSE Seal Assemblies to wellbore fluids and debris that scratched them.[329]

341. Scratching compromised the MSE Seal Assemblies by creating a path for pressure to leak between seal sets, pressuring the seals from the wrong direction, and causing them to blow out.[330]

342. Hess observes that FRA Rev. 7 called the scratches on the MSE Seal Assemblies in H13S-0010 installed in Well D "minor," but that characterization was based on photographs taken at a low

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[328]Hess's Motion for Judgment, Docket Entry No. 222, p. 44.

[329]Andrew Johnston, TT 7:150:13-154:5, Docket Entry No. 208, pp. 150-54; Dwayne May, TT 4:155:13-161:9, Docket Entry No. 205, pp. 155-61, and TT 9-39:6-43:12, Docket Entry No. 216, pp. 39-43.

[330]Dwayne May, TT 4-159:10-19, Docket Entry No. 205, p. 159.

magnification, and photographs taken later at higher magnification showed more extensive scratching.[331]

343. Photographs taken of the MSE Seal Assemblies from each of the failed Hess SCSSVs show that they all have similar scratching and grooves:[332] (a) SCSSV H13S-0010 installed in Well D;[333] (b) SCSSV H13S-0011 installed in Well B;[334] (c) SCSSV H13S-0022 installed in Well C;[335] and (d) SCSSV H13S-0025 installed in Well B(2).[336]

344. Hess argues that the scratching occurred after the MSE Seal Assemblies failed, but the credible evidence established that the scratching occurred while the pistons were still operable before the SCSSVs failed, and could not have occurred once the SCSSVs failed and the pistons stopped moving.[337]

345. Hess's unforseen operating activities substantially altered the SCSSVs by exposing them to debris that badly scratched the MSE Seal Assemblies and made them useless for sealing.

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[331]Dwayne May, TT 9-49:22-50:5, Docket Entry No. 216, pp. 49-50.

[332]Dwayne May, TT 9-50:6-23, Docket Entry No. 216, p. 50.

[333]Well D Photographs, DX 78, Exhibit 33 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-36.

[334]Well B Photographs, DX 75, Exhibit 30 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-33.

[335]Well C Photographs, DX 77, Exhibit 32 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-35.

[336]Well D Photographs, DX 76, Exhibit 31 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-34.

[337]Dwayne May, TT 9-47:3-48:22, Docket Entry No. 216, p. 48.

346. Hess's use of SCSSV H13S-0010 installed in Well D, for approximately 465 days substantially changed its condition, which was not caused by any alleged non-conformity.

347. Hess's use of SCSSV H13S-0011 installed in Well B, for approximately 575 days substantially changed its condition, which was not caused by any alleged non-conformity.

348. Hess's use of SCSSV H13S-0022 installed in Well C, for approximately 455 days years substantially changed its condition, which was not caused by any alleged non-conformity.

349. Hess's use of SCSSV H13S-0025 installed in Well B(2) for approximately 605 days substantially changed its condition, which was not caused by any alleged non-conformity.

D. Damages

Because Hess failed to establish by a preponderance of the credible evidence that it justifiably revoked its acceptance of any of the four SCSSVs, Hess has failed to establish that Schlumberger breached the parties' agreement or that it is entitled to recover damages. Nevertheless, because the legal issues in this case are complicated, and because the attorneys, parties, and the court have devoted substantial time and energy to Hess's claims for damages, the court will address those claims so that if a higher court disagrees with the court's rulings on liability, the parties and the court will not then need to revisit them.

Hess seeks damages of $217,900,795.00 consisting of the cost to purchase new SCSSVs, the cost to workover each well to retrieve and replace the failed SCSSVs, and lost profits from Well B deriving from the Gunflint tie-in to the Gulfstar One production platform.[338] Schlumberger argues that Hess has failed to prove its claimed damages because Hess failed to prove that its' workover costs were commercially reasonable, failed to reliably calculate its' damages calculations, and failed to prove that Schlumberger could foresee lost profits resulting from the Gunflint tie-in. Schlumberger also argues that it is entitled to a credit for the value of Hess's use of the SCSSVs.[339]

i. Schlumberger Is Not Entitled to a Credit for Hess's Use of the Failed SCSSVs

350. Schlumberger argues that it is entitled to a credit for the value of Hess's use of the SCSSVs,[340] but failed to support that argument by presenting evidence or methodology for calculating the amount of value Hess obtained from using the four failed SCSSVs.[341]

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[338]Hess's Motion for Judgment, Docket Entry No. 222, p. 45.

[339]Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223, pp. 47-50.

[340]Id. at 49.

[341]Citing two experts' reports and asserting that "Hess received significant value from the valves," id., Schlumberger argues that "using an average oil price of $45 per barrel, it grossed over $175 million for Well B(1), $229 million for Well B(2), $108 million for Well C, and $94 million for Well D." But (continued...)

ii. Failure of the SCSSVs Caused Hess to Incur the Following Costs and Loss of Deferred Compensation

a. Well D Damages

351. SCSSV H13S-0010 was installed in Well D on April 7, 2014.[342]

352. Production from Well D began on January 14, 2015.[343]

353. SCSSV H13S-0010 was installed in Well D for approximately 465 days before it failed, blocking production on July 22, 2015.[344]

354. Production from Well D was restored around February 27, 2016.[345]

(I) Cost of Cover for Failed SCSSV H13S-0010

355. Hess replaced SCSSV H13S-0010 with another 5-1/2" TRC-II-15K SCSSV, Serial Number H15S-0088 (Well D(2)) purchased from Schlumberger on November 24, 2014.[346]

356. SCSSV H15S-0088 cost $720,680.00.[347]

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[341](...continued)
the SCSSVs were only one small part of the infrastructure needed to produce hydrocarbons from the wells. Schlumberger fails to offer evidence, methodology, are argument for how the cited information should be used to calculate the value of Hess's use of the SCSSVs.

[342]Agreed Finding of Fact 202.

[343]Agreed Finding of Fact 204.

[344]May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

[345]Expert Report of Terry D. Payne ("Payne Report"), p. 18, PTX 375, Exhibit 80 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-84, p. 8.

[346]Agreed Findings of Fact 306, 732, and 753.

[347]Agreed Finding of Fact. 146. See also Calculation of (continued...)

(II) Incidental Costs to Retrieve and Replace Failed SCSSV H13S-0010

357. Restoring production to Well D required Hess to workover the blocked well, a process that involved retrieving the production equipment — including the SCSSV — and replacing it.[348]

358. Workover operations are costly, time-intensive operations that require the use of sophisticated drilling rigs manned by experienced, well-equipped crews.[349]

359. When SCSSV H13S-0010 failed, Hess had under contract and operating in the Tubular Bells Field, the Stena Forth, a drillship capable of drilling in water depths up to 10,000 feet staffed with an experienced crew.[350]

360. Before SCSSV H13S-0010 failed Hess had a pre-planned exploration and production schedule for the Stena Forth that extended through mid-2017 and possibly into 2018, and did not include any workover operations.[351]

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[347](...continued)
Damages for the Cost of Non-Conforming Safety Valves Plus Cover, PTX 605, Exhibit 52 to Hess's Motion for Judgment, Docket Entry 222-54; Barry Pullium, TT 6-94:16-96:15, Docket Entry No. 207, pp. 94-96.

[348]Jason Sapp, TT 5-92:6-97:24, Docket Entry No. 206, pp. 92-97 (describing the process for removing and replacing a failed SCSSV).

[349]Jason Sapp, TT 5-93:4-10, Docket Entry No. 206, p. 93.

[350]Rolle Hogan, TT 5-146:4-149:13, Docket Entry No. 206, pp. 146-49.

[351]Rolle Hogan, TT 5-153:2-155:19, Docket Entry No. 206, pp. 153-55.

361. Hess used the Stena Forth drillship to conduct the Well D workover required to retrieve and replace the failed SCSSV.[352]

362. Using the Stena Forth was the most efficient, cost-effective way to work the well over and mitigate damages because seeking an alternative drillship or rig would have required Hess to undertake a costly and time-consuming efforts to find a ship or rig that was both suitable and available, negotiate a contract with the owner, obtain necessary permits, and mobilize a new ship or rig to the Tubular Bells Field.[353]

363. A few months before the SCSSV failures Hess negotiated a lower day rate for the Stena Forth, PTX 425.-15, resulting in a "market competitive rate" for the workovers.[354]

364. Schlumberger argued, but failed to prove by a preponderance of the evidence, that by using the Stena Forth to workover Wells D, Well B, and Well C, Hess saved $74.6 million in standby expenses.

365. The Stena Forth performed the Well D workover over a 65-day period between December 23, 2015, and February 26, 2016.[355]

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[352]Jason Sapp, TT 5-125:21-23, and Rolle Hogan, TT 5-146:4-149:13, Docket Entry No. 206, pp. 125 and 146-49.

[353]Rolle Hogan, TT 5-151:6-153:1, 5:162:11-167:16, Docket Entry No. 206, pp. 151-56, 162-67.

[354]Rolle Hogan, TT 5-164:16-165:19, 5-185:5-9, Docket Entry No. 206, pp. 164-65 and 185 (Hess negotiated the Stena Forth day rate down from $563,000.00 to $498,000.00).

[355]Jason Sapp, TT 5-90:6-10, 5-115:5-116:25, Docket Entry (continued...)

366. The Well D workover cost Hess $63,060,880.00.[356]

367. The cost of the Well D workover includes $600,000 for "investigation expenses," which are pre-workover expenses that Hess incurred for investigation or for troubleshooting Well B.[357]

368. But for the failure of SCSSV H13S-0010 installed in Well D, Hess would not have needed to replace SCSSV H13S-0010 or conduct the required workover.[358]

369. Hess has proved by a preponderance of the evidence that the cost of new SCSSV H15S-0088 for Well D, and the cost to retrieve and replace failed SCSSV H13S-0010 was $63,781,560.00.[359]

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[355](...continued)
No. 206, pp. 90, and 115-16 (explaining that time allocated to workover included time to mobilize and demobilize the drillship).

[356]Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry 222-55; Barry Pullium, TT 6-103:21-105:8, 6-121:12-123:25, Docket Entry No. 207, pp. 103-05, and 121-23. See also Aladham Ismail, TT 6-62:2-63:19, Docket Entry No. 207, pp. 62-63; Carmen Eggleston, TT 10-22:15-19 (workover costs for Well D using her preferred numbers was $63,000,000.00).

[357]Barry Pullium, TT 6-107:8-12, Docket Entry No. 207, p. 107. See also Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry 222-55.

[358]Carmen Eggleston, TT 10-35:24-35:2, Docket Entry No. 218, pp. 35-36.

[359]Summary of Damages by Claim and Valve, PTX 604, Exhibit 51 to Hess's Motion for Judgment, Docket Entry 222-53; Barry Pullium, TT 6-93:14-94:11, Docket Entry No. 207, pp. 93-94.

b. Well B Damages

370. SCSSV H13S-0011 was installed in Well B on May 28, 2014.[360]

371. Production from Well B began on December 14, 2014.[361]

372. SCSSV H13S-0011 was installed in Well B for approximately 575 days before it failed, blocking production around January 30, 2016.[362]

373. Well B production was restored around June 14, 2016.[363]

(I) Cost of Cover for Failed SCSSV H13S-0011

374. Hess replaced SCSSV H13S-0011 with another 5-1/2" TRC-II-15K SCSSV, Serial Number H13S-0025 (Well B(2)) that Hess had in stock and intended to use in another well.

375. Hess purchased SCSSV H13S-0025 from Schlumberger in October 2013 for $572,430.00.[364]

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[360]Agreed Findings of Fact 232-233.

[361]Agreed Finding of Fact 234.

[362]Agreed Finding of Fact 310; May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

[363]Payne Report, p. 14, PTX 375, Exhibit 80 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-84, p. 4.

[364]Agreed Finding of Fact 227. See also Calculation of Damages for the Cost of Non-Conforming Safety Valves Plus Cover, PTX 605, Exhibit 52 to Hess's Motion for Judgment, Docket Entry 222-54, p. 2; Barry Pullium, TT 6-94:16-96:15, Docket Entry No. 207, pp. 94-96.

376. Pulling SCSSV H13S-0025 from inventory forced Hess to incur an expedite fee of $173,000.00 paid to Baker Hughes to replenish its then-depleted inventory.[365]

377. Purchasing a valve needed to replenish Hess's depleted inventory from Baker Hughes, even though replacing it required an expedite fee, was a reasonable commercial decision by Hess.[366]

378. The total cost of the new SCSSV purchased to replace the failed SCSSV H134S-0011 installed in Well B was $745,430.00.[367]

(II) Incidental Costs to Retrieve and Replace Failed SCSSV H13S-0011

379. Hess used the Stena Forth drillship to conduct the Well B workover required to retrieve and replace the failed SCSSV.[368]

380. Using the Stena Forth was the most efficient, cost-effective way to work the well over and mitigate damages because seeking out an alternative drillship or rig would have required Hess to undertake a costly and time-consuming effort to find a ship

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[365]Jason Sapp, 5-84:4-87:3, Docket Entry No. 206, pp. 84-87; Barry Pullium, TT 6-95:21-96:15, 6-100:10-103:6, Docket Entry No. 207, pp. 95-96, 100-103.

[366]Barry Pullium, TT 6-101:3-103:6, Docket Entry No. 207, pp. 101-03.

[367]Calculation of Damages for the Cost of Non-Conforming Safety Valves Plus Cover, PTX 605, Exhibit 52 to Hess's Motion for Judgment, Docket Entry 222-54; Barry Pullium, TT 6-94:16-96:15, Docket Entry No. 207, pp. 94-96.

[368]Jason Sapp, TT 5-125:21-23, and Rolle Hogan, TT 5-146:4-149:9, Docket Entry No. 206, pp. 125 and 146-49.

or rig that was both suitable and available, negotiate a contract with the owner, obtain necessary permits, and mobilize a new ship or rig to the Tubular Bells Field.[369]

381. Schlumberger argued, but failed to prove by a preponderance of the evidence, that by using the Stena Forth to workover Well D, B, and C, Hess saved $74.6 million in standby expenses.

382. Hess performed the Well B workover over a 61-day period from April to June of 2016.[370]

383. The Well B workover cost Hess $61,878,489.00.[371]

384. The cost of the Well B workover to Hess included $1,840,000 of investigation expenses, and excluded $557,931 of discretionary expenses.[372]

385. Investigation expenses are pre-workover expenses that Hess incurred for investigation or for troubleshooting Well B.[373]

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[369]Rolle Hogan, TT 5-151:6-153:1, 5:162:11-167:16, Docket Entry No. 206, pp. 151-56, 162-67.

[370]Jason Sapp, TT 5-90:6-91:11, Docket Entry No. 206, p. 90.

[371]Barry Pullium, TT 6-104:2-107:7, Docket Entry No. 207, pp. 104-07; Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry No. 222-55; ; Barry Pullium, TT 6-103:21-105:8, 6-121:12-123:25, Docket Entry No. 207, pp. 103-05, and 121-23.

[372]Barry Pullium, TT 6-107:8-109:6, Docket Entry No. 207, pp. 107-09; Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry No. 222-55; ; Barry Pullium, TT 6-103:21-105:8, 6-121:12-123:25, Docket Entry No. 207, pp. 103-05, and 121-23.

[373]Barry Pullium, TT 6-107:8-12, Docket Entry No. 207, p. 107.

386. Discretionary projects are improvements made to the wells not related to the SCSSV failures.[374]

387. But for the failure of SCSSV H13S-0011 installed in Well B, Hess would not have needed to replace SCSSV H13S-0011 and conduct the required workover.[375]

(III) Consequential Loss of Deferred Compensation

388. The Well B safety valve failure shutdown that Well B from January until June of 2016.

389. Pursuant to a Production Handling Agreement ("PHA") that Hess had with Williams, Williams had the right to require Hess to shut it its wells while it connected production from other fields to the Gulfstar One platform.[376]

390. In exchange, Williams agreed to pay Hess thirty percent of the estimated value of the shutdown production based on (1) production rates immediately before the shutdown and (2) the market price for oil and gas during the shutdown.[377]

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[374]Barry Pullium, TT 6-108:5-12, Docket Entry No. 207, p. 107.

[375]Carmen Eggleston, TT 10-35:24-35:2, Docket Entry No. 218, pp. 35-36.

[376]Barry Pullium, TT 6-148:1-25, Docket Entry No. 207, p. 148.

[377]Barry Pullium, TT 6-148:1-151:24, Docket Entry No. 207, pp. 148-51. See also Production Handling Agreement, PTX 524.

391. Hess shutdown its Tubular Bells wells from April through June 2016 while another field, the Gunflint Field, was tied in to the Gulfstar One platform.[378]

392. Under the terms of the PHA, Williams paid Hess approximately $4.3 million in deferred-production compensation relating to all of Hess's Tubular Bells Wells.[379]

393. Because when the Gunflint tie-in occurred Well B was shutdown and not producing hydrocarbons due to the failure of SCSSV H13S-0011, Hess received no deferred-production compensation for Well B.[380]

394. Had Well B been producing hydrocarbons at its average rate immediately before the Gunflint tie-in occurred, Hess would have received an additional $5,259,567.00 from Williams in deferred-production compensation.[381]

395. In April of 2012 when the parties entered into their agreement for SCSSVs, Schlumberger had reason to know that the

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[378]Barry Pullium, TT 6-149:1-25, Docket Entry No. 207, p. 149.

[379]Barry Pullium, TT 6-151:25-160:3 Docket Entry No. 207, pp. 151-60. See also Calculation of Gunflint Tie-In Damages, PTX 607, Exhibit 54 to Hess's Motion for Judgment, Docket Entry No. 222-56.

[380]Barry Pullium, TT 6-152:8-16, Docket Entry No. 207, p. 152.

[381]Barry Pullium, TT 6-152:17-157:6, Docket Entry No. 207, pp. 152-57. See also Calculation of Gunflint Tie-In Damages, PTX 607, Exhibit 54 to Hess's Motion for Judgment, Docket Entry No. 222-56; Summary of Damages by Claim and Valve, PTX 604, Exhibit 51 to Hess's Motion for Judgment, Docket Entry No. 222-53; Barry Pullium, TT 6-93:14-94:11, Docket Entry No. 207, pp. 93-94.

SCSSV failures could strip Hess of deferred-production compensation under the PHA with Williams because PHAs are not only common in the oil and gas industry and but also commonly provide for deferred compensation, and the existence of the Williams-Hess Gulfstar One PHA was publicly known.[382]

(IV) Conclusions as to Well B

396. Hess has proved by a preponderance of the evidence that the cost of cover for SCSSV H13S-0011 that failed while installed in Well B was $745,430, the cost to retrieve the replace the failed SCSSV H13S-0011 with new SCSSV H15S-0025 was $61,878,489.00, the amount of deferred compensation that Hess loss because Well B was shutdown during the period of the Gunflint tie-in was $5,259,567.00, and that the total amount of damages proved for Well B was $67,883,486.00.[383]

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[382]Stephen Dunn, TT 2-13:16-16:10 (describing the PHA and stating that such agreements common in the Gulf of Mexico); Barry Pullium, TT 6-157:13-158:22, Docket Entry No. 207, pp. 157-58 (describing deferred compensation as a commonly known feature of PHAs); Final Argument, TT 10-65:12-66:5. Docket Entry No. 218, pp. 65-66 (summarizing the evidence on the issue of foresee ability). See also Carmen Eggleston, TT 9-197:3-198:6; Rebuttal Expert Report of Carmen R. Eggleston and Walter Bratic, pp. 13 ¶ 33, 25 ¶ 59, DX 222, Exhibit 55 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-59, pp. 15 ¶ 33 and 27 ¶ 59(challenging Pullium's method of calculating deferred compensation damages, and Pullium's failure to cite sufficient evidence to establish that such damages were foreseeable, but not challenging Hess's entitlement to deferred compensation as consequential damages); Sur-Reply Expert Report of Carmen R. Eggleston, DX 223, p. 27 ¶¶ 57-59 (same).

[383]Summary of Damages by Claim and Valve, PTX 604, Exhibit 51 (continued...)

c. Well C Damages

397. SCSSV H13S-0022 was installed in Well C on April 15, 2015.[384]

398. Production from Well C began on July 21, 2015.[385]

399. SCSSV was installed in Well C for approximately 455 days before it failed, blocking production around July 17, 2016.[386]

(I) Cost of Cover for Failed SCSSV H13S-0022

400. The Well C safety valve was replaced with a Baker Hughes safety valve, Serial Number SN 1230710, purchased on August 2, 2016, for $600,312.[387]

(II) Incidental Costs to Retrieve and Replace Failed SCSSV H13S-0022

401. Hess used the Stena Forth drillship to conduct the Well C workover required to retrieve and replace the failed SCSSV.[388]

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[383](...continued)
to Hess's Motion for Judgment, Docket Entry 222-53; Barry Pullium, TT 6-93:14-94:11, Docket Entry No. 207, pp. 93-94.

[384]Agreed Finding of Fact 272.

[385]Agreed Finding of Fact 274.

[386]Agreed Finding of Fact 322; May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

[387]Agreed Finding of Fact 765; Calculation of Damages for the Cost of Non-Conforming Safety Valves Plus Cover, PTX 605, Exhibit 52 to Hess's Motion for Judgment, Docket Entry 222-54, p. 2; Barry Pullium, TT 6-94:16-96:15, Docket Entry No. 207, pp. 94-96.

[388]Jason Sapp, TT 5-125:21-23, and Rolle Hogan, TT 5-146:4-
(continued...)

402. Using the Stena Forth was the most efficient, cost-effective way to work the well over and mitigate damages because seeking out an alternative drillship or rig would have required Hess to undertake a costly and time-consuming effort to find a ship or rig that was both suitable and available, negotiate a contract with the owner, obtain necessary permits, and mobilize a new ship or rig to the Tubular Bells Field.[389]

403. Hess performed the Well C workover over a 60-day period from November to December of 2016.[390]

404. The Well C workover cost Hess $52,138,076.00.[391]

405. The Well C workover cost excluded $6,775,106, consisting of $4,375,069 of discretionary expenses, $2,400,037 of demobilization expenses,[392] and $194,000 adjustment agreed to by counsel following the cross-examination of Hess's damages expert.[393]

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[388](...continued)
149:9, Docket Entry No. 206, pp. 125 and 146-49.

[389]Rolle Hogan, TT 5-151:6-153:1, 5:162:11-167:16, Docket Entry No. 206, pp. 151-56, 162-67.

[390]Jason Sapp, TT 5-90:6-91:11, Docket Entry No. 206, p. 90; Rolle Hogan, TT 5-159:22-25, Docket Entry No 206, p. 159.

[391]See Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry No. 222-55; ; Barry Pullium, TT 6-103:21-105:8, 6-121:12-123:25, Docket Entry No. 207, pp. 103-05, and 121-23.

[392]Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry No. 222-55.

[393]Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to
(continued...)

406. Hess has proved by a preponderance of the evidence that the cost of a new SCSSV for Well C was $600,312.00, and the cost to retrieve the replace the failed SCSSV H13S-0022 with new SCSSV SN1230710 was $52,138,076.00, for a total of $52,738,388.[394]

407. But for the failure of SCSSV H13S-0022 installed in Well C, Hess would not have needed to replace SCSSV H13S-0022 or conduct the required workover.[395]

d. Well B(2) Damages

408. SCSSV H13S-0025 was installed as a replacement for the failed Well B safety valve at a depth of approximately 8,680 feet below sea level around May 20, 2016.[396]

409. Production from Well B(2)resumed in June of 2016.[397]

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[393](...continued)
Hess's Motion for Judgment, Docket Entry No. 222-55(showing Well C workover cost was $52,332,076.00). Following cross examination of Hess's damages expert, Barry Pullium, (TT 6-160:19-194:15, Docket Entry No. 207, pp. 160-94,) Counsel for Hess agreed that the workover costs for Well C should be reduced by $194,000.00 from $52,332,076.00 to $52,138,076.00. See Colloquy with the Court, TT 8-234:4-235:15, Docket Entry No. 209, pp. 234-35.

[394]Summary of Damages by Claim and Valve, PTX 604, Exhibit 51 to Hess's Motion for Judgment, Docket Entry 222-53, adjusted by $194,000.00 as agreed by counsel during trial. See Colloquy with the Court, TT 8-234:4-235:15, Docket Entry No. 209, pp. 234-35.

[395]Carmen Eggleston, TT 10-35:24-35:2, Docket Entry No. 218, pp. 35-36.

[396]Agreed Finding of Fact 456.

[397]Stephen Dunn, TT 2-18:17-18, Docket Entry No. 203, p. 18.

410. SCSSV H13S-0025 was installed in Well B(2) for approximately 605 days before it failed, blocking production on March 18, 2018.[398]

(I) Cost of Cover for Failed SCSSV H13S-0025

411. The Well B(2) safety valve was replaced with a Baker Hughes safety valve, Serial Number SN1328137 (Well B(3)), purchased on March 28, 2017, for $619,370.00.[399]

(II) Incidental Costs to Retrieve and Replace Failed SCSSV H13S-0025

412. In order to restore the well and resume production, Hess had to retrieve and replace the failed SCSSV.

413. When SCSSV H13S-0025 installed in Well B(2) failed Hess no longer had the Stena Forth drillship under contract. Instead, Hess extended the term of the Noble Paul Romano drillship to conduct the workover and valve replacement.

414. Schlumberger argued but failed to prove that by using the Noble Paul Romano to perform the workover on Well B(2), Hess saved $3.8 million in standby expenses. DX 222.

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[398]Agreed Finding of Fact 461; May Report, p. 6, Exhibit 50 to Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223-53, p. 7.

[399]Agreed Findings of Fact 773-74. See also Summary of Damages by Claim and Valve, PTX 604, Exhibit 51 to Hess's Motion for Judgment, Docket Entry 222-53; Barry Pullium, TT 6-93:14-94:11, Docket Entry No. 207, pp. 93-94.

415. Using the Noble Paul Romano was the most efficient, cost-effective way to work the well over and mitigate damages.[400]

416. Hess performed the Well B(2) workover over a 45-day period from March to May of 2018 at a cost of $32,877,992.00.[401]

417. Hess has proved by a preponderance of the evidence that the cost of a new SCSSV for Well B(2) was $619,370.00, and the cost to retrieve the replace the failed SCSSV H13S-0025 with new SCSSV SN1328137 was $32,877,992.00, for a total of $33,497,362.[402]

418. But for the failure of SCSSV H13S-0025 installed in Well B(2), Hess would not have needed to conduct the Well B(2) workover or replacement.[403]

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[400]Rolle Hogan, TT 5-190:13-191:8, Docket Entry No. 206, pp. 190-91; Barry Pullium, TT 6-120:11-121:11, 128:19-130:9, Docket Entry No. 207, pp. 120-21, 128-30.

[401]Rolle Hogan, TT 5-189:9-190:18, Docket Entry No. 206, pp. 189-90; Adalam Ismail, TT 6-36:25-37:4, Docket Entry No. 207, pp. 36-37; Retrieval and Replacement Expenses, PTX 606, Exhibit 53 to Hess's Motion for Judgment, Docket Entry No. 222-55; ; Barry Pullium, TT 6-103:21-105:8, 6-121:12-123:25, Docket Entry No. 207, pp. 103-05, and 121-23.

[402]Summary of Damages by Claim and Valve, PTX 604, Exhibit 51 to Hess's Motion for Judgment, Docket Entry 222-53, adjusted by $194,000.00 as agreed by counsel during trial. See Colloquy with the Court, TT 8-234:4-235:15, Docket Entry No. 209, pp. 234-35.

[403]Carmen Eggleston, TT 10-35:24-35:2, Docket Entry No. 218, pp. 35-36.

iii. Conclusions

419. Hess has established by a preponderance of the credible evidence that it reasonably spent a total of $2,685,792.00 to obtain the four replacement SCSSVs.

420. Hess has established by a preponderance of the credible evidence that it reasonably spent $209,955,437 to investigate and subsequently retrieve and replace the failed SCSSVs.

421. Hess has established by a preponderance of the credible evidence that it actually incurred and paid these expenses, that these expenses represent the cost of cover plus incidental expenses, and that they commercially reasonable and reasonably incurred to effect cover.

422. Hess has established by a preponderance of the credible evidence that it would be entitled to an additional $5,259,567 in consequential damages for deferred production compensation that it would have received from Williams had Well B not been shutdown during the Gunflint tie-in period in 2016.

423. Hess would, therefore, be entitled to $217,900,796.00 in damages, exclusive of interest, costs, and attorneys fees.

Damages Summary Table

Well	D	B	C	B(2)	Total
Failed SCSSV	**H13S-0010**	**H13S-0011**	**H13S-0022**	**H13S-0025**	
Replacement SCSSV	**H15S-0088**	**H13S-0025**	**SN1230710**	**SN1328137**	
Cost of New SCSSV	$720,680.00	$745,430.00	$600,312.00	$619,370.00	$2,685,792.00
Cost to Retrieve and Replace (Workover)	$63,060,880.00	$61,878,489.00	$52,138,076.00	$32,877,992.00	$209,955,437.00
Total to retrieve and replace failed SCSSVs	$63,781,560.00	$62,623,919.00	$52,738,388.00	$33,497,362.00	$212,641,229.00
Deferred Compensation		$5,259,567.00			$5,259,567.00
Total	$63,781,560.00	$67,883,486.00	$52,738,388.00	$33,497,362.00	$217,900,796.00

III. Conclusions of Law

Hess argues that it is entitled to judgment on its breach of contract claims as to all four of the failed SCSSVs because Schlumberger delivered nonconforming SCSSVs. Hess argues that the SCSSVs were non-conforming when delivered because "[t]he Metal Spring Energized ("MSE") Seal Assemblies used in [them] were not API qualified as the parties' contract required (liability) and that non-conformity caused the failures (causation)."[404] Hess moves the court to enter judgment in its "favor and award it $217,900,795.00 exclusive of interest, costs, and attorneys' fees."[405] Schlumberger urges the court not to enter judgment in Hess's favor because "Hess failed to carry its burden on three scores: one, it failed to show breach; two, it failed to show causation; and three, it failed to show that it revoked acceptance before it substantially changed the valves' condition."[406] Asserting that Hess did not justifiably revoke, and that the entry of summary judgment on its defense of release and its counterclaim for indemnity assumes Hess's justifiable revocation, Schlumberger seeks partial judgment on its indemnity counterclaim in an amount be determined after it submits evidence of attorneys' fees.[407]

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[404]Hess's Motion for Judgment, Docket Entry No. 222, p. 11.

[405]Id.

[406]Schlumberger's Response to Hess's Motion for Judgment, Docket Entry No. 223, p. 11.

[407]Id. at 47 & n. 17.

A. Jurisdiction

1. The court has jurisdiction over this action pursuant to 28 U.S.C. § 1332.

2. The court has jurisdiction over the parties.

3. Venue is proper pursuant to 28 U.S.C. § 1391.

B. Claims for Breach of Contract Under Texas Law

4. The elements of breach of contract under Texas law are: (a) the existence of a valid contract; (b) performance or tendered performance by the plaintiff; (c) breach of the contract by the defendant; and (d) damages to the plaintiff resulting from the breach." IAS Services Group, L.L.C. v. Jim Buckley & Associates, Inc., 900 F.3d 640, 652 (5th Cir. 2018).

5. The final element requires causation. To recover on a breach of contract claim, "the evidence must show that Hess suffered damages and that the damages are the 'natural, probable, and foreseeable consequence' of the defendant's conduct." Id. (quoting Prudential Securities, Inc. v. Haugland, 973 S.W.2d 394, 396-97 (Tex.App.—El Paso 1998, pet. denied)).

6. Hess, as the party seeking recovery, bears the burden of proof to show that Schlumberger breached the parties' contract. Matador Drilling Co., Inc. v. Post Petroleum Co., 662 F.2d 1190, 1195 (5th Cir. 1981). See also Chalker Energy Partners III, LLC v. Le Norman Operating LLC, 595 S.W.3d 668, 673 (Tex. 2020) ("A party seeking to recover under a contract bears the burden of proving that all conditions precedent have been satisfied.").

7. Based on § II of the Findings of Fact the court concludes that the Commercial Agreement, which incorporates the Master Service Agreement, constitutes a valid contract between Hess and Schlumberger governed by Texas law.[408]

8. The parties agree that their contract is not ambiguous.[409] "When a contract's language is unambiguous, courts must 'construe the contract as a matter of law." First Bank v. Brummitt, 519 S.W.3d 95, 105 (Tex. 2017) (quoting Coker v. Coker, 650 S.W.2d 391, 393 (Tex. 1983)).

i. Contracts for the Sale of Goods

9. Contracts relating the sale of goods are governed by Article Two of the Uniform Commercial Code, which has been adopted in Texas as Chapter Two of the Texas Business and Commerce Code. Tex. Bus. & Com. Code Ann. § 2.102; Emerson Electric Co. v. American Permanent Ware Co., 201 S.W.3d 301, 310 (Tex. App. — Dallas 2006, no pet.); Minsa Corporation v. SFTC, LLC, 540 S.W.3d 155, 159-60 (Tex.App.—Amarillo 2017, pet. denied).

10. The Texas Business and Commerce Code displaces common law rules regarding breach of contracts within its scope. Trident

[408]Both parties refer to a Bridging Agreement that amended the Master Service Agreement, but neither party offered the Bridging Agreement at trial, and the Bridging Agreement was not admitted as an exhibit at trial.

[409]Agreed Finding of Fact 63.

Steele Corp. v. Wiser Oil Co., 223 S.W.3d 520, 524 (Tex.App.—Amarillo 2006, pet denied) (citing Glenn Thurman, Inc. v. Moore Construction, Inc., 942 S.W.2d 768, 771 (Tex.App.—Tyler 1997, no writ)).

11. "Goods" is broadly defined to encompass "all things (including specially manufactured goods) which are movable at the time of identification to the contract of sale. . ." Propulsion Technologies, Inc. v. Attwood Corp., 369 F.3d 896, 900 (5th Cir. 2004) (quoting Tex. Bus. & Com. Code Ann. § 2.105(a)).

12. Because the parties' Commercial Agreement provides for the sale of goods (the SCSSVs) Hess's breach of contract claims are governed by Chapter Two of the Texas Business and Commerce Code.

13. A seller breaches a contract for the sale of goods if its delivery fails in any respect to conform to the contract. Tex.Bus.& Com. Code Ann. § 2.601. See also Minsa, 540 S.W.3d at 160 ("Goods are 'conforming' or conform to the contract when they are in accordance with the obligations under the contract.").

14. Non-conformity includes any failure of the seller to perform according to his obligations under the contract, including breaches of warranties. Texas Bus. & Com. Code Ann. § 2-714, Comment 2.

15. When goods fail to conform to the contract, the buyer may reject or accept the goods. Tex. Bus. & Com. Code Ann. § 2.601.

16. A buyer accepts goods if he agrees to accept them despite their non-conformity, fails to make an effective rejection, or does any act inconsistent with the seller's ownership. Tex. Bus. & Com. Code Ann. § 2.606.

17. A buyer effectively rejects non-conforming goods when the buyer timely notifies the seller that it will not accept the goods. HCI Chemicals (USA) Inc. v. Henkel KGaA, S.A., 966 F.2d 1018, 1023 (5th Cir. 1992) (citing Texas Bus. & Com. Code Ann. § 2.602).

18. The buyer's notice of rejection must be clear and unambiguous. Id.

19. Whether the buyer has a breach of contract or breach of warranty claim is determined by whether the buyer has finally accepted the goods. Tex. Bus. & Com. Code Ann. §§ 2.711, 2.714; Minsa, 540 S.W.3d at 160; Emerson Electric, 201 S.W.3d at 310.

20. "Acceptance of goods by the buyer precludes rejection of the goods accepted." Minsa, 540 S.W.3d at 160.

21. A buyer who rightfully rejects goods or justifiably revokes his acceptance may recover breach of contract remedies for delivery of non-conforming goods under § 2.711. Tex. Bus. & Com. Code Ann. §§ 2.711, 2.713; Emerson Electric, 201 S.W.3d at 310.

22. The remedies for breach of warranty are set forth in section 2.714, and are available to a buyer who has finally accepted goods, but discovers that the goods are defective in some

manner. Southwestern Bell Telephone Co. v. DFP Corp., 811 S.W.2d 572, 576 (Tex. 1991).

23. To recover on its breach of contract claim, Hess had to prove that it justifiably revoked its acceptance of the four SCSSVs at issue. Emerson Electric, 201 S.W.3d at 310.

ii. Justifiable Revocation of Acceptance

24. Section 2.608 of the Texas Business and Commerce Code describes the conditions necessary for revocation:

> (a) The buyer may revoke his acceptance of a lot or commercial unit whose non-conformity substantially impairs its value to him if he has accepted it . . .
>
> . . .
>
> (2) without discovery of such non-conformity if his acceptance was reasonably induced either by the difficulty of discovery before acceptance or by the seller's assurances.
>
> (b) Revocation of acceptance must occur within a reasonable time after the buyer discovers or should have discovered the ground for it and before any substantial change in condition of the goods which is not caused by their own defects. It is not effective until the buyer notifies the seller of it.
>
> (c) A buyer who so revokes has the same rights and duties with regard to the goods involved as if he had rejected them.

Tex. Bus. & Com. Code § 2.608.

25. If a buyer accepts goods without knowledge of nonconformity, the buyer may revoke its acceptance if acceptance was reasonably induced either by the difficulty of discovery before

acceptance or by the seller's assurances. Tex. Bus. & Com. Code Ann. § 2.608(a)(2).

26. Non-conformities that require disassembly or destructive testing to determine conformity are necessarily difficult to discover. Trident Steele, 223 S.W.3d at 527.

27. Revocation of acceptance must occur a reasonable time after the buyer discovers the grounds for revocation. Tex. Bus. & Com. Code Ann. § 2.608(b).

28. "Revocation of acceptance must occur "before any substantial change in condition of the goods which is not caused by their own defects." Tex. Bus. & Com. Code Ann. § 2.608 Comment 6. See also Minsa, 540 S.W.3d at 160; Village Mobile Homes, Inc. v. Porter, 716 S.W.2d 543, 552 (Tex.App.—Austin 1986, writ refused n.r.e.) (quoting Tex. Bus. & Com. Code Ann. § 2.608 Comment 6).

29. The elements of revocation of acceptance under Texas Business and Commerce Code § 2.608 are:

> (1) initial acceptance (with reasonable assumption that the non-conforming item would be cured and it is not cured, or without discovery of the non-conforming item if acceptance was induced by difficulty of discovery or by seller's assurance); (2) of [a] non-conforming item; (3) such non-conformity substantially impairs the value to the buyer; (4) and revocation occurs within a reasonable time; (5) in any event, the revocation must occur before a substantial change in the condition of the goods occurs (which change is not caused by defect of goods).

Neily v. Arron, 724 S.W.2d 908, 913-14 (Tex. App. — Fort Worth 1987, no writ)).

30. "The determination of each of these elements is a question of fact." Id. at 914. See also Vemex Trading Corp. v. Technology Ventures, Inc., 563 F. App'x 318, 325 (5th Cir. 2014) (per curiam) (whether a buyer justifiably revoked acceptance is a fact issue) (citing Neily, 724 S.W.2d at 913-14).

C. Application of Texas Law to the Facts of this Case

31. Based on § III.A of the Findings of Fact the court concludes that Hess's acceptance of each of the four SCSSVs at issue was induced by Schlumberger's assurances that each SCSSV conformed to the requirements of API 14A, Eleventh Edition, and by the difficulty of discovering the alleged non-conformities.

32. Based on § III.B of the Findings of Fact the court concludes that Hess revoked its acceptance of each of the SCSSVs within a reasonable time after discovering the alleged non-conformities. See A.O. Smith Corp. v. Elbi S.p.A., 123 F. App'x 617, 621-22 (5th Cir.2005) (per curiam) ("because prior testing did not reveal the defect, [buyer] timely revoked when it notified [seller] of the defect within a reasonable time after [buyer] discovered [the latent defect]").

33. Based on § III.C of the Findings of Fact the court concludes that Hess failed to carry its burden of proving that any of the SCSSVs did not conform to API 14A, Eleventh Edition, or that any alleged non-conformity caused any of the four SCSSVs to fail.

The credible evidence showed that the SCSSVs failed due to the way Hess operated the wells in which the SCSSVs were installed, and not due to failure of the valves to conform to API 14A §§ 6.3.2.2, 7.6.2, or 7.6.3(c).

34. Based on § III.D of the Findings of Fact the court concludes that the alleged violations of API 14A, Eleventh Edition, did not substantially impair the value of any of the four SCSSVs at issue to Hess.

35. Based on § III.E of the Findings of Fact the court concludes that Hess failed to revoke its acceptance of any of the four SCSSVs at issue before a substantial change to the condition of the SCSSVs occurred that was not caused by the alleged non-conformities.

36. Based on § III of the Findings of Fact the court concludes that Hess did not justifiably revoke its acceptance of the SCSSVs.

37. Because Hess failed to prove that it justifiably revoked its acceptance of the four SCSSVs at issue, the proper remedy for Hess to pursue was a breach of warranty claim under Texas Business and Commerce Code § 2.714. Minsa, 540 S.W.3d at 161.

38. For reasons stated in its June 29, 2017, Memorandum Opinion and Order, Docket Entry No. 40, the court has already dismissed Hess's claims for breach of warranty, holding that "Hess may proceed with its claims based on the alleged non-conformity of

the [SC]SSVs at the time of delivery. Hess may not proceed with its claims based on the failure of the [SC]SSVs to function after the warranty period had expired."[410]

D. Damages

39. "[B]reach of contract damages are not available when a buyer accepts non-conforming goods. In that instance, breach of warranty is the remedy. . . Breach of contract remedies are available, however, to a buyer who, *inter alia*, properly revokes acceptance." A.O. Smith, 123 F. App'x at 619 (citing Selectouch Corp. v. Perfect Starch, Inc., 111 S.W.3d 830, 834 (Tex. App. — Dallas 2003, no pet.)("A buyer who . . . justifiably revokes his acceptance may recover breach of contract remedies for delivery of non-conforming goods under section 2.711.")).

40. The remedies for breach of contract for a sale of goods are set forth in Texas Business and Commerce Code §§ 2.711-2.715.

41. In pertinent part § 2.711 governing "Buyer's Remedies in General" provides:

> (a) Where the seller fails to make delivery or repudiates or the buyer rightfully or justifiably revokes acceptance then with respect to any goods involved, and with respect to the whole if the breach goes to the whole contract (Section 2.612), the buyer may cancel and whether or not he has done so may in addition to recovering so much of the price as has been paid

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[410]Memorandum Opinion and Order, Docket Entry No. 40, p. 17. See also Memorandum Opinion and Order, Docket Entry No. 158, pp.13-14 (same).

(1) "cover" and have damages under the next section as to all the goods affected whether or not they have been identified to the contract; or

(2) recover damages for non-delivery as provided in this chapter (Section 2.713).

Tex. Bus. & Comm. Code § 2.711.

42. Section 2.712 governing "Cover" provides:

(a) After a breach within the preceding section the buyer may "cover" by making in good faith and without unreasonable delay any reasonable purchase of or contract to purchase goods in substitution for those due from the seller.

(b) The buyer may recover from the seller as damages the difference between the cost of cover and the contract price together with any incidental or consequential damages as hereinafter defined (Section 2.715), but less expenses saved in consequence of the sellers' breach.

Tex. Bus. & Comm. Code § 2.712.

43. Section 2.713 governing "Buyer's Damages for Non-Delivery or Repudiation" provides:

(a) Subject to the provisions of this chapter with respect to proof of market price (Section 2.723), the measure of damages for non-delivery or repudiation by the seller is the difference between the market price at the time when the buyer learned of the breach and the contract price together with any incidental and consequential damages provided in this chapter (Section 2.715), but less expenses saved in consequence of the seller's breach.

(b) Market price is to be determined as of the place for tender or, in cases of rejection after arrival or revocation of acceptance, as of the place of arrival.

Tex. Bus. & Comm. Code § 2.713.

44. A claim for "revocation seeks to put the buyer in the same position as if he had rejected the goods at the time of

delivery." Neal v. SMC Corp., 99 S.W.3d 813, 816 (Tex. App. — Dallas 2003, no pet.).

45. A buyer that has justifiably revoked acceptance of goods may recover damages for as much of the price as has been paid by the buyer for the goods. Tex. Bus. & Comm. Code Ann. § 2.711(a).

46. A buyer that has justifiably revoked acceptance of goods may recover damages for the difference between the market price at the time when they buyer learned of the breach and the contract price together with any incidental and consequential damages, but less expenses saved in consequence of the breach. Tex. Bus. & Comm. Code Ann. §§ 2.711(a), 2.713.

47. Section 2.715 governing "Buyer's Incidental and Consequential Damages" provides:

> (a) Incidental damages resulting from the seller's breach include expenses reasonably incurred in inspection, receipt, transportation and care and custody of goods rightfully rejected, any commercially reasonable charges, expenses or commissions, in connection with effecting cover and any other reasonable expense incident to the delay or other breach.
>
> (b) Consequential damages resulting from the seller's breach include
>
> > (1) any loss resulting from general or particular requirements and needs of which the seller at the time of contracting had reason to know and which could not reasonably be prevented by cover or otherwise; and
> >
> > (2) injury to person or property proximately resulting from any breach of warranty.

Tex. Bus. & Comm. Code § 2.715.

48. Incidental damages include "the reasonable cost of replacing the defective [goods] with equal quality as that represented by [the seller], less the salvage value, if any, of the defective [goods]." General Supply & Equipment Co., Inc. v. Phillips, 490 S.W.2d 913, 920 (Tex. App. — Tyler 1972, writ refused n.r.e.).

49. Consequential damages "result naturally, but not necessarily, from the defendant's wrongful acts," Stuart v. Bayless, 964 S.W.2d 920, 921 (Tex. 1998) (per curiam), and "are not recoverable unless the parties contemplated at the time they made the contract that such damages would be a probable result of the breach." Id.

50. "Lost profits may be either direct or consequential damages, depending on their nature." Cherokee County Cogeneration Partners, L.P. v. Dynegy Marketing and Trade, 305 S.W.3d 309, 314 (Tex.App.—Houston [14th Dist.] 2009, no pet.).

51. Reasonably foreseeable profits indirectly lost on another contract due to the breach are consequential damages. Id.

52. When a buyer justifiably revokes acceptance of goods and is entitled to incidental damages, "[a]n offset for the value of the buyer's use is appropriate." Delhomme Industries, Inc. v. Houston Beechcraft, Inc., 735 F.2d 177, 185 n. 12 (5th Cir. 1984).

53. If a higher court determines that Hess has proved that it justifiably revoked its acceptance of the SCSSVs, based on § D of

the Findings of Fact, § II.D, above, the court concludes that Hess has proved that would be entitled to recover damages totaling $217,900,796.00, which consist of the following:

(1) $2,685,792.00 in damages for the cost of the failed SCSSVs, and the difference between the contract price and the market price at the time Hess learned of the breach;

(2) $209,955.437.00 in incidental damages for costs reasonably incurred to retrieve and replace the failed SCSSVs; and

(3) $5,259,567.00 in consequential damages for loss of deferred compensation for the mandatory shut-down of Well B during the period that the Gunflint field was tied-in to the Gulfstar One production facility.

54. Hess also sought damages for $6.06 million in methanol-contamination damages, but for the reasons stated in its November 7, 2019, Memorandum Opinion and Order, Docket Entry No. 158, the court has held that Hess released and waived the right to recover for damages to or loss of Hess's property, and that Hess's claim for methanol-related damages is a claim for damage to or loss of Hess's property that Hess has released.[411]

[411]Memorandum Opinion and Order, Docket Entry No. 158, pp. 44-46, and 77.

E. Sclumberger's Affirmative Defense of Release and Waiver and Counterclaim for Indemnity

55. The provisions of the Texas Business and Commerce Code governing contracts for sale of goods may be altered by agreement of the contracting parties. Tex. Bus. & Com. Code Ann. § 1.302(a) ("Except as otherwise provided . . . elsewhere in this title, the effect of provisions of this title may be varied by agreement."). See Gasmark, Ltd. v. Kimball Energy Corp., 868 S.W.2d 925, 928 (Tex.App.—Fort Worth 1994, no writ) (citing earlier codification of Tex. Bus. & Com. Code § 1.302).

56. Section 2.719 of the Texas Business and Commerce Code allows parties to limit remedies and provides in part:

> (a) Subject to the provisions of (b) and (c) of this section and of the preceding section on liquidation and limitation of damages,
>
> > (1) the agreement may provide for remedies in addition to or in substitution for those provided in this chapter and may limit or alter the measure of damages recoverable under this chapter, as by limiting the buyer's remedies to return of the goods and repayment of the price or to repair and replacement of non-conforming goods or parts; and
> >
> > (2) resort to a remedy as provided is optional unless the remedy is expressly agreed to be exclusive, in which case it is the sole remedy.

Tex. Bus. & Com. Code Ann § 2.719.

57. Schlumberger asserts that "Hess's claims are barred by release," because "[t]he Master Service Contract released

[Schlumberger] from all claims brought by any party for any and all 'damage to or loss of property.'"[412]

58. Schlumberger asserts that "[b]y filing a lawsuit, Hess has breached its obligation to defend and hold harmless [Schlumberger] against these claims,"[413] and that "Hess's indemnity obligations require Hess to indemnify [Schlumberger] for attorney's fees already incurred in defending against the claims asserted by Hess."[414]

59. Schlumberger asserts that it "is entitled to indemnity from Hess for the Claims in this lawsuit, including recovery in the amount of Schlumberger's costs, attorneys' fees, and other expenses incurred in defending this litigation."[415]

60. Section 13(c) of the Master Service Contract requires Hess to "fully release, defend, indemnify, and hold [Schlumberger] harmless from and against all claims . . . for any and all damage to or loss of property of [Hess]," including "production and drilling equipment . . . subsurface reservoirs and any oil and gas or other hydrocarbon substances located therein. . ."[416]

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[412]Defendant's Answer and Affirmative Defenses and Counterclaims to Hess's Third Amended Complaint, Docket Entry No. 72, p. 19 (citing MSC at § 13(c)(1)).

[413]Id. at 21 ¶ 11.

[414]Id. at 21 ¶ 12.

[415]Schlumberger's Proposed Conclusions of Law, Exhibit L to Amended Joint Pretrial Order, Docket Entry No. 163-12, p. 15 # 86.

[416]Master Service Contract, § 13(c)1, PTX 68, Docket Entry (continued...)

61. Section 13(a)3 of the Master Service Contract defines "claims" as including "all claims, demands, suits, causes of action, losses, liabilities, damages (including, without limitation, compensatory, and exemplary), judgments, awards, obligations to defend or indemnify others, and other costs of every kind and character (including, without limitation, court costs, attorneys' fees, debts and interest), known or unknown, whether the underlying claim, demand, or suit is groundless, false or fraudulent."[417]

62. Section 13(i) of the Master Service Contract states that "[i]n the event that either party hereto is required to seek judicial enforcement of the contractual indemnities and other obligations and liabilities of the other party, the party entitled to such protection hereunder shall recover all reasonable attorneys' fees, court costs and other expenses incurred in connection with pursuing that claim through litigation or otherwise."[418]

63. The Master Service Contract is a binding and enforceable contractual release and indemnity agreement between the parties.

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[416](...continued)
No. 223-72, p. 7 (Section 13(c) is quoted in substantial part in Findings of Fact 62-63, supra).

[417]Id. § 13(a)3, Docket Entry No. 223-72, p. 7.

[418]Id. at § 13(i), PTX 68, Docket Entry No. 223-72, p. 13.

64. Section 13(c) of the Master Service Contract obligates Hess to indemnify Schlumberger for "damage to or loss of property of [Hess]."

65. A release is an agreement or contract in which one party agrees that a legal right or obligation owed by the other party is surrendered. Dresser Industries, Inc. v. Page Petroleum, Inc., 853 S.W.2d 505, 508 (Tex. 1993).

66. A release is subject to the normal rules of contract construction, including the rules of ambiguity. National Union Fire Insurance Company of Pittsburgh v. Insurance Company of North America, 955 S.W.2d 120, 127 (Tex.App.—Houston [14th Dist.] 1997), aff'd, 20 S.W.3d 692 (Tex. 2000).

67. A release extinguishes a claim or cause of action and is an absolute bar to any right of action on the released matter. Dresser Industries, 853 S.W.2d at 508.

68. To release a claim the releasing instrument must mention the claim to be released, but it is not necessary for the parties to anticipate and explicitly identify every potential cause of action relating to the subject matter of the release. Victoria Bank & Trust Co. v. Brady, 811 S.W.2d 931, 938 (Tex. 1991).

69. [I]n order to establish the affirmative defense of release, the party asserting the defense of release is required to prove the elements of a contract." Vanderbilt Mortgage & Finance,

Inc. v. Flores, 692 F.3d 358, 364 (5th Cir. 2012) (quoting In re J.P, 96 S.W.3d 830, 835 (Tex.App.—Fort Worth 2009, no pet.)).

70. "In construing a release, as with other contracts, the primary effort is to ascertain and give effect to the intention of the parties to the release, considering the instrument as a whole." D.R. Horton-Texas, Ltd. v. Savannah Properties Associates, L.P., 416 S.W.3d 217, 226 (Tex.App.—Fort Worth 2013, no pet.).

71. "Waiver is the intentional relinquishment of a right actually known, or intentional conduct inconsistent with claims of that right." Ulico Casualty Co. v. Allied Pilots Association, 262 S.W.3d 773, 778 (Tex. 2008).

72. The elements of waiver under Texas law are "(1) an existing right, benefit, or advantage held by a party; (2) the party's actual knowledge of its existence; and (3) the party's actual intent to relinquish the right, or intentional conduct inconsistent with the right." Id.

73. An indemnity agreement is a promise to safeguard or hold the indemnitee harmless against either existing and/or future loss liability, and creates a potential cause of action in the indemnitee against the indemnitor. Dresser Industries, 853 S.W.2d at 508.

74. When parties include an indemnity agreement in a contract the duty to indemnify generally includes a duty to pay for all costs and expenses associated with defending suits against the

indemnitee. Keystone Equity Management v. Thoen, 730 S.W.2d 339, 340 (Tex.App.—Dallas 1987, no writ) ("The ordinary and commonly accepted meaning of the phrase 'indemnify, defend, and hold harmless' . . . encompasses attorneys' fees . . . We hold that the [contractual] promise to defend . . . suits in connection with the promises' includes the obligation to pay for the defense of such suits.").

75. Under Texas law, a contractual indemnity claim has five elements:

> (1) a contractual indemnity agreement exists; (2) the indemnity agreement obligates one party to indemnify the other for particular claims; (3) those claims were made; (4) all conditions precedent for recovery have occurred or been waived or excused; and (5) the party seeking relief has been damaged.

AXA Corporate Solutions v. Lectrus Corp., Action No. 4:15cv3606, 2016 WL 6601049, at *3 (S.D. Tex. November 8, 2016) (citing Transamerica Ins. Co. v. Avenell, 66 F.3d 715, 719 (5th Cir. 1995) (per curiam)).

76. Indemnity and release provisions are "strictly construed in favor of the indemnitor." Keystone Equity, 730 S.W.2d at 340.

77. Schlumberger argues that § 13(c) of the MSC applies to each of the four categories of damages that Hess seeks: replacement safety valves, workovers, deferred compensation, and methanol contamination costs.[418]

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[418]Schlumberger's Proposed Conclusions of Law, Exhibit L to (continued...)

78. For the reasons stated in its November 7, 2019, Memorandum Opinion and Order, Docket Entry No. 158, the court held that Hess did not expressly release or waive the right to challenge the non-conformities alleged in this action, and only agreed to release and indemnify Schlumberger for damage to or loss of Hess's property.[419]

79. For the reasons stated in its November 7, 2019, Memorandum Opinion and Order, Docket Entry No. 158, the court held that "Hess's claims for costs to purchase replacements for the failed valves, costs to retrieve and replace the failed valves, and lost profits from the Gulfstar One facility are not claims for damage to or loss of Hess's property, but that Hess's claims for methanol contamination are claims for damage to or loss of Hess's property."[420]

80. For the reasons stated in its November 7, 2019, Memorandum Opinion and Order, Docket Entry No. 158, the court also held that Hess's claim for methanol-related damages is a claim for damage to or loss of Hess's property that Hess has released, and

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[418](...continued)
Amended Joint Pretrial Order, Docket Entry No. 163-12, ¶¶ 6-28 pp. 4-8.

[419]Memorandum Opinion and Order, Docket Entry No. 158, pp. 22-44.

[420]Id. at 77.

the court has granted Schlumberger summary judgment on that claim.[421]

81. Because the court has held that Hess's claim for methanol damages is a claim for damage to or loss of Hess's property, which the court has resolved in Schlumberger's favor,[422] Schlumberger is entitled to recover from Hess all reasonable attorneys' fees, court costs and other expenses incurred in connection with defending Hess's claim for methanol-related damages pursuant to §§ 13(c) and 13(i) of the Master Service Contract.

82. Because the court has held that Hess's damages for costs to purchase replacements for the failed valves, costs to retrieve and replace the failed valves, and lost profits from the Gulfstar One facility, are not damages for damage to or loss of Hess's property, Schlumberger would not be entitled either to indemnity or to attorneys fees, court costs, or other expenses for defending itself against Hess's breach of contract claims for those damages pursuant to §§ 13(c) and 13(i) of the Master Service Contract. See Building Specialties, Inc. v. Liberty Mutual Fire Insurance Co., 712 F.Supp.2d 628, 645-46 (S.D. Tex. 2010)(holding that a claim seeking damages "for the cost of repairing . . .defective duct work" did not involve "property damage").

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[421] Id. at 44-46, and 77.

[422] Id.

F. Attorneys' Fees

83. "State law controls both the award of and the reasonableness of [attorneys'] fees awarded where state law supplies the rule of decision." Mathis v. Exxon Corp., 302 F.3d 448, 461 (5th Cir. 2002).

84. Under Texas law attorneys' fees are recoverable in a suit only if they are authorized by contract or statute. Tucker v. Thomas, 419 S.W.3d 292, 295 (Tex. 2013).

85. The determination of reasonable attorneys' fees is usually a question for the trier of fact. Emerson Electric, 201 S.W.3d at 317 (citing Stewart Title Guaranty Co. v. Sterling, 822 S.W.2d 1, 12 (Tex. 1991)).

86. Both parties seek attorneys' fees pursuant to both § 13(i) of the Master Service Contract and the Texas Civil Practices and Remedies Code § 38.001.

87. Under Texas law, the party seeking attorneys' fees bears the burden of proof to show the reasonable fees they are owed. El Apple I, Ltd. v. Olivas, 370 S.W.3d 757, 760 (Tex. 2012).

88. The party seeking attorneys' fees may calculate their reasonable and necessary attorneys' fees using either the lodestar method or the market value method. Id. (citing Hensley v. Eckerhart, 103 S. Ct. 1933 (1983) (applying substantive federal law because it was a federal cause of action but also discussing Texas's adoption of the lodestar method in other cases).

89. Schlumberger is entitled to attorneys' fees, court costs, and expenses incurred defending Hess's claim for methanol damages pursuant to § 13(i) of the Master Service Contract because that claim is for damage to or loss of Hess's property which has been resolved in Schlumberger's favor.

90. Section 38.001 of the Texas Civil Practices and Remedies Code states that

> A person may recover reasonable attorney's fees from an individual or corporation, in addition to the amount of a valid claim and costs, if the claim is for:
>
> . . .
>
> (8) an oral or written contract.

Tex. Civ. Prac. & Rem. Code Ann. § 38.001.

91. To recover attorneys's fees in a breach of contract suit, a party must (1) prevail on the underlying claim and (2) recover damages. In re Nalle Plastics Family Ltd. Partnership, 406 S.W.3d 168, 172-73 (Tex. 2013).

92. If any attorneys' fees relate to a claim for which such fees are not recoverable, a claimant must segregate recoverable from unrecoverable attorneys' fees. Tony Gullo Motors I, LP v. Chapa, 212 S.W.3d 299, 313 (Tex. 2006).

93. The party seeking attorneys' fees bears the burden to show that the opposing party is only being charged with fees on a claim that allows for recovery of such fees. Id. at 311.

94. "Sufficient evidence includes, at a minimum, evidence 'of the services performed, who performed them and at what hourly rate, when they were performed and how much time the work required.'" Long v. Griffin, 442 S.W.3d 253, 255 (Tex. 2014) (per curiam) (quoting El Apple, 370 S.W.3d at 763).

95. Because Hess has neither prevailed on any of its breach of contract claims, nor recovered damages, Hess is not entitled to recover attorneys' fees.

96. The court has concluded that Schlumberger is entitled to attorneys' fees pursuant to §§ 13(c) and 13(i) of the Master Service Contract, but because Schlumberger has not yet had an opportunity to submit an application for attorneys' fees, the court will accord Schlumberger that opportunity.

97. A conclusion of law that should be treated as a finding of fact is hereby adopted as that, and a finding of fact that should be treated as a conclusion of law is hereby adopted as that.

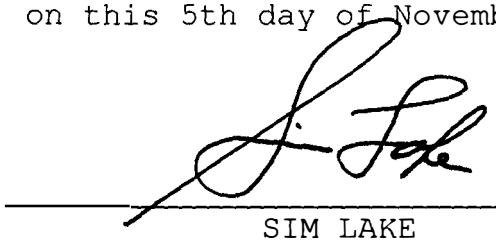
IV. Conclusions and Orders

Pursuant to the Findings of Fact and Conclusions of Law entered herewith, Schlumberger Technology Corporation's Renewed Rule 52(c) Motion for Judgment on Partial Findings as to the Well B(2) Valve, Docket Entry No. 212, is **DENIED as MOOT.**

Pursuant to the Findings of Fact and Conclusions of Law entered herewith, Hess Corporation's Motion for Entry of Judgment, Docket Entry No. 222, is **DENIED**.

In accordance with the Findings of Fact and Conclusions of Law entered herewith, Schlumberger shall submit within 14 days, a motion for attorneys' fees, costs[424] and other expenses to which it is entitled under § 13(i) of the Master Service Contract for having to defend against Hess's claim for methanol-related damages. Hess may submit a response within 14 days after Schlumberger files its motion, and Schlumberger may submit a reply within 7 days after Hess files its response.

SIGNED at Houston, Texas, on this 5th day of November, 2020.



SIM LAKE
SENIOR UNITED STATES DISTRICT JUDGE

[424]The parties have not addressed whether "court costs" as used in §§ 13(a)3 and 13(i) of the MSC is limited to the costs identified in 28 U.S.C. § 1920. If Schlumberger contends that "court costs" as used in the MSC includes additional costs, it may seek such costs, and brief its entitlement to them in its motion. If Schlumberger agrees that it is only entitled to the costs identified in 28 U.S.C. § 1920 it need not request them now, but may include those in its Bill of Costs pursuant to Local Rule 54.2.