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(54) **PRESSURE CYCLING TO CONTROL THE MATERIAL PROPERTIES OF A TUBULAR MEMBER**

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(21) Appl. No.: **11/623,980**

(22) Filed: **Jan. 17, 2007**

Related U.S. Application Data

(63) Continuation-in-part of application No. 10/030,593, filed on Oct. 29, 2002, filed as 371 of international application No. PCT/US00/18635, filed on Jul. 7, 2000, which is a continuation-in-part of application No. 09/588,946, filed on Jun. 7, 2000, now Pat. No. 6,557,640, and which is a continuation-in-part of application No. 09/559,122, filed on Apr. 26, 2000, now Pat. No. 6,604,763, and which is a continuation-in-part of application No. 09/523,460, filed on Mar. 10, 2000, now abandoned, and which is a continuation-in-part of application No. 09/510,913, filed on Feb. 23, 2000, and which is a continuation-in-part of application No. 09/502,350, filed on Feb. 10, 2000, now Pat. No. 6,823,937, and which is a continuation-in-part of application No. 09/454,139, filed on Dec. 3, 1999, now Pat. No. 6,497,289.

(60) Provisional application No. 60/761,324, filed on Jan. 23, 2006. Provisional application No. 60/137,998, filed on Jun. 7, 1999. Provisional application No. 60/131,106, filed on Apr. 26, 1999. Provisional application No. 60/124,042, filed on Mar. 11, 1999. Provisional application No. 60/121,702, filed on Feb. 25, 1999. Provisional application No. 60/119,611, filed on Feb. 11, 1999. Provisional application No. 60/111,293, filed on Dec. 7, 1998.

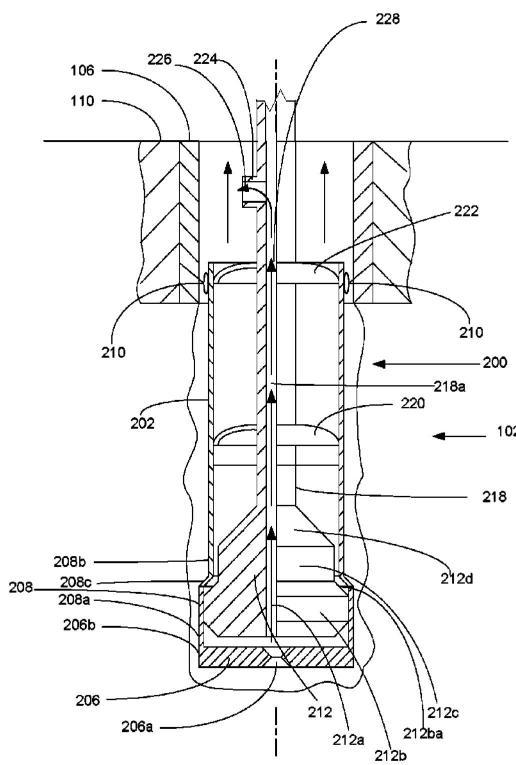
Publication Classification

(51) **Int. Cl.**
E21B 23/02 (2006.01)

(52) **U.S. Cl.** **166/206**

(57) **ABSTRACT**

A method of controlling the material properties of a tubular member including positioning a pressure source within the tubular member; and operating the pressure source to generate a pressure cycle signal.



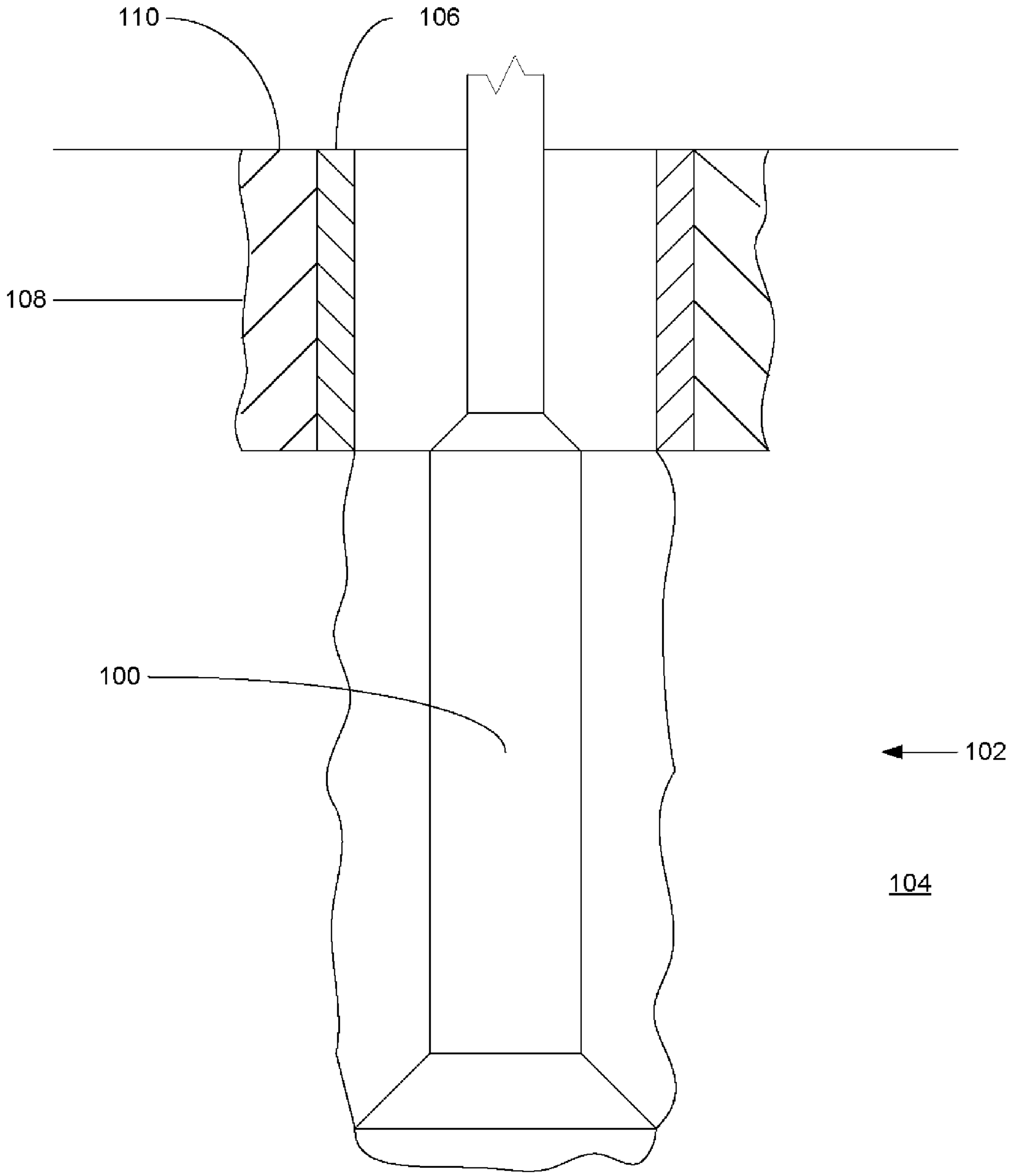


FIGURE 1

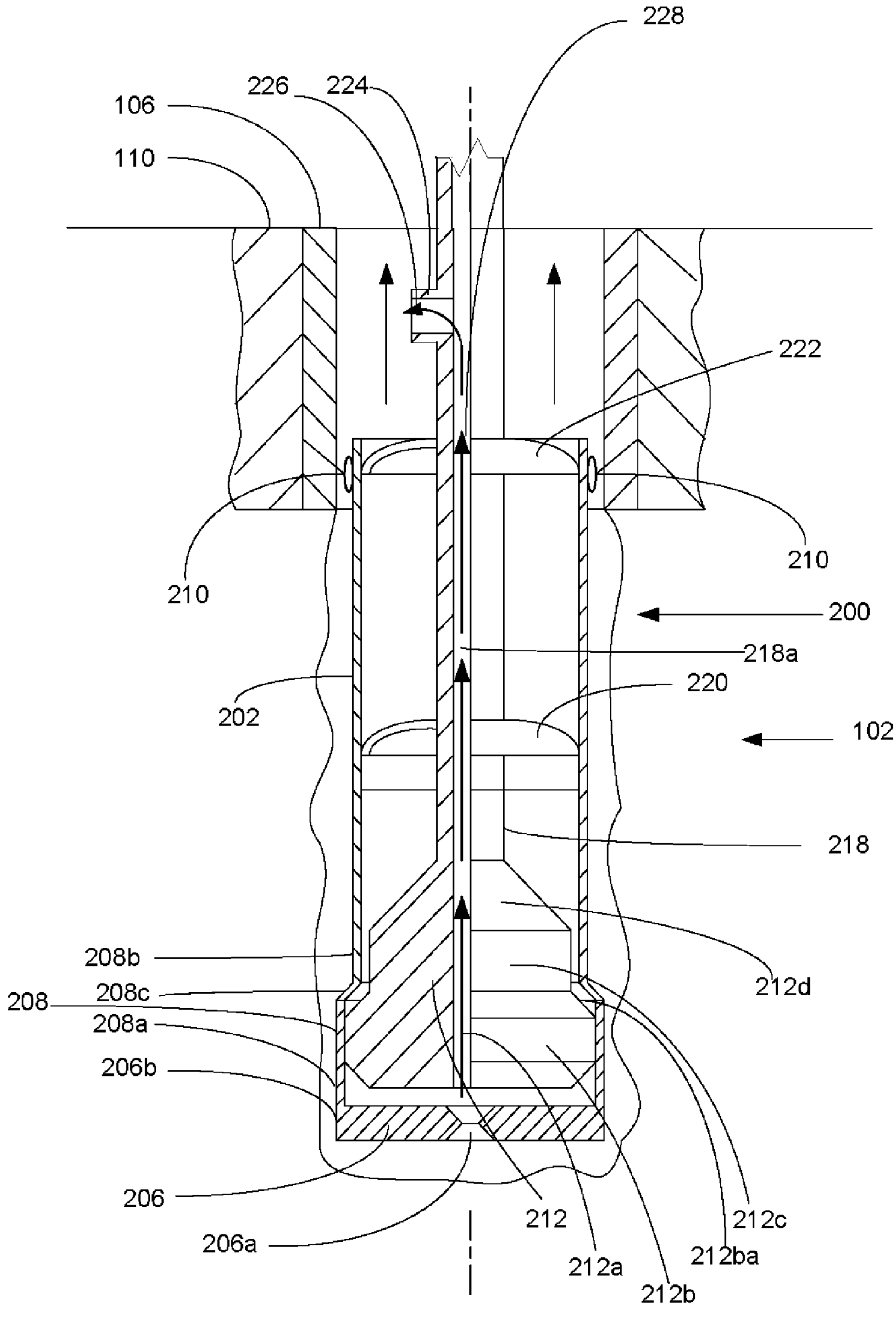

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FIGURE 2

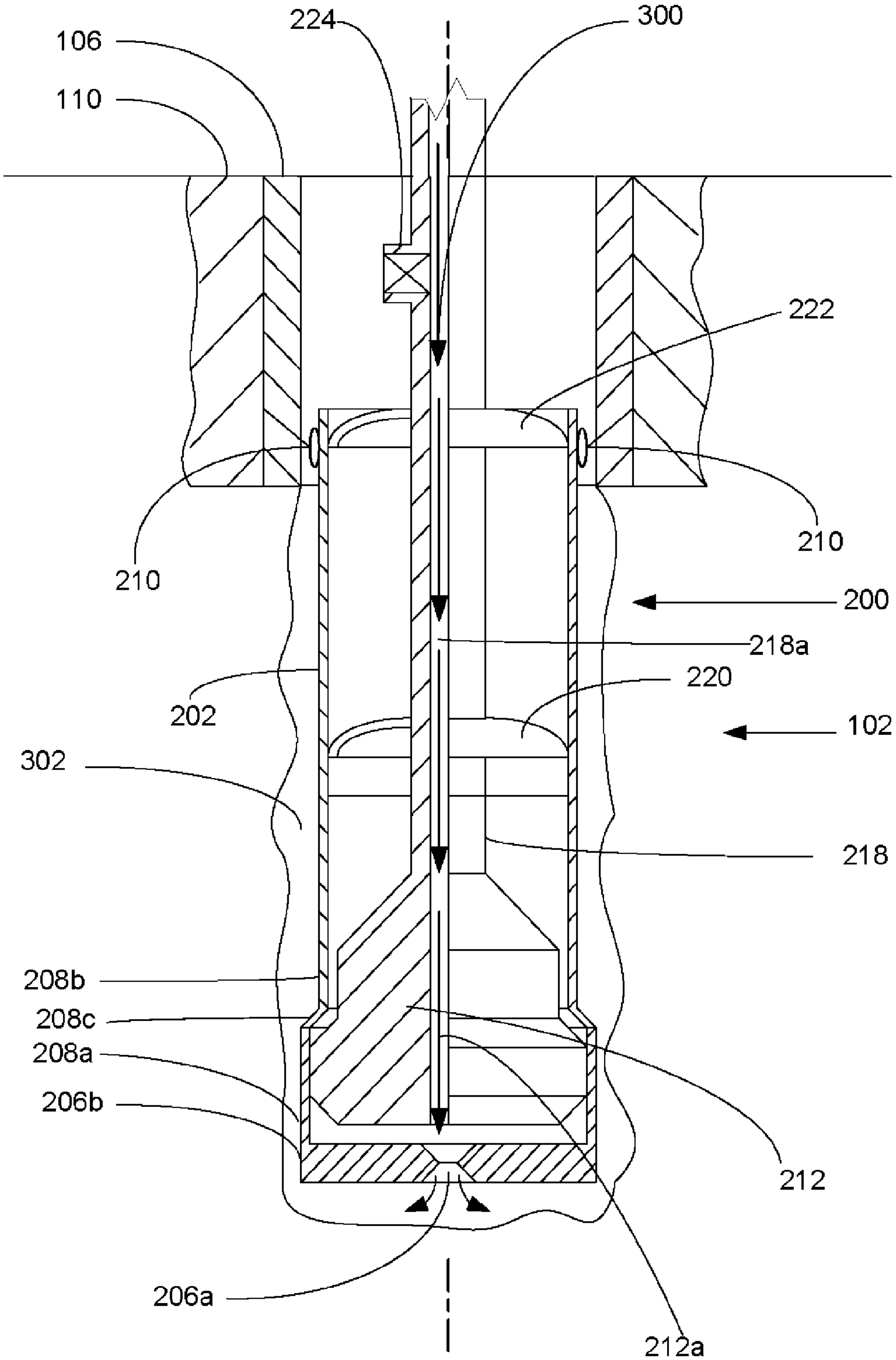
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FIGURE 3

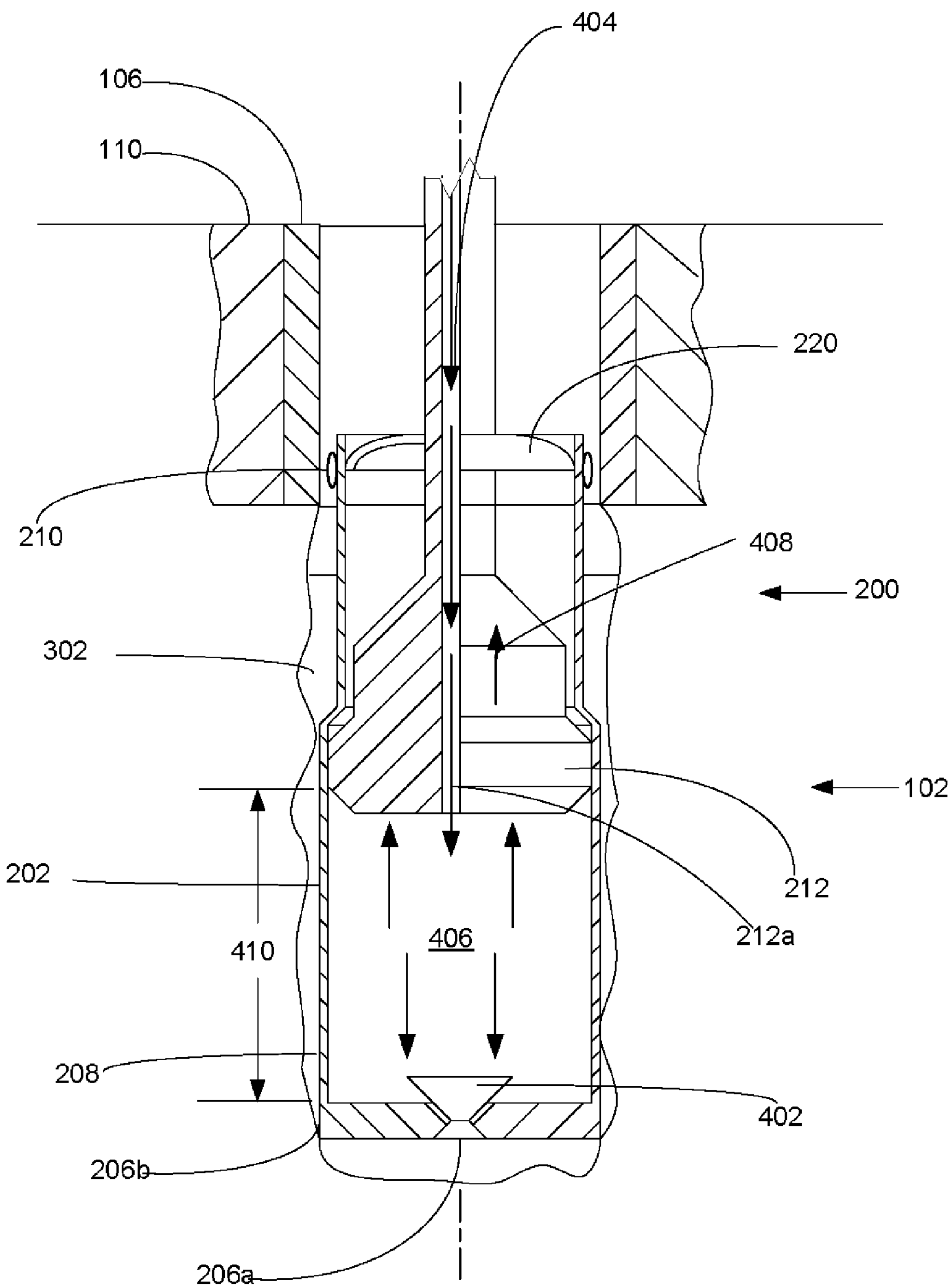
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FIGURE 4

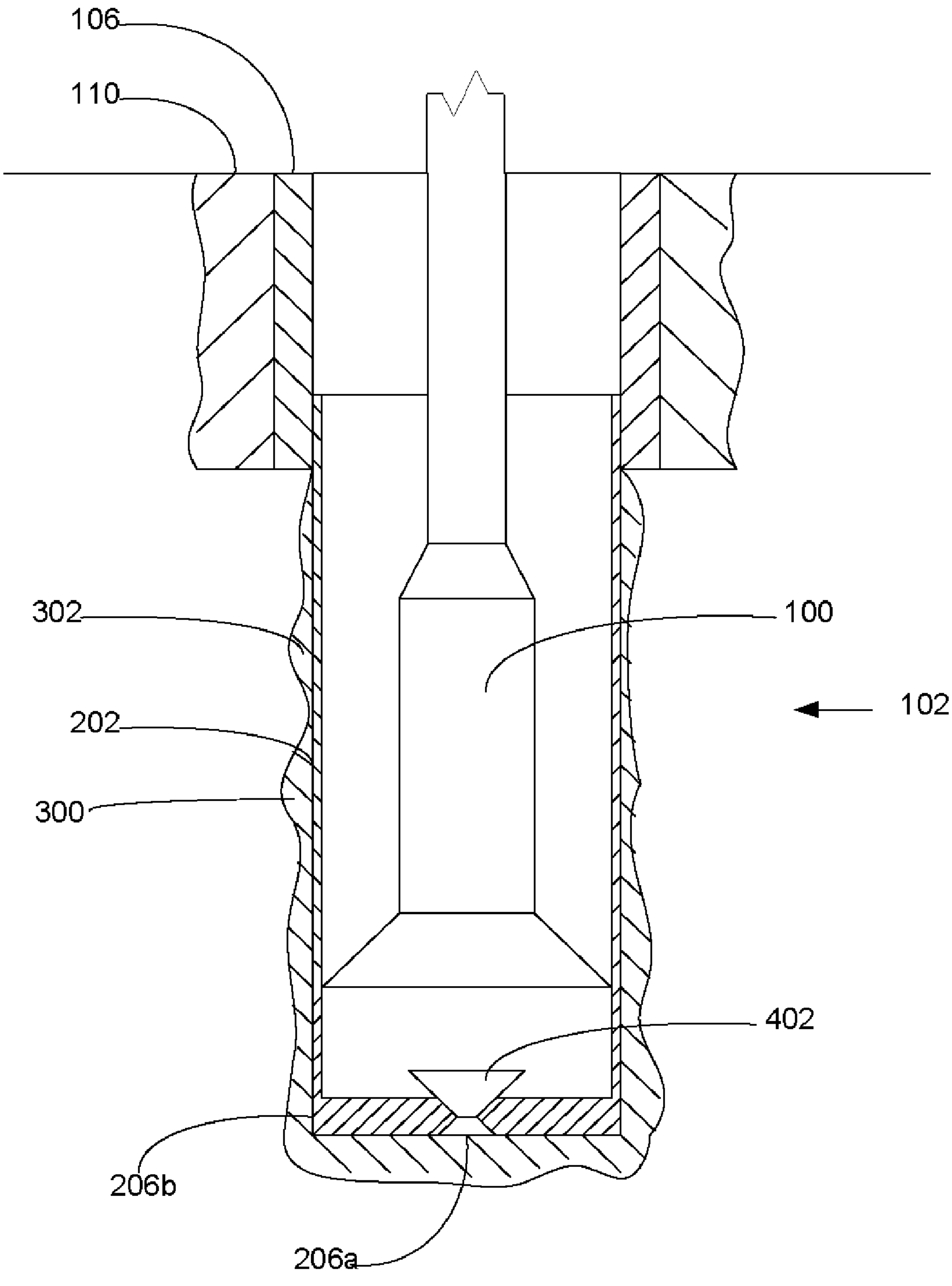

FIGURE 5

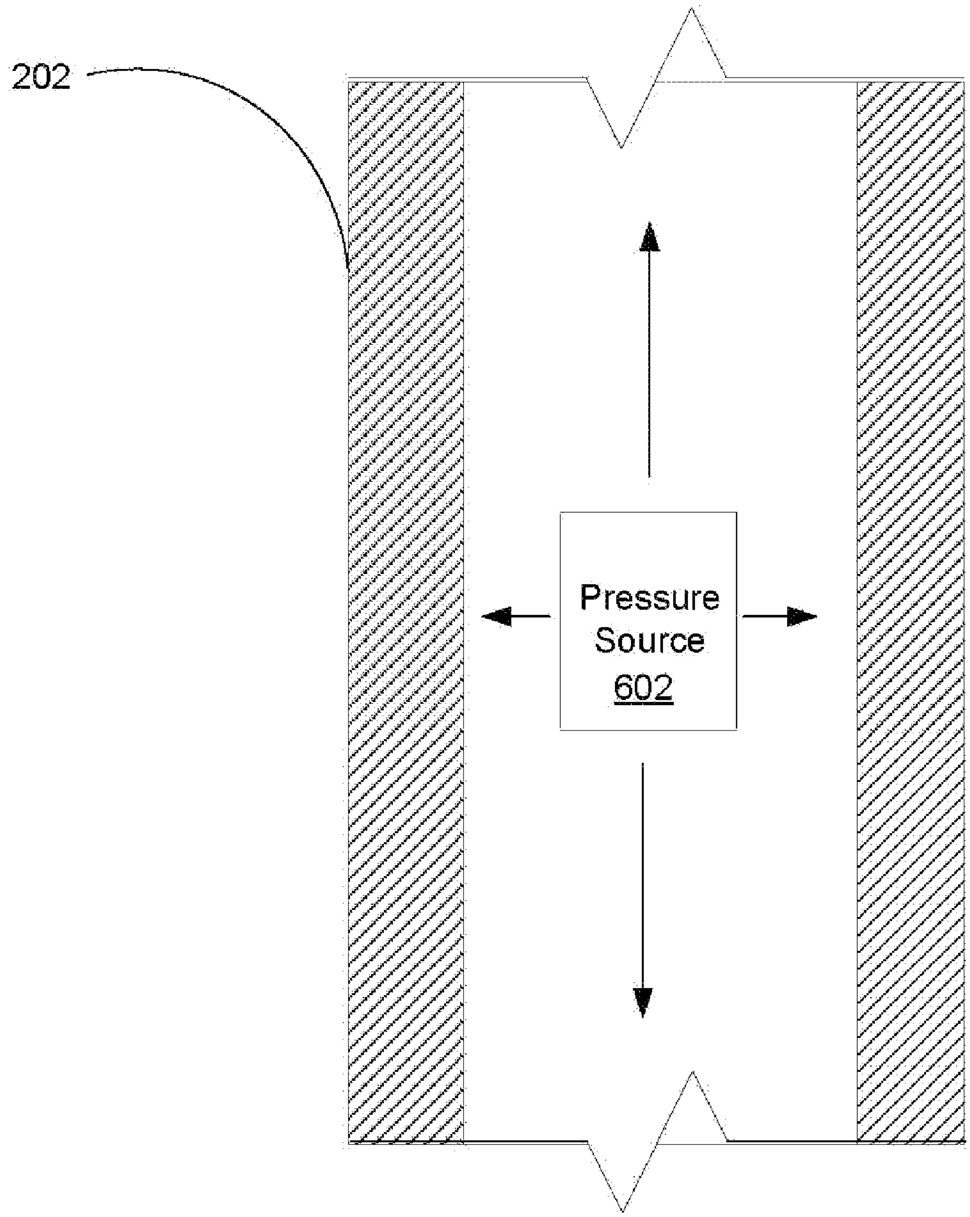

FIGURE 6

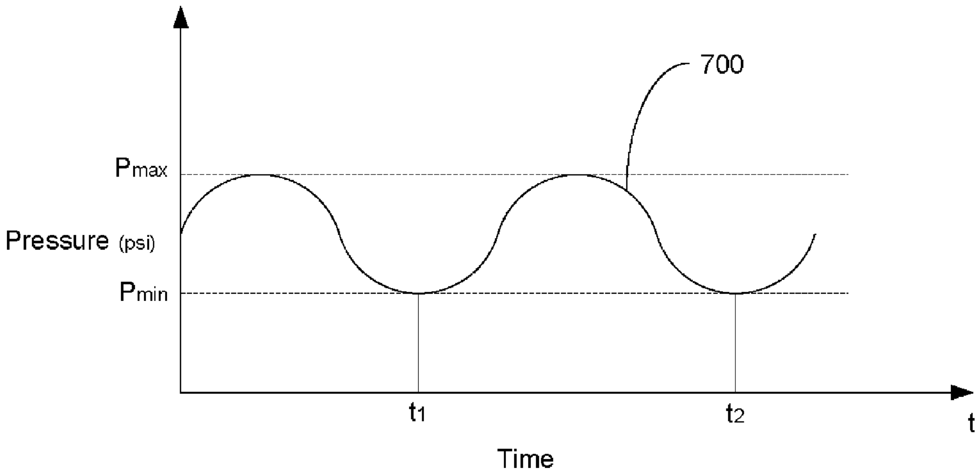

FIGURE 7

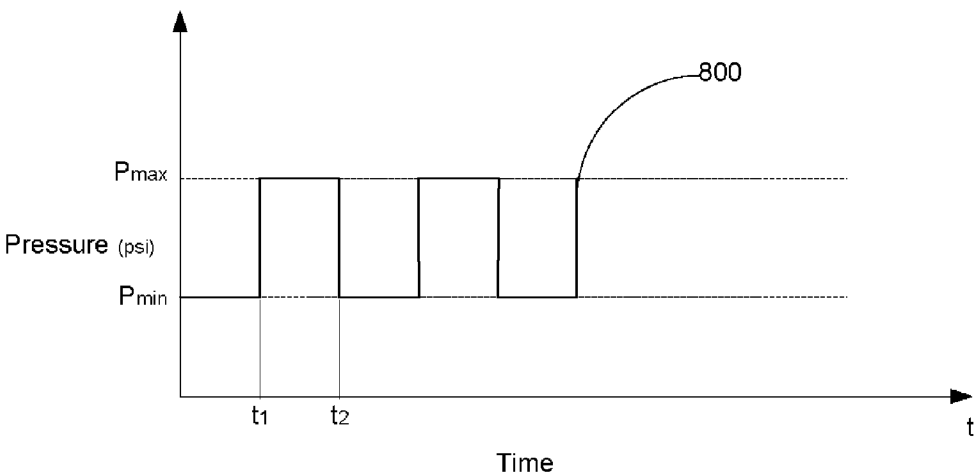

FIGURE 8

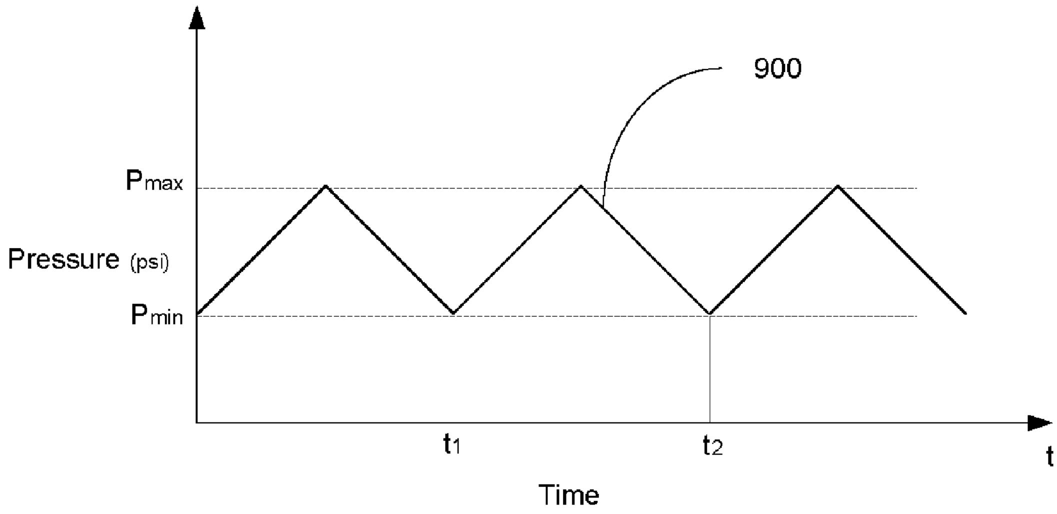

FIGURE 9

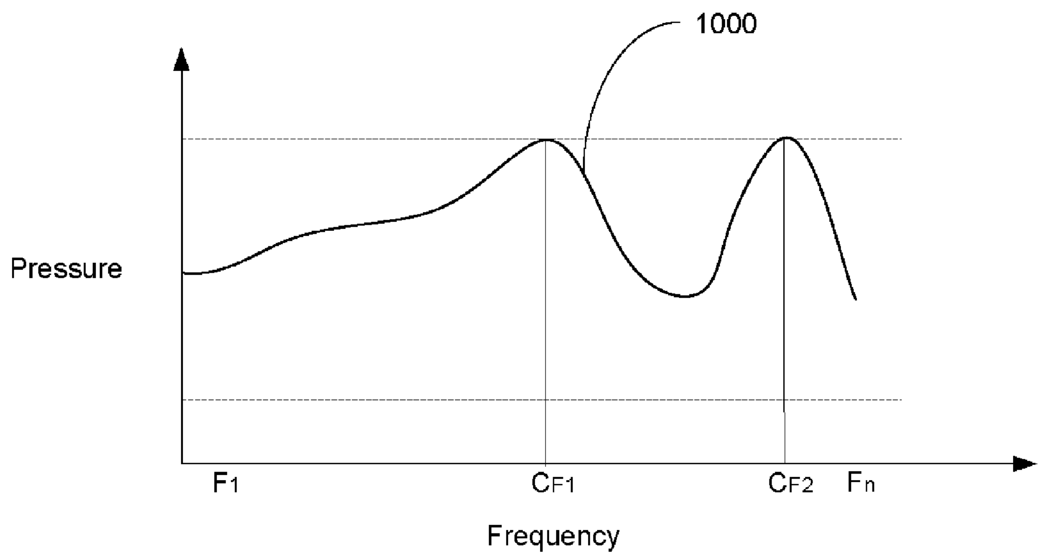

FIGURE 10

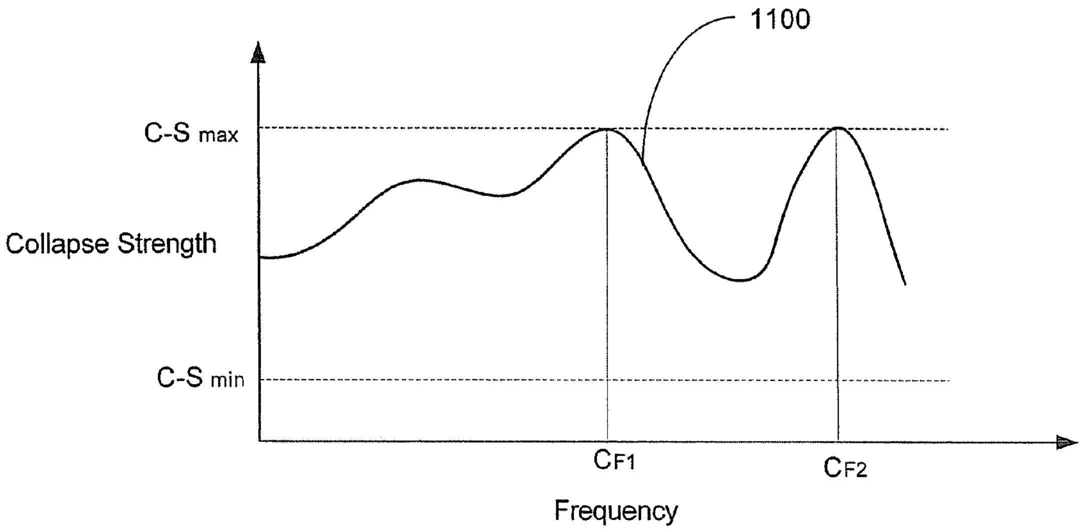

FIGURE 11

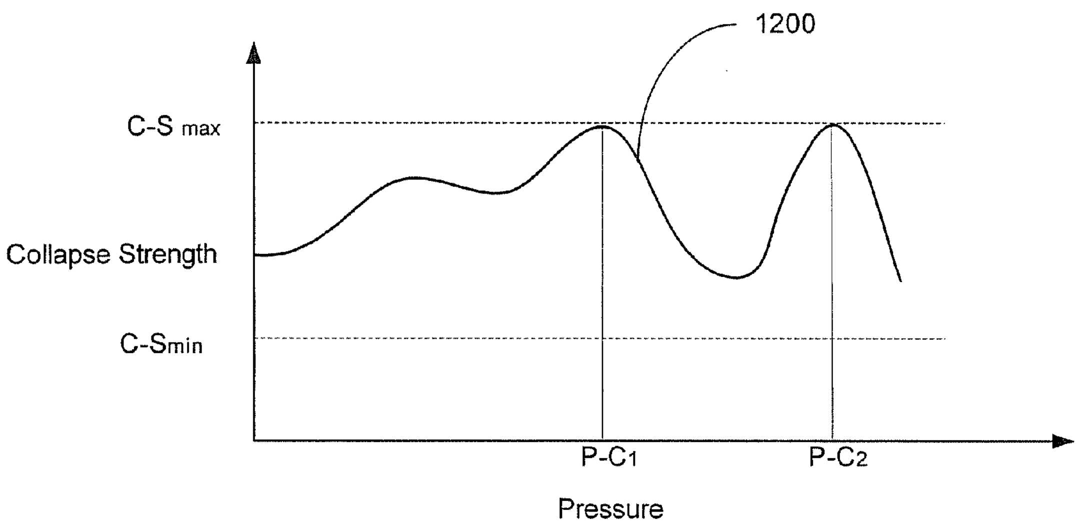

FIGURE 12

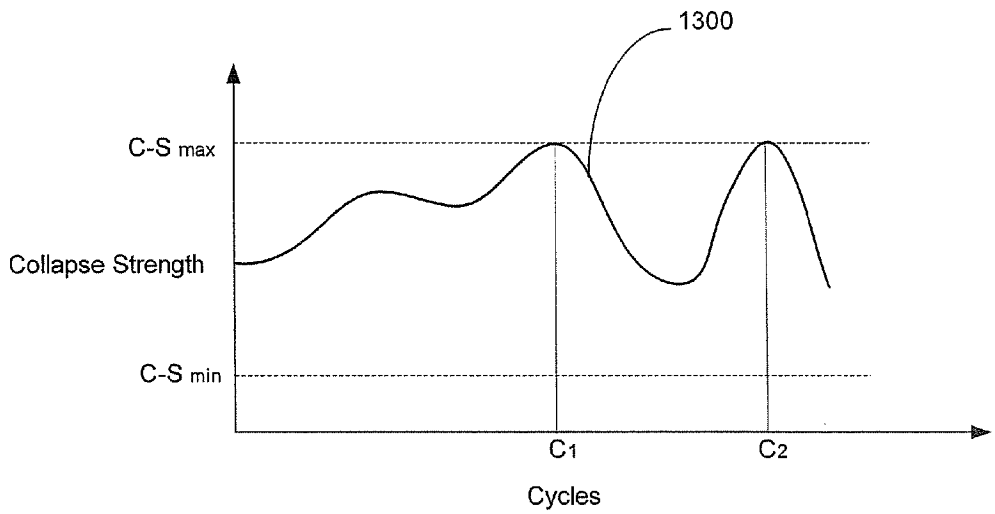

FIGURE 13

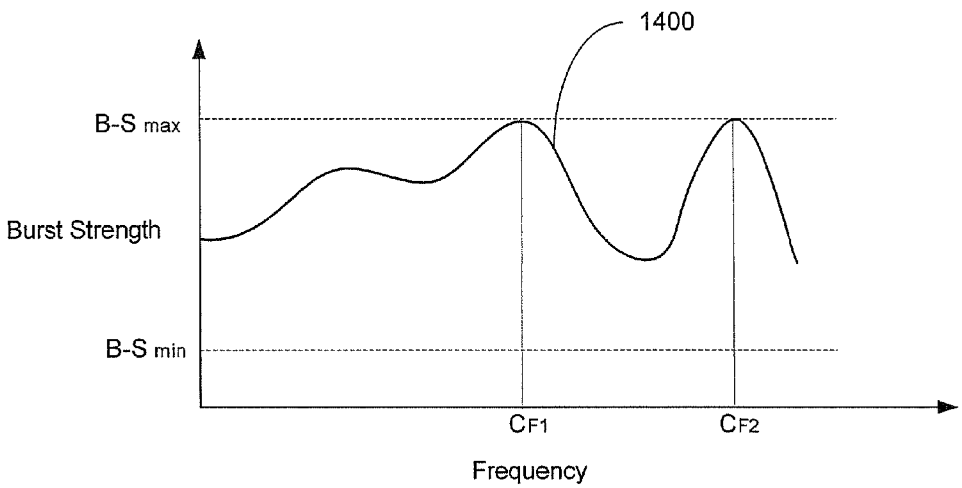

FIGURE 14

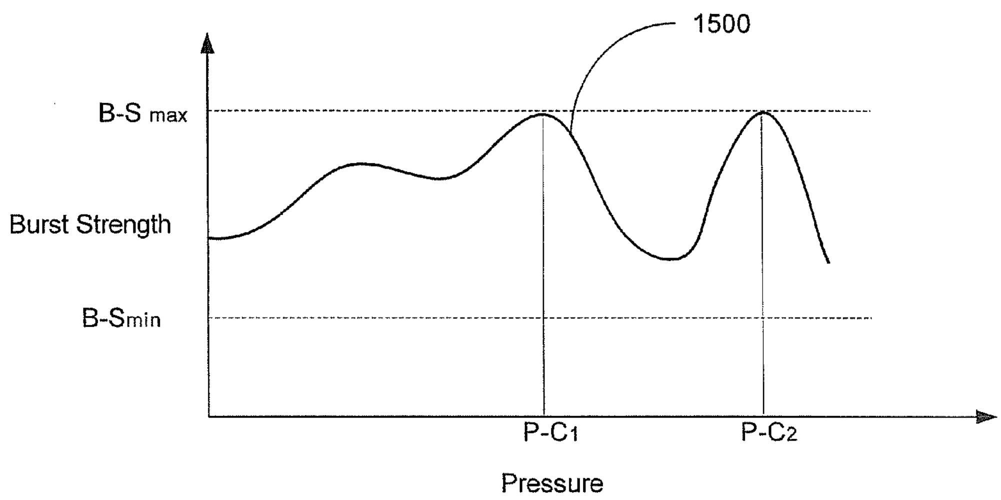

FIGURE 15

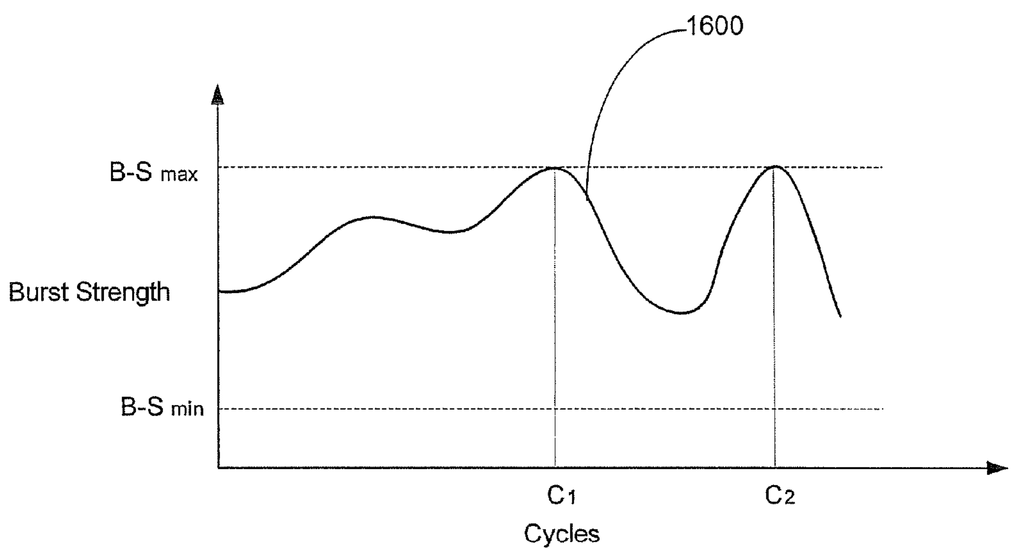

FIGURE 16

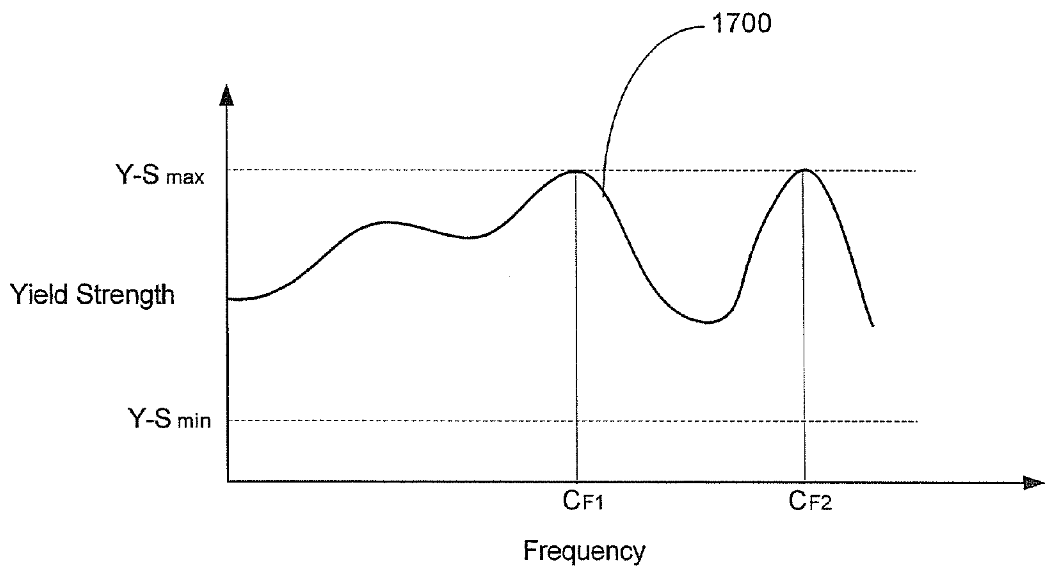

FIGURE 17

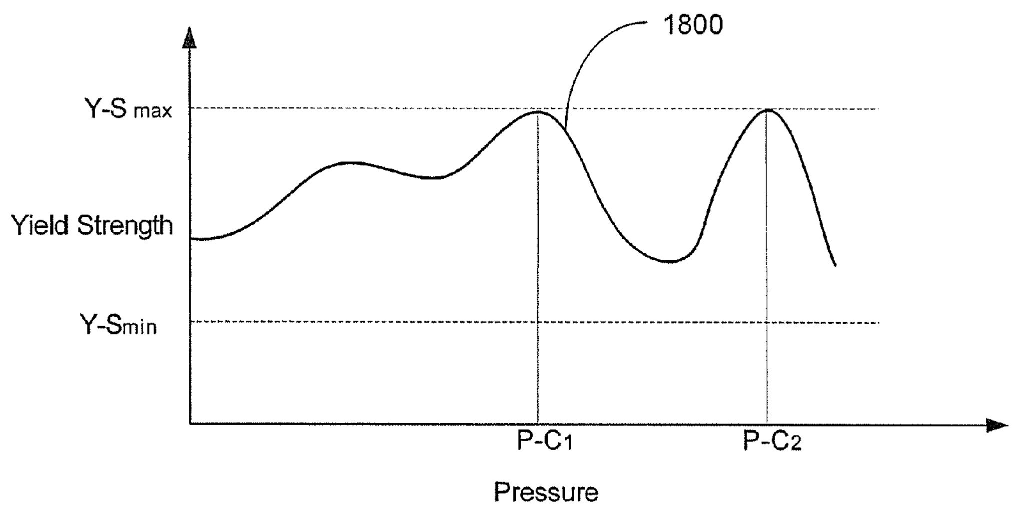

FIGURE 18

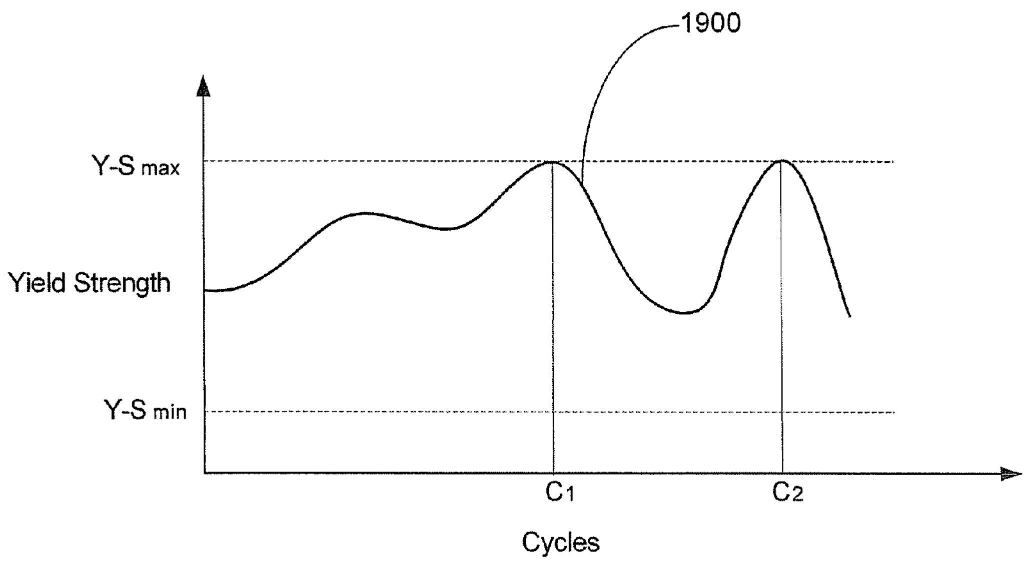

FIGURE 19

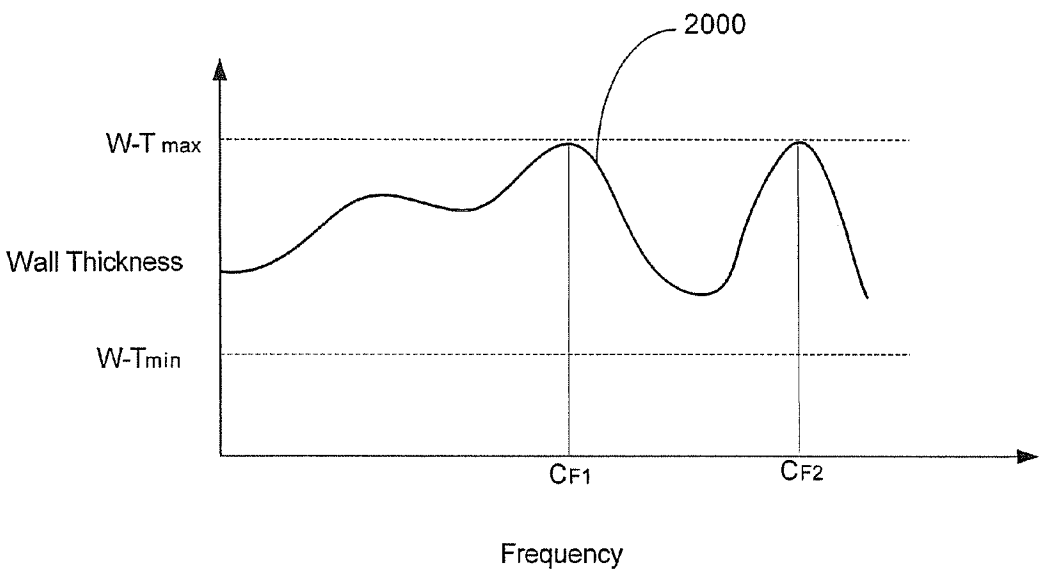

FIGURE 20

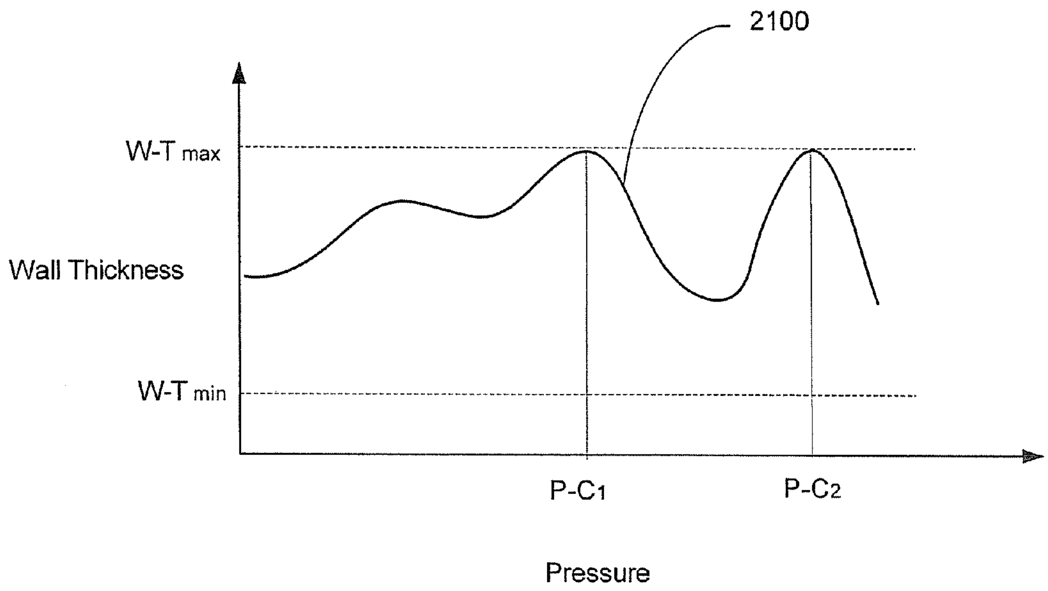

FIGURE 21

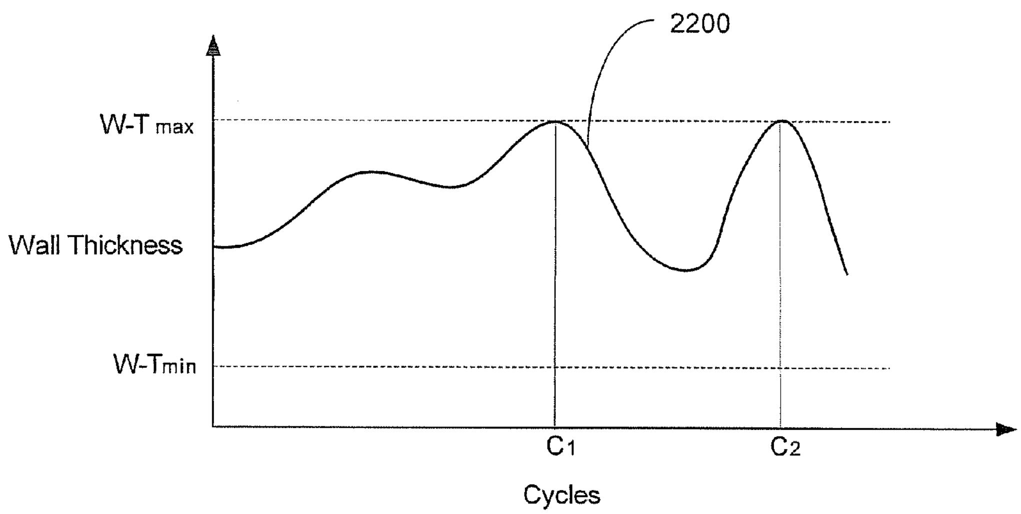

FIGURE 22

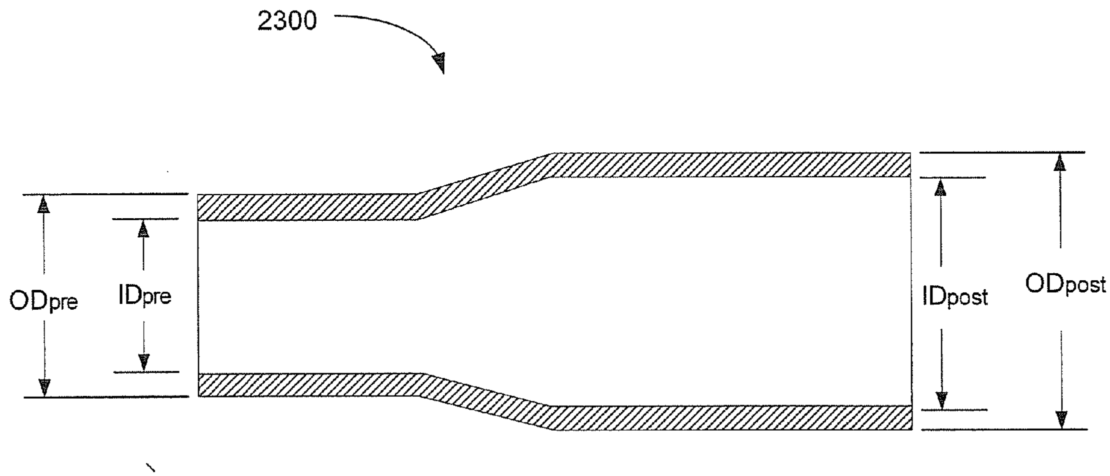

FIGURE 23

PRESSURE CYCLING TO CONTROL THE MATERIAL PROPERTIES OF A TUBULAR MEMBER

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of the filing date of U.S. provisional patent application Ser. No. 60/761,324, attorney docket number 25791.340, filed on Jan. 23, 2006, the disclosure of which is incorporated herein by reference.

[0002] This application is a continuation-in-part of U.S. patent application Ser. No. 10/030,593, attorney docket number 25791.25.08, filed on Jan. 8, 2002, which was the National Stage for PCT application serial number PCT/US00/18635, attorney docket number 25791.25.02, filed on Jul. 7, 2000, which claimed the benefit of U.S. provisional patent application Ser. No. 60/137,998, filed on Jun. 7, 1999, which was a continuation-in-part of U.S. patent application Ser. No. 09/588,946, attorney docket number 25791.17.02, filed on Jun. 7, 2000, (now U.S. Pat. No. 6,557,640 which issued May 6, 2003) which claimed the benefit of U.S. provisional patent application Ser. No. 60/137,998, filed on Jun. 7, 1999, which was a continuation-in-part of U.S. patent application Ser. No. 09/559,122, attorney docket number 25791.23.02, filed on Apr. 26, 2000, (now U.S. Pat. No. 6,604,763 which issued Aug. 12, 2003) which claimed the benefit of U.S. provisional patent application Ser. No. 60/131,106, filed on Apr. 26, 1999, which was a continuation-in-part of U.S. patent application Ser. No. 09/523,460, attorney docket number 25791.11.02, (now U.S. Pat. No. 6,640,903 which issued Nov. 4, 2003) which claimed the benefit of the filing date of U.S. provisional patent application Ser. No. 60/124,042, filed on Mar. 11, 1999, which was a continuation-in-part of U.S. patent application Ser. No. 09/510,913, attorney docket number 25791.7.02, which claimed the benefit of the filing date of U.S. provisional patent application Ser. No. 60/121,702, filed on Feb. 25, 1999, which was a continuation-in-part of U.S. patent application Ser. No. 09/502,350, attorney docket number 25791.8.02, filed on Feb. 10, 2000, (now U.S. Pat. No. 6,823,937 which issued Nov. 30, 2004) which claimed the benefit of the filing date of U.S. provisional patent application Ser. No. 60/119,611, attorney docket number 25791.8, filed on Feb. 11, 1999, which was a continuation-in-part of U.S. patent application Ser. No. 09/454,139, attorney docket number 25791.3.02, filed on Dec. 3, 1999, (now U.S. Pat. 6,497,289 which issued Dec. 24, 2002) which claimed the benefit of the filing date of U.S. provisional patent application Ser. No. 60/111,293, filed on Dec. 7, 1998.

[0003] This application is related to the following co-pending applications: (1) U.S. Pat. No. 6,497,289, which was filed as U.S. patent application Ser. No. 09/454,139, attorney docket no. 25791.03.02, filed on Dec. 3, 1999, which claims priority from provisional application 60/111,293, filed on Dec. 7, 1998, (2) U.S. patent application Ser. No. 09/510,913, attorney docket no. 25791.7.02, filed on Feb. 23, 2000, which claims priority from provisional application 60/121,702, filed on Feb. 25, 1999, (3) U.S. patent application Ser. No. 09/502,350, attorney docket no. 25791.8.02, filed on Feb. 10, 2000, which claims priority from provisional application 60/119,611, filed on Feb. 11, 1999, (4) U.S. Pat. No. 6,328,113, which was filed as U.S. patent application Ser. No. 09/440,338, attorney docket number 25791.9.02, filed on Nov. 15, 1999, which claims priority from provisional application 60/108,558, filed on Nov. 16, 1998, (5) U.S. patent application Ser. No. 10/169,434, attorney docket no. 25791.10.04, filed on Jul. 1, 2002, which claims priority from provisional application 60/183,546, filed on Feb. 18, 2000, (6) U.S. patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124,042, filed on Mar. 11, 1999, (7) U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (8) U.S. Pat. No. 6,575,240, which was filed as patent application Ser. No. 09/511,941, attorney docket no. 25791.16.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121, 907, filed on Feb. 26, 1999, (9) U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (10) U.S. patent application Ser. No. 09/981,916, attorney docket no. 25791.18, filed on Oct. 18, 2001 as a continuation-in-part application of U.S. Pat. No. 6,328,113, which was filed as U.S. patent application Ser. No. 09/440,338, attorney docket number 25791.9.02, filed on Nov. 15, 1999, which claims priority from provisional application 60/108,558, filed on Nov. 16, 1998, (11) U.S. Pat. No. 6,604,763, which was filed as application Ser. No. 09/559,122, attorney docket no. 25791.23.02, filed on Apr. 26, 2000, which claims priority from provisional application 60/131,106, filed on Apr. 26, 1999, (12) U.S. patent application Ser. No. 10/030,593, attorney docket no. 25791.25.08, filed on Jan. 8, 2002, which claims priority from provisional application 60/146,203, filed on Jul. 29, 1999, (13) U.S. provisional patent application Ser. No. 60/143,039, attorney docket no. 25791.26, filed on Jul. 9, 1999, (14) U.S. patent application Ser. No. 10/111,982, attorney docket no. 25791.27.08, filed on Apr. 30, 2002, which claims priority from provisional patent application Ser. No. 60/162,671, attorney docket no. 25791.27, filed on Nov. 1, 1999, (15) U.S. provisional patent application Ser. No. 60/154,047, attorney docket no. 25791.29, filed on Sep. 16, 1999, (16) U.S. provisional patent application Ser. No. 60/438,828, attorney docket no. 25791.31, filed on Jan. 9, 2003, (17) U.S. Pat. No. 6,564,875, which was filed as application Ser. No. 09/679,907, attorney docket no. 25791.34.02, on Oct. 5, 2000, which claims priority from provisional patent application Ser. No. 60/159,082, attorney docket no. 25791.34, filed on Oct. 12/1999, (18) U.S. patent application Ser. No. 10/089,419, filed on Mar. 27, 2002, attorney docket no. 25791.36.03, which claims priority from provisional patent application Ser. No. 60/159,039, attorney docket no. 25791.36, filed on Oct. 12, 1999, (19) U.S. patent application Ser. No. 09/679,906, filed on Oct. 5, 2000, attorney docket no. 25791.37.02, which claims priority from provisional patent application Ser. No. 60/159,033, attorney docket no. 25791.37, filed on Oct. 12, 1999, (20) U.S. patent application Ser. No. Oct. 303,992, filed on Nov. 22, 2002, attorney docket no. 25791.38.07, which claims priority from provisional patent application Ser. No. 60/212,359, attorney docket no. 25791.38, filed on Jun. 19, 2000, (21) U.S. provisional patent application Ser. No. 60/165,228, attorney docket no. 25791.39, filed on Nov. 12, 1999, (22) U.S. provisional patent application Ser. No. 60/455,051, attorney docket no. 25791.40, filed on Mar. 14, 2003, (23) PCT application US02/2477, filed on Jun. 26, 2002, attorney docket no. 25791.44.02, which claims priority from U.S. provisional patent application Ser. No. 60/303,711, attorney docket no. 25791.44, filed on Jul. 6, 2001, (24) U.S. patent application Ser. No. 10/311,412, filed on Dec. 12, 2002, attorney docket no. 25791.45.07, which claims priority from provisional patent application Ser. No. 60/221,443, attorney docket no. 25791.45, filed on Jul. 28, 2000, (25) U.S. patent application Ser. No. 10/, filed on Dec. 18, 2002, attorney docket no. 25791.46.07, which claims priority from provisional patent application Ser. No. 60/221,645, attorney docket no. 25791.46, filed on Jul. 28, 2000, (26) U.S. patent application Ser. No. 10/322,947, filed on Jan. 22, 2003, attorney docket no. 25791.47.03, which claims priority from provisional patent application Ser. No. 60/233, 638, attorney docket no. 25791.47, filed on Sep. 18, 2000, (27) U.S. patent application Ser. No. 10/406,648, filed on Mar. 31, 2003, attorney docket no. 25791.48.06, which claims priority from provisional patent application Ser. no. 60/237,334, attorney docket no. 25791.48, filed on Oct. 2, 2000, (28) PCT application US02/04353, filed on Feb. 14, 2002, attorney docket no. 25791.50.02, which claims priority from U.S. provisional patent application Ser. No. 60/270,007, attorney docket no. 25791.50, filed on Feb. 20, 2001, (29) U.S. patent application Ser. No. 10/465,835, filed on Jun. 13, 2003, attorney docket no. 25791.51.06, which claims priority from provisional patent application Ser. No. 60/262,434, attorney docket no. 25791.51, filed on Jan. 17/2001, (30) U.S. patent application Ser. No. 10/465,831, filed on Jun. 13, 2003, attorney docket no. 25791.52.06, which claims priority from U.S. provisional patent application Ser. No. 60/259,486, attorney docket no. 25791.52, filed on Jan. 3, 2001, (31) U.S. provisional patent application Ser. No. 60/452,303, filed on Mar. 5, 2003, attorney docket no. 25791.53, (32) U.S. Pat. No. 6,470,966, which was filed as patent application Ser. No. 09/850,093, filed on May 7, 2001, attorney docket no. 25791.55, as a divisional application of U.S. Pat. No. 6,497,289, which was filed as U.S. patent application Ser. No. 09/454,139, attorney docket no. 25791.03.02, filed on Dec. 3, 1999, which claims priority from provisional application 60/111,293, filed on Dec. 7, 1998, (33) U.S. Pat. No. 6,561,227, which was filed as patent application Ser. No. 09/852,026, filed on May 9, 2001, attorney docket no. 25791.56, as a divisional application of U.S. Pat. No. 6,497,289, which was filed as U.S. patent application Ser. No. 09/454,139, attorney docket no. 25791.03.02, filed on Dec. 3, 1999, which claims priority from provisional application 60/111,293, filed on Dec. 7, 1998, (34) U.S. patent application Ser. No. 09/852,027, filed on May 9, 2001, attorney docket no. 25791.57, as a divisional application of U.S. Pat. No. 6,497,289, which was filed as U.S. patent application Ser. No. 09/454,139, attorney docket no. 25791.03.02, filed on Dec. 3, 1999, which claims priority from provisional application 60/111,293, filed on Dec. 7, 1998, (35) PCT Application US02/25608, attorney docket no. 25791.58.02, filed on Aug. 13, 2002, which claims priority from provisional application 60/318,021, filed on Sep. 7, 2001, attorney docket no. 25791.58, (36) PCT Application US02/24399, attorney docket no. 25791.59.02, filed on Aug. 1, 2002, which claims priority from U.S. provisional patent application Ser. No. 60/313,453, attorney docket no. 25791.59, filed on Aug. 20, 2001, (37) PCT Application US02/29856, attorney docket no. 25791.60.02, filed on Sep. 19, 2002, which claims priority from U.S. provisional patent application Ser. No. 60/326,886, attorney docket no. 25791.60, filed on Oct. 3, 2001, (38) PCT Application US02/20256, attorney docket no. 25791.61.02, filed on Jun. 26, 2002, which claims priority from U.S. provisional patent application Ser. No. 60/303,740, attorney docket no. 25791.61, filed on Jul. 6, 2001, (39) U.S. patent application Ser. No. 09/962,469, filed on Sep. 25, 2001, attorney docket no. 25791.62, which is a divisional of U.S. patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124,042, filed on Mar. 11, 1999, (40) U.S. patent application Ser. No. 09/962,470, filed on Sep. 25, 2001, attorney docket no. 25791.63, which is a divisional of U.S. patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124, 042, filed on Mar. 11, 1999, (41) U.S. patent application Ser. No. 09/962,471, filed on Sep. 25, 2001, attorney docket no. 25791.64, which is a divisional of U.S. patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124,042, filed on Mar. 11, 1999, (42) U.S. patent application Ser. No. 09/962,467, filed on Sep. 25, 2001, attorney docket no. 25791.65, which is a divisional of U.S. patent application Ser. No. 09/523, 468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124, 042, filed on Mar. 11, 1999, (43) U.S. patent application Ser. No. 09/962, 468, filed on Sep. 25, 2001, attorney docket no. 25791.66, which is a divisional of U.S. patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124,042, filed on Mar. 11, 1999, (44) PCT application US 02/25727, filed on Aug. 14, 2002, attorney docket no. 25791.67.03, which claims priority from U.S. provisional patent application Ser. No. 60/317,985, attorney docket no. 25791.67, filed on Sep. 6, 2001, and U.S. provisional patent application Ser. No. 60/318,386, attorney docket no. 25791.67.02, filed on Sep. 10, 2001, (45) PCT application US 02/39425, filed on Dec. 10, 2002, attorney docket no. 25791.68.02, which claims priority from U.S. provisional patent application Ser. No. 60/343,674, attorney docket no. 25791.68, filed on Dec. 27, 2001, (46) U.S. utility patent application Ser. No. 09/969,922, attorney docket no. 25791.69, filed on Oct. 3, 2001, which is a continuation-in-part application of U.S. Pat. No. 6,328,113, which was filed as U.S. patent application Ser. No. 09/440,338, attorney docket number 25791.9.02, filed on Nov. 15, 1999, which claims priority from provisional application 60/108,558, filed on Nov. 16, 1998, (47) U.S. utility patent application Ser. No. 10/516,467, attorney docket no. 25791.70, filed on Dec. 10, 2001, which is a continuation application of U.S. utility patent application Ser. No. 09/969,922, attorney docket no. 25791.69, filed on Oct. 3, 2001, which is a continuation-in-part application of U.S. Pat. No. 6,328,113, which was filed as U.S. patent application Ser. No. 09/440, 338, attorney docket number 25791.9.02, filed on Nov. 15, 1999, which claims priority from provisional application 60/108,558, filed on Nov. 16, 1998, (48) PCT application US 03/000609, filed on Jan. 9, 2003, attorney docket no. 25791.71.02, which claims priority from U.S. provisional patent application Ser. No. 60/357,372 , attorney docket no.

25791.71, filed on Feb. 15, 2002, (49) U.S. patent application Ser. No. Oct. 074,703, attorney docket no. 25791.74, filed on Feb. 12, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (50) U.S. patent application Ser. No. 074,244, attorney docket no. 25791.75, filed on Feb. 12, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (51) U.S. patent application Ser. No. 10/076,660, attorney docket no. 25791.76, filed on Feb. 15, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (52) U.S. patent application Ser. No. 10/076,661, attorney docket no. 25791.77, filed on Feb. 15, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (53) U.S. patent application Ser. No. 10/076,659, attorney docket no. 25791.78, filed on Feb. 15, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (54) U.S. patent application Ser. No. 10/078,928, attorney docket no. 25791.79, filed on Feb. 20, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (55) U.S. patent application Ser. No. 10/078,922, attorney docket no. 25791.80, filed on Feb. 20, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (56) U.S. patent application Ser. No. 10/078,921, attorney docket no. 25791.81, filed on Feb. 20, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (57) U.S. patent application Ser. No. 10/261,928, attorney docket no. 25791.82, filed on Oct. 1, 2002, which is a divisional of U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (58) U.S. patent application Ser. No. 10/079,276 , attorney docket no. 25791.83, filed on Feb. 20, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (59) U.S. patent application Ser. No. 10/262,009, attorney docket no. 25791.84, filed on Oct. 1, 2002, which is a divisional of U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (60) U.S. patent application Ser. No. 10/092,481, attorney docket no. 25791.85, filed on Mar. 7, 2002, which is a divisional of U.S. Pat. No. 6,568,471, which was filed as patent application Ser. No. 09/512,895, attorney docket no. 25791.12.02, filed on Feb. 24, 2000, which claims priority from provisional application 60/121,841, filed on Feb. 26, 1999, (61) U.S. patent application Ser. No. 10/261,926, attorney docket no. 25791.86, filed on Oct. 1, 2002, which is a divisional of U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (62) PCT application US 02/36157, filed on Nov. 12, 2002, attorney docket no. 25791.87.02, which claims priority from U.S. provisional patent application Ser. No. 60/338,996, attorney docket no. 25791.87, filed on Nov. 12, 2001, (63) PCT application US 02/36267, filed on Nov. 12, 2002, attorney docket no. 25791.88.02, which claims priority from U.S. provisional patent application Ser. No. 60/339,013, attorney docket no. 25791.88, filed on Nov. 12, 2001, (64) PCT application US 03/11765, filed on Apr. 16, 2003, attorney docket no. 25791.89.02, which claims priority from U.S. provisional patent application Ser. No. 60/383,917, attorney docket no. 25791.89, filed on May 29, 2002, (65) PCT application US 03/15020, filed on May 12, 2003, attorney docket no. 25791.90.02, which claims priority from U.S. provisional patent application Ser. No. 60/391,703, attorney docket no. 25791.90, filed on Jun. 26, 2002, (66) PCT application US 02/39418, filed on Dec. 10, 2002, attorney docket no. 25791.92.02, which claims priority from U.S. provisional patent application Ser. No. 60/346,309, attorney docket no. 25791.92, filed on Jan. 7, 2002, (67) PCT application US 03/06544, filed on Mar. 4, 2003, attorney docket no. 25791.93.02, which claims priority from U.S. provisional patent application Ser. No. 60/372,048, attorney docket no. 25791.93, filed on Apr. 12, 2002, (68) U.S. patent application Ser. No. 10/331,718, attorney docket no. 25791.94, filed on Dec. 30, 2002, which is a divisional U.S. patent application Ser. No. 09/679,906, filed on Oct. 5, 2000, attorney docket no. 25791.37.02, which claims priority from provisional patent application Ser. No. 60/159,033, attorney docket no. 25791.37, filed on Oct. 12, 1999, (69) PCT application US 03/04837, filed on Feb. 29, 2003, attorney docket no. 25791.95.02, which claims priority from U.S. provisional patent application Ser. No. 60/363,829, attorney docket no. 25791.95, filed on Mar. 13, 2002, (70) U.S. patent application Ser. No. 10/261,927, attorney docket no. 25791.97, filed on Oct. 1, 2002, which is a divisional of U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (71) U.S. patent application Ser. No. 10/262,008, attorney docket no. 25791.98, filed on Oct. 1, 2002, which is a divisional of U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (72) U.S. patent application Ser. No. 10/261,925, attorney docket no. 25791.99, filed on Oct. 1, 2002, which is a divisional of U.S. Pat. No. 6,557,640, which was filed as patent application

Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (73) U.S. patent application Ser. No. 10/199,524, attorney docket no. 25791.100, filed on Jul. 19, 2002, which is a continuation of U.S. Pat. No. 6,497,289, which was filed as U.S. patent application Ser. No. 09/454,139, attorney docket no. 25791.03.02, filed on Dec. 3, 1999, which claims priority from provisional application 60/111,293, filed on Dec. 7, 1998, (74) PCT application US 03/10144, filed on Mar. 28, 2003, attorney docket no. 25791.101.02, which claims priority from U.S. provisional patent application Ser. No. 60/372,632, attorney docket no. 25791.101, filed on Apr. 15, 2002, (75) U.S. provisional patent application Ser. No. 60/412,542, attorney docket no. 25791.102, filed on Sep. 20, 2002, (76) PCT application US 03/14153, filed on May 6, 2003, attorney docket no. 25791.104.02, which claims priority from U.S. provisional patent application Ser. No. 60/380,147, attorney docket no. 25791.104, filed on May 6, 2002, (77) PCT application US 03, 19993, filed on Jun. 24, 2003, attorney docket no. 25791.106.02, which claims priority from U.S. provisional patent application Ser. No. 60/397,284, attorney docket no. 25791.106, filed on Jul. 19, 2002, (78) PCT application US 03/13787, filed on May 5, 2003, attorney docket no. 25791.107.02, which claims priority from U.S. provisional patent application Ser. No. 60/387,486 , attorney docket no. 25791.107, filed on Jun. 10, 2002, (79) PCT application US 03/18530, filed on Jun. 11, 2003, attorney docket no. 25791.108.02, which claims priority from U.S. provisional patent application Ser. No. 60/387,961, attorney docket no. 25791.108, filed on Jun. 12, 2002, (80) PCT application US 03/20694, filed on Jul. 1, 2003, attorney docket no. 25791.110.02, which claims priority from U.S. provisional patent application Ser. No. 60/398,061, attorney docket no. 25791.110, filed on Jul. 24, 2002, (81) PCT application US 03/20870, filed on Jul. 2, 2003, attorney docket no. 25791.111.02, which claims priority from U.S. provisional patent application Ser. No. 60/399,240, attorney docket no. 25791.111, filed on Jul. 29, 2002, (82) U.S. provisional patent application Ser. No. 60/412,487, attorney docket no. 25791.112, filed on Sep. 20, 2002, (83) U.S. provisional patent application Ser. No. 60/412,488, attorney docket no. 25791.114, filed on Sep. 20, 2002, (84) U.S. patent application Ser. No. 10/280,356, attorney docket no. 25791.115, filed on Oct. 25, 2002, which is a continuation of U.S. Pat. No. 6,470,966, which was filed as patent application Ser. No. 09/850,093, filed on May 7, 2001, attorney docket no. 25791.55, as a divisional application of U.S. Pat. No. 6,497,289, which was filed as U.S. patent application Ser. No. 09/454,139, attorney docket no. 25791.03.02, filed on Dec. 3, 1999, which claims priority from provisional application 60/111,293, filed on Dec. 7, 1998, (85) U.S. provisional patent application Ser. No. 60/412,177, attorney docket no. 25791.117, filed on Sep. 20, 2002, (86) U.S. provisional patent application Ser. No. 60/412,653, attorney docket no. 25791.118, filed on Sep. 20, 2002, (87) U.S. provisional patent application Ser. No. 60/405,610, attorney docket no. 25791.119, filed on Aug. 23, 2002, (88) U.S. provisional patent application Ser. No. 60/405,394, attorney docket no. 25791.120, filed on Aug. 23, 2002, (89) U.S. provisional patent application Ser. No. 60/412,544, attorney docket no. 25791.121, filed on Sep. 20, 2002, (90) PCT application US 03/24779, filed on Aug. 8, 2003, attorney docket no. 25791.125.02, which claims priority from U.S. provisional patent application Ser. No. 60/407,442, attorney docket no. 25791.125, filed on Aug. 30, 2002, (91) U.S. provisional patent application Ser. No. 60/423,363, attorney docket no. 25791.126, filed on Dec. 10, 2002, (92) U.S. provisional patent application Ser. No. 60/412,196, attorney docket no. 25791.127, filed on Sep. 20, 2002, (93) U.S. provisional patent application Ser. No. 60/412,187, attorney docket no. 25791.128, filed on Sep. 20, 2002, (94) U.S. provisional patent application Ser. No. 60/412,371, attorney docket no. 25791.129, filed on Sep. 20, 2002, (95) U.S. patent application Ser. No. 10/382,325, attorney docket no. 25791.145, filed on Mar. 10, 2003, which is a continuation of U.S. Pat. No. 6,557,640, which was filed as patent application Ser. No. 09/588,946, attorney docket no. 25791.17.02, filed on Jun. 7, 2000, which claims priority from provisional application 60/137,998, filed on Jun. 7, 1999, (96) U.S. patent application Ser. No. 10/624, 842, attorney docket no. 25791.151, filed on Jul. 22, 2003, which is a divisional of U.S. patent application Ser. No. 09/502,350, attorney docket no. 25791.8.02, filed on Feb. 10, 2000, which claims priority from provisional application 60/119,611, filed on Feb. 11, 1999, (97) U.S. provisional patent application Ser. No. 60/431,184, attorney docket no. 25791.157, filed on Dec. 5, 2002, (98) U.S. provisional patent application Ser. No. 60/448,526, attorney docket no. 25791.185, filed on Feb. 18, 2003, (99) U.S. provisional patent application Ser. No. 60/461,539, attorney docket no. 25791.186, filed on Apr. 10, 2003, (100) U.S. provisional patent application Ser. No. 60/462,750, attorney docket no. 25791.193, filed on Apr. 14, 2003, (101) U.S. provisional patent application Ser. No. 60/436,106, attorney docket no. 25791.200, filed on Dec. 23, 2002, (102) U.S. provisional patent application Ser. No. 60/442,942, attorney docket no. 25791.213, filed on Jan. 27, 2003, (103) U.S. provisional patent application Ser. No. 60/442,938, attorney docket no. 25791.225, filed on Jan. 27, 2003, (104) U.S. provisional patent application Ser. No. 60/418,687, attorney docket no. 25791.228, filed on Apr. 18, 2003, (105) U.S. provisional patent application Ser. No. 60/454,896, attorney docket no. 25791.236, filed on Mar. 14, 2003, (106) U.S. provisional patent application Ser. No. 60/450,504, attorney docket no. 25791.238, filed on Feb. 26, 2003, (107) U.S. provisional patent application Ser. No. 60/451,152, attorney docket no. 25791.239, filed on Mar. Sep. 03, (108) U.S. provisional patent application Ser. No. 60/455,124, attorney docket no. 25791.241, filed on Mar. 17, 2003, (109) U.S. provisional patent application Ser. No. 60/453,678, attorney docket no. 25791.253, filed on Mar. 11, 2003, (110) U.S. patent application Ser. No. 10/421,682, attorney docket no. 25791.256, filed on Apr. 23, 2003, which is a continuation of U.S. patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124,042, filed on Mar. 11, 1999, (111) U.S. provisional patent application Ser. No. 60/457,965, attorney docket no. 25791.260, filed on Mar. 27, 2003, (112) U.S. provisional patent application Ser. No. 60/455,718, attorney docket no. 25791.262, filed on Mar. 18, 2003, (113) U.S. Pat. No. 6,550,821, which was filed as patent application Ser. No. 09/811,734, filed on Mar. 19, 2001, (114) U.S. patent application Ser. No. 10/436,467, attorney docket no. 25791.268, filed on May 12, 2003, which is a continuation of U.S. Pat. No. 6,604,763, which was filed as application Ser. No. 09/559,122, attorney docket no. 25791.23.02, filed on Apr. 26, 2000, which claims priority from provisional application 60/131,106, filed on Apr. 26, 1999, (115) U.S. provisional patent application Ser. No. 60/459,776, attorney docket no. 25791.270, filed on Apr. 2, 2003, (116) U.S. provisional patent application Ser. No. 60/461,094, attorney docket no. 25791.272, filed on Apr. 8, 2003, (117) U.S. provisional patent application Ser. No. 60/461,038, attorney docket no. 25791.273, filed on Apr. 7, 2003, (118) U.S. provisional patent application Ser. No. 60/463,586, attorney docket no. 25791.277, filed on Apr. 17, 2003, (119) U.S. provisional patent application Ser. No. 60/472,240, attorney docket no. 25791.286, filed on May 20, 2003, (120) U.S. patent application Ser. No. 10/619, 285, attorney docket no. 25791.292, filed on Jul. 14, 2003, which is a continuation-in-part of U.S. utility patent application Ser. No. 09/969,922, attorney docket no. 25791.69, filed on Oct. 3, 2001, which is a continuation-in-part application of U.S. Pat. No. 6,328,113, which was filed as U.S. patent application Ser. No. 09/440, 338, attorney docket number 25791.9.02, filed on Nov. 15, 1999, which claims priority from provisional application 60/108,558, filed on Nov. 16, 1998, (121) U.S. utility patent application Ser. No. 10/418,688, attorney docket no. 25791.257, which was filed on Apr. 18, 2003, as a division of U.S. utility patent application Ser. No. 09/523,468, attorney docket no. 25791.11.02, filed on Mar. 10, 2000, which claims priority from provisional application 60/124,042, filed on Mar. 11, 1999, (122) PCT patent application serial number PCT/US2004/06246, attorney docket no. 25791.238.02, filed on Feb. 26/2004, (123) PCT patent application serial no. PCT/US2004/08170, attorney docket number 25791.40.02, filed on Mar. 15/04, (124) PCT patent application serial number PCT/US2004/08171, attorney docket number 25791.236.02, filed on Mar. 15/04, (125) PCT patent application serial number PCT/US2004/08073, attorney docket number 25791.262.02, filed on Mar. 18, 2004, (126) PCT patent application serial number PCT/US2004/0771 1, attorney docket number 25791.253.02, filed on Mar. Nov. 2004, (127) PCT patent application serial number PCT/US2004/029025, attorney docket number 25791.260.02, filed on Mar. 26, 2004, (128) PCT patent application serial number PCT/US2004/010317, attorney docket number 25791.270.02, filed on Apr. 2, 2004, (129) PCT patent application serial number PCT/US2004/010712, attorney docket number 25791.272.02, filed on Apr. 6, 2004, (130) PCT patent application serial number PCT/US2004/010762, attorney docket number 25791.273.02, filed on Apr. 6, 2004, (131) PCT patent application serial number PCT/US2004/011973, attorney docket number 25791.277.02, filed on Apr. 15, 2004, (132) U.S. provisional patent application Ser. No. 60/495,056, attorney docket number 25791.301, filed on Aug. 14, 2003, (133) U.S. provisional patent application Ser. No. 60/600,679, attorney docket number 25791.194, filed on Aug. 11, 2004, (134) PCT patent application serial number PCT/US2005/027318, attorney docket number 25791.329.02, filed on Jul. 29, 2005, the disclosures of which are incorporated herein by reference. (135) PCT patent application serial number PCT/US2005/028936, attorney docket number 25791.338.02, filed on Aug. 12, 2005, (136) PCT patent application serial number PCT/US2005/028669, attorney docket number 25791.194.02, filed on Aug. 11/2005, (137) PCT patent application serial number PCT/US2005/028453, attorney docket number 25791.371, filed on Aug. 11, 2005, (138) PCT patent application serial number PCT/US2005/028641, attorney docket number 25791.372, filed on Aug. 11, 2005, (139) PCT patent application serial number PCT/US2005/028819, attorney docket number 25791.373, filed on Aug. 11/2005, (140) PCT patent application serial number PCT/US2005/028446, attorney docket number 25791.374, filed on Aug. 11, 2005, (141) PCT patent application serial number PCT/US2005/028642, attorney docket number 25791.375, filed on Aug. 11, 2005, (142) PCT patent application serial number PCT/US2005/028451, attorney docket number 25791.376, filed on Aug. 11, 2005, and (143). PCT patent application serial number PCT/US2005/028473, attorney docket number 25791.377, filed on Jul. 29, 2005, (144) U.S. National Stage application Ser. No. 10/546,084, attorney docket no. 25791.185.05, filed on Aug. 17, 2005; (145) U.S. National Stage application Ser. No. 10/546,082, attorney docket no. 25791.378, filed on Aug. 17, 2005; (146) U.S. National Stage application Ser. No. 10/546,076, attorney docket no. 25791.379, filed on Aug. 17, 2005; (147) U.S. National Stage application Ser. No. 10/546,936, attorney docket no. 25791.380, filed on Aug. 17, 2005; (148) U.S. National Stage application Ser. No. 10/546,079, attorney docket no. 25791.381, filed on Aug. 17, 2005; (149) U.S. National Stage application Ser. No. 10/545,941, attorney docket no. 25791.382, filed on Aug. 17, 2005; (150) U.S. National Stage application Ser. No. 10/546,078, attorney docket no. 25791.383, filed on Aug. 17, 2005; (151) U.S. Provisional Patent Application No. 60/702,935, attorney docket no. 25791.133 filed on Jul. 27, 2005; (152) U.S. National Stage application Ser. No. 10/548,934, attorney docket no. 25791.253.05, filed on Sep. 12, 2005; (153) U.S. National Stage application Ser. No. 10/549,410, attorney docket no. 25791.262.05, filed on Sep. 13, 2005; (154) U.S. Provisional Patent Application No. 60/717,391, attorney docket no. 25791.214 filed on Sep. 15, 2005; (155) U.S. National Stage application Ser. No. 10/550,906, attorney docket no. 25791.260.06, filed on Sep. 27, 2005; (156) U.S. Provisional Patent Application No. 60/721,579, attorney docket no. 25791.327 filed on Sep. 28, 2005; (157) U.S. National Stage application Ser. No. 10/551,880, attorney docket no. 25791.270.06, filed on Sep. 30, 2005; (158) U.S. National Stage application Ser. No. 10/552,253, attorney docket no. 25791.273.06, filed on Oct. 4, 2005; (159) U.S. National Stage application Ser. No. 10/552,790, attorney docket no. 25791.272.06, filed on Oct. 10, 2005; (160) U.S. Provisional Patent Application No. 60/725,181, attorney docket no. 25791.184 filed on Oct. 11, 2005; (161) U.S. National Stage application Ser. No. 10/553,094, attorney docket no. 25791.193.03, filed on Oct. 13, 2005; (162) U.S. Utility Patent Application No. 11/249,967, attorney docket no. 25791.384 filed on Oct. 13, 2005; (163) U.S. National Stage application Ser. No. 10/553,566, attorney docket no. 25791.277.06, filed on Oct. 17, 2005; (164) U.S. Provisional Patent Application No. 60/721,579, attorney docket no. 25791.327 filed on Nov. 4, 2005; (165) U.S. Provisional Patent Application No. 60/734,302, attorney docket no. 25791.24 filed on Nov. 7, 2005; (166) PCT Patent Application No. PCT/US2005/43122, attorney docket no. 25791.326.02; and (167) PCT Patent Application No. PCT/US2006/02449, attorney docket no. 25791.324.02 filed on Jan. 20, 2006, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0004] The present disclosure relates to the material properties of tubing and/or casing located in a borehole traversing a subterranean formation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. **1** is an illustration of a conventional method for drilling a borehole in a subterranean formation.

[0006] FIG. **2** is an illustration of a device for coupling an expandable tubular member to an existing tubular member.

[0007] FIG. **3** is an illustration of a hardenable fluidic sealing material being pumped down the device of FIG. **2**.

[0008] FIG. **4** is an illustration of the expansion of an expandable tubular member using the expansion device of FIG. **2**.

[0009] FIG. **5** is an of the completion of the radial expansion and plastic deformation of an expandable tubular member.

[0010] FIG. **6** is an illustration of a pressure source inside an expandable tubular member.

[0011] FIG. **7** is a graphical illustration of an sinusoidal pressure cycle signal.

[0012] FIG. **8** is a graphical illustration of a square wave pressure cycle signal.

[0013] FIG. **9** is a graphical illustration of a triangular pressure cycle signal.

[0014] FIG. **10** is a graphical illustration of the spectral content of a pressure cycle signal.

[0015] FIG. **11** is a graphical illustration of varying the collapse strength of a tubular member by varying the spectral content of the pressure cycle signal.

[0016] FIG. **12** is a graphical illustration of varying the collapse strength of a tubular member by varying the maximum magnitude of the pressure of the pressure cycle signal.

[0017] FIG. **13** is a graphical illustration of varying the collapse strength of a tubular member by varying the number of cycles of the pressure cycle signal.

[0018] FIG. **14** is a graphical illustration of varying the burst strength of a tubular member by varying the spectral content of the pressure cycle signal.

[0019] FIG. **15** is a graphical illustration of varying the burst strength of a tubular member by varying the maximum magnitude of the pressure of the pressure cycle signal.

[0020] FIG. **16** is a graphical illustration of varying the burst strength of a tubular member by varying the number of cycles of the pressure cycle signal.

[0021] FIG. **17** is a graphical illustration of varying the yield strength of a tubular member by varying the spectral content of the pressure cycle signal.

[0022] FIG. **18** is a graphical illustration of varying the yield strength of a tubular member by varying the maximum magnitude of the pressure of the pressure cycle signal.

[0023] FIG. **19** is a graphical illustration of varying the yield strength of a tubular member by varying the number of cycles of the pressure cycle signal.

[0024] FIG. **20** is a graphical illustration of varying the wall thickness of a tubular member by varying the spectral content of the pressure cycle signal.

[0025] FIG. **21** is a graphical illustration of varying the wall thickness of a tubular member by varying the maximum magnitude of the pressure of the pressure cycle signal.

[0026] FIG. **22** is a graphical illustration of varying the wall thickness of a tubular member by varying the number of cycles of the pressure cycle signal.

[0027] FIG. **23** is an illustration of a partially expanded expandable tubular member.

DETAILED DESCRIPTION

[0028] Referring initially to FIG. **1**, a conventional device **100** for drilling a borehole **102** in a subterranean formation **104** is shown. The borehole **102** may be lined with a casing **106** at the top portion of its length. An annulus **108** formed between the casing **106** and the formation **104** may be filled with a sealing material **110**, such as, for example, cement. In an exemplary embodiment, the device **100** may be operated in a conventional manner to extend the length of the borehole **102** beyond the casing **106**.

[0029] Referring now to FIG. **2**, a device **200** for coupling an expandable tubular member **202** to an existing tubular member, such as, for example, the existing casing **106** , is shown. The device **200** includes a shoe **206** that defines a centrally positioned valveable passage **206** a adapted to receive, for example, a ball, plug or other similar device for closing the passage. An end of the shoe **206***b* is coupled to a lower tubular end **208***a* of a tubular launcher assembly **208** that includes the lower tubular end, an upper tubular end **208***b*, and a tapered tubular transition member **208***c*. The lower tubular end **208***a* of the tubular launcher assembly **208** has a greater inside diameter than the inside diameter of the upper tubular end **208***b*. The tapered tubular transition member **208***c* connects the lower tubular end **208***a* and the upper tubular end **208***b*. The upper tubular end **208***b* of the tubular launcher assembly **208** is coupled to an end of the expandable tubular member **202**. One or more seals **210** are coupled to the outside surface of the other end of the expandable tubular member **202**.

[0030] An expansion device **212** is centrally positioned within and mates with the tubular launcher assembly **208**. The expansion device **212** defines a centrally positioned fluid pathway **212***a*, and includes a lower section **212***b*, a middle section **212***c*, and an upper section **212***d*. The lower section **212***b* of the expansion device **212** defines an inclined expansion surface **212***ba* that supports the tubular launcher assembly **208** by mating with the tapered tubular transition member **208***c* of the tubular launcher assembly. The upper section **212***d* of the expansion device **212** is coupled to an end of a tubular member **218** that defines a fluid pathway **218***a*. The fluid pathway **218***a* of the tubular member **218** is fluidicly coupled to the fluid pathway **212***a* defined by the expansion device **212**. One or more spaced apart cup seals **220** and **222** are coupled to the outside surface of the tubular member **218** for sealing against the interior surface of the expandable tubular member **202**. In an exemplary embodiment, cup seal **222** is positioned near a top end of the expandable tubular member **202**. A top fluid valve **224** is coupled to the tubular member **218** above the cup seal **222** and defines a fluid pathway **226** that is fluidicly coupled to the fluid pathway **218***a*.

[0031] During operation of the device **200**, as illustrated in FIG. **2**, the device **200** is initially lowered into the borehole **102**. In an exemplary embodiment, during the lowering of the device **200** into the borehole **102**, a fluid **228** within the borehole **102** passes upwardly through the device **200** through the valveable passage **206***a* into the fluid pathway **212***a* and **218***a* and out of the device **200** through the fluid pathway **226** defined by the top fluid valve **224**.

[0032] Referring now to FIG. **3**, in an exemplary embodiment, a hardenable fluidic sealing material **300**, such as, for example, cement, is then pumped down the fluid pathway **218***a* and **212***a* and out through the valveable passage **206***a* into the borehole **102** with the top fluid valve **224** in a closed position. The hardenable fluidic sealing material **300** thereby fills an annular space **302** between the borehole **102** and the outside diameter of the expandable tubular member **102**.

[0033] Referring now to FIG. **4**, a plug **402** is then injected with a fluidic material **404**. The plug thereby fits into and closes the valveable passage **206***a* to further fluidic flow. Continued injection of the fluidic material **404** then pressurizes a chamber **406** defined by the shoe **206**, the bottom of the expansion device **212**, and the walls of the launcher assembly **208** and the expandable tubular member **202**. Continued pressurization of the chamber **406** then displaces the expansion device **212** in an upward direction **408** relative to the expandable tubular member **202** thereby causing radial expansion and plastic deformation of the launcher assembly **208** and the expandable tubular member.

[0034] In an exemplary embodiment, the pressure in chamber **406** is cycled between a minimum P_{min} and maximum pressure P_{max} over a length **410** of the expandable tubular member **202**, during operation of the device **200**.

[0035] Referring now to FIG. **5**, the radial expansion and plastic deformation of the expandable tubular member **202** is then completed and the expandable tubular member is coupled to the existing casing **106**. The hardenable fluidic sealing material **300**, such as, for example, cement fills the annulus **302** between the expandable tubular member **202** and the borehole **102**. The device **200** has been withdrawn from the borehole and a conventional device **100** for drilling the borehole **102** may then be utilized to drill out the shoe **206** and continue drilling the borehole **102**, if desired.

[0036] Referring now to FIG. **6**, in an exemplary embodiment, the interior of the expandable tubular member **202** is pressure cycled using a pressure source **602** positioned within and/or operably coupled to the interior of the expandable tubular member, to generate a pressure cycle signal **604**. In an exemplary embodiment, the pressure source **602** may comprise a hydraulic, pneumatic, or impulse type pressure source. In an exemplary embodiment, a controller **606** is coupled to the pressure source **602** for controlling the operation of the pressure source. In an exemplary embodiment, the controller **606** operates the pressure source **602** to generate a pressure cycle signal **604** to control one or more of the following material properties: collapse strength, burst strength, yield strength, and wall thickness of the expandable tubular member **202**.

[0037] Referring now to FIG. **7**, in an exemplary embodiment, the controller **606** operates the pressure source **602** to generate a sinusoidal pressure cycle signal **700** within the expandable tubular member **202**. In an exemplary embodiment, the sinusoidal pressure cycle signal **700** varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0038] Referring now to FIG. **8**, in an exemplary embodiment, the controller **606** operates the pressure source **602** to generate a square wave pressure cycle signal **800** within the expandable tubular member **202**. In an exemplary embodiment, the square wave pressure cycle signal **800** varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0039] Referring now to FIG. **9**, in an exemplary embodiment, the controller **606** operates the pressure source **602** to generate a triangular pressure cycle signal **900** within the expandable tubular member **202**. In an exemplary embodiment, the triangular pressure cycle signal **900** varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0040] In an exemplary embodiment, the controller **606** may operate the pressure source **602** to generate a pressure cycle signal **604** that includes one or more of the pressure cycle signals **700**, **800**, and **900**.

[0041] Referring now to FIG. **10**, in an exemplary embodiment, the spectral content of the pressure cycle signals of **700**, **800**, or **900** include one or more center frequencies CF within the spectral content **1000** of the pressure signal.

[0042] Referring now to FIG. **11**, in an exemplary embodiment, the collapse strength of the expandable tubular member **202** varies as a function of the spectral content **1100** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the spectral content **1100** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical center frequencies C_F for maximizing the collapse strength $C\text{-}S_{max}$ of the expandable tubular member **202**.

[0043] Referring now to FIG. **12**, in an exemplary embodiment, the collapse strength of the expandable tubular member **202** varies as a function of the maximum magnitude of the pressure **1200** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the maximum magnitude of the pressure **1200** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical pressures, $P\text{-}C_1$ and $P\text{-}C_2$, for maximizing the collapse strength $C\text{-}S_{max}$ of the expandable tubular member **202**.

[0044] Referring now to FIG. **13**, in an exemplary embodiment, the collapse strength of the expandable tubular member **202** varies as a function of the number of cycles **1300** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the number of cycles **1300** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more number of critical cycles, C_1 and C_2, for maximizing the collapse strength $C\text{-}S_{max}$ of the expandable tubular member **202**.

[0045] Referring now to FIG. **14**, in an exemplary embodiment, the burst strength of the expandable tubular member **202** varies as a function of the spectral content **1400** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the spectral content **1400** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical center frequencies C_F for maximizing the burst strength $B\text{-}S_{max}$ of the expandable tubular member **202**.

[0046] Referring now to FIG. **15**, in an exemplary embodiment, the burst strength of the expandable tubular member **202** varies as a function of the maximum magnitude of the pressure **1500** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the maximum magnitude of the pressure **1500** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical pressures, $P\text{-}C_1$ and $P\text{-}C_2$, for maximizing the burst strength $B\text{-}S_{max}$ of the expandable tubular member **202**.

[0047] Referring now to FIG. **16**, in an exemplary embodiment, the burst strength of the expandable tubular member **202** varies as a function of the number of cycles **1600** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the number of cycles **1600** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more number of critical cycles, C_1 and C_2, for maximizing the burst strength $B\text{-}S_{max}$ of the expandable tubular member **202**.

[0048] Referring now to FIG. **17**, in an exemplary embodiment, the yield strength of the expandable tubular member **202** varies as a function of the spectral content **1700** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the spectral content **1700** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical center frequencies C_F for maximizing the yield strength $Y\text{-}S_{max}$ of the expandable tubular member **202**.

[0049] Referring now to FIG. **18**, in an exemplary embodiment, the yield strength of the expandable tubular member **202** varies as a function of the maximum magnitude of the pressure **1800** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the maximum magnitude of the pressure **1800** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical pressures, $P\text{-}C_1$ and $P\text{-}C_2$, for maximizing the yield strength $Y\text{-}S_{max}$ of the expandable tubular member **202**.

[0050] Referring now to FIG. **19**, in an exemplary embodiment, the yield strength of the expandable tubular member **202** varies as a function of the number of cycles **1900** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the number of cycles **1900** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more number of critical cycles, C_1 and C_2, for maximizing the yield strength $Y\text{-}S_{max}$ of the expandable tubular member **202**.

[0051] Referring now to FIG. **20**, in an exemplary embodiment, the wall thickness of the expandable tubular member **202** varies as a function of the spectral content **2000** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the spectral content **2000** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical center frequencies C_F for maximizing the wall thickness $W\text{-}T_{max}$ of the expandable tubular member **202**.

[0052] Referring now to FIG. **21**, in an exemplary embodiment, the wall thickness of the expandable tubular member **202** varies as a function of the maximum magnitude of the pressure **2100** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the maximum magnitude of the pressure **2100** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more critical pressures, $P\text{-}C_1$ and $P\text{-}C_2$, for maximizing the wall thickness $W\text{-}T_{max}$ of the expandable tubular member **202**.

[0053] Referring now to FIG. **22**, in an exemplary embodiment, the wall thickness of the expandable tubular member **202** varies as a function of the number of cycles **2200** of the pressure cycle signal **604** generated by the pressure source **602**. In an exemplary embodiment, the number of cycles **2200** of the pressure cycle signal **604** generated by the pressure source **602** includes one or more number of critical cycles, C_1 and C_2, for maximizing the wall thickness $W\text{-}T_{max}$ of the expandable tubular member **202**.

[0054] In an exemplary embodiment, the critical parameters of the pressure cycle signal **604** including: one or more critical center frequencies C_F; one or more critical pressures P-C; and one or more number of critical cycles, C_1 and C_2; for maximizing the collapse strength, burst strength, yield strength, and wall thickness of the expandable tubular member **202**, may be empirically determined.

[0055] Referring now to FIG. **23**, a non-expanded end of an expandable tubular member **2100** defines a non-expanded interior diameter ID_{pre} and outer diameter OD_{pre}. The other expanded end of the expandable tubular member **2100** defines an interior diameter ID_{post} and outer diameter OD_{post}.

[0056] In an exemplary embodiment, the maximization of a material property of the expandable tubular member **202** may result in the decrease in another material property, for example, maximization of the collapse strength of the expandable tubular **202** member may result in a decrease in the yield strength of the expandable tubular member. Additionally, different combinations of material properties may be achieved by adjusting the parameters of the pressure cycle signal **604**. In an exemplary embodiment, the teaching of the present disclosure may be used to determine the empirical relationship between one or more of the following material properties of the expandable tubular member **202** including: collapse strength, burst strength, yield strength and wall thickness; and one or more of the parameters of the pressure cycle signal **604** generated by the pressure source **602** including spectral content, maximum magnitude of the pressure, and number of cycles.

[0057] A generalized vector equation may represent the modification of the material properties of the tubular member by the operation of a pressure source within the tubular member to generate a pressure cycle signal **604**, as follows:

$$\begin{bmatrix} MP_i \\ \vdots \\ MP_M \end{bmatrix} = \begin{bmatrix} f_i(PCS_j \ldots PCS_N) \\ \vdots \\ f_M(PCS_j \ldots PCS_N) \end{bmatrix}$$

where:

[0058] MP_i=particular material property of the tubular member, e.g. collapse strength, burst strength, yield strength, and wall thickness;

[0059] PCS_J=pressure cycle signal parameter, e.g, spectral content, maximum magnitude of pressure, and number of cycles;

[0060] i=1 to M

[0061] j=1 to N

[0062] A method of controlling the material properties of a tubular member has been described that includes positioning a pressure source within the tubular member. The tubular member is located in a borehole traversing a subterranean formation and the tubular member comprises a plastically deformed tubular member. The pressure source is operated to generate a pressure cycle signal comprising; a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0063] An apparatus has been described that includes a tubular member; wherein the tubular member is located in a borehole traversing a subterranean formation and the tubular member comprises a plastically deformed tubular member; a pressure source operably coupled to the interior of the tubular member; and a controller adapted to control the operation of the pressure source to generate a pressure cycle signal. The pressure cycle signal includes a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0064] A method of determining the optimum pressure cycle signal parameter, parameters including spectral content, pressure, and number of cycles, at which to control the material properties of a tubular member, including collapse strength, burst strength, yield strength and wall thickness, has been described that includes: (a) positioning a pressure source within a tubular member; and operating the pressure source to generate a pressure cycle signal having pressure cycle parameters comprising a first spectral content, a maximum magnitude of pressure, and a number of cycles; (b) determining the material properties of the tubular member in which the pressure source was operated to generate a pressure cycle signal having pressure cycle parameters comprising the first spectral content, the maximum magnitude of pressure, and the number of cycles; (c) incrementing one of the pressure cycle signal parameters and holding the other parameters constant and operating the pressure source to generate a pressure cycle signal comprising the incremented pressure cycle parameter; (d) determining the material properties of the tubular member in which the pressure source was operated to generate a pressure signal comprising the incremented pressure cycle parameter; and repeating the procedure (a)-(d) above until the last increment of pressure cycle parameter is reached. Comparing the material properties of the tubular members for each increment of the pressure cycle parameter; determining what is the optimum material property and what is the corresponding increment of the pressure cycle parameter; and operating at that pressure cycle parameter.

[0065] A method of determining one or more pressure cycle signal parameters at which to operate a pressure source that generates a pressure cycle signal within a tubular member to control the material properties of a tubular member has been described that includes the pressure cycle signal parameter as a function of the following factors:

[0066] ID_{pre}=internal diameter of the unexpanded tubular member;

[0067] OD_{pre}=outside diameter of the unexpanded tubular member;

[0068] ID_{post}=internal diameter of the expanded tubular member; and

[0069] OD_{post}=outside diameter of the expanded tubular member.

[0070] A method of coupling a tubular member to an existing tubular member in a borehole located in a subterranean formation has been described that includes: installing a tubular liner and an expansion device in the borehole; overlapping the tubular liner with an existing tubular member; injecting fluidic material into the borehole; pressurizing a portion of an interior region of the tubular liner; radially expanding at least a portion of the liner in the borehole by extruding at least a portion of the liner off of the expansion device; positioning a pressure source within the liner; and operating the pressure source to generate a pressure cycle signal. The pressure cycle signal includes: a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0071] A method of coupling a tubular member to an existing tubular member in a borehole located in a subterranean formation has been described that includes: means for installing a tubular liner and an expansion device in the borehole; means for overlapping the tubular liner with an existing tubular member; means for injecting fluidic material into the borehole; means for pressurizing a portion of an interior region of the tubular liner; means for radially expanding at least a portion of the liner in the borehole by extruding at least a portion of the liner off of the expansion device; means for positioning a pressure source within the liner; and means for operating the pressure source to generate a pressure cycle signal. The pressure cycle signal includes: a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

[0072] Although illustrative embodiments of the invention have been shown and described, a wide range of modification, changes and substitution is contemplated in the foregoing disclosure. In some instances, some features of the present invention may be employed without a corresponding use of the other features, and some steps of the present invention may be executed without a corresponding execution of other steps. Accordingly, all such modifications, changes and substitutions are intended to be included within the scope of this invention as defined in the following claims, and it is appropriate that the claims be construed broadly and in a manner consistent with the scope of the invention. In the claims, means-plus-function clauses are intended to cover the structures described herein as performing the recited function and not only structural equivalents, but also equivalent structures.

What is claimed is:

1. A method of controlling the material properties of a tubular member, comprising:

positioning a pressure source within the tubular member; and

operating the pressure source to generate a pressure cycle signal.

2. The method of claim 1, wherein the tubular member is located in a borehole traversing a subterranean formation.

3. The method of claim 2, wherein the tubular member comprises a plastically deformed tubular member.

4. The method of claim 1, wherein operating the pressure source to generate a pressure cycle signal comprises one or more of the following:

operating the pressure source to generate a pressure cycle signal comprising a predetermined spectral content;

operating the pressure source to generate a pressure cycle signal that varies between a maximum and a minimum pressure; and

operating the pressure source to generate a pressure cycle signal comprising a predetermined number of cycles.

5. The method of claim 1, wherein the pressure source is operated to generate a pressure cycle signal comprising one or more of the following:

a spectral content selected to control the collapse strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the collapse strength of the expanded tubular member;

a number of cycles selected to control the collapse strength of the expanded tubular member;

a spectral content selected to control the burst strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the burst strength of the expanded tubular member;

a number of cycles selected to control the burst strength of the expanded tubular member;

a spectral content selected to control the yield strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the yield strength of the expanded tubular member;

a number of cycles selected to control the yield strength of the expanded tubular member;

a spectral content selected to control the wall thickness of the expanded tubular member;

a maximum magnitude of pressure selected to control the wall thickness of the expanded tubular member;

a number of cycles selected to control the wall thickness of the expanded tubular member;

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time;

a square wave signal that varies from a maximum value P_{max} to a minimum value P_{min} over time; and

a triangular signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

6. A method of controlling the material properties of a tubular member located in a borehole traversing a subterranean formation, the tubular member comprising a plastically deformed tubular member, the method comprising:

positioning a pressure source within the tubular member; and

operating the pressure source to generate a pressure cycle signal comprising:

a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

7. An apparatus, comprising:

a tubular member;

a pressure source operably coupled to the interior of the tubular member; and

a controller adapted to control the operation of the pressure source to generate a pressure cycle signal.

8. The apparatus of claim 7, wherein the tubular member is located in a borehole traversing a subterranean formation.

9. The apparatus of claim 8, wherein the tubular member comprises a plastically deformed tubular member.

10. The apparatus of claim 7, wherein the pressure cycle signal comprises one or more of the following:

a predetermined spectral content;

a maximum and a minimum pressure; and

a predetermined number of cycles.

11. The apparatus of claim 7, wherein the pressure cycle signal comprises one or more of the following:

a spectral content selected to control the collapse strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the collapse strength of the expanded tubular member;

a number of cycles selected to control the collapse strength of the expanded tubular member;

a spectral content selected to control the burst strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the burst strength of the expanded tubular member;

a number of cycles selected to control the burst strength of the expanded tubular member;

a spectral content selected to control the yield strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the yield strength of the expanded tubular member;

a number of cycles selected to control the yield strength of the expanded tubular member;

a spectral content selected to control the wall thickness of the expanded tubular member;

a maximum magnitude of pressure selected to control the wall thickness of the expanded tubular member;

a number of cycles selected to control the wall thickness of the expanded tubular member;

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time;

a square wave signal that varies from a maximum value P_{max} to a minimum value P_{min} over time; and

a triangular signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

12. An apparatus, comprising:

a tubular member adapted to be located in a borehole traversing a subterranean formation, the tubular member comprising a plastically deformed tubular member;

a pressure source operably coupled to the interior of the tubular member; and

a controller adapted to control the operation of the pressure source to generate a pressure cycle signal;

wherein the pressure cycle signal comprises:

a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

13. A method of determining optimum pressure cycle signal parameter at which to control the material properties of a tubular member, the parameters comprising spectral content, maximum magnitude of pressure and number of cycles, the material properties comprising collapse strength, burst strength, yield strength and wall thickness, the method comprising:

positioning a pressure source within a tubular member;

a) operating the pressure source to generate a pressure cycle signal having pressure cycle parameters comprising a first spectral content, a maximum magnitude of pressure, and a number of cycles;

b) determining the material properties of the tubular member in which the pressure source was operated to generate a pressure cycle signal having pressure cycle parameters comprising the first spectral content, the maximum magnitude of pressure, and the number of cycles;

c) incrementing one of the pressure cycle signal parameters and holding the other parameters constant and operating the pressure source to generate a pressure cycle signal comprising the incremented pressure cycle parameter;

d) determining the material properties of the tubular member in which the pressure source was operated to generate a pressure signal comprising the incremented pressure cycle parameter;

repeating the procedure a)-d) above until the last increment of the incremented pressure cycle parameter is reached;

comparing the material properties of the tubular member for each increment of the incremented pressure cycle parameter;

determining what is the optimum material property and what is the corresponding increment of the incremented pressure cycle parameter; and

operating the pressure source at the increment of the incremented pressure cycle parameter corresponding to the optimum material property.

14. A method comprising:

providing a pressure source; and

determining one or more pressure cycle signal parameters at which to operate the pressure source to generate a pressure cycle signal within a tubular member to control at least one of the material properties of the tubular member;

wherein at least one of the one or more pressure cycle signal parameters is a function of the following factors:

ID_{pre}=internal diameter of the unexpanded tubular member;

OD_{pre}=outside diameter of the unexpanded tubular member;

ID_{post}=internal diameter of the expanded tubular member; and

OD_{post}=outside diameter of the expanded tubular member.

15. The method of claim 14, wherein the at least one of the one or more pressure cycle signal parameters comprises one or more of the following:

a spectral content of the pressure cycle signal;

a maximum magnitude of pressure of the pressure cycle signal; and

a number of cycles of the pressure cycle signal; and

wherein the at least one of the material properties of the tubular member

comprises one or more of the following:

the collapse strength of the tubular member;

the burst strength of the tubular member;

the yield strength of the tubular member; and

the wall thickness of the tubular member.

16. A method of coupling a tubular member to an existing tubular member in a borehole located in a subterranean formation comprising:

installing a tubular liner and an expansion device in the borehole;

overlapping the tubular liner with an existing tubular member;

injecting fluidic material into the borehole;

pressurizing a portion of an interior region of the tubular liner;

radially expanding at least a portion of the liner in the borehole by extruding at least a portion of the liner off of the expansion device;

positioning a pressure source within the liner; and

operating the pressure source to generate a pressure cycle signal.

17. The method of claim 16, wherein operating the pressure source to generate a pressure cycle signal comprises one or more of the following:

operating the pressure source to generate a pressure cycle signal comprising a predetermined spectral content;

operating the pressure source to generate a pressure cycle signal that varies between a maximum and a minimum pressure; and

operating the pressure source to generate a pressure cycle signal comprising a predetermined number of cycles.

18. The method of claim 16, wherein the pressure source is operated to generate a pressure cycle signal comprising one or more of the following:

a spectral content selected to control the collapse strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the collapse strength of the expanded tubular member;

a number of cycles selected to control the collapse strength of the expanded tubular member;

a spectral content selected to control the burst strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the burst strength of the expanded tubular member;

a number of cycles selected to control the burst strength of the expanded tubular member;

a spectral content selected to control the yield strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the yield strength of the expanded tubular member;

a number of cycles selected to control the yield strength of the expanded tubular member;

a spectral content selected to control the wall thickness of the expanded tubular member;

a maximum magnitude of pressure selected to control the wall thickness of the expanded tubular member;

a number of cycles selected to control the wall thickness of the expanded tubular member;

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time;

a square wave signal that varies from a maximum value P_{max} to a minimum value P_{min} over time; and

a triangular signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

19. A method of coupling a tubular member to an existing tubular member in a borehole located in a subterranean formation, the method comprising:

installing a tubular liner and an expansion device in the borehole;

overlapping the tubular liner with an existing tubular member;

injecting fluidic material into the borehole;

pressurizing a portion of an interior region of the tubular liner;

radially expanding at least a portion of the liner in the borehole by extruding at least a portion of the liner off of the expansion device;

positioning a pressure source within the liner; and

operating the pressure source to generate a pressure cycle signal, the pressure cycle signal comprising:

a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

20. A system for coupling a tubular member to an existing tubular member in a borehole located in a subterranean formation, the system comprising:

means for installing a tubular liner and an expansion device in the borehole;

means for overlapping the tubular liner with an existing tubular member;

means for injecting fluidic material into the borehole;

means for pressurizing a portion of an interior region of the tubular liner;

means for radially expanding at least a portion of the liner in the borehole by extruding at least a portion of the liner off of the expansion device;

means for positioning a pressure source within the liner; and

means for operating the pressure source to generate a pressure cycle signal.

21. The system of claim 20, wherein means for operating the pressure source to generate a pressure cycle signal comprises one or more of the following:

means for operating the pressure source to generate a pressure cycle signal comprising a predetermined spectral content;

means for operating the pressure source to generate a pressure cycle signal that varies between a maximum and a minimum pressure; and

means for operating the pressure source to generate a pressure cycle signal comprising a predetermined number of cycles.

22. The system of claim 20, wherein the pressure cycle signal comprises one or more of the following:

a spectral content selected to control the collapse strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the collapse strength of the expanded tubular member;

a number of cycles selected to control the collapse strength of the expanded tubular member;

a spectral content selected to control the burst strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the burst strength of the expanded tubular member;

a number of cycles selected to control the burst strength of the expanded tubular member;

a spectral content selected to control the yield strength of the expanded tubular member;

a maximum magnitude of pressure selected to control the yield strength of the expanded tubular member;

a number of cycles selected to control the yield strength of the expanded tubular member;

a spectral content selected to control the wall thickness of the expanded tubular member;

a maximum magnitude of pressure selected to control the wall thickness of the expanded tubular member;

a number of cycles selected to control the wall thickness of the expanded tubular member;

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time;

a square wave signal that varies from a maximum value P_{max} to a minimum value P_{min} over time; and

a triangular signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

23. A system for coupling a tubular member to an existing tubular member in a borehole located in a subterranean formation, the system comprising:

means for installing a tubular liner and an expansion device in the borehole;

means for overlapping the tubular liner with an existing tubular member;

means for injecting fluidic material into the borehole;

means for pressurizing a portion of an interior region of the tubular liner;

means for radially expanding at least a portion of the liner in the borehole by extruding at least a portion of the liner off of the expansion device;

means for positioning a pressure source within the liner; and

means for operating the pressure source to generate a pressure cycle signal, the pressure cycle signal comprising:

a spectral content selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a maximum magnitude of pressure selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member;

a number of cycles selected to control the collapse strength, burst strength, yield strength or wall thickness of the plastically deformed tubular member; and

a sinusoidal signal that varies from a maximum value P_{max} to a minimum value P_{min} over time.

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