OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

February 14, 1958

COPY

Mr. S. B. Christy, IV
Hervey, Dow & Hinkle
Box 547
Roswell, New Mexico

Dear Mr. Christy:

On behalf of your client, Cabot Carbon Company, we enclose two copies of Order R-1126 issued February 12, 1958, by the Oil Conservation Commission in Case 1365, which was heard on January 7th at Santa Fe.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

CABOT CARBON COMPANY

TELEPHONE MO-4-2581

P.O. BOX 1101 PAMPA, TEXAS

CABOT Carbon Black · Oil and Gas · Oil Field Pumping Equipment

January 14, 1958

Re: OCC Case No. 1365 -
Cabot Carbon Company's Application
to Dual Complete H. L. Lowe "B"
Well No. 1, Lea County, New Mexico

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter

Gentlemen:

Attached are the data and information requested by Mr. D. S. Nutter during the January 8, 1958 hearing of Case No. 1365 " Application for Permit to Dually Complete Cabot Carbon Company's H. L. Lowe "B" Well No. 1".

Listed below are the Outside Diameters of the several tubing sizes and the auxiliary equipment:

Item	Joint O.D. or Largest O.D. of Equip.
*1½" Tubing with Hydril CS couplings	2.113"
*2-1/16" Tubing with Hydril CS couplings	2.330"
1¼" API non-upset tubing	2.054"
1½" API non-upset tubing	2.200"
1¼" API external upset tubing	2.200"
1½" API external upset tubing	2.500"
*1½" Garrett Oil Tools, Inc. Type SSC-1½" gas lift mandrel	2.250"
2-1/16" Garrett Oil Tools, Inc. Type SSC-2-1/16" gas lift mandrel	not available
2-1/16" Camco gas lift valve mandrels	not available

*Attachments I and II are photostats of the data sheets furnished by Hydril Company and Garrett Oil Tool, Inc., giving dimensions of their equipment. The remaining tubing data was obtained from Spang's "Engineering Data Book".

Attachment III is a summary of clearances that would be available using various sizes of tubing and gas lift valves or mandrels, and the number of times this clearance would be required in running the tubing into the well bore. It is believed that Attachment III will show that we are using the largest tubing possible and yet providing a minimum safe clearance. Also, using a combination dual string, one string of 1½" tubing with Hydril CS joints and the other string of 2-1/16" tubing with Hydril CS joints, we would be unable to run mandrels on the 1½" or 2-1/16" tubing strings. See Part 3 & 4 of Case IV on Attachment III.

Regarding your question "why 7" casing was not used in Cabot's H. L. Lowe "B" Well No. 1 instead of 5½" casing", our previously drilled wells in the King Field had not encountered the Lower Wolfcamp as being productive. The drilling program therefore was planned for the use of 5½" casing as the oil string. On the Lowe "B" No. 1 we set 13-3/8" casing at 381', drilled out using a 11" bit, set 8-5/8" casing (32#/ft. and 24#/ft.) at 4615', and drilled to 12,320' with a 7-7/8" bit. At the time the Lower Wolfcamp was determined to be productive we had some 5700' of 7-7/8" hole drilled, which would not permit us to run 7" casing. The coupling OD of 7" casing is 7.656". The clearance between the walls of the well bore and the coupling's outside diameter was only 0.219".

I do hope that the attached data and information will be adequate to permit the Commission to review our application with all necessary data at hand.

Yours very truly,

Joe M. Daniel, Jr.

Joe M. Daniel, Jr.
Senior Petroleum Engineer

JMD:mn
Encls.

$8\frac{5}{8}$ 32# TD 7,921

HYDRIL "CS" TUBING JOINT

(Patented)

Fig. 59
Hydril "CS"
Tubing Joint.

The Hydril "CS" tubing joint was first introduced to the industry in 1947. Since then this joint has proved its merits so conspicuously that most oil and gas producers now prefer Hydril "CS" tubing strings wherever the producing conditions require better tubing. Hydril "CS" tubing strings are now in use in most of the high-pressure producing fields of the country.

This tubing joint is as strong as is needed in the deepest of wells. High pressure is sealed off positively at every joint by three separate sealing surfaces. In torque capacity (to resist over-tonging) this "CS" joint far exceeds the collared type tubing joints.

In corrosive gas or gas-distillate fields the need for flush-bore tubing joints is extreme. Hydril "CS" tubing provides streamline flow through the joints, there being no shoulders to cause eddying in the flow of the corrosive fluid at the joints.

All these advantages combine in the Hydril "CS" tubing joint to make it uniquely suited to solving problems encountered in difficult producing fields. There are many fields where all these advantages are required. The gas-distillate fields generally are deep, and usually are characterized by high pressure and corrosive conditions. In these areas the producing problems can be solved with economy by using tubing equipped with Hydril "CS" joints. It is the excellent performance record of this joint under all these adverse conditions that testifies most graphically to the merit of the Hydril "CS" tubing joint.

ELEVATORS

Hydril "CS" tubing strings can be run on standard tubing elevators using elevator plugs to provide a lifting shoulder equivalent to a tubing collar. When tubing is to be round-tripped several times, time is saved by providing an elevator plug for each stand.

Or, if desired, the elevator plugs can be eliminated and the string handled on slip-type elevators, available for rental for 2⅜", 2⅞" and 3½" "CS" tubing.

HOW THE JOINT MAKES UP

As the pin is stabbed into the box, guiding bevels bring the joint into the full stabbed position and land it on two full starting threads. At this position the joint is loose-fitting to permit free stabbing and easy starting of the threads. During spinning up of the joint, both threads engage so that only a few turns are required for full make-up. The first seating occurs on the 14° internal seal. This contact usually stops free spinning. Moderate further make-up preloads this internal seal, and then the outside shoulder seats. This double seating can usually be achieved by torque application equivalent to that of hand tubing tong make-up. As the joint is further tonged up with power tools (to the make-up torque shown in Table No. 18) the bore shoulder seats, forming a final positive stop. In this made-up position the 14° inside seal and the 30° outside seal both are properly preloaded to establish pressure seals against both low and high pressures. The bore shoulder itself is, of course, a third pressure seal as well as a third and final stop to the make-up of the joint.

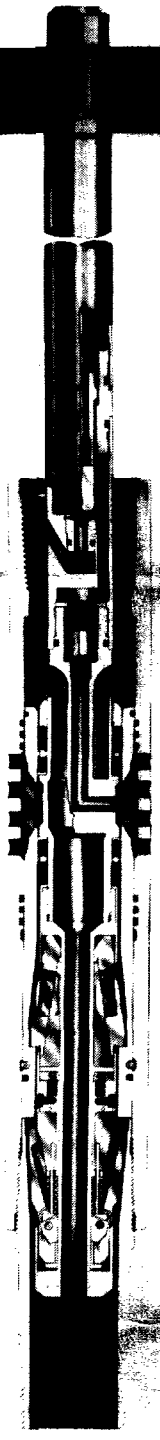
Table No. 18
HYDRIL "CS" JOINT FOR EXTERNAL UPSET TUBING

Size (O.D.) & Weight (Nominal)	TUBING			JOINT					See Table No. 21, Page 2599 for Burst and Collapse Ratings of Pipe	TENSION—(Pipe)† (Joint is Stronger than Pipe)			Recommended Make-Up Torque	
										J-55	N-80	P-105		
	Wall Thick.	I.D. (Nominal)	Drift Diam. (A.P.I.)	Pin Length	O.D. (Std.)	O.D. (Special)	I.D. (Bored)	Efficiency		Min. Yield	Min. Yield	Min. Yield	J-55	N-80 P-105
Inches Lbs.	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Percent		1000 Lbs.	1000 Lbs.	1000 Lbs.	Ft.-Lbs.	Ft.-Lbs.
1 (1.315-O.D.)-1.8	.133	1.049	.955	2.187	1.552		.970	116		27	40	52	300	400
1¼ (1.660-O.D.)-2.4	.140	1.380	1.286	2.187	1.883		1.300	114		37	53	70	400	600
1½ (1.900-O.D.)-2.9	.145	1.610	1.516	2.187	2.113		1.530	110		44	64	84	600	800
2 1/16—3.4	.156	1.750	1.656	2.187	2.330		1.700	109		51	75	98	800	1100
2⅜—4.7	.190	1.995	1.901	2.272	2.700	2.630	1.945	106		72	104	137	1300	1800
2⅜—5.3	.218	1.939	1.845	2.272	2.700		1.890	105		81	118	155	1300	1800
2⅞—6.5	.217	2.441	2.347	2.338	3.220	3.155	2.375	102		100	145	190	1700	2500
3½—9.3	.254	2.992	2.867	2.787	3.865	3.805	2.920	105		142	207	272	2500	3000
3½—10.3	.289	2.922	2.797	2.787	3.865		2.878	101		160	233	306	2500	3000
4 —11	.262	3.476	3.351	2.787	4.343	4.315	3.395	105		169	246	323	3500	3500
4½—12.75	.271	3.958	3.833	2.830	4.855	4.825	3.865	105		198	288	378	3500	3500

† Pipe Tension Strength Calculated on: J-55 = 55,000 Yield and 92,000 Ultimate. N-80 = 80,000 Yield and 105,000 Ultimate.
P-105 = 105,000 Yield and 120,000 Ultimate.

Hydril "A" and "CA" and "CS" threads are interchangeable.
Hydril 4½" O.D. type "A" and "CS" and "EL" casing threads are interchangeable.

MANDRELS FOR RETRIEVABLE VALVES



These mandrels accommodate the gas lift valves described on the opposite page. Both types contain the GOT Sliding Sleeve Valve, through which communication between the casing and tubing may be opened or shut off with wire line tools. The sliding sleeve, which serves as the receiver for the gas lift valve, is fitted with snap rings that engage when the sleeve valve is in full open or fully closed position and thus secure the sleeve against accidental movement. A direct thrust load of 3200 pounds is required to unseat the snap ring from its groove. O-Rings supported by Teflon back-up rings provide the pressure seal around the sleeve. The mandrels are made of high tensile, corrosion-resistant materials, and are designed to outlast the tubing under all conditions.

The sleeve valve is closed on upward movement of the sliding sleeve, and opened on downward movement. The design of the mandrels and the gas lift valves which they accommodate is such that the sleeve valve is shifted to open position when a gas lift valve is installed, and shifted to closed position when the valve is retrieved. When circulation between casing and tubing is desired, any or all sleeve valves may be shifted by wire line tools without using gas lift valves.

Coupled with the features of the Type "S" Gas Lift Valve, this design provides these advantages:

1. The gas lift valve may be installed or retrieved in one run of the wire line.
2. Undesired communication between the casing and tubing never exists.
3. Gas lift valves may be installed or retrieved without equalizing pressures.
4. Concentric mounting of the gas lift valve facilitates engagement of the fishing tool.
5. Turbulence, erosion and deposits of sand and silt are minimized.
6. All types of valves of the same size are interchangeable in mandrels of the same size.
7. Welding has been eliminated from the mandrels.

TYPE "SSC" MANDREL

This mandrel is designed especially for dual completions and slim holes. It permits two strings of 1½" upset tubing equipped with wire line retrievable gas lift valves to be run inside 5½" O.D. casing, or two strings of 2" upset to to be run inside 7" O.D. casing, *without clamping*. The flow of fluid is through the gas lift valve.

Circulation between casing and tubing is provided by a series of drilled ports in the body of the mandrel, and slots in the sliding sleeve. The total area of the ports and slots is equal to the inside area of the tubing, as a result of which a Type "SSC" Mandrel serves as a *full capacity circulating valve* that may be opened or closed with wire line tools, and in which a gas lift valve may be installed whenever desired.

DIMENSIONS AND WEIGHTS

Type	Tubing Size	Outside Diameter	Inside Diameter	Length	Weight
SSC	1½"	2.250"	1 7/16"	30 5/16"	19½ lbs.
SSC	1½"	2.375"	1 7/16"	30 5/16"	21 lbs.
SSC	2"	2.910"	1 29/32"	27"	22 lbs.
SSC	2"	3.000"	1 29/32"	27"	23 lbs.
SSC	2½"	3.750"	2 11/32"	29"	26¼ lbs.

FIGURE 1

Type "SSC" Mandrel with Type "S-O" Gas Lift Valve installed. Sliding sleeve valve is in open position. Fluid flows through the gas lift valve.

TYPE "V-2" MANDREL

The sliding sleeve in this mandrel contains a fluid by-pass with a flow capacity equal to that of the tubing. The gas inlet port is large enough to pass any required volume of injection gas, and provides for emergency circulation between casing and tubing.

DIMENSIONS AND WEIGHTS

Type	Tubing Size	Outside Diameter	Inside Diameter	Length	Weight
V-2	2"	4.125"	1 29/32"	48"	72 lbs.
V-2	2½"	4.750"	2 11/32"	48"	90 lbs.

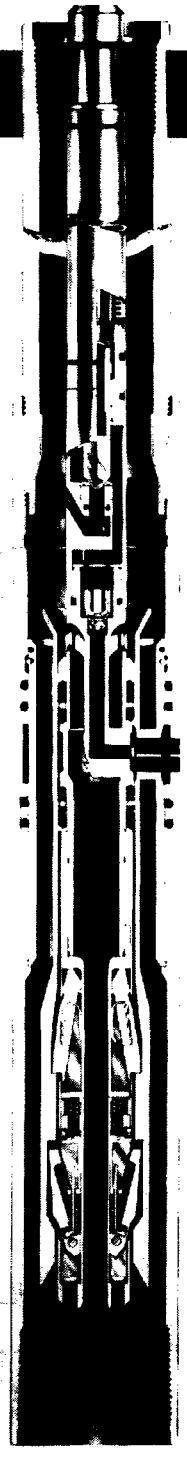
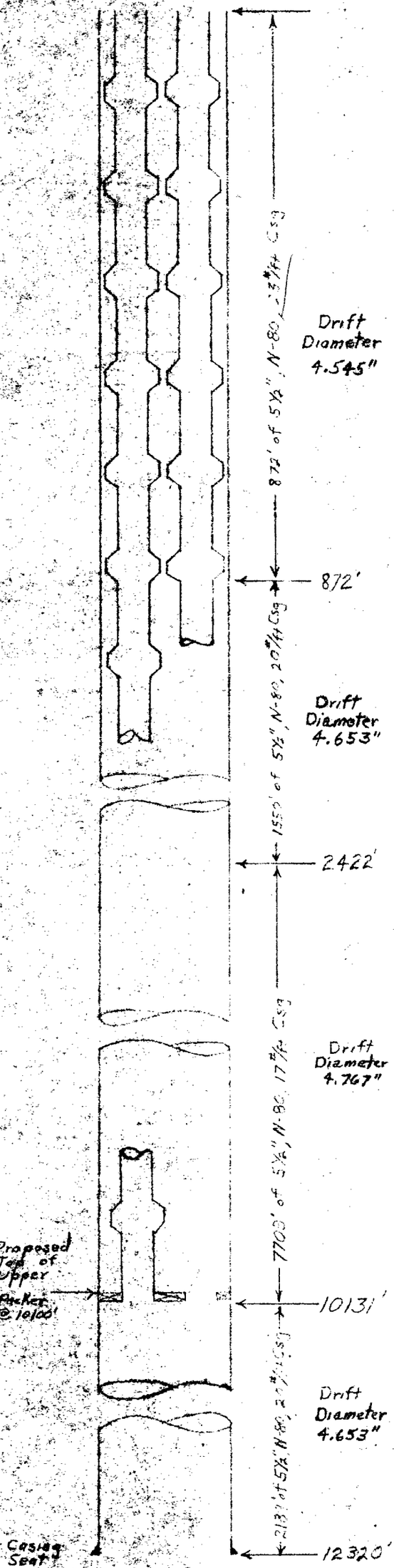


FIGURE 2

Type "V-2" Mandrel with Type S-O Gas Lift Valve installed. Fluid flows through by-pass in sliding sleeve, and through the gas lift valve.

ATTACHMENT III



Assumptions: (To be the same in all cases)

1. Each tubing joint length = 30'; Range 2 tubing is 28' to 32' in length.
2. First string of tubing already in place.

Note: All cases are based on what happens in the top 872' of the casing string since this is the interval with the smallest drift diameter.

CASE I

Assume: Dual string of 1½" tubing with Hydril CS couplings, the joint OD = 2.113", and the bottom of second tubing string has reached a depth of 872' while being run into the well bore.

Results: 1. There will be 29 joints ($\frac{872'}{30'}$ = 29) passing each other simultaneously with a clearance of 0.319" [4.545" - 2(2.113") = 0.319"] as each additional joint is run into the well bore.
2. This passing simultaneously of 29 joints in the top 872' of the well will occur until the second string of tubing reaches its seat in the upper packer at 10100' or 307 times; that is [(10100' - 871')/30' = 307.6].

CASE II

Assume: Dual string of 1½" tubing with Hydril CS couplings, the joint OD = 2.113"; and several 2.250" OD gas lift mandrels run on second tubing string with the mandrels spaced greater than 872' apart.

Results: A mandrel will pass 29 joints of the first string while being lowered into the well with a clearance of 0.182", [4.545" - (2.250" / 2.113") = 0.182"].

CASE III

Assume: Dual string of 2-1/16" tubing with Hydril CS couplings, the joint OD = 2.330".

Results: There will be no clearance since (2)(2.330") is greater than 4.545" by the amount of 0.115".

CASE IV

Assume: Dual strings, one string of 1½" tubing with Hydril CS couplings, joint OD = 2.113"; other string of 2-1/16" tubing with Hydril CS couplings, joint OD = 2.330"; and bottom of second tubing string has reached a depth greater than 872'.

Results: 1. There will be 29 joints passing each other simultaneously in the 23#/ft. casing interval with a clearance of 0.102", [4.545" - (2.113" / 2.330") = 0.102"].
2. This passing simultaneously of 29 joints in the top 872' of the well will occur 307 times while running the second string to 10100'.
3. If a gas lift mandrel is run on the 1½" tubing string, there would be no clearance since [4.545" - (2.330 / 2.250) = -0.035"].
4. Mandrels are not available in the 2-1/16" size and would prevent gas lifting the zone or zones.