

Case No.

1754

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 1754
Order No. R-1482

APPLICATION OF SKELLY OIL COMPANY
FOR PERMISSION TO COMMINGLE THE
PRODUCTION FROM TWO SEPARATE OIL
POOLS IN LEA COUNTY, NEW MEXICO

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 2, 1959, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 14th day of September, 1959, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Skelly Oil Company, is the owner and operator of the W/2 SW/4 and NE/4 SW/4 of Section 3, Township 23 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That the applicant proposes to commingle the production from the Langlie-Mattix Oil Pool and from an undesignated Blinebry oil pool from the four wells presently completed on the above-described acreage without separately metering the production from each pool.

(4) That of the four wells presently completed on the subject acreage, three Langlie-Mattix wells are capable of producing a total of about 9 barrels of oil per day and the one Blinebry well is capable of producing about 10 barrels of oil per day.

-2-
Case No. 1754
Order No. R-1432

(5) That because of the marginal character of the producing wells on the subject acreage, the applicant's request for permission to commingle, without prior metering, should be granted, provided that a monthly test is conducted on all wells located on the subject acreage to determine the individual production from each well.

(6) That approval of the subject application will neither cause waste nor impair correlative rights.

IT IS THEREFORE ORDERED:

That the applicant, Skelly Oil Company, be and the same is hereby authorized to commingle the oil production from the Langlie-Mattix Pool and from an undesignated Blin-bry pool from all wells presently completed on the W/2 SW/4 and the NE/4 SW/4 of Section 3, Township 23 South, Range 37 East, NMPM, Lea County, New Mexico, without separately metering the production from each of said pools prior to commingling.

PROVIDED HOWEVER, That if any well on the subject acreage shall at any time in the future become capable of producing in excess of top unit allowable for its producing zone, the authority granted by this order shall terminate unless the production from each of the two pools is separately measured prior to commingling.

PROVIDED FURTHER, That the applicant shall conduct monthly tests of all wells located on the subject acreage to determine the individual production from each well.

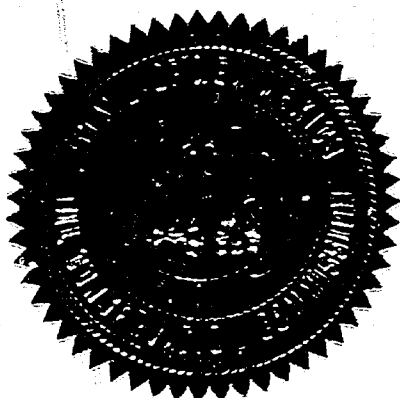
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

John Burroughs
JOHN BURROUGHS, Chairman

Murray E. Morgan
MURRAY E. MORGAN, Member

A. L. Porter
A. L. PORTER, Member & Secretary



lcr/

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

IN THE MATTER OF:

Case No. 1754

TRANSCRIPT OF PROCEEDINGS

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
Phone CHapel 3-6691

September 2, 1959

I N D E X

WITNESS

DIRECT

CROSS

Joe D. Ramey

3

7

2

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 2, 1959

IN THE MATTER OF:

Application of Skelly Oil Company for permission to commingle the production from two separate oil pools. Applicant, in the above-styled cause, seeks an order authorizing it to commingle the production from the Langlie-Mattix Pool and from an undesignated Blinebry oil pool from all wells on its R. R. Sims lease comprising the W/2 SW/4 and NE/4 SW/4 of Section 3, Township 23 South, Range 37 East, Lea County, New Mexico

CASE NO.
1754

BEFORE:

Elvis A. Utz, Examiner.

TRANSCRIPT OF PROCEEDINGS

MR. UTZ: Case 1754.

MR. PAYNE: Case 1754. Application of Skelly Oil Company for permission to commingle the production from two separate oil pools. Applicant, in the above-styled cause, seeks an order authorizing it to commingle the production from the Langlie-Mattix Pool and from an undesignated Blinebry oil pool from all wells on its R. R. Sims lease comprising the W/2 SW/4 and NE/4 SW 4 of Section 3, Township 23 South, Range 37 East, Lea County, New Mexico.

MR. WHITE: If the Examiner please, may the record show the same appearances as appear in Case Number 1752?

MR. UTZ: Yes.

MR. PAYNE: Let the record show that the witness is the same Mr. Ramey who testified in the previous case and was sworn at that time.

DIRECT EXAMINATION

BY MR. WHITE:

Q Mr. Ramey, are you the same witness that testified in Case Number 1752?

A Yes. I am.

Q Are you familiar with Skelly Oil Company's application in Case Number 1754?

A Yes.

Q Will you briefly state the nature of the petition, please?

A This is an application for permission to commingle the production from the Langlie Mattix Pool and from an undesignated Blinebry oil pool on a portion of our R. R. Sims lease.

Q The Exhibits to be introduced in this case were also prepared by you or under your supervision?

A Yes, they were.

Q Will you refer to Exhibit 1 and explain this please?

A Exhibit 1 is a plat showing that part of the R. R. Sims lease which is affected by this application and is outlined in red. This portion of the lease includes the west half of the southwest quarter and the northeast of the southwest quarter of Section 3, Township 23 South, Range 37 East, Lea County, New

Mexico. Also shown on this plat are offset leases and operators, well locations, flow lines and tank battery locations and our R. R. Sims lease.

Q From what formation are wells two, five and six producing?

A Those are producing from the Queen formation of the Langlie Mattix Pool.

Q And approximately how much production is there per day?

A Those wells are each producing around three barrels of oil, no water, per day, total nine barrels of oil per day.

Q Will you explain the production as to well number seven?

A Well number seven is a Blinebry oil well which was completed July the first, 1959, and its potential was fourteen barrels of oil, twelve barrels of water, from perforations fifty-five fifty-three to seventy-one, and fifty-five eighty to eighty-seven.

Q What is the well producing at the present time?

A The well is producing around twelve barrels of oil, eight barrels of water per day.

Q Now will you refer to Exhibit number 2 and explain that please?

A Exhibit number 2 is a diagrammatic sketch of the present flow and storage facilities for these two zones. As it now stands, wells two, five and six pass through a production separator, and from the production separator, the oil goes into stock in the left hand tank, well number seven passes through a

heater treater and from the heater treater into the right hand tank.

Q With this present setup is it necessary to shut up the wells at any time?

A Yes, when the tank becomes full and the pipeline runs the oil, why it is usually necessary to shut the wells down for one day.

Q How much loss of production --

A Approximately fifteen barrels a day, I think the Queen has the ability of making up part of its production that is lost by shutdown, and I believe the Blinbry will just about lose a day's production if it is shut in for a day.

Q In view of this small production, would it be economically feasible to install separate tankage for each zone?

A No. I think the cost of another battery for the well number seven would be around two thousand dollars, that is for a small battery, and cost of installing this tankage is too great disproportionate to the revenue produced.

Q Is it possible for you to commingle these two zones with no further revision to your present storage facilities?

A Yes, it would be. It would be a matter of opening and closing valves.

Q How could you take the necessary tests?

A By the same process, testing would be accomplished by the way the wells are producing now. We could divert the Queen

into one battery and we could divert the Blinebry into another. I should say tank rather than battery.

Q Over and above the economic savings in dollars and cents, do you believe that this proposal of commingling will be in the interest of conservation and prevention of waste?

A Yes, it would be. The storage time will be cut just about in half and hence the evaporation would be cut in half so there would be a savings of sort from evaporation losses.

Q Has the Commission granted similar application under similar circumstances as this?

A Yes, I believe they have.

Q What is the recompletion cost of your R. R. Sims number seven well?

A Estimated fourteen thousand three hundred dollars.

Q Do you have anything further to say in support of the application?

A I think that is all. We could, if the Commission so desire, we could produce this well separately up until the time that the pipeline runs oil; however, we would like to have permission to at least commingle them for at least a day or two days a month. However, this would not be the most efficient setup. The most efficient setup would be to put both as soon as possible into the same tank with the exception of testing time.

MR. WHITE: At this time we offer Exhibit 1 through 2.

MR. UTZ: Without objection Exhibits 1 and 2 will be

entered into the record.

MR. WHITE: This completes our direct examination.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Ramey, I'm a little confused at this point on what the Blinebry is making. I believe your application stated ten barrels and you just stated twelve barrels?

A The well had fallen down to ten barrels; however, over the last month we had an average of twelve barrels a day production from that.

Q And the Queen zone is about what?

A Those wells are each making around three barrels a day, a total of nine barrels a day.

Q You said the Blinebry was capable of making up some of its production. How do you mean, up to twelve barrels?

A I believe the Blinebry, if it is shut in for twenty-four hours, I believe you'll lose approximately twelve barrels of oil. However, the Queen in that area you can shut it down and not lose a full day's production.

Q Even though there are --

A That has been our experience in that area.

Q You mean not lose any production over nine barrels a day?

A We would not lose a full nine barrels a day by shutting the well in for twenty-four hours.

Q Well, it will make a little more than nine barrels a day

and then settle off to nine barrels again?

A Yes.

Q In other words, what you mean is that they will still average out, even though you shut them in, they will average nine barrels a day, but they wouldn't make over that?

A I don't believe it has been our experience in that area-- Most of the wells have the ability after being shut down for a rod job or similar shut down of some kind, why they will just about the next day, they will just about double their normal daily production. However, there will be some loss.

Q Would you be willing to test these wells once a month for the capacity?

A Yes, or even at a more frequent time. There is no problem to testing these wells.

MR. UTZ: Are there any other questions of the witness?

MR. PAYNE: Yes.

BY MR. PAYNE:

Q Mr. Ramey, is the royalty common at all depths in this lease?

A Yes, it is.

Q Do you propose to drill any more wells on this lease?

A No, we do not.

Q So that you don't need any sort of procedure then to take care of commingling of future wells drilled here to Langlie Mattix or Blinebry?

A No, I don't think so. There might be further applications. We have, in number 7, this was a former plugged and abandoned well which had been converted to a water supply well, and then recompleted in the Blinebry.

Q Is the Blinebry and the Langlie Mattix production, are both of those sour?

A No, they are not, the Blinebry is sweet crude, sweet or intermediate and the Langlie Mattix is sour; however, we have consulted Shell on this and they have no line in this area except a sour crude line and they have given us approval to commingle all this.

Q This does lower the value of your commingled crude on this when you have to put the sweet in with the sour and lower gravity of the total?

A No, I believe it would be sold as sour crude. If the Blinebry were put in separate storage, it would be, still be sold as sour crude.

Q Is this Blinebry well producing now, the seven well?

A Yes, it is.

Q What are you doing with it now?

A Going into the right hand tank.

Q It is the only one that is going in there now?

A Yes, and the other three wells, number two, five and six, are going into the left hand.

Q Now, do you propose to move the second tank off the lease

if your application here is granted?

A No, we do not.

Q Now, in the event that any of these wells are worked over and become capable of producing in excess of top unit allowable, you would be willing at that time to install separate tankage or meter the production from such wells prior to commingling would you not?

A Yes, we would. The wells are capable of supporting such an investment, it would certainly be --

Q This is all one basic lease?

A Yes, it is.

Q And this is a separate lease here to the left (indicating)?

A No, it is not. We have separate tankage for the wells in that portion of the lease.

Q You propose to produce those wells into separate tankage?

A Yes, we do.

MR. PAYNE: That's all, thank you.

MR. UTZ: Any other questions? If not, witness may be excused. Any statements to be made in this case? If there are none, the case will be taken under advisement.

C E R T I F I C A T E

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

I, J. A. TRUJILLO, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript by me and/or under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal, this, the 12th day of September, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

J. A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1960

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1754, heard by me on Sept. 2, 1959.

Ernest G. [Signature], Examiner
New Mexico Oil Conservation Commission

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
Phone CHapel 3-6691

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 9-2-59

CASE NO. 1754

HEARING DATE 9-2-59

My recommendations for an order in the above numbered case(s) are as follows:

Grant the commingling requested by Skelly as follows:

1. The Langlie Matlis-Dunn^{oil} and the Blinkey oil shall be commingled without metering provided a monthly test be conducted on each well for ~~each well~~ to determine the wells productivity.
2. If at any time either zone becomes non-marginal this order is void.
3. The lease is the Skelly-R.R. Sims consisting of W/2 SW/4, NE/4 SW/4 sec. 3-23S-37E.
4. The Blinkey well is the Skelly-Sims #7
5. The Langlie Matlis-Dunn wells are the Skelly Sims #1, 2, 5 & 6.

If at any time any well on this lease shall produce in excess of its allowable for the given production for the authority granted by this order shall terminate

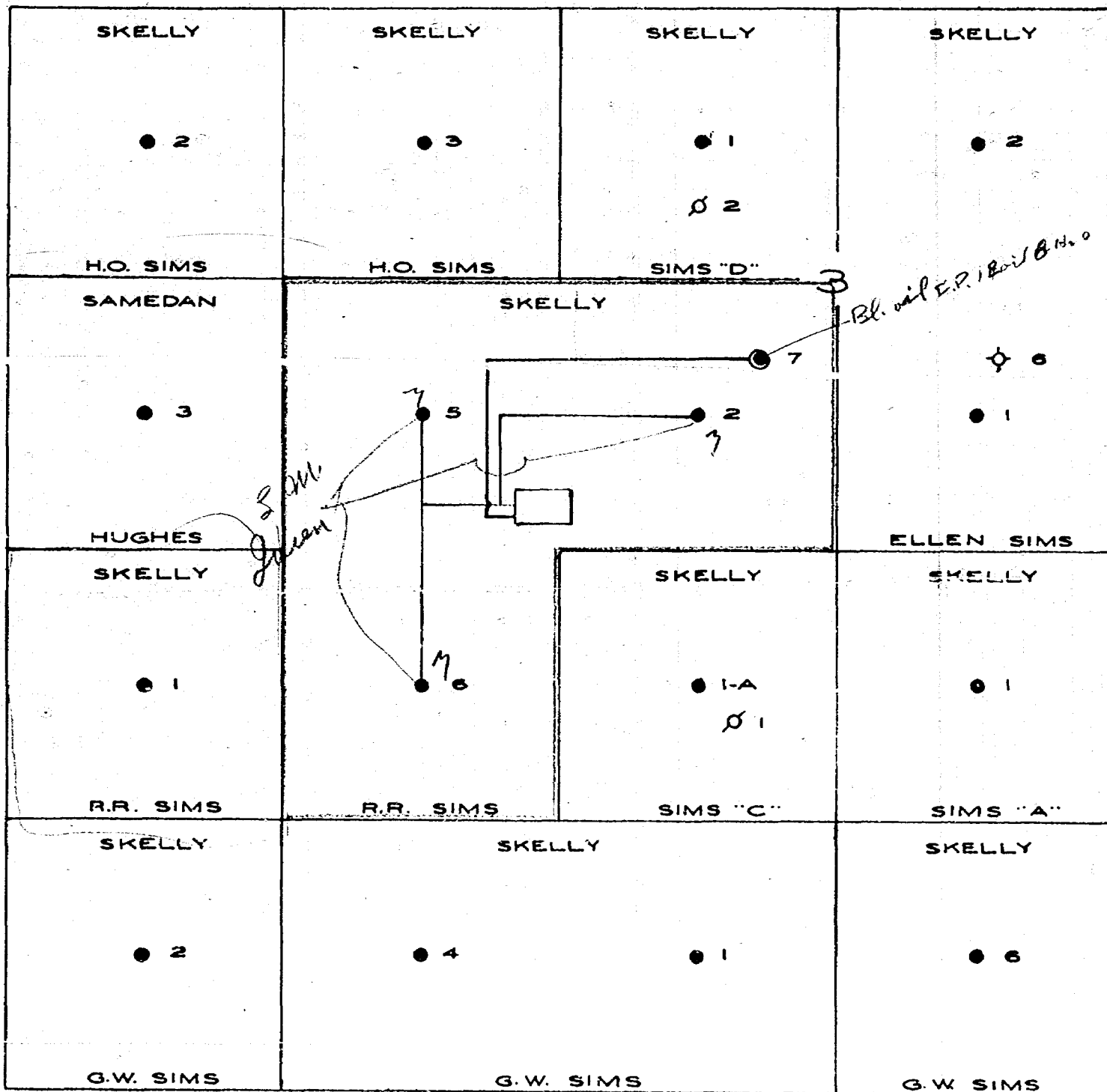
[Signature]

Staff Member

EXHIBIT I

Case 1754

SKELLY OIL COMPANY	
BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION R SIMS LEASE	
EXHIBIT NO.	W/2 SW/4 & NE/4 SW/4
CASE NO.	SECTION 3-T 23 S - R 37 E
LEA COUNTY NEW MEXICO	

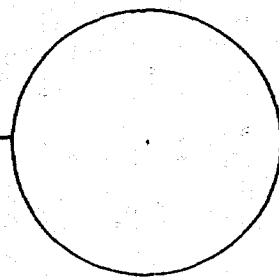


SCALE 8 INCHES = 1 MILE

250 BBL. STOCK TANKS

PRODUCTION
SEPARATOR

WELLS 2, 5 & 6



HEATER
TREATER

WELL 7

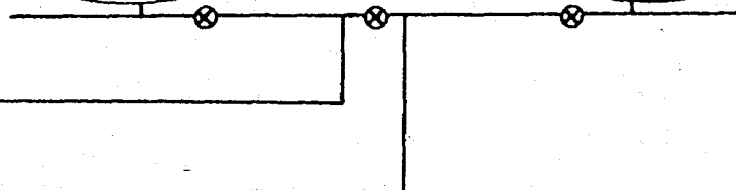
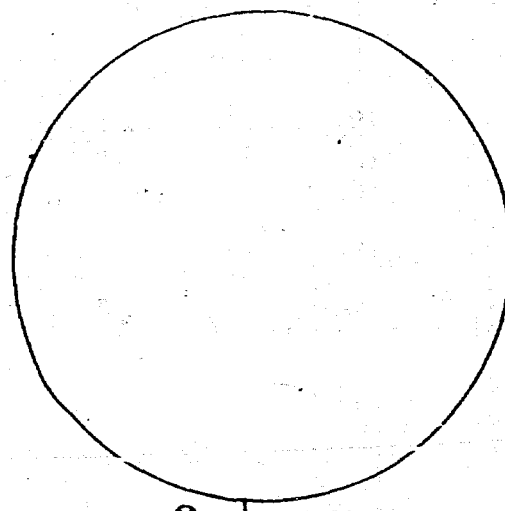
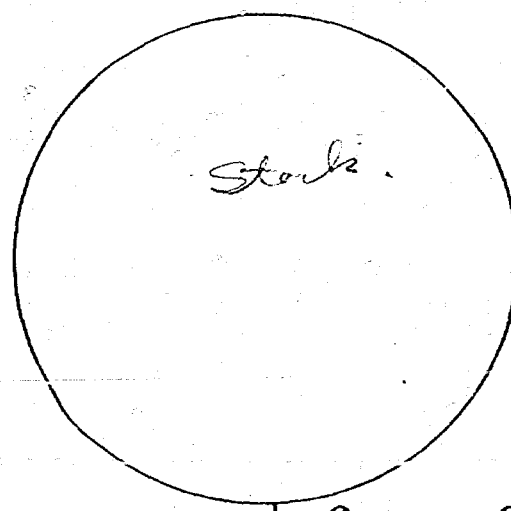
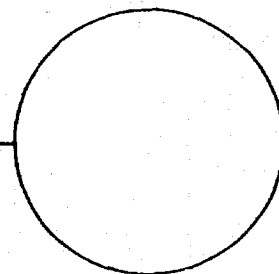


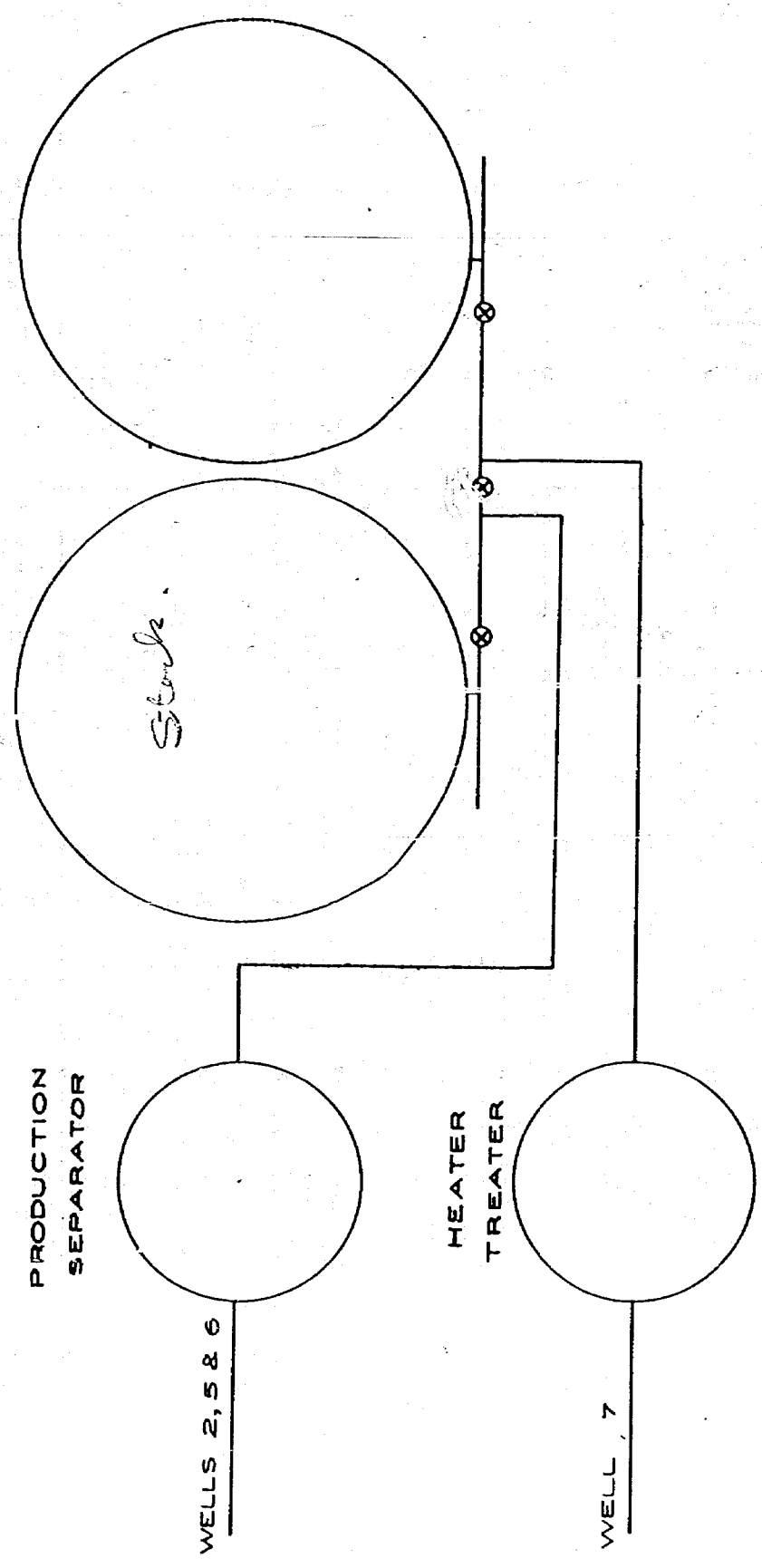
EXHIBIT II

Case 1754

EXHIBIT II

Case 1754

250 BBL. STOCK TANKS



DOCKET: EXAMINER HEARING SEPTEMBER 2, 1959

Oil Conservation Commission, 9 a.m., Mabry Hall, State Capitol, Santa Fe, New Mexico

The following cases will be heard before Elvis A. Utz, Examiner, or
A. L. Porter, Jr., Secretary-Director.

CASE 1750:

Application of Aztec Oil & Gas Company for permission to commingle the production from two separate leases. Applicant, in the above-styled cause, seeks an order authorizing it to commingle the production from the Robinson Pool from two separate leases, a State lease and a Federal lease, in Township 16 South, Range 32 East, Lea County, New Mexico, after separately metering the production from each lease.

CASE 1751:

Application of Rice Engineering and Operating, Inc., for a salt water disposal well. Applicant, in the above-styled cause, seeks an order authorizing it to complete a salt water disposal well in the San Andres formation at a point 100 feet from the South line and 250 feet from the West line of Section 9, Township 20 South, Range 37 East, Lea County, New Mexico. Applicant proposes to inject the produced salt water into the San Andres formation in the interval from 4300 feet to 4900 feet.

CASE 1752:

Application of Skelly Oil Company for an oil-oil dual completion and for permission to commingle the production from several separate pools. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Hobbs "A" Well No. 6, located 1650 feet from the North line and 330 feet from the West line of Section 30, Township 25 South, Range 38 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Justis-Blinbry Pool and the production of oil from an undesignated Tubb oil pool. Applicant further seeks permission to commingle the production of similar grade crudes from the pools underlying its Hobbs "A" lease comprising the NW/4 of said Section 30.

CASE 1753:

Application of Joseph I. O'Neill, Jr., for an oil-oil dual completion and for permission to commingle the production from two separate pools. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Federal "E" Well No. 3, located 1980 feet from the North line and 660 feet from the East line of Section 1, Township 19 South, Range 30 East, Eddy County, New Mexico, and for permission to commingle the production from the two zones of the said dually completed well.

CASE 1754:

Application of Skelly Oil Company for permission to commingle the production from two separate oil pools. Applicant, in the above-styled cause, seeks an order authorizing it to commingle the production from the Langlie-Mattix Pool and from an undesignated Blinbry oil pool from all wells on its R. R. Sims lease comprising the W/2 SW/4 and NE/4 SW/4 of Section 3, Township 23 South, Range 37 East, Lea County, New Mexico.

MAIN OFFICE CCC
1959 AUG 3 PM 2:52

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN RE THE MATTER OF THE APPLICATION
OF SKELLY OIL COMPANY FOR AN EX-
CEPTION TO RULE 303 TO PERMIT COMM-
INGLING OF CRUDES FROM THE LANGLEIE-
MATTIX OIL POOL AND FROM AN UNDE-
SIGNATED BLINEBRY OIL POOL ON APP-
LICANT'S R. R. SIMS LEASE.

Case No. 1754

APPLICATION

TO: THE HONORABLE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

Comes now the applicant, Skelly Oil Company, and respectfully alleges
and states as follows:

1. That it is the owner and operator of its R. R. Sims Lease, which
consists of the W/2 SW/4 and NE/4 SW/4 Section 3, Township 23 South, Range
37 East, Lea County, New Mexico.

2. That there is no diversity of royalty ownership underlying the
above described lease.

3. Applicant has recently recomplected its R. R. Sims Well No. 7, lo-
cated 2200' from the south and west lines of said Section 3, as an oil well
in an undesignated Blinebry Oil Pool and said well is capable of producing
around 10 BOPD.

4. That applicant proposes to commingle production from Well No. 7 into
common tankage with Wells Nos. 2, 5 and 6, which are capable of producing
around 9 BOPD from the Langlie-Mattix Oil Pool.

5. That in view of the smallness of production from each pool far be-
low the top per well allowable and the cost of installing a separate tank
battery for each pool or a separate metering, it would be so greatly dis-
proportionate to the revenue produced by said well as to work an undue
financial hardship.

6. That adequate periodic testing will be undertaken enabling accurate

GILBERT, WHITE AND GILBERT
ATTORNEYS AT LAW
SANTA FE, NEW MEXICO

GILBERT, WHITE AND GILBERT
ATTORNEYS AT LAW
SANTA FE, NEW MEXICO

1 production records by pools to be maintained.

2 7. Attached hereto marked Exhibit "A" and made a part hereof by refer-
3 ence is a plat which shows the location of applicant's R. R. Sims Lease, well
4 locations, flow lines and tank battery location, and offset operators.

5 8. That attached hereto marked Exhibit "B" and made a part hereof by
6 reference is a diagramatic sketch, which shows the proposed method of test-
7 ing and storage of the production produced.

8 9. That the Commission should permit hereafter such commingling in the
9 two above mentioned pools by operators without the necessity of a hearing but
10 by administrative approval from the Director upon the filing of certain nec-
11 essary and required information and the giving of notice to all operators or
12 owners of leases offsetting the tract upon which the wells are located.

13 WHEREFORE, applicant prays that this application be set for hearing, that
14 notice be given as required by law, and that upon the evidence adduced the
15 Commission issue an Order permitting applicant to commingle its production
16 from the Langlie-Mattix and undesignated Blinebry Oil Pool underlying its
17 R. R. Sims Lease, Lea County, New Mexico, as more fully set out in this app-
18 lication, and to provide for administrative approval upon certain require-
19 ments of wells hereafter completed in these two pools.

20 SKELLY OIL COMPANY

21 BY GEORGE W. SELINGER

22
23 BY *L. C. White*

L. C. White

not necessary

SKELLY OIL COMPANY

EXHIBIT I

G. W. Sims Lease
W/2 SW/4 & NE/4 SW/4
Section 3-T23S-R37E
Lea County, New Mexico

Skelly

Skelly

Skelly

Skelly

3

1

2

H. Q. Sims

L. O. Sims

Sims "D"

Skelly

Ellen Sims

Skelly

Skelly

Sims "C"

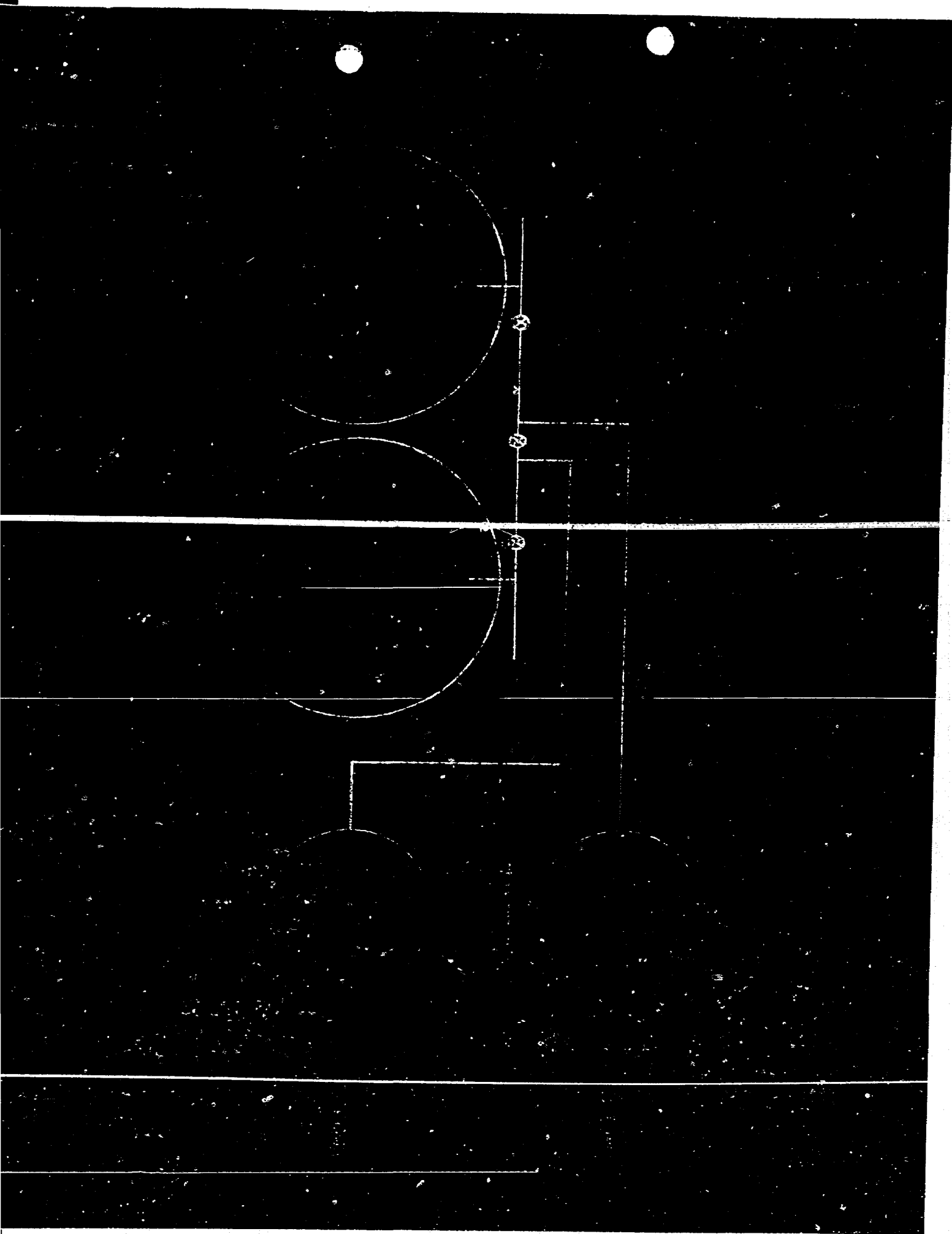
Sims "A"

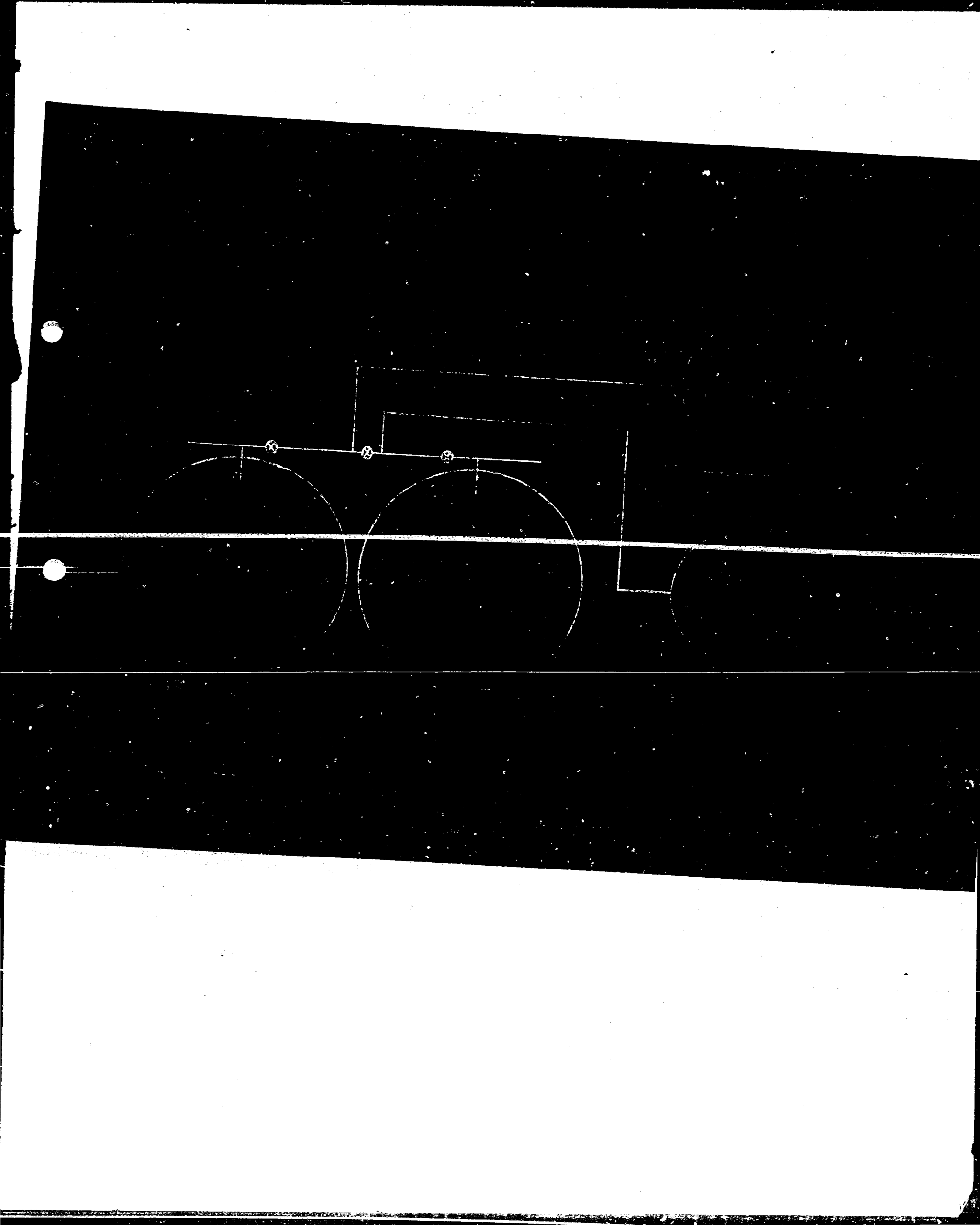
Skelly

G. W. Sims

G. W. Sims

R37E





Casa No.

Packer Questionnaires

Application, Transcript,
Small Exhibits, Etc.

MAIN OFFICE OCC
THE LAYNE & BOWLER CO.
THE LAYNE

1950 NOV 5 AM 8:58
Screen Packer and Specialties

HOUSTON, TEXAS
November 5, 1959

rec'd late

Oil Conservation Commission of New Mexico
Box 871
Santa Fe, New Mexico

Gentlemen:

Enclosed find our packer questionnaire and also one
of our packer brochures, from which you will note our
packers are primarily for use in setting screen, liner, and
the only packer we can consider as a production packer is
288. Anchor Packer.

We trust that this gives you the information you
desire.

Very truly yours,

THE LAYNE & BOWLER COMPANY

H.C. Block

H. C. Block,
Plant Manager

HCB:ew
Encl. 2

PACKER QUESTIONNAIRE

ECB:ew
12-4-59



THE
LAYNE

PACKERS

The Layne and Bowler Company

Strength of construction

The Layne Packers are known for

Ease of operation

Security of setting

Screw Thru Packer

Screw Thru Packer This is the most popular packer used for sealing screen and liner in the casing and for cementing blank liner in the casing.

The Packer consists of stem, sleeve, ratchet threads, canvas and lead. The stem and sleeve are attached together with ratchet or buttress threads. The best grade of closely woven canvas is wrapped 42" long over the stem and securely fastened on each end.

When the screen-liner and packer are in place, the setting tool (a) is disengaged from the packer by rotating eleven turns to the right and drops 20". The weight of the setting string (drill stem or tubing) is applied and the sleeve is forced down over the stem and held in place by internal ratchet threads in the sleeve and external ratchet threads on the stem. Due to special wrapping the canvas is forced down and outward and compressed to almost iron hardness, insuring a perfect pack, approximately 20" long.

This packer is manufactured for all sizes of screen-liner and casing.

Where the screen or liner is smaller than is ordinarily used for the size casing set, we recommend using the larger size packer swaged to the size of liner being used, to minimize the thickness of the canvas wrapping and insure a satisfactory seal.

The Specifications of all Layne Ratchet Packers are such that the smallest inside diameter (the stem) is never smaller than the inside diameter of the liner being used.

When ordering packers, we should be advised of the size and weight per foot of the well casing; the outside diameter, weight per foot and threads of the liner; and the approximate depth at which packer will be set. Also, for the setting tool; the size, weight and threads of the setting string.

Cementing Packer Same as Screw Thru Packer except that the Setting Tool carries rubber Cementing Piston (b) on the bottom.

Type "TS" Packer The Type "TS" Packer is made primarily to set with tubing. It is essentially the same as our famous Screw Thru type. The specifications are the same, except this "TS" Packer has only 36" of canvas wrapping and sets with the sleeve down-canvas up.

Due to our specially designed means of creating the canvas pack, the same results are obtained with tubing as with the conventional type.

When using the Type "TS" Set Shoe. The Shoe, Screen, Liner and Packer are run in the casing with the tubing connected in the Shoe via the Letting In Tool (c), thus the entire weight of the setting is supported by the connection of the Letting In Tool to the Set Shoe—and not the Packer. Twelve turns to the right, plus any additional make up of tubing, closes the valve and releases Letting In Tool from Shoe.

After Screen is washed inside, the tubing is raised sufficiently to allow Type "TS" Collapsing Tool (d) segments to expand in the recess at top of Packer. The Packer is then set in the usual manner and the tubing hung at the desired place.

All done with one trip in the hole.

When making up the setting, the wash pipe (tubing) is spaced so the collapsing tool is just inside the swaged portion of the Packer. A Packer Cap (f) is furnished which fits on the tubing and rests on top of the Packer to keep sand, etc., from inside of Packer and Screen setting.

Graveling Packer The Graveling Packer is used exclusively in gravel packed wells.

The setting mechanism operated the same as the Type "TS" Packer, its construction differs only, in that it has left hand threads in the top to accommodate Stuffing Box (e). Also, the Graveling Packer is 18'6" long, overall with 8' of canvas. The Graveling Packer has smaller O.D. than Type "TS" Packer, when used in same size casing, to facilitate pumping gravel down between packer and casing.

Pin Packer The Layne All Canvas Pin Packer is a very popular type of packer for use in either open hole or in casing. It does not require use of setting tool. It is usually run in below a Screw Thru or Type "TS" Packer.

It has a stem, sleeve and canvas. A coupling is on top and male threads on bottom to permit placing it as any position in the liner setting. Sufficient brass or steel pins prevent the packer from collapsing while being lowered in the well.

To set this packer, weight of setting string is applied to shear the pins and the canvas starts folding at the bottom. When completely set, the other packer above is then set in the usual manner. All this is done in one operation.

Standard Packers have 72" of canvas wrapping. However, they can be furnished in any length. The number and kind of pins used, depends upon the depth of the setting.

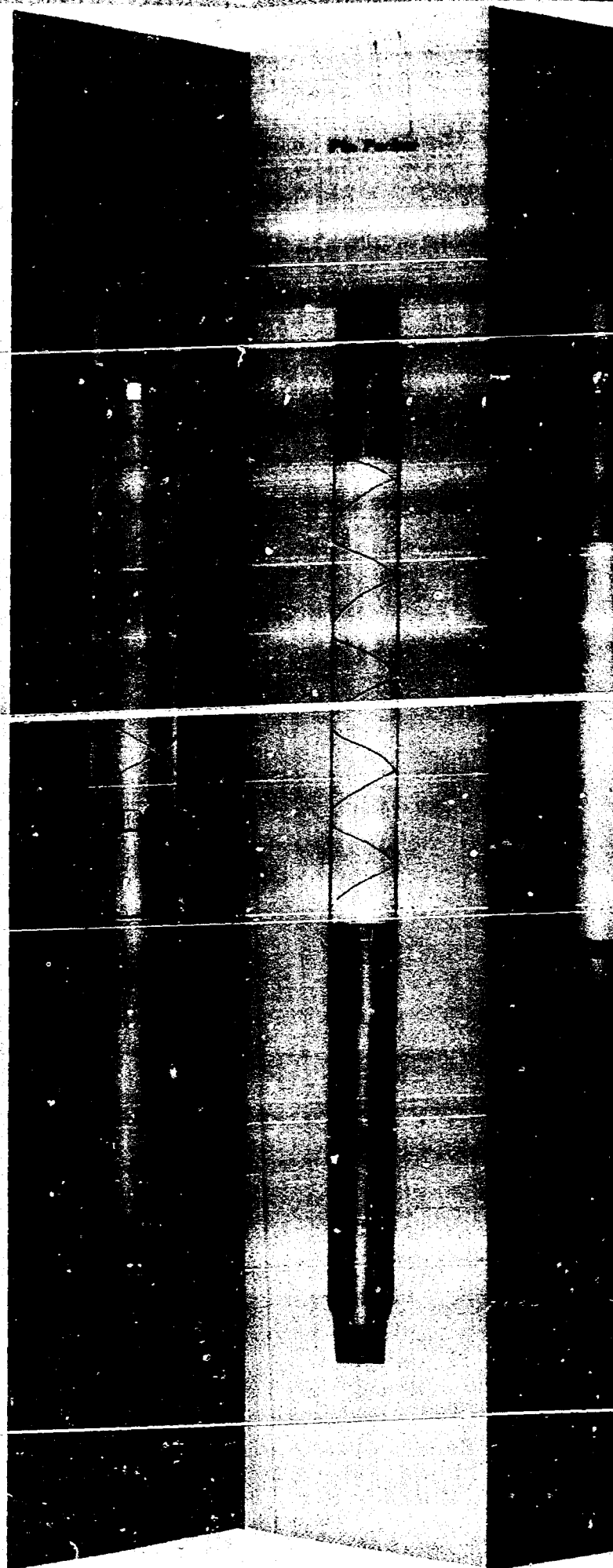
When ordering, show size and threads of liner, the depth at which it will be set and whether in casing or open hole.

Mother Hubbard Packer The Mother Hubbard Packer is probably one of the oldest types of packers used in open hole just above the producing formation.

When the Packer is ready to run in the well, slits are cut longitudinally in the canvas to permit shale and formation to work between the layers and slits of canvas for a pack.

The standard Packer is 5' long with best grade of closely woven canvas wrapped 3' long and securely fastened on one end. They are made for all sizes of liners.

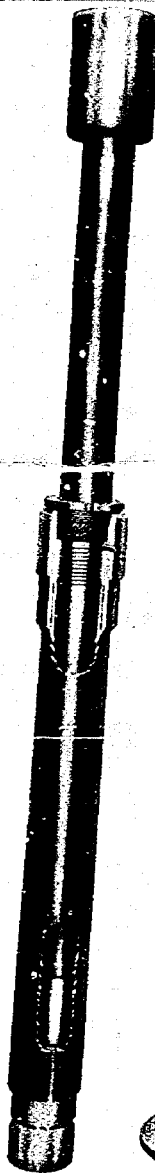
Anchor Packer The Anchor Packer is run on the bottom of tubing to seal same to the casing. It does not have slips and must be set with some type of anchor at the bottom. The Packer is furnished with or without a by-pass. The opening through the packer is standard weight seamless tubing. These packers are equipped with seals for left hand hook up nipples.



Screw Thru Packer

Pin Packer

Anchor Packer



a Screw Thru
Setting Tool



b Cementing
Piston



c Type "TS"
Letting In Tool

d Type "TS"
Collapsing Tool



e Stuffing Box



f Type "TS"
Packer Cap

The Layne and Bowler Company

Houston 1, Texas • P. O. Box 1327

Type "TS" Set Shoe



Regular Double Valve Set Shoe



Inserted Double Valve Set Shoe



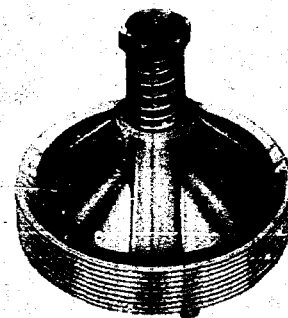
Push Down Valve Set Shoe

Circulating Type Set Shoe



Screw Down Valve Set Shoe

Back Pressure Valve



Back Pressure Valve and Wash Ring Assembly

Type "TS" Set Shoe This Shoe works in conjunction with the "TS" Packer and signals the operator when the valve is definitely closed.

It has a brass Back Pressure Valve and a brass screw down valve made of special alloy, with a tensile strength of 75,000 pounds per square inch, but is easily milled out.

The Screw Down Unit has tapered acme thread on inside to receive the tapered Letting In Tool and has straight acme threads on outside for closing. If pump is run slowly while the screw down valve is being closed circulation will stop entirely when valve is closed. When Letting In Tool is released from valve, circulation will start again.

Inserted Type "TS" Set Shoe Same as Type "TS" except that it has male threads to insert "inside" bottom of screen or liner.

Regular Double Valve Set Shoe This is a short one piece Set Shoe 14" overall, with Wash Ring, two Back Pressure Valves and Guide Plug, threaded right hand to eliminate turning, should it be desired to mill out. The wash ring and valves are brass. The guide plug is cast iron.

Inserted Double Valve Set Shoe This type of Shoe is the same as the standard Shoe, except the body is eliminated to permit screen to be as near bottom of well as possible.

The screen joint is threaded internal to the Wash Ring and valves are inside the screen, leaving only the Guide Plug below the screen.

Regular Single Valve Set Shoe This Shoe is made up by inserting Back Pressure Valve and Wash Ring Assembly into coupling or collar screwed onto screen or liner or without guide plug in the bottom.

Push Down Valve Set Shoe This Shoe was designed primarily for use on 2 3/8" OD Liner. The valves in the Set Shoe are actuated by a Push Down Nipple fastened to the bottom of the Wash Pipe. Downward pressure on the Nipple opens the valve, permitting reverse flow of circulating fluids into Shoe and up the Wash Pipe.

Circulating Type Set Shoe This type of Shoe was designed for use on 2 3/8" OD or larger liners.

The entire setting is carried into the hole by a special Letting In Tool. Rotation of the tubing five turns closes the bottom port, three more turns releases the Setting Tool, one more opens side ports so that graveling fluids can return to the surface. When graveling is completed, four more turns closes side ports and Wash Pipe and tools may then be raised into position to collapse Graveling Packer.

Screw Down Valve Set Shoe This Screw Down Valve Set Shoe offers a positive closing valve to work in conjunction with the Screw Thru Packer and Screw Thru Setting Tool.

It has a brass Back Pressure Valve and a one-piece brass Screw Down Valve with a hexagon shape wash ring on top. A hexagon nipple is screwed on bottom of Wash Pipe to fit the hexagon wash ring. A hexagon kelly joint is used on top of wash line extending through the setting tool. Rotation of the setting tool positively closes the valve.

Inserted Screw Down Valve Set Shoe Same principle as the Screw Down Valve Set Shoe except that it makes up with flush joint connection.

Back Pressure Valve This Valve is cone shape and is less liable to be held open by sand, trash, etc. Leakage through the center is eliminated, as the Valve and Stem are cast in one piece.

The body and stem are brass, accurately machined and seated same as automobile engine valves. They are held closed with a special tempered spring. This Valve is used in all Layne Set Shoes.

Back Pressure and Wash Ring Assembly The Wash Ring is a receptical or seat for the Wash Pipe and when coupled with Back Pressure Valve can be screwed into the bottom of a joint of screen instead of a regular set shoe when it is more important to shorten the setting and get screen closer to the bottom.

Any of the Layne Regular Set Shoes can be adapted to a mid string setting, by replacing the guide plug with an extension of blank pipe. Mid String Set Shoes are used when the casing perforations are considerably above the bottom of the hole.

Circulating Type Set Shoe



Type "TS" Set Shoe



Screw Down Valve Set Shoe



Regular Double Valve Set Shoe



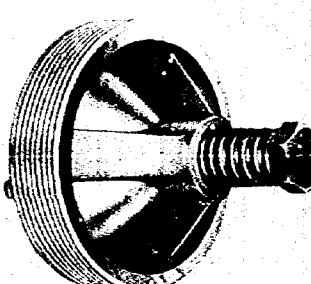
Inserted Double Valve Set Shoe



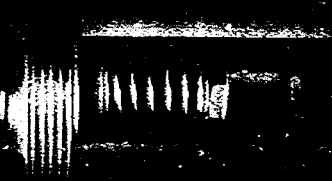
Push Down Valve Set Shoe



Back Pressure Valve



Back Pressure Valve and Wash Ring Assembly



Type "TS" Set Shoe This Shoe works in conjunction with the "TS" Packer and signals the operator when the valve is definitely closed.

It has a brass Back Pressure Valve and a brass screw down valve made of special alloy, with a tensile strength of 75,000 pounds per square inch, but is easily milled out.

The Screw Down Unit has tapered acme thread on inside to receive the tapered Letting In Tool and has straight acme threads on outside for closing. If pump is run slowly while the screw down valve is being closed circulation will stop entirely when valve is closed. When Letting In Tool is released from valve, circulation will start again.

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Regular Single Valve Set Shoe This Shoe is made up by inserting Back Pressure Valve and Wash Ring Assembly into coupling or collar screwed onto screen or liner or without guide plug in the bottom.

Push Down Valve Set Shoe This Shoe was designed primarily for use on 2 1/2" OD Liner. The valves in the Set Shoe are actuated by a Push Down Nipple fastened to the bottom of the Wash Pipe. Downward pressure on the Nipple opens the valve, permitting reverse flow of circulating fluids into Shoe and up the Wash Pipe.

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Screw Down Valve Set Shoe This Screw Down Valve Set Shoe offers a positive closing valve to work in conjunction with the Screw Thru Packer and Screw Thru Setting Tool.

It has a brass Back Pressure Valve and a one-piece brass Screw Down Valve with a hexagon shape wash ring on top. A hexagon nipple is screwed on bottom of Wash Pipe to fit the hexagon wash ring. A hexagon Kelly joint is used on top of wash line extending through the setting tool. Rotation of the setting tool positively closes the valve.

Inserted Screw Down Valve Set Shoe Same principle as the Screw Down Valve Set Shoe except that it makes up with flush joint connection.

Back Pressure Valve This Valve is cone shape and is less liable to be held open by sand, trash, etc. Leakage through the center is eliminated, as the Valve and Stem are cast in one piece.

The body and stem are brass, accurately machined and sealed same as automobile engine valves. They are held closed with a special tempered spring. This Valve is used in all Layne Set Shoes.

Back Pressure and Wash Ring Assembly The Wash Ring is a receptacle or seat for the Wash Pipe and when coupled with Back Pressure Valve can be screwed into the bottom of a joint of screen instead of a regular set shoe when it is more important to shorten the setting and get screen closer to the bottom.

Any of the Layne Regular Set Shoes can be adapted to a mid string setting, by replacing the guide plug with an extension of blank pipe. Mid String Set Shoes are used when the casing perforations are considerably above the bottom of the hole.

GOVERNOR
JOHN BURROUGHS
CHAIRMAN

State of New Mexico
Oil Conservation Commission



P. O. BOX 871
SANTA FE
August 21, 1939

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY DIRECTOR

Wilson Supply Company
P. O. Drawer 19
Houston, Texas

Gentlemen:

Your attention is called to the enclosed questionnaire which the Oil Conservation Commission of New Mexico is sending to all manufacturers of oil and gas well packers.

The questionnaire is being sent out by the Commission in the hope that the information requested therein will enable us to more properly evaluate the various types of packers and their applicability to different types of formations.

Your cooperation in providing us with the desired information about the packers which you manufacture will be greatly appreciated. Please fill out and return the questionnaire by September 10, 1939, if possible.

Very truly yours,

A. L. Porter, Jr.
A. L. PORTER, Jr.,
Secretary-Director

ALP/DSN/19

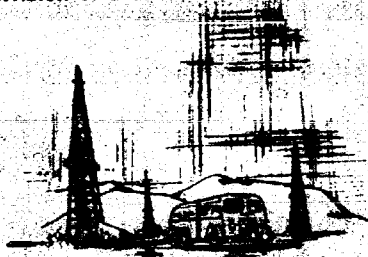
OIL CONSERVATION COMMISSION OF NEW MEXICO
SANTA FE, NEW MEXICO

Instructions For Completion Of Packer Questionnaire

- Item 1: Basic Model Number. Show here the model number of each group, type, or family of packers which you manufacture.
- Item 2: Variations of Basic Model. List here the model number of each of the different packers which you manufacture under the various groups. Do not consider different sizes of the same packer as a separate variation of the basic model unless the different sizes actually employ different mechanical design and/or setting/retrieving mechanisms.
- Item 3: Type of Packer: Simply state how packer is generally described - hook-wall, tension, anchor, etc.
- Item 4: This item is probably self explanatory, but may be clarified by asking, "Would this packer be recommended for zone completion in a one-packer or dual completions?" If packer would be suitable under some conditions in dual completions, but unsuitable under other conditions, answer would be "Some."
- Item 5: Show here the recommended maximum differential this packer should be able to sustain during the life of the well. If the differential is dependent upon other factors such as weight of tubing string, tension on tubing, etc, answer would be "Dependent."
- Item 6: If temperature is a critical factor in this packer's ability to withstand pressure, give approximate maximum temperature packer can sustain. If temperature is not critical, answer would be "Non-Critical."

MAIN OFFICE OCC
1959 SEP 8 AM 8:34
LANE WELLS
COMPANY
A DIVISION OF DRESSER INDUSTRIES, INC.

Please reply to:
P.O. Box 1467
Houston 1, Texas



September 2, 1959

Mr. A. L. Porter, Jr.
State of New Mexico
Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Dear Mr. Porter:

Attached is the filled out copy of the packer
questionnaire you requested. If there is any
further question we will be happy to reply.

Very truly yours,

F. A. Taylor

F. A. Taylor
Merchandise Manager

FAT/sab

Tomorrow's Tools - Today!

have

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO

PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
WGL	WGL (long stroke)	Hookwall Valve type	Some	7000 p.s.i. from above. Can be used with	300° F
WGL		Anchor, Valve type	Some	Anchor to hold pressure from below also. As above	300° F
WGL		Hookwall, Non-valve	Some	As above	300° F
WGL		Tension	Some	5000 p.s.i. from below only	300° F



BAKER OIL TOOLS, INC.

MAIL ADDRESS: POST OFFICE BOX 3048

HOUSTON 1, TEXAS

OFFICE AND FACTORY
6023 NAVIGATION BLVD.

June 17, 1959

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

Attention: Mr. A. L. Porter, Jr., Sectional Director

Gentlemen:

In response to your request of recent date for copies of our current catalog and/or price lists, we are pleased to send you the following:

One 1959 Baker Catalog

Your name has been placed on our mailing list to receive the same quantity of new catalogs and/or price lists as they are issued in the future.

If any additional information concerning our products is desired, please do not hesitate to write us or to contact our nearest office.

Yours very truly,

BAKER OIL TOOLS, INC.

A. L. Luzzio

A. L. Luzzio
Staff Assistant

✓ Baker Oil Tools, Inc.
P.O. Box 2274
Los Angeles 54, Calif.

✓ Baker Oil Tools, Inc.
P.O. Box 19236
Houston, Texas

✓ Equipment Engineers, Inc.
10000 Wilshire Blvd.
Beverly Hills, Calif.

✓ Equipment Engineers
10000 Wilshire Drive
Houston 3, Texas

✓ Equipment Engineers
Oklahoma, Oklahoma

✓ Equipment Engineers
10000 Wilshire Drive
Beverly Hills, Calif.

✓ Equipment Testers, Inc.
P.O. Box 98
Houston, Texas

✓ Lantex Equipment Corporation
P.O. Box 1958
Fort Worth Texas

✓ Lantex
Houston Oil Field Material Company, Inc.
1924 Main Street
Houston, Texas

Barker

The Layne and Bowler Company
P.O. Box 1327
Houston 1, Texas

The Jeffrey Taylor Corporation
2870 Chelsea Avenue
Long Beach, California

The Johnson Corporation
P.O. Box 1106
Houston, Texas

Barker, Penn

Texas Iron Works, Inc.
P.O. Box 16068, Houston, Texas

Supply Co.
P.O. Box 19
Houston, Texas

✓ Oil Engineering Corp
P.O. Box 35206
Dallas, Texas

Page Oil Tools, Inc.
P.O. Box 7097
Long Beach 7, Calif.

✓ Sweet Oil Well Equipment, Inc
424 North Dal Paso
Albuquerque, New Mexico



MAIL OFFICE
PACKER OIL TOOLS, INC.

959 SEP 13 AM 8:43
MAIL ADDRESS: POST OFFICE BOX 2274 TERMINAL ANNEX

CABLE ADDRESS "BACASO"
MAIN OFFICE AND FACTORY:
7400 E. SLAUSON AVENUE

LOS ANGELES 54, CALIF.

September 16, 1959

Oil Conservation Commission of New Mexico
Box 871
Santa Fe, New Mexico

Gentlemen:

We have become aware of the petition Case No. 1755 now pending before the New Mexico Oil Conservation Commission. We are familiar with the contents of the amendment to Rule 112-A2D and 112-A5D proposed by El Paso Natural Gas Company. Rule 112-A2D was proposed to be amended as follows:

"The Packer used to segregate the separate producing zones of the Multiple Completion shall be effective to prevent communication between all producing zones and may either be a permanent or a retrievable type Production Packer which shall be certified as adequate by the manufacturer or representative thereof as provided in Sub-Section 5D of this rule."

This was subsequently revised to read as follows:

"The Packer used to segregate the separate producing zones of the Multiple Completion shall be effective to prevent communication between all producing zones and may be either a permanent or a retrievable type Production Packer which will be certified as adequate by the operator as provided in Sub-Section 5D of this rule."

Rule 112-A5D was originally proposed to be amended as follows:

"A Packer setting affidavit shall accompany the report of the initial segregation test and Packer leakage test and shall include a certification by the manufacturer of such Packer, or authorized representative thereof, that the type of Production Packer to be used is adequate to satisfy the provisions of this rule with regard to the proposed completion."

This was subsequently revised as follows:

"A Packer setting affidavit shall accompany the report of the initial segregation test and Packer leakage test and shall include a certification by the operator that the type of Production Packer to be used is adequate to satisfy the provisions of this rule with regard to the proposed completion."

BAKER OIL TOOLS, INC.

Oil Conservation Commission of New Mexico
Santa Fe, New Mexico

9-16-59
Page 2

Baker Oil Tools, Inc. urges that the New Mexico Oil Conservation Commission consider favorably the application as revised, the revisions being felt by us to be a much more logical vesting of responsibility.

Our company manufactures both types of Production Packers with which this application is concerned. We have, in fact, returned to the Commission a Packer questionnaire completed in sufficient detail to illustrate the conditions under which our various types of Production Packers should perform satisfactorily.

We feel that there have been many technological advances made in recent years which have contributed to the successful performance of both types of Production Packers.

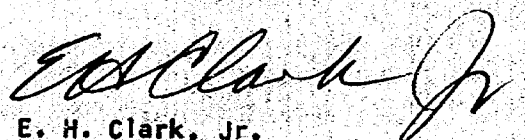
We feel that the effective exploitation of any area to attain the maximum benefit

companies to use the most suitable equipment available to accomplish the required job - zonal separation or otherwise. The lack of this facility by the operating companies could conceivably cause irrevocable loss of mineral wealth due to their inability to economically complete and produce certain formations.

We feel that it will be to the ultimate benefit of the State of New Mexico to grant the petition for the applicant.

Yours very truly,

BAKER OIL TOOLS, INC.



E. H. Clark, Jr.
Vice President and
Asst. General Manager

IFM:mg

MAIN OFFICE
EQUIPMENT ENGINEERS, INC.

Designers and Manufacturers of Oil Field Equipment
2020 AMERICA STREET • DALLAS 25, TEXAS, LAKEVIEW 6-3873

September 14, 1959

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

Enclosure

Enclosed is the "Packer Questionnaire" covering packers of our manufacture.

Basically they are not classified as conventional as most of them were designed for special purposes such as to seal casing leaks without gas locking the pump or to permit use of a packer in a well being pumped by electric Roda Pump.

The Standard Packer consists of nothing more than two cups and a mandrel. The Production Packer, Type J, is a heavy duty hook-wall packer.

If we can be of assistance in anyway, we would be most happy to cooperate.

Very truly yours,

EQUIPMENT ENGINEERS, INC.

J. A. Wilson

JAW:R

encls:

Form 11-C

Form GL-1

custom rubber molding
DOUBLE-E
PRODUCTS
oil field equipment

MAIN OFFICE OCC

1959 SEP 18 AM 8:43

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO
PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
State Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
OK		CUP		0,000 psi - Dependent	300°F
		CUP with Gas Line	Yes	6,000 psi - Dependent	300°F
		CUP with pro- vision for Bore cable	Yes	3,000 psi - Dependent	300°F
		NORMAL	Yes	10,000 psi - Dependent	300°F
EQUIPMENT ENGINEERS, INC. 2039 Amelia Street Dallas 35, Texas J. A. Wilson					Special "Rubber" Elements or Cups can be provided for temperatures to 400°F.

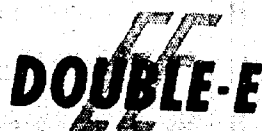
OIL CONSERVATION COMMISSION OF NEW MEXICO
 BOX 871
 SANTA FE, NEW MEXICO
 PACKER QUESTIONNAIRE

(1) Packer No.	(2) Type of Packer	(3) Is this Packer Recommended for Permanent Zone Separation in Dual Completions	(4) Maximum Pressure Differential for which you would Recommend this Packer	(5) Maximum Temperature for which you would Recommend this Packer
	CUP	Yes	6,000 psi - Dependent	300°F
	CUP with Gas Line	Yes	6,000 psi - Dependent	300°F
	CUP with provision for Reinforcing	Yes	3,000 psi - Dependent	300°F
	NORMAL	Yes	10,000 psi - Dependent	300°F

Special "Rubber" Elements or Caps can be provided for temperatures to 400°F.

EQUIPMENT ENGINEERS, INC.
 2039 Amelia Street
 Dallas 35, Texas
 J. A. Wilson

EQUIPMENT ENGINEERS, INC....DALLAS, TEXAS



PRODUCTION PACKER—TYPE J

The Type J Packer was designed to perform properly under severe well conditions, and to meet the demands of the oil industry for a packer that would run, set, packoff indefinitely, release and pull easily.

Packers that give trouble do so for one or more of the following most common faults. Most failures are caused by either poor sealing element design that permits cold or hot flow under pressure, or from trying to move the sealing element when it is tightly confined between the casing wall and its own element—mandrel. Other failures occur when the slip area is insufficient for the loads placed against the packer. When the packer construction does not permit elimination of packed solids before movement of the packer is attempted, removal difficulties will be severe.

To overcome some of the unusual well conditions, the Type J Packer has the following features. All tubular members are N-80 Grade or stronger to withstand high compressive and tensile loads. The packer Sealing Element is molded of a synthetic material which is compounded to withstand high temperatures and high pressure differentials and has molded in the assembly metal baskets which provide a proper metal block against cold or hot flow. The slips and head construction offer a greater protection to the casing than that of any other design.

The tremendous slip area means that extreme loads can be absorbed without requiring excessive pulling loads to release. The setting mechanism permits rotation and lowering to set the packer but requires only upward pull to relatch. This latching device consists of a Lock Case and a Floating Gudgeon mounted in the Lower Coupling. The Lock Case contains a track to guide the gudgeon on its path out of the case and a beveled orifice to compress the gudgeon when entering the case. The Floating Gudgeon is spring loaded to depress when entering the orifice of the case and to snap out into the track for relatching. The packer has spring loaded Friction Shoes to which are welded tungsten carbide chips in spiraled strips for maintaining the Floating Gudgeon in the locked position while lowering. These Friction Shoes enclose the flat leaf Springs and the tungsten carbide surfacing insures miles of travel in casing without appreciable wear.

The packer outside diameters were kept as small as practical to eliminate difficulty in passing down tight holes. The packer is full opening through the tube and has ample bypass for circulation. Circulation ports can be provided in the packer tube when requested. The packer Sealing Element is designed to withstand extreme pressures from either direction.

ENGINEERING DATA

Casing		Tubing Size (in.)	Minimum ID Through Tube (in.)	Rubber OD (in.)	Maximum Packer OD (in.)	Minimum By-Pass Area (sq. in.)	*Valve Travel (in.)	Length, Approx. (in.)	Weight Approx. (lb.)
OD (in.)	Weight (lbs./ft.)								
5 1/2	14-20	2	2	4 1/4	4 1/2	2.062	16	73	145
7	17-24	2 1/2	2 1/4	5 1/4	5 1/2	5.191	18	83	180
7	26-32	2 1/2	2 1/4	5 3/4	5 1/2	5.129	18	83	185
7	..	2 1/2	2 1/4	5 3/4	5 1/2	5.181	18	83	175
7	..	2 1/2	2 1/4	5 3/4	5 1/2	5.129	18	83	180

*Valve travel shown is standard. Longer travel can be furnished at slight price increase.

PRICE LIST

ADD 10% TO ALL PRICES LISTED
EFFECTIVE AUG. 17, 1955

Prices Effective August 1, 1952—Subject to change without notice.
F.O.B. All Oil Fields in U.S.A.—F.A.S. Point of Export in U.S.A.
For Sale at All Supply Stores

Part Name	Part Number	Number Required	5 1/2" x 2"	7" x 2" or 2 1/2"
Packer Complete.....	—	—	\$375.00	\$425.00
Upper Coupling.....	P1J	1	50.00	60.00
Tube.....	P2J	1	15.00	20.00
Sealing Element.....	P3J	1	75.00	90.00
Spacer.....	P4J	1	30.00	35.00
Head.....	P5J	1	75.00	80.00
Mandrel.....	P6J	1	8.00	12.00
Slip.....	P7J	3	22.00 ea.	20.00 ea.
Link.....	P8J	3	2.50 ea.	1.50 ea.
Pin.....	P9J	3	1.50 ea.	1.50 ea.
Link Connector.....	P10J	1	22.50	27.50
Retaining Sleeve.....	P11J	1	11.50	13.00
Bolt, R. Sleeve.....	P12J	3	75.00	75.00
Shoe Housing.....	P13J	1	30.00	38.00
Friction Shoe.....	P14J	3	15.00 ea.	18.00 ea.
Spring, F. Shoe.....	P15J	3	2.00 ea.	2.50 ea.
Lock Case.....	P16J	1	35.00	45.00
Lower Coupling.....	P17J	1	55.00	65.00
Floating Gudgeon.....	P18J	1	10.00	12.00
Bushing, F. Gudgeon.....	P18J1	1	10.00	12.00
Spring, F. Gudgeon.....	P18J2	1	2.00	2.00

When ordering specify casing size and weight, tubing size and threads. Prices of other sizes will be furnished upon request.



EQUIPMENT ENGINEERS, INC....DALLAS, TEXAS

DOUBLE E

GAS LINE PACKERS

The Gas Line Packer is a special purpose packer designed principally for sealing off the casing annulus and still providing a bypass in the annulus by means of a small pipe. There are several variations of use depending upon the assembly of the Gas Line Packer parts. Some of the uses are outlined below.

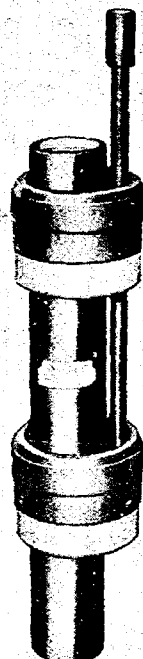
CASING LEAKS—TWO GAS LINE PACKERS required to straddle a casing leak as shown on the well installation method sketches. This method of sealing off casing leaks is a proven means for curing a serious problem in an economical manner. Where the casing leak is located in a short length section, one joint of tubing and one joint of gas line pipe is usually sufficient to straddle the leaky section. Where the leaking section is long or its location not specifically known, several joints of tubing and pipe can be installed between the packers.

ANNULUS FLUID PACKOFF WITH GAS RELIEF—The use of a GAS LINE PACKER is desirable under certain well conditions such as the necessity of introducing gas to a flow valve below a packer. Another use is the bleeding off of gas from below a packer through fluid above the packer.

STANDARD PACKERS—The simplest form of packer is the Standard Packer which consists of a mandrel, two cups, and two couplings. The assembly is installed in the tubing string usually between upper and lower perforations in the tubing. It is these perforations that permit passage of the cups through well fluids. To set the packer it is only necessary to prevent flow through the perforations. The packer cups are manufactured for high pressure-high temperature service and consist of a molded unit of expandable steel fingers bonded to the synthetic rubber. No bowl is required for this cup as the bowl and cup are one piece. These cups are used for acidizing, cementing, casing testing and many other uses where cups designed for high pressure service are required.

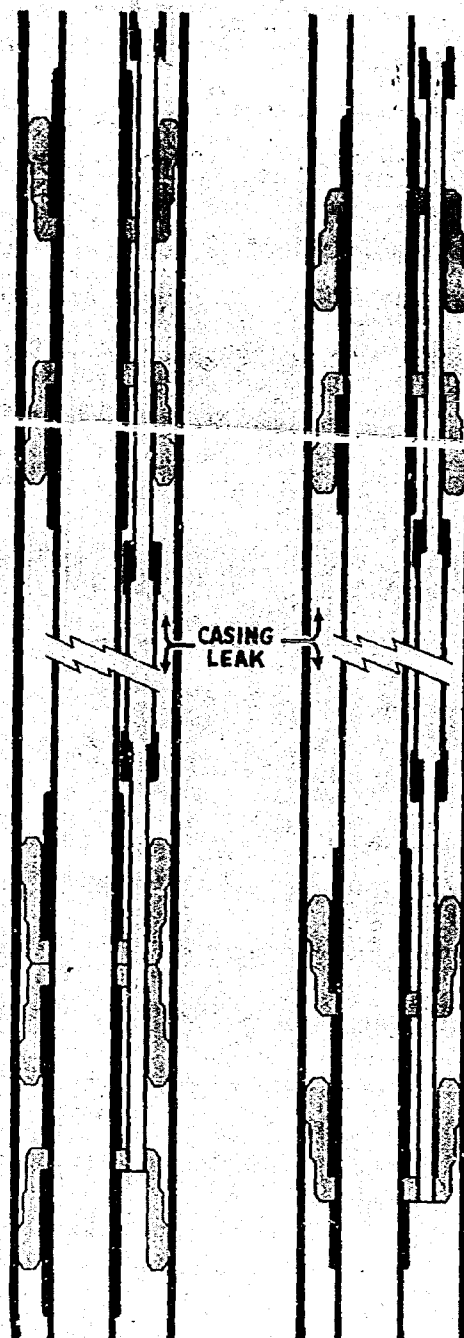


Standard Packer



Gas Line Packer

FORM GLI



Casing Leak Installation Gas Lift Type

Casing Leak Installation Pumping Type

Schematic sketches of two types of casing leak installation cures. The number of cups used per packer is optional.

EQUIPMENT ENGINEERS, INC...DALLAS, TEXAS

PRICE LIST

Prices Effective December 1, 1956 — Subject to Change without Notice.
For Sale at All Supply Stores

Application and Equipment Included in Price Complete	Casing O.D. (in.)	Tubing Size (in.)	Price Complete	Cups each (4 or more)	Mandrel each (2)	Couplings each (4)	Gas Line each (2)	Gas Line Coupling each (2)	
Casing Leak	4 1/4 - 5	2	\$205.00	\$35.00	\$40.75	\$ 3.15	\$10.00	\$ 7.00	
Price Complete includes 3 GAS LINE PACKERS with 2 Cups on each Pack-er. For each additional cup per packer, add to Price Complete the price of each additional cup plus 20% of the price of each additional cup.	5 1/4 - 5	2	205.00	35.00	40.75	3.15	10.00	7.00	
		2 1/4	250.00	42.00	45.00	5.15	15.00	7.50	
	6 1/4 - 7	2	250.00	42.00	40.75	3.15	15.00	7.50	
		2 1/4	260.00	42.00	45.00	5.15	15.00	7.50	
	7 1/4	2	300.00	50.00	40.75	3.15	15.00	7.50	
		2 1/4	345.00	50.00	45.00	5.15	15.00	7.50	
	8 1/4	2-3	375.00	55.00	55.00	15.00	20.00	10.00	
	Add 10% To All Prices Listed	9	2-3	400.00	62.50	55.00	15.00	20.00	10.00
		9 1/4	2-3	425.00	70.00	55.00	15.00	20.00	10.00
		10 1/4	2-3	500.00	90.00	55.00	15.00	20.00	10.00

Application and Equipment Included in Price Complete	Casing O.D. (in.)	Tubing Size (in.)	Price Complete	Cups each (2)	Mandrel each (1)	Couplings each (2)	Gas Line each (1)	Gas Line Coupling each (1)
Automatic Weld Pack off with Gas Relief	4 1/4 - 5	2	\$103.00	\$35.00	\$40.75	\$ 3.15	\$10.00	\$ 7.00
Price Complete includes 1 GAS LINE PACKER.	5 1/4 - 6	2	103.00	35.00	40.75	3.15	10.00	7.00
		2 1/4	125.00	42.00	45.00	5.15	15.00	7.50
	6 1/4 - 7	2	125.00	42.00	40.75	3.15	15.00	7.50
		2 1/4	130.00	42.00	45.00	5.15	15.00	7.50
	7 1/4	2	150.00	50.00	40.75	3.15	15.00	7.50
		2 1/4	158.00	50.00	45.00	5.15	15.00	7.50
	8 1/4	2-3	188.00	55.00	55.00	15.00	20.00	10.00
	9	2-3	200.00	62.50	55.00	15.00	20.00	10.00
	9 1/4	2-3	215.00	70.00	55.00	15.00	20.00	10.00
	10 1/4	2-3	250.00	90.00	55.00	15.00	20.00	10.00
Add 10% To All Prices Listed								

STANDARD PACKER	Casing OD	Tubing Size	Price Complete	Cups (each)	Mandrel	Couplings (each)
	4 1/4" - 5"	2"	\$ 66.00	\$12.25	2"	2"
	5 1/4" - 5 1/2"	2"	77.00	16.50	\$45.00	\$3.50
		2 1/4"	82.50	16.50		
	6" - 7"	2" - 2 1/4"	90.75	19.25	2 1/4"	2 1/4"
	7 1/4"	2" - 2 1/4"	100.00	27.50		
	8 1/4"	2" - 3"	145.00	33.00	\$49.50	\$5.75
	9"	2" - 3"	150.00	36.25		
	9 1/4"	2" - 3"	165.00	44.00		
	10 1/4"	2" - 2"	231.00	55.00	\$60.50	\$9.00



THE OIL INDUSTRY'S MOST *Complete* SERVICE

P. O. DRAWER 2589.

HOUSTON 1, TEXAS

September 14, 1959

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
State of New Mexico
P. O. Box 871
Santa Fe, New Mexico

File

1959 SEP 13 AM 8:42
MAIN OFFICE DEC

Dear Mr. Porter:

In answer to your letter of August 21, 1959, the "Packer Questionnaire" is being returned as requested.

To help you to better evaluate and compare our Type "E" Packer to other packers being sold, two brochures are enclosed.

If you need any additional technical information, please contact me or the Engineering Department.

Very truly yours,

HOUSTON OIL FIELD MATERIAL COMPANY, INC.

W. E. Sanders

W. E. Sanders
Chief Project Engineer
Mechanical Research

WES:tad

Encls.

CABLE ADDRESS "HOMCO" HOUSTON

1950 SEP 17 PM 5:07

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO
PACKER QUESTIONNAIRE

MAIN OFFICE 000
1952 SEP 13 AM 8 42

[illegible]



HOMCO

Edwards

PACKER



TYPE E



THE OIL INDUSTRY'S MOST COMPLETE SERVICE

HOMCO Edwards PACKER

GENERAL INFORMATION

The HOMCO-Edwards Type E packer is designed for the severest type of usage.

The packer is ideal for high temperatures and extreme pressure differentials.

This tool has a lead sealing element which seals in the bore of the casing without extruding, a condition which usually occurs with rubber packing elements. The lead sealing element is backed with bronze rings which are designed to flex and to contact the wall of the casing, minimizing the chance of the lead extruding when weight and pressure are applied to the packer.

Sealed with Teflon rings the bypass valve at the top of the packer is temperature and pressure-resistant. In addition to these rings, a metal-to-metal seat assures a seal between the annulus and

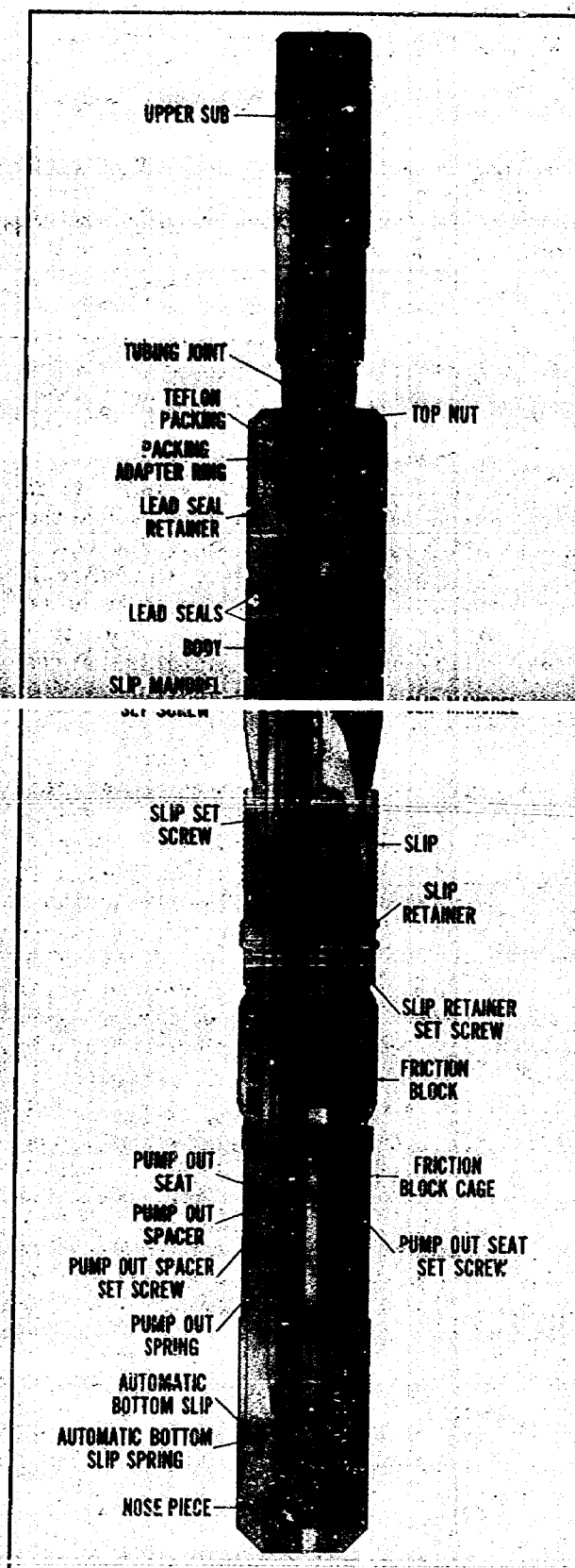
The HOMCO-Edwards Type E packer is also unique in that, after the packer has been set, circulation can be established through its full opening bore to clean the well. This allows the operator to displace the annulus with any fluid desired after the packer is set.

Another important feature is the 28-foot stroke which allows spacing in the tubing head, eliminating the use of pup joints. The long stroke also allows movement of the tail pipe, permitting fluid flow to the bottom of tail pipe either through the tubing or by reverse circulation.

When running the packer, a valve and seat arrangement in the lower end serves as a bypass. When retrieving the tool, this valve is closed, allowing pump pressure to be applied to release the slip section. The force exerted by the pump pressure is added to the upward strain on the tubing.

The packer incorporates a dovetail slip arrangement which is very efficient in supporting maximum mud loads.

There is an automatic bottom incorporated which requires seven to eight turns to disengage and is re-engaged by simply raising the tubing string. This is an important feature over the "J" arrangement commonly used in most packers. The packer will not disengage while going in the hole and cause premature setting.



HOMCO Edwards TYPE "E" PACKER

CONSTRUCTION

The HOMCO-Edwards Type E packer consists of a top sub, the packer, and the nose piece. The top sub has a section which is machined to close tolerance to engage the Teflon packing installed in the mandrel at the upper end. The packing is retained by the top nut which is threaded onto the mandrel at the upper end. Immediately below the top nut, expander rings are installed on top and bottom of the lead sealing element.

The slip expander is located below the lead sealing element on the mandrel. The slips are attached to the slip expander by means of a dovetail arrangement, and are secured to the slip retainer by means of female T-slots. The slip retainer is attached to the bore of the friction block cage and is held in place by four special pipe plug lock screws. Friction blocks are located below the slips in four friction block pockets. These friction blocks have three compression springs which fit into flat bottom drilled holes and force the friction blocks outward. These blocks are retained by plates secured with screws at each end. The pump-out seat is threaded onto the mandrel immediately below the friction block section. The pump-out spacer seats in the pump-out seat. This spacer is held against the pump-out seat by the pump-out spring which shoulders against the nose piece above the tubing thread. The friction block cage engages the nose piece through an automatic bottom arrangement. There is a female buttress thread in the friction block cage which engages the automatic bottom slips located in pockets in the nose piece. Compression springs actuate the slips to insure engagement with the threads in the friction block cage. The automatic bottom slips are fastened with screws.

OPERATION

The HOMCO-Edwards Type E packer is very simple to set. It is lowered to the desired setting depth. Then the tubing collar is lowered to the point where the tubing will be suspended in the tubing head, and a mark is made even with the top of the rotary table. The tubing is picked up the length of the stroke, approximately 28 feet,

plus the desired number of feet for compression for setting the packer. It is advisable to pick up an additional five feet and slack down to relieve wall friction. After the packer has been slacked down the additional five feet, it is rotated to the right seven or eight turns to disengage the automatic bottom. After the automatic bottom is released, the tubing is lowered the length of the stroke plus the compression distance to set the lead seal. With the packer fully set, the original mark on the tubing will again be even with the top of the rotary table.

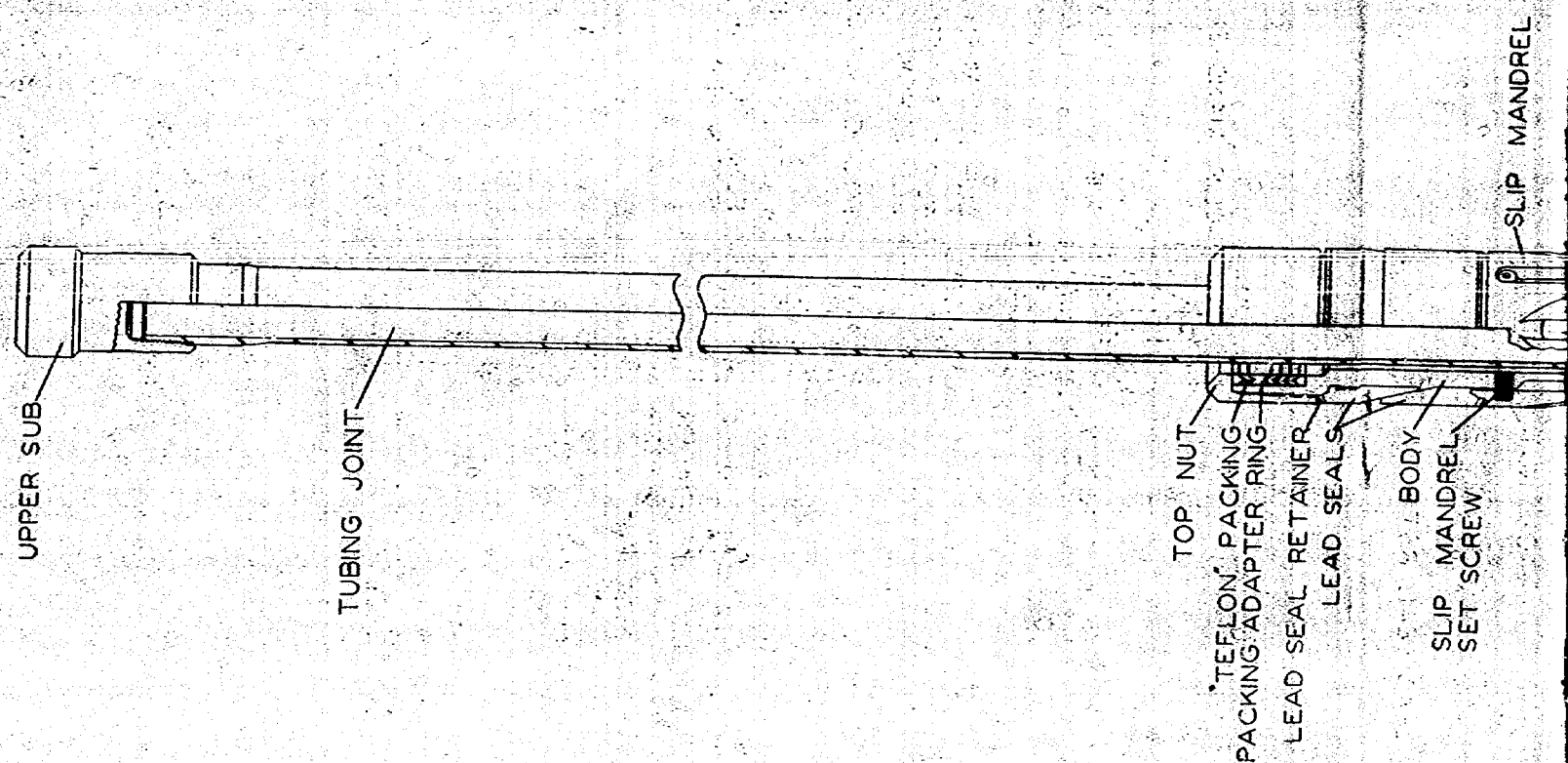
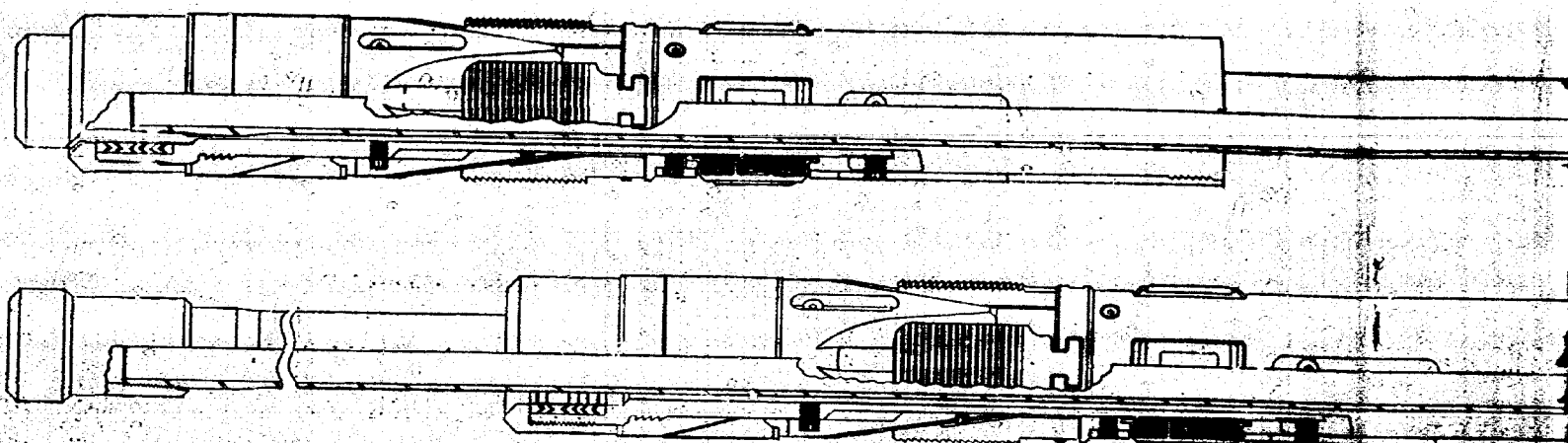
The weight indicator should be referred to at all times while lowering the tubing to see that the packer is going to set at the desired point. Where the packer is set with the desired weight, additional weight of the tubing string should be applied to insure compression of the lead for a permanent seal. The setting weights of the various packers are 5" - 15,000 #; 5½" - 25,000 #; 6⅝" and 7" - 30,000 #.

The packer is now ready for pressure testing. The blowout preventers should be closed and pressure applied to the casing. If the packer is holding properly, there should be no return flow through the tubing. However, if there is a leak, the packer can be released and reset. It may be the operator's desire to displace the well fluid with uncontaminated fluid such as water, oil, etc. This may be done by picking the tubing up, opening the bypass to reverse circulation. Should the operator decide to wash down through the tubing, this is permissible also.

The HOMCO-Edwards Type E packer is very easy to release. By simply picking up the tubing the full original stroke, the fluid load is equalized. If the packer does not release, it has a unique valve arrangement which will allow it to be pumped free. Should pumping become necessary to release the packer, a strain is taken to overcome the pump-out spring. This allows the pump-out seat and the upper end of the nose piece to seal, closing the pump-out valve. This will close the annulus between the tubing and the casing, and expose the cross sectional area of the lead sealing element to the pump pressure, thus allowing additional force for releasing the packer. After the packer starts moving, it is recommended that it be lowered somewhat to free the lead sealing element; it can then be withdrawn from the hole easily.

HOMCO

THE HOMCO Edwards TYPE "E" PACKER IS IDEAL FOR

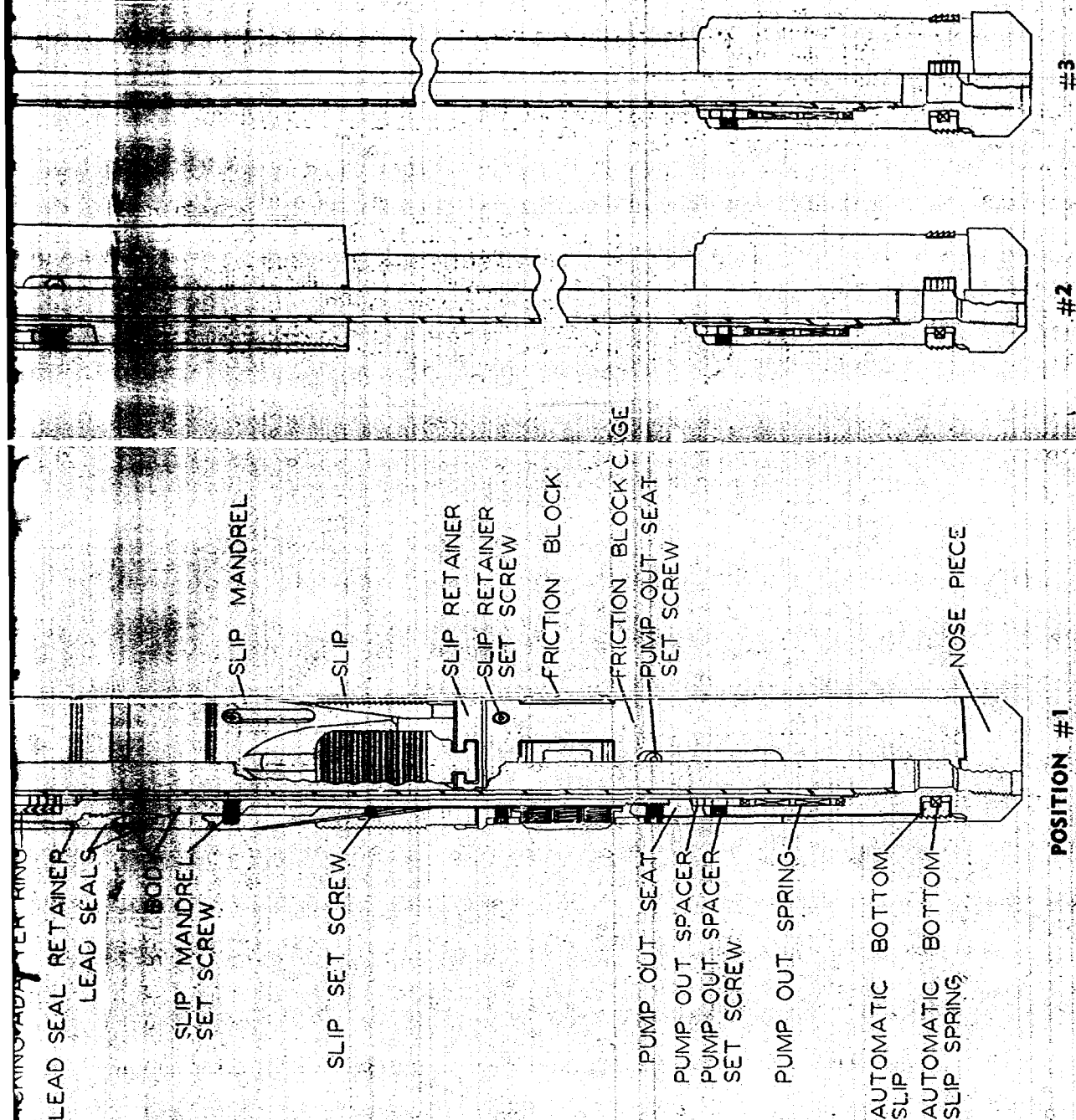


28 FOOT STROKE PERMITS SPACING IN TUBING

AUTOMATIC BOTTOM PERMITS THE PACKER TO BE DISENGAGED

IS IDEAL FOR HIGH TEMPERATURES AND PRESSURE

HOMCO



1. RUNNING INTO THE HOLE

2. PACKER SET IN CIRCULATING POSITION

3. PACKER SET IN PRODUCING POSITION

DOVE-TAIL ARRANGEMENT SUPPORTS MAXIMUM LOADS

BE DISENGAGED AND ENGAGED WHILE IN THE HOLE.



HOMCO Edwards PACKER

ASSEMBLY

The assembly of the HOMCO-Edwards Type E packer begins with the mandrel. The Teflon packing rings are installed in the female bore in the upper end. To seal fluid from above and below, the Teflon "V" rings are opposed. The top nut is threaded onto the male thread at the upper end of the mandrel to retain the Teflon packing. After the top nut is tightened securely, a set screw is installed to lock it to the mandrel. The lead spacer ring is installed on the lower end of the mandrel, shouldering against the top nut. The lead sealing element is then placed on the mandrel so that it comes to rest against the lead spacer ring. Another lead spacer ring is placed against the lower end of the lead sealing element.

The slip expander is placed on the mandrel from the lower end, coming to rest against the lead sealing element and into the lead spacer ring. The slip expander is retained to the mandrel by means of slots having four pipe plugs which allow travel in the expander when setting the slips. The slip retainer is installed on the mandrel and the slips are placed in the T-slots of the slip retainer, and the dovetail section of the slips is aligned with the dovetails on the slip expander and pushed into place.

The friction block cage is assembled with friction blocks which are inserted into the pockets in the cage. These blocks have flat bottom holes where the compression springs are inserted. They are held in the pockets by retainer plates and screws.

The pump-out seat is inserted from the lower end of the friction block cage. The threaded holes in the pump-out seat are aligned with the slots in the friction block cage and the pipe plug type set screws are inserted into the slots of the fric-

tion block cage and threaded into the holes of the pump-out seat and tightened by hand.

The complete friction block cage assembly is rotated to the right and the pipe plug type set screws will drive the pump-out seat until it is tight on the mandrel. After this has been completed, the pipe plug type set screw is tightened securely to lock the pump-out seat to the mandrel.

The automatic bottom slips, with compression springs, are inserted into the square pockets provided on the nose piece and are held with retainer screws. It is most important that the slips are in correct sequence in a radial direction: 1, 2, 3, etc. It is important that the slips be installed so that the slow taper of the buttress thread is always in a downward direction toward the tapered end of the nose piece, matching up with the threads on the nose piece. The pump-out spring is inserted into the female bore at the upper end of the nose piece, coming to rest on the spring seat at the female tubing thread. The pump-out spacer is then inserted into the bore at the upper end of the nose piece, seating on top of the spring. The pump-out spacer has holes for pipe plug set screws which are aligned with tapped holes in the nose piece, then tightened securely.

This complete sub assembly is inserted into the bore of the friction block cage and is screwed together by the automatic bottom thread. This completes the shop assembly of the packer.

When the packer is delivered to the field, the nose piece assembly is removed and is attached to a joint of tubing and the complete packer assembly is placed over the joint of tubing. The top sub is then attached to the other end of the tubing and the packer is threaded onto the automatic bottom and the tool is ready to be lowered in the hole. A visual inspection should be made to see if any damage has been done to the lead seal, slips, wipers, etc.

HOMCO Edwards PACKER



ADVANTAGES

1. Displacement of drilling fluid after packer is set.
2. Complete circulation to the lowest point of the tail pipe.
3. Long stroke allowing spacing in tubing head and eliminating the use of pup joints.
4. High temperature-resistant lead and Teflon seals.
5. Pump-out feature which allows hydraulic force, in addition to tubing strain, to be applied for releasing the packer.
6. Automatic bottom feature which eliminates the "J" system and minimizes "premature" setting.
7. Full-opening bore for running wire line tools.
8. Does not require wire line for setting.

ORDERING INSTRUCTIONS

1. Specify weight and size of casing.
2. Specify smallest weight and size of casing the packer will have to pass through.
3. Specify tubing size and type.

HOMCO SERVES THE OIL INDUSTRY COMPLETELY

EXPORT OFFICES

HOMCO

509 MADISON AVE.
ROOM 1614
NEW YORK 22, N. Y.

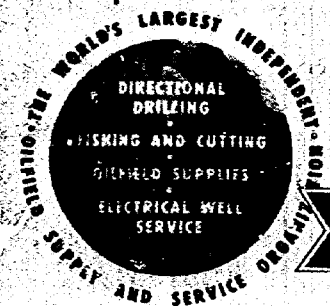
HOMCO DE MEXICO

EDIFICIO - REFORMA - VERSALLES
PASEO DE LA REFORMA No. 76, DESP. 503
MEXICO 6, D. F.

ASOCIADOS AL SERVICIO AL PETROLIO, S.A.
EDIFICIO VERTITAS, APT. SUR
85-74 AVENIDA ROOSEVELT
MARACAIBO, VENEZUELA

HOMCO

P. O. BOX 7098
BIXBY STATION
LONG BEACH, CALIFORNIA



ESTABLISHED
1919

TELEPHONE
HAMILTON 1-4191

THE GUIBERSON CORPORATION
MAIN OFFICE **MANUFACTURERS OF OIL FIELD EQUIPMENT**

1959 SEP 2 PM 1:06

P. O. BOX 1106 - 1000 FOREST AVENUE

DALLAS 21, TEXAS

September 1, 1959

State of New Mexico
Oil Conservation Committee
P. O. Box 871

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Dear Sirs,

In accordance with your letter of August 21, 1959, we are attaching hereto information requested on your questionnaire concerning our manufacture of oil and gas well packers.

Should you require any additional information, please do not hesitate to call upon us.

Yours very truly,

THE GUIBERSON CORPORATION

Harry S. Zane, Jr.
Harry S. Zane, Jr.
Sales Manager

HSZ:hb



OIL CONSERVATION COMMISSION OF NEW MEXICO

BOX 671

SANTA FE, NEW MEXICO

PACKER QUESTIONNAIRE

MAIN OFFICE OCC

1959 SEP 2 PM 1:06

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
Drillable Permanent	A, AG, AN, AT, AR, A2R, ANR, AGR	Drillable Tubing or Gun Set	Yes	6000 psi	300°F
Drillable Permanent	A, AR	Drillable Gun Set	Yes	6000 psi	300°F
Coil String Retrievable	Large opening secondary cushion release snap ring sleeve metallic anchor	Hookwall Compression Set	Yes	6000 psi	300°F
Retrievable	L8, L8P, L30, L30P	Hookwall Compression Set	Yes	6000 psi	300°F
KVL Retrievable	KVL8, KVL8-P, KVL30, KVL30-P	Hookwall Compression Set	Yes	6000 psi	300°F

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO
PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
CV Retrievable	KV8, KV8-P, KV30, KV30-P	Hookwall Compression Set	Yes	6000 psi	300°F
Early Production Retrievable	- -	Hookwall Compression Set	Yes	6000 psi	300°F
KV Retrievable	- -	Anchor Compression Set	Some	6000 psi	300°F
Early Production Retrievable	- -	Tension Set Hookwall	Some	6000 psi Dependent	300°F
AF Tension Retrievable	- -	Tension Set Hookwall	Some	6000 psi Dependent	300°F

TEXAS IRON WORKS

Manufacturing and Servicing Oil Field Equipment

11 PM 1:16

GENERAL OFFICE & PLANT
1423 MAURY STREET
P. O. BOX 16088
HOUSTON 22, TEXAS
CAPITOL 4-0871

EXPORT OFFICE
30 ROCKEFELLER PLAZA
NEW YORK 20, N. Y.

September 9, 1959

Mr. A. L. Porter, Jr.,
Secretary-Director
P. O. Box 871
Sante Fe, New Mexico

Dear Sir:

Enclosed are completed forms as requested in your
letter of August 21, 1959.

Yours truly,

TEXAS IRON WORKS

James W. Gibbs
Sales Manager

JWGIBBS:eb

enclosures: as noted

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO

MAIN OFFICE OCC
1950 SEP 11 PM 1:16

(1) Basic Model No.	(2) Variations of Basic Model	(3) Type of Packer	(4) Is this Packer Recommended for Permanent Zone Separation in Dual Completions	(5) Maximum Pressure Differential for which you would Recommend this Packer	(6) Maximum Temperature for which you would Recommend this Packer
337-0		Hookwall	Some	Dependent	(250°F)
	w/lead backup	"	"	"	325°F
	w/hydr.	"	Yes	6000 psi	325°F w/lead backup
Hydraseal		"	Some	Dependent	250°F
	w/hyd. holddown	"	Yes	6000 psi	250°F
		Screw Set	Yes	6000 psi	275°F
337-1		Anchor	Some	Dependent	250°F
	HERE	Anchor	Yes	6000 psi	325°F
337-2		Anchor	Some	Dependent	250°F
	w/hyd. holddown	Anchor	Yes	6000 psi	250°F



CABLE ADDRESS "BAGASO"
MAIN OFFICE AND FACTORY:
7400 E. SLAUSON AVENUE

LOS ANGELES 54, CALIF.

September 9, 1959

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

Attention: A. L. Porter, Jr.
Secretary-Director

Gentlemen:

In your letter of August 21, 1959 you enclosed a questionnaire with the request that we fill out the information on oil and gas well packers. We are enclosing the questionnaire filled out to the best of our ability.

We hope that you will understand that there are a great many variables involved including the size of packer, the size, weight and grade of casing, and many others over which we have no control. This makes it somewhat difficult to set forth maximum conditions on a broad basis such as you have requested.

We hope, however, that the information will be helpful to you, and that you will not hesitate to contact us further should you desire additional information.

Yours truly,

BAKER OIL TOOLS, INC.

W. S. Althouse
W. S. Althouse
Manager of Research & Engineering

WSA:m
Encls.

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO
PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Best Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
Pro- Packer - Product #415	-DB -DA -DB -DA	Permanent Drillable "	Yes "	Dependent upon strength of casing the Packer is set in (a) "	Non-Critical (b) "
Pro- Packer - Product #415	-DF -F -FA	"	"	"	"
Pro- Packer - Product #415	-H -H	"	"	"	"
Pro- Packer - Product #535	-H	Retrievable Compression Packer W/Slips	Yes	10,000 (c)	Non-Critical (c)
Pro- Packer - Product #535	-HDA -HDA -HDA	"	"	"	"
Pro- Packer - Product #535	-HDA -HDA -HDA	"	"	"	"
Pro- Packer - Product #535	-HDA -HDA -HDA	"	"	"	"

OIL CONSERVATION COMMISSION OF NEW MEXICO
 BOX 871
 SANTA FE, NEW MEXICO
 PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
Snap Set Packer - Product #736	-HGO	Retrievable Compression Packer w/Slips and Anchor	Yes	10,000 psi (c)	Non-Critical (c)
	-HGC		"	"	" "
	-HGD		"	"	" "
	-MGF		"	"	" "
Retrievable Snap Set Packer - Product #738	-E	Hookwall	Yes	"	" "
	-EG		"	"	" "
Retrievable Snap Set Packer w/Anchor & Unloader	-EGJ	Hookwall w/ Anchor & Unloader	"	"	" "
#419	-EGO	Hookwall with Anchor only	"	"	" "
	-EOJ	Hookwall with Unloader Only	"	"	" "
Double Snap Packer - Product #739	-A	Tension	Yes	10,000 psi (c)	" "
Dual Snap Set Packer (Single Zone) Product #740	-J	Retrievable Parallel	"	"	" "
	-K	"	"	"	" "

OIL CONSERVATION COMMISSION OF NEW MEXICO
 BOX 871
 SANTA FE, NEW MEXICO
 PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
1	-J	Parallel W/ Anchor	Yes	10,000 psi (c)	" "
	-JS	"	"	"	" "
	-K	"	"	"	" "

MAIN OFFICE OCC
Halliburton
AUG 27 PM 1:11

OIL WELL CEMENTING COMPANY
DUNCAN, OKLAHOMA

August 26, 1959

WM. D. OWSLEY
SENIOR VICE PRESIDENT

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

Attention: Mr. A. L. Porter, Jr.

Dear Sir:

Please find attached two copies of the Packer Questionnaire submitted in your letter of August 21.

Under Item 5 in your instructions you have made the statement "Show here the recommended maximum differential this packer should be able to sustain during the life of the well." I am sure that you of course realize that no packer manufacturer will make any guarantee whatsoever as to the life expectancy against leakage and other break down of a packer. There are too many factors over which the packer manufacturer has no control for such guarantee to be given.

Yours very truly,

W. D. Owsley
Wm. D. Owsley

WDO:eg

CC: Mr. R. G. Kelly
Mr. Harry Conroy
Mr. D. R. Yager
Mr. O. L. Stalcup
Mr. Frank Sharp

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO

PACKER QUESTIONNAIRE

Submitted by: Halliburton Oil Well Cementing Company, Duncan, Oklahoma

Product No.	Variations of Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
100		Permanent	Yes	12,000 psi at 350°F. temperature for 5 1/2" Csg. size. (Dependent on casing size and temperature)	350°F. (Dependent on casing size and Pressure)
101		Permanent	Yes	12,000 psi at 350°F. temperature for 5 1/2" Csg. size. (Dependent on casing size and temperature)	350°F. (Dependent on casing size and Pressure)
102		Permanent	Yes	12,000 psi at 350°F. temperature for 5 1/2" Csg. size. (Dependent on casing size and temperature)	350°F. (Dependent on casing size and Pressure)
103		Temporary and Rock Wall	Yes	5000 psi	300° F.
104		Rock Wall with Integral Hydraulic Hold Down	Yes	10,000 psi	300° F.
105		Rock Wall with Integral Hydraulic Hold Down	Yes	5000 psi	300° F.
106		Rock Wall with Integral Hydraulic Hold Down	Yes	10,000 psi	300° F.

OTIS ENGINEERING CORPORATION

MAIN OFFICE
PRESSURE CONTROL

6612 GORDON DRIVE
1550 SEP 14 1959



SERVICE EQUIPMENT

P. O. Box 35206

DALLAS 35, TEXAS

September 11, 1959

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

Attention: Mr. A. L. Porter, Jr.
Secretary-Director

Gentlemen:

In accordance with your request, dated August 21, 1959, we have filled out the packer information forms and are enclosing them.

Since the nipple packers are not like the conventional hookwall and permanent type packers, we are enclosing a brochure that briefly describes the packer and its operation.

Yours very truly,

OTIS ENGINEERING CORPORATION

L. M. Wilhoit
L. M. Wilhoit
Vice President for Engineering

LMW:pb
Enclosures



WILSON ENGINEERING CORPORATION

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871

SANTA FE, NEW MEXICO

PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
122	1225 1220 1220	Anchor Hookwall Hookwall	Yes Yes Yes	5,000 psi Dependent 5,000 5,000	300°F 200°F 200°F
1122	11220 11220 11220	Nipple* Nipple Nipple	Yes Yes Yes	10,000 10,000 10,000	300°F 300°F 300°F

*Uses Landing Nipple in Casing String

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MAIN OFFICE OCC

OTIS "Selective"

Collet-Type Casing Packer and Landing Nipple

Operation — The seating nipple is made up and run in the hole as a part of the casing string. The packer body, which seats and seals in the casing nipple, is provided with a section of Otis V-type packing, a locating and locking assembly, an inside fishing neck, and a smooth bore for the seal nipple packing. The packer body may be run in and retrieved either on the tubing or with wire line equipment.

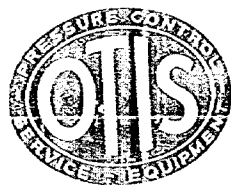
Several casing nipples may be installed in a well and a packer set in each nipple if desired. These exclusive Otis "selective" landing nipples make it possible to set a packer low at first and later reset it in another nipple higher up in the well.

The Otis "selective" principle means that a certain-size recess machined in the inside wall of the landing nipple corresponds to the size of a set of "selective" keys on the packer body (see cutaway illustration at left). Landing nipple No. 1 — which has the longest recess — is made up and run in on the casing string first; nipple No. 2, with a smaller recess, is made up several joints above the lowermost nipple; nipple No. 3, with still a shorter recess, above No. 2, etc. Thus when a packer body with No. 1 "selective" keys is run in, the long keys will not engage in nipples No. 3 and No. 2, and will pass on through to No. 1. If it is desired to move the packer up the hole, a locator mandrel with No. 2 or No. 3 (or No. 4, etc.) "selective" keys is made up on the packer body.

The flow area through the tool is virtually full-opening, which allows the packer to be used for wells set up as permanent completions. (A "permanent well completion" is where the tubing, packer, and wellhead are installed only once in the life of the well.)

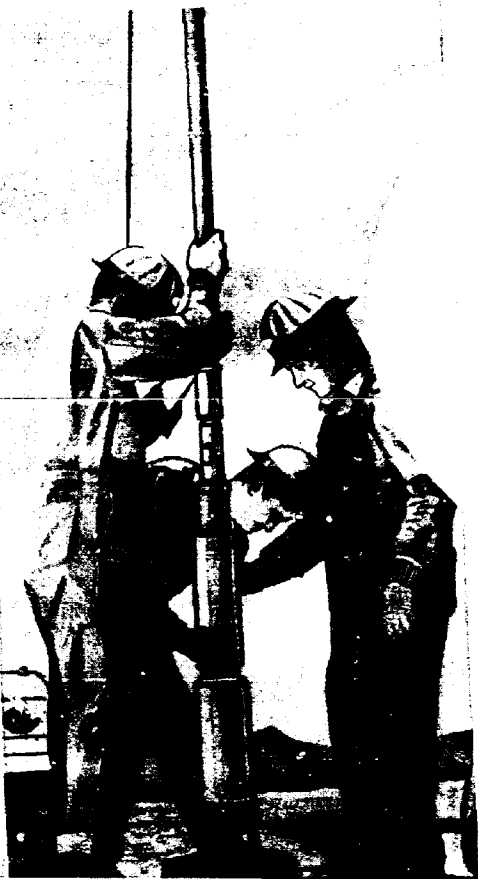
A special hold-down, operated by the differential pressure between the tubing and annulus, is available for wells in which there might be an abnormal pressure below the packer. This special hold-down utilizes approximately 3,000 pounds' tubing weight to set the packer.

The packer body is run with a special Otis Packer Running Tool in much the same manner as other Otis sub-surface controls are run. An Otis Packer Pulling Tool, which latches onto an inside fishing neck of the packer body, is used below the wire line jars or made up on the tubing to pull the packer.



OTIS PRESSURE CONTROL, INC.

General Offices and Manufacturing Plant: 6612 Denton Drive, Dallas
Branches Throughout the Oil Country



OTIS "Selective" Collet-Type Casing Packer and Landing Nipple . . . Run on Tubing or Wire Line

If you are operating wells where the packer must be moved often, or if you have wells with crooked or directional holes, you will be interested in this new Otis packer designed on an entirely new operating principle.

The Otis "Selective" Collet-Type Casing Packer is a retrievable tubing-to-casing pack-off tool which can be run, set, and pulled on the tubing string or a sand line, and landed in a special nipple made up in the casing string. The assembly consists of a casing landing nipple,

a packer body, and a seal mandrel which lands in the packer. Tubing weight is not necessary to set the packer, nor is rotation necessary to seat or unseat the tool.

The tool does not have slips, which eliminates damage to the casing wall, and also avoids the possibility of slips becoming corroded to a tapered mandrel. Heavy-duty collets hold the tool securely in position and Otis V-type packing affords a positive seal against extremely high pressures — either above or below — in the casing or the tubing (*see illustration on other side*).

Ask your nearest Otis office for more information on this new tool. We will be glad to give you illustrated literature and complete operating data without obligation.



OTIS PRESSURE CONTROL, INC.

Winter

PACKER QUESTIONNAIRE

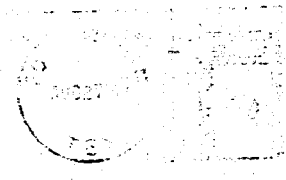
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LAMTEX EQUIPMENT CORPORATION

MANUFACTURERS AND DISTRIBUTORS OF

The Lamtex Casing Pump

P. O. BOX 1088 • FORT WORTH 1, TEXAS



Oil Conservation Commission of New Mexico
Box 871
Santa Fe, New Mexico

LAMTEX

Specialists in Large Bore Pumping Equipment

OIL CONSERVATION COMMISSION OF NEW MEXICO
 BOX 871
 SANTA FE, NEW MEXICO
 PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
			<p>August 24, 1959</p> <p>Gentlemen:</p> <p>Hayward Testing Service Manufactures none of the above type packers at the present time.</p> <p>Very truly yours,</p> <p><i>Landes H. Hayward</i> Landes H. Hayward</p> <p>3316 Cherry Avenue Long Beach, California.</p> <p>21:1 11 52 AM '59</p> <p>MAIN OFFICE OCC</p>		

OIL CONSERVATION COMMISSION OF NEW MEXICO
 BOX 871
 SANTA FE, NEW MEXICO
 PACKER QUESTIONNAIRE

1959 AUG 25
 MAIN OFFICE OGC

(1) Packer Model No.	(2) Variations of Basic Model	(3) Type of Packer	(4) Is this Packer Recommended for Permanent Zone Separation in Dual Completions	(5) Maximum Pressure Differential for which you would Recommend this Packer	(6) Maximum Temperature for which you would Recommend this Packer
None	No	Rockwall	Some	Dependent	400°
P100	No	Anchor	Some	Dependent	300°
Sweet Oil Well Equipment, Inc. Box 1115 Hobbs, New Mexico					



MAIL ADDRESS: POST OFFICE BOX 2274 TERMINAL ANNEX

CABLE ADDRESS "BACASO"
MAIN OFFICE AND FACTORY:
7400 E. Slauson AVENUE

LOS ANGELES 54, CALIF.

HAVE YOU SEEN BAKER'S NEW DUAL STRING PACKER?

Maybe you've heard about; maybe you saw it at the oil show in Tulsa or maybe you read about it in Baker's new Multiple Completion Guide. Could be you're one of the more than one hundred satisfied operators who have put this beauty to work in the last eight months. You might even be one of the operators who co-operated with us (following our intensive development and testing program) by helping us get field experience with this fine tool. In any case, whether you already know about it or not, the attached folder will give you some new facts about this packer and dual string completions.

Even after you've read the folder, however, you still won't have the complete story. For instance, we didn't have room to tell you how the use of three short packing elements of different but carefully balanced degrees of hardness provide dependable pack-off without the need for metallic back-up rings...rings that can defeat retrievability; or about the specially designed slips with a 15° angle cone which reduces stress both outward against the casing and inward against the bores; or about the multitude of minor design features that increase this packer's value and dependability.

We invite you to take a close look at this new Baker Snap-Set Dual String Packer. Compare it point for point with any competitive packer, then call your local Baker representative (he's a multiple completion specialist) to furnish you with further information or to help you plan a dual string completion.

BAKER OIL TOOLS, INC.,



BAKER SNAP-SET DUAL PACKERS
Catalog Supplement No.

357



model "J"

model "K"

BAKER *snap-set dual packers*

BAKER

snap-set dual packers

...ARE DESIGNED TO PROVIDE
DEPENDABLE PERFORMANCE PLUS
COMPLETION CONVENIENCE

Baker Snap-Set Dual Packers can be depended upon to provide the required separation of all zones throughout their producing life as well as during the completion or initial flowing phase. This is because the pressure holding ability of these packers did not have to be compromised to provide operational convenience. Baker Snap-Set Dual Packers are easier to set and release than the simplest of hook-wall packers—just set down a slight amount of weight on the tubing to set—simply pick up to release; no rotation, no ball dropping, no pressuring required—and they can be set and released as many times as desired. They permit bringing in the well up under complete control or in any other way that may be desired for completion convenience.

Baker Snap-Set Dual Packers are designed to be used (1) as the upper packer in a practical two-packer parallel string hookup in which the lower packer is a Baker Retainer Production Packer or (2) as the upper packers in Selective Multiple string hookups that permit the economical production of several zones.

1 ZONES CAN BE UNLOADED AND WASHED AFTER WELL HEAD IS FLANGED UP

Through the use of side-door completion valves or sleeve valves (Models "J" and "K" Packers) or through use of wrap-around tubing hangers (Model "J" Packer only) that permit movement of the tubing while keeping it packed off, complete circulation can be established, both zones unloaded and cleaned prior to being placed on production.

2 FULL-OPENING TUBING STRINGS

Baker Snap-Set Dual Packers offer full-opening through both sides for two strings of 2 3/8" tubing when run in the popular 7" casing size. This important feature may not be found in more elaborate, more expensive packers.

3 NO ROTATION, NO BALL DROPPING, NO PRESSURE REQUIRED TO SET PACKERS

The Model "J" Packer can be set by application of a slight amount of set-down weight against a lower Retainer Production Packer. The Model "K" is set by setting down weight on the short string against the resistance of the long string. Both models can be set and released as many times as desired for installation, spacing out, displacement, etc.

4 DOUBLE-GRIP MODEL HOLDS HIGH DIFFERENTIAL PRESSURES FROM BELOW

Both models of the Snap-Set Dual Packer are available with an integral hydraulic-actuated button-type hold down with directional wickers on the buttons. The greater the pressure differential across these packers from below, the tighter the grip of the anchor to keep the packers from unpacking and being pumped up the hole.

5 LONG STRING CAN BE PLACED IN TENSION

The Model "K" Snap-Set Dual Packer, which is set by applying setting down weight on the short string against the resistance of the long string, may be used to hold the long string in more than normal tension in order to permit the straight tubing necessary for any through-the-tubing operation that may be required below the packer.

6 DYNAMIC PACK-OFF PROPORTIONAL TO PRESSURE DIFFERENTIAL

The stored energy required to keep the packing element of these Baker packers securely packed off is contained in the tubing string which acts like a spring to take up any slack due to extrusion of the rubber. Packers that rely on a static type of pack off, provided by trapped pressure, cannot take up the slack of rubber pressure loss due to extrusion. Consequently, packers of this type are not as dependable in maintaining pack off except under very constant and carefully selected conditions.

7 SIMPLICITY OF DESIGN MEANS DEPENDABLE OPERATION AND MINIMUM MAINTENANCE

Baker Snap-Set Dual Packers contain no complicated internal seals, valves or other elaborate mechanisms. Their design is the essence of simplicity. The packers are easy to understand, operate and redress. Complete stocks of standard parts are readily available.

**MODEL
Snap-Set
Dual Packers**

Single-Grip
Product No.
756-J



Fig. 3

Double-Grip
Product No.
757-J

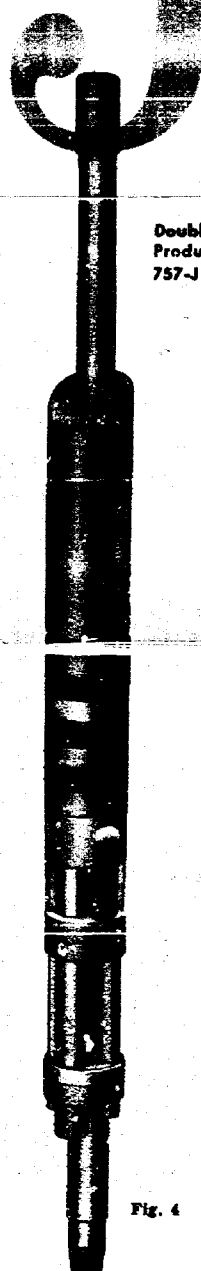


Fig. 4

**MODEL
Snap-Set
Dual Packers**

Single-Grip
Product No.
756-K



Fig. 5

Double-Grip
Product No.
757-K

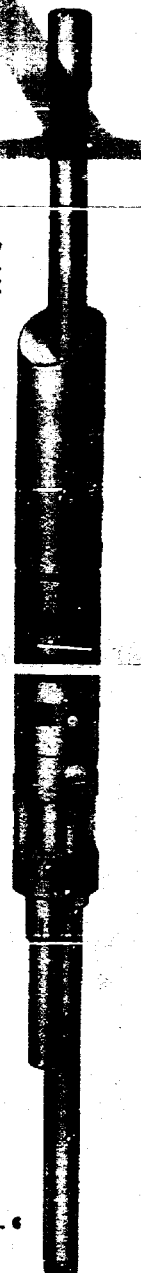


Fig. 6

Packer Release Spring
Control Rod
Packer Release Spring
Control Rod
Used to release long
string packers on dual
packer or connection
between a Model
"K" and a "J" in
selective hydraulic
hook-ups.

Model "J" Snap-Set Dual Packers are "long string set." This means that the packer is set by the application of a small amount of "set-down" weight against the resistance provided by a stringer installed in the bore of a previously set lower Retainer Production Packer. Upward movement of the tubing releases and unpacks packer. Packer is available with hydraulic button-type hold-down (Double Grip)

Model "K" Snap-Set Dual Packers differ from the closely related Model "J" Packers principally in the method of setting. The Model "K" is "short string set." This means that weight set down on the short string against the long string sets and packs off the packer. Presence of a previously set lower packer is not required for setting. Packer is available with hydraulic button-type hold-down (Double Grip).

BAKER

Produce two zones with convenience, simple components
and dependable separation of zones

dual zone

TWO PACKER

DUAL STRING COMPLETIONS

featuring: Baker Snap-Set Dual Packers
Baker Retainer Production Packers

THIS HOOKUP CATEGORY has become extremely popular principally because of the development of improved down-hole equipment including wire line actuated sleeve valves or side-door completion valves and new parallel retrievable packers such as the new Baker Snap-Set Dual Packers. Because there can be many combinations of zones with different characteristics, Baker offers several hookups that provide coverage from the severest of pressure and temperature conditions to the least demanding.

Each of these hookups permits displacement of DOWN TUBING STRINGS WITH THE WELL UNDER COMPLETE CONTROL. This can be accomplished through use of wire line actuated sleeve valves or side-door completion valves. If the Model "J" Packer is used as the upper packer, the packer can be released, the tubing seal nipples in the lower packer unseated, well fluids displaced through use of a dual wrap-around tubing hanger that packs off both tubing strings at the surface. This cannot be done with the Model "K" Packer. Each hookup features equipment which is devoid of intricate parts and internal seals. All equipment has been thoroughly field tested and proved reliable.

Completion Practice "A" (Fig. 7)

The upper zone is confined to a separately retrievable full opening short string (full opening with some tubing combinations) that seats and seals off in head of Baker Model "J" Single-Grip Snap-Set Dual Packer (Fig. 3). Lower zone confined to full-opening long string that is attached to upper packer and seats and seals off in bore of the lower Retainer Production Packer (Fig. 11).

Lower Retainer Production Packer set on wire line, or tubing. Long string made up to contain seal and spacer nipples for lower packer and Model "J" Snap-Set Dual Packer. Long string run in until locator of tubing seal assembly "locates" on top of Retainer Production Packer. Short String made up to include Snap Latch Seal Nipple (Fig. 1). Short string run into well; Seal Nipple stabbed into sealing bore of Model "J" Packer. Strings can be displaced through sleeve valves, side-door completion valves or through

use of wrap around hanger technique.

Completion Practice "B" (Fig. 8)

Should it be desired to complete this hookup with the long string in tension, the Model "K" Packer (Fig. 9) can be used in place of the Model "J" provided a combination of Baker Tubing Seal Nipples, Product No. 448-E1, and Baker Spacer Nipples, Product No. 470 are run in place of the Locator Tubing Seal Assembly, Product No. 442-E2 to seal off in the bore of the lower packer (Fig. 11).

Completion Practice "C" (Fig. 9)

Should it be desirable and possible to use retrievable packers for both the upper and lower packers then a hookup involving the Baker Model "K" Single-Grip Snap-Set Dual Packer and the Model "Z" Retrievable Casing Packer is possible.

Both upper and lower packers are made up on the string and run in to setting depth. Short string and Snap Latch Seal Nipple run in and stabbed into sealing bore of Model "K" Packer. Model "K" Packer is set by rotating $\frac{1}{4}$ turn to right and setting down weight on the long string. Model "K" Snap-Set Dual Packer is set by setting weight down on the short string against the long string.

Artificial Lift

GAS-LIFT—Both zones can be gas lifted using the casing as a gas reservoir. Pre-planned gas-lift installations can be made in which housings for wire line gas-lift mandrels are made up into initial tubing strings. When gas-lift is required, annular fluid is removed, and mandrels are run in on an instrument line and are installed in the housings.

PUMPING—Either or both zones can be pumped, however, it is difficult to vent either zone.

Advantages

Permits complete isolation of each zone at all times, loading of annulus and gas-lift of both zones using annulus as a reservoir. Prime disadvantage is inability to vent either zone for pumping.

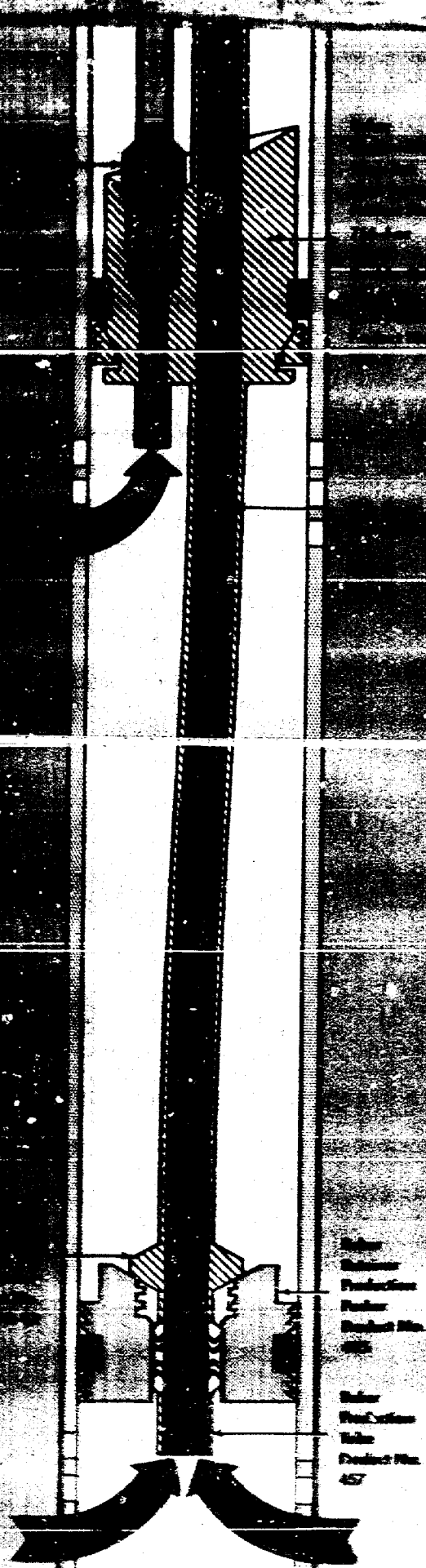


FIG. 7

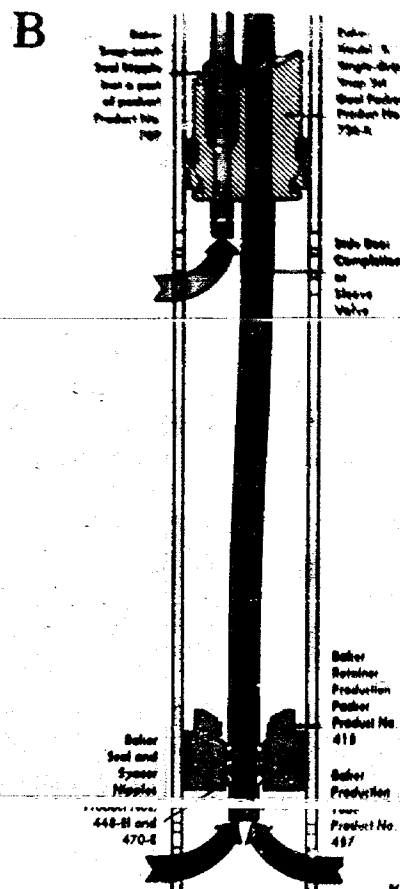


FIG. 8

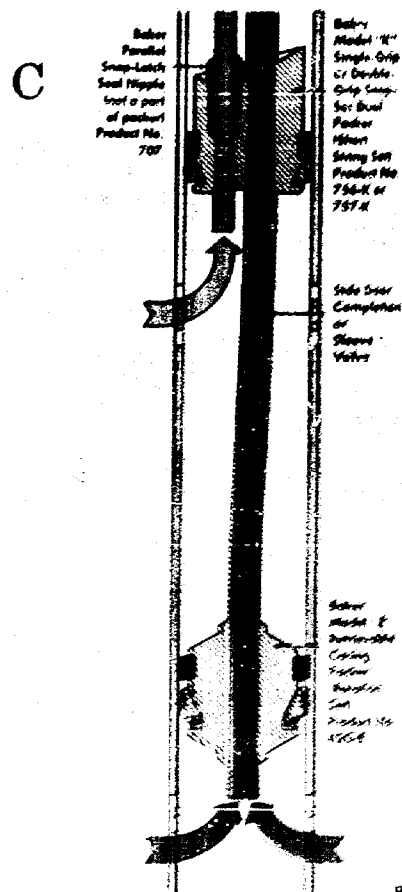


FIG. 9

BAKER

Produce three, four, five or more zones through one well bore with the simplicity and convenience of a dual completion

selective multiple zone

MULTIPLE PACKER DUAL STRING COMPLETIONS

featuring: Baker Snap-Set Dual Packers
Baker Retainer Production Packers

Dual string hookups with alternate zones isolated by additional packers (Fig. 10) may be the answer to the expense and exacting requirements of complex and mechanically difficult log-pipe and quads. By this method, one or more zones can be selectively opened to the tubing string (s) through use of piano-wire-actuated sleeve valves, non-ported nipples and blank mandrels or ported nipples. This technique is particularly applicable in areas where zones can only be produced a few days out of each month (limited allowable). Under these conditions alternate production from several zones would be economical.

Advantages

This type of hookup is more economical because no more than two strings of tubing are ever used. Four or five zones can be produced in 7" casing using two strings of 2 3/4" tubing. Normally four-string quads must be made in 9 5/8" casing in order to accommodate four strings of tubing. Hookup is comprised of readily available competitively priced components. No premium need be paid for special equipment. Hookup is easier to install and requires less installation time.

Completion Practice

Installation features Baker Model "K" and Model "J" Single-Grip Snap-Set Dual Packers (Figs. 3 and 5) and two or more Retainer Production Packers (Fig. 11). The hookup illustrated shows production from an alternate zone to the lower zone, and production from the upper zone. By blanking-off the long string, through the installation of a blank mandrel in the proper non-ported nipple and opening the corresponding sleeve valve, production from the lower zone, alternate to the lower zone or alternate to the upper zone can be produced through the long string. The upper zone or the alternate to the upper zone can be produced through the short string by closing or open-

ing the ported nipple.

The Retainer Production Packers are first run and set on a wire line or tubing. The long string is made up to include all seal nipples for the lower packers, required number of ported nipples and corresponding sleeve valves, and the lower Snap-Set Dual Packer. This string is run into the well to a depth equal to the spacing required between the two upper packers. The short string is made up with the lower Snap Latch Seal Nipple (Fig. 1) and the properly positioned blanked off ported nipple. The lower portion of the short string is then run in and is stabbed into the sealing bore of the lower dual packer. It is then connected to the tailpipe on the short string side of the upper dual packer. A special Telescoping Swivel Sub (Fig. 2) is available to facilitate this connection. When this swivel sub is used, it is necessary to remove the top guide, receptacle and short string tubing seal nipple from the top packer. The short string will then be directly connected to the packer. This entire assembly is then run into the hole on the long string to the desired depth. The short string containing the Snap Latch Seal Nipple is run into the well and is stabbed into the sealing bore of the upper packer.

The upper packers are set by the application of set-down weight. No rotation is required. Both Baker Models "J" and "K" Snap-Set Dual Packers can be set, released and re-set repeatedly as desired. Well fluids can be displaced as individual tubing strings are run and landed, by swabbing, or by actuating the wire line operated valves as illustrated.

Artificial Lift

GAS-LIFT—Single or dual string installations can be gas-lifted using casing as gas reservoir.

PUMPING—Each zone can be pumped as it is opened to the tubing string, but cannot be vented.

Baker Telescoping Swivel Sub Product No. 72 Used to facilitate tail pipe connection on short string dual packer or between a "K" and a "J" Selective Multiple hook-ups.

WHY USE A DRILLABLE PACKER FOR THE LOWER PACKER?

Experience has shown that many of the difficulties that have been experienced with dual zone, dual string, two-packer installations have been in connection with the lower packer.

This packer is the packer that performs the vital separation of zones—a job that it must do continuously throughout the life of the well. It is safe to say that the packer selected for the lower packer must, above all else, be a packer that offers dependable, long-lasting performance under the greatest variety of conditions.

In the selective multiple hook-ups where several zones may be isolated by packers, this same performance requirement also exists. It may be several years before each zone has been fully depleted, yet throughout this entire period these packers must provide absolute separation of zones.

The Baker Retainer Production Packer (Fig. 11), without question, offers the most reliable, longest-lasting pack off under the greatest variety of conditions, which include the highest of pressure differentials even under temperatures in excess of 300°.

An additional advantage stems from the fact that the Retainer Production Packer is designed to be removed by drilling out. Under many conditions where an operator might be concerned over the amount of steel in the hole, known drillability might easily outweigh questionable retrievability.

The recent development of the Baker Packer Milling Tool has reduced the time required to mill up a Retainer Production Packer by as much as 75%.



Fig. 10



Fig. 11

Baker
Retainer
Production Packer



Fig. 12

Baker Locator
Tubing Seal
Assembly

BAKER

MODEL "I"
Single-Grip
Snap-Set
Dual Packer
Product No.
756-J



MODEL "J"
Double-Grip
Snap-Set
Dual Packer
Product No.
757-J



MODEL "K"
Single-Grip
Snap-Set
Dual Packer
Product No.
756-K



MODEL "K"
Double-Grip
Snap-Set
Dual Packer
Product No.
757-K



PAGE OIL TOOLS, INC.



Production Specialties

MAIN OFFICE: 2255 LIME AVENUE, P.O. BOX 7087
LONG BEACH 7, CALIFORNIA

TELEPHONE GARFIELD 4-3546
NEVADA 6-4429
CABLE ADDRESS: "PAGOIL"

September 18, 1959

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

Attention: A. L. Porter, Jr.
Secretary-Director

Gentlemen:

In reference to your letter of August 21, 1959, enclosed
please find packer questionnaire.

Yours very truly,

PAGE OIL TOOLS, INC.

John S. Page
President

JSP:vr
Enclosures

OIL CONSERVATION COMMISSION OF NEW MEXICO
BOX 871
SANTA FE, NEW MEXICO
PACKER QUESTIONNAIRE

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
125-B	None	Hookwall with Valve operated by wire line to br-nass fluid in casing annulus.	Yes	7,000# minimum 8,800# maximum	350°
125-A	None	Cup type Pressure seal multiple selec- tive zone packer.	Yes	6,000#	150-180°



**BAKER
BAKER**

MULTIPLE COMPLETION GUIDE

• DUAL ZONE: SINGLE PACKER

• DUAL ZONE: TWO PACKERS

• SELECTIVE MULTIPLE ZONE
DUALY PRODUCED

• TRIPLE ZONE

• QUADRUPE ZONE

BAKER

GUIDE

INTRODUCTION

The multiple completion was born as the result of an attractive theory: two wells for the price of one. After a nearly ruinous beginning, it began to grow through careful application and development of down-hole equipment specifically designed for multiple-zone completions, not merely adaptations of single-zone equipment.

Advancement in multiple-zone techniques and equipment has been so rapid in recent years that it becomes difficult even for those who specialize in this field not only to keep up with it but to maintain an over-all perspective.

This guide outlines the basic multiple completion categories and discusses the mechanical and economical advantages and the limitations associated with them. With this background, careful study of the hookup drawings (with reference to the flowing characteristics, artificial lift and work-over requirements of each zone and the limiting effects of surface equipment on down-hole equipment) will permit the selection of the most practical multiple completion hookup for any given set of conditions.

MULTIPLE COMPLETION COSTS

The cost of drilling the well, running and cementing casing can be assumed to be the same for a single, dual, triple or quad, although the use of multiple strings may require larger I. D. casing than would normally be run for a single zone well. The greatest single factor affecting the subsequent completion cost, is the cost of the tubing. All single tubing string installations whether they contain one or two packers, complex cross-overs, etc. all cost less than the most simple parallel string installation. In like manner, all two string parallels cost less than any three string triple. Cost variations within the one, two, three or four string categories are proportional to the number of packers, circulating valves, cross-overs used. These items, which bring about the vital separation of zones and flow and make a hookup a multiple completion, usually cost less than 10% of the completion cost. In most wells over 5,000 ft. the total cost of all of this equipment is much less than the cost of an extra string of tubing.

DUAL-ZONE COMPLETIONS

Multiple completions can be categorized by number of packers used, number of strings of tubing used, number of zones produced or by a combination of these categories. There are, however, two basic classifications that deserve special attention because they determine more directly the initial and long term economic advantages of the various hookups.

These classifications, by basic flow pattern, are as follows:

1. Tubing and annulus production.

Hookups that produce one zone through the tubing and one zone through the tubing-to-casing annulus.

2. Parallel string production.

Hookups that produce each zone through an individual tubing string.

Each method has certain constant requirements and limitations that provide the initial direction in the selection of particular groups of hookups.

Tubing and Annulus Production

The most inexpensive multiple-zone completions fall in this category. A great number of dual-zone completions, therefore, are tubing and annulus completions. The production, however, of one zone in the annulus can have many disadvantages.

It is nearly impossible to run instruments in the annulus. This can be overcome by running a sideported nipple blanking off the zone produced through tubing and opening up the zone produced through the annulus.

The comparatively large annular area makes flow more difficult, encourages gas separation and loss of natural gas lift.

Artificial lift of the zone produced in the annulus is difficult and awkward.

Full pressure of the zone is on the casing, making control somewhat hazardous. The casing is also exposed to corrosive attack.

Where conditions are right, however, and zones of strong flowing characteristics are present without corrosion or other complications, this method is entirely satisfactory. Some states do not allow annulus completion in all fields.

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Parallel-String Production

(1) Permits each zone to be produced through an individual tubing string so that each zone will flow throughout a longer portion of the well's producing life. (2) Keeps production from the two zones isolated from each other and casing. This is most desirable from a corrosion and bursting standpoint. (3) Makes it possible to gas lift or pump either or both zones. Not every parallel-string hookup incorporates all of these advantages.

Most operators prefer to run and pull each tubing string independently. This does not necessarily mean that either string can be removed independently of the other, but may mean that one string can be either removed or run at a time provided a certain sequence is followed. In some cases the short string (string producing the upper zone) is removed before the long string (string producing the lower zone) can be removed and vice-versa when running in. Equipment is also available to permit removal of either string selectively.

Single Packer Tubing and Annulus Production

If both zones of a proposed dual have long-term flowing characteristics and it is not necessary to isolate both zones simultaneously from the casing due to high pressure or corrosion problems, and regulations permit annulus flow, then tubing and annulus production, as shown in Fig. 1, is the most practical and economical hookup.

Single Packer, Parallel String Production

If both zones have a relatively short flowing life requiring pumping with separate gas venting for each zone and long-term economy is a factor, then single-packer parallel-string hookups such as Figs. 6, 8, or 9 should be considered. This series of hookups actually represent pumping hookups whereas Figs. 1 and 5 are primarily flowing hookups.

Two-Packer Selective Cross-Over Tubing and Annulus Production

If the lower zone, or both zones, have good flowing characteristics and can be produced through the annulus then tubing and annulus production such as Figs. 10 and 13 would be recommended provided the weak zone does not have to be vented during pumping. This hookup permits the production, treatment or testing of either zone selectively through the tubing while producing the remaining zone in the annulus. The change in flow, or selection of a zone for treatment, is accomplished through the wire line installation of the proper choke in a landing nipple. Removal of the choke leaves a full-opening for permanent completion work-over techniques.

Two-Packer Parallel String Production

If annulus production is not permitted or if both zones must be isolated simultaneously from the casing, or it is essential that the annulus be loaded, then parallel string installations such as Figs. 14, 18 and 24 must be used.

SINGLE- OR DUAL-STRING SELECTIVE MULTIPLE COMPLETIONS

Single or dual string hookups with alternate zones isolated by additional packers and selectively produced through use of sleeve valves (Fig. 26) and non-ported nipples with blank mandrels (Fig. 27) may be the answer to the expense and exacting requirements of complex and mechanically difficult completions. Fig. 28 illustrates a parallel string installation. The single-string equivalent can be visualized by considering only the long string.

TRIPLE ZONE COMPLETIONS

Triple completions can be made with dual, parallel hookups such as Figs. 14, 18 and 24, provided the third zone can be produced in the annulus. Pumps are now available to pump all three zones simultaneously through the use of a single string of hollow sucker rods and three tandem pumps. For conditions where annulus production is not practical, a true triple, using three packers and three strings of tubing, as shown in Fig. 29, is recommended.

QUADRUPLE ZONE COMPLETIONS

Quadruple completions can be made with triple installations (Fig. 29) using three strings of tubing and three packers where the fourth zone is produced in the annulus. Where this is not practical a true quadruple using four Retainer Production Packers and four tubing strings is now possible (Fig. 32). This arrangement is similar to Retainer Production Packer duals and triples where use is made of a Flow Tube and concentric flow patterns.

SELECTING TUBING STRING SIZES FOR PARALLEL-STRING HOOK UPS

The starting point for planning any parallel-string hookup is the determination of the combined diameter of the long and short string joints desired with respect to the I. D. of the casing through which these strings are to run. The tubing specification guide and combined diameter chart on the last page of this guide can be used to determine the combined diameters of various sizes and types of tubing.

This information when compared with the theoretical casing I. D., less the recommended diametral clearance of 3/16" to 3/8" will permit the selection of a practical combination of tubing strings.

DRILLABLE

BAKER

SINGLE-ZONE OR MULTIPLE-ZONE



Baker Model "D"
Retainer Production
Packer
Product No. 415-D
The most widely used
drillable packer in the
world. Contains continuous
sealing bore and flapper-
type back-pressure valve.



Baker Model "DA"
Retainer Production
Packer

Direct variation of Model "D"
with a larger I.D. sealing
bore located in the upper end of
the packer. Permits larger bore
through packer accessories.
Used as an upper packer in two-
packer flowing or pumping,
parallel string hookups.



Baker Model "F"
Retainer Production
Packer
Product No. 415-F
Related design to
Model "D". Contains larger
continuous bore than
Model "D". Used where
extra large bore is required
in some parallel (triple)
string, flowing or pumping
hookups.



Baker Model "FA"
Retainer Production
Packer

Product No. 415-FA
Related to the Model "F" Packer
in the same manner that the
Model "DA" is to Model "D".
Contains extra large upper
sealing bore. Provides largest I.D.
of any retainer-type packer.
Used in multiple string
hookups exclusively.



Baker Model "H"
Retainer Production
Packer

Product No. 416-H
Similar to other Baker
Retainer Production
Packers, but employs
differently designed com-
ponents. Is set on tubing
ready for production in
one-half a round trip. Same
bore size as Model "D";
and can use same acces-
sories once the setting seal
mandrel is removed.

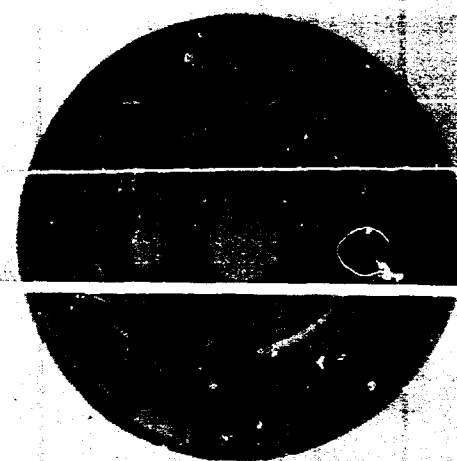


FIG. 33—Top view of receptacle
showing guide tracks;
Quadruple String Flow Tube.

Baker Quadruple
Flow
Product N

RETRIEVABLE

MULTIPLE-ZONE

**Baker Model "J" and "K"
Snap-Set Dual Packers**
Used as the upper retrievable packer in two-packer, parallel-string installations. Actuated by set-down weight only, and can be set and released as many times as required. Short string can be run and retrieved separately. Model "J" is "long-string" set; Model "K" is "short-string" set. Double-Grip versions which contain a built-in, button-type, hydraulic hold-down, are available.

(left)
Model "J" Single-Grip
Snap-Set Dual Packer
Product No. 705-J

(right)
Model "K" Single-Grip
Snap-Set Dual Packer

**Baker Model "M"
Snap-Set Packers**
Product No. 635-M

Used as the upper retrievable packer in two-packer, full-opening, selective cross-over, tubing and annulus production hookups. Set with set-down weight. Released and recocked for repeat setting by picking up on tubing.

**Baker
Dual Pumping Packer**
Product No. 604

Used as the upper retrievable packer in two-packer pumping hookups involving dual-zone pump. Set and released in same manner as Snap-Set Packers.

SINGLE-ZONE AND WATER FLOODING

**Baker Model "E"
Retrievable Casing Packer**
Product No. 420-E

One of the shortest, most compact, set down retrievable packers available. Ideal for light or medium duty production requirements, or for all-around water flooding use. Simple J-Slot setting mechanism.

**Baker Model "A"
Retrievable Tension
Packer**
Product No. 719-A

One of the shortest, most modern high-performance tension packers. Ideal for economical, low- or high-pressure water flooding. Rugged enough for many high-pressure fracturing and acidizing operations. Simple J-Slot setting mechanism.

DUAL ZONE

TUBING AND ANNULUS PRODUCTION

Basis for Selection

To realize the maximum advantage from this, the most popular and economical of all multiple completion hookups (Fig. 1) the upper zone, which is produced in the annulus, must have a long flowing life, be of a pressure that can be safely introduced into the casing, be non-corrosive, and be free from excessive sand or paraffin. The lower zone should have similar characteristics; however, because it is produced through the tubing, it can be of higher pressure, more corrosive and have a shorter flowing life.

Regardless of the flowing situation, attention should be given to the method to be used to pump either or both zones, even though the need may not be immediate. Figs. 6, 8 and 9 illustrate ideal pumping variations of this hookup. Pre-planning, based on the future use of one of these hookups, will enable the same packer to be used most effectively and economically throughout the producing life of the well.

Completion Practice

Upper and lower zones positively and effectively separated by a Baker Retainer Production Packer (Figs. 2, 3 and 4). Upper zone flowing in annulus between tubing and casing above packer. Lower zone flowing through tubing. Mud in tubing (and annulus) can be displaced in order to bring in zones by removing seal assembly from packer bore, or may be displaced through side-ported nipple positioned in tubing string immediately above packer (Fig. 28).

Gas Lift

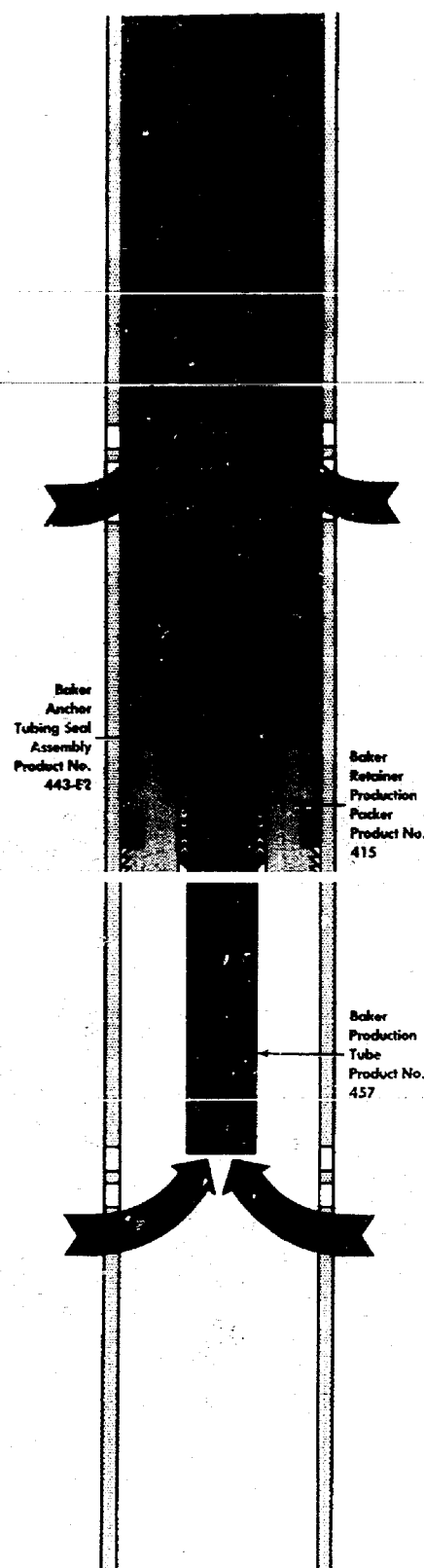
Lower zone can be lifted by running concentric or parallel small diameter pipe called macaroni string for hydraulic lift or single point gas injection.

Pumping

Lower zone can be rod-pumped provided gas venting is not required. Pumping of both zones can best be accomplished by conversion to hookups illustrated in Figs. 6, 8 and 9.

Advantages and Disadvantages

The prime advantage of this hookup (Fig. 1) is that it requires the minimum investment in equipment. If both zones have excellent flowing characteristics and no other complications, this arrangement can truly provide two wells for the price of one. Use of the Baker Retainer Production Packer (Fig. 2) makes effective work-over simple and economical. This packer, which contains a flapper-type back-pressure valve that closes to isolate pressure differentials from below the packer whenever the tubing



TUBING AND ANNULUS PRODUCTION

FIG. 1—Illustrates Packer set in casing, with anchored production string for dual-zone production. Tubing can be released from packer by rotating to the right.

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is removed, can be used in place as a squeeze tool for lower zone work-over. Work-overs through the tubing, using permanent completion tools, are also possible. Packer can be converted to a temporary bridge plug for upper zone pressuring operations. The disadvantages of this hookup stem from the production of one zone through the annulus. (Refer to Tubing and Annulus Production, (Page 2).

PARALLEL STRING PRODUCTION

Basis for Selection

The hookups illustrated in Figs. 5 and 6 might be selected as initial flowing hookups as alternates to the basic single packer tubing and annulus hookup (Fig. 1) in cases where a planned conversion to the most practical two-zone pumping hookup (Fig. 8 or 9) was anticipated and it was desired to enjoy the benefits of producing the upper zone through a separate tubing string throughout its flowing life. Figs. 8 and 9, which would be selected as initial hookups only if both zones were to be completed on the pump, represent pumping hookups for single packer dual zone installations.

Completion Practice

Upper and lower zones effectively separated by a Baker Retainer Production Packer. Upper zone through short string (full pressure of upper zone on casing); lower zone through long string.

Gas Lift

Gas lifting of either zone is impractical.



FIG. 2
Sectional View
Baker Model "D"
Retainer
Production Packer
Product No. 415-D

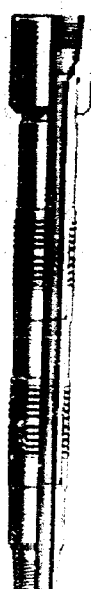
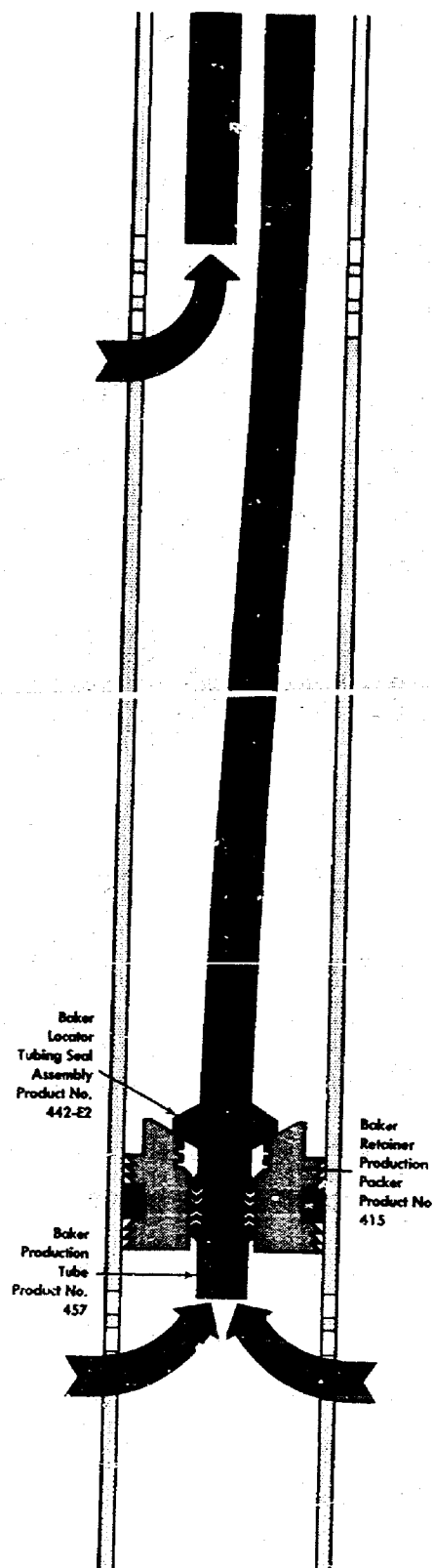


FIG. 3
Baker Locator
Tubing Seal
Assembly
Product
No. 442-E2

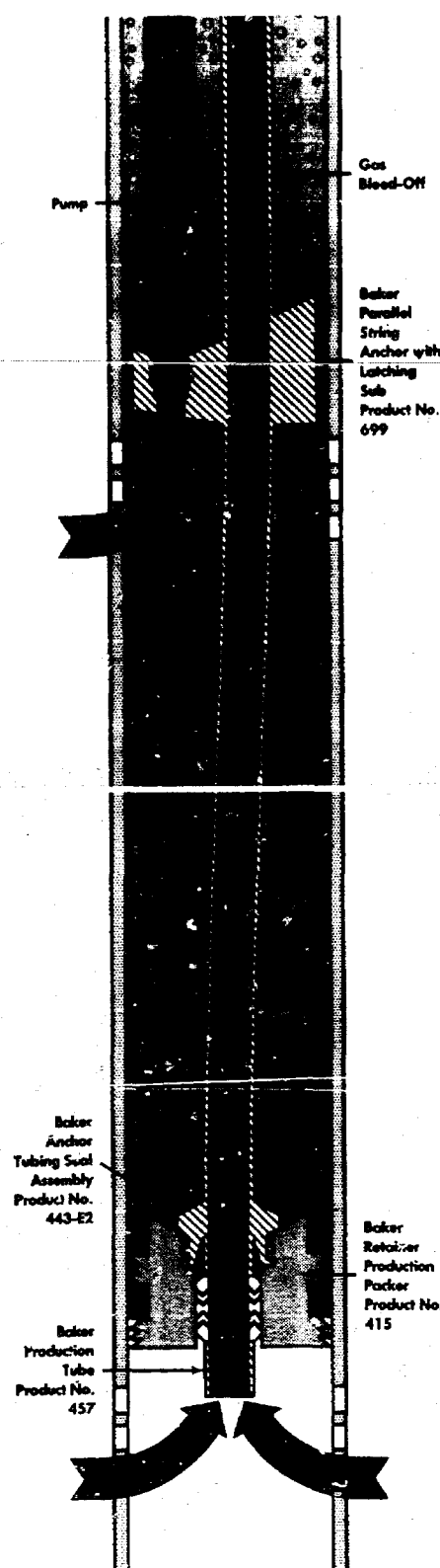


FIG. 4
Locator Tubing
Seal Assembly
installed in
Model "D"
Packer



PARALLEL STRING PRODUCTION
FIG. 5—Hookup with short string hanging free, permits removal of either string independently, regardless of sequence. Full-opening (tubing I.D.) long string to lower zone.

DUAL ZONE



FLOWING LOWER, PUMPING UPPER ZONE

FIG. 6—Short string anchored; gas bleed-off through annulus. Permits removal of either string independently; however long string must be run first, and short string pulled first. Full-opening long string.

FIG. 7
Baker Parallel String
Anchor with
Latching Sub,
Product No. 699



Pumping

The Baker Anchor with Latching Sub (Fig. 7) permits a separately run and retrieved short string to be anchored for more successful pumping of the upper zone. Hookup (Fig. 6) permits rod pumping of both zones but does not provide means of venting gas from lower zone.

Ideally, all zones that are pumped should be vented to prevent gas-locking of the pump. Figs. 8 and 9 illustrate two pumping hookups that provide gas venting for both zones.

Fig. 8 illustrates a pumping system that involves two separate pumps each with its own set of rods and pumping jack at the surface. The upper zone is vented through the annulus and the lower zone through a macaroni string that is run through the Baker Full Opening Parallel Flow Tube (Fig. 15), through the lower packer to the lower zone.

Fig. 9, which utilizes a special dual zone pump that is actuated by a single set of rods, also offers venting of both zones. If both zones can be pumped fairly efficiently at the same rate, this latter hookup in spite of the extra cost of the dual zone pump, could be the most economical because its use eliminates a string of rods and a second pumping jack.

Advantages and Disadvantages

Single Packer Parallel String Hookups provide flexibility at lowest cost. Workover of either zone is simple and economical. Lower zone can be permanently completed. Disadvantages are that upper zone pressure and corrosion are exposed to casing, annulus cannot be loaded and gas lift is impractical.

sary to remove the string tubing seal short string will t packer. This entire hole on the long short string conta is run into the we bore of the upper

The upper pack set-down weight Baker Models "3" can be set, releaser Well fluid; can b strings are run and ating the wire line

Gas Lift

Single or dual str using casing as ga

Pumping

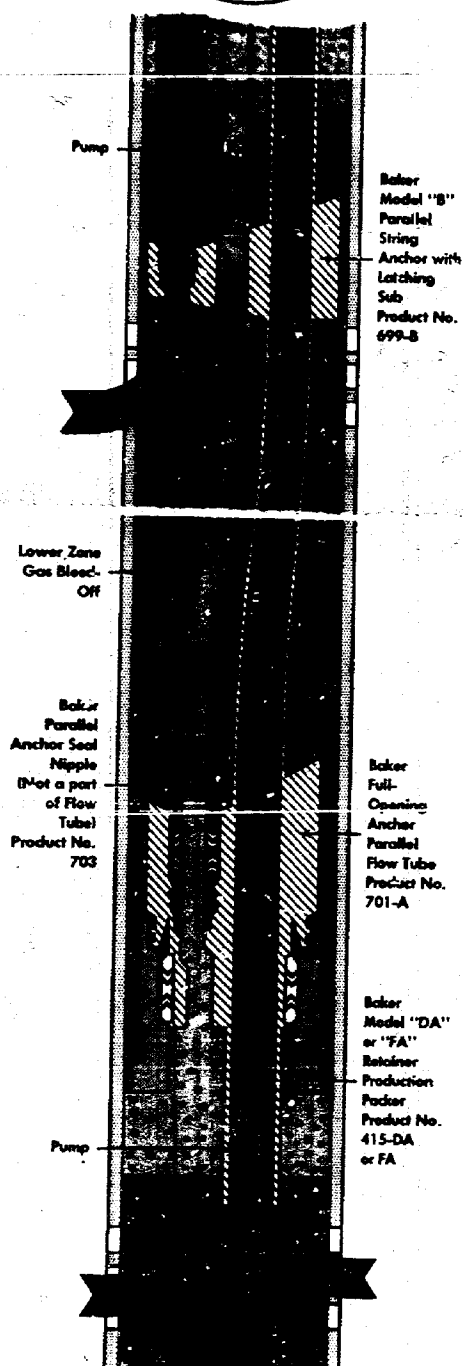
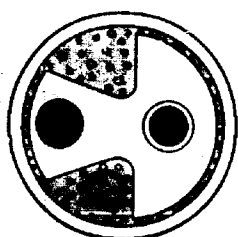
Each zone can be ing string, but can

Advantages and Disadvantages

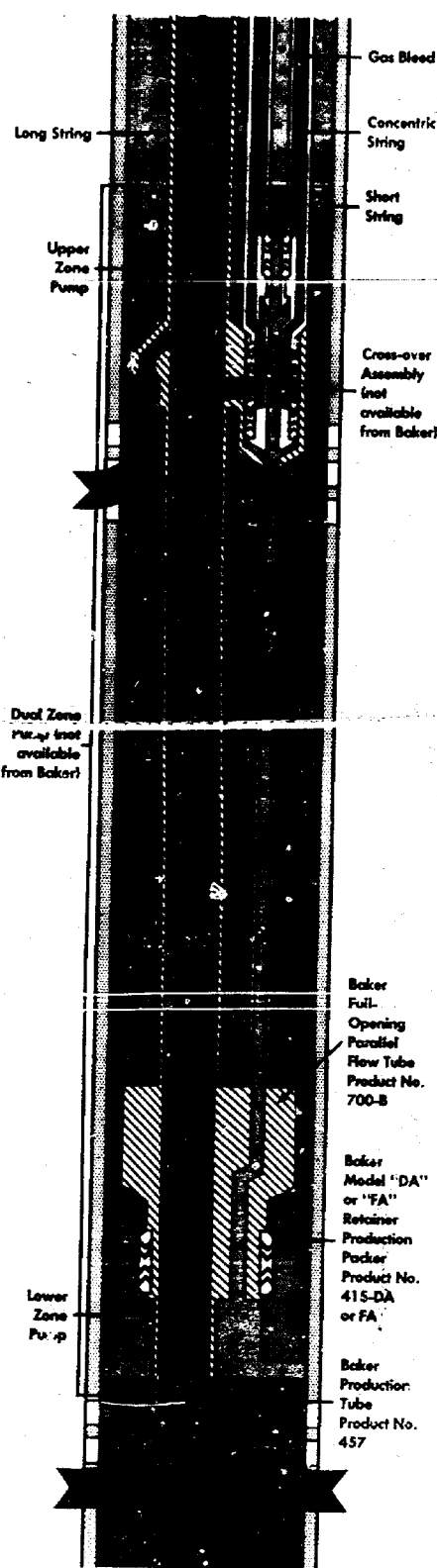
This type of hook more than two str or five zones can b strings of 2 3/8" tu must be made in date four strings readily available No premium nee Hookup is easier t tion time. The dis fold. Under favor production such compared with a be pumped is a p sible with triples

Sleeve Valves, P

This equipment establishing com string and the tu used to circulate site any isolated z tion of that zone designs accompl different manner provided by a sh closed by means When it is nece valve a blank m nipple that has b (Fig. 27). Anoth same result is th (Fig. 28). Variou either open the p off the ports and



PUMPING BOTH ZONES, WITH GAS VENTING, USING TWO SETS OF RODS
FIG. 8—Lower zone gas bleed-off through separate string. Upper zone flowing or pumping through separate (short) string and gas bleed-off through annulus.



PUMPING BOTH ZONES, WITH GAS VENTING, USING ONE SET OF RODS
FIG. 9—Both zones pumped simultaneously. Gas-bleed through concentric string for lower zone, and annulus for upper zone. Short string and concentric bleed-off string run separately after long string is landed.

DUAL ZONE

Selective Cross-Over
Flowing in Annulus of Production

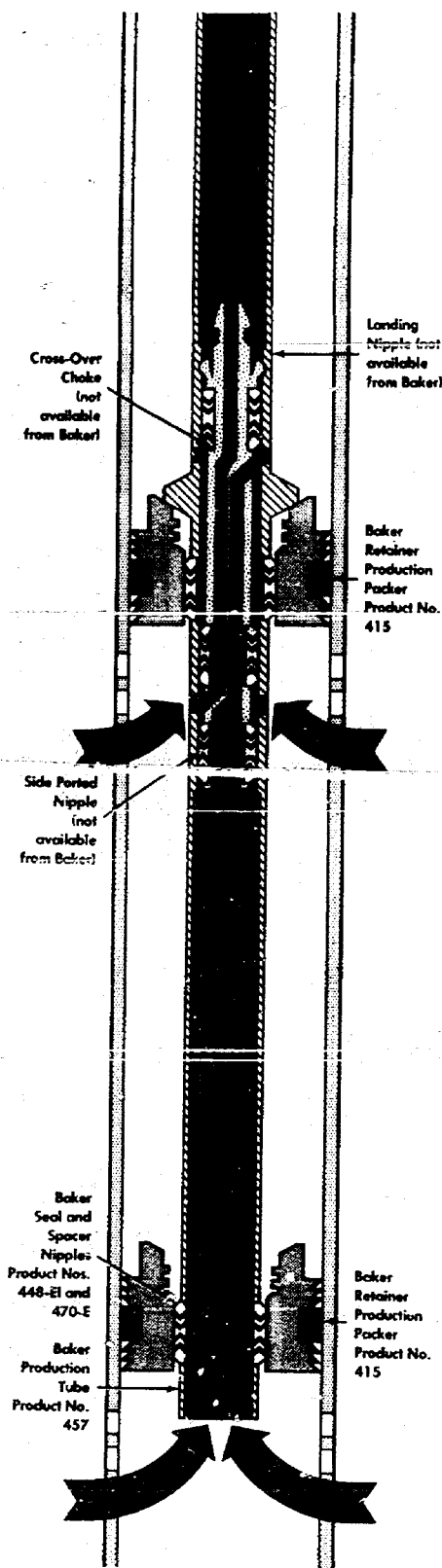


FIG. 10—Illustrates a full-opening, selective dual-zone, production hookup with cross-over choke installed. Removal of choke provides full-opening access to lower zone. Flow pattern can be switched by substituting different choke.

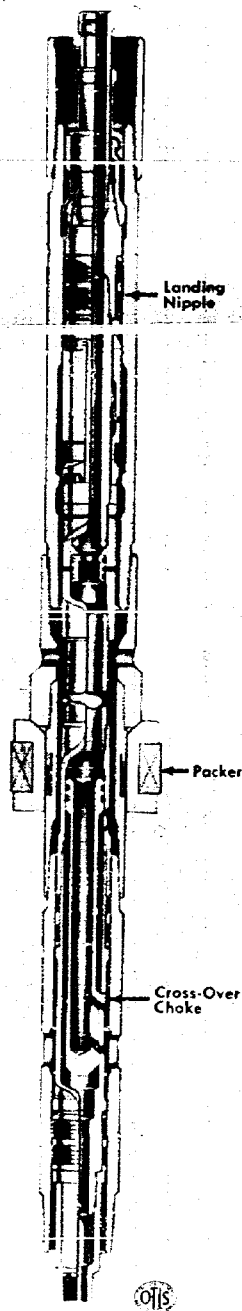


FIG. 11—Crossover choke installed in full-opening landing nipple.

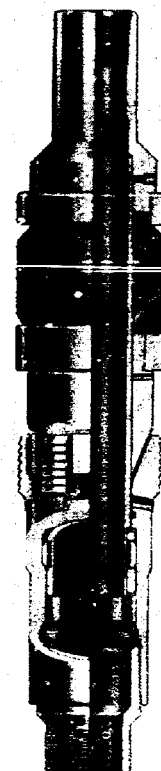


FIG. 12—Baker Model "M" Snap-Set Packer, Product No. 635-M.

Upper and Lower

Upper zone of string (full of containing a and seals of Single Grip zone confined connected to the Casing Pack

Both upper string and re Snap Latch S into sealing Packer is s down weigh

Dual Packer short string Model "K" d viously set R successful se in many diff upper packer up described the long strig also available type hold do Set Dual Pac ferentials fro

Gas Lift

Both zones of reservoir. Pr made in whi drels are ma gas lift is re mandrels are installed in th

Pumping

Either or bot difficult to ve up, use of Bak venting lowe with gas-vent packer and hookups such recommended

Advantages a

Permits comp loading of ann annulus as a n ity to vent eit

Basic for Selection

This hookup (Figs. 10 and 11) would be recommended under conditions where the upper zone could not be produced in the annulus due to a crossover or pressure problem or where its flowing life was known to be comparatively short, requiring pumping within a short period of time. In either case the lower zone must be producible through the annulus without complications, and should have a long flowing life. Because only one string of tubing is required, this hookup is considerably less expensive than any of the parallel string hookups discussed previously. Hookup also permits selective communication of either zone through the tubing by the installation of the proper choke. Removal of choke provides full-opening access to lower zone. In addition, this hookup could be made in casing sizes too small to permit a parallel string hookup with full opening to the lower zone.

Completion Practice

This hookup can be made with two Baker Retainer Production Packers (Fig. 10) or with a Baker Retainer Production Packer and a retrievable Baker Model "M" Snap-Set Packer (Fig. 13). In either case the Baker Retainer Production Packer (Fig. 2) is used as the lower packer to separate the two zones. The upper packer, whether retrievable (Fig. 12) or drillable, is installed above the upper zone and isolates it from the tubing-to-casing annulus when the cross-over choke (Fig. 11) is installed.

The hookup enables the operator to produce (pump or flow), treat (formation fracture, acidize, etc.) or test either zone selectively through the tubing while producing the remaining zone in the annulus. The change in flow is accomplished through the installation of the proper choke that is run and retrieved on piano wire. Removal of the choke from the landing nipple (Fig. 11) leaves a full opening tubing string through the lower packer for permanent completion workover techniques.

The well head can be completely flanged up before the mud is displaced in either of these two hookups. Once the mud has been displaced the well can be worked on under high pressure through a lubricator. The well will be under control at all times. If it is necessary to overhaul the surface equipment, the annulus can be shut off at the cross-over.

Gas Lift

Either zone can be gas lifted alternately using retrievable crossover to open either zone to the tubing. The casing annulus above the upper packer is used as the gas reservoir.

Pumping

Either zone can be pumped (without venting) with the remaining zone flowing up the annulus. Zones can be pumped alternately.

Advantages and Disadvantages

This hookup provides increased flexibility over single packer single string hookups particularly in the area of artificial lift. It still retains all the disadvantages of producing one zone in the annulus.

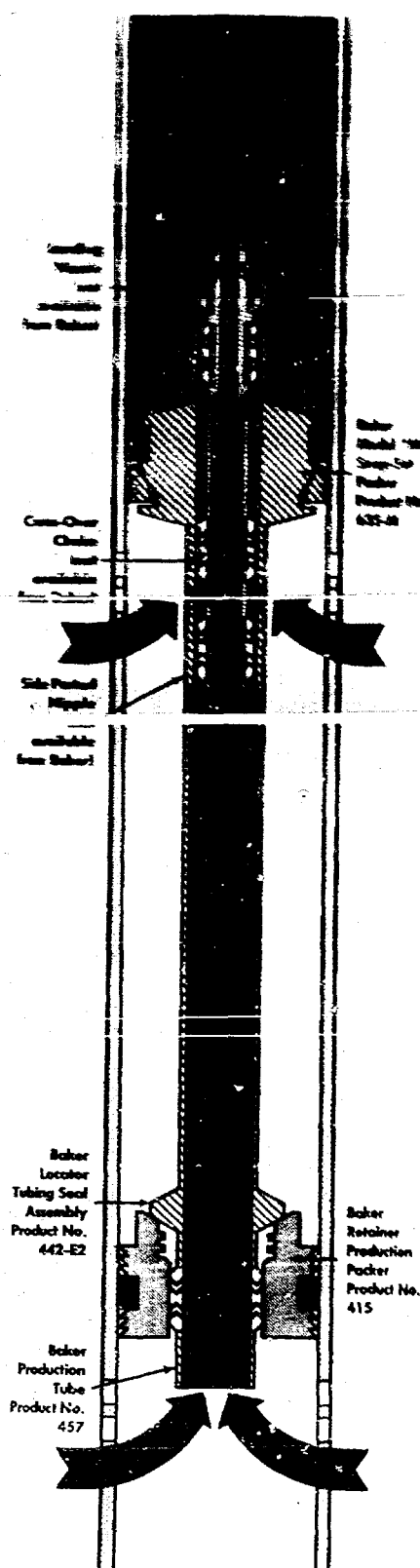


FIG. 13—Similar to Fig. 10 except that the upper packer is retrievable. Removal of the choke provides full-opening access to the lower zone. Flow pattern can be switched by substituting different choke.

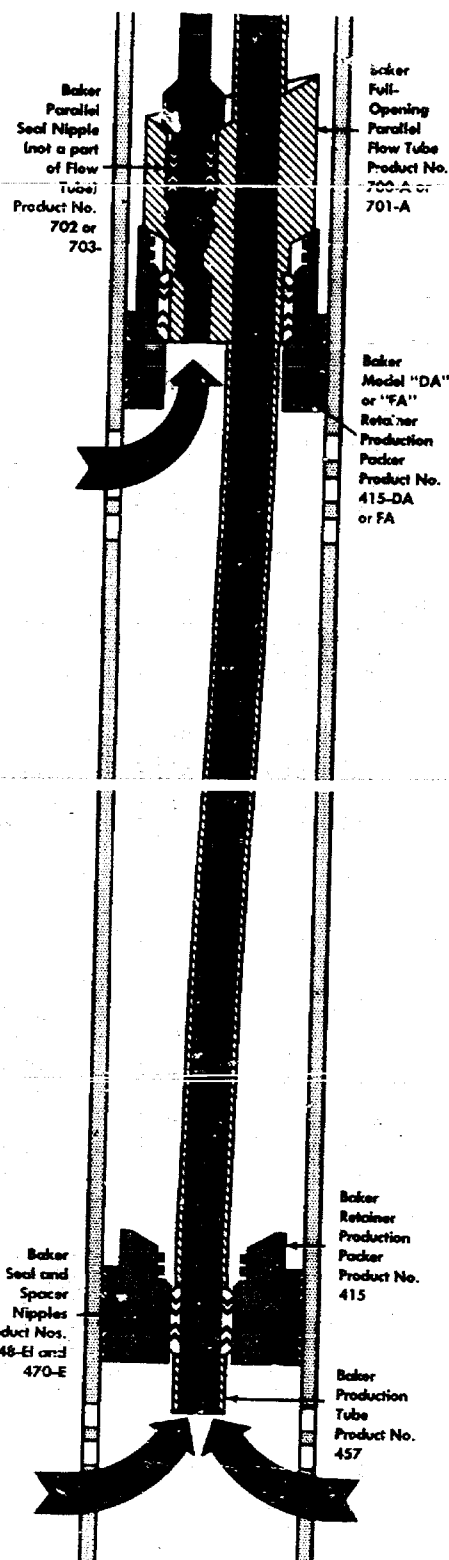


FIG. 14 - Parallel string installation using two Retainer Production Packers. Each string is confined to its individual tubing string. Full-opening to lower zone permits use of permanent-type completion tools.

DUAL ZONE

Parallel String Production

FIG. 16
Baker Parallel
Locator Seal Nipple
Product No. 702



FIG. 15
Baker
Full-Opening
Parallel
Flow Tube,
Product No. 700

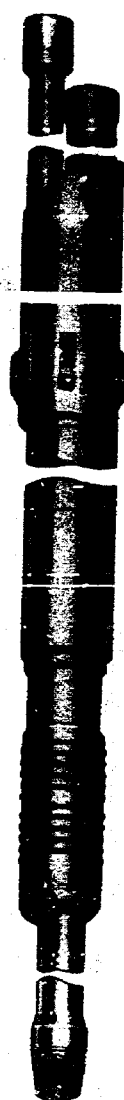
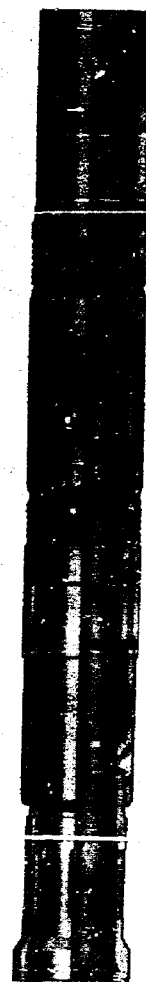


FIG. 17
Baker Model "FA"
Retainer Production Packer
Product No. 415-FA



Basis for Selection

These hookups are recommended if and only if cause it is required for both zones to be completed each other and

Completion Procedure

This hookup can be recently principle improved downhole actuated sleeve completion valves such as the new (19 and 21). Because of zones with three hookups, the least of pressure least demanding

Each of these tubing strings will under complete through use of (26), side-door around tubing

keeping both strings hanger, however "K" Packer. Each has been thorough a minimum of

Upper and Lower

Upper zone configuration string that seats Opening Parallel Tube seats and Model "FA" Retainer Lower zone configuration is connected to Tube to seat and Production Packer Spacer Nipples. strings selectively Packers set on wellbore seals for flow tube run in String with Tubing into sealing bore

Upper Packer Retainer Drillable (Fig. 18)

Upper zone configuration opening short string combinations) the Baker Model "J" (Fig. 19). Lower string that is attached seals off in bore of

Lower Retainer line, or tubing. Lower and spacer nipple Snap Set Dual Packer

Basis for Selection

These hookups (Figs. 14, 18 and 24) are recommended if annulus production is not permitted because it is required that the annulus be loaded, or if both zones must be isolated simultaneously from each other and the casing.

Completion Practice

This hookup category has become extremely popular recently principally because of the development of improved down-hole equipment including wire line actuated sleeve valves (Fig. 26) or side-door completion valves and new parallel retrievable packers such as the new Baker Snap Set Dual Packers (Figs. 19 and 21). Because there can be many combinations of zones with different characteristics, Baker offers three hookups that provide coverage from the severest of pressure and temperature conditions to the least demanding, most economical.

Each of these hookups permits displacement of both tubing strings with the head flanged up and the well under complete control. This can be accomplished through use of wire line actuated sleeve valves (Fig. 26), side-door completion valves or special wrap-around tubing hanger equipment that permits the Xmas Tree to be picked up for displacement while keeping both strings packed off. The wrap-around hanger, however, cannot be used with the Model "K" Packer. Each hookup features equipment that has been thoroughly field tested and proved with a minimum of intricate parts and internal seals.

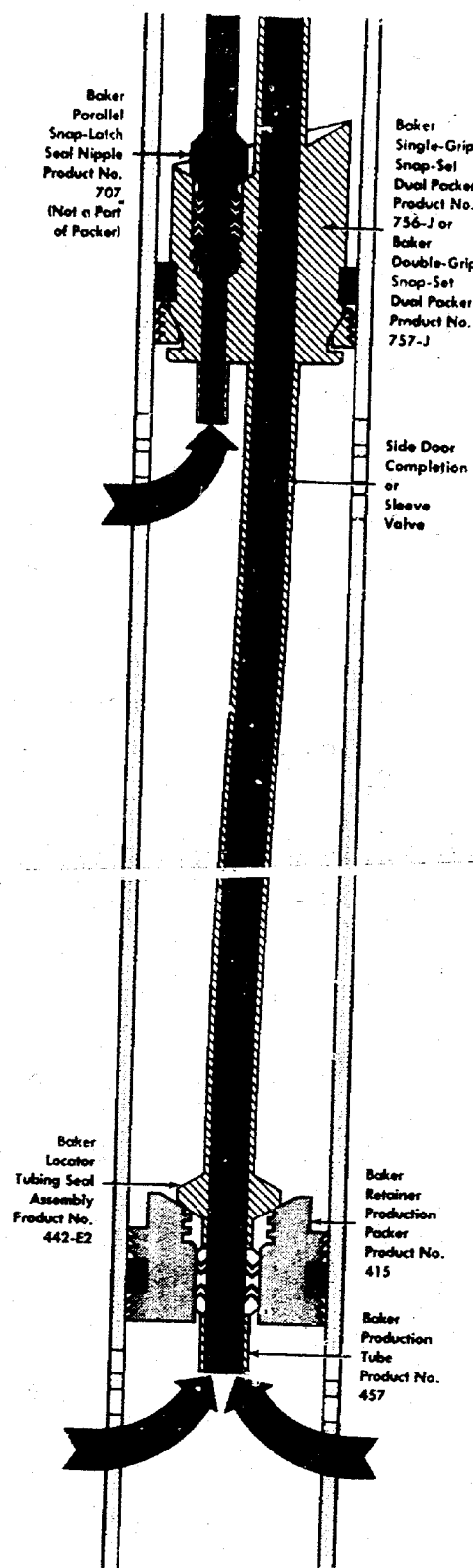
Upper and Lower Packers Drillable. (Fig. 14)

Upper zone confined to a separately retrievable short string that seats and seals off in head of Baker Full-Opening Parallel Flow Tube (Fig. 15). Parallel Flow Tube seats and seals off in large upper bore of upper Model "FA" Retainer Production Packer (Fig. 17). Lower zone confined to full-opening long string that is connected to and extends through Parallel Flow Tube to seat and seal off in bore of lower Retainer Production Packer by means of Tubing Seal and Spacer Nipples. Also furnished with long and short strings selectively retrievable. Retainer Production Packers set on wire line or tubing; long string containing seals for lower packer, full opening parallel flow tube run in and seated in upper packer. Short String with Tubing Seal Nipple run in and stabbed into sealing bore of flow tube.

Upper Packer Retrievable; Lower Packer Drillable (Fig. 18)

Upper zone confined to separately retrievable full opening short string (full opening with some tubing combinations) that seats and seals off in head of Baker Model "J" Single-Grip Snap-Set Dual Packer (Fig. 19). Lower zone confined to full-opening long string that is attached to upper packer and seats and seals off in bore of lower Retainer Production Packer.

Lower Retainer Production Packer set on wire line, or tubing. Long string made up to contain seal and spacer nipples for lower packer and Model "J" Snap Set Dual Packer. Long string run in until loca-



tion. Full opening (to some combinations) short string is separately retrievable. Full-opening long string, retrievable packer and tubing seal nipples for lower packer are run and retrieved together.

DUAL ZONE

Parallel String Production

FIG. 20
Baker Parallel Snap-Latch
Seal Nipple,
Product No. 707.



tor of tubing seal assembly "locates" on top of Retainer Production Packer. Short String made up to include Snap Latch Seal Nipple (Fig. 20). Short string run into well; Seal Nipple stabbed into sealing bore of Model "J" Packer. Strings can be displaced through sleeve valves (Fig. 26), side-door completion valves or through use of wrap around hanger technique. Baker Model "J" Packer set by small amount of set down weight. No rotation required to set or release. Upward movement of tubing unpacks packer, retracts slips and recocks release mechanism, for removal or resetting. Packer is available with hydraulic button-type hold down as Model "J" Double-Grip Snap Set Dual Packer for use under conditions where pressure differentials from below packer are anticipated.



FIG. 19—Baker
Model "J" Single-
Grip Snap-Set Dual
Packer, Product
No. 756-J.



FIG. 21—Baker
Model "K" Single-
Grip Snap-Set
Dual Packer,
Product No. 756-K.



FIG. 22—Baker
Telescoping Swivel Sub,
Product No. 758.



FIG. 23—Baker
Model "E" Retrivable
Casing Packer,
Product No. 420-E.

Upper and Lower Packers Retrievable. (Fig. 24)

Upper zone confined to separately retrievable short string (full opening with some tubing combinations) containing a Baker Snap Latch Seal Nipple that seats and seals off in head of upper Baker Model "K" Single Grip Snap Set Dual Packer (Fig. 21.) Lower zone confined to full-opening long string that is connected to the lower Baker Model "E" Retrievable Casing Packer (Fig. 23).

Both upper and lower packers are made up on long string and run in to setting depth. Short string and Snap Latch Seal Nipple (Fig. 20) run in and stabbed into sealing bore of Model "K" Packer. Model "E" Packer is set by rotating $\frac{1}{4}$ turn to right and setting down weight on the long string. Model "K" Snap Set Dual Packer is set by setting weight down on the short string against the long string. Because the Model "K" does not require the presence of a previously set Retainer Production Packer below it for successful setting, it can be used as the upper packer in many different hookups. It can be used as the upper packer in place of the Model "J" in the hook-up described previously, should it be desired to hold the long string in slight tension. The Model "K" is also available with a hydraulically actuated button-type hold down, as the Model "K" Double-Grip Snap Set Dual Packer, for conditions where pressure differentials from below the packer are anticipated.

Gas Lift

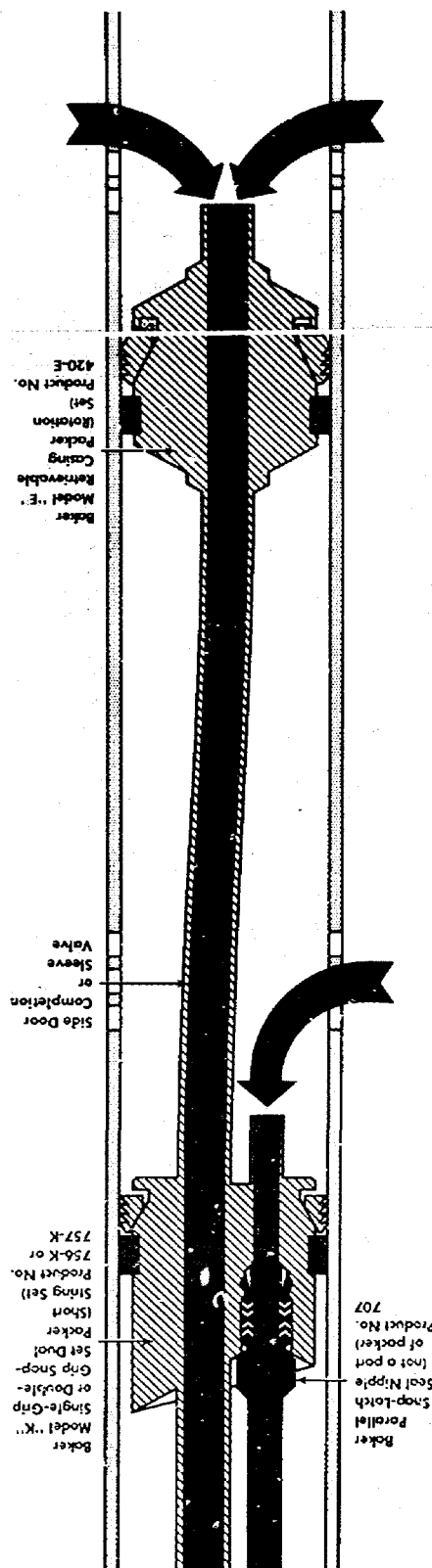
Both zones can be gas lifted using the casing as a gas reservoir. Pre-planned gas-lift installations can be made in which housings for wire line gas-lift mandrels are made up into initial tubing string. When gas lift is required, annular fluid is removed, and mandrels are run in on an instrument line and are installed in the housings.

Pumping

Either or both zones can be pumped, however, it is difficult to vent either zone. In drillable packer hook-up, use of Baker Triple String Flow Tube will permit venting lower zone. Should pumping of both zones with gas-venting become necessary, removal of upper packer and conversion to single packer pumping hookups such as illustrated in Figs. 8 and 9 would be recommended.

Advantages and Disadvantages

Permits complete isolation of each zone at all times, loading of annulus and gas lifting of both zones using annulus as a reservoir. Prime disadvantage is inability to vent either zone for pumping.



Upper and Lower Packers Retrievable. (Fig. 24)

Upper zone confined to separately retrievable short string (full opening with wire taking combinations) containing a Baker Snap Latch Seal Nipple that seats and seals off in head of upper Baker Model "K" Single Grip Snap Set Dual Packer (Fig. 21.) Lower zone confined to full-opening long string that is connected to the lower Baker Model "E" Retrievable Casing Packer (Fig. 23).

Both upper and lower packers are made up on long string and run in to setting depth. Short string and snap latch seal nipple (Fig. 20) run in and stabbed into sealing bore of Model "K" Packer. Model "E" Packer is set by rotating $\frac{1}{4}$ turn to right and setting down weight on the long string. Model "K" Snap Set Dual Packer is set by setting weight down on the short string against the long string. Because the Model "K" does not require the presence of a previously set Retainer Production Packer below it for successful setting, it can be used as the upper packer in many different hookups. It can be used as the upper packer in place of the Model "J" in the hookup described previously, should it be desired to hold the long string in slight tension. The Model "K" is also available with a hydraulically actuated button-type hold down, as the Model "K" Double-Grip Snap Set Dual Packer, for conditions where pressure differentials from below the packer are anticipated.

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Both zones can be gas lifted using the casing as a gas reservoir. Pre-planned gas-lift installations can be made in which housings for wire line gas-lift mandrels are made up into initial tubing strings. When gas lift is required, annular fluid is removed, and mandrels are run in on an instrument line and are installed in the housings.

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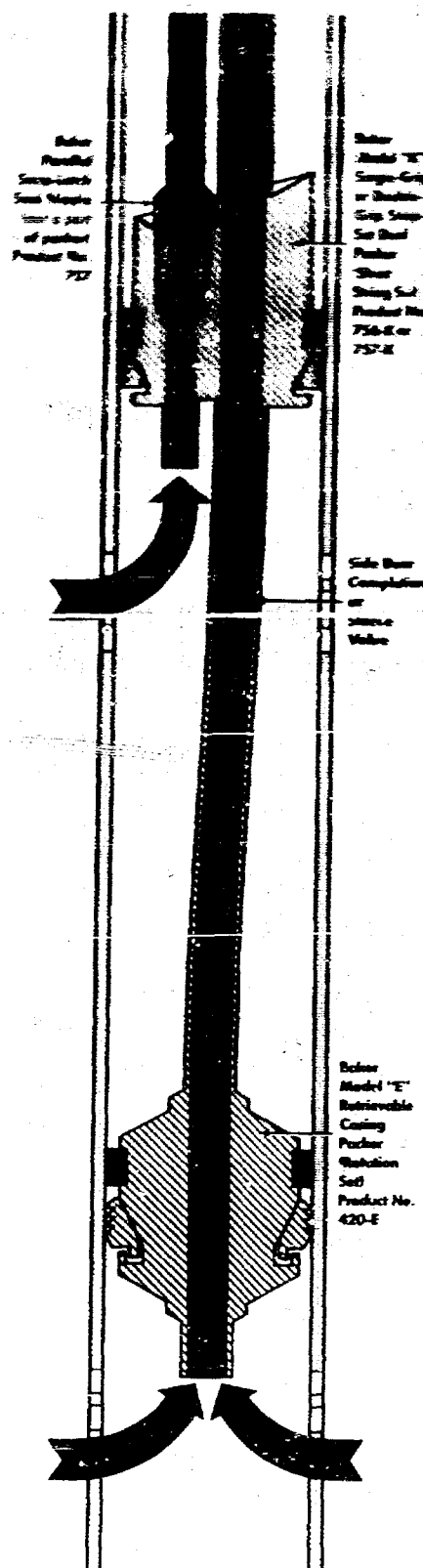


FIG. 24—Production from each zone is confined to its individual tubing string. Full-opening (in some combinations) short string is separately retrievable. Full-opening long string, and retrievable packers are run and retrieved together.

SELECTIVE MULTIPLE ZONE

Single or Dual String Hookups

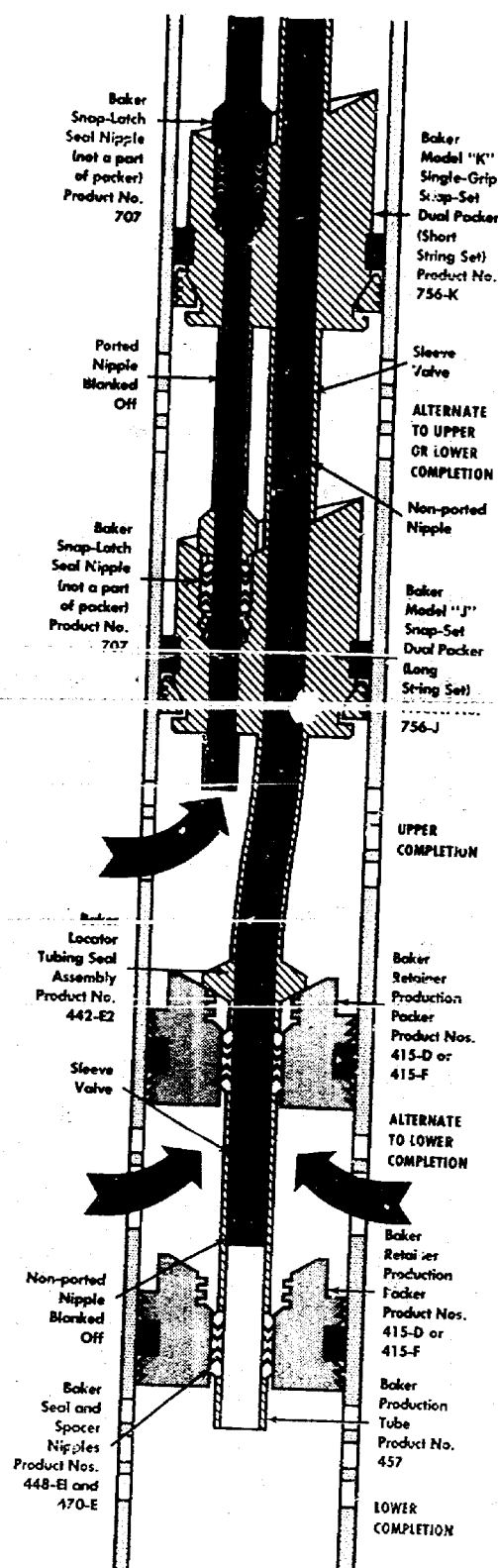


FIG. 25—All alternates to the lower completion are produced through Sleeve Valves, following installation of Plug in adjoining Non-ported Nipple. Upper zone alternate is produced through Side-ported Nipple.

Basis for Selection

Single or dual string hookups with alternate zones isolated by additional packers may be the answer to the expense and exacting requirements of complex and mechanically difficult triples and quads. Fig. 25 illustrates a parallel string installation. The single string equivalent can be visualized by considering only the long string of this installation. By this method, one or more zones can be selectively opened to the tubing string(s) through use of piano-wire-actuated sleeve valves (Fig. 26), non-ported nipples and blank mandrels (Fig. 27) or ported nipples (Fig. 28). This technique is applicable to installations where zones can only be produced a few days out of each month (limited allowable). Under these conditions alternate production from several zones would be economically feasible.

Completion Practice

Installation features Baker Model "K" and Model "J" Single-Grip Snap-Set Dual Packers (Figs. 19 and 21) and two or more Retainer Production Packers (Fig. 2). The Baker Full-opening Parallel Flow Tube and Models "DA" or "FA" Retainer Production Packers can replace the Model "J" Packer in this installation. The hookup illustrated (Fig. 25) shows production from an alternate zone to the lower zone, and production from the upper zone. By blanking-off the long string, through the installation of a blank mandrel in the proper non-ported nipple (Fig. 27) and opening the corresponding sleeve valve (Fig. 26), production from the lower zone, alternate to the lower zone or alternate to the upper zone can be produced through the long string. The upper zone or the alternate to the upper zone can be produced through the short string by closing or opening the ported nipple (Fig. 28).

The Retainer Production Packers are first run and set on a wire line or tubing. The long string is made up to include all seal nipples for the lower packers, required number of ported nipples and corresponding sleeve valves, and the lower Snap-Set Dual Packer. This string is run into the well to a depth equal to the spacing required between the two upper packers. The short string is made up with the lower Snap Latch Seal Nipple (Fig. 20) and the properly positioned blanked off ported nipple. The lower portion of the short string is then run in and is stabbed into the sealing bore of the lower dual packer. It is then connected to the tailpipe on the short string side of the upper dual packer. A special Telescoping Swivel sub (Fig. 22) is available to facilitate this connection. When this swivel sub is used, it is neces-

Lower Zone
Gas Blank-
Off

Baker
Parallel
Flow Tube
Nipple
(Not a part
of Flow
Tube)
Product No.
708

Pump

sary to remove the top guide, receptacle and short string tubing seal nipple from the top packer. The short string will then be directly connected to the packer. This entire assembly is then run into the hole on the long string to the desired depth. The short string containing the Snap Latch Seal Nipple is run into the well and is stabbed into the sealing bore of the upper retrievable packer.

The upper packers are set by the application of set-down weight. No rotation is required. Both Baker Models "J" and "K" Snap Set Dual Packers can be set, released and re-set repeatedly as desired. Well fluids can be displaced as individual tubing strings are run and landed, by swabbing, or by actuating the wire line operated valves as illustrated.

Gas Lift

Single or dual string installations can be gas lifted using casing as gas reservoir.

Pumping

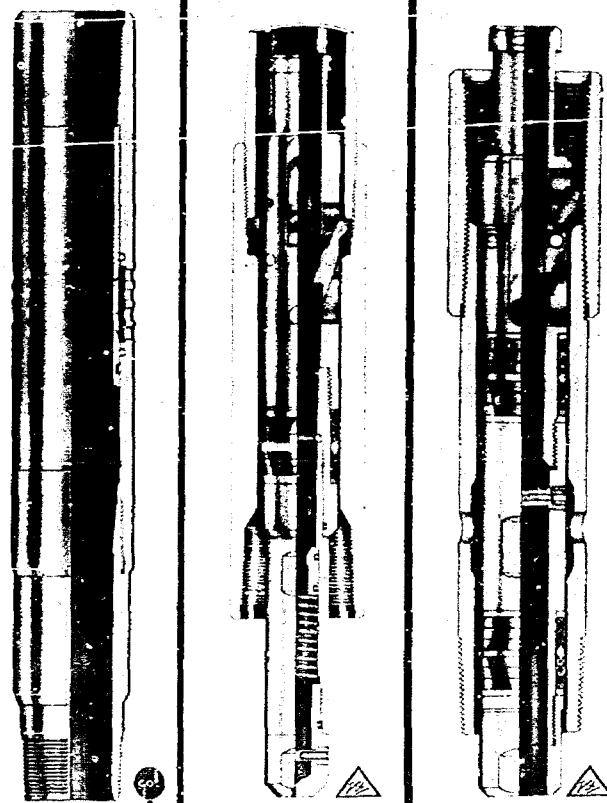
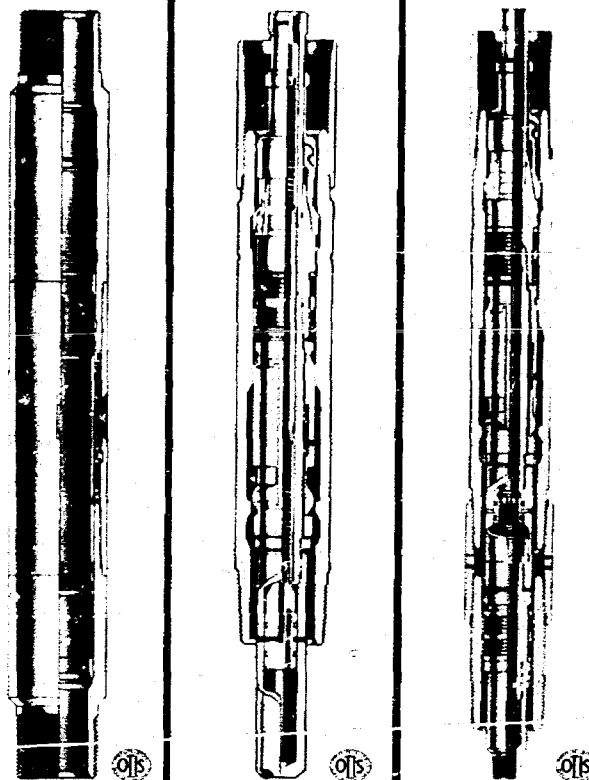
Each zone can be pumped as it is opened to the tubing string, but cannot be vented.

Advantages and Disadvantages

This type of hookup is more economical because no more than two strings of tubing are ever used. Four or five zones can be produced in 7" casing using two strings of 2 $\frac{3}{8}$ " tubing. Normally four-string quads must be made in 9 $\frac{5}{8}$ " casing in order to accommodate four strings of tubing. Hookup is comprised of readily available competitively priced components. No premium need be paid for special equipment. Hookup is easier to install and requires less installation time. The disadvantages of this hookup are two-fold. Under favorable conditions with unrestricted production such as gas, the payout time is longer compared with a triple or a quad. Venting zones to be pumped is a problem but venting is also impossible with triples and quads.

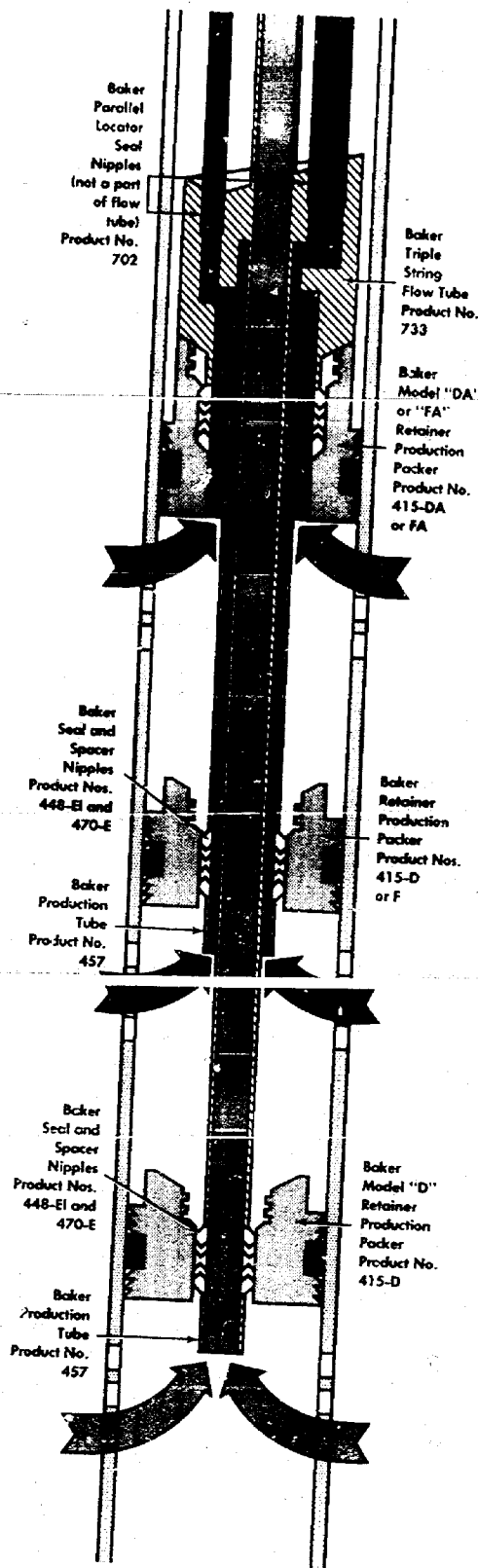
Sleeve Valves, Ported and Non-Ported Nipples

This equipment provides a means of selectively establishing communication between the tubing string and the tubing-to-casing annulus. It can be used to circulate out mud or when positioned opposite any isolated zone can be opened to allow production of that zone through the tubing. Two different designs accomplish a similar result in a slightly different manner. In one design (Fig. 26) control is provided by a sleeve valve that can be opened or closed by means of special tool run on piano wire. When it is necessary to blank off below a sleeve valve a blank mandrel is installed in a non-porting nipple that has been made up into the tubing string (Fig. 27). Another method of accomplishing the same result is through the use of a ported nipple (Fig. 28). Various devices installed in this nipple either open the ports and blank off below or blank off the ports and permit straight-through flow.



TRIPLE ZONE

Parallel String Production



Basis for Selection

Triple completions can be made with dual parallel hookups (Figs. 14, 18 and 24) provided the upper zone can be produced in the annulus. Pumps are now available to pump all three zones of such a hookup simultaneously with a single string of hollow sucker rods and three tandem pumps. For conditions where annulus production is not practical, and where the Selective Multiple can not be used effectively, a true triple using three packers and three strings of tubing as shown in Fig. 29 is recommended.

Completion Practice

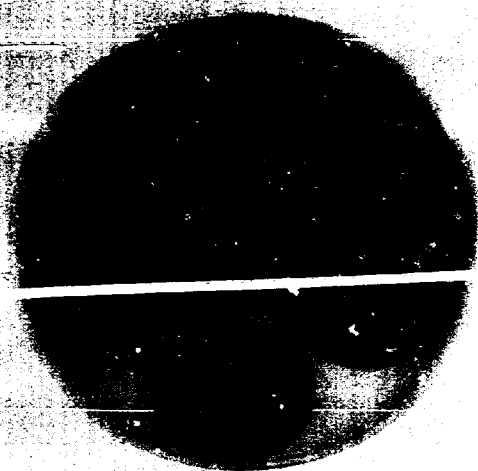
The hookup requires the use of three drillable Retainer Production Packers. The lowermost packer is a conventional Model "D" Retainer Production Packer (Fig. 2). The middle packer can be a Model "D" or the new Model "F" which is similar to the Model "D" but contains a larger continuous bore for the same packer O.D. The uppermost packer can be a Model "DA" or the new Model "FA" Retainer Production Packer (Fig. 17) which contains an even larger upper sealing bore.

The use of Retainer Production Packers provides two important advantages to a triple-string hookup: (1) the most dependable, long-lasting pack-off for absolute isolation of the zones and (2) known drillability as compared with unknown retrievability, an important factor for operators who are concerned about the amount of steel in the hole, required for many retrievable packer multiple-string hookups. Each packer can be run and set through the accuracy and dependability of wire line or on tubing.

The heart of the hookup is the new Baker Triple-String Flow Tube (Fig. 31). Similar in appearance and construction to the Baker Full-Opening Parallel Flow Tube, this new flow tube contains a triple-string head with sealing bores for the short and intermediate strings and a threaded connection for the full-opening long string (Fig. 30). The flow tube contains a lower seal unit assembly that seats and seals off in the upper sealing bore of the uppermost Model "FA" Retainer Production Packer.

Following the setting of the three packers, the lower end of the long string is made up to contain a Baker Full-Opening Production Tube and the Seal and Spacer Nipples required to seat and seal off in the bore of the lowest packer. The intermediate string is made up in a similar manner involving the same accessories, but of larger size to seat and seal off in the bore of the middle (Model "F") packer. Both of these strings are made up concentrically and are connected to the Triple String Flow Tube. This entire assembly is run into the well on the long string

Three separate strings of drillable packers are run into the well through a single string flow tube. Each zone is confined to an individual and isolated tubing string.



1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

[illegible]

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QUADRUPLE ZONE

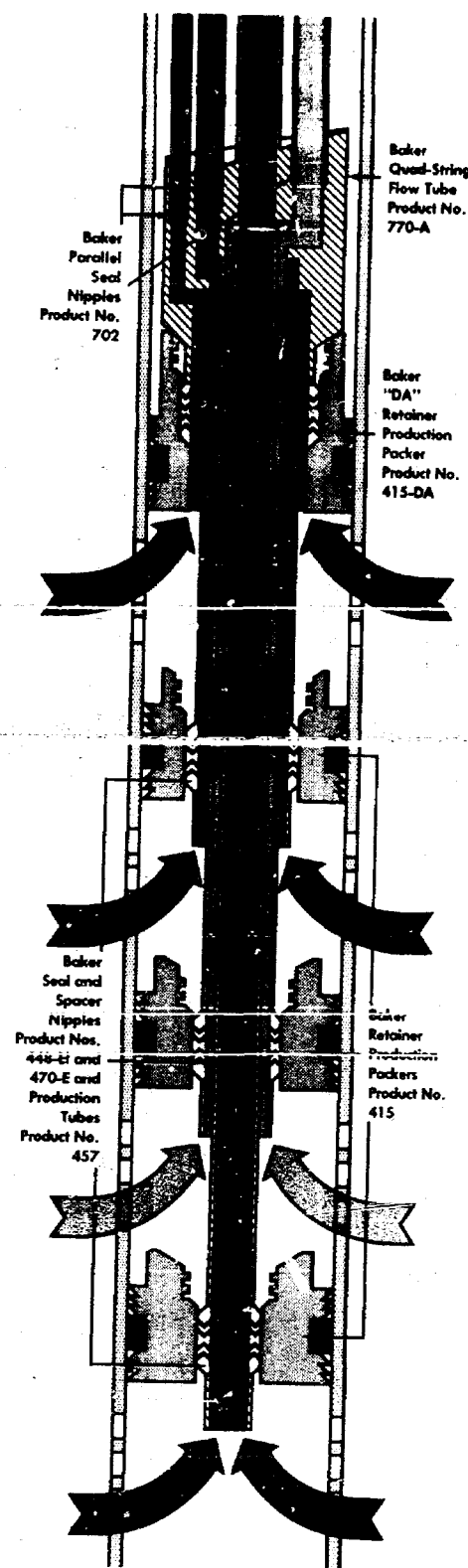


FIG. 32—Installation using four drillable packers. Production from four zones through a quadruple-string flow tube. Each zone is confined to an individual tubing string.

Basis for Selection

Quadruple completions can be made with triple installations (Fig. 29) using three strings of tubing and three packers where the fourth zone is produced in the annulus above the uppermost packer. Where this is not practical, and where a Selective Multiple such as that described on Page 16 cannot be used, a true quadruple completion using four packers and four strings of tubing is recommended (Fig. 32).

Completion Practice

The hookup requires the use of four drillable Retainer Production Packers. The lowermost packer is a special Model "D" Retainer Production Packer which contains a smaller bore than the bore of a standard Model "D" Packer that is available for use in 9 $\frac{5}{8}$ " casing. The next packer above this packer is also a special Model "D" that contains a bore that is larger than that of the lowermost packer but smaller than standard for the 9 $\frac{5}{8}$ " casing size. The next packer is a standard Model "D" Packer. The uppermost packer is a special Model "DA" Retainer Production Packer, that contains a larger lower sealing bore than standard.

The heart of the hookup is the new Baker Parallel Quadruple String Flow Tube (Fig. 34). Similar in construction and appearance to the Triple and Full-Opening Parallel String Flow Tubes, this new Flow Tube contains a head with sealing bores for three separately retrievable strings and a threaded connection for the fourth (full-opening, long) string. Guide tracks are provided so that the strings when run in proper sequence are automatically guided into the correct sealing bore (Fig. 33). The Quad Flow Tube contains a lower seal unit that seats and seals off in the upper sealing bore of the uppermost (Model "DA") Retainer Production Packer.

Following the setting of the four packers on wire line, the long string is made up to include the production tube, seal and spacer nipples for the lowermost packer, the first intermediate packer the second intermediate packer and the quad flow tube for the uppermost packer. These strings are concentric up to the flow tube, whence three individual flow passages terminate in three separate sealing bores and the long string continues through the flow tube. The long string is run in and the seal nipples seated in their respective packers, and the flow tube in the uppermost packer. The short and two intermediate strings are made up to contain their respective seal nipples and are run in sequence to seat and seal off in the proper bores of the parallel head of the quadruple flow tube (Fig. 35).

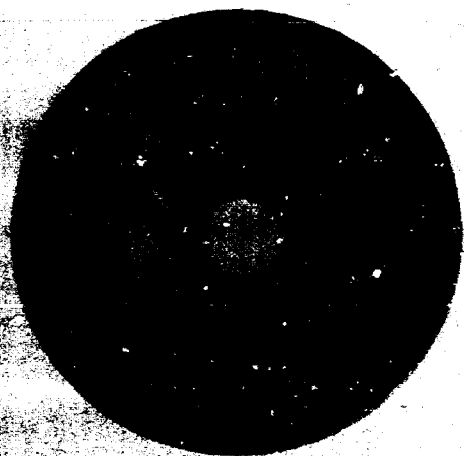


FIG. 33—Top view of receptacle
showing guide tracks;
Quadruple String Flow Tube.



FIG. 34
Baker Quadruple-String
Flow Tube,
Product No. 770.

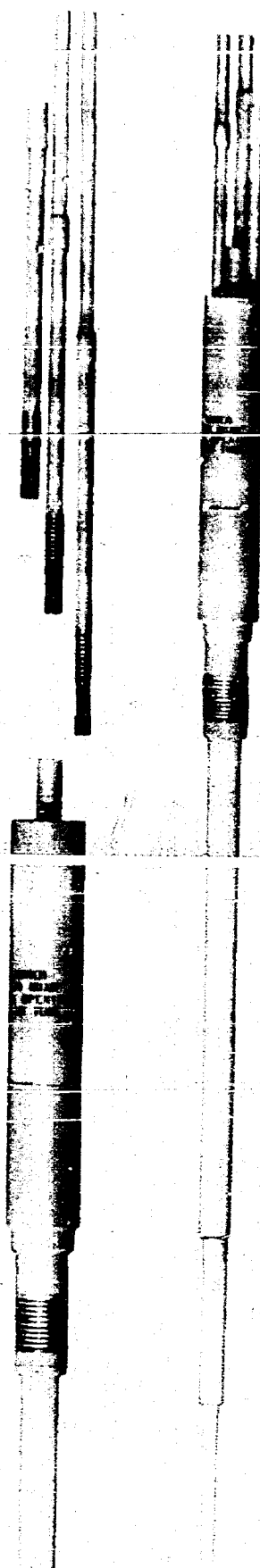


FIG. 35—Illustrates Seal Nipples installed
(right); and removed (left) from Quad. Flow Tube.

BAKER

The exceptional performance of Baker Production Packers is due in large part to the fact that these packers, when set, become a permanent—though drillable—part of the casing. No design compromise had to be made for a release mechanism. Every effort was concentrated on providing operators with the most dependable, high-performance pack-off.

Special emphasis, however, was placed on designing the various parts of the packers to promote maximum drillability. Recently, Baker Retainer Production Packers have become even more drillable, due to the perfection of the Baker Packer Milling Tool (Fig. 36), which is designed to mill over and retrieve Baker Retainer Production Packers.

Drill-out Time Reduced Approximately 75%.

The average time required to drill out a Retainer Production Packer with rock bits ranges from 8 to 16 hours, and then the packer is usually pushed downhole; whereas, the average time to mill over a Retainer Production Packer with the Baker Packer Milling Tool ranges from 2 to 4 hours. And usually no part of the packer is left in the well. After the upper outside portion of the packer is milled up, the balance of the packer is retrieved in over 90 per cent of the jobs.

Both the milling shoe and bottom sub are dressed with hundreds of crushed tungsten carbide chips. Whenever a chip becomes dull, another sharp chip takes its place. Thus the milling shoe and bottom sub will mill for hours before all the chips become dull.

All connections, from the top sub through the bottom sub, are threaded (right-hand thread) and locked with set screws. There are no keys or keyways. The Baker Packer Milling Tool is strong enough to withstand a 50,000-lb. pull.

The milling shoe is stabilized in the casing by the lower portion of the milling tool which rotates inside the packer body.

The Baker Packer Milling Tool, which mills over the packer and retrieves it in one round trip, adds a new dimension to drillability. In addition to drastically decreasing drillout time, the new milling tool makes it possible to safely remove an upper packer of a multiple packer completion without fear of damaging or affecting the performance of lower packers. Not only is the new milling tool rugged and dependable, but it is easy to operate. As a safety feature it can be released from the packer and retrieved if necessary.



FIG. 36—Baker Packer Milling Tool, Product No. 747.

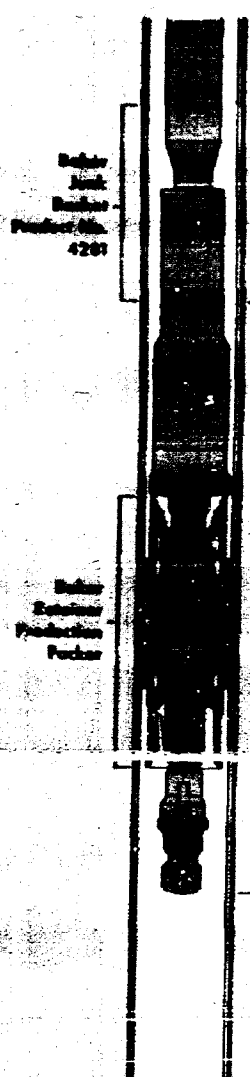


FIG. 37
Installed in
Packer.

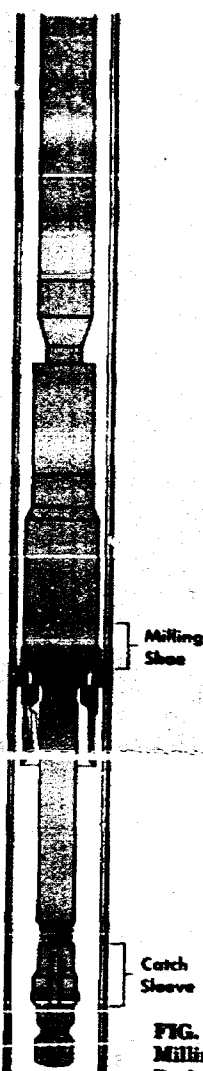


FIG. 38
Milling
Packer.

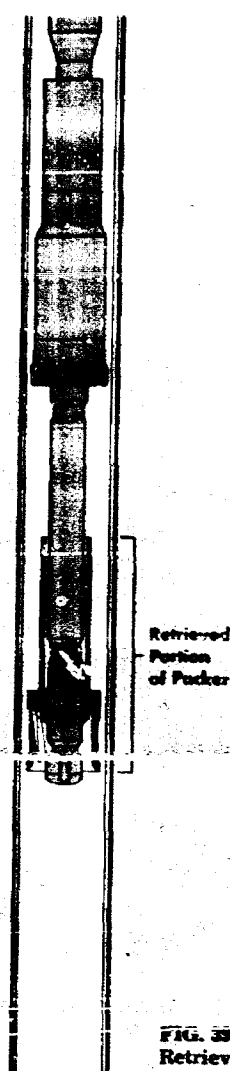


FIG. 39
Retrieving
Packer.

OPERATING INSTRUCTIONS

1. Packer Milling Tool can be run on drill pipe or tubing. A Baker Junk Basket and at least one drill collar should be run between Milling Tool and drill string, refer to Fig. 37.

2. Keep an accurate tally so that the relative positions of Milling Tool and packer are known at all times. When setting depth of packer is known, it is fairly easy to space out the kelly. When packer is tagged, there must be enough of the kelly in the hole to get the kelly bushing in, and sufficient kelly up to completely mill over the packer. If accurate information on packer depth is not available, it is good practice to start feeling for the packer with the kelly three or four joints before the packer is expected, using caution not to go all the way down with the kelly.

3. Adequate circulation is required to keep milling shoe clear of debris. If it is impossible to circulate, dump an occasional barrel of oil or oil-base mud in the drill string for lubrication.

Milling Packer (Fig. 38)

The following weights and rotary speeds should be used as a guide only. Common sense and past experience should govern the milling operation.

4. With pump on, tag packer and set down with about 5,000 lbs., then take a 15,000-lb. strain to be sure catch sleeve is properly latched below packer body.

5. If catch sleeve is properly latched in packer body, set back down and start milling with 2,000 lbs. weight and rotary speed set at 50 r.p.m. Mill a few minutes and check for backlash.

6. If backlash is normal, increase weight to between 5,000 and 8,000 lbs. and increase rotary speed to between 65 and 75 r.p.m. Drill-off should begin at this point.

7. Weight may have to be increased to 10,000 lbs. to keep shoe milling while going through the retaining rings of packer.

8. Continue milling until packer moves downhole. If no progress is made after reaching lower retaining rings, the packer can usually be pulled loose. (Milling Tool will take a 50,000-lb. pull.)

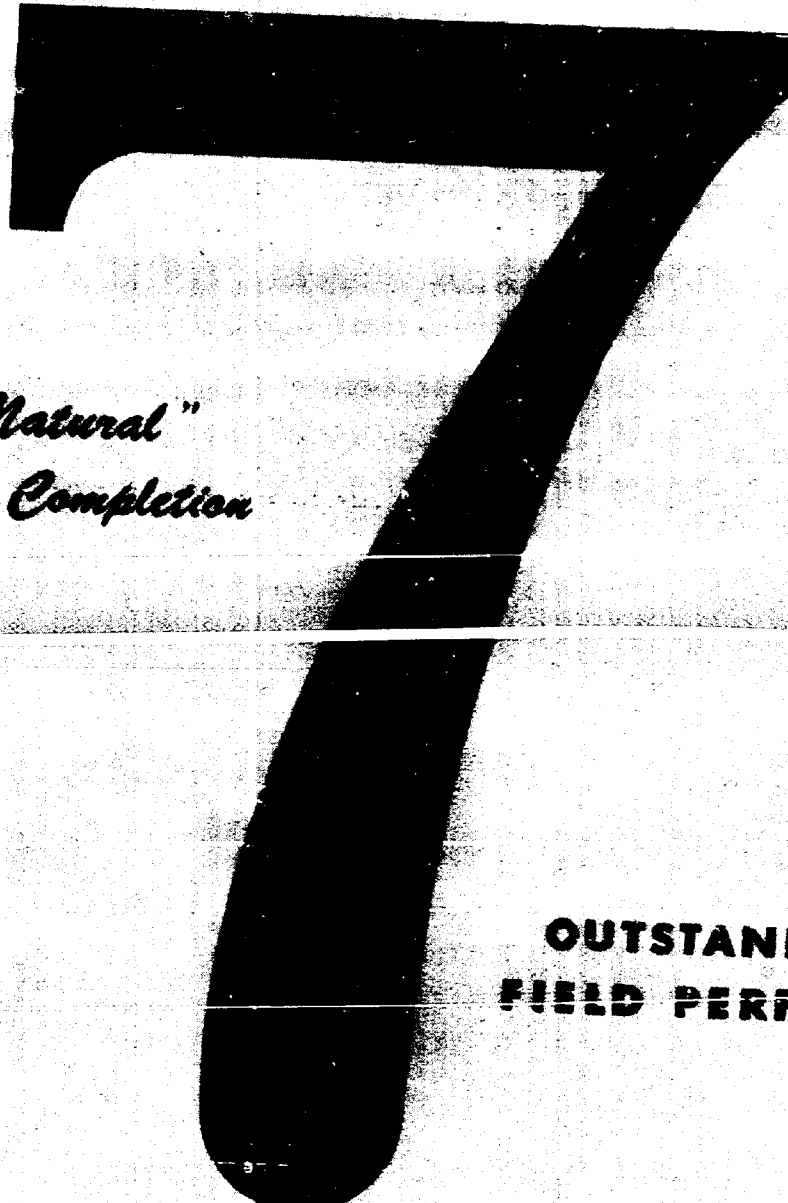
Retrieving Packer (Fig. 39)

9. Always move the packer up and down the full length of the kelly with pump running. Continue this up and down motion until packer moves freely.

10. Remove kelly and come out of hole. Exercise caution in removing the first 8 to 10 stands. Packer may hang up and have to be worked free again.

Emergency Release

To free Milling Tool from packer, take a 5,000-lb. up-strain on drill pipe and rotate at least 10 turns (at tool) to right. If tool does not release from packer, strain should be increased to 10,000-15,000 lbs. before rotating to right.



*A "Natural"
for Every Completion*

**OUTSTANDING IN
FIELD PERFORMANCE**

HOOK-WALL

PACKER

type completion



WILSON FOUNDRY & MACHINE CO.

1710 BURNETT ST. HOUSTON, TEXAS

Remember

there's a

WILSON

.....for every

ty

At any depth, for any purpose—you can run a Wilson Packer and **KNOW** it will do the job. When set it will hold, and when you want to come out of the hole—every Wilson Packer releases quickly and easily.

Whatever type completion you have—the Wilson Packer listed below for that job will out perform any other Packer made today.

- 1 **THE WILSON "LB" PACKER**
—for low differential completions.
- 2 **THE WILSON "LB" PACKER WITH HOLD-DOWN**
—for high bottom hole pressure—low hydrostatic head completions.
- 3 **THE WILSON "MB" PACKER**
—for exceptionally high hydrostatic head and high temperature completions.
- 4 **THE WILSON "MB" PACKER WITH HOLD-DOWN**
—for excessively high bottom hole pressures and/or excessively high hydrostatic head with high temperatures.
- 5 **THE WILSON "MB" (Latch-type) PACKER**
—for high hydrostatic head, where minimum tubing weight is desired.
- 6 **THE WILSON "MB" (Latch-type) PACKER; WITH HOLD-DOWN**
—to be used with tubing guns, when minimum weight on Packer is a must. Also for fracturing, acidizing and dual completions and high temperatures.
- 7 **THE WILSON "MB" (Stinger-type) RETRIEVABLE PACKER; WITH HOLD-DOWN AND BRIDGE PLUG**
—to be used for permanent completions, acidizing, fracturing; to isolate zone. With this Packer, tubing may be retrieved and Packer left in hole.

W

THE WILSON "MB" (Stinger-Type) RETRIEVABLE PACKER WITH HOLD-DOWN AND BRIDGE PLUG

Here is a Wilson Packer that can be set and the tubing pulled—without unseating the Packer. Packer may be retrieved at any time.

This Packer is especially designed for dual completions and permanent installations.

In operation the tubing is screwed into the top of a Sealing Sleeve, which travels over a nipple. A heavy Coil Spring between the top of the Packer and The Sealing Sleeve is used only to push the Packer to the bottom and at the same time retain the Sealing Sleeve in latched position. In setting the Packer, when the desired depth is reached, rotate the tubing to the right for 10 or 12 rounds to insure the release of the Automatic Bottom. Simultaneously with tubing rotation slack off on the tubing until the Packer starts taking weight. As the Packer takes weight the Coil Spring, between top of Packer and Setting Sleeve, will collapse. While adding setting weight to the Packer, maintain a good torque to the right on the tubing to insure that the J-pin will have attained released position in the J-slot as the result of right-hand rotation of the Sealing Sleeve. In this position the tubing is free to be pulled, leaving the Packer completely set. The Packer will be retained in a fully set position because of the Element Latch and the Unit Latch. As the Element is collapsed, the Element Latch, being of ratchet type, will retain the Element in its collapsed position. At the time of setting, the Packer and Top Hold-Down are secured together as a unit.

When it is desired to retrieve the Packer, the Sealing Sleeve is replaced with a Bowen Spear on the bottom of the tubing. The Bowen Spear has a definite stop shoulder at a given distance above the Spear Slips. With this arrangement the stop shoulder will rest on the top of the Nipple at the same time that the Spear Slips are engaged. By lifting the tubing string, the Unit Releasing Sleeve will disengage and allow the Packer to be retrieved from the hole.

With the use of the Wilson Stinger-Type Packer expensive rig time is saved if it is necessary to do corrective work, because the Packer may be retrieved at any time.

THE WILSON "MB" (Latch-Type) PACKER WITH HOLD-DOWN

This Wilson Packer is especially designed for use when fracturing, acidizing and in dual completions and/or when tubing guns are used. It is the answer to the problem of excessive tubing weight.

The following five facts may be achieved:

1. Packer may be run and set with all the weight desired to procure a positive seal.
2. Because of the latch arrangement the Packer will remain in set position for as long as desired.
3. Because the Packer is held in the set position by the latch the tubing can be raised, by-pass opened and the well circulated without disturbing the seal between packer and casing.
4. After circulating, the tubing string can be lowered to close the by-pass and as little as 2,000 to 3,000 pounds tubing weight place on the packer. This leaves an essentially straight string of tubing from the surface to the packer; thus creating the most ideal conditions for the use of wire line tools in tubing.
5. When necessary to release the latch, it is accomplished by simply raising the tubing a little in excess of the setting stroke of the packer.

If you are going to run tubing and set Packer before perforating—the Wilson "MB" Latch-Type Packer with Hold-Down will eliminate all wire-line shooting hazards due to crooked tubing.

CONTACT YOUR SUPPLY STORE

ALSO

DRILPROD CO.
Hobbs, New Mexico

THE "SLIM" LA GRONE CO.
Odessa, Texas

BOWEN-ITCO LTD.
Edmonton, Alberta, Canada

NORBRO SALES
Sherman, Texas
Oklahoma City, Oklahoma

C. A. WHITE
Glendive, Wyoming
Casper, Wyoming
Ft. Morgan, Colo.

FOSTER TESTERS
Perryton, Texas

NORTHERN WELL
EQUIPMENT CO.
Williston, North Dakota
Toga, North Dakota

Printed in U.S.A.

101 SEP 10 PM 1:20

PACKER QUESTIONNAIRE

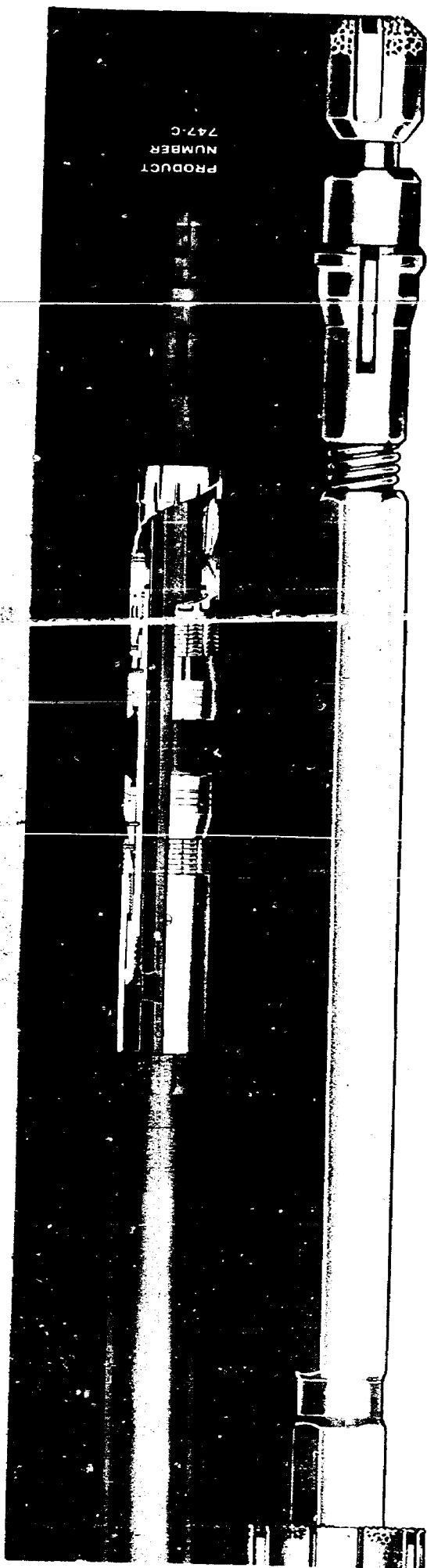
(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
Wilson "LB" Packer	LBSB (Automatic bottom) w/orw/o Hyd. H. D.	Hook wall Production Packer	NO.	Dependent	300 De Frn.
Wilson "MB" Packer	MBSB-w/ automatic btm. w/orw/o Hyd H. D.	DO	NO.	do	350 De. Frn
Wilson Latch Type "MB" Packer	With or w/o Hyd. Hold down.	XXXXXX Fracturing, Acidizing and Dual completion.	SOME	do	350 De. Frn.

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PACKER QUESTIONNAIRE

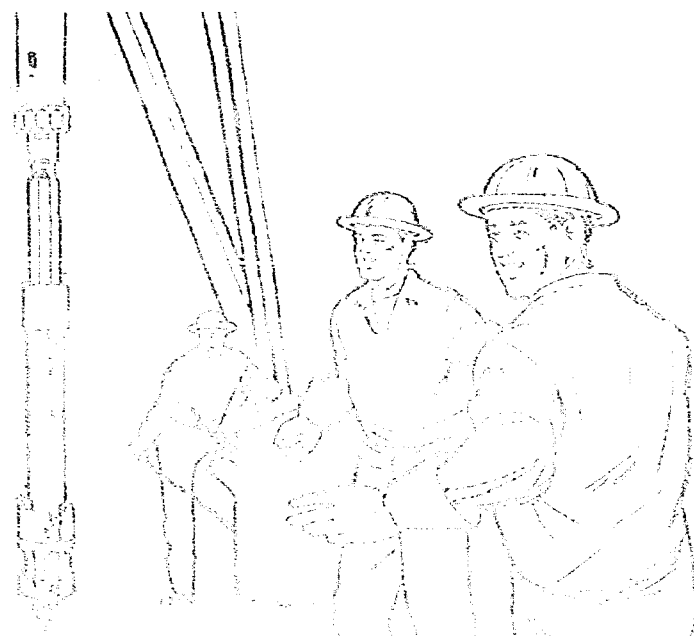
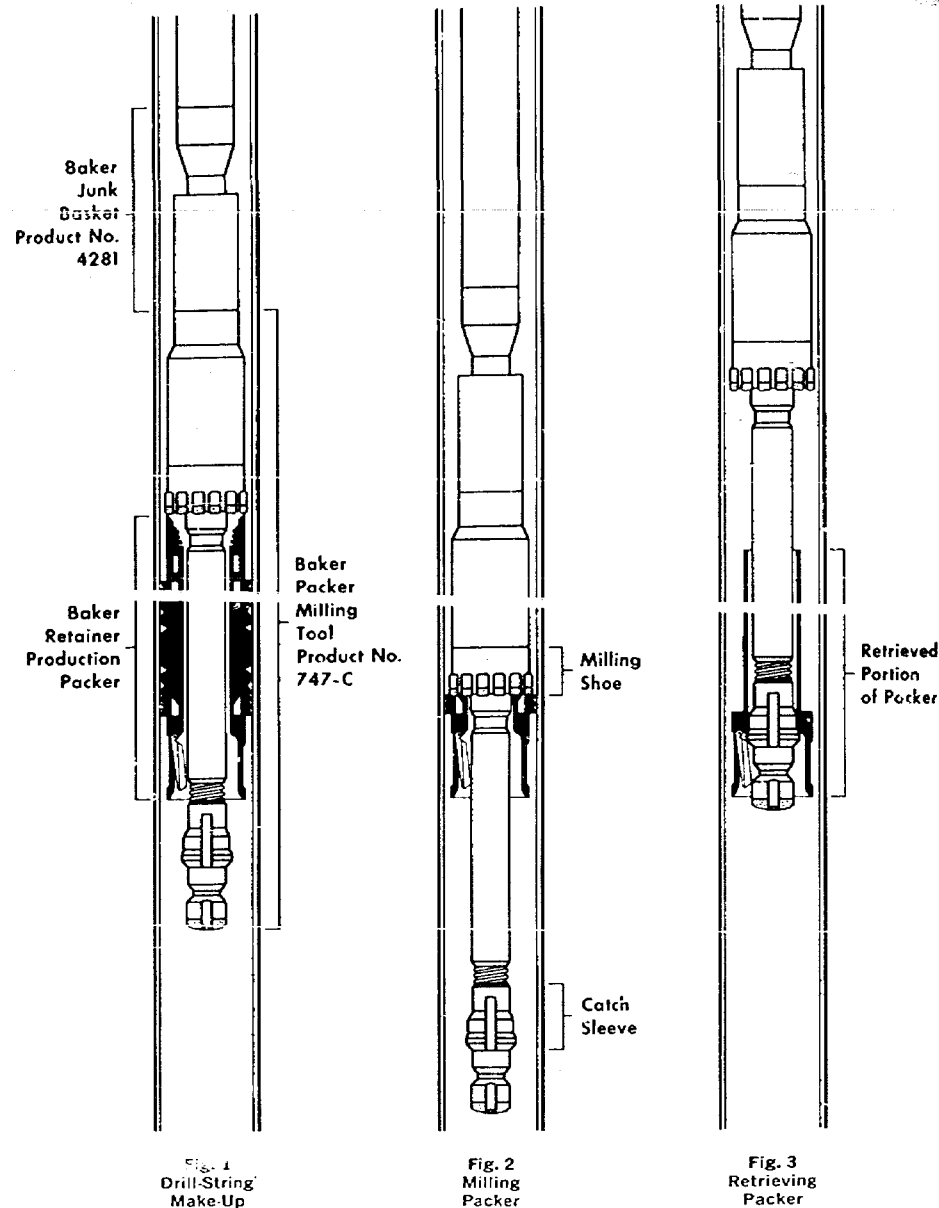
(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
Wilson "LB" Packer	LESS (Automatic bottom)	Hook wall Production Packer	NO.	Dependent	300 De Frn.
Wilson "MB" Packer	w/crw/o-Hyd. H. D.	DO	NO.	do	350 De. Frn
Wilson Latch Type "MB" Packer	MBSB-w/automatic btm. w/crw/o Hyd H. D.	EXCEM Fracturing, Acidizing and Dual completion.	SOME	do	350 De. Frn.
	With or w/o Hyd. Hold down.				



**NEW BAKER
PACKER
MILLING TOOL
CUTS ACTUAL
DRILL-OUT TIME
UP TO**



*New
Baker
Packer
Milling Tool
Mills Over
Retainer
Production
Packer
in 2 to 4
Hours...*



Retriever
Deep Well
Packer
19,425 ft
casing.
milled
two hours
fifty minutes
and the
(shown
retrieved

The average time required to drill on a Retainer Production Packer with this tool is from 2 to 4 hours. The tool is usually milled over the top.

Fig. 1 shows the tool in the packer. A hand is shown at the bottom of the tool.

The tool is shown in the packer in the position of the tool.

NOW BAKER HAS A PACKER MILLING TOOL that mills over a Baker Retainer Production Packer in 2 to 4 hours—reducing actual drill-out time about 75 per cent. And usually no part of the packer is left in the hole. After the upper outside portion of the packer is milled up, the balance of the packer is retrieved in over 90 per cent of the jobs.

This new Packer Milling Tool can be run on drill pipe or tubing. A Baker Junk Basket and at least one drill collar, however, should be run between the Milling Tool and drill string (see Fig. 1). A spring-loaded Catch Sleeve collapses when going through the bore of the packer and expands to catch it. The trapped valve opens once it is through the packer. This positive method of latching makes it possible to retrieve the packer body in nearly every instance.

Both the Milling Shoe and the Bottom Sub of the Milling Tool are dressed with special Baker crushed tungsten carbide. The size and type of chips and the application techniques are the result of extensive Baker research. The resulting combination has proved highly effective. Whenever a chip becomes dull, another sharp chip takes its place—thus the Milling Shoe and Bottom Sub will mill for hours before losing their efficiency.

All connections of this rugged Milling Tool are threaded (right hand thread) and locked with set screws. There are no keys nor keyways. This tool is designed to take it—is strong enough to withstand a 50,000-lb. pull.

The position of the Milling Tool as it mills over the top outside portion of the packer is illustrated in Fig. 2. Note that only the outside of the packer is milled. Note, too, that the Milling Tool is stabilized in the casing by the lower part of the Milling Tool which rotates inside the packer body.

Most jobs are done with full circulation, but in low-fluid wells some jobs are completed without circulating. When it is impossible to circulate, an occasional barrel of oil down the drill string will keep the tool milling.

After the packer is milled over and freed, the Catch Sleeve retrieves the Body, Guide and Junk Pusher of the packer (see Fig. 3). The Milling Tool is designed to mill over a packer and retrieve it in one round trip.

In case of an emergency, the Packer Milling Tool can be released from the packer by holding a 5,000 to 15,000-lb strain on the drill string and rotating to the right until the Catch Sleeve collapses. It has a positive emergency release.

The Baker Packer Milling Tool, Product No. 44-0, is available to mill over and retrieve all models and most sizes of Baker Retainer Production Packers. While it was especially designed for use with these Baker packers, it can also be used to remove any other drillable production packer of a similar design. The Packer Milling Tool is available as a Baker Service in the United States and many other areas. For additional information call your nearest Baker representative or write to BAKER OIL TOOLS, INC., Houston 1, Los Angeles 54, or New York 17.

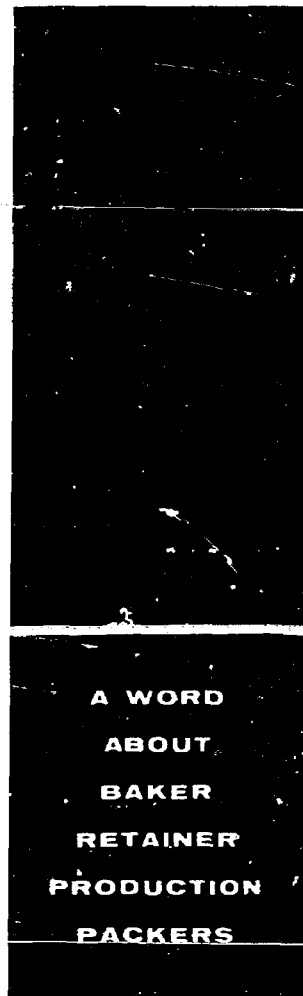
Retrieved from Deep Well Packer, set at 19,425 feet in 7" casing, was milled over in two hours and fifty minutes and the body (shown here) retrieved.



Model "D"
Retainer
Production
Packer



Model "DA"
Retainer
Production
Packer



Model "F"
Retainer
Production
Packer



Model "FA"
Retainer
Production
Packer

The exceptional performance of Baker Retainer Production Packers is due in large part to the fact that these packers, when set, become a permanent—though drillable—part of the casing.

No design compromise had to be made to provide for a release mechanism. Every effort was concentrated on providing operators with the most dependable, high-performance pack-off. That's why today, Baker Retainer Production Packers are the most popular drillable production packers in the World!

These packers offer proven reliability—based on thousands of successful applications over the past 16 years. Many of these applications were under the most rigorous, high-temperature, high-pressure conditions. Yet some of the first models are still providing excellent service.

Special emphasis, however, was placed on designing the various parts of the packers to promote *maximum* drillability. All models of the Baker Retainer Production Packer are constructed of *readily* drillable cast iron and synthetic rubber.

The Baker Packer Milling Tool, which mills over the packer and retrieves it in one round trip, adds a new dimension to drillability. In addition to drastically reducing drill-out time, the new milling tool makes it possible to safely remove an upper packer of a multiple packer completion without fear of damaging or affecting the performance of lower packers.

BAKER OIL TOOLS, INC. • HOUSTON • LOS ANGELES • NEW YORK



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BOX 871
SANTA FE, NEW MEXICO

MAIL OFFICE OCC

McGAFFEY-TAYLOR CORP.

2877 CHERRY AVE.
LONG BEACH 6, CALIF.

PACKER QUESTIONNAIRE

10 SEP 1964 AM 8:18

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer
		NONE			

McGAFFEY-TAYLOR CORP.
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PACKER QUESTIONNAIRE

McGaffey-Taylor Corp.
2877 Cherry Ave.
Long Beach 6, Calif.

(1)	(2)	(3)	(4)	(5)	(6)
Basic Model No.	Variations of Basic Model	Type of Packer	Is this Packer Recommended for Permanent Zone Separation in Dual Completions	Maximum Pressure Differential for which you would Recommend this Packer	Maximum Temperature for which you would Recommend this Packer