



*Consolidated Oil & Gas, Inc.*

LINCOLN TOWER BUILDING  
1660 LINCOLN STREET  
DENVER, COLORADO 80203  
(303) 259-1751

January 24, 1975



U. S. Geological Survey  
Department of the Interior  
P. O. Box 959  
Farmington, New Mexico 87401

Re: Request to Commingle  
Pictured Cliff and Mesaverde Zones  
Linda 1-31  
Ballard Pictured Cliff Field  
Blanco Mesaverde Field  
SW/4 Sec. 31-T27N-R8W  
San Juan County, New Mexico

Gentlemen:

Consolidated Oil & Gas, Inc. is requesting permission to commingle the Pictured Cliff and Mesaverde zones in Linda 1-31 well and to allocate production 42.26% and 57.74% respectively, based on an engineering evaluation of remaining reserves from January 1, 1975 to an abandonment pressure of 50 psig.

Downhole communications of the Pictured Cliff and Mesaverde zones recently occurred, apparently caused by a hole in the Mesaverde production tubing. Corrective action is, therefore, necessary either by repairing the communications problem or by obtaining permission to commingle the two zones and allocate production. A similar problem occurred earlier in the well and was corrected in 1970.

The Mesaverde tubing is sanded in above the permanent packer with frac sand. Repair of the problem will require moving in a workover unit, killing both zones, freepointing and cutting off the tubing above the sand, electronically inspecting the tubing, running a tubing patch and/or washing over and recovering the tubing stub, and returning the well to production as a dual producer. The estimated cost to repair the situation by running a tubing patch is estimated at \$14,700 if no problems are encountered, whereas, correcting the problem by washing over and recovering the tubing stub would add an estimated \$6,000 to the cost if no problems are encountered.

It is Consolidated's understanding that the W/2 of Section 31-T21N-R8W is covered by one base lease from Navajo Indian allottees. Since the working interest owners in the Pictured Cliff and Mesaverde zones are the same and the royalty interest is the same, both royalty and working interests are protected no matter how the production is divided. Thus, from a practical standpoint, the only valid reason for division of production is to properly allocate the production to both zones for bookkeeping purposes. This allocation, we feel, can be done in the following manner:

When production decline curves can not be used with any degree of accuracy due to allowables, changing line pressure, etc., disrupting production performance -- as is the case for the Linda 1-31 well, one of the more acceptable engineering methods to determine gas reserves is to plot a well's static bottom-hole pressure, corrected for compressibility, against the well's cumulative production. Plotting of these points should result in a straight line on coordinate paper if the reservoir is allowed to build to its absolute static condition and the proper compressibility (Z) factor is used. This we have done for both the Pictured Cliff and Mesaverde zones in the Linda 1-31 using the yearly wellhead shut-in pressures reported to the New Mexico Oil Conservation Commission corrected for compressibility to bottom-hole conditions with the aid of a Garrett Computing Systems program. As Graphs I and II demonstrate, a very good straight line fit can be made to the Pictured Cliff points while a reasonably good straight line fit can be made to the Mesaverde points when certain explainable anomalous points are excluded. Using the line fits shown on Graphs I and II and projecting to an abandonment economic limit of 50 psig, the projected ultimate production for the Pictured Cliff is 765,000 Mcf and the projected ultimate production for the Mesaverde is 1,580,000 Mcf. Based on these projections, the remaining reserves from January 1, 1975 for the Pictured Cliff are 342,550 Mcf and 467,960 Mcf for the Mesaverde, or 42.26% and 57.74%, respectively, of the total remaining reserves. (See attached Table I.)

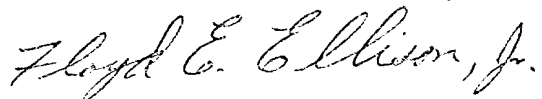
Production history since the hole was repaired in the tubing in 1970 shows a gradual increase in the Pictured Cliff's share of total production due, apparently, to the pressure differential between the zones and the line pressure changing as well as the lowering of the line pressure. The Pictured Cliff share of the total was 30.71% in 1971, 35.37% in 1972 and 43.55% in 1973. A review of production curves suggests only the first 8 months of 1973 should be used for a corrected share of 38.43% since a gradual increase in Pictured Cliff production corresponds with a gradual loss in Mesaverde production beginning in September indicating the

start and enlargement of the tubing hole. This shift toward the Pictured Cliff producing a larger percentage of the total over the last several years supports the crediting of the Pictured Cliff with a larger percentage of the remaining reserves than it produces on a current rate basis.

Even though the approximate current producing rate of 150 Mcf/D from the Pictured Cliff and 230 Mcf/D from the Mesaverde would pay out the tubing repair work assuming no problems are encountered and another hole does not develop at some future date, Consolidated feels the workover expense to correct the communications problem is an unnecessary allocation of resources for both Consolidated and the public. We base our position on the fact that both royalty and working interest owners will be properly protected and production from the well can be adequately allocated to the two zones for bookkeeping purposes. We, therefore, request approval to commingle production from the Pictured Cliff and Mesaverde zones in the Linda 1-31 well and allocate future production 42.26% to the Pictured Cliff zone and 57.74% to Mesaverde zone, based on the above described reserve projection.

Yours very truly,

CONSOLIDATED OIL & GAS, INC.



Floyd E. Ellison, Jr.  
Area Production Manager

FEE:lt  
Attach.

TABLE I

Linda 1-31

| <u>Year</u>                    | <u>Pictured Cliff<br/>Production</u>                             | <u>Mesaverde<br/>Production</u> | <u>Total<br/>Production</u> | <u>Percentage Production</u><br><u>Pictured Cliff</u> <u>Mesaverde</u> |         |
|--------------------------------|--|---------------------------------|-----------------------------|--|---------|
| 1970                           | Not representative. Communications problem corrected during year |                                 |                             |  |         |
| 1971                           | 42,817   | 96,601                          | 139,418                     | 30.71  | 69.29   |
| 1972                           | 47,541   | 86,884                          | 134,425                     | 35.37  | 64.63   |
| 1973 (total year)              | 56,952   | 73,816                          | 130,768                     | 43.55  | 56.49 * |
| 1973 <sup>1</sup> (1st 8 mos.) | 33,086   | 53,000                          | 86,086                      | 38.43  | 61.57   |

\* Not representative. Communications problem appear to have developed late in year.

Remaining Reserves to 50# Abandonment Pressure  
as of January 1, 1975

|                      | <u>Pictured Cliff</u> | <u>Mesaverde</u> | <u>Total</u> |
|----------------------|-----------------------|------------------|--------------|
| Ultimate             | 765,000               | 1,580,000        |              |
| Cum. 1/1/75          | <u>422,450</u>        | <u>1,112,040</u> |              |
| Remaining Reserves   | 342,550               | 467,960          | 810,510      |
| % Remaining Reserves | 42.26%                | 57.74%           |              |

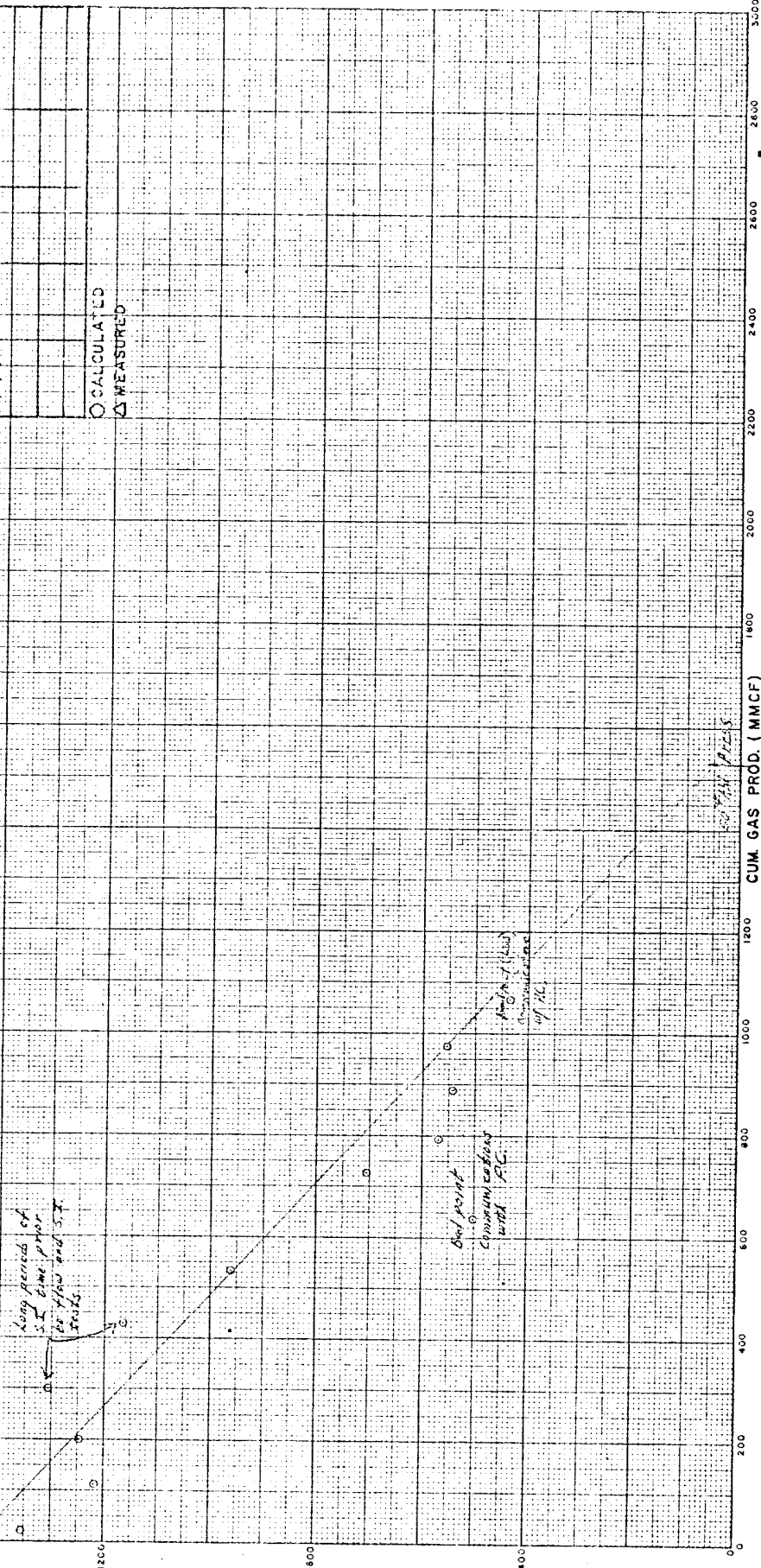
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JAN 29 1975

U. S. GEOLOGICAL SURVEY

|                |                         |
|----------------|-------------------------|
| WELL NAME      | LINDA 1-3, (MESA VERDE) |
| LOCATION SW SW | SEC. 31, T31N-R6W       |
| COUNTY         | SAN JUAN                |
|                | STATE NEW MEXICO        |

| DATE     | WHSP | SITIME | SHIP'Z | CUM PROD |
|----------|------|--------|--------|----------|
| 12/2/42  | 1379 | 7.04   | 1571   | 24,120.2 |
| 12/3/42  | 140  | -      | 1571   | 111      |
| 12/4/42  | 140  | -      | 1571   | 20       |
| 12/5/42  | 140  | -      | 1571   | 211      |
| 12/6/42  | 140  | -      | 1571   | 268      |
| 12/7/42  | 140  | -      | 1571   | 312      |
| 12/8/42  | 140  | -      | 1571   | 312      |
| 12/9/42  | 140  | -      | 1571   | 312      |
| 12/10/42 | 140  | -      | 1571   | 312      |
| 12/11/42 | 140  | -      | 1571   | 312      |
| 12/12/42 | 140  | -      | 1571   | 312      |
| 12/13/42 | 140  | -      | 1571   | 312      |
| 12/14/42 | 140  | -      | 1571   | 312      |
| 12/15/42 | 140  | -      | 1571   | 312      |
| 12/16/42 | 140  | -      | 1571   | 312      |
| 12/17/42 | 140  | -      | 1571   | 312      |
| 12/18/42 | 140  | -      | 1571   | 312      |
| 12/19/42 | 140  | -      | 1571   | 312      |
| 12/20/42 | 140  | -      | 1571   | 312      |
| 12/21/42 | 140  | -      | 1571   | 312      |
| 12/22/42 | 140  | -      | 1571   | 312      |
| 12/23/42 | 140  | -      | 1571   | 312      |
| 12/24/42 | 140  | -      | 1571   | 312      |
| 12/25/42 | 140  | -      | 1571   | 312      |
| 12/26/42 | 140  | -      | 1571   | 312      |
| 12/27/42 | 140  | -      | 1571   | 312      |
| 12/28/42 | 140  | -      | 1571   | 312      |
| 12/29/42 | 140  | -      | 1571   | 312      |
| 12/30/42 | 140  | -      | 1571   | 312      |
| 12/31/42 | 140  | -      | 1571   | 312      |

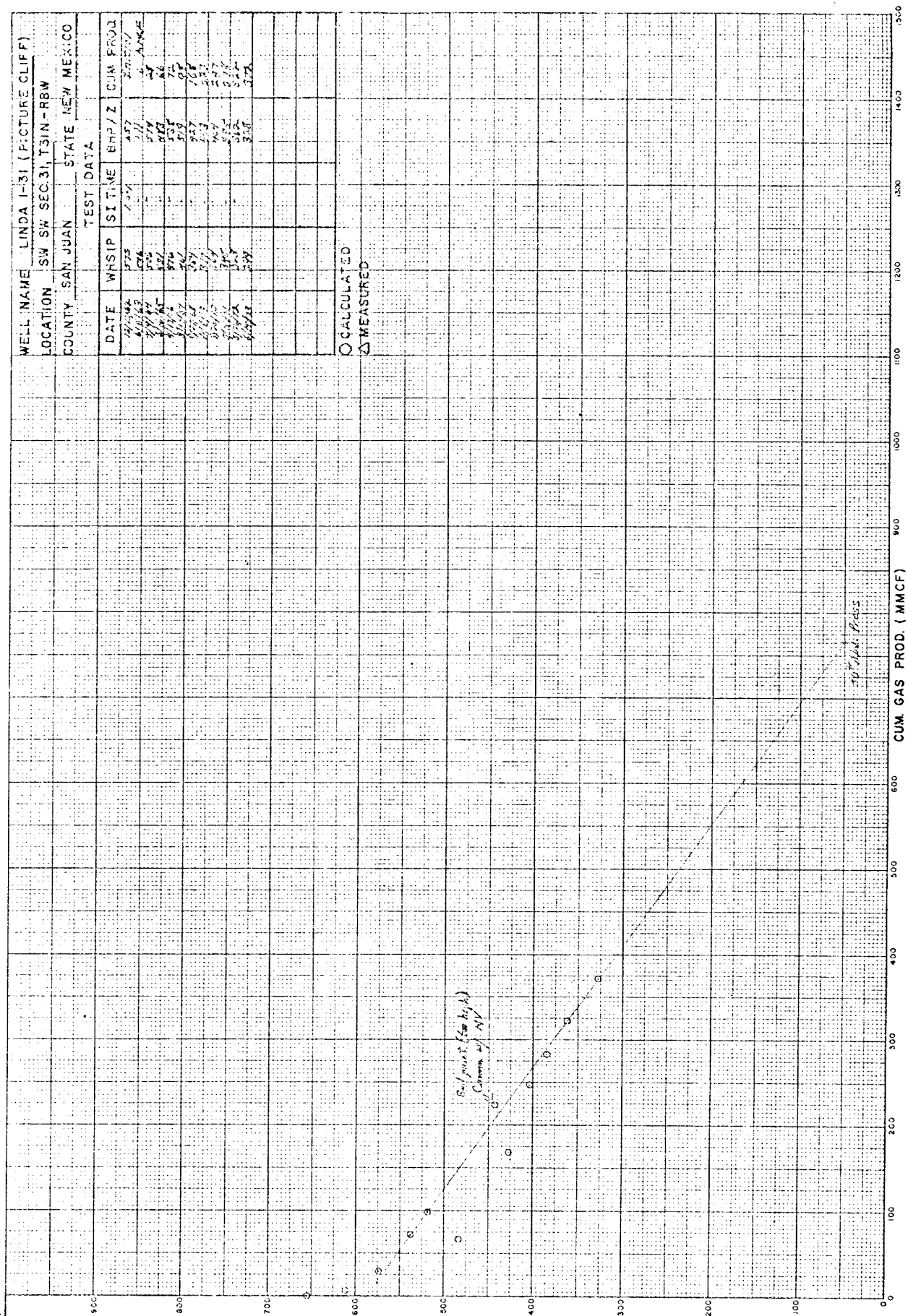


Graph II

|           |                            |
|-----------|----------------------------|
| WELL NAME | LUNDA 1-31 (PICTURE CLIFF) |
| LOCATION  | SW SW SEC.31, T31N-R6W     |
| COUNTY    | SAN JUAN STATE NEW MEXICO  |

| TEST DATA |       |        |       |          |
|-----------|-------|--------|-------|----------|
| DATE      | WHSIP | SITIME | BHP/Z | CUM PROD |
| 12/1/84   | 274   | 1.04   | 457   | 2.07E+07 |
| 12/1/84   | 274   | -      | 457   | 4.44E+07 |
| 12/1/84   | 274   | -      | 579   | 4.8      |
| 12/1/84   | 274   | -      | 579   | 4.8      |
| 12/1/84   | 274   | -      | 538   | 7.2      |
| 12/1/84   | 274   | -      | 519   | 9.6      |
| 12/1/84   | 274   | -      | 937   | 1.08     |
| 12/1/84   | 274   | -      | 1.1   | 1.33     |
| 12/1/84   | 274   | -      | 947   | 1.33     |
| 12/1/84   | 274   | -      | 512   | 1.33     |
| 12/1/84   | 274   | -      | 512   | 1.33     |
| 12/1/84   | 274   | -      | 512   | 1.33     |
| 12/1/84   | 274   | -      | 512   | 1.33     |

|     | ○ CALCULATED | △ MEASURED |
|-----|--------------|------------|
| 1   | 0.00         | 0.00       |
| 2   | 0.00         | 0.00       |
| 3   | 0.00         | 0.00       |
| 4   | 0.00         | 0.00       |
| 5   | 0.00         | 0.00       |
| 6   | 0.00         | 0.00       |
| 7   | 0.00         | 0.00       |
| 8   | 0.00         | 0.00       |
| 9   | 0.00         | 0.00       |
| 10  | 0.00         | 0.00       |
| 11  | 0.00         | 0.00       |
| 12  | 0.00         | 0.00       |
| 13  | 0.00         | 0.00       |
| 14  | 0.00         | 0.00       |
| 15  | 0.00         | 0.00       |
| 16  | 0.00         | 0.00       |
| 17  | 0.00         | 0.00       |
| 18  | 0.00         | 0.00       |
| 19  | 0.00         | 0.00       |
| 20  | 0.00         | 0.00       |
| 21  | 0.00         | 0.00       |
| 22  | 0.00         | 0.00       |
| 23  | 0.00         | 0.00       |
| 24  | 0.00         | 0.00       |
| 25  | 0.00         | 0.00       |
| 26  | 0.00         | 0.00       |
| 27  | 0.00         | 0.00       |
| 28  | 0.00         | 0.00       |
| 29  | 0.00         | 0.00       |
| 30  | 0.00         | 0.00       |
| 31  | 0.00         | 0.00       |
| 32  | 0.00         | 0.00       |
| 33  | 0.00         | 0.00       |
| 34  | 0.00         | 0.00       |
| 35  | 0.00         | 0.00       |
| 36  | 0.00         | 0.00       |
| 37  | 0.00         | 0.00       |
| 38  | 0.00         | 0.00       |
| 39  | 0.00         | 0.00       |
| 40  | 0.00         | 0.00       |
| 41  | 0.00         | 0.00       |
| 42  | 0.00         | 0.00       |
| 43  | 0.00         | 0.00       |
| 44  | 0.00         | 0.00       |
| 45  | 0.00         | 0.00       |
| 46  | 0.00         | 0.00       |
| 47  | 0.00         | 0.00       |
| 48  | 0.00         | 0.00       |
| 49  | 0.00         | 0.00       |
| 50  | 0.00         | 0.00       |
| 51  | 0.00         | 0.00       |
| 52  | 0.00         | 0.00       |
| 53  | 0.00         | 0.00       |
| 54  | 0.00         | 0.00       |
| 55  | 0.00         | 0.00       |
| 56  | 0.00         | 0.00       |
| 57  | 0.00         | 0.00       |
| 58  | 0.00         | 0.00       |
| 59  | 0.00         | 0.00       |
| 60  | 0.00         | 0.00       |
| 61  | 0.00         | 0.00       |
| 62  | 0.00         | 0.00       |
| 63  | 0.00         | 0.00       |
| 64  | 0.00         | 0.00       |
| 65  | 0.00         | 0.00       |
| 66  | 0.00         | 0.00       |
| 67  | 0.00         | 0.00       |
| 68  | 0.00         | 0.00       |
| 69  | 0.00         | 0.00       |
| 70  | 0.00         | 0.00       |
| 71  | 0.00         | 0.00       |
| 72  | 0.00         | 0.00       |
| 73  | 0.00         | 0.00       |
| 74  | 0.00         | 0.00       |
| 75  | 0.00         | 0.00       |
| 76  | 0.00         | 0.00       |
| 77  | 0.00         | 0.00       |
| 78  | 0.00         | 0.00       |
| 79  | 0.00         | 0.00       |
| 80  | 0.00         | 0.00       |
| 81  | 0.00         | 0.00       |
| 82  | 0.00         | 0.00       |
| 83  | 0.00         | 0.00       |
| 84  | 0.00         | 0.00       |
| 85  | 0.00         | 0.00       |
| 86  | 0.00         | 0.00       |
| 87  | 0.00         | 0.00       |
| 88  | 0.00         | 0.00       |
| 89  | 0.00         | 0.00       |
| 90  | 0.00         | 0.00       |
| 91  | 0.00         | 0.00       |
| 92  | 0.00         | 0.00       |
| 93  | 0.00         | 0.00       |
| 94  | 0.00         | 0.00       |
| 95  | 0.00         | 0.00       |
| 96  | 0.00         | 0.00       |
| 97  | 0.00         | 0.00       |
| 98  | 0.00         | 0.00       |
| 99  | 0.00         | 0.00       |
| 100 | 0.00         | 0.00       |



Graph I

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEYSUBMIT IN TRIPPLICATE\*  
(Other instructions on re-  
verse side)Form approved.  
Budget Bureau No. 42-R1421.  
5. LEASE DESIGNATION AND SERIAL NO.

## SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.  
Use "APPLICATION FOR PERMIT—" for such proposals.)

|  |  |
|--|--|
| 1. OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>   | 6. IF INDIAN, ALLOTTEE OR TRIBE NAME<br>I-149-Ind. 8469              |
| 2. NAME OF OPERATOR<br>Consolidated Oil & Gas, Inc.  | 7. UNIT AGREEMENT NAME   |
| 3. ADDRESS OF OPERATOR<br>1860 Lincoln Street, Denver, Colorado 80203  | 8. FARM OR LEASE NAME<br>Linda                                       |
| 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*<br>See also space 17 below.)<br>At surface<br>SW/4 Sec. 31-T27N-R8W | 9. WELL NO.<br>1-31  |
| 14. PERMIT NO.   | 10. FIELD AND POOL, OR WILDCAT<br>Blanco MV Ballard PC               |
| 15. ELEVATIONS (Show whether DE, RT, GR, etc.)<br>KB 6094  | 11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA<br>Sec. 31-T27N-R8W |
|  | 12. COUNTY OR PARISH<br>San Juan                                     |
|  | 13. STATE<br>New Mex.  |

## 16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

## NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF ☐FRACTURE TREAT ☐SHOOT OR ACIDIZE ☐REPAIR WELL ☐(Other) ☐PULL OR ALTER CASING ☐MULTIPLE COMPLETE ☐ABANDON\* ☐CHANGE PLANS ☐Commingle ☒

## SUBSEQUENT REPORT OF:

WATER SHUT-OFF ☐FRACTURE TREATMENT ☐SHOOTING OR ACIDIZING ☐(Other) ☐REPAIRING WELL ☐ALTERING CASING ☐ABANDONMENT\* ☐

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Consolidated requests permission to commingle production from the Pictured Cliff and Mesaverde formations in subject well. Royalty and working interest owners are the same in both zones. Allocation of gas production would be 42.26% to the Pictured Cliff and 57.74% to the Mesaverde based on an engineering estimate of remaining reserves from January 1, 1975 to an abandonment pressure of 50 psig determined by plotting BHP/Z vs. cumulative gas. All produced oil would be credited to the Mesaverde since the Pictured Cliff has not produced any oil in the past.

RECEIVED

JAN 29 1975

U. S. GEOLOGICAL SURVEY  
FARMINGTON, N.M.

18. I hereby certify that the foregoing is true and correct

SIGNED

*Floyd E. Ellery*

TITLE

Area Production Manager

DATE

Jan. 24, 1975

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

\*See Instructions on Reverse Side