

*Handwritten signature*

**RELEASED**

11/8/70



**REPORT OF THE  
COMPTROLLER GENERAL  
OF THE UNITED STATES**



**Department Of The Interior  
Study Of Shut-In Oil And Gas  
Well Completions And Leases —  
GAO Observations**

This report contains information on the scope and methodology of the Department's shut-in study. The Department verified the operators' reasons for shut-in by a records check only and did not independently verify any of the reasons for shut-in. The Department believes that verification by reviewing records is adequate in most cases, since Department records are accumulated from company reports and Department inspections and tests.

*GAO review*

*of Interior's*

*(33)*

*de  
in*

*(B)*

*(140)*

MARCH 30, 1976

702893

**099400**



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-178205

The Honorable Alan Cranston  
The Honorable Ernest F. Hollings  
The Honorable Warren G. Magnuson  
The Honorable Frank E. Moss  
The Honorable Adlai E. Stevenson  
The Honorable John V. Tunney  
United States Senate

As agreed with your offices, we are providing information on the Department of the Interior's investigation of shut-in oil and gas well completions on the Outer Continental Shelf in the Gulf of Mexico. As further agreed with your offices, this report does not include any conclusions or recommendations and completes the work which you requested on January 27, 1975.

We addressed other issues in your request in two reports to the Congress entitled "Outlook of Federal Goals to Accelerate Leasing of Oil and Gas Resources on the Outer Continental Shelf" (RED-75-343, March 19, 1975) and "Outer Continental Shelf Oil and Gas Development--Improvements Needed in Determining Where to Lease and at What Dollar Value" (RED-75-359, June 30, 1975). Copies of these reports were provided to your offices.

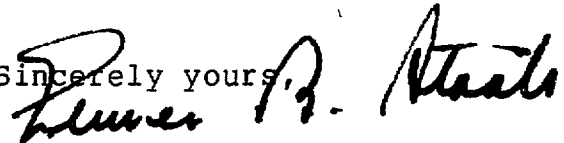
The Department's study of shut-in oil and gas wells was in progress at the time we received your request, and it was agreed with your offices, therefore, that we would initially limit our work to reviewing the scope and methodology of the Department's study and do no further work until the study was completed. On July 3, 1975, we expressed concern as to the adequacy of the study in a letter to the Department's Assistant Secretary, Energy and Minerals. A copy of this letter was sent to your offices on July 7, 1975, and on July 28, 1975, we sent you a copy of the Department's response to our letter.

The Assistant Secretary stated that the Department does not feel it necessary to verify the shut-in status of every well completion and that verification by reviewing records is adequate in most cases.

B-178205

In December 1975, after the Department's study was completed, we analyzed the results and on January 16, 1976, briefed your offices. We noted that the Department of the Interior, in conducting its study, failed to independently verify the basis for the status of the shut-in well completions.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Elmer A. Staats". The signature is written in black ink and is positioned to the right of the typed name.

Comptroller General  
of the United States

DEPARTMENT OF THE INTERIOR STUDY  
OF SHUT-IN OIL AND GAS WELL COMPLETIONS AND LEASES--  
GENERAL ACCOUNTING OFFICE OBSERVATIONS

INTRODUCTION

On January 27, 1975, Senators Alan Cranston, Ernest F. Hollings, Warren G. Magnuson, Frank E. Moss, Adlai E. Stevenson, and John V. Tunney requested the General Accounting Office to review recurrent charges that major oil companies may be delaying or withholding oil and natural gas production from lands leased from the Federal Government.

On January 22, 1975, the Secretary of the Interior instructed Geological Survey to study Outer Continental Shelf (OCS) shut-in well completions and leases in the Gulf of Mexico. The Department focused its study on the following areas:

- Shut-in oil and gas well completions.<sup>1</sup>
- Nonproducing leases with qualified producible wells.
- Certain nonproducing leases with gas reserves.
- Unexplored primary-term (5-year) leases with no drilling operations for 2 consecutive years.

The study was carried out by Survey headquarters personnel for the Gulf Coast area in Metairie, Louisiana. Because the Department's study was in progress at the time we received the request, we agreed to direct our inquiries to the scope and methodology of the study. Our work at the Survey Metairie office raised several points concerning the adequacy of the study and on July 3, 1975, we sent a letter to the Department's Assistant Secretary, Energy and Minerals, about the scope and methodology of the study. Our primary concern was that the reasons for the shut-in oil and gas well completions were not independently verified.

---

<sup>1/</sup> A completion is a producing zone within a well. A well may consist of a single or multiple producing zones. A shut-in completion is one that is not producing due to mechanical, reservoir, or economic problems.

On July 18, 1975, the Assistant Secretary replied that:

- It was not necessary to verify the shut-in status of every well completion.
- Verification by reviewing records was adequate in most cases, since Department records are accumulated from company reports and Department inspections and tests.
- The study of certain shut-in leases was not conducted to cancel leases but to determine if operators exhibited diligence in developing the leases.

In August 1975 the Metairie office sent the results of its study to headquarters. A Department official said that a formal report on its study will not be issued.

#### GEOLOGICAL SURVEY SAMPLING METHODOLOGY

On January 15, 1975, Survey requested Gulf of Mexico OCS operators to provide data on shut-in well completions, including classifying the wells as to future production, the reason for shut-in, and--if production was expected to resume--the estimated production date and expected daily production. Survey personnel prepared a list of about 3,000 shut-in well completions from this data.

A total of 154 shut-in well completions were reviewed during this study. Survey personnel initially selected, on a test basis, four shut-in well completions to determine what would be involved in verifying their status. Survey officials then decided to randomly select about 5 percent, or 150 shut-in well completions for review. However, there was no evidence supporting how the sample was selected.

#### VERIFICATION OF SHUT-IN OIL AND GAS WELL COMPLETIONS

Department personnel verified the operators' reasons for shut-in oil and gas well completions primarily by reviewing regional office records. Most of the data included industry reports which Survey required under its standard operating orders and instructions.

To verify the reasons for the shut-in completions reported by the operators, Survey personnel compared operators' reasons with data in Survey regional office lease files. Survey considered the verification procedures adequate if the regional office records were not over 2 months old and supported the operators' explanations for the shut-in. Using this information, Survey personnel verified 106 of the 154 shut-in completions.

The regional office files on the remaining 48 shut-in well completions were over 2 months old or incomplete; therefore, the following methods were used to verify operators' reasons for shut-in.

	<u>Number of well completions</u>
Survey district office records	2
Records at an operator's district office	1
Operator records at the well site	<u>45</u>
Total	48

The operators' reasons were verified by a records check only; Survey personnel did not independently verify any of the reasons for the 154 shut-in well completions.

The 154 shut-in well completion list includes future utility of the well completions and the basic reasons for the shut-in. (See app. II.)

#### Physical verification of wells already shut in

Survey's summary of operators' reasons for shut-in completion indicated that 94 well completions were plugged or were awaiting plugging operations because they had produced oil or gas to their economic and/or physical limits. Most of the remaining 60 well completions were shut in pending completion of a pipeline connection or were awaiting additional work to restore production.

#### Wells shut in for lack of flow

Survey officials said that the lack of oil and gas flow was generally due to geological formation difficulties, such as pressure depletion caused by excessive

sand, or to mechanical problems, such as collapsed tubing. They said the only way to determine a well completion's potential under these circumstances was to open the well.

Survey officials questioned the merits of this type of testing program for shut-in well completions because of the potential safety and environmental hazards, costs, and technical limitations. They said the verification could be hazardous for well completions filled with sand or where the tubing has collapsed. Sand tends to plug tubing and damage equipment by its erosive action, and a sudden flow of oil or gas could cause an uncontrolled flare of oil, gas, or other fluids. Furthermore, because well completions shut in for 6 months or longer are required by Geological Survey regulations to be plugged, special equipment would be needed to remove the plugs.

#### Wells shut in for other reasons

Well completions are also shut in when they wait for a market or produce a high gas-oil ratio. Survey officials did not offer any additional evidence for not independently verifying the reasons for the shut-in well completions. They acknowledged that a high gas-oil ratio could be easily verified by passing the oil or gas through separators located on the platforms.

Survey officials accept operators' reasons as a valid basis for shut-ins but have not attempted to independently review and verify the production potential of shut-in well completions.

#### Study of recoverable reserves<sup>1</sup>

The Department included a study of recoverable reserves on shut-in wells as a part of their investigation of the 154 shut-in oil and gas well completions. A Survey field official said that reserve estimates were based on an analysis of geological and engineering information obtained from operators. Seventeen completions were not included in

---

<sup>1</sup>/ Identified deposits known to be recoverable with current technology under present economic conditions

the study for various reasons, such as transferring the well to the State, the well's location on an expired lease, using the well for injection or in production.

The study of the remaining 137 completions indicated

--34 completions with possible gas reserves,

--19 completions with possible oil reserves, and

--84 completions with no reserves.

As of December 31, 1975, Survey had estimated reserves on 40 fields in the Gulf by reservoir<sup>1</sup> (103 leases) and had made rough reserve estimates on 200 other fields. Survey believed that by June 1979, it will have estimated reserves for all fields in the Gulf of Mexico (now approximately 250) by reservoir.

#### Verification before shut-in

Survey field officials said that a pre-shut-in testing program to determine each well completion's potential could be implemented by Survey district offices under their regular inspection program. They believed each district would need one or two more technicians to carry out the program.

On July 18, 1975, the Department stated that it had no plans, however, to physically verify the ability of existing shut-in well completions to flow or to require Survey verification of the well conditions before shut-in. The Department believes that verification by reviewing records is adequate in most cases, because this information is obtained from operator reports and Survey inspections and tests.

Survey officials plan to institute a reporting system in June 1976 to identify shut-in well completions on a quarterly basis. Survey plans to select a sample of shut-in well completions from each quarterly report and to verify their status at their next regularly scheduled inspection.

---

1/

A natural underground rock formation in which the pore space is sufficient to contain a liquid, such as oil or water and gas.



However, Survey officials said that the verification would generally consist of only a visual check of records and well equipment.

They added, that if necessary and in cases where feasible, the well would be opened to determine flow. They gave no specific criteria as to what conditions would make it "necessary" to check the flow but outlined only general areas that would have to be considered. Survey field officials generally do not favor independent verification of a well completion's ability to flow. They said reviewing the operator's records was an adequate and reliable test.

#### Reporting shut-in well completions

On July 18, 1975, the Department said that a notice to lessees and operators, dated April 18, 1975, required operators to promptly report the shutting-in for more than 5 days of any well completion which produces significant quantities<sup>1</sup> of oil or gas. Survey procedures require that Survey personnel review the reasons for shut-in on all wells to verify that shutting-in the well was appropriate. If the operation's validity is questionable, the procedures call for a field inspection by Survey inspectors or additional justification from the operator.

However, Survey field office officials said they do not independently verify that shutting-in well completions are proper, nor does Survey determine that all shut-in well completions are being reported.

#### SHUT-IN LEASES

To determine if operators were diligently developing gas leases, the Department directed Survey to study the validity of shutting in certain gas leases. In March 1974 the Federal Power Commission (FPC), in a report on producible shut-in oil and gas leases on the OCS, reported that as of January 1974, 168 producible shut-in gas and oil leases were in the Gulf of Mexico.

---

<sup>1</sup>/ Defined by Survey as 200 barrels per day for oil and 4 million cubic feet per day for gas.

Survey studied 17 of the 168 leases.

Total oil and gas leases in FPC report		168
Less:		
Unitized leases	(a) 12	
Oil leases	<u>37</u>	<u>49</u>
		<u>119</u>
Leases with less than 40 billion cubic feet of gas reserves		(b) <u>58</u>
		<u>61</u>
Leases under contract	24	
Leases under advance payment agreements	13	
Leases making suitable development progress	<u>7</u>	(c) <u>44</u>
Shut-in leases reviewed by Survey		<u>17</u>

Note a/

Leases authorized by Survey to be shut in to use a common platform on an adjoining or adjacent lease for development and production.

Note b/

Survey decided that since any leases purposely shut in to await higher prices would have to be profitable, leases with gas reserves less than 40 billion cubic feet were marginal and should be eliminated from the study.

Note c/

Survey eliminated these leases from the study because there was no incentive to shut-in in anticipation of higher prices.

The Department's effort to verify the 17 shut-in leases, like that for shut-in well completions, was limited to analyzing records; justifications submitted by the lessees were not independently verified.

Survey's study disclosed that 2 of the 17 leases were producing, 1 was in the midst of an intensive development program, 2 were relinquished, and 12 were allowed to retain their leases for additional periods of time. Department officials directed Survey to monitor the lease activities and to exercise greater scrutiny in approving further requests for suspension of production.

As of December 18, 1975, the 12 leases were in the following stages.

- Extensions of 12 to 13 months were approved for four leases (whose primary 5-year terms would have expired on December 31, 1975) because (1) additional time was allowed for further exploratory drilling, (2) a well was being drilled from a platform on an adjacent lease, (3) an operator was considering drilling an additional well, and (4) a production platform was being fabricated.
- Seven leases were still in a suspension-of-production status, which had been approved because the lessees: (1) were in process of drilling a well, (2) were in process of fabricating production facilities, (3) had a commitment to drill well, install platform, or surrender lease, or (4) had a development plan which provided for production start-up.
- Action had been postponed on one former Louisiana lease because such leases may be maintained for 3 years by semiannual shut-in gas payments. The 3-year period will expire on January 1, 1977. The Solicitor's office ruled that former State leases are subject to all OCS rules and regulations and believed that the shut-in gas payments provisions would be nullified. The Solicitor's opinion, however, will not be enforced until January 1, 1977.

#### Suspension-of-production procedures

Before the end of the primary term (5th year) of a lease, a lessee can submit a written request and justification to Survey for a suspension of production. Survey officials said they approve the first two requests if some action is being taken to get the lease on production. For subsequent approvals of suspensions, they said that Survey requires a positive commitment to develop the lease or to relinquish it. A positive commitment can be drilling a well or installing a platform. Suspensions are presently approved for periods less than 1 year, some for as few as 3 months. During 1975, 104 suspension requests were received and 7 were denied.

Survey officials said that because of differing circumstances, each request is evaluated on its individual merits. Lease files are reviewed to determine the number

of wells drilled, the amount of production, and other similar activity. They said that Survey also determines whether the lessee carried out the activity proposed in a prior suspension.

Survey officials said they do not have the necessary staff to independently verify the justifications submitted by lessees. The basis for a decision on each request hinges on the need for extending the lease and on past lease activity. In most cases, only a request letter is submitted to Survey. Survey officials also said leases in a suspension status are not monitored, although Survey may require the operator to submit progress reports.

In February 1975 the Department established a task force to review regulations and lease terms under the Outer Continental Shelf Lands Act and to develop criteria to evaluate requests for suspensions. On December 19, 1975, the Department published a proposed OCS Order No. 14 in the Federal Register, to insure that lessees show adequate diligence in the exploration, development and production of oil and gas from OCS lands under lease. The proposed order, which is not yet completed and is subject to change, contains certain requirements for justification and approval of suspensions. However, the proposed regulation does not require Survey's independent verification of the justification.

CLASSIFICATION OF  
154 SHUT-IN WELL COMPLETIONS BY  
FUTURE UTILITY AND REASON FOR SHUT-IN

FUTURE UTILITY

A nonproducing, temporarily abandoned well completion with no future utility that is awaiting final plugging operations. 89

A nonproducing completion being saved for possible future use as a service point in a sand reservoir. Such a completion may serve as an injection or producing well in supplemental or secondary recovery operations. 7

A completion which is currently nonproducing with a reasonable expectation of restored production with additional work. 37

A completion currently nonproducing awaiting a pipeline connection and/or market. A completion currently nonproducing awaiting installation or repair of surface facilities, flow lines, compressor facilities, etc. 16

Plugged and abandoned. 5

Total 154

REASON FOR SHUT-IN

Produced oil or gas to some economic or physical limit; now depleted. 51

Not currently producing because of a high gas-oil ratio. The shut-in is intended to conserve reservoir energy and to maximize ultimate recovery. 3

Not producing because of a high water cut. This shut-in is also intended to conserve reservoir energy to maximize ultimate recovery. 11

REASONS FOR SHUT-IN (continued)

Not producing because it cannot flow against current line or separator pressures. Such a completion may have a high water cut and can conceivably produce with artificial lift (pump or gas pressure) or in the case of a gas well, with additional compressor capacity.	7
Sanded up.	8
Mechanical problems.	27
Nonproducing but waiting for completion of platform work, such as drilling or construction.	1
Nonproducing but waiting for connection or repair of pipeline or other transportation facility.	8
Nonproducing but a work over in the same zone has been approved or is a reasonable prospect.	4
Temporarily abandoned but a recompletion to another zone has been approved or is a reasonable prospect.	9
An unperforated expected completion usually in a new well in an operation where all steps to complete have been taken but perforating has been suspended until other work is finished or until markets are available.	1
An alternate completion which has been perforated but will not be produced until the existing completion is finished.	2
Nonproducing but is in an existing or proposed supplemental or secondary recovery operation to be used as an injection or producing well or both.	1

## APPENDIX II

## APPENDIX II

Other than established classifications.	10
No classification.	<u>11</u>
Total	<u>154</u>

Note: Geological Survey established the above classifications and on January 15, 1975, asked the operators to review and categorize their shut-in completions according to these classifications.

**AN EQUAL OPPORTUNITY EMPLOYER**

**UNITED STATES  
GENERAL ACCOUNTING OFFICE  
WASHINGTON, D.C. 20548**

**OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300**

**POSTAGE AND FEES PAID  
U. S. GENERAL ACCOUNTING OFFICE**



**THIRD CLASS**