

APPENDIX N

FINAL WELL REPORTS

1. Format

Five copies of the Final Well Report, on letter-size paper and suitably bound, are to be prepared; three are to be sent to COGLA (Engineering Branch), Ottawa, and two to the relevant COGLA regional office. For the area offshore Newfoundland, five copies of the Final Well Report are to be sent to CNOPB. The title page should include the report's date and the name of the operator's representative responsible for the report. ok

2. Contents

The subjects detailed below are to be addressed in the report. If information pertaining to a particular heading does not exist, will not become available or is not applicable to the well in question, a statement to this effect should be made. Most measurements should be given using the S.I. system and dates and time given as Yr./Mo./Day/Hr. Most information submitted will be kept in confidence as required by Sections 230-233 of the Drilling Regulations.

a) Introduction

i) Summary

ok

A recapitulation of some 200 words telling the nature and purpose of the well, name of the operator and contractor, type of drilling

unit used, a resumé of operations at the wellsite, information on the formations penetrated, and the results of testing.

ii) Locality Map *OK*
A single page map showing the location of the well with respect to an identifiable shoreline or topographic features.

b) General Data

i) Well Name and Number and Exploration Agreement Number No E.A. Number.
Full federal designation with unit, section and grid area. See Appendix F: "Naming of Wells on Frontier Lands".

ii) Well Location *OK*
Surveying systems used to determine final well position.

iii) Unique Well Identifier ✓
To be supplied, if required, by COGLA (Engineering), Ottawa or CNOPB, St. John's.

iv) Operator and Drilling Contractor ✓
Full name and address of each.

v) Drilling Unit ✓
Name, type or class, registry, year built and shipyard.

vi) Position Keeping N/A
Method used to maintain drilling unit on location.

vii) Support Craft *N/A*
Name, type and owner of support ships and aircraft.

viii) Drilling Unit Performance *N/A*
Graphs of prevailing weather and sea conditions, including wave period. Summary of vessel performance in response to these conditions on the same time scale as that of the first graph. The analysis should be derived from the records of the environmental observer, with emphasis on peak or critical periods.

ix) Difficulties and Delays *N/A*
A summary of problems not directly associated with downhole operations, such as delays in drilling due to incompetent foundation or anchoring conditions. Causes such as weather, pack ice, and icebergs should also be given and broken down into hours-per-month, and indicated on the drilling unit performance graphical summary.

c) Summary of Drilling Operations

i) Elevations
Rotary table; sea floor.

ii) Total Depth
Drilled; logged; plugged-back depth if applicable.

iii) Date and Hour Spudded.

- iv) Date Drilling Completed. ✓
- v) Date of Rig Release. ✓
- vi) Well Status (Suspended, abandoned or completed). ✓
- vii) Hole Sizes and Depths ✓
Table of bit diameters for each section of hole.
- viii) Casing and Cementing Record ✓
Size, weight, grade, make, number of joints, type of thread, date and depth set, and sacks of cement. If a casing cementation report was not previously submitted, provide the location of shoes, centralizers and scratchers, cement additives, calculated cement rise behind casing, and make and type of casing hangers and seals.
- ix) Sidetracked Hole N/A
Reason for sidetracking; method used and effectiveness of operation.
- x) Drilling Fluid ✓
Basic type of fluid system and summary of properties maintained for each phase of the hole.
- xi) Fishing Operations ✓
List with a brief summary of operations for each occurrence and identification of fish left in hole along with a statement of the probable cause of the problem.

xii) Well Kicks *None*
Details of any kicks encountered, control methods used.

xiii) Formation Leak-Off Tests (FLOT) ✓
Details of depth, fluid density, applied pressure, mud weight equivalent, and last casing depth.

xiv) Time Distribution ✓
A table of the hourly activity as recorded on the IADC/CAODC Daily Drilling Reports from the hour the well was spudded to the time the rig was released, showing the total hours for each type of operation.

xv) Deviation Survey *OK*
Plan view showing the location of the borehole with respect to the wellhead for a discovery well, a development well and any well that deviated more than 10° from the vertical over any part of the hole. Bottom-hole co-ordinates referenced to surface location for all wells.

xvi) Abandonment Plugs *N/A (Suspended)* ✓
Tables summarizing type and depths of plugs and nature of fluid remaining between plugs.

xvii) Composite Well Record ✓
A chart of drilling activities on a suitable depth scale. The information to show major lithological units, rates of penetration,

gas detection curves, hydrocarbon shows, cores, bit record, casing points; test intervals and plugs. Records prepared during the course of drilling may be utilized as the basis for this composite well record but the depth scale must be consistent. The mud data logger's reports are a valuable part of this record.

d) Geology

i) Drill Cuttings ✓
Prescribed frequency of sampling and intervals for which samples were not obtained. Distribution of samples and location of stored suites of cuttings.

ii) Cores ✓
- Conventional: table showing core number, interval, recovery.
N/A → Sidewall: depths sampled and portions recovered. If tested to destruction, give results (use of an appendix or separate report is acceptable).
- The location of storage for any remaining core.

iii) Lithology ✓
Lithological description of cuttings and cores, including sidewall, wireline, conventional cores, and including any visual shows of hydrocarbons, as seen under either conventional or fluorescent light.

iv) Stratigraphic Column ✓
Table of formations or biostratigraphic units showing name, age, lithology, paleontology, depth, sub-sea elevation and thickness of each stratigraphic unit penetrated.

v) Biostratigraphic Data *None*
Chart summarizing the biostratigraphic data (palynology, micropaleontology) with reference to the lithostratigraphic picks in the well.

e) Well Evaluation

i) Downhole Logs ✓
Date, run number, type, interval, and service company. Consolidated copies of logs to be included.

ii) Other Logs ✓
Logs, such as computed dipmeter, deviation and drift surveys, and records from gas detection and mud logs.

iii) Synthetic Seismograms, Velocity Surveys, *None*
Vertical Seismic Profiles*

a) Synthetic seismograms processed to match the operator's recent seismic data in the vicinity of the well and displayed on an equivalent time scale.

* Pursuant to Section 50 of the Canada Oil and Gas Act, this information may be kept confidential for five years.

None

b) Final report of vertical seismic profile surveys, which includes the information required for velocity surveys and a display of the profile on a time scale corresponding to the time scale of the operator's seismic data near the well.

None

c) Final report of velocity surveys (check-shot surveys) which includes summary tables of: true vertical seismic time, relative to the datum of the seismic data; interval velocity, average velocity and root-mean-square velocity; and reflection co-efficient sequence. Required only if vertical seismic profiles are not available for the well.

iv) Formation Stimulation *N/A*

Date, intervals, method, contractor, stimulants, and quantities and results.

v) Formation and Production Test Results *OK*
Date, test number, interval tested. The method of obtaining pressures and results should be presented in brief.

f) Environmental Well Report

(See Appendix K.)

g) Appendices to Well History Report

Appendices may be used to give details on the subjects below, if such have not been given elsewhere in the report:

- i) Oil gas and water analyses. ✓
- ii) Reservoir engineering data on cores and ~~None~~ cuttings, porosity, permeability, fluid saturation, density measurements, etc.
- iii) Photographic record of core under natural ~~None~~ and ultra-violet light.
- iv) Details of formation and production testing. ~~OK~~
- v) Petrological reports.* ~~None~~
- vi) Paleontological reports.* ~~None~~
- vii) Palynological reports.* ~~None~~
- viii) Geochemical reports.* ~~None~~
- ix) Age determinations (K/Ar, etc.). ~~None~~
- x) Processed combination of well logs.* ✓

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- xi) Deviation and drift records. ✓
- xii) Gas detector log or mud logging records. OK
- xiii) Completion data such as tubing and N/A stimulation records.
- xiv) Composite well records. ✓
- xv) Final survey plan. ✓
- xvi) Mud data logger's report. None