MARATHON OIL COMPANY

COMMENTS ON PROPOSED RULES AND REGULATIONS
HOUSE BILL 23 - "ENHANCED OIL RECOVERY ACT"

BEFORE THE
OIL CONSERVATION COMMISSION
MARATHON OIL COMPANY
EXHIBIT NO. 1-M
CASE NO. 10492

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Marathon has reviewed the rules and regulations for EOR project certification, as proposed by the Oil Conservation Division, and believes that additional clarification is needed in several areas. These modifications are offered so that operators and the Oil Conservation Division will have a mutual understanding as to the intent and application of the rules and regulations governing the "Enhanced Oil Recovery Act".

Several definitions listed in Section C should be expanded. The first is the definition of "Enhanced Oil Recovery (EOR) Project". Marathon supports the specific recovery processes listed; however, vertical/areal conformance treatments and cyclic injection projects utilizing steam, CO_2, and natural gas (huff 'n' puff projects) should also qualify for severance tax relief, if used in a systematic plan.

Any EOR project is optimized when high volumetric sweep efficiencies are obtained by the injected fluid. Each reservoir has unique rock and fluid properties which determine the effectiveness of hydrocarbon displacement from the reservoir. Reservoir heterogeneities such as layers or zones of different

permeability, channels of high permeability, or existence of naturally occurring fractures establish natural flow paths for the fluids. Effectively managing any displacement process often requires small volumes of high viscosity fluids to be injected into a reservoir thereby diverting the fluids into areas of the reservoir not previously swept. Processes such as these improve recovery by enabling the injected fluids to contact a larger portion of the reservoir.

Some small oil reservoirs with only a few wells are not amenable to "classical" improved oil recovery technology. It may be cost prohibitive to drill injection wells to implement a fluid drive process such as waterflooding. However, in some of these situations, cyclic processes including steam, CO_2, and natural gas (huff 'n' puff projects) may recover significant incremental oil. In these processes, the production well is temporarily converted to an injection well, shut in for a soak period, and then returned to production. Cyclic processes may be the only EOR technology which can be applied in these small fields and the oil from these projects should qualify for the severance tax relief when they have demonstrated "positive production response".

In summary, Marathon recommends that the definition of "Enhanced Oil Recovery (EOR) Project" be amended to read as follows (under scored material is new):

"Enhanced Oil Recovery (EOR) Project" means the use or the expanded use of any process for displacement of crude oil from an oil well or pool classified by the Division other than a primary recovery process, including but not limited to the use of a pressure maintenance process, a waterflooding process, an immiscible, miscible, chemical, thermal or biological process, a vertical/areal conformance process, a cyclic injection process, or any other related process, whether the process is applied on a single well or multiple well basis as part of an overall development plan.

Under the definition for "Expansion or Expanded Use", Marathon believes that the rules should specifically address the addition of injection and producing wells or the change of injection patterns within existing enhanced oil recovery projects that will result in the recovery of oil that would not otherwise be produced.

Areal continuity in a reservoir is extremely important for successful EOR projects. In many cases, reduced well and pattern spacing will minimize the effects of reservoir heterogeneities by more efficiently propagating frontal advance. New injection points in the reservoir will allow injectants to contact previously unswept areas resulting in improved oil recoveries.

The modified definition of "Expansion or Expanded Use" as recommended by Marathon is as follows (underscored material is new):

"Expansion or Expanded Use" means a significant change or modification as determined by the Oil Conservation Division in (a) the technology or process used for the displacement of crude oil from an oil well or pool classified by the Division; including, but not limited to, the addition of infill injection and producing wells, and

the change of injection patterns; or (b) the expansion, extension or increase in size of the geologic area or adjacent geologic area that could reasonably be determined to represent a new or unique area of activity.

The definition of "Termination" requires additional clarification. Many EOR processes involve the injection of a slug of chemical, polymer, CO_2, gas, etc., followed by drive fluid (usually water). The drive fluid displaces the slug through the reservoir optimizing oil recovery. It is important that this definition not be misconstrued to mean that the project is terminated when the "slug" injection is converted to water or gas injection. Suggested modification of this definition is as follows (underscored material is new):

"Termination" means the discontinuance of an enhanced recovery project by the operator. The method of determining the termination date of an approved enhanced oil recovery project shall be set out in the Division's certification of approval of the project.

Finally, Marathon believes that Section D , Paragraph 2 of the proposed regulations should be amended to include the key date January 1, 1994 and its significance. Proposed revisions are as follows (underscored material is new):

2. To be eligible for the recovered oil tax rate the operator must apply for and be granted Division approval of a new EOR project or the expansion of an existing EOR project prior to the commencement of actual injection of fluids into the reservoir, provided, however, no project or expansion approved by the Division prior to March 6, 1992 shall qualify for the recovered tax rate. Non-carbon dioxide EOR projects may be approved by the Division between March 6, 1992 and January 1, 1994 even though, such projects will not be eligible for the recovered oil tax rate until January 1, 1994.

In summary, Marathon believes these clarifications to the proposed regulations are important for implementing House Bill 23. It is imperative that the State and its agencies continue to work with industry so that all may benefit from this Enhanced Oil Recovery Program.