

discharging produced water separation/treatment facilities in Texas.

The total annual cost of Option 4 for BAT control of produced water discharges from existing facilities is estimated at \$30.9 million (1992 dollars) for the entire coastal subcategory. \$29.2 million of this total would be incurred by operators in the Gulf Coast states of TX and LA in attaining zero discharge. The remaining \$2.3 million would be incurred by Cook Inlet operators in complying with the oil and grease limitations. EPA finds this cost to be economically achievable for the reasons discussed later in Section VII of this preamble but are briefly summarized here. Total production losses realized from this option are expected to total 15.2 million bbls over the lifetime of the wells and platforms subject to this rule which equals up to 1.7 percent of total lifetime production for the Gulf and Cook Inlet combined. The net present value losses of producer income associated with this decrease in production is \$153.2 million. A total of 111 wells in the Gulf coast area (2.4 percent of all current Gulf coast wells) and no Cook Inlet platforms are considered likely to shut in immediately when this proposal becomes final. Furthermore, a maximum of 12 Gulf operators might fail as a result of this BAT option (2.8 percent of the current Gulf operators). No company failures are expected in Cook Inlet. This option would reduce the pollutant loading from this wastestream by 4.3 billion pounds per year.

c. Rationale for Selection of BAT.

EPA proposes Zero Discharge; Cook Inlet Improved Gas Flotation Option 4: as BAT for produced water. This option prohibits discharges of produced water from all coastal facilities, except for those facilities located in Cook Inlet. Coastal facilities in Cook Inlet would be required to comply with the oil and grease limitations (29 mg/l 30-day average, 42 mg/l daily maximum) based on improved operating performance of gas flotation. EPA has determined this option to be economically achievable and technologically available, and that it reflects the BAT level of control.

Zero discharge is technologically available because injection of produced water is currently ongoing in much of the coastal subcategory at the present time and adequate geological formations exist to accept produced water. By 1996, 72 percent of the facilities in the Gulf region will be meeting zero discharge. The oil and grease limit applicable to Cook Inlet is technologically available for the reasons discussed elsewhere in this preamble, the record for this rule, as well as in cited portions of the

rulemaking record for the Offshore Guidelines.

Option 4 is economically achievable because, as the economic analysis shows (in Section VII), total production losses in terms of oil production as a result of this proposed rule are expected to range between 1.0 percent and 1.7 percent of total lifetime production for both Cook Inlet and the Gulf. Additionally, only 2.4 percent of all current Gulf coastal wells (111 out of 4675 current Gulf coastal wells) and no Cook Inlet platforms are considered likely to shut in as a result of this rule. These shut-in wells tend to be relatively low-producing and marginal wells. At most, only 2.8 percent of the operators in the Gulf (12 of the estimated 435 Gulf coastal operators) might fail as a result of a zero discharge requirement and no firm failure is expected in Cook Inlet, as a result of meeting oil and grease limits of 29 mg/l 30-day average and 42 mg/l daily maximum for produced water. (The range of firm failures in the Gulf is actually 0-12, but because data were not available to rule out the possibility of failures, EPA assumed possible failures to be actual failures.) The "average" Gulf coastal firm does not discharge produced water and coastal firms are expected to face average (medium) declines in equity or working capital of 0 percent. Of the 122 discharging firms, average (medium) declines in equity or working capital of 0.37 percent and 2.63 percent, respectively, are expected to occur. These impacts, combined with the fact that most Gulf coastal operators (72 percent) will not be discharging by 1996, show Option 4 to be economically achievable.

Option 5, zero discharge all was not selected based on the unacceptable economic impacts estimated for the Cook Inlet operators. EPA's economic analysis shows that 3 of 13 platforms would be "shut-in" or closed down and believes that this economic impact is unacceptable in Cook Inlet. EPA did not select the "Flotation All" or "BPT All" options as preferred because they, applied industry-wide, do not represent BAT or NSPS level of control. As stated previously, all coastal operations in California, Alabama, Florida, some parts of Louisiana and the North Slope of Alaska do not discharge produced water, but inject their produced water underground either to comply with permit limitations or to enhance hydrocarbon recovery. EPA has therefore concluded that control options based on the continued discharge of produced water in all areas of the country do not represent BAT or NSPS. Non-water quality environmental

impacts for the proposed Option 4 consist of incremental air emissions of approximately 2800 tons/year across the entire subcategory. Given that an average Gulf coast production facility may alone produce approximately 188 tons/year of emissions, this option would increase air emissions by about 13 percent. EPA considers this increase to be acceptable. A description of estimated non-water quality impacts, consisting of additional energy requirement and air emission created by complying with the proposed requirements and other options being considered are discussed in Section VIII of this preamble and in more detail in Chapter XIV of the Coastal Technical Development Document.

d. Rationale for Selection of NSPS.

For NSPS control of produced water discharges from new sources, EPA is proposing the "Zero Discharge All" (Option 5) prohibiting discharges of produced water from all new sources. Option 5 is economically achievable for the reasons discussed in the economic impact analysis and in Section VII, below. This NSPS option is estimated to cost approximately \$4.5 million annually for the entire coastal subcategory. This cost would be incurred only by Gulf Coast operators where EPA estimates that approximately 6 new production facilities will be constructed per year. No new sources are expected in the Cook Inlet (See Section VII). However, were new sources to be installed in Cook Inlet, the preferred NSPS option of zero discharge is not expected to cause a barrier to entry because new project operations would still be quite profitable. For a new source, EPA estimates that the decline in internal rates of return would only be reduced from 39 to 37 percent and therefore would not be likely to affect the decision to undertake a new project. In addition, the impact on Net Present Value from the zero discharge requirement (2.9 percent) is not substantially different from the impacts on Net Present Value from the proposed BAT option for Cook Inlet platforms (2.4 percent). Thus existing and new platforms would face similar impacts on Net Present Value and Internal Rate of Return. In addition, as discussed in Section VIII, EPA has determined the non-water quality environmental impacts to be acceptable for the NSPS option for produced water. Total incremental emissions from the proposed option is approximately 64 tons/year for NSPS. As a comparison, an average Gulf coast production facility may produce approximately 188 tons/year of emissions. EPA considers this