



OIL: A Slippery Business

Cleaning up in N.C.

by Mercer Doty

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On August 26 of last year Gov. Jim Hunt announced that North Carolina would spend \$1.4 million to establish the first plant in the United States to use a new process developed by the Phillips Petroleum Co. for the recycling of waste engine oil from automobiles. The reaction of the public and the news media was favorable. It seemed like a happy union of environmental protection, resource conservation, and good politics. And the Governor said the plant would pay for itself in five years and make \$1 million per year profit after ten years.

For North Carolina, the project is a major step toward responding to the N. C. Energy Conservation Plan, signed by Hunt in early 1977, which included as one of several options the operation of a state-owned recycling facility.

The Center found, however, that:

- The proposed state plant is supposed to operate at a profit, but it will be competing for waste oil with some of the state's own private businesses. This seems likely to force the price of waste oil to rise and increase the cost of the state program as well as the costs of private processors.

- The oil produced by the Phillips process has not been subjected to accepted quality tests by an independent laboratory. The state's conclusions concerning the quality of the re-refined oil have been based entirely on test data supplied by Phillips.

- The state has agreed to buy a process that has never been publicly disclosed and, as a result, has not been widely discussed and debated by scientists and engineers best qualified to evaluate it. According to Phillips Petroleum the process is probably understood by only one person in North Carolina, and he is under oath not to disclose it.

- The proposed plant is supposed to be a good buy, but at least two other alternatives may be feasible at less cost, and they use processes that are fully disclosed and currently undergoing independent testing. These alternatives have not been adequately studied.

In view of these findings the Center asked the Governor's office why the administration signed a contract with Phillips and entered a field in which private enterprise is expected to expand rapidly in the next few years. Gary Pearce, the Governor's press secretary, responded that "The answer is basically a leadership issue. The state saw, and seized, an opportunity to be part of a pioneering energy- and money-saving effort. Gov. Hunt feels strongly that it is the role of government to take the initiative and break new ground in this area, and this reprocessing plant, the first of its kind in the world, is a prime example of state government fulfilling its role. . ."

According to a 1976 Federal Energy Administration fact sheet, more than 18 million gallons of waste oil is generated in North Carolina each year, and a lot of it is either dumped by people who change their own oil or it is spread on roads to settle the dust. Both practices create serious environmental problems.

For years the petroleum industry has known that waste oil can be cleaned and re-used because oil never wears out in normal use. But, in the past, opposition from the industry as well as federal tax and labeling rules have crippled the shrinking waste oil re-refining business. Now, however, oil shortages and growing concern for the environment are changing this, and since 1972 the federal government has been doing research aimed at the recovery and re-use of waste oil and at reviving the re-refining industry. The opposition of the big oil companies has quietly diminished, and in 1975 the Congress passed the Energy Policy and Conservation Act (EPCA) that provides financial support for state plans to reduce energy consumption by 5 per cent by 1980. The preparation of the Energy Conservation Plan for North Carolina in response to this federal legislation began in the fall of 1976. By March, 1977, it had been completed, signed by Gov. Hunt, and sent to Washington.

The state plan included three proposals dealing with engine lubricating oil. One was for the state purchasing office to test synthetic oils by using them in state vehicles. Willis Holding, the state purchasing officer, says that nothing is being done on this because the use of synthetics does not yet appear to be economically feasible. Their initial cost is indeed high—about \$11.50 a gallon wholesale or about nine times the price the state pays for a gallon of conventional oil. But the synthetics have shown amazing durability while improving both fuel and oil economy. A former chief of engine lubrication for the Ford Motor Co. has been quoted as saying that he will use synthetic oil and change it every 100,000 miles or five years, whichever comes first.

The second proposal in the state plan involved legislation to encourage the public to recycle waste engine oil and to improve and regulate waste oil collection. It would require stores that sell more than 500 gallons of oil per year for off-premises use to provide and clearly mark collection points where used oil can be turned in. Rep. Charles Holt of Fayetteville introduced such a bill in the 1977 General Assembly. It didn't get very far even though the state energy office estimated it would save over 900 million BTU's in North Carolina by 1980, or about 1 per cent of the state's energy savings goal. According to Holt, his bill stopped dead in committee because "about the time we got ready to take it up they passed the bill that put the state in the business."

The third proposal was for the state to operate a waste oil reprocessing program "as a profit-making venture." This idea ultimately led to the Governor's announcement.

According to state feasibility study recommendations the plan is to collect waste engine oil in tank trucks and deliver it to Raleigh where it will be re-refined in a plant now being assembled by Phillips Petroleum. The original idea was to get the waste oil from state and local governments, but the authorization passed by the General Assembly puts no restriction on the sources. The plant will be shipped to North Carolina and reassembled this summer if all goes well. Once re-refined, the oil will be sold to state and local government users in 55-gallon drums. The re-refining facility as well as the collection and distribution systems will be operated by Prison Enterprises, the arm of the Department of Correction that runs about 14 service and manufacturing activities which train inmates and sell products to tax-supported agencies.

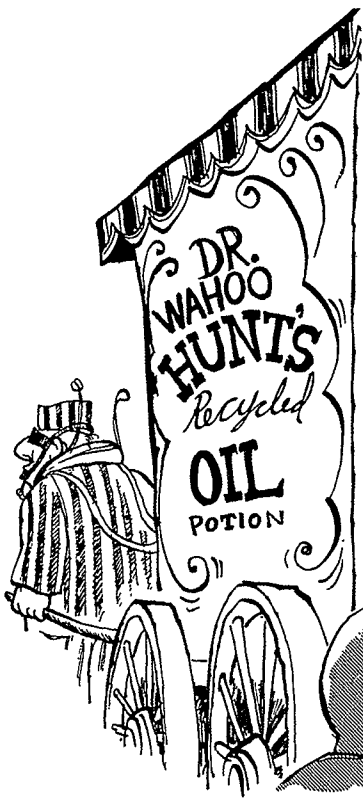
The project began to take shape in early 1977 when Willis Holding, the state purchasing officer, suggested that Prison Enterprises look into the possibility of an oil recycling program similar to one operated by West Virginia. However, according to G. M. "Gil" Holland, chief of Prison Enterprises Services, he did not consider the West Virginia approach attractive because it involved the high cost of trucking used oil to the Motor Oils Refining Company (MORC) in Chicago. Nevertheless West Virginia claimed to be saving tax money with its system while taking advantage of the technological competence of the largest waste oil re-refining company in the United States.

When the Center talked to R. E. Poindexter, MORC manager of automotive and industrial sales, it discovered that MORC re-refines and returns used lubricating oils from as far away as the Pacific Northwest, usually transported by rail. Holland acknowledged that he had not looked into the possibility of using railroads to reduce transportation costs.

Holland also talked to several of the large oil companies, including Texaco and Exxon, in early 1977, as well as to waste oil reprocessing firms. The big oil companies showed little

"The answer is basically a leadership issue."

- Gary Pearce
Gov. Hunt's press secretary



The State's Oil Options - THEN

- Pass legislation to encourage the public to turn in waste oil for processing by private firms operating in the state.
- Ship waste oil to the largest re-refinery in the U. S. and exchange it for re-refined oil that will soon be of proven quality.
- Invest in a secret process developed by private industry that produces re-refined oil not yet proven by accepted independent lab tests.
- Use a process developed by the federal government that might be less costly.
- Develop a more efficient method of collecting oil from government vehicles and sell it to the highest bidder.
- Test the use of synthetic oil in government vehicles and determine the costs involved.



interest, according to Holland, and the reproprocessors "didn't impress" him much. As a result, in February, 1977, he turned to Dr. James K. Ferrell, head of the chemical engineering department at N. C. State University, for help in identifying ways to recycle waste oil. Ferrell, a former employee of the Sun Oil Company, says he took a look around and didn't find much. He recalls talking with Exxon, Gulf, and with some university departments familiar with petroleum engineering. Finally in March, he contacted a friend at Phillips who told him that the company had been working on a new waste oil re-refining process for five or six years and was about ready to market it. Ferrell was aware of other new processes, but his review of available information convinced him that the Phillips approach was a good one. He was also impressed by the company's willingness to build a plant and ship it to North Carolina, thus allowing the state to avoid the complicated and time-consuming problem of construction.

The Center discussed the Phillips process with people who are knowledgeable about waste oil research, including officials of the U. S. government's Bartlesville (Oklahoma) Energy Research Center (BERC), the

National Bureau of Standards and the Army Mobility Equipment Research and Development Center. All of the experts contacted said they could not evaluate the Phillips process adequately because the company had been very reluctant to provide information about it. Phillips' spokesman R. E. Linnard said this was necessary to protect the company's proprietary interests in the process.

Nevertheless, the Phillips proposition seemed like the answer to a prayer to Prison Enterprises. Visits by company officials armed with company data appeared to confirm this. Throughout this period, Prison Enterprises relied heavily on the opinion of Dr. Ferrell, according to Holland. Yet Ferrell says he functioned only as a consultant, a technical advisor, and that his principal role was to offer assurances that the Phillips process would work. Even on that point he concedes that there are some who are skeptical about it.

In the contract with Phillips, the state recognizes that there will be a reduction in the design capacity of the plant if the waste oil put through it is not "free of. . . products such as brake fluids, antifreezes, and solvents such as those used in cleaning engines and

parts." Yet most service stations and motor pools dump these contaminants into a collecting tank along with waste motor oil. When questioned by the Center, Ferrell agreed that this can be a problem but suggested that it can be solved by separating the waste oil from the other fluids. As he pointed out, however, this in turn generates another problem: How do motor pools and service stations then dispose of these contaminants? Ferrell said he didn't know why the state chose a process with this limitation. N. C. State University has a continuing interest in the project, according to Ferrell, and in the next few months it will submit a grant proposal to the National Bureau of Standards to do experimental work on quality control aspects of the Phillips process. The aim is to find an acceptable, inexpensive substitute for the current waste oil test procedures that cost about \$25,000 to run.

Gil Holland and the people at Prison Enterprises felt that because they now deliver products to all sections of the state, it would be possible to collect waste oil and redistribute the re-refined oil without major additional cost. Nevertheless, there would be a need for money. The plant alone would sell for about \$1.25 million, according to Phillips, and that kind of money could come only from the General Assembly. Holland said his heart sank when he heard the figure because he saw no way for the state to make that much available. He underestimated legislative response to executive leadership.

Before the proposal could be taken to the legislature, however, it had to be accepted by the Department of Administration and the Governor. In the department the largest share of the responsibility rested on Holding, the highly regarded state purchasing officer, and on John Talton, an assistant secretary and Holding's immediate boss. Holding, who said he also relied on Ferrell's technical advice, maintains that the Phillips process is the only one that met the state's primary needs: recovery of 90 per cent of the waste oil processed, a finished product as good as virgin oil, and a process that caused no significant environmental effects.

The state also made an investment in Phillips' name. As Dr. Ferrell and others have pointed out, the company may be sure the plant works because so much attention is being paid to the North Carolina sale. Yet the Center found that the re-refined oil produced by the Phillips process has never been subjected to accepted tests by an inde-

pendent laboratory. The company has provided test results from its own facilities, but the question is whether this is sufficient evidence for the investment of \$1.4 million in public funds, not to mention any possible risk of damage to some 97,000 vehicles owned by state and local governments.

The North Carolina approach stands in vivid contrast to that of Iowa. There, re-refined oils are being used in state vehicles for 24 months on a test basis, and the various collection, distribution, and re-refining options are being concurrently studied. After two years some of the engines will be torn down and examined by an independent laboratory to determine wear. Then Iowa will make its decision.

North Carolina has the same options as Iowa. It could, for example, increase the collection of waste oil and sell it. John Talton said this alternative had not been studied because there is no used oil processor in the state that meets the federal environmental standards. The Center found, however, that the Holston Fuel Co. of Waynesville buys and processes about 3 million gallons of waste oil a year, and James Breece, the Holston vice president for quality control, claims the company meets federal requirements. Breece says his company now buys about 1 million gallons of waste oil each year in North Carolina, including government oil, and it is considering a suit against the state because the state will soon be competing for some of the same oil.

Although state law generally prohibits agencies from providing services customarily provided by private enterprise, the Advisory Budget Commission can make exceptions for prison industries. Such exceptions are subject to review by the General Assembly.

Talton also said that no one had looked into the relative economics of the Phillips process as compared to one developed by the federal energy laboratory in Oklahoma. Data on the federal process is readily available. Its product is being thoroughly tested in the Iowa program. The process is patented and can now be used by anyone for a \$10 fee. According to a study prepared by Richard J. Bigda & Associates of Tulsa, Oklahoma, the preliminary estimate of the cost of a plant using this process is about \$2 million. The plant capacity would be 10 million gallons a year or five times that of the Phillips plant, but the cost would be only 1.4 times that of its Phillips counterpart. The profitability of a plant using the

federal process also seems likely to be greater than that of the plant purchased by North Carolina.

Phillip's re-refined oil has never been subjected to accepted tests by an independent laboratory.

The Holston Fuel Co. offers still another possible alternative for the state. Although the estimate is very rough, the company thinks it could expand its existing plant for \$750,000 and do for the state the same job Phillips claims it will do. Gerald Breece, the president, said the company would be happy to work with the state in any way as long as it didn't cost his company any business.

Under the circumstances it is surprising that there seemed to be no doubts about the Phillips proposal in the Department of Administration. And, if there were, the doubts apparently were not shared by Gov. Hunt. On June 13, 1977, less than three weeks before the legislature adjourned, an administration-backed bill was introduced by Sen. Kenneth Royall of Durham to appropriate \$1.3 million to buy the Phillips plant. During brief discussions Royall spoke for the project, as did Sen. Harold Hardison of Deep Run and Sen. James Garrison of Albemarle, both of whom are in the oil business. With no opposition and no debate the measure sailed through the legislature. One prominent house member said, "My feeling was that it came up very late—at the last minute. I would have liked to have known more about it." It didn't have to come up so late. Phillips says the company provided written material on the plant in April, a good six weeks before Royall introduced his bill.

When the 79-page operating appropriation bill was ratified on June 29 the waste oil re-refining plant was included in Section 50.55, but there had been some interesting changes. Instead of an outright appropriation, Section 50.55 said that the Advisory Budget Commission could use up to \$1.3 million of the funds already appropriated for other purposes to pay for the facility. Also included was a requirement that any money used to build the plant be repaid from the profits. The most interesting change from Royall's original bill,

however, was the omission of any restriction on the sources of waste oil for the plant. This means that the state can compete with private collectors and processors for the oil it must have to use its plant capacity. Shortly after the General Assembly adjourned on July 1, John Talton, an assistant secretary of the Department of Administration, ordered an economic feasibility study of the Phillips proposal. The study estimated that 350,000 gallons of waste oil would be available for the plant from government sources and concluded that the "two key elements to profitability will be maintaining a production level in excess of 600K - 700K (600,000 - 700,000) gallons annually and extremely tight controls over the variable costs." The study then went on to say, "The major sources of spent motor oil are the auto dealerships in the metropolitan areas. They alone can supply approximately 400-500K (400,000 - 500,000) gallons annually at a nominal cost."

These conclusions, coupled with the lack of restrictions on oil sources in the appropriation bill, have far-reaching implications. If the state competes with its own businessmen for waste oil the price will almost certainly go up and alter the economics of the state operation. If the state does not buy waste oil somewhere it will operate its 1.5 million gallon plant at a level below that recommended for profitability. What competition can do to the price of waste oil is reported in a recent story in *Energy User News* about the Milwaukee area: "A number of oil reclamation companies are scrambling for used lubricants from gas stations, auto dealers and some industry. Competition for the oil has caused a recent price war among the larger companies, and has resulted in prices going from about a nickel a gallon at stations to 15 cents." In contrast, the state's feasibility study used a price of 5 cents per gallon for the first year of plant operation, rising to 10 cents by the sixth year and to 18 cents by the tenth year.

Late in July, 1977, while the feasibility study was being completed, a group of North Carolina officials visited the Bartlesville, Oklahoma, plant of Phillips Petroleum to look at the process proposed for installation here. The delegation included Sen. Garrison, who is a Phillips dealer and a member of the Advisory Budget Commission; Willis Holding, the state purchasing officer; Dr. James K. Ferrell, head of the chemical engineering department at N. C. State

University; and Paul Jordan, the state analyst who was working on the feasibility study. Dr. Ferrell, after signing a secrecy agreement, was allowed to view the Phillips process and laboratory procedures while the rest of the group discussed other aspects of the project. They flew home satisfied, even though they did not talk with the people at the federal energy research laboratory in the same town, a facility that has been doing waste oil research for years.

Reassured by Garrison and Department of Administration representatives, the Advisory Budget Commission approved the project on August 26. Members of the commission were told by the Budget division that the General Assembly had appropriated an estimated \$1.3 million that the department would not need—money that could thus be used to build the plant. The commission also authorized Prison Enterprises to provide up to \$250,000 to get the plant into operation. Later the same day the agreement with Phillips was signed, and the Governor announced “the location in North Carolina of a unique oil recycling plant that will save the state money as well as fuel.” When asked about the apparent rush of all of these events on the same day, the Governor’s office replied: “We were in no real hurry. We had the opportunity to take the lead, we were advised by technical experts at N. C. State University that this was a unique opportunity for the state and we conducted our own feasibility study.”

Perhaps the most interesting part of the agreement with Phillips has to do with

publicity. The company can use the plant as a showpiece for visitors and publicize its location using photographs, provided it uses discretion and gets the state’s approval before “publishing any advertisement that would constitute an endorsement” by the state. Even the plant site was subject to Phillips’ approval. The company has already obtained some publicity from the sale at meetings around the country, including hearings of a U. S. House subcommittee, and in letters sent to some waste oil reclaimers.

The Phillips agreement does require two test runs before the plant will be accepted by the state. But the state has not included in the contract rigorous standards for Phillips to meet. The product must only be what is described as “usable as a high grade engine lubricating oil,” a meaningless definition unless accompanied by further technical specifications, according to a representative of the Society of Automotive Engineers. In addition, the contract says that the state “shall be provided with a full opportunity to monitor the test” but it contains no specific provision that allows the state or an outside laboratory to conduct separate tests.

Perhaps North Carolina can get Phillips to agree to tests that offer some real assurances of quality. In the meantime, the state will do well to take a much closer look at the economics of the entire project. Whether or not a suit is brought against the state, it ought to be a matter of special concern that the state not launch a venture that can be just as well undertaken by private business. ■

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When the 1973 General Assembly appropriated about \$1.8 million to construct and operate a building for the National Driving Center (NDC) in the Research Triangle near Raleigh, legislators were told that the NDC, an affiliate of Duke University, would do just about everything that needed doing in traffic safety research with the help of a steady flow of research grants.

By the time the building opened in early 1976, however, the NDC has become the Edsel of the traffic safety research field. Having fallen on hard times from a lack of research grants, the NDC never occupied the attractive building that today stands empty except for a security guard who answers the telephone.

Help is on the way. As a final gesture of its impatience with the entire project, the 1977 General Assembly transferred the building to the University of North Carolina Board of Governors for use by the new Institute for Transportation Research and Education, an amalgam of the remnants of the National Driving Center and UNC’s own National Highway Safety Research Center, which already was in operation when NDC was still an affiliate of Duke University in 1973.

The new research center may have the building open for business in time to celebrate the second anniversary of its completion.