State of California
AIR RESOURCES BOARD

RESEARCH PROPOSAL

Resolution 06-30

November 16, 2006

Agenda Item No.: 06-10-2

WHEREAS, the Air Resources Board has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code sections 39700 through 39705;

WHEREAS, a research proposal, number 2616-253, entitled "Investigation of the Role of Lubricating Oil on Particulate Matter Emissions from Vehicles," has been submitted by the Southwest Research Institute.

WHEREAS, the Research Division staff has reviewed and recommended this proposal for approval;

WHEREAS, the Research Screening Committee has reviewed and recommends for funding:

> Proposal Number 2616-253 entitled "Investigation of the Role of Lubricating Oil on Particulate Matter Emissions from Vehicles," submitted by the Southwest Research Institute (SWRI) and will be co-funded through the South Coast Air Quality Management District, for a total amount not to exceed $100,000;

NOW, THEREFORE BE IT RESOLVED, that the Air Resources Board, pursuant to the authority granted by Health and Safety Code section 39703, hereby accepts the recommendation of the Research Screening Committee and approves the following:

> Proposal Number 2616-253 entitled "Investigation of the Role of Lubricating Oil on Particulate Matter Emissions from Vehicles," submitted by the Southwest Research Institute and will be co-funded through the South Coast Air Quality Management District, for a total amount not to exceed $100,000.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the research effort proposed herein, and as described in Attachment A, in an amount not to exceed $100,000.

I hereby certify that the above is a true and correct copy of Resolution 06-30, as adopted by the Air Resources Board.

Lori Andreoni

Lori Andreoni, Clerk of the Board

ATTACHMENT A

"Investigation of the Role of Lubricating Oil on Particulate Matter Emissions from Vehicles"

Background
Engine lubricating oil has been implicated as a significant parent material in the formation of mobile source particulate matter (PM) emissions, including nanoparticle emissions. As fuels become cleaner (especially with lower sulfur content) and emission control systems become more effective and durable, the contribution of the lubricant becomes increasingly significant. However, to date, much of the present understanding regarding the impact of lubricating oil on PM emissions has been anecdotal and not the subject of a focused and carefully conducted research study. The National Renewable Energy Laboratory (NREL), the South Coast Air Quality Management District (SCAQMD), and the California Air Resources Board (ARB) are developing a concerted effort to characterize the potential for reformulated lubricants to reduce PM emissions from mobile sources, both from new vehicles and from the much larger in-use vehicle fleet.

Objective
The work proposed in this study will involve vehicle emission tests, including normal and oil burning vehicles (light duty gasoline, heavy-duty diesel, and heavy-duty natural gas), to investigate the following: the effect of lubricant in PM emissions under various conditions of operation (including different duty cycles and ambient temperatures); the lubricant properties that influence PM formation; and the potential for a lubricant to be formulated to reduce PM emissions.

Methods
This project will evaluate six types of vehicles using conventional and advanced lubricants. The evaluation will focus on PM emissions for each vehicle/lubricant combination. Light-duty gasoline vehicles will be evaluated under cold operating conditions (30°F) and at normal operating conditions (72°F). Heavy-duty vehicles will be evaluated under normal conditions only.

Expected Results
The project is intended to provide a basis of understanding related to the impact of commercial automotive lubricants and alternative lubricant formulations on PM emissions from a variety of vehicles.

Significance to the Board
This proposed study would help ARB explore some currently unclear, but highly relevant, issues regarding PM emissions from lubricating oil.

Contractor:
Southwest Research Institute (SWRI).

ARB will provide co-funding to the South Coast Air Quality Management District for this project.

Contract Period:
15 months

Principal Investigator (PI):
Kevin Whitney

Contract Amount:
$100,000

Cofunding:
National Renewable Energy Laboratory (NREL): $254,652
South Coast Air Quality Management District (SCAQMD): $100,000

Basis for Indirect Cost Rate:
ARB's contribution to this project does not include overhead charges.

Past Experience with this Principal Investigator:
PI has had very positive previous research collaborations with all organizations involved in this project.

Prior Research Division Funding to SWRI/SCAQMD

Year	2005	2004	2003
Funding	$0	$0	$0

BUDGET SUMMARY

South Coast Air Quality Management District

Investigation of the Role of Lubricating Oil on Particulate Matter Emissions from Vehicles

DIRECT COSTS AND BENEFITS				
1.	Labor and Employee Fringe Benefits	$	100,000	
2.	Subcontractors	$	0	
3.	Equipment	$	0	
4.	Travel and Subsistence	$	0	
5.	Electronic Data Processing	$	0	
6.	Reproduction/Publication	$	0	
7.	Mail and Phone	$	0	
8.	Supplies	$	0	
9.	Analyses	$	0	
10.	Miscellaneous	$	0	
	Total Direct Costs			$100,000
INDIRECT COSTS				
1.	Overhead	$	0	
2.	General and Administrative Expenses	$	0	
3.	Other Indirect Costs	$	0	
4.	Fee or Profit	$	0	
	Total Indirect Costs			$0
TOTAL PROJECT COSTS				**$ 100,000**