

FINAL REPORT



Contents: Volume 1 of 2
Text, Summary Tables, and Appendices A - G

Study Title: A 14-Day Dose Range Finding Dermal Toxicity
Study Utilizing Distillates (Petroleum), Light
Catalytic Cracked in Sprague Dawley Rats

Study Number: WIL-402020

Study Director: Teresa D. Morris, BS

Data Requirements: Not Applicable

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WIL-402020
American Petroleum Institute

Distillates (Petroleum), Light Catalytic Cracked

COMPLIANCE STATEMENT

This non-GLP study, designated WIL-402020, was conducted in compliance with the WIL Research SOPs and the protocol as approved by the Sponsor. The data tables and the associated raw data were audited by the Quality Assurance Unit of WIL Research in accordance with the WIL Research SOPs and the protocol as approved by the Sponsor.



Teresa D. Morris, BS
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30 Jan 2013
Date

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1. SUMMARY

1.1. OBJECTIVE

The objectives of this study were to evaluate the potential irritative and toxicity effects of repeated exposure of Distillates (Petroleum), Light Catalytic Cracked (LCC) over 14 days, and to assist in dose selection for subsequent dermal toxicity studies (OECD 414 and 411) in Sprague Dawley rats.

1.2. STUDY DESIGN

Distillates (Petroleum), Light Catalytic Cracked (LCC CAS 64741-59-9) in the vehicle, mineral oil, was administered by once daily dermal application for 14 consecutive days to 4 groups (Groups 3-6) of Crl:CD(SD) rats. Dosage levels were 25, 100, 300, and 1440 mg/kg/day for Groups 3, 4, 5, and 6, respectively. A concurrent vehicle control group (Group 2) received the vehicle on a comparable regimen. In order to select appropriate doses for the subsequent studies to be conducted with this test article, 3 additional dosage levels were evaluated. Dosage levels were 450, 600, and 750 mg/kg/day for Groups 7, 8, and 9, respectively. The dose volume was 1.5 mL/kg for Groups 2-9. A concurrent sham control group (Group 1) was subjected to the same procedures (*i.e.*, shaving, collaring, sham dosing with glass rod, and weekly wiping) as the test substance-treated groups; however, no vehicle was applied to these animals. Once weekly (on study days 6 and 13) the test site was gently patted in an effort to remove the residual test substance. All animals were collared continuously during the 14-day dosing period. Each group (Groups 1-9) consisted of 2 animals/sex. Following 14 days of dose administration, all animals were euthanized (study day 14).

All animals were observed twice daily for mortality and moribundity. Clinical and dermal observations were recorded daily, and detailed physical examinations were performed approximately weekly. Individual body weights and food consumption were recorded approximately weekly. Necropsies were conducted on all animals. Selected organs were weighed for all animals in Groups 1-6 and the livers were weighed for the animals in Groups 7-9 at the scheduled necropsy (study day 14).

1.3. RESULTS

Any clinical, dermal, or macroscopic observations related to test substance administration were limited to the 1440 mg/kg/day group animals which were euthanized *in extremis* prior to the scheduled necropsy.

All 4 animals from the 1440 mg/kg/day group were euthanized *in extremis* prior to the scheduled necropsy. These deaths were considered test substance-related; however, the physical conditions were attributed to the level of dermal irritation rather than systemic toxicity. One animal from the 1440 mg/kg/day group (male no. 90198) was noted with vocalization during dosing on study day 5 (last day of dosing for this animal). At necropsy, these animals were observed with red matting, scabbing, and/or thickening of the skin. All other animals survived to the scheduled necropsy.

Lower body weight gains and/or losses were noted at dosage levels ≥ 300 mg/kg/day. Lower food consumption was observed in the 600 and 750 mg/kg males and females from study day 0 to 7.

Higher liver weights were noted in the 450, 600, and 750 mg/kg/day group males and females when compared to the WIL Research historical control.

1.4. CONCLUSIONS

Based on the results of this study, dermal administration of distillates (petroleum), light catalytic cracked over an area of approximately 10% of the shaved body surface area to CrI:CD[SD] rats for 14 consecutive days at dosage levels of 25, 100, 300, 450, 600, 750, and 1440 mg/kg/day resulted in test substance-related lethality of all animals from the 1440 mg/kg/day group. Lethality was attributed the level of dermal irritation, rather than systemic toxicity. Non-adverse lower body weights were noted in the 100 (males only), 300, 450, 600, 750, and 1440 mg/kg/day group males and females, lower food consumption was observed in the 600 and 750 mg/kg males and females and higher liver weights were noted in the 450, 600, and 750 mg/kg/day males and females when

compared to WIL Research historical control. The maximum tolerated dose (MTD) was determined to be 750 mg/kg/day.

2. INTRODUCTION

The objectives of this study were to evaluate the potential irritative and toxicity effects of repeated exposure of Distillates (Petroleum), Light Catalytic Cracked (LCC) over 14 days, and to assist in dose selection for subsequent dermal toxicity studies (OECD 414 and 411) in Sprague Dawley rats.

2.1. GENERAL STUDY INFORMATION

This report presents the data from “A 14-Day Dose Range Finding Dermal Toxicity Study Utilizing Distillates (Petroleum), Light Catalytic Cracked in Sprague Dawley Rats.” Due to software spacing constraints, the study title appears as “14-Day Rat Dermal Study of Distillates, Light Catalytic Cracked” on the report tables. The study protocol and the deviations from the protocol are presented in [Appendix A](#).

A list of abbreviations potentially used in this report is presented in [Section 12. \(Abbreviations\)](#).

For the data collection process, each phase of the study was separated into what were termed WIL computer protocols. The computer protocol reference numbers and types of data collected were identified as follows:

<u>Computer Protocol</u>	<u>Type of Data Collected</u>
WIL-402020M.....	Main study data (Groups 1-6)
WIL-402020E.....	Main study data (Groups 7-9)
WIL-402020P	Pretest data (Groups 1-6)
WIL-402020W	Pretest data (Groups 7-9)
WIL-402020V	Unscheduled dermal observations (Groups 1-6)
WIL-402020X	Treatments (Groups 7-9)

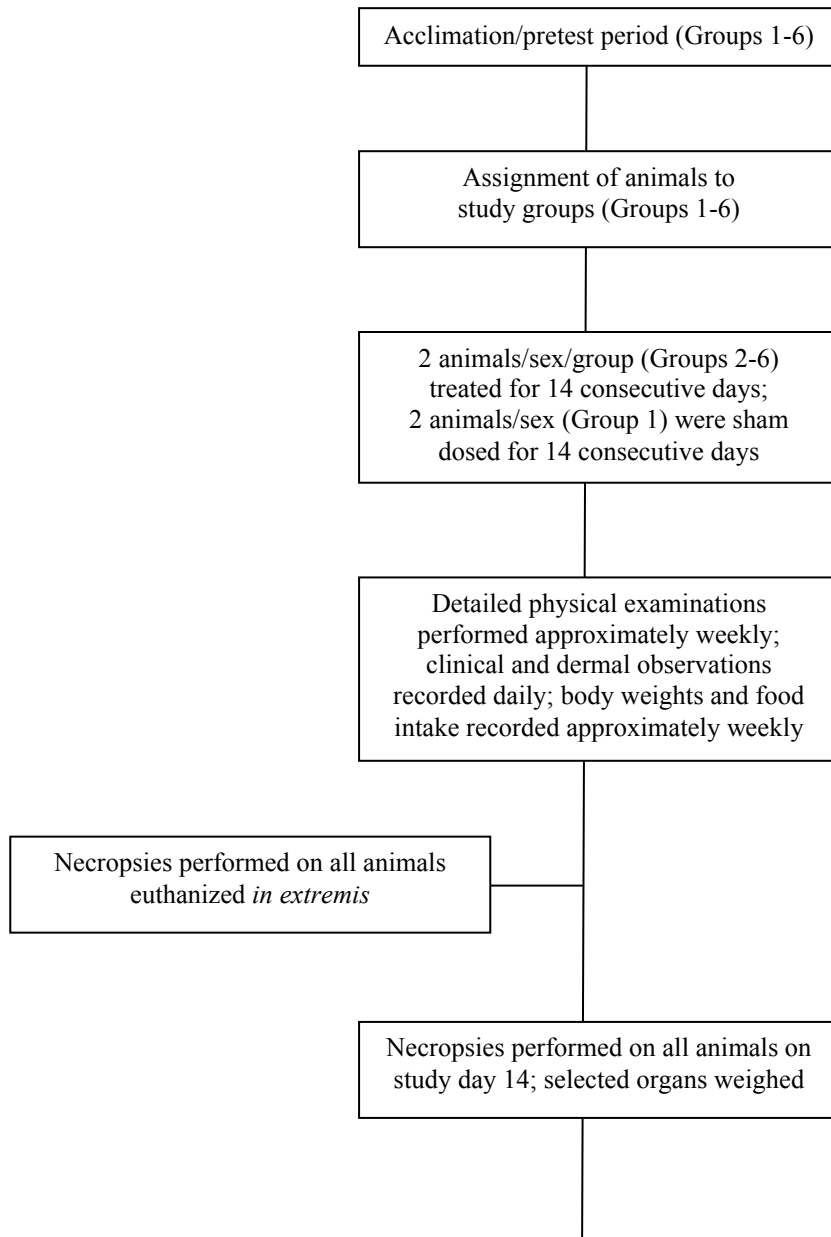
2.2. KEY STUDY DATES

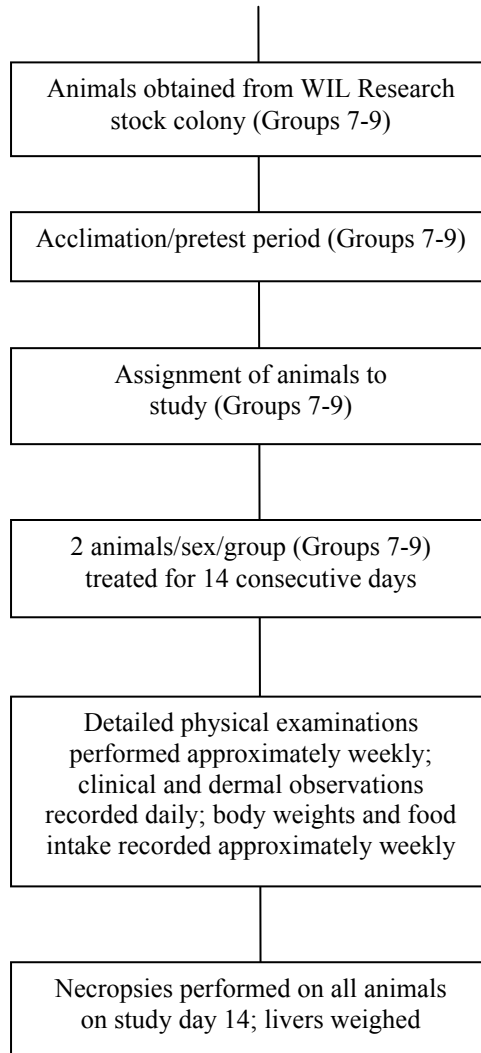
<u>Date(s)</u>	<u>Event(s)</u>
23 November 2010	Animal receipt (Groups 1-6)
2 December 2010.....	Assignment to study groups (Groups 1-6)
3 December 2010.....	Initiation of dose administration (study day 0; Groups 1-6)
17 December 2010.....	Scheduled necropsy (study day 14; Groups 1-6)
18 February 2011	Animal obtained from the WIL Research stock colony (Groups 7-9)
23 February 2011	Assignment to study groups (Groups 7-9)
24 February 2011	Initiation of dose administration (study day 0; Groups 7-9)
10 March 2011	Scheduled necropsy (study day 14; Groups 7-9)

2.3. WIL RESEARCH KEY STUDY PERSONNEL

Susan C. Haley, BS	Senior Operations Manager, Pathology
Sally A. Keets, AS	Senior Operations Manager, Vivarium
Carol A. Kopp, BS, LAT	Manager, Gross Pathology and Developmental Toxicology Laboratory
Erica L. Lashley, BS, LAT	Operations Manager, Toxicology
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Robert A. Wally, BS	Operations Manager, Reporting & Technical Support Services

3. STUDY DESIGN





4. EXPERIMENTAL PROCEDURES - MATERIALS AND METHODS

4.1. TEST SUBSTANCE AND VEHICLE

4.1.1. TEST SUBSTANCE

The test substance, distillates (petroleum), light catalytic cracked LCC, was received from EPL Archives, Inc., Sterling, VA, on behalf of American Petroleum Institute, on 10 November 2010, as follows:

Identification	Physical Description
Distillates (petroleum), light catalytic cracked LCC (CAS# 64741-59-9; Site# 26, Sample# 18) [WIL log no. 8471A]	Clear, amber liquid

Documentation regarding the purity and stability of the test substance is on file with the Sponsor. The purity of the test substance was 100%. The test substance was stored at room temperature, protected from light, and was considered stable under these conditions. A reserve sample of the test substance was collected and stored in the WIL Research Archives.

4.1.2. VEHICLE

The vehicle used in preparation of the test substance formulations for Groups 1-6 and for administration to the vehicle control group was mineral oil (lot nos. YV0056 and YX0253; exp. dates: 5 February 2011 and 19 March 2011, respectively; manufactured by Spectrum Chemical Manufacturing Corporation, New Brunswick, NJ). The vehicle used in preparation of the test substance formulations for Groups 7-9 was mineral oil (lot nos. ZH100 and 9BFO641; exp. dates: 3 March 2012 and 1 January 2010, respectively; manufactured by Spectrum Chemical Manufacturing Corporation, New Brunswick, NJ, and purchased from CVS Pharmacy, respectively).

4.1.3. PREPARATION

For the vehicle control group (Group 2), a sufficient amount of mineral oil was dispensed into a labeled glass storage container. The vehicle was dispensed daily.

Dosing formulations were prepared at the test substance concentrations indicated in the following table:

Group Number	Treatment	Dosage Level (mg/kg/day)	Test substance Concentration (mg/mL)
1	Sham Control	NA	NA
2	Vehicle	0	0
3	Test Substance ^a	25	16.6
4	Test Substance ^a	100	66.6
5	Test Substance ^a	300	200
6	Test Substance ^{a,b}	1440	Neat
7	Test Substance ^{a,b}	450	300
8	Test Substance ^{a,b}	600	400
9	Test Substance ^{a,b}	750	500

NA = Not applicable

^a = The test substance for this study was distillates (petroleum), light catalytic cracked LCC.

^b = The specific gravity = 0.96 g/mL

The test substance formulations were weight/volume (test substance/vehicle) mixtures with the exception of Group 6 which was administered as a neat test substance. The test substance formulations were prepared daily as single formulations for each dosage level and stored at room temperature, protected from light, prior to dose application. The test substance formulations were stirred continuously throughout the preparation and dose administration procedures.

4.1.4. SAMPLING AND ANALYSES

Assessments of formulation homogeneity, stability, and concentration were not included as a part of this non-GLP study.

4.2. TEST SYSTEM, ANIMAL RECEIPT, AND ACCLIMATION/PRETEST PERIOD

Crl:CD(SD) rats were used as the test system for this study. This species and strain of animal is recognized as appropriate for short-term toxicity studies. The Sprague Dawley rat was utilized because it is a widely used strain for which historical control data are available. The number of animals selected for this study (see [Section 4.7.](#)) was the minimum needed to yield scientifically meaningful data.

For Groups 1-6, Crl:CD(SD) rats (13 males and 13 females) were received in good health from Charles River Laboratories, Inc., Raleigh, NC on 23 November 2010. The animals were approximately 48 days old at receipt. Each animal was examined by a qualified technician on the day of receipt and weighed 3 days later. Each animal was uniquely identified by a Monel[®] metal ear tag displaying the permanent identification number. All animals were housed for a 10-day acclimation/pretest period. During this period, each animal was observed twice daily for mortality and changes in general appearance or behavior.

All animals used for Groups 7-9 were obtained from the WIL Research stock colony. On 18 February 2011, six male and 6 female Crl:CD(SD) rats in apparent good health were obtained for use on this study. All animals were originally obtained from Charles River Laboratories, Inc., Raleigh, NC. Each animal was uniquely identified with a subcutaneous microchip (BMDS system) implanted in the dorsoscapular area. All animals were housed for a 6-day acclimation/pretest period. During this period, each animal was observed twice daily for mortality and changes in general appearance or behavior.

Pretest data collection began on 26 November 2010 and 18 February 2011 for Groups 1-6 and Groups 7-9, respectively. Individual body weights and food consumption were recorded and detailed physical examinations were performed periodically during the pretest period. Pretest clinical observations for are presented in [Appendix B](#).

Animals were acclimated to wearing Elizabethan collars on an incremental basis, starting with 1 hour and ending with 24 hours of acclimation, for approximately 1 week prior to the initiation of dose application as outlined below:

Groups 1-6	
Study Day	Approximate Acclimation Period (Hours)
-6	1
-5	2
-4	4
-3	8
-2	24
Groups 7-9	
-5	1
-4	2
-3	4
-2	8
-1	24

4.3. ANIMAL HOUSING

All animals were housed individually in clean, stainless steel, wire-mesh cages suspended above cage-board. Animals were maintained in accordance with the *Guide for the Care and Use of Laboratory Animals* ([National Research Council, 1996](#)). The animal facilities at WIL Research are accredited by AAALAC International. Enrichment devices were provided to all animals as appropriate throughout the study for environmental enrichment and to aid in maintaining the animals' oral health, and were sanitized weekly.

4.4. DIET, DRINKING WATER, AND MAINTENANCE

The basal diet used in this study, PMI Nutrition International, LLC, Certified Rodent LabDiet® 5002 (pellet), is a certified feed with appropriate analyses performed by the

manufacturer and provided to WIL Research. Reverse osmosis-treated (on-site) drinking water, delivered by an automatic watering system, and the basal diet were provided *ad libitum* throughout the study, except during the period of fasting prior to necropsy when food, but not water, was withheld. Municipal water supplying the facility was analyzed for contaminants according to SOPs. The results of the diet and water analyses are maintained at WIL Research. No contaminants were present in animal feed or water at concentrations sufficient to interfere with the objectives of this study.

4.5. ENVIRONMENTAL CONDITIONS

All animals were housed throughout the acclimation period and during the study in an environmentally controlled room. The room temperature and humidity controls were set to maintain environmental conditions of $71 \pm 5^{\circ}\text{F}$ ($22 \pm 3^{\circ}\text{C}$) and $50 \pm 20\%$, respectively. Room temperature and relative humidity data were monitored continuously and were scheduled for automatic collection on an hourly basis. These data are summarized in [Appendix C](#). For Groups 1-6, actual mean daily temperature ranged from 70.7°F to 70.9°F (21.5°C to 21.6°C) and mean daily relative humidity ranged from 40.9% to 46.0% during the study. For Groups 7-9, actual mean daily temperature ranged from 70.2°F to 70.5°F (21.2°C to 21.4°C) and mean daily relative humidity ranged from 36.7% to 48.6% during the study. Fluorescent lighting provided illumination for a 12-hour light (0600 hours to 1800 hours)/12-hour dark photoperiod. Lighting conditions were recorded every 15 minutes. Air handling units were set to provide a minimum of 10 fresh air changes per hour.

4.6. ASSIGNMENT OF ANIMALS TO TREATMENT GROUPS

On 2 December 2010 (the day prior to the initiation of dose administration for Groups 1-6), all available rats were weighed and examined in detail for physical abnormalities. On 23 February 2011 (the day prior to initiation of dose administration for Groups 7-9), all available rats were weighed and examined in detail for physical abnormalities. These data were collected using WTDMS™ and reviewed by the Study Director. The animals judged suitable for assignment to the study were selected for use in a computerized randomization procedure based on body weight stratification in a block design. A printout containing the animal numbers and individual group assignments was generated, and the animals were then arranged into groups according to the printout. Individual body weights at randomization were within $\pm 20\%$ of the mean for each sex. Animals not assigned to study were euthanized by carbon dioxide inhalation and discarded.

Each group (Groups 1-9) consisted of 2 males and 2 females. For Groups 1-6, the animals were approximately 8 weeks old at the initiation of dose administration, and for Groups 7-9, the animals were approximately 14 and 16 weeks old at the initiation of dose administration for males and females, respectively. At randomization, individual body weights ranged from 220 g to 285 g for males and from 177 g to 203 g for females in Groups 1-6, and from 454 g to 547 g for males and from 266 g to 325 g for females in Groups 7-9. Data for animals assigned to Groups 7-9 are presented in [Appendix D](#).

4.7. ORGANIZATION OF TEST GROUPS, DOSAGE LEVELS, AND TREATMENT REGIMEN

Prior to the initiation of dose administration, and throughout the study as necessary, the hair was clipped from the back (down each side to the ventral surface) and flanks of each animal using an electric clipper; a different set of clippers was used for the sham control group, the vehicle control group, and the test substance-treated groups to avoid potential cross-contamination.

The vehicle or test substance was applied evenly to the clipped, unabraded area of skin and spread evenly using a glass rod (to ensure contact with an area of approximately 10% of the body surface area) once daily for 14 consecutive days. No vehicle was applied to the sham control group. All animals (Groups 1-9) were fitted with Elizabethan collars during the dosing period. On study days 6 and 13, the test site of each animal was gently patted using a disposable paper towel according to WIL Research SOPs.

The corners of the application site were marked daily with indelible ink to allow proper identification of the treated and untreated skin. The area of test substance application was measured and recorded weekly for all animals in each group. The actual surface area of coverage was calculated for each representative as follows:

$$\text{Total body surface area (cm}^2\text{)} = K \cdot \text{body weight (grams)}^{(2/3)}$$

Where:

K = 9 for rats ([Freireich *et al.*, 1966](#))

The mean area of coverage was approximately 10% for males and females in the test substance-treated groups.

The following tables present the approximate percentages of body surface area covered by the test substance for each group/week/sex.

Percent Coverage (%) - Males									
Group	1	2	3	4	5	6	7	8	9
Dosage Level (mg/kg/day)	NA	0	25	100	300	1440	450	600	750
Study Week 0 ^a	10.8	10.6	10.3	10.4	10.6	10.1	10.1	10.6	10.4
Study Week 1 ^a	10.4	10.4	10.4	10.0	10.3	10.1*	10.0	10.1	10.3
Mean									
Coverage	10.6	10.5	10.3	10.2	10.5	10.1	10.0	10.4	10.3
Standard Deviation	0.5	0.7	0.4	0.4	0.6	0.1	0.0	0.6	0.4

^a = Data presented represents the mean for the combined study weeks (N = 2), except where * presented (N = 1)

Group Dosage Level (mg/kg/day)	Percent Coverage (%) - Females								
	1	2	3	4	5	6	7	8	9
	NA	0	25	100	300	1440	450	600	750
Study Week 0 ^a	10.1	10.5	10.0	10.2	10.0	10.1	10.5	10.9	10.5
Study Week 1 ^a	10.3	10.1	10.2	10.5	10.2	10.1*	10.4	10.8	10.2
Mean Coverage	10.2	10.3	10.1	10.3	10.1	10.1	10.4	10.8	10.3
Standard Deviation	0.3	0.4	0.2	0.4	0.2	0.2	0.6	1.0	0.4

^a = Data presented represents the mean for the combined study weeks (N = 2), except where * presented (N = 1)

The dose volume for the test substance-treated groups was 1.5 mL/kg, adjusted as mL/kg per the most recent body weight. Adjusted doses became effective the day of collection of the weekly body weights. The first day of dosing was study day 0, the first week of dosing was study week 0.

The following table presents the study group assignment:

Group Number	Treatment	Dosage Level (mg/kg/day)	Dose Volume (mL/kg)	Number of Animals	
				Males	Females
1	Sham Control	NA	NA	2	2
2	Vehicle	0	1.5	2	2
3	Test Substance ^a	25	1.5	2	2
4	Test Substance ^a	100	1.5	2	2
5	Test Substance ^a	300	1.5	2	2
6	Test Substance ^a	1440	1.5	2	2
7	Test Substance ^a	450	1.5	2	2
8	Test Substance ^a	600	1.5	2	2
9	Test Substance ^{a, b}	750	1.5	2	2

NA = Not applicable

^a = The test substance for this study was distillates (petroleum), light catalytic cracked.

^b = The specific gravity = 0.96 g/mL.

Dosage levels were selected by the Sponsor.

The selected route of administration for this study was dermal to determine the potential toxicity of the test substance when administered by the dermal route.

5. PARAMETERS EVALUATED

5.1. SURVIVAL

All animals were observed twice daily, once in the morning and once in the afternoon, for mortality and moribundity. Moribund animals were euthanized by carbon dioxide inhalation and necropsies were performed.

5.2. CLINICAL OBSERVATIONS

Clinical examinations were performed twice daily, at the time of dose administration and approximately 1 to 2 hours following dose administration. The absence or presence of findings was recorded for individual animals at the scheduled intervals. Detailed physical examinations were conducted on all animals at least once during the pretreatment period, approximately weekly during the study, and prior to the scheduled necropsy. In addition, a separate computer protocol was used to record any treatments are presented in [Appendix G](#).

5.3. DERMAL OBSERVATIONS

The application sites were scored weekly (following test substance removal) from study days 0 through 14 for erythema and edema in accordance with the methods of Draize ([Draize, 1965](#)) using the 4-step grading system presented in [Appendix E](#). All dermal findings were recorded. A separate computer protocol was used to record any dermal observations noted outside of the above-specified intervals. These unscheduled dermal observations are presented in [Appendix F](#).

5.4. BODY WEIGHTS

Individual body weights were recorded approximately weekly, beginning during the pretest period, for the duration of the study. Body weights were collected with collars on throughout the study. Mean body weights and mean body weight changes were calculated for the corresponding intervals. Final body weights (fasted) were recorded on the day of the scheduled necropsy.

5.5. FOOD CONSUMPTION

Individual food consumption was recorded approximately weekly, beginning during the pretest period, for the duration of the study. Food intake was calculated as g/animal/day for the corresponding body weight intervals. When food consumption could not be measured for a given interval (due to spillage, weighing error, obvious erroneous value, *etc.*), the appropriate interval was footnoted as "NA" on the individual tables.

5.6. ANATOMIC PATHOLOGY

5.6.1. MACROSCOPIC EXAMINATION

A complete necropsy was conducted on all animals. Animals were euthanized by carbon dioxide inhalation followed by exsanguination. The necropsies included, but were not limited to, examination of the external surface, all orifices, and the cranial, thoracic, abdominal, and pelvic cavities, including viscera. For Groups 7-9, the liver was collected. For Groups 1-6, the following tissues and organs were collected and placed in 10% neutral-buffered formalin (except as noted):

Adrenals (2)	Lymph nodes
Aorta	Axillary
Bone with marrow	Mesenteric (2)
Femur with joint	Ovaries with oviducts (2)
Sternum	Pancreas
Bone marrow smear	Peripheral nerve (sciatic)
(from femur) ^a	Pituitary
Brain	Prostate
Cerebrum level 1	Salivary glands (mandibular [2])
Cerebrum level 2	Seminal vesicles (2)
Cerebellum with medulla/pons	Skeletal muscle (rectus femoris)
Cervix	Skin (with mammary gland) ^d
Epididymides (2) ^b	Skin (treated, sham, untreated
Eyes with optic nerve (2) ^c	[posterior to treated skin])
Gastrointestinal tract	Spinal cord (cervical, thoracic,
Esophagus	lumbar)
Stomach	Spleen
Duodenum	Testes (2) ^b
Jejunum	Thymus
Ileum	Thyroid (with parathyroids, if
Cecum	present [2])
Colon	Trachea
Rectum	Urinary bladder
Heart	Uterus
Kidneys (2)	Vagina
Lacrimal gland (exorbital [2])	Gross lesions (when possible)
Liver (sections of 2 lobes)	
Lungs (including bronchi, fixed by	
inflation with fixative)	

^a = Bone marrow smears were obtained at the scheduled necropsy, but not placed in formalin; slides were examined only if scientifically warranted.

^b = Fixed in Bouin's solution

^c = Fixed in Davidson's solution

^d = For females only.

5.6.2. ORGAN WEIGHTS

The following organs were weighed from all animals in Groups 1-6 at the scheduled necropsy:

Adrenals	Pituitary
Brain	Prostate
Epididymides	Spleen
Heart	Testes
Kidneys	Thymus
Liver	Thyroid with parathyroids*
Ovaries with oviducts	Uterus

Paired organs were weighed together. Designated organs (*) were weighed after fixation. For Groups 7-9, the liver was collected, weighed, and discarded. Organ to final body weight and organ to brain weight ratios were calculated.

5.7. DATA ACQUISITION AND ANALYSIS

5.7.1. ACQUISITION AND REPORTING

Program/System	Description
Archive Management System (AMS)	In-house developed application for storage, maintenance, and retrieval of information for archived materials (<i>e.g.</i> , lab books, study data, wet tissues, slides, <i>etc.</i>).
Formulations Dose Dispensing Management System (FDDMS)	In-house developed system used to assign unique barcodes to formulation containers and individual containers used for dispensing dosing formulations.
InSight [®] Publisher	Electronic publishing system (output is Adobe Acrobat, PDF).
Master Schedule	Maintains the master schedule for the company.
Metasys DDC Electronic Environmental Control System	Controls and monitors animal room environmental conditions.
Microsoft [®] Office 2002 and 2007	Used in conjunction with the publishing software to generate study reports.
WIL Metasys	In-house developed system used to record and report animal room environmental conditions.
WIL Toxicology Data Management System [™] (WTDMS [™])	In-house developed system used for collection and reporting of in-life and <i>postmortem</i> data.
Note: Version numbers of WTDMS [™] programs used for the study are presented on the report data tables (reporting programs); version numbers and release dates are otherwise maintained in the study records and/or facility records.	

5.7.2. STATISTICAL ANALYSIS

Statistical analysis of the in-life data was not conducted due to the small group size.

6. RESULTS

6.1. SURVIVAL

Summary Data: [Table S1](#), [Table R1](#)

Individual Data: [Table A1](#), [Table R11](#)

All animals from the 1440 mg/kg/day group were euthanized *in extremis* prior to the scheduled necropsy based on irritation levels rather than systemic toxicity. Test substance-related dermal observations of very slight to moderate erythema, very slight to moderate edema, desquamation, exfoliation, and encrustation were noted for the 1440 mg/kg/day group males and females. The presence of erythema and edema began on study day 4 for all 1440 mg/kg/day group animals. At this time, animals were also noted with desquamation and/or exfoliation. By study day 6, all animals were noted with moderate edema and 1 male (no. 90198) and 1 female (no. 90202) was noted with encrustation. Two animals were euthanized *in extremis* on study day 6 (male no. 90191 and female no. 90212) and 2 animals were euthanized *in extremis* on study day 10 (male no. 90198 and female no. 90202). At necropsy, male no. 90191 and female no. 90202 were observed with scabbed, thickened skin. Male no. 90198 was observed with red matting on the skin, and female no. 90212 was observed with red matting, scabbing, and thickening of the skin. All other animals survived to the scheduled necropsy.

6.2. CLINICAL OBSERVATIONS

Summary Data: [Table S2](#), [Table S3](#), [Table R2](#), [Table R3](#)

Individual Data: [Table A2](#), [Table A3](#), [Table A4](#), [Table R12](#), [Table R13](#), [Table R14](#)

A test substance-related clinical observation of vocalization during dosing was noted for 1 animal euthanized *in extremis* (male no. 90198 in the 1440 mg/kg/day group) on study day 5. Other clinical findings noted for the 1440 mg/kg/day group animals euthanized *in extremis* included yellow material on various body surfaces (urogenital area, anogenital area, ventral trunk, and hindlimbs) and red material around the eyes and nose. These findings were considered to be related to presence of the collar rather than

test substance-related, and were noted with similar incidence in the vehicle control and/or sham control groups, and/or were common findings for laboratory rats of this age and strain.

There were no remarkable test substance-related clinical observations for the animals that survived to the scheduled necropsy.

6.3. DERMAL OBSERVATIONS

Summary Data: [Table S4](#), [Table R4](#)

Individual Data: [Table A5](#), [Table R15](#); [Appendix F](#)

Test substance-related dermal observations of very slight to moderate erythema, very slight to moderate edema, desquamation, exfoliation, and encrustation were noted for the 1440 mg/kg/day group males and females.

The presence of erythema and edema began on study day 4 for all 1440 mg/kg/day group animals. At this time, animals were also noted with desquamation and/or exfoliation. By study day 6, all animals were noted with moderate edema and 1 male (no. 90198) and 1 female (no. 90202) animal was noted with encrustation.

There were no test substance-related effects noted during the dermal observations for doses of 750 mg/kg/day and lower. Residual test substance was noted within the test site for the 25, 100, 300, 450, 600, and 750 mg/kg/day group males and females.

6.4. BODY WEIGHTS

Summary Data: [Table S5](#), [Table S6](#), [Table S7](#), [Table R5](#), [Table R6](#), [Table R7](#)

Individual Data: [Table A6](#), [Table A7](#), [Table A8](#), [Table R16](#), [Table R17](#), [Table R18](#)

Test substance-related effects on body weights were noted in the 100 (males only), 300, 450, 600, 750, and 1440 mg/kg/day group males and females.

Lower body weight gains or slight body weight losses were observed primarily from study day 0 to 7 for the 100, 300, and 1440 mg/kg/day group males and the 300 and

1440 mg/kg/day group females when compared to the concurrent sham and vehicle control groups. Lower mean cumulative body weight gains continued through the dosing period (study day 13) for the 100 and 300 mg/kg/day group males. All 1440 mg/kg/day group animals were euthanized *in extremis* prior to the end of the dosing period.

All animals from the 450, 600, and 750 mg/kg/day groups experienced overall (study days 0 to 13) body weight losses with the exception of the 450 mg/kg/day group females and 1 female in the 750 mg/kg/day group. A concurrent sham and/or vehicle control group was not included.

6.5. FOOD CONSUMPTION

Summary Data: [Table S8](#), [Table R8](#)

Individual Data: [Table A9](#), [Table R19](#)

Test substance-related effects on food consumption were noted in the 600 and 750 mg/kg/day group males and females.

Lower food consumption was observed in the 600 and 750 mg/kg males and females from study day 0 to 7. There were no test substance-related effects on food consumption for doses of 450 mg/kg and lower.

6.6. ANATOMIC PATHOLOGY

6.6.1. MACROSCOPIC EXAMINATION

Summary Data: [Table S9](#), [Table S10](#), [Table R9](#)

Individual Data: [Table A10](#), [Table A11](#), [Table R20](#)

Test substance-related macroscopic findings were limited to the 1440 mg/kg/day group animals euthanized *in extremis* and included red matting, scabbing and/or thickening of the treated skin.

There were no other test substance-related macroscopic findings at the unscheduled and scheduled necropsies. All macroscopic findings noted were considered to be spontaneous and/or incidental in nature and unrelated to test substance administration.

6.6.2. ORGAN WEIGHTS

Summary Data: [Table S11](#), [Table R10](#)

Individual Data: [Table A12](#), [Table A13](#), [Table A14](#), [Table R21](#), [Table R22](#)

Higher liver weights were noted in the 450, 600, and 750 mg/kg/day males and females when compared to WIL Research historical control.

7. CONCLUSIONS

Based on the results of this study, dermal administration of distillates (petroleum), light catalytic cracked over an area of approximately 10% of the shaved body surface area to Crl:CD[SD] rats for 14 consecutive days at dosage levels of 25, 100, 300, 450, 600, 750, and 1440 mg/kg/day resulted in test substance-related lethality of all animals from the 1440 mg/kg/day group. Lethality was attributed the level of dermal irritation, rather than systemic toxicity. Non-adverse lower body weights were noted in the 100 (males only), 300, 450, 600, 750, and 1440 mg/kg/day group males and females, lower food consumption was observed in the 600 and 750 mg/kg males and females and higher liver weights were noted in the 450, 600, and 750 mg/kg/day males and females when compared to WIL Research historical control. The maximum tolerated dose (MTD) was determined to be 750 mg/kg/day.

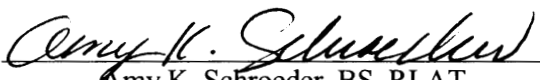
8. REPORT REVIEW AND APPROVAL

Report Approved By:


Teresa D. Morris, BS
Assistant Director, General Toxicology
Study Director

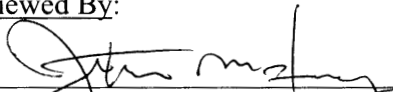
30 Jan 2013
Date

Report Prepared By:

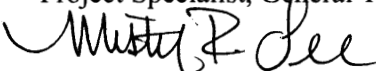

Amy K. Schroeder, BS, RLAT
Study Analyst

30 Jan 2013
Date

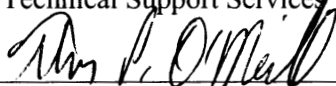
Report Reviewed By:


Jonathan M. Hurley, BS
Project Specialist, General Toxicology

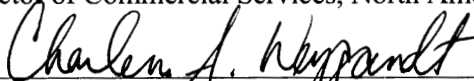
30 Jan 2013
Date


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Group Manager, Reporting &
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30 Jan 2013
Date


Thomas P. O'Neill, BS, DABT
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30 JAN 2013
Date


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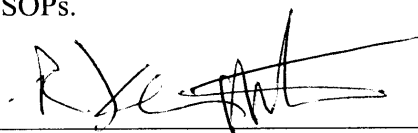
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Date

9. QUALITY ASSURANCE UNIT STATEMENT

<u>Date(s) of Inspection(s)</u>	<u>Phase Inspected</u>	<u>Date(s) Findings Reported to Study Director</u>	<u>Date(s) Findings Reported to Management</u>
28-Dec-2010 03-Jan-2011	I-1, Data for audited tables only	03-Jan-2011	28-Feb-2011
28-Dec-2010 03-Jan-2011	N-1, Data for audited tables only	03-Jan-2011	28-Feb-2011
04-Jan-2011	Summary and Individual Data Tables	04-Jan-2011	28-Feb-2011
25-Mar-2011	Study Records (I-2, Data for audited tables only)	25-Mar-2011	25-Apr-2011
25-Mar-2011	Study Records (N-2, Data for audited tables only)	25-Mar-2011	25-Apr-2011
29-Mar-2011 30-Mar-2011	Summary and Individual Data Tables (Groups 7-9)	30-Mar-2011	25-Apr-2011
28-Jan-2013	Final Report (Summary and Individual Tables)	28-Jan-2013	28-Jan-2013

This study and the corresponding report were not audited by the WIL Quality Assurance Unit with the following exception. The data tables and the associated raw data were audited by the Quality Assurance Unit of WIL Research in accordance with the WIL Research SOPs and the protocol as approved by the Sponsor. Quality Assurance findings, derived from the inspections of the raw data and draft data tables, are documented and have been reported to the Study Director.

This report accurately reflects the data generated during the study. The methods and procedures used in the study were those specified in the protocol, its amendments, and WIL Research's SOPs.



R. Kelvin Mentzer, BS, RQAP-GLP
Quality Assurance Representative

30 Jan 2013

Date

10. REFERENCES

Draize, J.H. The appraisal of the safety of chemicals in foods, drugs, and cosmetics. *Dermal Toxicity* **1965**, 46-59.

Freireich, E.J.; Gehan, E.A.; Rall, D.P.; Schmidt, L.H.; Skipper, H.E. Quantitative Comparison Toxicity of Anticancer Agents in Mouse, Rat, Hamster, Dog, Monkey, and Man. *Cancer Chemotherapy Reports* **1966**, 50(4), 219-244.

National Research Council. *Guide for the Care and Use of Laboratory Animals*, Institute of Laboratory Animal Resources, Commission on Life Sciences; National Academy Press: Washington, DC, **1996**.

11. DATA RETENTION

The Sponsor has title to all documentation records, raw data, specimens, or other work product generated during the performance of the study. All remaining work product generated by WIL Research, including raw paper data and specimens, are retained in the WIL Research Archives as specified in the study protocol.

A reserve sample of the test substance, pertinent electronic storage media, and the original final report are retained in the WIL Research Archives in compliance with regulatory requirements.

12. ABBREVIATIONS

The following abbreviations may apply to this report:

μ	-	micro
AAALAC	-	Association for Assessment and Accreditation of Laboratory Animal Care
cm	-	centimeter
$C_{\max}$	-	maximum measured concentration of the analyte in plasma
CEO	-	correlates with externally observed
dB	-	decibels
dL	-	deciliter
EPA	-	Environmental Protection Agency
<i>etc.</i>	-	et cetera
FDA	-	Food and Drug Administration
g	-	gram
GLP	-	Good Laboratory Practices
hr	-	hour(s)
kg	-	kilogram
L	-	liter
M	-	molar
mg	-	milligram
mL	-	milliliter
mm	-	millimeter
ms	-	milliseconds
mM	-	millimolar
NA	-	not applicable
OECD	-	Organisation for Economic Cooperation and Development
ppm	-	parts per million
RSD	-	Relative standard deviation
SOP	-	standard operating procedure
$T_{\max}$	-	Sampling time at which $C_{\max}$ was achieved
WIL Research	-	WIL Research Laboratories, LLC
WTDMS™	-	WIL Toxicology Data Management System

TABLES S1 – S11

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S1
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF SURVIVAL AND DISPOSITION

PAGE 1

MALES																			
GROUP : 1					2					3					4				
5					6														
DAY	LIVE	FD	EE	SE	LIVE	FD	EE	SE		LIVE	FD	EE	SE		LIVE	FD	EE	SE	
0	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
1	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
2	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
3	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
4	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
5	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
6	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
7	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
8	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
9	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
10	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
11	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
12	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
13	2	0	0	0	2	0	0	0		2	0	0	0		2	0	0	0	
14	0	0	0	2	0	0	0	2		0	0	0	2		0	0	0	2	
DAY = DAY OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA																			
1-	UNTREATED				2-	0 MG/KG/DAY				3-	25 MG/KG/DAY				4-	100 MG/KG/DAY			
																300 MG/KG/DAY			
																1440 MG/KG/DAY			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S1
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF SURVIVAL AND DISPOSITION

PAGE 2

FEMALES																													
GROUP : 1					2					3					4					5					6				
DAY	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE					
0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0					
1	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0					
2	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0					
3	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0					
4	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0					
5	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0					
6	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	1	0					
7	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	0					
8	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	0					
9	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	0					
10	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0	0	1	0					
11	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0					
12	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0					
13	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0					
14	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0	0					
DAY = DAY OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA																													
1-	UNTREATED				2-	0 MG/KG/DAY				3-	25 MG/KG/DAY				4-	100 MG/KG/DAY				5-	300 MG/KG/DAY				6-	1440 MG/KG/DAY			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 1

----- M A L E -----						
TABLE RANGE: GROUP:	1	2	3	4	5	6

NORMAL						
-NO SIGNIFICANT CLINICAL OBSERVATIONS	4/ 2	4/ 2	4/ 2	4/ 2	4/ 2	2/ 2
DISPOSITION						
-EUTHANIZED IN EXTREMIS - PHYSICAL CONDITION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	2/ 2
-PRIMARY NECROPSY (DAY 14)	2/ 2	2/ 2	2/ 2	2/ 2	2/ 2	0/ 0
BODY/INTEGUMENT						
-MOIST ALOPECIA VENTRAL NECK	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0
EYES/EARS/NOSE						
-DRIED YELLOW MATERIAL UROGENITAL AREA	1/ 1	1/ 1	0/ 0	0/ 0	1/ 1	1/ 1
-WET YELLOW MATERIAL UROGENITAL AREA	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0
-DRIED RED MATERIAL AROUND NOSE	2/ 2	1/ 1	1/ 1	1/ 1	2/ 2	1/ 1
-DRIED RED MATERIAL AROUND RIGHT EYE	2/ 2	1/ 1	2/ 2	2/ 2	2/ 2	2/ 1
-DRIED RED MATERIAL AROUND LEFT EYE	1/ 1	1/ 1	2/ 2	2/ 2	1/ 1	2/ 1
EXCRETA						
-DRIED YELLOW MATERIAL ANOGENITAL AREA	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1	1/ 1
-DRIED YELLOW MATERIAL VENTRAL TRUNK	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1

1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 2

----- F E M A L E -----						
TABLE RANGE: GROUP:	1	2	3	4	5	6

NORMAL						
-NO SIGNIFICANT CLINICAL OBSERVATIONS	3/ 2	3/ 2	4/ 2	4/ 2	4/ 2	3/ 2
DISPOSITION						
-EUTHANIZED IN EXTREMIS - PHYSICAL CONDITION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	2/ 2
-PRIMARY NECROPSY (DAY 14)	2/ 2	2/ 2	2/ 2	2/ 2	2/ 2	0/ 0
EYES/EARS/NOSE						
-DRIED YELLOW MATERIAL UROGENITAL AREA	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	2/ 2
-WET YELLOW MATERIAL UROGENITAL AREA	0/ 0	1/ 1	1/ 1	0/ 0	0/ 0	1/ 1
-DRIED RED MATERIAL AROUND NOSE	3/ 2	1/ 1	1/ 1	1/ 1	2/ 2	2/ 2
-DRIED RED MATERIAL AROUND RIGHT EYE	2/ 2	1/ 1	0/ 0	1/ 1	1/ 1	3/ 2
-DRIED RED MATERIAL AROUND LEFT EYE	3/ 2	0/ 0	0/ 0	2/ 2	1/ 1	2/ 2
EXCRETA						
-DRIED YELLOW MATERIAL ANOGENITAL AREA	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	3/ 2
-DRIED YELLOW MATERIAL VENTRAL TRUNK	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	3/ 2
-DRIED YELLOW MATERIAL HINDLIMB(S)	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	3/ 2
BODY/INTEG II						
-SCABBING VENTRAL TRUNK	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1

1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 3

----- F E M A L E -----						

TABLE RANGE:	DAY 000 TO DAY 014					
GROUP:	1	2	3	4	5	6

BODY/INTEG II						
-SCABBING HINDLIMB(S)	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	1 / 1
-SCABBING RIGHT LATERAL NECK	0 / 0	0 / 0	1 / 1	0 / 0	0 / 0	0 / 0

1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

PCSUv4.07
12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S3 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF POST-DOSE FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 1

----- M A L E -----

TABLE RANGE:		DAY 0 TO DAY 13					
GROUP:		1	2	3	4	5	6
NORMAL							
TIME OF DOSE							
-NO SIGNIFICANT CLINICAL OBSERVATIONS		28/2	28/2	28/2	28/2	28/2	15/2
1-2 HOUR POST-DOSING							
-NO SIGNIFICANT CLINICAL OBSERVATIONS		27/2	25/2	24/2	26/2	26/2	14/2
EYES/EARS/NOSE							
1-2 HOUR POST-DOSING							
-DRIED YELLOW MATERIAL UROGENITAL AREA		0/0	0/0	0/0	0/0	0/0	2/2
SPECIAL II							
TIME OF DOSE							
-VOCALIZATION DURING DOSING		0/0	0/0	0/0	0/0	0/0	1/1
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY		

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S3 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF POST-DOSE FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 2

----- F E M A L E -----

TABLE RANGE:		DAY 0 TO DAY 13					
GROUP:		1	2	3	4	5	6
NORMAL							
TIME OF DOSE							
-NO SIGNIFICANT CLINICAL OBSERVATIONS		28/2	28/2	28/2	28/2	28/2	16/2
1-2 HOUR POST-DOSING							
-NO SIGNIFICANT CLINICAL OBSERVATIONS		28/2	26/2	26/2	26/2	25/2	12/2
EYES/EARS/NOSE							
TIME OF DOSE							
-DRIED YELLOW MATERIAL UROGENITAL AREA		0/0	0/0	0/0	0/0	0/0	1/1
1-2 HOUR POST-DOSING							
-DRIED YELLOW MATERIAL UROGENITAL AREA		0/0	0/0	0/0	0/0	0/0	1/1
-WET YELLOW MATERIAL UROGENITAL AREA		0/0	0/0	0/0	0/0	1/1	1/1
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY		

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12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S4
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF DERMAL OBSERVATIONS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 1

----- M A L E -----						
TABLE RANGE: GROUP:		DAY 000 TO DAY 014				
	1	2	3	4	5	6
DERMAL OBS						
-SCORED, NOT REMARKABLE	30/ 2	25/ 2	16/ 2	15/ 2	12/ 2	6/ 2
-NO ERYTHEMA	0/ 0	4/ 2	14/ 2	15/ 2	18/ 2	4/ 2
-ERYTHEMA - VERY SLIGHT	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	4/ 2
-ERYTHEMA - SLIGHT	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	3/ 2
-ERYTHEMA - MODERATE	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-NO EDEMA	0/ 0	5/ 2	14/ 2	15/ 2	18/ 2	2/ 2
-EDEMA - VERY SLIGHT	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	2/ 2
-EDEMA - MODERATE	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	8/ 2
-DESQUAMATION	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0	6/ 2
-EXFOLIATION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-ENCRUSTATION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	5/ 1
-RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE	0/ 0	4/ 2	14/ 2	15/ 2	18/ 2	5/ 2
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S4
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF DERMAL OBSERVATIONS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 2

----- F E M A L E -----

TABLE RANGE: GROUP:	1	2	3	4	5	6
DAY 000 TO DAY 014						
DERMAL OBS						
-SCORED, NOT REMARKABLE	30/ 2	19/ 2	15/ 2	14/ 2	12/ 2	6/ 2
-NO ERYTHEMA	0/ 0	11/ 2	15/ 2	16/ 2	18/ 2	5/ 2
-ERYTHEMA - VERY SLIGHT	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	3/ 2
-ERYTHEMA - SLIGHT	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	2/ 1
-ERYTHEMA - MODERATE	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	2/ 1
-NO EDEMA	0/ 0	11/ 2	15/ 2	16/ 2	18/ 2	2/ 2
-EDEMA - VERY SLIGHT	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	2/ 2
-EDEMA - SLIGHT	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-EDEMA - MODERATE	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	7/ 2
-DESQUAMATION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	4/ 1
-EXFOLIATION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	7/ 2
-ENCRUSTATION	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	4/ 1
-RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE	0/ 0	11/ 2	15/ 2	16/ 2	18/ 2	5/ 2
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

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TABLE S5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHTS [G]

		MALES						
GROUP:		UNTREATED	0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY	
DAY	-7							
	MEAN	203.	211.	199.	213.	213.	202.	
%	DIFFERENCE		3.9	-2.0	4.9	4.9	-0.5	
	S.D.	4.2	21.2	3.5	15.6	20.5	12.7	
	N	2	2	2	2	2	2	
	-1							
	MEAN	240.	258.	237.	261.	255.	255.	
%	DIFFERENCE		7.5	-1.3	8.8	6.3	6.3	
	S.D.	23.3	38.2	23.3	20.5	33.9	16.3	
	N	2	2	2	2	2	2	
	0							
	MEAN	260.	273.	251.	274.	273.	261.	
%	DIFFERENCE		5.0	-3.5	5.4	5.0	0.4	
	S.D.	23.3	36.1	21.2	24.0	35.4	2.1	
	N	2	2	2	2	2	2	
	7							
	MEAN	291.	295.	272.	287.	268.	268.	
%	DIFFERENCE		1.4	-6.5	-1.4	-7.9	-7.9	
	S.D.	23.3	26.9	17.0	2.1	16.3	0.0	
	N	2	2	2	2	2	1	
	13							
	MEAN	316.	318.	296.	299.	288.	NA	
%	DIFFERENCE		0.6	-6.3	-5.4	-8.9		
	S.D.	28.3	19.1	7.8	4.2	17.0		
	N	2	2	2	2	2		

NA = NOT APPLICABLE

TABLE S5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHTS [G]

GROUP:		UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY	
DAY	-7	MEAN	169.	166.	165.	167.	173.	171.
	% DIFFERENCE			-1.8	-2.4	-1.2	2.4	1.2
	S.D.	5.7	7.8	1.4	6.4	2.8	7.1	
	N	2	2	2	2	2	2	
	-1	MEAN	184.	187.	193.	190.	192.	195.
	% DIFFERENCE			1.6	4.9	3.3	4.3	6.0
	S.D.	9.2	6.4	6.4	6.4	4.2	11.3	
	N	2	2	2	2	2	2	
	0	MEAN	198.	194.	200.	195.	199.	209.
	% DIFFERENCE			-2.0	1.0	-1.5	0.5	5.6
	S.D.	6.4	13.4	1.4	4.9	1.4	6.4	
	N	2	2	2	2	2	2	
	7	MEAN	209.	208.	225.	206.	207.	209.
	% DIFFERENCE			-0.5	7.7	-1.4	-1.0	0.0
	S.D.	9.9	4.9	9.9	18.4	6.4	0.0	
	N	2	2	2	2	2	1	
	13	MEAN	217.	225.	242.	217.	214.	NA
	% DIFFERENCE			3.7	11.5	0.0	-1.4	
	S.D.	0.7	7.8	12.7	22.6	14.8		
	N	2	2	2	2	2		

NA = NOT APPLICABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S6
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHT CHANGES [G]

PAGE 1

GROUP:		UNTREATED	0 MG/KG/DAY	MALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
DAY	-7 TO -1						
	MEAN	37.	47.	38.	48.	43.	53.
	S.D.	19.1	17.0	19.8	4.9	13.4	3.5
	N	2	2	2	2	2	2
	-1 TO 0						
	MEAN	20.	15.	15.	14.	18.	6.
	S.D.	0.0	2.1	2.1	3.5	1.4	14.1
	N	2	2	2	2	2	2
	0 TO 7						
	MEAN	31.	23.	21.	13.	-6.	6.
	S.D.	0.0	9.2	4.2	26.2	19.1	0.0
	N	2	2	2	2	2	1
	7 TO 13						
	MEAN	26.	23.	24.	13.	21.	NA
	S.D.	4.9	7.8	9.2	6.4	0.7	
	N	2	2	2	2	2	

NA = NOT APPLICABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S6
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHT CHANGES [G]

PAGE 2

GROUP:		UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
DAY	-7 TO -1						
	MEAN	15.	21.	28.	23.	19.	24.
	S.D.	3.5	1.4	4.9	0.0	1.4	4.2
	N	2	2	2	2	2	2
	-1 TO 0						
	MEAN	14.	7.	8.	5.	7.	14.
	S.D.	2.8	7.1	4.9	1.4	5.7	4.9
	N	2	2	2	2	2	2
	0 TO 7						
	MEAN	12.	14.	25.	12.	8.	-4.
	S.D.	3.5	8.5	8.5	13.4	7.8	0.0
	N	2	2	2	2	2	1
	7 TO 13						
	MEAN	8.	17.	17.	11.	7.	NA
	S.D.	9.2	2.8	2.8	4.2	8.5	
	N	2	2	2	2	2	

NA = NOT APPLICABLE

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12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S7
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 1

GROUP:		UNTREATED	0 MG/KG/DAY	MALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
DAY	0 TO 7						
	MEAN	31.	23.	21.	13.	-6.	6.
	S.D.	0.0	9.2	4.2	26.2	19.1	0.0
	N	2	2	2	2	2	1
	0 TO 13						
	MEAN	57.	45.	45.	25.	15.	NA
	S.D.	4.9	17.0	13.4	19.8	18.4	
	N	2	2	2	2	2	

NA = NOT APPLICABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S7
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 2

GROUP:		UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
DAY	0 TO 7						
	MEAN	12.	14.	25.	12.	8.	-4.
	S.D.	3.5	8.5	8.5	13.4	7.8	0.0
	N	2	2	2	2	2	1
	0 TO 13						
	MEAN	19.	31.	42.	23.	15.	NA
	S.D.	5.7	5.7	11.3	17.7	16.3	
	N	2	2	2	2	2	

NA = NOT APPLICABLE

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12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 1

GROUP:		UNTREATED	0 MG/KG/DAY	MALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
DAY	-7 TO -1						
	MEAN	25.	28.	26.	29.	28.	27.
	S.D.	4.2	4.2	3.5	1.4	4.2	1.4
	N	2	2	2	2	2	2
	0 TO 7						
	MEAN	31.	34.	31.	29.	29.	26.
	S.D.	2.8	2.8	3.5	4.2	2.1	0.0
	N	2	2	2	2	2	1
	7 TO 13						
	MEAN	37.	34.	35.	33.	34.	NA
	S.D.	3.5	0.7	0.0	2.8	0.0	
	N	2	2	2	2	2	

NA = NOT APPLICABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 2

GROUP:		UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
DAY	-7 TO -1						
	MEAN	21.	21.	22.	22.	24.	22.
	S.D.	2.1	1.4	0.0	1.4	1.4	2.8
	N	2	2	2	2	2	2
	0 TO 7						
	MEAN	26.	22.	30.	28.	27.	20.
	S.D.	1.4	0.0	0.0	1.4	2.8	0.0
	N	2	2	2	2	2	1
	7 TO 13						
	MEAN	27.	28.	31.	30.	26.	NA
	S.D.	0.0	0.0	0.0	2.1	0.0	
	N	2	1	1	2	1	

NA = NOT APPLICABLE

PBFSTv5.32
12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S9 (UNSCHEDULED DEATHS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF MACROSCOPIC FINDINGS

PAGE 1

FOUND DEAD OR EUTHANIZED MORIBUND OR IN EXTREMIS

	M A L E					
GROUP:	1	2	3	4	5	6
NUMBER OF ANIMALS IN DOSE GROUP	2	2	2	2	2	2
NUMBER OF ANIMALS EXAMINED	0	0	0	0	0	2
LN, AXILLARY -ENLARGED	0	0	0	0	0	1
SKIN -MATTING, RED	0	0	0	0	0	1
SKIN, TREATED -SCABBING	0	0	0	0	0	1
-THICKENED	0	0	0	0	0	2
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S9 (UNSCHEDULED DEATHS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF MACROSCOPIC FINDINGS

PAGE 2

FOUND DEAD OR EUTHANIZED MORIBUND OR IN EXTREMIS

GROUP:	F E M A L E					
	1	2	3	4	5	6
NUMBER OF ANIMALS IN DOSE GROUP	2	2	2	2	2	2
NUMBER OF ANIMALS EXAMINED	0	0	0	0	0	2
LN, AXILLARY -ENLARGED	0	0	0	0	0	1
SKIN -MATTING, YELLOW	0	0	0	0	0	1
SKIN, TREATED -SCABBING	0	0	0	0	0	2
-THICKENED	0	0	0	0	0	2
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY	

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PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S10 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF MACROSCOPIC FINDINGS

PAGE 1

SCHEDULED NECROPSY								
GROUP:		1	2	M A L E	3	4	5	6
NUMBER OF ANIMALS IN DOSE GROUP		2	2	2	2	2	2	2
NUMBER OF ANIMALS EXAMINED		2	2	2	2	2	2	0
KIDNEYS								
-DILATED PELVIS		0	0	0	0	0	1	0
SKIN								
-SCABBING		0	1	0	0	0	0	0
THYMUS								
-AREA(S), DARK RED		0	0	0	1	0	0	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES		2	1	2	1	1	1	0
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S10 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF MACROSCOPIC FINDINGS

PAGE 2

SCHEDULED NECROPSY								
GROUP:		1	2	F E M A L E	3	4	5	6
		2	2	2	2	2	2	2
NUMBER OF ANIMALS IN DOSE GROUP		2	2	2	2	2	2	2
NUMBER OF ANIMALS EXAMINED		2	2	2	2	2	2	0
LN, MANDIBULAR -ENLARGED		0	0	0	1	0	0	0
LN, MEDIASTINAL -ENLARGED		0	1	0	0	0	0	0
SKIN -SCABBING		0	1	0	0	0	0	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES		2	1	2	1	2	2	0
1- UNTREATED	2- 0 MG/KG/DAY	3- 25 MG/KG/DAY	4- 100 MG/KG/DAY	5- 300 MG/KG/DAY	6- 1440 MG/KG/DAY			

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12/30/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

PAGE 1

GROUP:	UNTREATED	0 MG/KG/DAY	MALES			1440 MG/KG/DAY
			25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	
FINAL BODY WT (G)						
MEAN	286.	282.	266.	269.	261.	NA
% DIFFERENCE		-1.4	-7.0	-5.9	-8.7	
S.D.	29.7	18.4	10.6	2.1	14.1	
N	2	2	2	2	2	
ADRENAL GLANDS (G)						
MEAN	0.0725	0.0632	0.0641	0.0565	0.0727	NA
% DIFFERENCE		-12.8	-11.6	-22.1	0.3	
S.D.	0.00064	0.00721	0.01619	0.00417	0.00502	
N	2	2	2	2	2	
ADRENAL GLANDS (G/100 G FINAL BODY WEIGHT)						
MEAN	0.025	0.022	0.024	0.021	0.028	NA
% DIFFERENCE		-12.0	-4.0	-16.0	12.0	
S.D.	0.0024	0.0011	0.0071	0.0014	0.0004	
N	2	2	2	2	2	
ADRENAL GLANDS (G/100 G BRAIN)						
MEAN	3.908	3.179	3.481	3.004	3.842	NA
% DIFFERENCE		-18.7	-10.9	-23.1	-1.7	
S.D.	0.1386	0.4076	1.0084	0.0266	0.1219	
N	2	2	2	2	2	
BRAIN (G)						
MEAN	1.86	1.99	1.85	1.88	1.89	NA
% DIFFERENCE		7.0	-0.5	1.1	1.6	
S.D.	0.049	0.028	0.071	0.156	0.071	
N	2	2	2	2	2	
NA = NOT APPLICABLE						

NA = NOT APPLICABLE

		MALES					
GROUP:	UNTREATED	0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY	
BRAIN (G/100 G FINAL BODY WEIGHT)							
MEAN	0.653	0.708	0.697	0.700	0.724		NA
% DIFFERENCE		8.4	6.7	7.2	10.9		
S.D.	0.0851	0.0562	0.0012	0.0524	0.0122		
N	2	2	2	2	2		
EPIDIDYMITIS (G)							
MEAN	0.75	0.76	0.74	0.76	0.72		NA
% DIFFERENCE		1.3	-1.3	1.3	-4.0		
S.D.	0.021	0.014	0.007	0.021	0.0127		
N	2	2	2	2	2		
EPIDIDYMITIS (G/100 G FINAL BODY WEIGHT)							
MEAN	0.262	0.270	0.277	0.281	0.275		NA
% DIFFERENCE		3.1	5.7	7.3	5.0		
S.D.	0.0347	0.0126	0.0084	0.0057	0.0339		
N	2	2	2	2	2		
EPIDIDYMITIS (G/100 G BRAIN)							
MEAN	40.161	38.200	39.751	40.251	37.996		NA
% DIFFERENCE		-4.9	-1.0	0.2	-5.4		
S.D.	0.0716	1.2536	1.1372	2.2022	5.3128		
N	2	2	2	2	2		
HEART (G)							
MEAN	1.27	1.12	1.10	1.13	1.06		NA
% DIFFERENCE		-11.8	-13.4	-11.0	-16.5		
S.D.	0.092	0.042	0.014	0.007	0.028		
N	2	2	2	2	2		

NA = NOT APPLICABLE

PROJECT NO.:WIL-402020M
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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

PAGE 3

GROUP:	UNTREATED	MALES				1440 MG/KG/DAY
		0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	

HEART (G/100 G FINAL BODY WEIGHT)						
MEAN	0.443	0.399	0.415	0.419	0.406	NA
% DIFFERENCE		-9.9	-6.3	-5.4	-8.4	
S.D.	0.0139	0.0410	0.0112	0.0059	0.0112	
N	2	2	2	2	2	
HEART (G/100 G BRAIN)						
MEAN	68.284	56.272	59.488	60.062	56.096	NA
% DIFFERENCE		-17.6	-12.9	-12.0	-17.8	
S.D.	6.7775	1.3322	1.5093	5.3460	0.6021	
N	2	2	2	2	2	
KIDNEYS (G)						
MEAN	2.74	2.68	2.62	2.90	2.63	NA
% DIFFERENCE		-2.2	-4.4	5.8	-4.0	
S.D.	0.042	0.099	0.191	0.170	0.177	
N	2	2	2	2	2	
KIDNEYS (G/100 G FINAL BODY WEIGHT)						
MEAN	0.964	0.951	0.984	1.080	1.005	NA
% DIFFERENCE		-1.3	2.1	12.0	4.3	
S.D.	0.1149	0.0269	0.0326	0.0547	0.0133	
N	2	2	2	2	2	
KIDNEYS (G/100 G BRAIN)						
MEAN	147.731	134.722	141.257	154.410	138.811	NA
% DIFFERENCE		-8.8	-4.4	4.5	-6.0	
S.D.	1.6549	6.8895	4.9207	3.7502	4.1598	
N	2	2	2	2	2	

NA = NOT APPLICABLE						

PROJECT NO.:WIL-402020M
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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

PAGE 4

GROUP:		MALES					
		UNTREATED	0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	
LIVER (G)							
	MEAN	11.69	10.38	10.85	10.79	10.35	NA
	% DIFFERENCE		-11.2	-7.2	-7.7	-11.5	
	S.D.	1.648	0.488	2.008	0.163	0.184	
	N	2	2	2	2	2	
LIVER (G/100 G FINAL BODY WEIGHT)							
	MEAN	4.078	3.681	4.075	4.017	3.973	NA
	% DIFFERENCE		-9.7	-0.1	-1.5	-2.6	
	S.D.	0.1526	0.0670	0.5936	0.0923	0.2857	
	N	2	2	2	2	2	
LIVER (G/100 G BRAIN)							
	MEAN	631.329	521.584	584.839	576.000	548.185	NA
	% DIFFERENCE		-17.4	-7.4	-8.8	-13.2	
	S.D.	105.6631	31.9314	86.1967	56.3129	30.2365	
	N	2	2	2	2	2	
PITUITARY (G)							
	MEAN	0.0113	0.0118	0.0113	0.0082	0.0101	NA
	% DIFFERENCE		4.4	0.0	-27.4	-10.6	
	S.D.	0.00226	0.00078	0.00276	0.00028	0.00106	
	N	2	2	2	2	2	
PITUITARY (G/100 G FINAL BODY WEIGHT)							
	MEAN	0.004	0.004	0.004	0.003	0.004	NA
	% DIFFERENCE		0.0	0.0	-25.0	0.0	
	S.D.	0.0004	0.0005	0.0012	0.0001	0.0006	
	N	2	2	2	2	2	
NA = NOT APPLICABLE							

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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

PAGE 5

GROUP:	UNTREATED	0 MG/KG/DAY	MALES			1440 MG/KG/DAY
			25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	
PITUITARY (G/100 G BRAIN)						
MEAN	0.611	0.590	0.611	0.438	0.533	NA
% DIFFERENCE		-3.4	0.0	-28.3	-12.8	
S.D.	0.1383	0.0307	0.1724	0.0513	0.0761	
N	2	2	2	2	2	
PROSTATE (G)						
MEAN	0.65	0.61	0.60	0.51	0.57	NA
% DIFFERENCE		-6.2	-7.7	-21.5	-12.3	
S.D.	0.042	0.078	0.035	0.057	0.014	
N	2	2	2	2	2	
PROSTATE (G/100 G FINAL BODY WEIGHT)						
MEAN	0.228	0.214	0.224	0.190	0.219	NA
% DIFFERENCE		-6.1	-1.8	-16.7	-3.9	
S.D.	0.0088	0.0136	0.0044	0.0226	0.0064	
N	2	2	2	2	2	
PROSTATE (G/100 G BRAIN)						
MEAN	35.083	30.433	32.149	27.346	30.166	NA
% DIFFERENCE		-13.3	-8.4	-22.1	-14.0	
S.D.	3.2233	4.3412	0.6823	5.2717	0.3804	
N	2	2	2	2	2	
SPLEEN (G)						
MEAN	0.59	0.62	0.51	0.53	0.52	NA
% DIFFERENCE		5.1	-13.6	-10.2	-11.9	
S.D.	0.127	0.141	0.007	0.014	0.064	
N	2	2	2	2	2	

NA = NOT APPLICABLE

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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

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GROUP:	UNTREATED	0 MG/KG/DAY	MALES			300 MG/KG/DAY	1440 MG/KG/DAY
			25 MG/KG/DAY	100 MG/KG/DAY			

SPLEEN (G/100 G FINAL BODY WEIGHT)							
MEAN	0.205	0.219	0.190	0.197	0.197		NA
% DIFFERENCE		6.8	-7.3	-3.9	-3.9		
S.D.	0.0232	0.0359	0.0049	0.0037	0.0137		
N	2	2	2	2	2		
SPLEEN (G/100 G BRAIN)							
MEAN	31.909	31.209	27.310	28.257	27.205		NA
% DIFFERENCE		-2.2	-14.4	-11.4	-14.7		
S.D.	7.7128	7.5502	0.6616	1.5859	2.3494		
N	2	2	2	2	2		
TESTES (G)							
MEAN	3.40	3.14	3.19	3.18	3.36		NA
% DIFFERENCE		-7.6	-6.2	-6.5	-1.2		
S.D.	0.057	0.332	0.148	0.021	0.113		
N	2	2	2	2	2		
TESTES (G/100 G FINAL BODY WEIGHT)							
MEAN	1.194	1.118	1.202	1.183	1.290		NA
% DIFFERENCE		-6.4	0.7	-0.9	8.0		
S.D.	0.1042	0.1907	0.1039	0.0014	0.1133		
N	2	2	2	2	2		
TESTES (G/100 G BRAIN)							
MEAN	183.394	157.435	172.442	169.416	178.014		NA
% DIFFERENCE		-14.2	-6.0	-7.6	-2.9		
S.D.	7.9430	14.4629	14.6177	12.8903	12.6461		
N	2	2	2	2	2		

NA = NOT APPLICABLE							

TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

GROUP:		MALES					
		UNTREATED	0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	
THYMUS (G)							
	MEAN	0.3791	0.3839	0.4054	0.3625	0.2730	NA
	% DIFFERENCE		1.3	6.9	-4.4	-28.0	
	S.D.	0.00608	0.03210	0.03196	0.05353	0.00474	
	N	2	2	2	2	2	
THYMUS (G/100 G FINAL BODY WEIGHT)							
	MEAN	0.133	0.137	0.153	0.135	0.105	NA
	% DIFFERENCE		3.0	15.0	1.5	-21.1	
	S.D.	0.0117	0.0203	0.0182	0.0210	0.0075	
	N	2	2	2	2	2	
THYMUS (G/100 G BRAIN)							
	MEAN	20.448	19.282	21.963	19.464	14.457	NA
	% DIFFERENCE		-5.7	7.4	-4.8	-29.3	
	S.D.	0.8734	1.3391	2.5671	4.4578	0.7915	
	N	2	2	2	2	2	
THYROID/SPARATHY (G)							
	MEAN	0.0186	0.0190	0.0167	0.0184	0.0193	NA
	% DIFFERENCE		2.2	-10.2	-1.1	3.8	
	S.D.	0.00134	0.00049	0.00042	0.00212	0.00021	
	N	2	2	2	2	2	
THYROID/SPARATHY (G/100 G FINAL BODY WEIGHT)							
	MEAN	0.007	0.007	0.006	0.007	0.008	NA
	% DIFFERENCE		0.0	-14.3	0.0	14.3	
	S.D.	0.0007	0.0000	0.0000	0.0007	0.0007	
	N	2	2	2	2	2	
NA = NOT APPLICABLE							

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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

PAGE 8

GROUP:	MALES					
	UNTREATED	0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
THYROID/PARATHY (G/100 G BRAIN)						
MEAN	1.001	0.953	0.903	0.987	1.019	NA
% DIFFERENCE		-4.8	-9.8	-1.4	1.8	
S.D.	0.0990	0.0389	0.0113	0.1945	0.0269	
N	2	2	2	2	2	

NA = NOT APPLICABLE

TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

GROUP:	UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
FINAL BODY WT (G)						
MEAN	195.	200.	214.	189.	193.	NA
% DIFFERENCE		2.6	9.7	-3.1	-1.0	
S.D.	0.7	4.9	8.5	15.6	3.5	
N	2	2	2	2	2	
ADRENAL GLANDS (G)						
MEAN	0.0755	0.0730	0.0749	0.0837	0.0703	NA
% DIFFERENCE		-3.3	-0.8	10.9	-6.9	
S.D.	0.00092	0.00170	0.00389	0.00283	0.00262	
N	2	2	2	2	2	
ADRENAL GLANDS (G/100 G FINAL BODY WEIGHT)						
MEAN	0.039	0.037	0.035	0.044	0.037	NA
% DIFFERENCE		-5.1	-10.3	12.8	-5.1	
S.D.	0.0003	0.0018	0.0004	0.0052	0.0020	
N	2	2	2	2	2	
ADRENAL GLANDS (G/100 G BRAIN)						
MEAN	4.204	3.865	3.850	4.665	3.916	NA
% DIFFERENCE		-8.1	-8.4	11.0	-6.9	
S.D.	0.1009	0.1127	0.0380	0.2495	0.2229	
N	2	2	2	2	2	
BRAIN (G)						
MEAN	1.80	1.89	1.95	1.80	1.80	NA
% DIFFERENCE		5.0	8.3	0.0	0.0	
S.D.	0.021	0.099	0.120	0.035	0.035	
N	2	2	2	2	2	

NA = NOT APPLICABLE

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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

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GROUP:	UNTREATED	0 MG/KG/DAY	FEMALES				1440 MG/KG/DAY
			25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY		
BRAIN (G/100 G FINAL BODY WEIGHT)							
MEAN	0.923	0.948	0.908	0.952	0.932		NA
% DIFFERENCE		2.7	-1.6	3.1	1.0		
S.D.	0.0143	0.0731	0.0202	0.0597	0.0012		
N	2	2	2	2	2		
HEART (G)							
MEAN	0.90	0.91	0.99	0.84	0.86		NA
% DIFFERENCE		1.1	10.0	-6.7	-4.4		
S.D.	0.035	0.106	0.071	0.028	0.028		
N	2	2	2	2	2		
HEART (G/100 G FINAL BODY WEIGHT)							
MEAN	0.460	0.454	0.464	0.445	0.447		NA
% DIFFERENCE		-1.3	0.9	-3.3	-2.8		
S.D.	0.0199	0.0644	0.0514	0.0217	0.0229		
N	2	2	2	2	2		
HEART (G/100 G BRAIN)							
MEAN	49.853	47.802	51.110	46.790	47.936		NA
% DIFFERENCE		-4.1	2.5	-6.1	-3.8		
S.D.	1.3806	3.1082	6.7943	0.6541	2.5199		
N	2	2	2	2	2		
KIDNEYS (G)							
MEAN	1.87	1.98	2.13	2.02	1.95		NA
% DIFFERENCE		5.9	13.9	8.0	4.3		
S.D.	0.042	0.099	0.262	0.177	0.106		
N	2	2	2	2	2		

NA = NOT APPLICABLE

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TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

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GROUP:	UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
KIDNEYS (G/100 G FINAL BODY WEIGHT)						
MEAN	0.961	0.992	0.991	1.066	1.010	NA
% DIFFERENCE		3.2	3.1	10.9	5.1	
S.D.	0.0183	0.0250	0.0829	0.0058	0.0365	
N	2	2	2	2	2	
KIDNEYS (G/100 G BRAIN)						
MEAN	104.200	105.043	109.047	112.181	108.319	NA
% DIFFERENCE		0.8	4.7	7.7	4.0	
S.D.	3.5951	10.7398	6.7119	7.6387	3.7755	
N	2	2	2	2	2	
LIVER (G)						
MEAN	8.35	8.23	10.08	8.22	9.12	NA
% DIFFERENCE		-1.4	20.7	-1.6	9.2	
S.D.	1.131	1.457	1.973	1.810	1.082	
N	2	2	2	2	2	
LIVER (G/100 G FINAL BODY WEIGHT)						
MEAN	4.292	4.118	4.693	4.324	4.731	NA
% DIFFERENCE		-4.1	9.3	0.7	10.2	
S.D.	0.5661	0.6280	0.7358	0.6018	0.4751	
N	2	2	2	2	2	
LIVER (G/100 G BRAIN)						
MEAN	465.586	438.069	515.846	457.034	507.304	NA
% DIFFERENCE		-5.9	10.8	-1.8	9.0	
S.D.	68.5312	100.0162	69.5497	91.8444	50.2793	
N	2	2	2	2	2	

NA = NOT APPLICABLE

NA = NOT APPLICABLE

TABLE S11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

GROUP:	UNTREATED	0 MG/KG/DAY	FEMALES				
			25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY	
PITUITARY (G/100 G BRAIN)							
MEAN	0.864	0.788	0.717	0.697	0.771	NA	
% DIFFERENCE		-8.8	-17.0	-19.3	-10.8		
S.D.	0.0338	0.3216	0.0175	0.0452	0.0518		
N	2	2	2	2	2		
SPLEEN (G)							
MEAN	0.52	0.52	0.51	0.46	0.44	NA	
% DIFFERENCE		0.0	-1.9	-11.5	-15.4		
S.D.	0.021	0.099	0.099	0.099	0.021		
N	2	2	2	2	2		
SPLEEN (G/100 G FINAL BODY WEIGHT)							
MEAN	0.265	0.260	0.238	0.242	0.226	NA	
% DIFFERENCE		-1.9	-10.2	-8.7	-14.7		
S.D.	0.0099	0.0432	0.0368	0.0325	0.0069		
N	2	2	2	2	2		
SPLEEN (G/100 G BRAIN)							
MEAN	28.700	27.688	26.114	25.577	24.227	NA	
% DIFFERENCE		-3.5	-9.0	-10.9	-15.6		
S.D.	1.5210	6.6881	3.4758	5.0113	0.7046		
N	2	2	2	2	2		
THYMUS (G)							
MEAN	0.4835	0.4813	0.5318	0.3466	0.3292	NA	
% DIFFERENCE		-0.5	10.0	-28.3	-31.9		
S.D.	0.11080	0.06102	0.12247	0.03338	0.03875		
N	2	2	2	2	2		
NA = NOT APPLICABLE							

		FEMALES					
GROUP:	UNTREATED	0 MG/KG/DAY	25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY	

THYMUS (G/100 G FINAL BODY WEIGHT)							
MEAN	0.248	0.242	0.248	0.185	0.171	NA	
% DIFFERENCE		-2.4	0.0	-25.4	-31.0		
S.D.	0.0561	0.0366	0.0474	0.0329	0.0170		
N	2	2	2	2	2		
THYMUS (G/100 G BRAIN)							
MEAN	26.972	25.413	27.199	19.331	18.322	NA	
% DIFFERENCE		-5.8	0.8	-28.3	-32.1		
S.D.	6.4917	1.8976	4.6157	2.2401	1.7979		
N	2	2	2	2	2		
THYROID/ PARATHY (G)							
MEAN	0.0153	0.0178	0.0170	0.0136	0.0169	NA	
% DIFFERENCE		16.3	11.1	-11.1	10.5		
S.D.	0.00127	0.00212	0.00099	0.00007	0.00078		
N	2	2	2	2	2		
THYROID/ PARATHY (G/100 G FINAL BODY WEIGHT)							
MEAN	0.008	0.009	0.008	0.008	0.009	NA	
% DIFFERENCE		12.5	0.0	0.0	12.5		
S.D.	0.0007	0.0014	0.0000	0.0007	0.0007		
N	2	2	2	2	2		
THYROID/ PARATHY (G/100 G BRAIN)							
MEAN	0.852	0.941	0.874	0.755	0.940	NA	
% DIFFERENCE		10.4	2.6	-11.4	10.3		
S.D.	0.0608	0.0629	0.0028	0.0113	0.0615		
N	2	2	2	2	2		

NA = NOT APPLICABLE							

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14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND RELATIVE ORGAN WEIGHTS

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GROUP:		UNTREATED	0 MG/KG/DAY	FEMALES 25 MG/KG/DAY	100 MG/KG/DAY	300 MG/KG/DAY	1440 MG/KG/DAY
UTERUS (G)							
	MEAN	0.40	0.39	0.37	0.43	0.41	NA
	% DIFFERENCE		-2.5	-7.5	7.5	2.5	
	S.D.	0.078	0.064	0.014	0.127	0.148	
	N	2	2	2	2	2	
UTERUS (G/100 G FINAL BODY WEIGHT)							
	MEAN	0.203	0.193	0.173	0.226	0.211	NA
	% DIFFERENCE		-4.9	-14.8	11.3	3.9	
	S.D.	0.0407	0.0367	0.0135	0.0488	0.0810	
	N	2	2	2	2	2	
UTERUS (G/100 G BRAIN)							
	MEAN	21.982	20.310	19.082	23.890	22.649	NA
	% DIFFERENCE		-7.6	-13.2	8.7	3.0	
	S.D.	4.0735	2.3034	1.9064	6.6202	8.7187	
	N	2	2	2	2	2	

NA = NOT APPLICABLE

POFBSTv5.24
12/29/2010

APPENDIX A

Study Protocol and Deviations

DEVIATIONS FROM THE PROTOCOL

This study was conducted in accordance with the protocol and protocol amendments, except for the following.

- **Protocol Section 5.6** states that animals would be uniquely identified by a metal ear tag displaying the animal number. However, the stock animals utilized for the additional dose levels (Groups 7-9) were identified by a microchip (BMDS system) implanted subcutaneously in the dorsoscapular region prior to being assigned to this study.

Reason for Deviation: The stock animals utilized on study were uniquely identified by microchip instead of a metal ear tag.

- **Protocol Section 6.2** states that fluorescent lighting will provide illumination for a 12-hour light/dark photoperiod. On 25 November 2010 (study day -8 for Groups 1-6), the power supply was interrupted from 1455 hours to 1525 hours.

Reason for Deviation: The main breaker tripped.

These deviations did not negatively impact the quality or integrity of the data nor the outcome of the study.



Study Number: WIL-402020

PROTOCOL AMENDMENT 2

Sponsor: American Petroleum Institute

Title of Study:

A 14-Day Dose Range Finding Dermal Toxicity Study Utilizing Distillates (Petroleum), Light Catalytic Cracked in Sprague Dawley Rats

Protocol Modifications:

In order to select the appropriate doses for the subsequent studies to be conducted with this test article, three additional dose levels will be evaluated. Unless otherwise indicated below, the protocol and amendment(s) will be followed for this additional work. Modifications indicated below are only applicable to the additional dose levels.

1) 5.4 Number of Animals:

Six (6) naïve males and 6 naïve females will be arbitrarily selected from stock and place on study.

2) 5.5 Approximate Age and Weight:

Stock animals assigned to this study will be selected from those closest in age and weight based on the range specified in the protocol.

3) 7.4.1 Organization of Test Groups:

The following table presents the study group arrangement. The dosage levels were selected by the Sponsor's Representatives.

Group Number	Test Substance ^a	Dosage Level (mg/kg/day)	Dose Concentration (mg/mL) ^a	Dose Volume (mL/kg)	Number of Animals	
					Males	Females
7	Test Substance	450	300	1.5	2	2
8	Test Substance	600	400	1.5	2	2
9	Test Substance	750	500	1.5	2	2

^a Distillates (Petroleum), Light Catalytic Cracked (LLC) which will be formulated w/v in mineral oil.

4) **8.6.1 Macroscopic Examination:**

Tissues will not be collected for these additional groups.

5) **8.6.2 Organ Weights:**

The liver will be weighed and discarded at the scheduled necropsy. No other organs will be weighed.

6) **8.6.3 Microscopic Examination:**

Not applicable these additional groups.

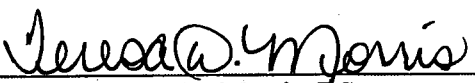
Reasons for Protocol Modification:

- 1-6) Three additional dose levels added to aid in the selection of doses for the subsequent studies to be conducted with this test article. All modifications were implemented at the request of the Sponsor.

Approval:

Sponsor's approval was obtained via e-mail on 2/17/11.

WIL Research Laboratories, LLC



Teresa D. Morris, BS
Study Director

2/17/11

Date

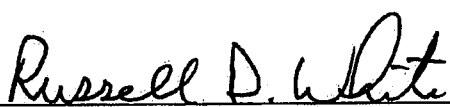


Jozef J.W.M. Mertens, PhD, DABT
Senior Director, General Toxicology

17-Feb-2011

Date

American Petroleum Institute



Russell White
Sponsor Representative

2-17-2011

Date



Study Number: WIL-402020

PROTOCOL AMENDMENT 1

Sponsor: American Petroleum Institute

Title of Study:

A 14-Day Dose Range Finding Dermal Toxicity Study Utilizing Distillates (Petroleum), Light Catalytic Cracked in Sprague Dawley Rats

Protocol Modifications:

1) 7.4.3 Treatment Regimen:

This section will be replaced with the following:

The vehicle (mineral oil) and test substance formulations will be administered once daily, 7 days a week for approximately 14 days (until the day prior to necropsy). Day 0 is the first day of dosing and Day 14 is the day of the scheduled necropsy. All animals will be collared continuously during the 14-day dosing period. Once per week (on study days 6 and 13) the test site will be gently patted using a disposable paper towel in an effort to remove the residual test substance. If needed, the test site can be gently patted with gauze moistened with the vehicle and then again with dry gauze or disposable paper towel. Group 1 animals will be sham controls and will not receive the test or vehicle control substance; however, all other dosing procedures will be followed for this group.

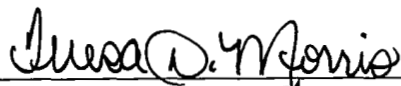
Reasons for Protocol Modification:

- 1) Change removal of residual test substance from daily (6-hours following dosing) to weekly (approximately 6 hours following dosing).

Approval:

Sponsor's approval was obtained via e-mail on December 3, 2010.

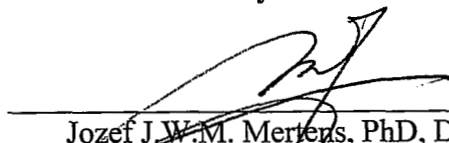
WIL Research Laboratories, LLC



Teresa D. Morris, BS
Study Director

12/3/10

Date

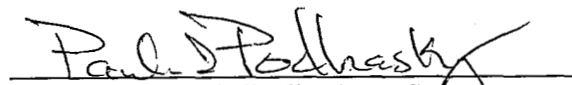


Jozef J.W.M. Mertens, PhD, DABT
Senior Director, General Toxicology

3 Dec 2010

Date

American Petroleum Institute



Paula Podhasky, BS
Sponsor Representative

07 Dec 2010

Date



PROTOCOL

A 14-DAY DOSE RANGE FINDING DERMAL TOXICITY STUDY UTILIZING DISTILLATES (PETROLEUM), LIGHT CATALYTIC CRACKEDIN SPRAGUE DAWLEY RATS

Submitted To:

American Petroleum Institute
1220 L Street, NW
Washington, DC 20005

WIL Research Laboratories, LLC
1407 George Road
Ashland, OH 44805-8946

WIL RESEARCH LABORATORIES, LLC 1407 GEORGE ROAD ASHLAND, OH 44805-8946 (419) 289-8700 FAX (419) 289-3650

Improving human health and protecting the environment through scientific research services.®

1 OBJECTIVE:

The objectives of this study are to evaluate the potential irritative and toxicity effects of repeated exposure of Distillates (Petroleum), Light Catalytic Cracked (LLC) over 14 days, and to assist in dose selection for subsequent dermal toxicity studies (OECD 414 and 411) in Sprague Dawley rats.

This study is a non-GLP study and will be performed according to this protocol as approved by the Sponsor and the applicable Standard Operating Procedures of WIL Research Laboratories, LLC (WIL SOPs).

2 PERSONNEL INVOLVED IN THE STUDY:**2.1 Sponsor Representative:**

Paula Podhasky, BS
American Petroleum Institute
1220 L Street, NW
Washington, DC 20005
Tel: (202) 682-8333
E-mail: Podhaskyp@api.org

2.2 WIL Study Director:

Teresa D. Morris, BS
Senior Toxicologist, Toxicology
Tel: (419) 289-8700
Fax: (419) 289-3650
E-mail: tmorris@wilresearch.com

2.3 WIL Departmental Responsibilities:

Jonathan M. Hurley, BS
Project Specialist, General Toxicology
Emergency Contact
Tel: (419) 289-8700
Fax: (419) 289-3650
E-mail: jhurley@wilresearch.com

Mark D. Nemec, BS, DABT
President and Chief Operating Officer

Jozef J.W.M Mertens, PhD, DABT
Senior Director, General Toxicology



Alex K. Eapen, PhD, DABT
Assistant Director, Toxicology

Ronald E. Wilson, BS
Director, Informational Systems

Walter R. Miller, Jr., DVM
Clinical Veterinarian, Head of Surgery
and Experimental Medicine

Sally A. Keets, AS
Senior Operations Manager, Vivarium

Erica L. Lashley, BS, LAT
Operations Manager, Toxicology

Theresa M. Rafeld, CPhT
Group Manager, Formulations Laboratory

Carol A. Kopp, BS, LAT
Manager, Gross Pathology and
Developmental Toxicology Laboratory

Robert A. Wally, BS
Operations Manager, Reporting and
Technical Support Services

3 STUDY SCHEDULE:

Proposed Experimental Starting Date: (Animal Receipt Date)	November 23, 2010
Proposed Experimental Start Date: (Proposed Initiation of Dosing)	December 3, 2010
Proposed Necropsy Date:	December 17, 2010
Preliminary Audited Data Tables:	Approximately 3 weeks following the scheduled necropsy
Proposed Unaudited Draft Report Date:	Approximately 6-8 weeks following the scheduled necropsy



4 TEST SUBSTANCE INFORMATION:**4.1 Test Substance Shipment:**

Test substance and applicable documentation will be shipped under Sponsor's responsibility to:

Formulations Laboratory (WIL-402020; Teresa D. Morris, BS)
Attn. Larry Blessing
WIL Research Laboratories, LLC
1407 George Road
Ashland, Ohio 44805-8946

4.2 Identification:

Distillates (Petroleum), Light Catalytic Cracked (LLC CAS 64741-59-9)

4.3 Lot Number:

Site #26: Sample #18

4.4 Expiration/Retest Date:

Not applicable for this study. Will be determined prior to the conduct of the GLP definitive studies.

4.5 Purity:

100%

4.6 Stability:

The test substance is considered to be stable under the storage conditions provided by the Sponsor.

4.7 Physical Description:

To be documented by WIL Research Laboratories, LLC.

4.8 Storage Conditions:

Room temperature, protected from light.



4.9 Reserve Samples:

Reserve samples of the test substance will be taken in accordance with WIL Standard Operating Procedures and stored in the Archives at WIL Research Laboratories, LLC indefinitely, unless otherwise specified.

4.10 Personnel Safety:

Routine safety precautions apply. It is the responsibility of the Sponsor to notify the testing facility of any special handling requirements for the test substance. A Material Safety Data Sheet (MSDS) will be provided.

4.11 Test Substance Disposition:

With the exception of the reserve sample for each batch of test substance, all neat test substance remaining at study completion will be returned to the Sponsor or retained for subsequent studies.

5 TEST SYSTEM:**5.1 Species:**

Rat

5.2 Strain:

CrI:CD(SD)

5.3 Source:

Charles River Laboratories, Inc.
Facility to be documented in the raw data

5.4 Number of Animals:

Thirteen (13) naïve males and 13 naïve females will be purchased. Twelve males and 12 females will be placed on study. Females will be nulliparous and non-pregnant. Animals not utilized on study will be assigned to stock or euthanized by CO₂ inhalation and discarded.



5.5 Approximate Age and Weight:

Animals will be approximately 7-8 weeks of age when received, and approximately 8-9 weeks of age at initiation of dosing. The males will weigh approximately 240 to 340 grams and the females approximately 170 to 270 grams at randomization.

5.6 Identification System:

Animals will be uniquely identified by a metal eartag displaying the animal number. Individual cage cards will be affixed to each cage and will display at least the animal number, group number, sex, and study number.

5.7 Justification for Selection and Number of Animals:

This species and strain of animal is recognized as appropriate for short-term toxicity studies. The CrI:CD(SD) rat will be utilized because it is a widely used strain for which historical control data are available. The number of animals selected is the minimum needed to yield scientifically meaningful data.

6 SPECIFIC MAINTENANCE SCHEDULE:**6.1 Animal Housing:**

Animals will be housed individually in an environmentally controlled room in suspended, wire-mesh cages. The cages will be elevated above cage-board or other suitable material. The cages will be subject to routine cleaning at a frequency consistent with maintaining good animal health. The facilities at WIL Research Laboratories, LLC are fully accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC International).

6.2 Environmental Conditions:

Controls will be set to maintain temperature at $71 \pm 5^{\circ}\text{F}$ ($22 \pm 3^{\circ}\text{C}$) and relative humidity at approximately $50 \pm 20\%$. Temperature and relative humidity will be monitored continuously. Data for these two parameters will be scheduled for automatic collection on an hourly basis. Fluorescent lighting will provide illumination for a 12-hour light/dark photoperiod. Temporary adjustments to the light/dark cycles may be made to accommodate protocol specified activities. The ventilation rate will be set at a minimum of 10 room air changes per hour, 100% fresh air.



6.3 Drinking Water:

Reverse osmosis-purified water will be available *ad libitum*. Filters servicing the automatic watering system will be changed regularly according to Standard Operating Procedures. The municipal water supplying the laboratory will be analyzed for contaminants according to Standard Operating Procedures to ascertain that none are present at concentrations that would be expected to affect the outcome of the study.

6.4 Diet:

PMI Nutrition International, LLC Certified Rodent LabDiet® 5002 (pellet) will be offered *ad libitum* during the study, except during overnight fasting prior to necropsy. Each lot utilized will be identified and recorded. Standard operating procedures provide specifications for acceptable levels of heavy metals and pesticides that are reasonably expected to be present in the diet without interfering with the purpose or conduct of the study. Each lot of feed has been analyzed to assure specifications are met. Feeders will be changed and sanitized once per week.

6.5 Enrichment:

Enrichment devices will be provided to each animal for environmental enrichment and to aid in maintaining the animal's oral health (to be provided starting during acclimation).

7 EXPERIMENTAL DESIGN:

7.1 Animal Receipt and Acclimation:

Each animal will be inspected by qualified personnel upon receipt. Animals judged to be in good health will be placed immediately in acclimation for at least 7 days. All animals will be weighed and assigned a permanent animal number. During the acclimation period, each animal will be observed twice daily for changes in general appearance or behavior.

The animals will be allowed a pretreatment week (during the acclimation period) at which time all animals will be fitted with collars, food consumption will be determined and general health will be monitored, but they will not receive the test substance. All animals will receive a detailed physical examination and body weight determination prior to the time of animal selection for randomization.



7.2 Randomization:

Near the end of the pretest period, animals judged to be suitable for testing will be assigned to groups at random based on body weight stratification into a block design using a computer program. A printout containing the animal numbers and individual group assignments will be generated. Animals will then be arranged into the groups according to the printout. Body weights at randomization will be within $\pm 20\%$ of the mean of each sex. Following randomization, it may be necessary to replace individual animals prior to or shortly after the initiation of dosing, based on the health status of the animals. Replacement animals will be selected from remaining pretest animals and assigned arbitrarily. These instances will be appropriately documented in the study records.

7.3 Route and Rationale of Test Substance Administration:

The route of administration will be dermal since the study objective is to determine the potential toxicity of the test substance when administered by the dermal route.

7.4 Organization of Test Groups, Dosage Levels and Treatment Regimen:**7.4.1 Organization of Test Groups:**

The following table presents the study group arrangement. The dosage levels were selected by the Sponsor's Representatives.

Group Number	Test Substance	Dosage Level (mg/kg/day)	Dose Concentration (mg/mL)	Dose Volume (mL/kg)	Number of Animals	
					Males	Females
1	Sham Control	NA	NA	NA	2	2
2	Vehicle ^a	0	0	1.5	2	2
3	Test Substance ^b	25	16.6	1.5	2	2
4	Test Substance ^b	100	66.6	1.5	2	2
5	Test Substance ^b	300	200	1.5	2	2
6	Test Substance ^{bc}	1440	Neat	1.5	2	2

^a The vehicle for this study is mineral oil.

^b The test substance used for Groups 3-6 is Distillates (Petroleum), Light Catalytic Cracked (LLC).

^c The specific gravity = 0.96g/mL



7.4.2 Sham Control:

The Group 1 sham control animals will be subject to the same procedures (i.e. shaving, collaring, sham dosing with glass rod and removal of residual test substance) as animals in Groups 2-6. However, no vehicle or test substance will be applied to the sham control animals.

7.4.3 Treatment Regimen:

The vehicle (mineral oil) and test substance formulations will be administered once daily (6-hour exposure), 7 days a week for approximately 14 days (until the day prior to necropsy). Day 0 is the first day of dosing and Day 14 is the day of the scheduled necropsy. All animals will be collared continuously during the 14-day dosing period. Following each 6-hour exposure the test site will be gently patted using a disposable paper towel in an effort to remove the residual test substance. If needed, the test site can be gently patted with gauze moistened with the vehicle and then again with dry gauze or disposable paper towels. Group 1 animals will be sham controls and will not receive the test or vehicle control substance; however, all other dosing procedures will be followed for this group.

7.4.4 Method of Administration and Dose Calculations:

Prior to administration the back (down each side to the ventral surface) and flanks of each animal will be clipped free of hair using an electric clipper. Additional clipping throughout the study will be performed as necessary.

The vehicle and test substance formulations, adjusted as mL/kg per the most recent body weight, will be spread uniformly over the treatment site (target area of approximately 10% of the body surface area). The area covered by test substance will be measured and recorded once per week for each animal and the resulting approximate % of body surface area covered will be reported. The test substance will be applied to each animal in Groups 2-6 and spread over the area using a glass rod. The area will remain uncovered. Dosing sites will be marked with a permanent marker and remarked as necessary. Animals will be exposed for 14 consecutive days and collared for the duration of the exposure to prevent ingestion of the test substance.



7.5 Preparation and Analysis of Test Substance Formulations:

7.5.1 Method and Frequency of Preparation:

The test substance will be prepared for dosing as a weight-to-volume mixture in mineral oil. The dosing formulations will be prepared daily. A complete and detailed description of the methods of test substance preparation will be included in the study records and described in the final report.

7.5.2 Homogeneity, Stability and Concentration of Test Substance Formulations:

Not applicable for this study. Will be determined prior to the conduct of the GLP definitive studies.

8 PARAMETERS TO BE EVALUATED:

8.1 Viability Observations:

All animals will be observed for mortality and moribundity twice daily, once in the morning and once in the afternoon. Moribund animals will be euthanized by CO₂ inhalation and necropsied as described in section 8.6.1.

8.2 Animals to Be Euthanized in Extremis:

All animals to be euthanized *in extremis* will have a body weight collected and undergo a final detailed physical observation prior to release for euthanasia and subsequent necropsy.

8.3 Clinical Observations:

8.3.1 Daily Observations:

A clinical examination will be performed on all animals at the time of dosing and at approximately 1-2 hours post-dose on each dosing day. Observations will include, but are not limited to, changes in the skin, fur, eyes and mucous membranes; respiratory, circulatory, autonomic and central nervous systems functions; somatomotor activity and behavior patterns. Findings or lack of findings noted at the clinical examination will be recorded for individual animals. Findings noted for individual animals outside of the specified observation periods will also be recorded.



8.3.2 Detailed Physical Examinations:

A detailed physical examination will be conducted at least once during the pretreatment period, and approximately weekly during the study. All animals assigned to study will also receive a detailed physical examination on the days of the scheduled or unscheduled euthanasia. The animals will be removed from their home cages and placed in a standard arena for observations. Observations will be detailed and carefully recorded. Where appropriate an explicitly defined scoring system will be used if in the opinion of the Study Director, and with approval of the Sponsor, doing so increases the utility of the data. Signs noted shall include, but not be limited to, changes in skin, fur, eyes, mucous membranes, occurrence of secretions and excretions and autonomic activity (e.g., lacrimation, piloerection, pupil size, unusual respiratory pattern), changes in gait, posture and response to handling, as well as the presence of clonic or tonic movements, stereotypic behavior (e.g., excessive grooming, repetitive circling) or bizarre behavior (e.g., self-mutilation, walking backwards) will be recorded. The absence or presence of findings will be recorded for individual animals.

8.3.3 Dermal Observations:

Dermal scoring according to the method of Draize (Appendix A) will be conducted daily during the 14-day dosing period (immediately prior to application, on dosing days).

8.4 Individual Body Weights:

Individual body weights will be recorded approximately weekly, beginning during pretest, for the duration of the study. A final fasted body weight will be recorded at the time of necropsy.

8.5 Individual Food Consumption:

Individual food consumption will be recorded approximately weekly, beginning during pretest, for the duration of the study.

8.6 Anatomic Pathology:

8.6.1 Macroscopic Examination:

A complete necropsy examination will be conducted on all animals. Animals *in extremis* or surviving to the scheduled necropsy will be euthanized by CO₂ inhalation. Necropsy will include examination of the external surface; all orifices; and the cranial, thoracic, abdominal and



pelvic cavities including viscera. At the time of necropsy, the following tissues will be collected and placed in 10% neutral-buffered formalin (or other fixative if applicable).

Adrenals (2)	Skin with mammary gland ^d
Aorta	(females only)
Bone with marrow	Skeletal muscle (Rectus femoris)
Sternum	Ovaries (2) with oviducts ^e
Femur with joint	Pancreas
Bone marrow smear (from femur) ^a	Peripheral nerve (sciatic)
Brain	Pituitary
Cerebrum (2 levels)	Prostate
Cerebellum with pons/medulla	Salivary glands [mandibular (2)]
Cervix	Seminal vesicles (2)
Epididymides (2) ^c	Skin
Exor bital lacrimal glands (2)	Treated
Eyes with optic nerves (2) ^b	Sham
Gastrointestinal tract	Untreated (posterior to treated skin)
Esophagus	Spinal cord
Stomach	Cervical
Duodenum	Thoracic
Jejunum	Lumbar
Ileum	Spleen
Cecum	Testes (2) ^c
Colon	Thymus
Rectum	Thyroid with parathyroids (2) ^e
Heart	Trachea
Kidneys (2)	Urinary bladder
Liver (sections of two lobes)	Uterus
Lungs (including bronchi, fixed by inflation with fixative)	Vagina
Lymph node [Axillary and mesenteric (2)]	All gross lesions

^a- Not taken from animals found dead; not placed in formalin; to be examined only if scientifically warranted.

^b- To be placed in Davidson's solution.

^c- To be placed in Bouin's solution.

^d- For females: A corresponding section of skin will be collected from the same anatomical area for males.

^e- If microscopic evaluation is conducted, parathyroids and oviducts will be examined histopathologically if in the plane of section and in all cases where a gross lesion is present.



8.6.2 Organ Weights:

The following organs, from all animals, will be weighed at the scheduled necropsy:

Adrenals (2)	Pituitary gland
Brain	Prostate
Epididymides (2)	Spleen
Heart	Testes (2)
Kidneys (2)	Thymus
Liver	Thyroid with parathyroids (2)*
Ovaries (2)with oviducts	Uterus

Paired organs will be weighed together. Designated (*) organs will be weighed after fixation. Organ-to-body-weight and organ-to-brain-weight ratios will be calculated from animals euthanized at the scheduled necropsy.

8.6.3 Microscopic Examination:

Processing of tissues to slide and subsequent microscopic examination of hematoxylin-eosin stained paraffin sections will only be conducted if deemed necessary in consultation with the Sponsor by protocol amendment (at additional cost).

9 STATISTICAL METHODS:

Statistical evaluations will not be performed due to the small group size.

10 QUALITY ASSURANCE:

This study and the corresponding report will not be audited by the WIL Quality Assurance Unit. However, the data tables for this study will be audited by the WIL Quality Assurance Unit.

11 RECORDS TO BE MAINTAINED:

All original raw data records, as defined by WIL SOPs will be stored in Archives at WIL Research Laboratories, LLC as described in protocol Section 12.



12 WORK PRODUCT:

Sponsor will have title to all documentation records, raw data, slides, specimens, or other work products generated during the performance of the study. All work products including raw paper data, pertinent electronic storage media and specimens will be retained at no charge for a period of 6 months following issuance of the final report in the Archives at WIL Research Laboratories, LLC. Thereafter, WIL Research Laboratories will charge a monthly archiving fee for retention of all work products. All work products will be stored in compliance with regulatory requirements.

Any work product, including documents, specimens, and samples, that are required by this protocol, its amendments, or other written instructions of the Sponsor, to be shipped by WIL Research Laboratories, LLC to another location will be appropriately packaged and labeled as defined by WIL's SOPs and delivered to a common carrier for shipment. WIL Research Laboratories, LLC will not be responsible for shipment following delivery to the common carrier.

13 REPORTS:

Audited data tables will be prepared and sent to the study monitor approximately 3 weeks after the scheduled necropsy.

The final report will contain a summary, test substance data, methods and procedures, appropriate individual animal and summary data tables, a copy of the protocol and amendments (if any) and an interpretation and discussion of the study results. The final report will be comprehensive and shall attempt to define level(s) inducing toxic effects, including skin irritation, under the condition of this investigation.

WIL Research Laboratories, LLC will submit an electronic copy (PDF with an MS Word copy of the report text for editing and comments) of the unaudited draft report in a timely manner upon completion of data collection prior to issuance of the final report. It is expected that the Sponsor will review the draft report and provide comments to WIL within a two-month time frame following submission. Within one month following receipt of the Sponsor's comments, WIL shall provide a revised draft report that incorporates the Sponsor's reasonable revisions and suggestions. One revision will be permitted as part of the cost of the study; additional changes or revisions may be made, at extra cost. WIL shall submit the final report within two weeks of receiving authorization from the sponsor. If the Sponsor's comments and/or authorization to finalize the report have not been received at WIL within one year following submission of the draft report, WIL may elect to finalize the report following appropriate written notification to the Sponsor. Two electronic copies (PDF) of the final report on CD-R will be provided. Requests for additional paper copies of the final report may result in additional charges.



14 PROTOCOL MODIFICATION:

Modification of the protocol may be accomplished during the course of this investigation. However, no changes will be made in the study design without the verbal or written permission of the Sponsor Representative. In the event that the Sponsor verbally requests or approves changes in the protocol, documentation will be maintained as e-mail or other suitable correspondence, and may be communicated to WIL Research Laboratory staff in the form of Study Director Notifications, as appropriate.

15 ANIMAL WELFARE ACT COMPLIANCE:

This study will comply with all applicable sections of the Final Rules of the Animal Welfare Act regulations (9 CFR). The Sponsor should make particular note of the following:

- The Sponsor signature on this protocol documents for the Study Director the Sponsor's assurance that the study described does not unnecessarily duplicate previous experiments
- Whenever possible, procedures used in this study have been designed to avoid or minimize discomfort, distress or pain to animals. All methods are described in this study protocol or in written laboratory standard operating procedures.
- Animals that experience severe or chronic pain or distress that cannot be relieved will be painlessly euthanized, as deemed appropriate by the veterinary staff and Study Director. The Sponsor will be advised by the Study Director of all circumstances which could lead to this action, in as timely a manner as possible.
- Methods of euthanasia used during this study are in conformance with the above-referenced regulation.



- The sponsor/study director has considered alternatives to procedures that may cause more than momentary or slight pain or distress to the animals and has provided a written narrative description (AWA covered species) of the methods and sources used to determine that alternatives are not available.

16 PROTOCOL APPROVAL:

Sponsor approval received via E-mail on 12/2/10.
Date

American Petroleum Institute

Paula Podhasky
Paula Podhasky, BS
Sponsor Representative

06 Dec 2010
Date

WIL Research Laboratories, LLC

Teresa D. Morris
Teresa D. Morris, BS
Study Director

12/2/10
Date

Jozef I.W.M. Mertens
Jozef I.W.M. Mertens, PhD, DABT
Senior Director, General Toxicology

3 Dec 2010
Date



APPENDIX A**SCORING CRITERIA FOR DERMAL REACTIONS****Evaluation of Dermal Reactions***

<u>Value</u>	<u>Erythema and Eschar Formation</u>	<u>Computer Designation</u>
0	No erythema	No erythema
1	Very slight erythema (barely perceptible, edges of area not well defined)	Very slight erythema
2	Slight erythema (pale red in color and edges definable)	Slight erythema
3	Moderate to severe erythema (definite red in color and area well defined)	Moderate erythema
4	Severe erythema (beet or crimson red) to slight eschar formation (injuries in depth)	Severe erythema
	<u>Edema Formation</u>	<u>Computer Designation</u>
0	No edema	No edema
1	Very slight edema (barely perceptible, edges of area not well defined)	Very slight edema
2	Slight edema (edges of area well defined by definite raising)	Slight edema
3	Moderate edema (raised approximately 1 mm)	Moderate edema
4	Severe edema (raised more than 1 mm and extending beyond area of exposure)	Severe edema

*Draize, J. H., 1965. The Appraisal of the Safety of Chemicals in Foods, Drugs and Cosmetics. Dermal Toxicity, pp. 46-59. Assoc. of Food and Drug Officials of the U.S., Topeka, Kansas.



APPENDIX B

Pretest Clinical Observations

----- M A L E -----		
TABLE RANGE:	11-26-10 TO 12-02-10	
GROUP:		1

NORMAL		
-NO SIGNIFICANT CLINICAL OBSERVATIONS		14/13
EYES/EARS/NOSE		
-DRIED RED MATERIAL AROUND LEFT EYE		7/ 7
-DRIED RED MATERIAL AROUND RIGHT EYE		6/ 6
-DRIED RED MATERIAL AROUND NOSE		12/12

1- PRETEST		

----- F E M A L E -----		
TABLE RANGE:	11-26-10 TO 12-02-10	
GROUP:		1

NORMAL		
-NO SIGNIFICANT CLINICAL OBSERVATIONS		16/13
EYES/EARS/NOSE		
-DRIED RED MATERIAL AROUND LEFT EYE		3/ 3
-DRIED RED MATERIAL AROUND RIGHT EYE		4/ 4
-DRIED RED MATERIAL AROUND NOSE		9/ 9
BODY/INTEG III		
-WET YELLOW MATERIAL UROGENITAL AREA		1/ 1

1- PRETEST		
		PCSUv4.07 12/29/2010 R:06/06/2011

----- M A L E -----		
TABLE RANGE:	02-18-11 TO 02-23-11	
GROUP:		1

NORMAL
-NO SIGNIFICANT CLINICAL OBSERVATIONS

12/ 6

1- PRETEST

----- F E M A L E -----		

TABLE RANGE:	02-18-11 TO 02-23-11	
GROUP:		1

NORMAL		
-NO SIGNIFICANT CLINICAL OBSERVATIONS		9/ 5
BODY/INTEGUMENT		
-HAIR LOSS FORELIMB(S)		3/ 2

1- PRETEST		
PCSUv4.07 03/23/2011 R:06/06/2011		

APPENDIX C

Animal Room Environmental Conditions

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

Page 1 of 7

STUDY SPECIFICATIONS: 402020

DATE IN 11/23/10 TIME IN 08:00

DATE OUT 12/17/10 TIME OUT 16:00

ROOM SPECIFICATIONS: B ROOM 48

LOW TEMPERATURE °F: 66.0 HIGH TEMPERATURE °F: 76.0 LOW HUMIDITY %RH: 30.0

TEST SYSTEM: RAT

LOW TEMPERATURE °C: 18.9 HIGH TEMPERATURE °C: 24.4 HIGH HUMIDITY %RH: 70.0

DATE	PRIMARY TEMP		SECONDARY TEMP		PRIMARY HUM	SECONDARY HUM
	MEAN (°F)	MEAN (°C)	MEAN (°F)	MEAN (°C)	MEAN (%RH)	MEAN (%RH)
11/23/10	70.7	21.5	71.0	21.7	41.8	41.7
11/24/10	70.7	21.5	71.1	21.7	41.6	41.5
11/25/10	70.8	21.6	71.2	21.8	43.8	43.8
11/26/10	70.7	21.5	71.0	21.7	40.9	40.9
11/27/10	70.8	21.6	71.2	21.8	40.9	40.8
11/28/10	70.8	21.6	71.2	21.8	41.6	41.5
11/29/10	70.7	21.5	71.1	21.7	41.7	41.7
11/30/10	70.8	21.6	71.1	21.7	46.0	46.0
12/01/10	70.8	21.6	71.1	21.7	41.4	41.3
12/02/10	70.8	21.6	71.1	21.7	41.3	41.2
12/03/10	70.8	21.6	71.2	21.8	41.3	41.2
12/04/10	70.7	21.5	71.1	21.7	42.0	41.9
12/05/10	70.8	21.6	71.2	21.8	41.6	41.5
12/06/10	70.7	21.5	71.1	21.7	42.3	42.3
12/07/10	70.8	21.6	71.2	21.8	42.2	42.2
12/08/10	70.8	21.6	71.2	21.8	42.8	42.7
12/09/10	70.7	21.5	71.1	21.7	42.1	42.1
12/10/10	70.8	21.6	71.2	21.8	42.7	42.7
12/11/10	70.8	21.6	71.2	21.8	43.0	42.9

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

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DATE	PRIMARY TEMP		SECONDARY TEMP		PRIMARY HUM	SECONDARY HUM
	MEAN (°F)	MEAN (°C)	MEAN (°F)	MEAN (°C)	MEAN (%RH)	MEAN (%RH)
12/12/10	70.7	21.5	71.0	21.7	43.2	43.2
12/13/10	70.7	21.5	71.2	21.8	43.0	42.9
12/14/10	70.7	21.5	71.1	21.7	43.3	43.2
12/15/10	70.7	21.5	71.1	21.7	42.7	42.7
12/16/10	70.7	21.5	71.1	21.7	42.4	42.3
12/17/10	70.9	21.6	71.2	21.8	41.9	41.8

SUMMARY OF DAILY MEANS

	MEAN	MIN	MAX
PRIMARY TEMP °F:	70.7	70.7	70.9
PRIMARY TEMP °C:	21.5	21.5	21.6
SECONDARY TEMP °F:	71.1	71.0	71.2
SECONDARY TEMP °C:	21.7	21.7	21.8
PRIMARY HUM %RH:	42.3	40.9	46.0
SECONDARY HUM %RH:	42.3	40.8	46.0
N DAYS	25		

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

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B ROOM 48 SUMMARY OF HOURLY VALUES

	PRIMARY TEMP				SECONDARY TEMP				PRIMARY HUM		SECONDARY HUM	
MEAN	70.7	°F	21.5	°C	71.1	°F	21.7	°C	42.3	%RH	42.3	%RH
MIN	68.7	°F	20.4	°C	69.0	°F	20.6	°C	31.6	%RH	31.5	%RH
MAX	72.2	°F	22.3	°C	72.7	°F	22.6	°C	55.2	%RH	55.5	%RH
SD	0.25		0.14		0.26		0.14		1.93		1.94	
SE	0.01		0.01		0.01		0.01		0.08		0.08	
N SAMPLES	583				583				583		583	
FIRST DAY	11/23/10											
LAST DAY	12/17/10											
N DAYS	25											

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

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STUDY SPECIFICATIONS: 402020

DATE IN 02/18/11 TIME IN 08:00

DATE OUT 03/10/11 TIME OUT 16:00

ROOM SPECIFICATIONS: B ROOM 100

LOW TEMPERATURE °F: 66.0 HIGH TEMPERATURE °F: 76.0 LOW HUMIDITY %RH: 30.0

TEST SYSTEM: Rat

LOW TEMPERATURE °C: 18.9 HIGH TEMPERATURE °C: 24.4 HIGH HUMIDITY %RH: 70.0

DATE	PRIMARY TEMP		SECONDARY TEMP		PRIMARY HUM	SECONDARY HUM
	MEAN (°F)	MEAN (°C)	MEAN (°F)	MEAN (°C)	MEAN (%RH)	MEAN (%RH)
02/18/11	70.2	21.2	70.2	21.2	46.4	47.1
02/19/11	70.2	21.2	70.2	21.2	39.7	40.2
02/20/11	70.3	21.3	70.2	21.2	43.3	43.9
02/21/11	70.4	21.3	70.4	21.3	45.7	46.4
02/22/11	70.3	21.3	70.3	21.3	38.9	39.5
02/23/11	70.3	21.3	70.2	21.2	40.4	41.0
02/24/11	70.4	21.3	70.4	21.3	47.9	48.5
02/25/11	70.4	21.3	70.4	21.3	44.2	44.8
02/26/11	70.3	21.3	70.3	21.3	42.0	42.5
02/27/11	70.5	21.4	70.4	21.3	47.0	47.6
02/28/11	70.4	21.3	70.3	21.3	48.6	49.2
03/01/11	70.5	21.4	70.5	21.4	42.8	43.3
03/02/11	70.4	21.3	70.4	21.3	43.7	44.2
03/03/11	70.4	21.3	70.4	21.3	36.7	37.2
03/04/11	70.4	21.3	70.4	21.3	45.2	45.7
03/05/11	70.4	21.3	70.4	21.3	47.4	47.9
03/06/11	70.4	21.3	70.3	21.3	45.0	45.6
03/07/11	70.5	21.4	70.4	21.3	42.8	43.3
03/08/11	70.4	21.3	70.3	21.3	45.4	46.0

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

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DATE	PRIMARY TEMP		SECONDARY TEMP		PRIMARY HUM	SECONDARY HUM
	MEAN (°F)	MEAN (°C)	MEAN (°F)	MEAN (°C)	MEAN (%RH)	MEAN (%RH)
03/09/11	70.5	21.4	70.5	21.4	44.1	44.6
03/10/11	70.4	21.3	70.3	21.3	43.9	44.3

SUMMARY OF DAILY MEANS	MEAN	MIN	MAX
PRIMARY TEMP °F:	70.4	70.2	70.5
PRIMARY TEMP °C:	21.3	21.2	21.4
SECONDARY TEMP °F:	70.3	70.2	70.5
SECONDARY TEMP °C:	21.3	21.2	21.4
PRIMARY HUM %RH:	43.8	36.7	48.6
SECONDARY HUM %RH:	44.4	37.2	49.2
N DAYS	21		

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

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B ROOM 100 SUMMARY OF HOURLY VALUES

	PRIMARY TEMP				SECONDARY TEMP				PRIMARY HUM		SECONDARY HUM	
MEAN	70.4	°F	21.3	°C	70.3	°F	21.3	°C	43.8	%RH	44.4	%RH
MIN	68.7	°F	20.4	°C	68.7	°F	20.4	°C	32.9	%RH	33.6	%RH
MAX	72.5	°F	22.5	°C	72.4	°F	22.4	°C	62.1	%RH	61.1	%RH
SD	0.78		0.43		0.77		0.43		4.50		4.44	
SE	0.04		0.02		0.03		0.02		0.20		0.20	
N SAMPLES	487				487				487		487	
FIRST DAY	02/18/11											
LAST DAY	03/10/11											
N DAYS	21											

14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED

PROJECT NO.:WIL- 402020

TEMPERATURE/HUMIDITY - STUDY SUMMARY REPORT

SPONSOR: 402 - AMERICAN PETROLEUM

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STUDY 402020 SUMMARY OF HOURLY VALUES

	PRIMARY TEMP				SECONDARY TEMP				PRIMARY HUM		SECONDARY HUM	
MEAN	70.6	°F	21.4	°C	70.8	°F	21.6	°C	43.0	%RH	43.2	%RH
MIN	68.7	°F	20.4	°C	68.7	°F	20.4	°C	31.6	%RH	31.5	%RH
MAX	72.5	°F	22.5	°C	72.7	°F	22.6	°C	62.1	%RH	61.1	%RH
SD	0.59		0.33		0.68		0.38		3.44		3.49	
SE	0.02		0.01		0.02		0.01		0.11		0.11	
N SAMPLES	1070				1070				1070		1070	
FIRST DAY	11/23/10											
LAST DAY	03/10/11											
N DAYS	46				NOTE: THE DATE IN AND DATE OUT OF THE STUDY ROOMS MAY OVERLAP.							

APPENDIX D

Groups 7-9 Data

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R1 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF SURVIVAL AND DISPOSITION

PAGE 1

MALES																
GROUP : 7					8					9						
DAY	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE				
0	2	0	0	0	2	0	0	0	2	0	0	0				
1	2	0	0	0	2	0	0	0	2	0	0	0				
2	2	0	0	0	2	0	0	0	2	0	0	0				
3	2	0	0	0	2	0	0	0	2	0	0	0				
4	2	0	0	0	2	0	0	0	2	0	0	0				
5	2	0	0	0	2	0	0	0	2	0	0	0				
6	2	0	0	0	2	0	0	0	2	0	0	0				
7	2	0	0	0	2	0	0	0	2	0	0	0				
8	2	0	0	0	2	0	0	0	2	0	0	0				
9	2	0	0	0	2	0	0	0	2	0	0	0				
10	2	0	0	0	2	0	0	0	2	0	0	0				
11	2	0	0	0	2	0	0	0	2	0	0	0				
12	2	0	0	0	2	0	0	0	2	0	0	0				
13	2	0	0	0	2	0	0	0	2	0	0	0				
14	0	0	0	2	0	0	0	2	0	0	0	2				
DAY =		DAY OF STUDY			FD = FOUND DEAD			EE = EUTHANIZED IN EXTREMIS			SE = SCHEDULED EUTHANASIA					
7- 450 MG/KG/DAY					8- 600 MG/KG/DAY					9- 750 MG/KG/DAY						

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R1 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF SURVIVAL AND DISPOSITION

PAGE 2

GROUP : 7					8					9					FEMALES				
DAY	LIVE	FD	EE	SE	LIVE	FD	EE	SE		LIVE	FD	EE	SE						
0	2	0	0	0	2	0	0	0		2	0	0	0						
1	2	0	0	0	2	0	0	0		2	0	0	0						
2	2	0	0	0	2	0	0	0		2	0	0	0						
3	2	0	0	0	2	0	0	0		2	0	0	0						
4	2	0	0	0	2	0	0	0		2	0	0	0						
5	2	0	0	0	2	0	0	0		2	0	0	0						
6	2	0	0	0	2	0	0	0		2	0	0	0						
7	2	0	0	0	2	0	0	0		2	0	0	0						
8	2	0	0	0	2	0	0	0		2	0	0	0						
9	2	0	0	0	2	0	0	0		2	0	0	0						
10	2	0	0	0	2	0	0	0		2	0	0	0						
11	2	0	0	0	2	0	0	0		2	0	0	0						
12	2	0	0	0	2	0	0	0		2	0	0	0						
13	2	0	0	0	2	0	0	0		2	0	0	0						
14	0	0	0	2	0	0	0	2		0	0	0	2						
DAY = DAY OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA																			
7- 450 MG/KG/DAY					8- 600 MG/KG/DAY					9- 750 MG/KG/DAY									

PSURVv4.10
03/29/2011
R:03/29/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 1

----- M A L E -----			
TABLE RANGE:	DAY 000 TO DAY 014		
GROUP:	7	8	9

NORMAL			
-NO SIGNIFICANT CLINICAL OBSERVATIONS	2/ 2	2/ 2	2/ 2
DISPOSITION			
-PRIMARY NECROPSY (DAY 14)	2/ 2	2/ 2	2/ 2
EYES/EARS/NOSE			
-DRIED YELLOW MATERIAL UROGENITAL AREA	2/ 2	1/ 1	4/ 2
-WET YELLOW MATERIAL UROGENITAL AREA	1/ 1	1/ 1	0/ 0
-DRIED RED MATERIAL AROUND NOSE	4/ 2	4/ 2	3/ 2
-DRIED RED MATERIAL AROUND RIGHT EYE	3/ 2	4/ 2	3/ 2
-DRIED RED MATERIAL AROUND LEFT EYE	4/ 2	4/ 2	2/ 1
BODY/INTEG II			
-SCABBING RIGHT LATERAL NECK	0/ 0	0/ 0	1/ 1

7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 2

----- F E M A L E -----

TABLE RANGE: GROUP:	7	8	DAY 000 TO DAY 014 9
NORMAL			
-NO SIGNIFICANT CLINICAL OBSERVATIONS	2/ 2	2/ 2	2/ 2
DISPOSITION			
-PRIMARY NECROPSY (DAY 14)	2/ 2	2/ 2	2/ 2
EYES/EARS/NOSE			
-DRIED YELLOW MATERIAL UROGENITAL AREA	2/ 1	0/ 0	2/ 1
-DRIED RED MATERIAL AROUND NOSE	4/ 2	4/ 2	4/ 2
-DRIED RED MATERIAL AROUND RIGHT EYE	1/ 1	2/ 1	3/ 2
-DRIED RED MATERIAL AROUND LEFT EYE	1/ 1	3/ 2	4/ 2
EXCRETA			
-DRIED YELLOW MATERIAL ANOGENITAL AREA	0/ 0	0/ 0	1/ 1
-DRIED YELLOW MATERIAL HINDLIMB(S)	0/ 0	0/ 0	1/ 1
BODY/INTEG II			
-SCABBING HINDLIMB(S)	1/ 1	0/ 0	0/ 0
SPECIAL			
-SWOLLEN RIGHT HIMDLIMB	0/ 0	1/ 1	0/ 0
7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PCSUv4.07
03/23/2011
R:03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R3 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF POST-DOSE FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 1

----- M A L E -----

TABLE RANGE: DAY 0 TO DAY 13
GROUP: 7 8 9

NORMAL

TIME OF DOSE
-NO SIGNIFICANT CLINICAL 28/2 28/2 28/2
OBSERVATIONS

1-2 HOUR POST-DOSING
-NO SIGNIFICANT CLINICAL 28/2 28/2 28/2
OBSERVATIONS

7- 450 MG/KG/DAY 8- 600 MG/KG/DAY 9- 750 MG/KG/DAY

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R3 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF POST-DOSE FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 2

----- F E M A L E -----

TABLE RANGE: DAY 0 TO DAY 13
GROUP: 7 8 9

NORMAL

TIME OF DOSE
-NO SIGNIFICANT CLINICAL 28/2 26/2 28/2
OBSERVATIONS

1-2 HOUR POST-DOSING
-NO SIGNIFICANT CLINICAL 28/2 26/2 28/2
OBSERVATIONS

SPECIAL

TIME OF DOSE
-SWOLLEN RIGHT HIMDLIMB 0/0 2/1 0/0

1-2 HOUR POST-DOSING
-SWOLLEN RIGHT HIMDLIMB 0/0 2/1 0/0

7- 450 MG/KG/DAY 8- 600 MG/KG/DAY 9- 750 MG/KG/DAY

PPDTSUv1.48
03/23/2011
R:03/23/2011

----- M A L E -----			

TABLE RANGE:	DAY 000 TO DAY 014		
GROUP:	7	8	9

DERMAL OBS			
-SCORED, NOT REMARKABLE	4 / 2	4 / 2	4 / 2
-NO ERYTHEMA	26 / 2	26 / 2	26 / 2
-NO EDEMA	26 / 2	26 / 2	26 / 2
-RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE	26 / 2	26 / 2	26 / 2

7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R4 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

PAGE 2

----- F E M A L E -----

TABLE RANGE: DAY 000 TO DAY 014
GROUP: 7 8 9

DERMAL OBS

-SCORED, NOT REMARKABLE	4/ 2	4/ 2	5/ 2
-NO ERYTHEMA	26/ 2	26/ 2	25/ 2
-NO EDEMA	26/ 2	26/ 2	25/ 2
-RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE	26/ 2	26/ 2	25/ 2

7- 450 MG/KG/DAY 8- 600 MG/KG/DAY 9- 750 MG/KG/DAY

PCSUv4.07
03/23/2011
R:03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R5 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHTS [G]

PAGE 1

		MALES			
GROUP:		7	8	9	
DAY	-6	MEAN	442.	472.	469.
		S.D.	4.9	73.5	44.5
		N	2	2	2
	-1	MEAN	465.	501.	491.
		S.D.	2.1	65.8	41.0
		N	2	2	2
	0	MEAN	443.	481.	465.
		S.D.	7.1	58.0	33.2
		N	2	2	2
	7	MEAN	410.	443.	420.
		S.D.	2.1	9.9	24.7
		N	2	2	2
	13	MEAN	395.	441.	427.
		S.D.	9.9	14.1	31.1
		N	2	2	2
7- 450 MG/KG/DAY		8- 600 MG/KG/DAY		9- 750 MG/KG/DAY	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R5 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHTS [G]

PAGE 2

		FEMALES		
GROUP:		7	8	9
DAY	-6			
	MEAN	297.	290.	269.
	S.D.	23.3	29.0	12.0
	N	2	2	2
	-1			
	MEAN	297.	297.	279.
	S.D.	28.3	39.6	17.7
	N	2	2	2
	0			
	MEAN	275.	281.	268.
	S.D.	25.5	48.8	19.1
	N	2	2	2
	7			
	MEAN	265.	257.	264.
	S.D.	24.7	38.9	9.2
	N	2	2	2
	13			
	MEAN	278.	261.	261.
	S.D.	22.6	33.2	2.8
	N	2	2	2
7- 450 MG/KG/DAY		8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PBFSTv5.34
03/23/2011
R:03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R6 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHT CHANGES [G]

PAGE 1

				MALES		
GROUP:				7	8	9
DAY	-6 TO	-1				
		MEAN		23.	29.	23.
		S.D.		2.8	7.8	3.5
		N		2	2	2
	-1 TO	0				
		MEAN		-22.	-20.	-27.
		S.D.		4.9	7.8	7.8
		N		2	2	2
	0 TO	7				
		MEAN		-34.	-38.	-45.
		S.D.		4.9	48.1	8.5
		N		2	2	2
	7 TO	13				
		MEAN		-15.	-2.	8.
		S.D.		7.8	4.2	6.4
		N		2	2	2
7- 450 MG/KG/DAY				8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R6 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF BODY WEIGHT CHANGES [G]

PAGE 2

				FEMALES		
GROUP:				7	8	9
DAY	-6 TO	-1				
		MEAN		1.	8.	10.
		S.D.		4.9	10.6	5.7
		N		2	2	2
	-1 TO	0				
		MEAN		-22.	-17.	-11.
		S.D.		2.8	9.2	1.4
		N		2	2	2
	0 TO	7				
		MEAN		-11.	-24.	-4.
		S.D.		0.7	9.9	9.9
		N		2	2	2
	7 TO	13				
		MEAN		14.	4.	-3.
		S.D.		2.1	5.7	6.4
		N		2	2	2
7- 450 MG/KG/DAY				8- 600 MG/KG/DAY		9- 750 MG/KG/DAY

PBFSTv5.34
03/23/2011
R:03/23/2011

GROUP:		7	8	9	MALES
DAY	0 TO				
	7				
	MEAN	-34.	-38.	-45.	
	S.D.	4.9	48.1	8.5	
	N	2	2	2	
	0 TO 13				
	MEAN	-48.	-40.	-38.	
	S.D.	2.8	43.8	2.1	
	N	2	2	2	
7- 450 MG/KG/DAY		8- 600 MG/KG/DAY	9- 750 MG/KG/DAY		

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R7 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 2

GROUP:		7	8	9	FEMALES
DAY	0 TO				
	7				
	MEAN	-11.	-24.	-4.	
	S.D.	0.7	9.9	9.9	
	N	2	2	2	
	0 TO 13				
	MEAN	3.	-20.	-7.	
	S.D.	2.8	15.6	16.3	
	N	2	2	2	

7- 450 MG/KG/DAY 8- 600 MG/KG/DAY 9- 750 MG/KG/DAY

PBFSTv5.34
03/23/2011
R:03/23/2011

				MALES		
GROUP:				7	8	9
DAY	-6 TO	-1				
		MEAN	35.	36.	32.	
		S.D.	3.5	0.7	4.2	
		N	2	2	2	
	0 TO	7				
		MEAN	28.	22.	14.	
		S.D.	6.4	7.1	5.7	
		N	2	2	2	
	7 TO	13				
		MEAN	34.	33.	35.	
		S.D.	1.4	3.5	2.1	
		N	2	2	2	
7- 450 MG/KG/DAY				8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R8 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 2

FEMALES				
GROUP:		7	8	9
DAY	-6 TO -1			
	MEAN	23.	24.	22.
	S.D.	3.5	4.9	0.7
	N	2	2	2
	0 TO 7			
	MEAN	20.	11.	17.
	S.D.	1.4	1.4	2.1
	N	2	2	2
	7 TO 13			
	MEAN	30.	26.	25.
	S.D.	0.0	0.7	1.4
	N	1	2	2
7- 450 MG/KG/DAY		8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PBFSTv5.34
03/23/2011
R:03/23/2011

SCHEDULED NECROPSY						
		-----			M A L E	-----
GROUP:		7	8	9		
NUMBER OF ANIMALS IN DOSE GROUP		2	2	2		
NUMBER OF ANIMALS EXAMINED		2	2	2		
SKIN						
-SCABBING		1	0	0		
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES		1	2	2		
7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY				

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R9 (SCHEDULED NECROPSY - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF MACROSCOPIC FINDINGS

PAGE 2

SCHEDULED NECROPSY			

GROUP:	7	8	----- F E M A L E ----- 9

NUMBER OF ANIMALS IN DOSE GROUP	2	2	2
NUMBER OF ANIMALS EXAMINED	2	2	2
SKIN			
-SCABBING	0	0	1
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	2	2	1

7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY	

PGRSI2v4.09
03/23/2011
R:03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R10 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND ORGAN WTS. RELATIVE TO BODY WTS.

PAGE 1

				MALES
GROUP:	7	8	9	

FINAL BODY WT (G)				
MEAN	368.	410.	401.	
S.D.	4.2	17.0	25.5	
N	2	2	2	
LIVER (G)				
MEAN	15.00	16.24	17.59	
S.D.	0.424	1.704	2.213	
N	2	2	2	
LIVER (G/100 G FINAL BODY WEIGHT)				
MEAN	4.076	3.955	4.377	
S.D.	0.0686	0.2524	0.2736	
N	2	2	2	

7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY		

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R10 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
SUMMARY OF ORGAN WEIGHTS AND ORGAN WTS. RELATIVE TO BODY WTS.

PAGE 2

FEMALES				
GROUP:	7	8	9	
FINAL BODY WT (G)				
MEAN	253.	240.	239.	
S.D.	21.2	32.5	1.4	
N	2	2	2	
LIVER (G)				
MEAN	10.46	10.98	11.59	
S.D.	0.226	0.912	1.916	
N	2	2	2	
LIVER (G/100 G FINAL BODY WEIGHT)				
MEAN	4.146	4.589	4.845	
S.D.	0.2581	0.2418	0.7736	
N	2	2	2	
7- 450 MG/KG/DAY	8- 600 MG/KG/DAY	9- 750 MG/KG/DAY		

POFBSTv5.25
03/23/2011
R:03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R11 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL SURVIVAL AND DISPOSITION

PAGE 1

ANIMAL	SEX	GROUP	TYPE OF DEATH	AGE IN WEEKS A	DATE OF DEATH	DAYS ON STUDY
4526	M	450 MG/KG/DAY	SCHEDULED EUTHANASIA	16	10-MAR-11	14
4527	M	450 MG/KG/DAY	SCHEDULED EUTHANASIA	16	10-MAR-11	14
4506	M	600 MG/KG/DAY	SCHEDULED EUTHANASIA	16	10-MAR-11	14
5650	M	600 MG/KG/DAY	SCHEDULED EUTHANASIA	14B	10-MAR-11	14
4507	M	750 MG/KG/DAY	SCHEDULED EUTHANASIA	16	10-MAR-11	14
4525	M	750 MG/KG/DAY	SCHEDULED EUTHANASIA	16	10-MAR-11	14

A = CALCULATED TO THE NEAREST WHOLE WEEK USING THE MEAN AGE IN WEEKS AT INITIATION OF DOSING (14)
B = MEAN AGE IN WEEKS AT INITIATION OF DOSING (12)

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R11 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL SURVIVAL AND DISPOSITION

PAGE 2

ANIMAL	SEX	GROUP	TYPE OF DEATH	AGE IN WEEKS A	DATE OF DEATH	DAYS ON STUDY
3788	F	450 MG/KG/DAY	SCHEDULED EUTHANASIA	18	10-MAR-11	14
3806	F	450 MG/KG/DAY	SCHEDULED EUTHANASIA	18	10-MAR-11	14
3793	F	600 MG/KG/DAY	SCHEDULED EUTHANASIA	18	10-MAR-11	14
3809	F	600 MG/KG/DAY	SCHEDULED EUTHANASIA	18	10-MAR-11	14
3801	F	750 MG/KG/DAY	SCHEDULED EUTHANASIA	18	10-MAR-11	14
3808	F	750 MG/KG/DAY	SCHEDULED EUTHANASIA	18	10-MAR-11	14

A = CALCULATED TO THE NEAREST WHOLE WEEK USING THE MEAN AGE IN WEEKS AT INITIATION OF DOSING (16)

PDEADv4.07
03/29/2011
R:03/31/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R12 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4526	M	450 MG/KG/DAY	NORMAL	0	8:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4526	M	450 MG/KG/DAY	DISPOSITION	14	9:52	P	PRIMARY NECROPSY (DAY 14)
4526	M	450 MG/KG/DAY	EYES/EARS/NOSE	7	8:43	P	DRIED RED MATERIAL AROUND NOSE
				7	8:43	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:43	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:45	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:45	P	DRIED RED MATERIAL AROUND NOSE
				14	7:45	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:45	P	DRIED RED MATERIAL AROUND LEFT EYE
4527	M	450 MG/KG/DAY	NORMAL	0	8:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4527	M	450 MG/KG/DAY	DISPOSITION	14	9:52	P	PRIMARY NECROPSY (DAY 14)
4527	M	450 MG/KG/DAY	EYES/EARS/NOSE	7	8:44	P	DRIED RED MATERIAL AROUND NOSE
				7	8:44	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:44	P	DRIED RED MATERIAL AROUND LEFT EYE
				7	8:44	P	WET YELLOW MATERIAL UROGENITAL AREA
				14	7:45	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:46	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:46	P	DRIED RED MATERIAL AROUND NOSE
4506	M	600 MG/KG/DAY	NORMAL	0	8:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4506	M	600 MG/KG/DAY	DISPOSITION	14	9:53	P	PRIMARY NECROPSY (DAY 14)
4506	M	600 MG/KG/DAY	EYES/EARS/NOSE	7	8:49	P	DRIED RED MATERIAL AROUND NOSE
				7	8:49	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:49	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:49	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:49	P	DRIED RED MATERIAL AROUND NOSE
				14	7:49	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:49	P	DRIED RED MATERIAL AROUND LEFT EYE
5650	M	600 MG/KG/DAY	NORMAL	0	8:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
5650	M	600 MG/KG/DAY	DISPOSITION	14	9:53	P	PRIMARY NECROPSY (DAY 14)

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R12 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 2

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
5650	M	600 MG/KG/DAY	EYES/EARS/NOSE	7	8:51	P	DRIED RED MATERIAL AROUND NOSE
				7	8:51	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:51	P	DRIED RED MATERIAL AROUND LEFT EYE
				7	8:51	P	WET YELLOW MATERIAL UROGENITAL AREA
				14	7:49	P	DRIED RED MATERIAL AROUND NOSE
				14	7:49	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:49	P	DRIED RED MATERIAL AROUND LEFT EYE
4507	M	750 MG/KG/DAY	NORMAL	0	8:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4507	M	750 MG/KG/DAY	DISPOSITION	14	9:53	P	PRIMARY NECROPSY (DAY 14)
4507	M	750 MG/KG/DAY	EYES/EARS/NOSE	7	8:56	P	DRIED RED MATERIAL AROUND NOSE
				7	8:56	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:56	P	DRIED RED MATERIAL AROUND LEFT EYE
				7	8:56	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:51	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:51	P	DRIED RED MATERIAL AROUND NOSE
				14	7:51	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:51	P	DRIED RED MATERIAL AROUND LEFT EYE
4525	M	750 MG/KG/DAY	NORMAL	0	8:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4525	M	750 MG/KG/DAY	DISPOSITION	14	9:54	P	PRIMARY NECROPSY (DAY 14)
4525	M	750 MG/KG/DAY	EYES/EARS/NOSE	7	8:57	P	DRIED RED MATERIAL AROUND NOSE
				7	8:57	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:58	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:51	P	DRIED YELLOW MATERIAL UROGENITAL AREA
4525	M	750 MG/KG/DAY	BODY/INTEG II	14	7:51	P	SCABBING RIGHT LATERAL NECK
3788	F	450 MG/KG/DAY	NORMAL	0	8:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3788	F	450 MG/KG/DAY	DISPOSITION	14	9:52	P	PRIMARY NECROPSY (DAY 14)
3788	F	450 MG/KG/DAY	EYES/EARS/NOSE	7	8:46	P	DRIED RED MATERIAL AROUND NOSE
				7	8:46	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:46	P	DRIED RED MATERIAL AROUND LEFT EYE

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R12 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 3

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3788	F	450 MG/KG/DAY	EYES/EARS/NOSE	14	7:47	P	DRIED RED MATERIAL AROUND NOSE
3788	F	450 MG/KG/DAY	BODY/INTEG II	14	7:47	P	SCABBING HINDLIMB(S)
3806	F	450 MG/KG/DAY	NORMAL	0	8:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3806	F	450 MG/KG/DAY	DISPOSITION	14	9:52	P	PRIMARY NECROPSY (DAY 14)
3806	F	450 MG/KG/DAY	EYES/EARS/NOSE	7	8:47	P	DRIED RED MATERIAL AROUND NOSE
				7	8:47	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				14	7:48	P	DRIED RED MATERIAL AROUND NOSE
				14	7:48	P	DRIED YELLOW MATERIAL UROGENITAL AREA
3793	F	600 MG/KG/DAY	NORMAL	0	8:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3793	F	600 MG/KG/DAY	DISPOSITION	14	9:53	P	PRIMARY NECROPSY (DAY 14)
3793	F	600 MG/KG/DAY	EYES/EARS/NOSE	7	8:52	P	DRIED RED MATERIAL AROUND NOSE
				7	8:52	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:52	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:50	P	DRIED RED MATERIAL AROUND NOSE
				14	7:50	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:50	P	DRIED RED MATERIAL AROUND LEFT EYE
3809	F	600 MG/KG/DAY	NORMAL	0	8:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3809	F	600 MG/KG/DAY	DISPOSITION	14	9:53	P	PRIMARY NECROPSY (DAY 14)
3809	F	600 MG/KG/DAY	EYES/EARS/NOSE	7	8:54	P	DRIED RED MATERIAL AROUND NOSE
				7	8:54	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:50	P	DRIED RED MATERIAL AROUND NOSE
3809	F	600 MG/KG/DAY	SPECIAL	7	8:54	P	SWOLLEN RIGHT HINDLIMB
3801	F	750 MG/KG/DAY	NORMAL	0	8:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3801	F	750 MG/KG/DAY	DISPOSITION	14	9:54	P	PRIMARY NECROPSY (DAY 14)
3801	F	750 MG/KG/DAY	EYES/EARS/NOSE	7	8:59	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				7	8:59	P	DRIED RED MATERIAL AROUND NOSE
				7	8:59	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:59	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:52	P	DRIED YELLOW MATERIAL UROGENITAL AREA

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R12 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 4

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3801	F	750 MG/KG/DAY	EYES/EARS/NOSE	14	7:52	P	DRIED RED MATERIAL AROUND NOSE
				14	7:52	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:52	P	DRIED RED MATERIAL AROUND LEFT EYE
3801	F	750 MG/KG/DAY	EXCRETA	14	7:52	P	DRIED YELLOW MATERIAL ANOGENITAL AREA
				14	7:52	P	DRIED YELLOW MATERIAL HINDLIMB(S)
3808	F	750 MG/KG/DAY	NORMAL	0	8:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3808	F	750 MG/KG/DAY	DISPOSITION	14	9:54	P	PRIMARY NECROPSY (DAY 14)
3808	F	750 MG/KG/DAY	EYES/EARS/NOSE	7	9:00	P	DRIED RED MATERIAL AROUND LEFT EYE
				7	9:00	P	DRIED RED MATERIAL AROUND NOSE
				14	7:53	P	DRIED RED MATERIAL AROUND NOSE
				14	7:53	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:53	P	DRIED RED MATERIAL AROUND LEFT EYE

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PCRDv4.17
03/23/2011
R:03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R13 (AT TIME OF DOSING - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4526	M	450 MG/KG/DAY	NORMAL	0	11:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4527	M	450 MG/KG/DAY	NORMAL	0	11:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4506	M	600 MG/KG/DAY	NORMAL	0	11:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R13 (AT TIME OF DOSING - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 2

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4506	M	600 MG/KG/DAY	NORMAL	1	11:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
5650	M	600 MG/KG/DAY	NORMAL	0	11:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4507	M	750 MG/KG/DAY	NORMAL	0	11:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R13 (AT TIME OF DOSING - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 3

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4507	M	750 MG/KG/DAY	NORMAL	2	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:21	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	10:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4525	M	750 MG/KG/DAY	NORMAL	0	11:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:21	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	10:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3788	F	450 MG/KG/DAY	NORMAL	0	11:21	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R13 (AT TIME OF DOSING - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 4

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3788	F	450 MG/KG/DAY	NORMAL	3	9:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3806	F	450 MG/KG/DAY	NORMAL	0	11:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3793	F	600 MG/KG/DAY	NORMAL	0	11:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R13 (AT TIME OF DOSING - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3793	F	600 MG/KG/DAY	NORMAL	4	10:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:20	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3809	F	600 MG/KG/DAY	NORMAL	0	11:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:20	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	9:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3809	F	600 MG/KG/DAY	SPECIAL	7	11:44	P	SWOLLEN RIGHT HIMDLIMB
				8	10:21	P	SWOLLEN RIGHT HIMDLIMB
3801	F	750 MG/KG/DAY	NORMAL	0	11:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R13 (AT TIME OF DOSING - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3801	F	750 MG/KG/DAY	NORMAL	5	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:23	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3808	F	750 MG/KG/DAY	NORMAL	0	11:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	10:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	9:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	10:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	8:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:23	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	8:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	8:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

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PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R14 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4526	M	450 MG/KG/DAY	NORMAL	0	12:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4527	M	450 MG/KG/DAY	NORMAL	0	12:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4506	M	600 MG/KG/DAY	NORMAL	0	12:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R14 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 2

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4506	M	600 MG/KG/DAY	NORMAL	1	12:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
5650	M	600 MG/KG/DAY	NORMAL	0	13:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4507	M	750 MG/KG/DAY	NORMAL	0	13:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R14 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 3

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4507	M	750 MG/KG/DAY	NORMAL	2	12:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
4525	M	750 MG/KG/DAY	NORMAL	0	13:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3788	F	450 MG/KG/DAY	NORMAL	0	12:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R14 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 4

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3788	F	450 MG/KG/DAY	NORMAL	3	11:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3806	F	450 MG/KG/DAY	NORMAL	0	12:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3793	F	600 MG/KG/DAY	NORMAL	0	13:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R14 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 5

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3793	F	600 MG/KG/DAY	NORMAL	4	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3809	F	600 MG/KG/DAY	NORMAL	0	13:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3809	F	600 MG/KG/DAY	SPECIAL	7	13:11	P	SWOLLEN RIGHT HIMDLIMB
				8	11:58	P	SWOLLEN RIGHT HIMDLIMB
3801	F	750 MG/KG/DAY	NORMAL	0	13:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R14 (DOSING DAY OBSERVATIONS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 6

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
3801	F	750 MG/KG/DAY	NORMAL	5	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
3808	F	750 MG/KG/DAY	NORMAL	0	13:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

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R:03/23/2011

PROJECT NO.:WIL-402020E	TABLE R15 (GROUPS 7-9)	PAGE 1
SPONSOR:AMERICAN PETROLEUM	14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED INDIVIDUAL DERMAL OBSERVATIONS	

GROUP :	450 MG/KG/DAY		ANIMAL NO. / SEX
	4526/M	4527/M	
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	0/0/h	0/0/h	
2	0/0/h	0/0/h	
3	0/0/h	0/0/h	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	0/0/h	0/0/h	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	0/0/h	0/0/h	
13	0/0/h	0/0/h	
14	SNR	SNR	

+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA
 SEX CODE: M = MALE F = FEMALE
 SNR = SCORED, NOT REMARKABLE
 h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R15 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 2

GROUP : 600 MG/KG/DAY		ANIMAL NO. / SEX
4506/M		5650/M
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR
1	0/0/h	0/0/h
2	0/0/h	0/0/h
3	0/0/h	0/0/h
4	0/0/h	0/0/h
5	0/0/h	0/0/h
6	0/0/h	0/0/h
7	0/0/h	0/0/h
8	0/0/h	0/0/h
9	0/0/h	0/0/h
10	0/0/h	0/0/h
11	0/0/h	0/0/h
12	0/0/h	0/0/h
13	0/0/h	0/0/h
14	SNR	SNR
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA		
SEX CODE: M = MALE F = FEMALE		
SNR = SCORED, NOT REMARKABLE		
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE		

PROJECT NO.:WIL-402020E
 SPONSOR:AMERICAN PETROLEUM

TABLE R15 (GROUPS 7-9)
 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
 INDIVIDUAL DERMAL OBSERVATIONS

PAGE 3

GROUP : 750 MG/KG/DAY		ANIMAL NO. / SEX
4507/M		4525/M
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR
1	0/0/h	0/0/h
2	0/0/h	0/0/h
3	0/0/h	0/0/h
4	0/0/h	0/0/h
5	0/0/h	0/0/h
6	0/0/h	0/0/h
7	0/0/h	0/0/h
8	0/0/h	0/0/h
9	0/0/h	0/0/h
10	0/0/h	0/0/h
11	0/0/h	0/0/h
12	0/0/h	0/0/h
13	0/0/h	0/0/h
14	SNR	SNR
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA		
SEX CODE: M = MALE F = FEMALE		
SNR = SCORED, NOT REMARKABLE		
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE		

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R15 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 4

GROUP : 450 MG/KG/DAY		ANIMAL NO. / SEX	
3788/F		3806/F	
STUDY DAY		ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR	
1	0/0/h	0/0/h	
2	0/0/h	0/0/h	
3	0/0/h	0/0/h	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	0/0/h	0/0/h	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	0/0/h	0/0/h	
13	0/0/h	0/0/h	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020E	TABLE R15 (GROUPS 7-9)	PAGE 5
SPONSOR:AMERICAN PETROLEUM	14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED INDIVIDUAL DERMAL OBSERVATIONS	

GROUP :	600 MG/KG/DAY		ANIMAL NO. / SEX
	3793/F		3809/F

STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS
0	SNR SNR
1	0/0/h 0/0/h
2	0/0/h 0/0/h
3	0/0/h 0/0/h
4	0/0/h 0/0/h
5	0/0/h 0/0/h
6	0/0/h 0/0/h
7	0/0/h 0/0/h
8	0/0/h 0/0/h
9	0/0/h 0/0/h
10	0/0/h 0/0/h
11	0/0/h 0/0/h
12	0/0/h 0/0/h
13	0/0/h 0/0/h
14	SNR SNR

+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA
 SEX CODE: M = MALE F = FEMALE
 SNR = SCORED, NOT REMARKABLE
 h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R15 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 6

GROUP : 750 MG/KG/DAY		ANIMAL NO. / SEX
3801/F		3808/F
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR
1	0/0/h	0/0/h
2	0/0/h	0/0/h
3	0/0/h	0/0/h
4	0/0/h	0/0/h
5	0/0/h	0/0/h
6	0/0/h	0/0/h
7	0/0/h	0/0/h
8	0/0/h	0/0/h
9	0/0/h	0/0/h
10	0/0/h	0/0/h
11	0/0/h	0/0/h
12	SNR	0/0/h
13	0/0/h	0/0/h
14	SNR	SNR
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA		
SEX CODE: M = MALE F = FEMALE		
SNR = SCORED, NOT REMARKABLE		
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE		

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DAY	-6	-1	0	7	MALE GROUP: 450 MG/KG/DAY 13
ANIMAL					
4526	445.	466.	448.	411.	402.
4527	438.	463.	438.	408.	388.
MEAN	442.	465.	443.	410.	395.
S.D.	4.9	2.1	7.1	2.1	9.9
N	2	2	2	2	2

DAY	-6	-1	0	7	MALE GROUP: 600 MG/KG/DAY 13
ANIMAL					
4506	524.	547.	522.	450.	451.
5650	420.	454.	440.	436.	431.
MEAN	472.	501.	481.	443.	441.
S.D.	73.5	65.8	58.0	9.9	14.1
N	2	2	2	2	2

DAY	-6	-1	0	7	MALE GROUP: 750 MG/KG/DAY 13
ANIMAL					
4507	500.	520.	488.	437.	449.
4525	437.	462.	441.	402.	405.
MEAN	469.	491.	465.	420.	427.
S.D.	44.5	41.0	33.2	24.7	31.1
N	2	2	2	2	2

DAY	-6	-1	0	7	13
FEMALE GROUP: 450 MG/KG/DAY					
ANIMAL					
3788	313.	317.	293.	282.	294.
3806	280.	277.	257.	247.	262.
MEAN	297.	297.	275.	265.	278.
S.D.	23.3	28.3	25.5	24.7	22.6
N	2	2	2	2	2

DAY	-6	-1	0	7	13
FEMALE GROUP: 600 MG/KG/DAY					
ANIMAL					
3793	269.	269.	246.	229.	237.
3809	310.	325.	315.	284.	284.
MEAN	290.	297.	281.	257.	261.
S.D.	29.0	39.6	48.8	38.9	33.2
N	2	2	2	2	2

DAY	-6	-1	0	7	13
FEMALE GROUP: 750 MG/KG/DAY					
ANIMAL					
3801	260.	266.	254.	257.	259.
3808	277.	291.	281.	270.	263.
MEAN	269.	279.	268.	264.	261.
S.D.	12.0	17.7	19.1	9.2	2.8
N	2	2	2	2	2

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PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R17 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHT CHANGES [G]

PAGE 1

MALE GROUP: 450 MG/KG/DAY					
DAY	-6 TO	-1	-1 TO	0	0 TO
					7
					7 TO
					13

ANIMAL					
4526	21.		-18.		-37.
4527	25.		-25.		-30.
					-9.
					-20.
MEAN	23.		-22.		-34.
S.D.	2.8		4.9		4.9
N	2		2		2

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R17 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHT CHANGES [G]

MALE GROUP: 600 MG/KG/DAY				
DAY	-6 TO -1	-1 TO 0	0 TO 7	7 TO 13

ANIMAL				
4506	23.	-25.	-72.	1.
5650	34.	-14.	-4.	-5.
MEAN	29.	-20.	-38.	-2.
S.D.	7.8	7.8	48.1	4.2
N	2	2	2	2

MALE GROUP: 750 MG/KG/DAY							
DAY	-6 TO	-1	-1 TO	0	0 TO	7	7 TO 13

ANIMAL							
4507	20.		-32.		-51.		12.
4525	25.		-21.		-39.		3.
MEAN	23.		-27.		-45.		8.
S.D.	3.5		7.8		8.5		6.4
N	2		2		2		2

DAY	-6 TO	-1	-1 TO	0	0 TO	7	7 TO	13
FEMALE GROUP: 450 MG/KG/DAY								
ANIMAL								
3788		4.		-24.		-11.		12.
3806		-3.		-20.		-10.		15.
MEAN		1.		-22.		-11.		14.
S.D.		4.9		2.8		0.7		2.1
N		2		2		2		2

DAY	-6 TO	-1	-1 TO	0	0 TO	7	7 TO	13
FEMALE GROUP: 600 MG/KG/DAY								
ANIMAL								
3793		0.		-23.		-17.		8.
3809		15.		-10.		-31.		0.
MEAN		8.		-17.		-24.		4.
S.D.		10.6		9.2		9.9		5.7
N		2		2		2		2

DAY	-6 TO	-1	-1 TO	0	0 TO	7	7 TO	13
FEMALE GROUP: 750 MG/KG/DAY								
ANIMAL								
3801		6.		-12.		3.		2.
3808		14.		-10.		-11.		-7.
MEAN		10.		-11.		-4.		-3.
S.D.		5.7		1.4		9.9		6.4
N		2		2		2		2

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DAY	0 TO 7	0 TO 13

ANIMAL		
4526	-37.	-46.
4527	-30.	-50.
MEAN	-34.	-48.
S.D.	4.9	2.8
N	2	2

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R18 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 2

MALE GROUP: 600 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
4506	-72.	-71.	
5650	-4.	-9.	
MEAN	-38.	-40.	
S.D.	48.1	43.8	
N	2	2	

DAY	0 TO 7	0 TO 13

ANIMAL		
4507	-51.	-39.
4525	-39.	-36.
MEAN	-45.	-38.
S.D.	8.5	2.1
N	2	2

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R18 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 4

FEMALE GROUP: 450 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
3788	-11.	1.	
3806	-10.	5.	
MEAN	-11.	3.	
S.D.	0.7	2.8	
N	2	2	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R18 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 5

FEMALE GROUP: 600 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
3793	-17.	-9.	
3809	-31.	-31.	
MEAN	-24.	-20.	
S.D.	9.9	15.6	
N	2	2	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R18 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 6

FEMALE GROUP: 750 MG/KG/DAY

DAY	0 TO 7	0 TO 13

ANIMAL		
3801	3.	5.
3808	-11.	-18.
MEAN	-4.	-7.
S.D.	9.9	16.3
N	2	2

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SPONSOR:AMERICAN PETROLEUM

TABLE R19 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 1

MALE GROUP: 450 MG/KG/DAY				
DAY	-6 TO -1	0 TO 7	7 TO 13	

ANIMAL				
4526	32.	32.	33.	
4527	37.	23.	35.	
MEAN	35.	28.	34.	
S.D.	3.5	6.4	1.4	
N	2	2	2	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R19 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 2

MALE GROUP: 600 MG/KG/DAY				
DAY	-6 TO -1	0 TO 7	7 TO 13	

ANIMAL				
4506	36.	17.	35.	
5650	35.	27.	30.	
MEAN	36.	22.	33.	
S.D.	0.7	7.1	3.5	
N	2	2	2	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R19 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 3

MALE GROUP: 750 MG/KG/DAY				
DAY	-6 TO -1	0 TO 7	7 TO 13	

ANIMAL				
4507	35.	10.	33.	
4525	29.	18.	36.	
MEAN	32.	14.	35.	
S.D.	4.2	5.7	2.1	
N	2	2	2	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R19 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

FEMALE GROUP: 450 MG/KG/DAY				
DAY	-6 TO -1	0 TO 7	7 TO 13	

ANIMAL				
3788	25.	19.	NA	
3806	20.	21.	30.	
MEAN	23.	20.	30.	
S.D.	3.5	1.4	0.0	
N	2	2	1	

NA = NOT APPLICABLE

FEMALE GROUP: 600 MG/KG/DAY				
DAY	-6 TO -1	0 TO 7	7 TO 13	

ANIMAL				
3793	20.	10.	26.	
3809	27.	12.	25.	
MEAN	24.	11.	26.	
S.D.	4.9	1.4	0.7	
N	2	2	2	

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R19 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 6

FEMALE GROUP: 750 MG/KG/DAY						
DAY	-6 TO	-1	0 TO	7	7 TO	13

ANIMAL						
3801		21.		18.		26.
3808		22.		15.		24.
MEAN		22.		17.		25.
S.D.		0.7		2.1		1.4
N		2		2		2

PBFTSv4.49
03/23/2011
R:03/23/2011

ANIMAL NO.4526GROUP7: 450 MG/KG/DAYMALESCHEDULED EUTH03/10/11DATE OF DEATH: 03/10/11STUDY DAY: 14

GRADE

ORGAN WEIGHT	ABS. (G)	REL.	SKIN	GROSS: SCABBING				P
LIVER	14.70	4.027		OCULAR, BILATERAL; VENTRAL NECK				
FINAL BODY WT(G)	365.		NO SIGNIFICANT CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	EPIDIDYMIDES	ESOPHAGUS	
				EYES	HEART	INTESTINE	KIDNEYS	
				LIVER	LN, MESENTERIC	LUNGS	MAMMARY GLAND	
				PANCREAS	PITUITARY	PROSTATE	SPINAL CORD	
				SAL. GLAND MAND	SPLEEN	STOMACH	SEMINAL VESICLES	
				TESTES	THYMUS	THYROID GLANDS	TRACHEA	
				URINARY BLADDER	DIAPHRAGM			

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.4527

GROUP7

7: 450 MG/KG/DAY

MALE

SCHEDULED EUTH03/10/11

DATE OF DEATH: 03/10/11

STUDY DAY: 14

GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	15.30	4.124	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	EPIDIDYIMIDES	ESOPHAGUS
FINAL BODY WT(G)	371.			EYES	HEART	INTESTINE	KIDNEYS
				LIVER	LN, MESENTERIC	LUNGS	MAMMARY GLAND
				PANCREAS	PITUITARY	PROSTATE	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				SEMINAL VESICLES	TESTES	THYMUS	THYROID GLANDS
				TRACHEA	URINARY BLADDER	DIAPHRAGM	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.4506 GROUP 8: 600 MG/KG/DAY MALE SCHEDULED EUTH 03/10/11 DATE OF DEATH: 03/10/11 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	17.44	4.133	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	EPIDIDYIMIDES	ESOPHAGUS
FINAL BODY WT(G)	422.			EYES	HEART	INTESTINE	KIDNEYS
				LIVER	LN, MESENTERIC	LUNGS	MAMMARY GLAND
				PANCREAS	PITUITARY	PROSTATE	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				SEMINAL VESICLES	TESTES	THYMUS	THYROID GLANDS
				TRACHEA	URINARY BLADDER	DIAPHRAGM	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.5650 GROUP 8: 600 MG/KG/DAY MALE SCHEDULED EUTH 03/10/11 DATE OF DEATH: 03/10/11 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	15.03	3.776	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	EPIDIDYIMIDES	ESOPHAGUS
FINAL BODY WT(G)	398.			EYES	HEART	INTESTINE	KIDNEYS
				LIVER	LN, MESENTERIC	LUNGS	MAMMARY GLAND
				PANCREAS	PITUITARY	PROSTATE	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				SEMINAL VESICLES	TESTES	THYMUS	THYROID GLANDS
				TRACHEA	URINARY BLADDER	DIAPHRAGM	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.4507

GROUP 9: 750 MG/KG/DAY

MALE

SCHEDULED EUTH03/10/11

DATE OF DEATH: 03/10/11

STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	19.15	4.570	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	EPIDIDYIMIDES	ESOPHAGUS
FINAL BODY WT(G)	419.			EYES	HEART	INTESTINE	KIDNEYS
				LIVER	LN, MESENTERIC	LUNGS	MAMMARY GLAND
				PANCREAS	PITUITARY	PROSTATE	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				SEMINAL VESICLES	TESTES	THYMUS	THYROID GLANDS
				TRACHEA	URINARY BLADDER	DIAPHRAGM	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.4525

GROUP 9: 750 MG/KG/DAY

MALE

SCHEDULED EUTH03/10/11

DATE OF DEATH: 03/10/11

STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	16.02	4.183	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	EPIDIDYIMIDES	ESOPHAGUS
FINAL BODY WT(G)	383.			EYES	HEART	INTESTINE	KIDNEYS
				LIVER	LN, MESENTERIC	LUNGS	MAMMARY GLAND
				PANCREAS	PITUITARY	PROSTATE	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				SEMINAL VESICLES	TESTES	THYMUS	THYROID GLANDS
				TRACHEA	URINARY BLADDER	DIAPHRAGM	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.3788GROUP7: 450 MG/KG/DAYFEMALESCHEDULED EUTH03/10/11DATE OF DEATH: 03/10/11STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	10.62	3.963	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	ESOPHAGUS	EYES
FINAL BODY WT(G)	268.			HEART	INTESTINE	KIDNEYS	LIVER
				LN, MESENTERIC	LUNGS	MAMMARY GLAND	OVIDUCTS
				OVARIES	PANCREAS	PITUITARY	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				THYMUS	THYROID GLANDS	TRACHEA	URINARY BLADDER
				UTERUS	CERVIX	VAGINA	DIAPHRAGM

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.3806GROUP7: 450 MG/KG/DAYFEMALESCHEDULED EUTH03/10/11DATE OF DEATH: 03/10/11STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	10.30	4.328	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	ESOPHAGUS	EYES
FINAL BODY WT(G)	238.			HEART	INTESTINE	KIDNEYS	LIVER
				LN, MESENTERIC	LUNGS	MAMMARY GLAND	OVIDUCTS
				OVARIES	PANCREAS	PITUITARY	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				THYMUS	THYROID GLANDS	TRACHEA	URINARY BLADDER
				UTERUS	CERVIX	VAGINA	DIAPHRAGM

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO. 3793 GROUP 8: 600 MG/KG/DAY FEMALE SCHEDULED EUTH 03/10/11 DATE OF DEATH: 03/10/11 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	10.33	4.760	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	ESOPHAGUS	EYES
FINAL BODY WT(G)	217.			HEART	INTESTINE	KIDNEYS	LIVER
				LN, MESENTERIC	LUNGS	MAMMARY GLAND	OVIDUCTS
				OVARIES	PANCREAS	PITUITARY	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				THYMUS	THYROID GLANDS	TRACHEA	URINARY BLADDER
				UTERUS	CERVIX	VAGINA	DIAPHRAGM

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO. 3809 GROUP 8: 600 MG/KG/DAY FEMALE SCHEDULED EUTH 03/10/11 DATE OF DEATH: 03/10/11 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	11.62	4.418	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	ESOPHAGUS	EYES
FINAL BODY WT(G)	263.			HEART	INTESTINE	KIDNEYS	LIVER
				LN, MESENTERIC	LUNGS	MAMMARY GLAND	OVIDUCTS
				OVARIES	PANCREAS	PITUITARY	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				THYMUS	THYROID GLANDS	TRACHEA	URINARY BLADDER
				UTERUS	CERVIX	VAGINA	DIAPHRAGM

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

TABLE R20 (SCHEDULED NECROPSY - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

ANIMAL NO.	3801	GROUP	9: 750 MG/KG/DAY	FEMALE	SCHEDULED EUTH	03/10/11	DATE OF DEATH: 03/10/11	STUDY DAY: 14
								GRADE

ORGAN	WEIGHT	ABS. (G)	REL.	SKIN	GROSS: SCABBING				P
LIVER		10.23	4.298		NASAL				
FINAL BODY WT (G)		238.		NO SIGNIFICANT					
				CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	ESOPHAGUS	EYES	
					HEART	INTESTINE	KIDNEYS	LIVER	
					LN, MESENTERIC	LUNGS	MAMMARY GLAND	OIDUCTS	
					OVARIES	PANCREAS	PITUITARY	SPINAL CORD	
					SAL. GLAND MAND	SPLEEN	STOMACH	THYMUS	
					THYROID GLANDS	TRACHEA	URINARY BLADDER	UTERUS	
					CERVIX	VAGINA	DIAPHRAGM		

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

ANIMAL NO.3808 GROUP 9: 750 MG/KG/DAY FEMALE SCHEDULED EUTH 03/10/11 DATE OF DEATH: 03/10/11 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
LIVER	12.94	5.392	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	BRAIN	ESOPHAGUS	EYES
FINAL BODY WT(G)	240.			HEART	INTESTINE	KIDNEYS	LIVER
				LN, MESENTERIC	LUNGS	MAMMARY GLAND	OVIDUCTS
				OVARIES	PANCREAS	PITUITARY	SPINAL CORD
				SAL. GLAND MAND	SKIN	SPLEEN	STOMACH
				THYMUS	THYROID GLANDS	TRACHEA	URINARY BLADDER
				UTERUS	CERVIX	VAGINA	DIAPHRAGM

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PGRHv4.66
03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R21 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 1

MALE GROUP: 450 MG/KG/DAY

ANIMAL FBW(G)		LIVER
4526	365.	14.70
4527	371.	15.30
MEAN	368.	15.00
S.D.	4.2	0.424
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R21 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 2

MALE GROUP: 600 MG/KG/DAY

ANIMAL FBW(G)		LIVER
4506	422.	17.44
5650	398.	15.03
MEAN	410.	16.24
S.D.	17.0	1.704
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R21 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 3

MALE GROUP: 750 MG/KG/DAY

ANIMAL FBW(G)		LIVER
4507	419.	19.15
4525	383.	16.02
MEAN	401.	17.59
S.D.	25.5	2.213
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R21 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 4

FEMALE GROUP: 450 MG/KG/DAY

ANIMAL FBW(G)		LIVER
3788	268.	10.62
3806	238.	10.30
MEAN	253.	10.46
S.D.	21.2	0.226
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R21 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 5

FEMALE GROUP: 600 MG/KG/DAY

ANIMAL FBW(G)		LIVER
3793	217.	10.33
3809	263.	11.62
MEAN	240.	10.98
S.D.	32.5	0.912
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R21 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 6

FEMALE GROUP: 750 MG/KG/DAY

ANIMAL	FBW(G)	LIVER
3801	238.	10.23
3808	240.	12.94
MEAN	239.	11.59
S.D.	1.4	1.916
N	2	2

FBW = FINAL BODY WEIGHT

POFBWv4.28
03/23/2011

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R22 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 1

MALE GROUP: 450 MG/KG/DAY

ANIMAL FBW(G)		LIVER
4526	365.	4.027
4527	371.	4.124
MEAN	368.	4.076
S.D.	4.2	0.0686
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R22 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 2

MALE GROUP: 600 MG/KG/DAY

ANIMAL FBW(G)		LIVER
4506	422.	4.133
5650	398.	3.776
MEAN	410.	3.955
S.D.	17.0	0.2524
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R22 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 3

MALE GROUP: 750 MG/KG/DAY

ANIMAL FBW(G)		LIVER
4507	419.	4.570
4525	383.	4.183
MEAN	401.	4.377
S.D.	25.5	0.2736
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R22 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 4

FEMALE GROUP: 450 MG/KG/DAY

ANIMAL FBW(G)		LIVER
3788	268.	3.963
3806	238.	4.328
MEAN	253.	4.146
S.D.	21.2	0.2581
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R22 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 5

FEMALE GROUP: 600 MG/KG/DAY

ANIMAL FBW(G)		LIVER
3793	217.	4.760
3809	263.	4.418
MEAN	240.	4.589
S.D.	32.5	0.2418
N	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020E
SPONSOR:AMERICAN PETROLEUM

TABLE R22 (GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 6

FEMALE GROUP: 750 MG/KG/DAY

ANIMAL	FBW(G)	LIVER
3801	238.	4.298
3808	240.	5.392
MEAN	239.	4.845
S.D.	1.4	0.7736
N	2	2

FBW = FINAL BODY WEIGHT

POFBWv4.28
03/23/2011

APPENDIX E

Scoring Criteria for Dermal Reactions

SCORING CRITERIA FOR DERMAL REACTIONS

Evaluation of Dermal Reactions*

<u>Value</u>	<u>Erythema and Eschar Formation</u>	<u>Computer Designation</u>
0	No erythema	No erythema
1	Very slight erythema (barely perceptible, edges of area not well defined)	Very slight erythema
2	Slight erythema (pale red in color and edges definable)	Slight erythema
3	Moderate to severe erythema (definite red in color and area well defined)	Moderate erythema
4	Severe erythema (beet or crimson red) to slight eschar formation (injuries in depth)	Severe erythema

<u>Value</u>	<u>Edema Formation</u>	<u>Computer Designation</u>
0	No edema	No edema
1	Very slight edema (barely perceptible, edges of area not well defined)	Very slight edema
2	Slight edema (edges of area well defined by definite raising)	Slight edema
3	Moderate edema (raised approximately 1 mm)	Moderate edema
4	Severe edema (raised more than 1 mm and extending beyond area of exposure)	Severe edema

* Draize, J.H. The appraisal of the safety of chemicals in foods, drugs and cosmetics. *Dermal Toxicity* **1965**, 46-59. Assoc. of Food and Drug Officials of the U.S., Topeka, Kansas and the EPA-OPPTS Health Effects Test Guidelines **1998**.

APPENDIX F

Unscheduled Dermal Observations

PROJECT NO.:WIL-402020V
SPONSOR:AMERICAN PETROLEUM

TABLE U1 (UNSCHEDULED OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90191	M	1440 MG/KG/DAY	DERMAL OBS	6	13:13	P	DESQUAMATION
				6	13:13	P	ERYTHEMA-MODERATE
				6	13:13	P	EDEMA-MODERATE
90198	M	1440 MG/KG/DAY	DERMAL OBS	10	13:38	P	ERYTHEMA-SLIGHT
				10	13:38	P	EDEMA-MODERATE
				10	13:38	P	DESQUAMATION
				10	13:38	P	ENCRUSTATION
90202	F	1440 MG/KG/DAY	DERMAL OBS	10	13:40	P	ERYTHEMA-SLIGHT
				10	13:40	P	EDEMA-MODERATE
				10	13:40	P	DESQUAMATION
				10	13:40	P	EXFOLIATION
90212	F	1440 MG/KG/DAY	DERMAL OBS	6	13:18	P	NO ERYTHEMA
				6	13:18	P	EDEMA-MODERATE
				6	13:18	P	EXFOLIATION

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PCRDv4.17
12/29/2010
R:01/07/2011

APPENDIX G

Treatments

PROJECT NO.:WIL-402020X
SPONSOR:AMERICAN PETROLEUM

TABLE X1 (TREATMENTS - GROUPS 7-9)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
4526	M	450 MG/KG/DAY	SPECIAL II	7	13:32	P	WATER BOTTLE ADDED-BODY WEIGHT LOSS
4506	M	600 MG/KG/DAY	SPECIAL II	7	13:32	P	WATER BOTTLE ADDED-BODY WEIGHT LOSS
4507	M	750 MG/KG/DAY	SPECIAL II	7	13:33	P	WATER BOTTLE ADDED-BODY WEIGHT LOSS
4525	M	750 MG/KG/DAY	SPECIAL II	7	13:34	P	WATER BOTTLE ADDED-BODY WEIGHT LOSS
3809	F	600 MG/KG/DAY	SPECIAL II	7	13:33	P	WATER BOTTLE ADDED-BODY WEIGHT LOSS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PCRDv4.17
03/23/2011

FINAL REPORT



Contents: Volume 2 of 2
Appendix H

Study Title: A 14-Day Dose Range Finding Dermal Toxicity
Study Utilizing Distillates (Petroleum), Light
Catalytic Cracked in Sprague Dawley Rats

Study Number: WIL-402020

Study Director: Teresa D. Morris, BS

Data Requirements: Not Applicable

Study Initiation Date: 2 December 2010

Study Completion Date: 30 January 2013

Performing Laboratory: WIL Research Laboratories, LLC
1407 George Road
Ashland, OH 44805-8946

Sponsor Number: Not Applicable

Sponsor: American Petroleum Institute
1220 L Street, NW
Washington, DC 20005

APPENDIX H

Individual Animal Data

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A1
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL SURVIVAL AND DISPOSITION

PAGE 1

ANIMAL	SEX	GROUP	TYPE OF DEATH	AGE IN WEEKS A	DATE OF DEATH	DAYS ON STUDY
90190	M	UNTREATED	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90195	M	UNTREATED	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90192	M	0 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90199	M	0 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90193	M	25 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90194	M	25 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90189	M	100 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90197	M	100 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90187	M	300 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90196	M	300 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90191	M	1440 MG/KG/DAY	EUTHANIZED IN EXTREMIS	9	09-DEC-10	6
90198	M	1440 MG/KG/DAY	EUTHANIZED IN EXTREMIS	9	13-DEC-10	10

A = CALCULATED TO THE NEAREST WHOLE WEEK USING THE MEAN AGE IN WEEKS AT INITIATION OF DOSING (8)

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A1
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL SURVIVAL AND DISPOSITION

PAGE 2

ANIMAL	SEX	GROUP	TYPE OF DEATH	AGE IN WEEKS A	DATE OF DEATH	DAYS ON STUDY
90203	F	UNTREATED	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90207	F	UNTREATED	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90210	F	0 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90211	F	0 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90201	F	25 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90206	F	25 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90204	F	100 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90205	F	100 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90200	F	300 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90208	F	300 MG/KG/DAY	SCHEDULED EUTHANASIA	10	17-DEC-10	14
90202	F	1440 MG/KG/DAY	EUTHANIZED IN EXTREMIS	9	13-DEC-10	10
90212	F	1440 MG/KG/DAY	EUTHANIZED IN EXTREMIS	9	09-DEC-10	6

A = CALCULATED TO THE NEAREST WHOLE WEEK USING THE MEAN AGE IN WEEKS AT INITIATION OF DOSING (8)

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12/29/2010
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PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90190	M	UNTREATED	NORMAL	0	6:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	7:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90190	M	UNTREATED	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90190	M	UNTREATED	EYES/EARS/NOSE	7	7:40	P	DRIED RED MATERIAL AROUND NOSE
				7	7:40	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:40	P	DRIED RED MATERIAL AROUND LEFT EYE
				7	7:40	P	DRIED YELLOW MATERIAL UROGENITAL AREA
90195	M	UNTREATED	NORMAL	0	6:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	7:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90195	M	UNTREATED	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90195	M	UNTREATED	EYES/EARS/NOSE	7	7:42	P	DRIED RED MATERIAL AROUND NOSE
				7	7:42	P	DRIED RED MATERIAL AROUND RIGHT EYE
90192	M	0 MG/KG/DAY	NORMAL	0	6:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90192	M	0 MG/KG/DAY	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90192	M	0 MG/KG/DAY	BODY/INTEGUMENT	14	7:57	P	MOIST ALOPECIA VENTRAL NECK
90192	M	0 MG/KG/DAY	EYES/EARS/NOSE	7	7:46	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				7	7:46	P	DRIED RED MATERIAL AROUND NOSE
				7	7:46	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:46	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:56	P	WET YELLOW MATERIAL UROGENITAL AREA
90199	M	0 MG/KG/DAY	NORMAL	0	6:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	7:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	7:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90199	M	0 MG/KG/DAY	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90193	M	25 MG/KG/DAY	NORMAL	0	6:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90193	M	25 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90193	M	25 MG/KG/DAY	EYES/EARS/NOSE	7	7:51	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:51	P	DRIED RED MATERIAL AROUND LEFT EYE

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 2

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90194	M	25 MG/KG/DAY	NORMAL	0	6:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90194	M	25 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90194	M	25 MG/KG/DAY	EYES/EARS/NOSE	7	7:53	P	DRIED RED MATERIAL AROUND NOSE
				7	7:53	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:53	P	DRIED RED MATERIAL AROUND LEFT EYE
90189	M	100 MG/KG/DAY	NORMAL	0	6:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90189	M	100 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90189	M	100 MG/KG/DAY	EYES/EARS/NOSE	7	7:57	P	DRIED RED MATERIAL AROUND NOSE
				7	7:57	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:57	P	DRIED RED MATERIAL AROUND LEFT EYE
90197	M	100 MG/KG/DAY	NORMAL	0	7:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90197	M	100 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90197	M	100 MG/KG/DAY	EYES/EARS/NOSE	7	7:58	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:58	P	DRIED RED MATERIAL AROUND LEFT EYE
90187	M	300 MG/KG/DAY	NORMAL	0	7:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90187	M	300 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90187	M	300 MG/KG/DAY	EYES/EARS/NOSE	7	8:02	P	DRIED RED MATERIAL AROUND NOSE
				7	8:02	P	DRIED RED MATERIAL AROUND RIGHT EYE
90196	M	300 MG/KG/DAY	NORMAL	0	7:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90196	M	300 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90196	M	300 MG/KG/DAY	EYES/EARS/NOSE	7	8:03	P	DRIED RED MATERIAL AROUND NOSE
				7	8:03	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:03	P	DRIED RED MATERIAL AROUND LEFT EYE
				7	8:03	P	DRIED YELLOW MATERIAL UROGENITAL AREA

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 3

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90196	M	300 MG/KG/DAY	EXCRETA	7	8:03	P	DRIED YELLOW MATERIAL ANOGENITAL AREA
90191	M	1440 MG/KG/DAY	NORMAL	0	7:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90191	M	1440 MG/KG/DAY	DISPOSITION	6	13:16	P	EUTHANIZED IN EXTREMIS - PHYSICAL CONDITION
90191	M	1440 MG/KG/DAY	EXCRETA	6	13:14	P	DRIED YELLOW MATERIAL ANOGENITAL AREA
				6	13:15	P	DRIED YELLOW MATERIAL VENTRAL TRUNK
90198	M	1440 MG/KG/DAY	NORMAL	0	7:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90198	M	1440 MG/KG/DAY	DISPOSITION	10	13:39	P	EUTHANIZED IN EXTREMIS - PHYSICAL CONDITION
90198	M	1440 MG/KG/DAY	EYES/EARS/NOSE	7	8:07	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:07	P	DRIED RED MATERIAL AROUND LEFT EYE
				10	13:39	P	DRIED RED MATERIAL AROUND NOSE
				10	13:39	P	DRIED RED MATERIAL AROUND RIGHT EYE
				10	13:39	P	DRIED RED MATERIAL AROUND LEFT EYE
				10	13:39	P	DRIED YELLOW MATERIAL UROGENITAL AREA
90203	F	UNTREATED	NORMAL	0	6:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90203	F	UNTREATED	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90203	F	UNTREATED	EYES/EARS/NOSE	7	7:43	P	DRIED RED MATERIAL AROUND NOSE
				7	7:43	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:43	P	DRIED RED MATERIAL AROUND LEFT EYE
				14	7:55	P	DRIED RED MATERIAL AROUND NOSE
				14	7:55	P	DRIED RED MATERIAL AROUND LEFT EYE
90207	F	UNTREATED	NORMAL	0	6:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	7:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90207	F	UNTREATED	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90207	F	UNTREATED	EYES/EARS/NOSE	7	7:44	P	DRIED RED MATERIAL AROUND NOSE
				7	7:44	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	7:44	P	DRIED RED MATERIAL AROUND LEFT EYE
90210	F	0 MG/KG/DAY	NORMAL	0	6:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90210	F	0 MG/KG/DAY	DISPOSITION	14	9:12	P	PRIMARY NECROPSY (DAY 14)
90210	F	0 MG/KG/DAY	EYES/EARS/NOSE	7	7:48	P	DRIED YELLOW MATERIAL UROGENITAL AREA

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.: WIL-402020M
 SPONSOR: AMERICAN PETROLEUM

TABLE A2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
 INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 4

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90210	F	0 MG/KG/DAY	EYES/EARS/NOSE	7	7:48	P	DRIED RED MATERIAL AROUND RIGHT EYE
				14	7:58	P	WET YELLOW MATERIAL UROGENITAL AREA
90211	F	0 MG/KG/DAY	NORMAL	0	6:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	7:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90211	F	0 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90211	F	0 MG/KG/DAY	EYES/EARS/NOSE	7	7:49	P	DRIED RED MATERIAL AROUND NOSE
90201	F	25 MG/KG/DAY	NORMAL	0	6:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	7:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90201	F	25 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90206	F	25 MG/KG/DAY	NORMAL	0	6:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90206	F	25 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90206	F	25 MG/KG/DAY	EYES/EARS/NOSE	7	7:56	P	DRIED RED MATERIAL AROUND NOSE
				14	8:01	P	WET YELLOW MATERIAL UROGENITAL AREA
90206	F	25 MG/KG/DAY	BODY/INTEG II	14	8:01	P	SCABBING RIGHT LATERAL NECK
90204	F	100 MG/KG/DAY	NORMAL	0	7:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90204	F	100 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90204	F	100 MG/KG/DAY	EYES/EARS/NOSE	7	7:59	P	DRIED RED MATERIAL AROUND LEFT EYE
90205	F	100 MG/KG/DAY	NORMAL	0	7:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90205	F	100 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90205	F	100 MG/KG/DAY	EYES/EARS/NOSE	7	8:00	P	DRIED RED MATERIAL AROUND NOSE
				7	8:00	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:00	P	DRIED RED MATERIAL AROUND LEFT EYE
90200	F	300 MG/KG/DAY	NORMAL	0	7:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90200	F	300 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90200	F	300 MG/KG/DAY	EYES/EARS/NOSE	7	8:04	P	DRIED RED MATERIAL AROUND NOSE

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 5

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90200	F	300 MG/KG/DAY	EYES/EARS/NOSE	7	8:04	P	DRIED RED MATERIAL AROUND RIGHT EYE
				7	8:04	P	DRIED RED MATERIAL AROUND LEFT EYE
90208	F	300 MG/KG/DAY	NORMAL	0	7:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				14	8:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90208	F	300 MG/KG/DAY	DISPOSITION	14	9:13	P	PRIMARY NECROPSY (DAY 14)
90208	F	300 MG/KG/DAY	EYES/EARS/NOSE	7	8:06	P	DRIED RED MATERIAL AROUND NOSE
90202	F	1440 MG/KG/DAY	NORMAL	0	7:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90202	F	1440 MG/KG/DAY	DISPOSITION	10	13:40	P	EUTHANIZED IN EXTREMIS - PHYSICAL CONDITION
90202	F	1440 MG/KG/DAY	EYES/EARS/NOSE	7	8:08	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				7	8:09	P	DRIED RED MATERIAL AROUND RIGHT EYE
				10	13:40	P	WET YELLOW MATERIAL UROGENITAL AREA
				10	13:40	P	DRIED RED MATERIAL AROUND NOSE
				10	13:40	P	DRIED RED MATERIAL AROUND RIGHT EYE
				10	13:40	P	DRIED RED MATERIAL AROUND LEFT EYE
90202	F	1440 MG/KG/DAY	EXCRETA	7	8:09	P	DRIED YELLOW MATERIAL ANOGENITAL AREA
				7	8:09	P	DRIED YELLOW MATERIAL VENTRAL TRUNK
				7	8:09	P	DRIED YELLOW MATERIAL HINDLIMB(S)
				10	13:40	P	DRIED YELLOW MATERIAL ANOGENITAL AREA
				10	13:40	P	DRIED YELLOW MATERIAL VENTRAL TRUNK
				10	13:40	P	DRIED YELLOW MATERIAL HINDLIMB(S)
90212	F	1440 MG/KG/DAY	NORMAL	0	7:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90212	F	1440 MG/KG/DAY	DISPOSITION	6	13:20	P	EUTHANIZED IN EXTREMIS - PHYSICAL CONDITION
90212	F	1440 MG/KG/DAY	EYES/EARS/NOSE	6	13:17	P	DRIED YELLOW MATERIAL UROGENITAL AREA
				6	13:20	P	DRIED RED MATERIAL AROUND NOSE
				6	13:20	P	DRIED RED MATERIAL AROUND RIGHT EYE
				6	13:20	P	DRIED RED MATERIAL AROUND LEFT EYE
90212	F	1440 MG/KG/DAY	EXCRETA	6	13:17	P	DRIED YELLOW MATERIAL ANOGENITAL AREA
				6	13:17	P	DRIED YELLOW MATERIAL VENTRAL TRUNK

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A2 (DETAILED PHYSICAL EXAMINATIONS/DISPOSITIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 6

STUDY DAYS: 0 THROUGH 14

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90212	F	1440 MG/KG/DAY	EXCRETA	6	13:17	P	DRIED YELLOW MATERIAL HINDLIMB(S)
90212	F	1440 MG/KG/DAY	BODY/INTEG II	6	13:19	P	SCABBING VENTRAL TRUNK
				6	13:19	P	SCABBING HINDLIMB(S)

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

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12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90190	M	UNTREATED	NORMAL	0	15:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90195	M	UNTREATED	NORMAL	0	15:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90192	M	0 MG/KG/DAY	NORMAL	0	15:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 2

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90192	M	0 MG/KG/DAY	NORMAL	1	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90199	M	0 MG/KG/DAY	NORMAL	0	15:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90193	M	25 MG/KG/DAY	NORMAL	0	15:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 3

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90193	M	25 MG/KG/DAY	NORMAL	2	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90194	M	25 MG/KG/DAY	NORMAL	0	15:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:17	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90189	M	100 MG/KG/DAY	NORMAL	0	16:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90189	M	100 MG/KG/DAY	NORMAL	3	10:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90197	M	100 MG/KG/DAY	NORMAL	0	16:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:20	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90187	M	300 MG/KG/DAY	NORMAL	0	16:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90187	M	300 MG/KG/DAY	NORMAL	4	13:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:21	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90196	M	300 MG/KG/DAY	NORMAL	0	16:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:21	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90191	M	1440 MG/KG/DAY	NORMAL	0	16:12	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90191	M	1440 MG/KG/DAY	NORMAL	6	10:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90198	M	1440 MG/KG/DAY	NORMAL	0	16:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	12:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90198	M	1440 MG/KG/DAY	SPECIAL II	5	10:49	P	VOCALIZATION DURING DOSING
90203	F	UNTREATED	NORMAL	0	15:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90207	F	UNTREATED	NORMAL	0	15:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90207	F	UNTREATED	NORMAL	4	13:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90210	F	0 MG/KG/DAY	NORMAL	0	15:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90211	F	0 MG/KG/DAY	NORMAL	0	15:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90211	F	0 MG/KG/DAY	NORMAL	5	10:40	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:31	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	9:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90201	F	25 MG/KG/DAY	NORMAL	0	15:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:10	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90206	F	25 MG/KG/DAY	NORMAL	0	15:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90206	F	25 MG/KG/DAY	NORMAL	6	10:18	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90204	F	100 MG/KG/DAY	NORMAL	0	16:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:20	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:20	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	11:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90205	F	100 MG/KG/DAY	NORMAL	0	16:03	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:21	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:20	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90205	F	100 MG/KG/DAY	NORMAL	7	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:41	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90200	F	300 MG/KG/DAY	NORMAL	0	16:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:23	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	9:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:42	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90208	F	300 MG/KG/DAY	NORMAL	0	16:09	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:24	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	10:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:22	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A3 (AT TIME OF DOSING)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90208	F	300 MG/KG/DAY	NORMAL	8	9:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:43	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	11:39	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	10:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	9:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90202	F	1440 MG/KG/DAY	NORMAL	0	16:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	12:02	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	10:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	9:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	10:38	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90212	F	1440 MG/KG/DAY	NORMAL	0	16:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	12:04	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	11:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	13:19	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	10:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	10:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90212	F	1440 MG/KG/DAY	EYES/EARS/NOSE	3	10:39	P	DRIED YELLOW MATERIAL UROGENITAL AREA

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

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SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

PAGE 1

STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90190	M	UNTREATED	NORMAL	0	17:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90195	M	UNTREATED	NORMAL	0	17:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:25	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:44	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90192	M	0 MG/KG/DAY	NORMAL	1	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90192	M	0 MG/KG/DAY	NORMAL	3	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90199	M	0 MG/KG/DAY	NORMAL	1	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90193	M	25 MG/KG/DAY	NORMAL	1	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
 SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
 INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90193	M	25 MG/KG/DAY	NORMAL	7	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90194	M	25 MG/KG/DAY	NORMAL	1	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90189	M	100 MG/KG/DAY	NORMAL	1	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90189	M	100 MG/KG/DAY	NORMAL	12	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90197	M	100 MG/KG/DAY	NORMAL	1	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90187	M	300 MG/KG/DAY	NORMAL	1	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90196	M	300 MG/KG/DAY	NORMAL	1	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90196	M	300 MG/KG/DAY	NORMAL	2	12:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90191	M	1440 MG/KG/DAY	NORMAL	1	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90191	M	1440 MG/KG/DAY	EYES/EARS/NOSE	3	11:49	P	DRIED YELLOW MATERIAL UROGENITAL AREA
90198	M	1440 MG/KG/DAY	NORMAL	1	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90198	M	1440 MG/KG/DAY	EYES/EARS/NOSE	3	11:50	P	DRIED YELLOW MATERIAL UROGENITAL AREA
90203	F	UNTREATED	NORMAL	0	17:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90203	F	UNTREATED	NORMAL	1	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90207	F	UNTREATED	NORMAL	0	17:11	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				1	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:32	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:05	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:13	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90210	F	0 MG/KG/DAY	NORMAL	1	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90210	F	0 MG/KG/DAY	NORMAL	3	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90211	F	0 MG/KG/DAY	NORMAL	1	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:51	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:33	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:58	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:26	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:06	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:45	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:14	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90201	F	25 MG/KG/DAY	NORMAL	1	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90201	F	25 MG/KG/DAY	NORMAL	6	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90206	F	25 MG/KG/DAY	NORMAL	1	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:52	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:34	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	11:59	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:27	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:46	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90204	F	100 MG/KG/DAY	NORMAL	1	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90204	F	100 MG/KG/DAY	NORMAL	9	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90205	F	100 MG/KG/DAY	NORMAL	1	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:53	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:07	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:56	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:15	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90200	F	300 MG/KG/DAY	NORMAL	1	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:35	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:00	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:47	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

PROJECT NO.:WIL-402020M
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TABLE A4 (DOSING DAY OBSERVATIONS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CLINICAL OBSERVATIONS

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STUDY DAYS: 0 THROUGH 13

ANIMAL	SEX	GROUP	CATEGORY	STUDY DAY	TIME	GRADE	OBSERVATIONS
90200	F	300 MG/KG/DAY	NORMAL	13	10:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90200	F	300 MG/KG/DAY	EYES/EARS/NOSE	3	11:49	P	WET YELLOW MATERIAL UROGENITAL AREA
90208	F	300 MG/KG/DAY	NORMAL	1	13:29	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:54	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				3	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				7	13:28	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				8	11:08	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:49	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				11	12:57	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				12	11:16	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				13	10:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90202	F	1440 MG/KG/DAY	NORMAL	1	13:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:36	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				9	10:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				10	11:50	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90202	F	1440 MG/KG/DAY	EYES/EARS/NOSE	3	11:50	P	DRIED YELLOW MATERIAL UROGENITAL AREA
90212	F	1440 MG/KG/DAY	NORMAL	1	13:30	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				2	12:55	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				4	14:37	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				5	12:01	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
				6	11:48	P	NO SIGNIFICANT CLINICAL OBSERVATIONS
90212	F	1440 MG/KG/DAY	EYES/EARS/NOSE	3	11:50	P	WET YELLOW MATERIAL UROGENITAL AREA

GRADE CODE: 1 - SLIGHT 2 - MODERATE 3 - SEVERE P - PRESENT

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PROJECT NO.:WIL-402020M	TABLE A5 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED	PAGE 1
SPONSOR:AMERICAN PETROLEUM	INDIVIDUAL DERMAL OBSERVATIONS	

GROUP :	UNTREATED	ANIMAL NO. / SEX
	90190/M	90195/M
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR
1	SNR	SNR
2	SNR	SNR
3	SNR	SNR
4	SNR	SNR
5	SNR	SNR
6	SNR	SNR
7	SNR	SNR
8	SNR	SNR
9	SNR	SNR
10	SNR	SNR
11	SNR	SNR
12	SNR	SNR
13	SNR	SNR
14	SNR	SNR

+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA
 SEX CODE: M = MALE F = FEMALE
 SNR = SCORED, NOT REMARKABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 2

GROUP : 0 MG/KG/DAY			ANIMAL NO. / SEX
90192/M			90199/M
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	SNR	
6	SNR	0/0/h	
7	SNR	SNR	
8	SNR	SNR	
9	SNR	SNR	
10	SNR	SNR	
11	SNR	SNR	
12	1/0/d	SNR	
13	SNR	SNR	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 3

GROUP : 25 MG/KG/DAY			ANIMAL NO. / SEX
90193/M			90194/M
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	SNR	SNR	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	SNR	SNR	
13	SNR	SNR	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M	TABLE A5	PAGE	4
SPONSOR:AMERICAN PETROLEUM	14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED		
	INDIVIDUAL DERMAL OBSERVATIONS		

GROUP : 100 MG/KG/DAY			ANIMAL NO. / SEX
	90189/M	90197/M	
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	SNR	SNR	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	SNR	SNR	
13	SNR	0/0/h	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA SEX CODE: M = MALE F = FEMALE d = DESQUAMATION, SNR = SCORED, NOT REMARKABLE h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 5

GROUP : 300 MG/KG/DAY			ANIMAL NO. / SEX
90187/M			90196/M
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	0/0/h	0/0/h	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	SNR	SNR	
13	0/0/h	0/0/h	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M	TABLE A5 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED	PAGE 6
SPONSOR:AMERICAN PETROLEUM	INDIVIDUAL DERMAL OBSERVATIONS	

GROUP :	1440 MG/KG/DAY	ANIMAL NO. / SEX
	90191/M	90198/M

STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS
0	SNR
1	SNR
2	SNR
3	0/0/h
4	1/1/hd
5	2/3/dh
6	3/3/d
7	DEAD
8	
9	
10	
11	

+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA
SEX CODE: M = MALE F = FEMALE
d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE

PROJECT NO.:WIL-402020M	TABLE A5 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED	PAGE 7
SPONSOR:AMERICAN PETROLEUM	INDIVIDUAL DERMAL OBSERVATIONS	

GROUP :	UNTREATED	ANIMAL NO. / SEX
	90203/F	90207/F
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR
1	SNR	SNR
2	SNR	SNR
3	SNR	SNR
4	SNR	SNR
5	SNR	SNR
6	SNR	SNR
7	SNR	SNR
8	SNR	SNR
9	SNR	SNR
10	SNR	SNR
11	SNR	SNR
12	SNR	SNR
13	SNR	SNR
14	SNR	SNR

+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA
 SEX CODE: M = MALE F = FEMALE
 d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 8

GROUP : 0 MG/KG/DAY			ANIMAL NO. / SEX
90210/F			90211/F
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	SNR	SNR	
8	SNR	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	SNR	SNR	
12	SNR	SNR	
13	SNR	SNR	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 9

GROUP : 25 MG/KG/DAY		ANIMAL NO. / SEX	
90201/F		90206/F	
STUDY DAY		ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	SNR	0/0/h	
8	SNR	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	SNR	SNR	
13	SNR	0/0/h	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 10

GROUP : 100 MG/KG/DAY		ANIMAL NO. / SEX	
90204/F		90205/F	
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS		
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	0/0/h	0/0/h	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	SNR	SNR	
13	SNR	SNR	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 11

GROUP : 300 MG/KG/DAY		ANIMAL NO. / SEX	
90200/F		90208/F	
STUDY DAY		ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR	
1	SNR	SNR	
2	SNR	SNR	
3	SNR	SNR	
4	0/0/h	0/0/h	
5	0/0/h	0/0/h	
6	0/0/h	0/0/h	
7	0/0/h	0/0/h	
8	0/0/h	0/0/h	
9	0/0/h	0/0/h	
10	0/0/h	0/0/h	
11	0/0/h	0/0/h	
12	SNR	SNR	
13	0/0/h	0/0/h	
14	SNR	SNR	
+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA			
SEX CODE: M = MALE F = FEMALE			
d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE			
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A5
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL DERMAL OBSERVATIONS

PAGE 12

GROUP : 1440 MG/KG/DAY		ANIMAL NO. / SEX
90202/F		90212/F
STUDY DAY	ERYTHEMA+/EDEMA+/OTHER FINDINGS	
0	SNR	SNR
1	SNR	SNR
2	SNR	SNR
3	0/0/h	0/0/h
4	1/1/hd	1/1/hx
5	0/3/d	0/2/xh
6	1/3/g	0/3/x
7	3/3/gx	DEAD
8	3/3/xg	
9	2/3/dxg	
10	2/3/dx	
11	DEAD	

+ = REFER TO DRAIZE SCALE FOR DERMAL SCORING CRITERIA
SEX CODE: M = MALE F = FEMALE
d = DESQUAMATION, x = EXFOLIATION, g = ENCRUSTATION, SNR = SCORED, NOT REMARKABLE
h = RESIDUAL TEST SUBSTANCE WITHIN DOSE SITE

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DAY	-7	-1	0	7	MALE GROUP: 13	UNTREATED

ANIMAL						
90190	206.	256.	276.	307.	336.	
90195	200.	223.	243.	274.	296.	
MEAN	203.	240.	260.	291.	316.	
S.D.	4.2	23.3	23.3	23.3	28.3	
N	2	2	2	2	2	

DAY	-7	-1	0	7	MALE GROUP: 0 MG/KG/DAY 13
ANIMAL					
90192	226.	285.	298.	314.	331.
90199	196.	231.	247.	276.	304.
MEAN	211.	258.	273.	295.	318.
S.D.	21.2	38.2	36.1	26.9	19.1
N	2	2	2	2	2

DAY	-7	-1	0	7	MALE GROUP: 25 MG/KG/DAY 13
ANIMAL					
90193	201.	253.	266.	284.	301.
90194	196.	220.	236.	260.	290.
MEAN	199.	237.	251.	272.	296.
S.D.	3.5	23.3	21.2	17.0	7.8
N	2	2	2	2	2

DAY	-7	-1	0	7	MALE GROUP: 100 MG/KG/DAY 13
ANIMAL					
90189	202.	246.	257.	288.	296.
90197	224.	275.	291.	285.	302.
MEAN	213.	261.	274.	287.	299.
S.D.	15.6	20.5	24.0	2.1	4.2
N	2	2	2	2	2

DAY	-7	-1	0	7	MALE GROUP: 300 MG/KG/DAY 13
ANIMAL					
90187	227.	279.	298.	279.	300.
90196	198.	231.	248.	256.	276.
MEAN	213.	255.	273.	268.	288.
S.D.	20.5	33.9	35.4	16.3	17.0
N	2	2	2	2	2

DAY	-7	-1	0	7	MALE GROUP: 1440 MG/KG/DAY
ANIMAL					
90191	193.	243.	259.		
90198	211.	266.	262.	268.	
MEAN	202.	255.	261.	268.	
S.D.	12.7	16.3	2.1	0.0	
N	2	2	2	1	

DAY	-7	-1	0	7	FEMALE GROUP: 13	UNTREATED
ANIMAL						
90203	173.	190.	202.	216.	217.	
90207	165.	177.	193.	202.	216.	
MEAN	169.	184.	198.	209.	217.	
S.D.	5.7	9.2	6.4	9.9	0.7	
N	2	2	2	2	2	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A6
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHTS [G]

PAGE 8

DAY	-7	-1	0	7	13
FEMALE GROUP: 0 MG/KG/DAY					
ANIMAL					
90210	171.	191.	203.	211.	230.
90211	160.	182.	184.	204.	219.
MEAN	166.	187.	194.	208.	225.
S.D.	7.8	6.4	13.4	4.9	7.8
N	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A6
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHTS [G]

PAGE 9

FEMALE GROUP: 25 MG/KG/DAY					
DAY	-7	-1	0	7	13

ANIMAL					
90201	166.	197.	201.	232.	251.
90206	164.	188.	199.	218.	233.
MEAN	165.	193.	200.	225.	242.
S.D.	1.4	6.4	1.4	9.9	12.7
N	2	2	2	2	2

DAY	-7	-1	0	7	13
FEMALE GROUP: 100 MG/KG/DAY					
ANIMAL					
90204	171.	194.	198.	219.	233.
90205	162.	185.	191.	193.	201.
MEAN	167.	190.	195.	206.	217.
S.D.	6.4	6.4	4.9	18.4	22.6
N	2	2	2	2	2

DAY	-7	-1	0	7	13
FEMALE GROUP: 300 MG/KG/DAY					
ANIMAL					
90200	175.	195.	198.	211.	224.
90208	171.	189.	200.	202.	203.
MEAN	173.	192.	199.	207.	214.
S.D.	2.8	4.2	1.4	6.4	14.8
N	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A6
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHTS [G]

PAGE 12

FEMALE GROUP: 1440 MG/KG/DAY				
DAY	-7	-1	0	7

ANIMAL				
90202	176.	203.	213.	209.
90212	166.	187.	204.	
MEAN	171.	195.	209.	209.
S.D.	7.1	11.3	6.4	0.0
N	2	2	2	1

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DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13	MALE GROUP: UNTREATED

ANIMAL					
90190	50.	20.	31.	29.	
90195	23.	20.	31.	22.	
MEAN	37.	20.	31.	26.	
S.D.	19.1	0.0	0.0	4.9	
N	2	2	2	2	

DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13	MALE GROUP: 0 MG/KG/DAY

ANIMAL					
90192	59.	13.	16.	17.	
90199	35.	16.	29.	28.	
MEAN	47.	15.	23.	23.	
S.D.	17.0	2.1	9.2	7.8	
N	2	2	2	2	

DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13
MALE GROUP: 25 MG/KG/DAY				
ANIMAL				
90193	52.	13.	18.	17.
90194	24.	16.	24.	30.
MEAN	38.	15.	21.	24.
S.D.	19.8	2.1	4.2	9.2
N	2	2	2	2

DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13
MALE GROUP: 100 MG/KG/DAY				
ANIMAL				
90189	44.	11.	31.	8.
90197	51.	16.	-6.	17.
MEAN	48.	14.	13.	13.
S.D.	4.9	3.5	26.2	6.4
N	2	2	2	2

DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13
MALE GROUP: 300 MG/KG/DAY				
ANIMAL				
90187	52.	19.	-19.	21.
90196	33.	17.	8.	20.
MEAN	43.	18.	-6.	21.
S.D.	13.4	1.4	19.1	0.7
N	2	2	2	2

DAY	-7 TO	-1	-1 TO	0	0 TO	7

ANIMAL						
90191	50.		16.			
90198	55.		-4.		6.	
MEAN	53.		6.		6.	
S.D.	3.5		14.1		0.0	
N	2		2		1	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A7
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHT CHANGES [G]

DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13	FEMALE GROUP: UNTREATED
ANIMAL					
90203	17.	12.	14.	1.	
90207	12.	16.	9.	14.	
MEAN	15.	14.	12.	8.	
S.D.	3.5	2.8	3.5	9.2	
N	2	2	2	2	

PROJECT NO.:WIL-402020M
 SPONSOR:AMERICAN PETROLEUM

TABLE A7
 14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
 INDIVIDUAL BODY WEIGHT CHANGES [G]

PAGE 8

FEMALE GROUP: 0 MG/KG/DAY				
DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13

ANIMAL				
90210	20.	12.	8.	19.
90211	22.	2.	20.	15.
MEAN	21.	7.	14.	17.
S.D.	1.4	7.1	8.5	2.8
N	2	2	2	2

FEMALE GROUP: 25 MG/KG/DAY				
DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13

ANIMAL				
90201	31.	4.	31.	19.
90206	24.	11.	19.	15.
MEAN	28.	8.	25.	17.
S.D.	4.9	4.9	8.5	2.8
N	2	2	2	2

FEMALE GROUP: 100 MG/KG/DAY				
DAY	-7 TO -1	-1 TO 0	0 TO 7	7 TO 13

ANIMAL				
90204	23.	4.	21.	14.
90205	23.	6.	2.	8.
MEAN	23.	5.	12.	11.
S.D.	0.0	1.4	13.4	4.2
N	2	2	2	2

FEMALE GROUP: 300 MG/KG/DAY							
DAY	-7 TO	-1	-1 TO	0	0 TO	7	7 TO 13

ANIMAL							
90200	20.		3.		13.		13.
90208	18.		11.		2.		1.
MEAN	19.		7.		8.		7.
S.D.	1.4		5.7		7.8		8.5
N	2		2		2		2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A7
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL BODY WEIGHT CHANGES [G]

PAGE 12

FEMALE GROUP: 1440 MG/KG/DAY						
DAY	-7 TO	-1	-1 TO	0	0 TO	7

ANIMAL						
90202	27.		10.		-4.	
90212	21.		17.			
MEAN	24.		14.		-4.	
S.D.	4.2		4.9		0.0	
N	2		2		1	

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PROJECT NO.:WIL-402020M
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TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

MALE GROUP: UNTREATED			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90190	31.	60.	
90195	31.	53.	
MEAN	31.	57.	
S.D.	0.0	4.9	
N	2	2	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 2

MALE GROUP: 0 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90192	16.	33.	
90199	29.	57.	
MEAN	23.	45.	
S.D.	9.2	17.0	
N	2	2	

PROJECT NO.:WIL-402020M
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TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 3

MALE GROUP: 25 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90193	18.	35.	
90194	24.	54.	
MEAN	21.	45.	
S.D.	4.2	13.4	
N	2	2	

PROJECT NO.:WIL-402020M
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TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 4

DAY	0 TO 7	0 TO 13

ANIMAL		
90189	31.	39.
90197	-6.	11.
MEAN	13.	25.
S.D.	26.2	19.8
N	2	2

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TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 5

DAY	0 TO 7	0 TO 13
MALE GROUP: 300 MG/KG/DAY		

ANIMAL		
90187	-19.	2.
90196	8.	28.
MEAN	-6.	15.
S.D.	19.1	18.4
N	2	2

PROJECT NO.:WIL-402020M
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TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 6

		MALE		GROUP: 1440 MG/KG/DAY	
DAY	0	TO	7		

ANIMAL					
90191					
90198		6.			
MEAN		6.			
S.D.		0.0			
N		1			

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

FEMALE GROUP: UNTREATED			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90203	14.	15.	
90207	9.	23.	
MEAN	12.	19.	
S.D.	3.5	5.7	
N	2	2	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

FEMALE GROUP: 0 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90210	8.	27.	
90211	20.	35.	
MEAN	14.	31.	
S.D.	8.5	5.7	
N	2	2	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 9

DAY	0 TO 7	0 TO 13

ANIMAL		
90201	31.	50.
90206	19.	34.
MEAN	25.	42.
S.D.	8.5	11.3
N	2	2

PROJECT NO.:WIL-402020M
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TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 10

FEMALE GROUP: 100 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90204	21.	35.	
90205	2.	10.	
MEAN	12.	23.	
S.D.	13.4	17.7	
N	2	2	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 11

FEMALE GROUP: 300 MG/KG/DAY			
DAY	0 TO 7	0 TO 13	

ANIMAL			
90200	13.	26.	
90208	2.	3.	
MEAN	8.	15.	
S.D.	7.8	16.3	
N	2	2	

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A8
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL CUMULATIVE BODY WEIGHT CHANGES [G]

PAGE 12

FEMALE GROUP: 1440 MG/KG/DAY		
DAY	0	7

ANIMAL		
90202		-4.
90212		
MEAN		-4.
S.D.		0.0
N		1

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MALE GROUP: UNTREATED			
DAY	- 7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90190	28.	33.	39.
90195	22.	29.	34.
MEAN	25.	31.	37.
S.D.	4.2	2.8	3.5
N	2	2	2

MALE GROUP: 0 MG/KG/DAY			
DAY	-7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90192	31.	36.	33.
90199	25.	32.	34.
MEAN	28.	34.	34.
S.D.	4.2	2.8	0.7
N	2	2	2

MALE GROUP: 25 MG/KG/DAY			
DAY	-7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90193	28.	33.	35.
90194	23.	28.	35.
MEAN	26.	31.	35.
S.D.	3.5	3.5	0.0
N	2	2	2

MALE GROUP: 100 MG/KG/DAY			
DAY	-7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90189	28.	32.	31.
90197	30.	26.	35.
MEAN	29.	29.	33.
S.D.	1.4	4.2	2.8
N	2	2	2

MALE GROUP: 300 MG/KG/DAY			
DAY	- 7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90187	31.	30.	34.
90196	25.	27.	34.
MEAN	28.	29.	34.
S.D.	4.2	2.1	0.0
N	2	2	2

PROJECT NO.:WIL-402020M
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TABLE A9
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 6

MALE GROUP: 1440 MG/KG/DAY			
DAY	-7 TO -1	0 TO	7

ANIMAL			
90191	26.		
90198	28.	26.	
MEAN	27.	26.	
S.D.	1.4	0.0	
N	2	1	

FEMALE GROUP: UNTREATED			
DAY	-7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90203	22.	27.	27.
90207	19.	25.	27.
MEAN	21.	26.	27.
S.D.	2.1	1.4	0.0
N	2	2	2

PROJECT NO.:WIL-402020M
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TABLE A9
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 8

FEMALE GROUP: 0 MG/KG/DAY			
DAY	-7 TO -1	0 TO 7	7 TO 13

ANIMAL			
90210	22.	22.	NA
90211	20.	22.	28.
MEAN	21.	22.	28.
S.D.	1.4	0.0	0.0
N	2	2	1

NA = NOT APPLICABLE

FEMALE GROUP: 25 MG/KG/DAY				
DAY	- 7 TO -1	0 TO 7	7 TO 13	

ANIMAL				
90201	22.	30.	31.	
90206	22.	30.	NA	
MEAN	22.	30.	31.	
S.D.	0.0	0.0	0.0	
N	2	2	1	

NA = NOT APPLICABLE

FEMALE GROUP: 100 MG/KG/DAY				
DAY	- 7 TO -1	0 TO 7	7 TO 13	

ANIMAL				
90204	23.	29.	31.	
90205	21.	27.	28.	
MEAN	22.	28.	30.	
S.D.	1.4	1.4	2.1	
N	2	2	2	

FEMALE GROUP: 300 MG/KG/DAY				
DAY	-7 TO -1	0 TO 7	7 TO 13	

ANIMAL				
90200	23.	29.	NA	
90208	25.	25.	26.	
MEAN	24.	27.	26.	
S.D.	1.4	2.8	0.0	
N	2	2	1	

NA = NOT APPLICABLE

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A9
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL FOOD CONSUMPTION [G/ANIMAL/DAY]

PAGE 12

FEMALE GROUP: 1440 MG/KG/DAY			
DAY	-7 TO -1	0 TO	7

ANIMAL			
90202	24.	20.	
90212	20.		
MEAN	22.	20.	
S.D.	2.8	0.0	
N	2	1	

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PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A10 (UNSCHEDULED DEATHS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 1

ANIMAL NO. 90191 GROUP 6: 1440 MG/KG/DAY MALE EUTH IN EXTREMIS 12/09/10 DATE OF DEATH: 12/09/10 STUDY DAY: 6
GRADE

LN, AXILLARY	GROSS: ENLARGED				P
	BILATERAL				
SKIN, TREATED	GROSS: SCABBING				P
SKIN, TREATED	GROSS: THICKENED				P
NO SIGNIFICANT					
CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
	JOINT	BRAIN	CECUM	COLON	
	DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES	
	NERVES, OPTIC	HEART	ILEUM	JEJUNUM	
	KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	
	LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY	
	PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND	
	STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN	
	SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS	
	TRACHEA	URINARY BLADDER	SKIN, UNTREATED		

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A10 (UNSCHEDULED DEATHS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 2

ANIMAL NO. 90198 GROUP 6: 1440 MG/KG/DAY MALE EUTH IN EXTREMIS 12/13/10 DATE OF DEATH: 12/13/10 STUDY DAY: 10
GRADE

SKIN	GROSS: MATTING, RED				P
	OCULAR, BILATERAL; NASAL; BUCCAL				
SKIN, TREATED	GROSS: THICKENED				P
NO SIGNIFICANT					
CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
	JOINT	BRAIN	CECUM	COLON	
	DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES	
	NERVES, OPTIC	HEART	ILEUM	JEJUNUM	
	KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	
	LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY	
	PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND	
	STOMACH	SKELETAL MUSCLE	SPLEEN	SEMINAL VESICLES	
	TESTES	THYROID GLANDS	THYMUS	TRACHEA	
	URINARY BLADDER	LN, AXILLARY	SKIN, UNTREATED		

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A10 (UNSCHEDULED DEATHS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 3

ANIMAL NO. 90202 GROUP 6: 1440 MG/KG/DAY FEMALE EUTH IN EXTREMIS 12/13/10 DATE OF DEATH: 12/13/10 STUDY DAY: 10
GRADE

LN, AXILLARY	GROSS: ENLARGED				P
	RIGHT				
SKIN, TREATED	GROSS: SCABBING				P
SKIN, TREATED	GROSS: THICKENED				P
NO SIGNIFICANT					
CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
	JOINT	BRAIN	CECUM	COLON	
	DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC	
	HEART	ILEUM	JEJUNUM	KIDNEYS	
	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS	
	MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES	
	PANCREAS	PITUITARY	RECTUM	SPINAL CORD	
	SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN	
	SPLEEN	THYROID GLANDS	THYMUS	TRACHEA	
	URINARY BLADDER	UTERUS	VAGINA	CERVIX	
	SKIN, UNTREATED				

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A10 (UNSCHEDULED DEATHS)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 4

ANIMAL NO. 90212 GROUP 6: 1440 MG/KG/DAY FEMALE EUTH IN EXTREMIS 12/09/10 DATE OF DEATH: 12/09/10 STUDY DAY: 6
GRADE

SKIN	GROSS: MATTING, YELLOW				P
	ENTIRE VENTRAL SURFACE				
SKIN, TREATED	GROSS: SCABBING				P
SKIN, TREATED	GROSS: THICKENED				P
NO SIGNIFICANT					
CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
	JOINT	BRAIN	CECUM	COLON	
	DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC	
	HEART	ILEUM	JEJUNUM	KIDNEYS	
	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS	
	MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES	
	PANCREAS	PITUITARY	RECTUM	SPINAL CORD	
	SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SPLEEN	
	THYROID GLANDS	THYMUS	TRACHEA	URINARY BLADDER	
	UTERUS	VAGINA	CERVIX	LN, AXILLARY	
	SKIN, UNTREATED				

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

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PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 1

ANIMAL NO. 90190 GROUP 1: UNTREATED MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
BRAIN	1.82	0.593	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	12.85	4.186		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.71	0.883		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES
HEART	1.33	0.433		NERVES, OPTIC	HEART	ILEUM	JEJUNUM
SPLEEN	0.68	0.221		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC
PROSTATE	0.68	0.221		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY
TESTES	3.44	1.121		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND
EPIDIDYMIDES	0.73	0.238		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN
THYMUS	0.3834	0.125		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS
ADRENAL GLANDS	0.0729	0.024		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED
PITUITARY	0.0129	0.004		SKIN, UNTREATED			
THYROIDS/PARATHY	0.0195	0.006					
FINAL BODY WT(G)	307.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 2

ANIMAL NO. 90195 GROUP 1: UNTREATED MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
BRAIN	1.89	0.713	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	10.52	3.970		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.77	1.045		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES
HEART	1.20	0.453		NERVES, OPTIC	HEART	ILEUM	JEJUNUM
SPLEEN	0.50	0.189		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC
PROSTATE	0.62	0.234		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY
TESTES	3.36	1.268		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND
EPIDIDYMIDES	0.76	0.287		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN
THYMUS	0.3748	0.141		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS
ADRENAL GLANDS	0.0720	0.027		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED
PITUITARY	0.0097	0.004		SKIN, UNTREATED			
THYROIDS/PARATHY	0.0176	0.007					
FINAL BODY WT(G)	265.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 3

ANIMAL NO. 90192 GROUP 2: 0 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	SKIN	GROSS: SCABBING				P
BRAIN	1.97	0.668		VENTRAL NECK				
LIVER	10.72	3.634	NO SIGNIFICANT					
KIDNEYS	2.75	0.932	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
HEART	1.09	0.369		JOINT	BRAIN	CECUM	COLON	
SPLEEN	0.72	0.244		DUODENUM	EPIDIDYIMIDES	ESOPHAGUS	EYES	
PROSTATE	0.66	0.224		NERVES, OPTIC	HEART	ILEUM	JEJUNUM	
TESTES	2.90	0.983		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	
EPIDIDYIMIDES	0.77	0.261		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY	
THYMUS	0.3612	0.122		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND	
ADRENAL GLANDS	0.0683	0.023		STOMACH	SKELETAL MUSCLE	SPLEEN	SEMINAL VESICLES	
PITUITARY	0.0112	0.004		TESTES	THYROID GLANDS	THYMUS	TRACHEA	
THYROIDS/PARATHY	0.0193	0.007		URINARY BLADDER	LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
FINAL BODY WT(G)	295.							

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

PAGE 4

ANIMAL NO. 90199 GROUP 2: 0 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT				
BRAIN	2.01	0.747	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	10.03	3.729		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.61	0.970		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES
HEART	1.15	0.428		NERVES, OPTIC	HEART	ILEUM	JEJUNUM
SPLEEN	0.52	0.193		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC
PROSTATE	0.55	0.204		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY
TESTES	3.37	1.253		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND
EPIDIDYMIDES	0.75	0.279		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN
THYMUS	0.4066	0.151		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS
ADRENAL GLANDS	0.0581	0.022		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED
PITUITARY	0.0123	0.005		SKIN, UNTREATED			
THYROIDS/PARATHY	0.0186	0.007					
FINAL BODY WT(G)	269.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90193 GROUP 3: 25 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
BRAIN	1.90	0.696	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	12.27	4.495		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.75	1.007		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES
HEART	1.11	0.407		NERVES, OPTIC	HEART	ILEUM	JEJUNUM
SPLEEN	0.51	0.187		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC
PROSTATE	0.62	0.227		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY
TESTES	3.08	1.128		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND
EPIDIDYMIDES	0.74	0.271		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN
THYMUS	0.3828	0.140		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS
ADRENAL GLANDS	0.0526	0.019		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED
PITUITARY	0.0093	0.003		SKIN, UNTREATED			
THYROIDS/PARATHY	0.0170	0.006					
FINAL BODY WT(G)	273.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90194 GROUP 3: 25 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT				
BRAIN	1.80	0.698	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	9.43	3.655		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.48	0.961		DUODENUM	EPIDIDYIMIDES	ESOPHAGUS	EYES
HEART	1.09	0.422		NERVES, OPTIC	HEART	ILEUM	JEJUNUM
SPLEEN	0.50	0.194		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC
PROSTATE	0.57	0.221		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY
TESTES	3.29	1.275		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND
EPIDIDYIMIDES	0.73	0.283		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN
THYMUS	0.4280	0.166		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS
ADRENAL GLANDS	0.0755	0.029		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED
PITUITARY	0.0132	0.005		SKIN, UNTREATED			
THYROIDS/PARATHY	0.0164	0.006					
FINAL BODY WT(G)	258.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90189 GROUP 4: 100 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	THYMUS	GROSS: AREA(S), DARK RED				P
BRAIN	1.77	0.663		FEW, IRREGULARLY SHAPED				
LIVER	10.90	4.082	NO SIGNIFICANT					
KIDNEYS	2.78	1.041	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
HEART	1.13	0.423		JOINT	BRAIN	CECUM	COLON	
SPLEEN	0.52	0.195		DUODENUM	EPIDIDYIMIDES	ESOPHAGUS	EYES	
PROSTATE	0.55	0.206		NERVES, OPTIC	HEART	ILEUM	JEJUNUM	
TESTES	3.16	1.184		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	
EPIDIDYIMIDES	0.74	0.277		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY	
THYMUS	0.4003	0.150		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND	
ADRENAL GLANDS	0.0535	0.020		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN	
PITUITARY	0.0084	0.003		SEMINAL VESICLES	TESTES	THYROID GLANDS	TRACHEA	
THYROIDS/PARATHY	0.0199	0.007		URINARY BLADDER	LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
FINAL BODY WT(G)	267.							

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90197 GROUP 4: 100 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT				
BRAIN	1.99	0.737	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	10.67	3.952		JOINT	BRAIN	CECUM	COLON
KIDNEYS	3.02	1.119		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES
HEART	1.12	0.415		NERVES, OPTIC	HEART	ILEUM	JEJUNUM
SPLEEN	0.54	0.200		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC
PROSTATE	0.47	0.174		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY
TESTES	3.19	1.181		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND
EPIDIDYMIDES	0.77	0.285		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN
THYMUS	0.3246	0.120		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS
ADRENAL GLANDS	0.0594	0.022		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED
PITUITARY	0.0080	0.003		SKIN, UNTREATED			
THYROIDS/PARATHY	0.0169	0.006					
FINAL BODY WT(G)	270.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
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ANIMAL NO. 90187 GROUP 5: 300 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	KIDNEYS	GROSS: DILATED PELVIS				1
BRAIN	1.94	0.716		LEFT				
LIVER	10.22	3.771	NO SIGNIFICANT					
KIDNEYS	2.75	1.015	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
HEART	1.08	0.399		JOINT	BRAIN	CECUM	COLON	
SPLEEN	0.56	0.207		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES	
PROSTATE	0.58	0.214		NERVES, OPTIC	HEART	ILEUM	JEJUNUM	
TESTES	3.28	1.210		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS	
EPIDIDYMIDES	0.81	0.299		NERVE, SCIATIC	PANCREAS	PITUITARY	PROSTATE	
THYMUS	0.2696	0.099		RECTUM	SPINAL CORD	SAL. GLAND MAND	STOMACH	
ADRENAL GLANDS	0.0762	0.028		SKELETAL MUSCLE	SKIN	SPLEEN	SEMINAL VESICLES	
PITUITARY	0.0093	0.003		TESTES	THYROID GLANDS	THYMUS	TRACHEA	
THYROIDS/PARATHY	0.0194	0.007		URINARY BLADDER	LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
FINAL BODY WT(G)	271.							

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90196 GROUP 5: 300 MG/KG/DAY MALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	GENERAL COMMENT	GROSS: ORGAN DAMAGED AT NECROPSY				P
BRAIN	1.84	0.733	NO SIGNIFICANT CHANGES OBSERVED	PROSTATE				
LIVER	10.48	4.175						
KIDNEYS	2.50	0.996	NO SIGNIFICANT CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
HEART	1.04	0.414		JOINT	BRAIN	CECUM	COLON	
SPLEEN	0.47	0.187		DUODENUM	EPIDIDYMIDES	ESOPHAGUS	EYES	
PROSTATE	0.56	0.223		NERVES, OPTIC	HEART	ILEUM	JEJUNUM	
TESTES	3.44	1.371		KIDNEYS	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	
EPIDIDYMIDES	0.63	0.251		LUNGS	NERVE, SCIATIC	PANCREAS	PITUITARY	
THYMUS	0.2763	0.110		PROSTATE	RECTUM	SPINAL CORD	SAL. GLAND MAND	
ADRENAL GLANDS	0.0691	0.028		STOMACH	SKELETAL MUSCLE	SKIN	SPLEEN	
PITUITARY	0.0108	0.004		SEMINAL VESICLES	TESTES	THYROID GLANDS	THYMUS	
THYROIDS/PARATHY	0.0191	0.008		TRACHEA	URINARY BLADDER	LN, AXILLARY	SKIN, TREATED	
FINAL BODY WT(G)	251.			SKIN, UNTREATED				

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90203 GROUP 1: UNTREATED FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
BRAIN	1.78	0.913		JOINT	BRAIN	CECUM	COLON
LIVER	9.15	4.692		DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
KIDNEYS	1.90	0.974		HEART	ILEUM	JEJUNUM	KIDNEYS
HEART	0.87	0.446		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
SPLEEN	0.53	0.272		MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
UTERUS	0.34	0.174		PANCREAS	PITUITARY	RECTUM	SPINAL CORD
OVARIES/OVIDUCTS	0.1181	0.061		SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
THYMUS	0.5618	0.288		SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
ADRENAL GLANDS	0.0761	0.039		URINARY BLADDER	UTERUS	VAGINA	CERVIX
PITUITARY	0.0158	0.008		LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
THYROIDS/PARATHY	0.0144	0.007					
FINAL BODY WT (G)	195.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90207 GROUP 1: UNTREATED FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
BRAIN	1.81	0.933	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	7.55	3.892		JOINT	BRAIN	CECUM	COLON
KIDNEYS	1.84	0.948		DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
HEART	0.92	0.474		HEART	ILEUM	JEJUNUM	KIDNEYS
SPLEEN	0.50	0.258		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
UTERUS	0.45	0.232		MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
OVARIES/OVIDUCTS	0.1176	0.061		PANCREAS	PITUITARY	RECTUM	SPINAL CORD
THYMUS	0.4051	0.209		SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
ADRENAL GLANDS	0.0748	0.039		SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
PITUITARY	0.0152	0.008		URINARY BLADDER	UTERUS	VAGINA	CERVIX
THYROIDS/PARATHY	0.0162	0.008		LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
FINAL BODY WT(G)	194.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90210 GROUP 2: 0 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	SKIN	GROSS: SCABBING				P
BRAIN	1.82	0.897		VENTRAL NECK				
LIVER	9.26	4.562	LN, MEDIASTINAL	GROSS: ENLARGED				P
KIDNEYS	2.05	1.010	NO SIGNIFICANT					
HEART	0.83	0.409	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
SPLEEN	0.59	0.291		JOINT	BRAIN	CECUM	COLON	
UTERUS	0.34	0.167		DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC	
OVARIES/OVIDUCTS	0.1104	0.054		HEART	ILEUM	JEJUNUM	KIDNEYS	
THYMUS	0.4381	0.216		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS	
ADRENAL GLANDS	0.0718	0.035		MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES	
PITUITARY	0.0102	0.005		PANCREAS	PITUITARY	RECTUM	SPINAL CORD	
THYROIDS/PARATHY	0.0163	0.008		SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SPLEEN	
FINAL BODY WT(G)	203.			THYROID GLANDS	THYMUS	TRACHEA	URINARY BLADDER	
				UTERUS	VAGINA	CERVIX	LN, AXILLARY	
				SKIN, TREATED	SKIN, UNTREATED			

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90211 GROUP 2: 0 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT
BRAIN	1.96	1.000	CHANGES OBSERVED
LIVER	7.20	3.673	
KIDNEYS	1.91	0.974	
HEART	0.98	0.500	
SPLEEN	0.45	0.230	
UTERUS	0.43	0.219	
OVARIES/OVIDUCTS	0.1004	0.051	
THYMUS	0.5244	0.268	
ADRENAL GLANDS	0.0742	0.038	
PITUITARY	0.0199	0.010	
THYROIDS/PARATHY	0.0193	0.010	
FINAL BODY WT (G)	196.		

GROSS:	ADRENAL GLANDS	AORTA	STERNUM	FEMUR
	JOINT	BRAIN	CECUM	COLON
	DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
	HEART	ILEUM	JEJUNUM	KIDNEYS
	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
	MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
	PANCREAS	PITUITARY	RECTUM	SPINAL CORD
	SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
	SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
	URINARY BLADDER	UTERUS	VAGINA	CERVIX
	LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90201 GROUP 3: 25 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS.(G)	REL.	NO SIGNIFICANT				
BRAIN	2.03	0.923	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	11.47	5.214		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.31	1.050		DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
HEART	0.94	0.427		HEART	ILEUM	JEJUNUM	KIDNEYS
SPLEEN	0.58	0.264		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
UTERUS	0.36	0.164		MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
OVARIES/OVIDUCTS	0.1285	0.058		PANCREAS	PITUITARY	RECTUM	SPINAL CORD
THYMUS	0.6184	0.281		SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
ADRENAL GLANDS	0.0776	0.035		SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
PITUITARY	0.0148	0.007		URINARY BLADDER	UTERUS	VAGINA	CERVIX
THYROIDS/PARATHY	0.0177	0.008		LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
FINAL BODY WT(G)	220.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90206 GROUP 3: 25 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT
BRAIN	1.86	0.894	CHANGES OBSERVED
LIVER	8.68	4.173	
KIDNEYS	1.94	0.933	
HEART	1.04	0.500	
SPLEEN	0.44	0.212	
UTERUS	0.38	0.183	
OVARIES/OVIDUCTS	0.1182	0.057	
THYMUS	0.4452	0.214	
ADRENAL GLANDS	0.0721	0.035	
PITUITARY	0.0131	0.006	
THYROIDS/PARATHY	0.0163	0.008	
FINAL BODY WT (G)	208.		

GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
JOINT	BRAIN	CECUM	COLON
DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
HEART	ILEUM	JEJUNUM	KIDNEYS
LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
PANCREAS	PITUITARY	RECTUM	SPINAL CORD
SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
URINARY BLADDER	UTERUS	VAGINA	CERVIX
LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90204 GROUP 4: 100 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	LN, MANDIBULAR	GROSS: ENLARGED				
BRAIN	1.82	0.910		BILATERAL				P
LIVER	9.50	4.750	NO SIGNIFICANT					
KIDNEYS	2.14	1.070	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR	
HEART	0.86	0.430		JOINT	BRAIN	CECUM	COLON	
SPLEEN	0.53	0.265		DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC	
UTERUS	0.52	0.260		HEART	ILEUM	JEJUNUM	KIDNEYS	
OVARIES/OVIDUCTS	0.1213	0.061		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS	
THYMUS	0.3230	0.162		MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES	
ADRENAL GLANDS	0.0817	0.041		PANCREAS	PITUITARY	RECTUM	SPINAL CORD	
PITUITARY	0.0121	0.006		SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN	
THYROIDS/PARATHY	0.0136	0.007		SPLEEN	THYROID GLANDS	THYMUS	TRACHEA	
FINAL BODY WT (G)	200.			URINARY BLADDER	UTERUS	VAGINA	CERVIX	
				LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED		

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90205 GROUP 4: 100 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT
BRAIN	1.77	0.994	CHANGES OBSERVED
LIVER	6.94	3.899	
KIDNEYS	1.89	1.062	
HEART	0.82	0.461	
SPLEEN	0.39	0.219	
UTERUS	0.34	0.191	
OVARIES/OVIDUCTS	0.1009	0.057	
THYMUS	0.3702	0.208	
ADRENAL GLANDS	0.0857	0.048	
PITUITARY	0.0129	0.007	
THYROIDS/PARATHY	0.0135	0.008	
FINAL BODY WT (G)	178.		

GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
JOINT	BRAIN	CECUM	COLON
DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
HEART	ILEUM	JEJUNUM	KIDNEYS
LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
PANCREAS	PITUITARY	RECTUM	SPINAL CORD
SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
URINARY BLADDER	UTERUS	VAGINA	CERVIX
LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90200 GROUP 5: 300 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT				
BRAIN	1.82	0.933	CHANGES OBSERVED	GROSS:ADRENAL GLANDS	AORTA	STERNUM	FEMUR
LIVER	9.88	5.067		JOINT	BRAIN	CECUM	COLON
KIDNEYS	2.02	1.036		DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
HEART	0.84	0.431		HEART	ILEUM	JEJUNUM	KIDNEYS
SPLEEN	0.45	0.231		LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
UTERUS	0.30	0.154		MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
OVARIES/OVIDUCTS	0.0998	0.051		PANCREAS	PITUITARY	RECTUM	SPINAL CORD
THYMUS	0.3566	0.183		SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
ADRENAL GLANDS	0.0684	0.035		SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
PITUITARY	0.0147	0.008		URINARY BLADDER	UTERUS	VAGINA	CERVIX
THYROIDS/PARATHY	0.0163	0.008		LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	
FINAL BODY WT (G)	195.						

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A11 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL MACROSCOPIC FINDINGS

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ANIMAL NO. 90208 GROUP 5: 300 MG/KG/DAY FEMALE SCHEDULED EUTH 12/17/10 DATE OF DEATH: 12/17/10 STUDY DAY: 14
GRADE

ORGAN WEIGHT	ABS. (G)	REL.	NO SIGNIFICANT
BRAIN	1.77	0.932	CHANGES OBSERVED
LIVER	8.35	4.395	
KIDNEYS	1.87	0.984	
HEART	0.88	0.463	
SPLEEN	0.42	0.221	
UTERUS	0.51	0.268	
OVARIES/OVIDUCTS	0.1075	0.057	
THYMUS	0.3018	0.159	
ADRENAL GLANDS	0.0721	0.038	
PITUITARY	0.0130	0.007	
THYROIDS/PARATHY	0.0174	0.009	
FINAL BODY WT (G)	190.		

GROSS:	ADRENAL GLANDS	AORTA	STERNUM	FEMUR
	JOINT	BRAIN	CECUM	COLON
	DUODENUM	ESOPHAGUS	EYES	NERVES, OPTIC
	HEART	ILEUM	JEJUNUM	KIDNEYS
	LAC. GLAND EXOR	LIVER	LN, MESENTERIC	LUNGS
	MAMMARY GLAND	NERVE, SCIATIC	OVIDUCTS	OVARIES
	PANCREAS	PITUITARY	RECTUM	SPINAL CORD
	SAL. GLAND MAND	STOMACH	SKELETAL MUSCLE	SKIN
	SPLEEN	THYROID GLANDS	THYMUS	TRACHEA
	URINARY BLADDER	UTERUS	VAGINA	CERVIX
	LN, AXILLARY	SKIN, TREATED	SKIN, UNTREATED	

GROSS GRADE CODE: 1-SLIGHT, 2-MODERATE, 3-MARKED, P-PRESENT

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12/29/2010

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 1

MALE GROUP: UNTREATED

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90190	307.	1.82	12.85	2.71	1.33	0.68	0.68
90195	265.	1.89	10.52	2.77	1.20	0.50	0.62
MEAN	286.	1.86	11.69	2.74	1.27	0.59	0.65
S.D.	29.7	0.049	1.648	0.042	0.092	0.127	0.042
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

MALE GROUP: 0 MG/KG/DAY							
ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90192	295.	1.97	10.72	2.75	1.09	0.72	0.66
90199	269.	2.01	10.03	2.61	1.15	0.52	0.55
MEAN	282.	1.99	10.38	2.68	1.12	0.62	0.61
S.D.	18.4	0.028	0.488	0.099	0.042	0.141	0.078
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 3

MALE GROUP: 25 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90193	273.	1.90	12.27	2.75	1.11	0.51	0.62
90194	258.	1.80	9.43	2.48	1.09	0.50	0.57
MEAN	266.	1.85	10.85	2.62	1.10	0.51	0.60
S.D.	10.6	0.071	2.008	0.191	0.014	0.007	0.035
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 4

MALE GROUP: 100 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90189	267.	1.77	10.90	2.78	1.13	0.52	0.55
90197	270.	1.99	10.67	3.02	1.12	0.54	0.47
MEAN	269.	1.88	10.79	2.90	1.13	0.53	0.51
S.D.	2.1	0.156	0.163	0.170	0.007	0.014	0.057
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 5

MALE GROUP: 300 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90187	271.	1.94	10.22	2.75	1.08	0.56	0.58
90196	251.	1.84	10.48	2.50	1.04	0.47	0.56
MEAN	261.	1.89	10.35	2.63	1.06	0.52	0.57
S.D.	14.1	0.071	0.184	0.177	0.028	0.064	0.014
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

MALE GROUP: UNTREATED						
ANIMAL	TESTES	EPIDIDYMIDES	THYMUS	ADRENAL GLANDS	PITUITARY	THYROIDSPARATHY
90190	3.44	0.73	0.3834	0.0729	0.0129	0.0195
90195	3.36	0.76	0.3748	0.0720	0.0097	0.0176
MEAN	3.40	0.75	0.3791	0.0725	0.0113	0.0186
S.D.	0.057	0.021	0.00608	0.00064	0.00226	0.00134
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 7

MALE GROUP: 0 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90192	2.90	0.77	0.3612	0.0683	0.0112	0.0193
90199	3.37	0.75	0.4066	0.0581	0.0123	0.0186
MEAN	3.14	0.76	0.3839	0.0632	0.0118	0.0190
S.D.	0.332	0.014	0.03210	0.00721	0.00078	0.00049
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 8

MALE GROUP: 25 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDS /PARATHY
90193	3.08	0.74	0.3828	0.0526	0.0093	0.0170
90194	3.29	0.73	0.4280	0.0755	0.0132	0.0164
MEAN	3.19	0.74	0.4054	0.0641	0.0113	0.0167
S.D.	0.148	0.007	0.03196	0.01619	0.00276	0.00042
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 9

MALE GROUP: 100 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90189	3.16	0.74	0.4003	0.0535	0.0084	0.0199
90197	3.19	0.77	0.3246	0.0594	0.0080	0.0169
MEAN	3.18	0.76	0.3625	0.0565	0.0082	0.0184
S.D.	0.021	0.021	0.05353	0.00417	0.00028	0.00212
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 10

MALE GROUP: 300 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROID S/PARATHY
90187	3.28	0.81	0.2696	0.0762	0.0093	0.0194
90196	3.44	0.63	0.2763	0.0691	0.0108	0.0191
MEAN	3.36	0.72	0.2730	0.0727	0.0101	0.0193
S.D.	0.113	0.127	0.00474	0.00502	0.00106	0.00021
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 11

FEMALE GROUP: UNTREATED

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90203	195.	1.78	9.15	1.90	0.87	0.53
90207	194.	1.81	7.55	1.84	0.92	0.50
MEAN	195.	1.80	8.35	1.87	0.90	0.52
S.D.	0.7	0.021	1.131	0.042	0.035	0.021
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

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FEMALE GROUP: 0 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90210	203.	1.82	9.26	2.05	0.83	0.59
90211	196.	1.96	7.20	1.91	0.98	0.45
MEAN	200.	1.89	8.23	1.98	0.91	0.52
S.D.	4.9	0.099	1.457	0.099	0.106	0.099
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 13

FEMALE GROUP: 25 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90201	220.	2.03	11.47	2.31	0.94	0.58
90206	208.	1.86	8.68	1.94	1.04	0.44
MEAN	214.	1.95	10.08	2.13	0.99	0.51
S.D.	8.5	0.120	1.973	0.262	0.071	0.099
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 14

FEMALE GROUP: 100 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90204	200.	1.82	9.50	2.14	0.86	0.53
90205	178.	1.77	6.94	1.89	0.82	0.39
MEAN	189.	1.80	8.22	2.02	0.84	0.46
S.D.	15.6	0.035	1.810	0.177	0.028	0.099
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

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FEMALE GROUP: 300 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90200	195.	1.82	9.88	2.02	0.84	0.45
90208	190.	1.77	8.35	1.87	0.88	0.42
MEAN	193.	1.80	9.12	1.95	0.86	0.44
S.D.	3.5	0.035	1.082	0.106	0.028	0.021
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

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FEMALE GROUP: UNTREATED						
ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90203	0.34	0.1181	0.5618	0.0761	0.0158	0.0144
90207	0.45	0.1176	0.4051	0.0748	0.0152	0.0162
MEAN	0.40	0.1179	0.4835	0.0755	0.0155	0.0153
S.D.	0.078	0.00035	0.11080	0.00092	0.00042	0.00127
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

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FEMALE GROUP: 0 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90210	0.34	0.1104	0.4381	0.0718	0.0102	0.0163
90211	0.43	0.1004	0.5244	0.0742	0.0199	0.0193
MEAN	0.39	0.1054	0.4813	0.0730	0.0151	0.0178
S.D.	0.064	0.00707	0.06102	0.00170	0.00686	0.00212
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 18

FEMALE GROUP: 25 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDS /PARATHY
90201	0.36	0.1285	0.6184	0.0776	0.0148	0.0177
90206	0.38	0.1182	0.4452	0.0721	0.0131	0.0163
MEAN	0.37	0.1234	0.5318	0.0749	0.0140	0.0170
S.D.	0.014	0.00728	0.12247	0.00389	0.00120	0.00099
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 19

FEMALE GROUP: 100 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90204	0.52	0.1213	0.3230	0.0817	0.0121	0.0136
90205	0.34	0.1009	0.3702	0.0857	0.0129	0.0135
MEAN	0.43	0.1111	0.3466	0.0837	0.0125	0.0136
S.D.	0.127	0.01442	0.03338	0.00283	0.00057	0.00007
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A12 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS AND FINAL BODY WEIGHTS [G]

PAGE 20

FEMALE GROUP: 300 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90200	0.30	0.0998	0.3566	0.0684	0.0147	0.0163
90208	0.51	0.1075	0.3018	0.0721	0.0130	0.0174
MEAN	0.41	0.1037	0.3292	0.0703	0.0139	0.0169
S.D.	0.148	0.00544	0.03875	0.00262	0.00120	0.00078
N	2	2	2	2	2	2

POFBWv4.25
12/29/2010

MALE GROUP: UNTREATED							
ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90190	307.	0.593	4.186	0.883	0.433	0.221	0.221
90195	265.	0.713	3.970	1.045	0.453	0.189	0.234
MEAN	286.	0.650	4.080	0.960	0.440	0.210	0.230
S.D.	29.7	0.0851	0.1526	0.1149	0.0139	0.0232	0.0088
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 2

MALE GROUP: 0 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90192	295.	0.668	3.634	0.932	0.369	0.244	0.224
90199	269.	0.747	3.729	0.970	0.428	0.193	0.204
MEAN	282.	0.710	3.680	0.950	0.400	0.220	0.210
S.D.	18.4	0.0562	0.0670	0.0269	0.0410	0.0359	0.0136
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 3

MALE GROUP: 25 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90193	273.	0.696	4.495	1.007	0.407	0.187	0.227
90194	258.	0.698	3.655	0.961	0.422	0.194	0.221
MEAN	266.	0.700	4.070	0.980	0.410	0.190	0.220
S.D.	10.6	0.0012	0.5936	0.0326	0.0112	0.0049	0.0044
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 4

MALE GROUP: 100 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90189	267.	0.663	4.082	1.041	0.423	0.195	0.206
90197	270.	0.737	3.952	1.119	0.415	0.200	0.174
MEAN	269.	0.700	4.020	1.080	0.420	0.200	0.190
S.D.	2.1	0.0524	0.0923	0.0547	0.0059	0.0037	0.0226
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 5

MALE GROUP: 300 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90187	271.	0.716	3.771	1.015	0.399	0.207	0.214
90196	251.	0.733	4.175	0.996	0.414	0.187	0.223
MEAN	261.	0.720	3.970	1.010	0.410	0.200	0.220
S.D.	14.1	0.0122	0.2857	0.0133	0.0112	0.0137	0.0064
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 6

MALE GROUP: UNTREATED						
ANIMAL	TESTES	EPIDIDYMIDES	THYMUS	ADRENAL GLANDS	PITUITARY	THYROIDSPARATHY
90190	1.121	0.238	0.125	0.024	0.004	0.006
90195	1.268	0.287	0.141	0.027	0.004	0.007
MEAN	1.190	0.260	0.133	0.025	0.004	0.007
S.D.	0.1042	0.0347	0.0117	0.0024	0.0004	0.0001
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 7

MALE GROUP: 0 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90192	0.983	0.261	0.122	0.023	0.004	0.007
90199	1.253	0.279	0.151	0.022	0.005	0.007
MEAN	1.120	0.270	0.137	0.022	0.004	0.007
S.D.	0.1907	0.0126	0.0203	0.0011	0.0005	0.0003
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 8

MALE GROUP: 25 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDS /PARATHY
90193	1.128	0.271	0.140	0.019	0.003	0.006
90194	1.275	0.283	0.166	0.029	0.005	0.006
MEAN	1.200	0.280	0.153	0.024	0.004	0.006
S.D.	0.1039	0.0084	0.0182	0.0071	0.0012	0.0001
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 9

MALE GROUP: 100 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90189	1.184	0.277	0.150	0.020	0.003	0.007
90197	1.181	0.285	0.120	0.022	0.003	0.006
MEAN	1.180	0.280	0.135	0.021	0.003	0.007
S.D.	0.0014	0.0057	0.0210	0.0014	0.0001	0.0008
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 10

MALE GROUP: 300 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROID S/PARATHY
90187	1.210	0.299	0.099	0.028	0.003	0.007
90196	1.371	0.251	0.110	0.028	0.004	0.008
MEAN	1.290	0.270	0.105	0.028	0.004	0.007
S.D.	0.1133	0.0339	0.0075	0.0004	0.0006	0.0003
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 11

FEMALE GROUP: UNTREATED

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90203	195.	0.913	4.692	0.974	0.446	0.272
90207	194.	0.933	3.892	0.948	0.474	0.258
MEAN	195.	0.920	4.290	0.960	0.460	0.260
S.D.	0.7	0.0143	0.5661	0.0183	0.0199	0.0099
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 12

FEMALE GROUP: 0 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90210	203.	0.897	4.562	1.010	0.409	0.291
90211	196.	1.000	3.673	0.974	0.500	0.230
MEAN	200.	0.950	4.120	0.990	0.450	0.260
S.D.	4.9	0.0731	0.6280	0.0250	0.0644	0.0432
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 13

FEMALE GROUP: 25 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90201	220.	0.923	5.214	1.050	0.427	0.264
90206	208.	0.894	4.173	0.933	0.500	0.212
MEAN	214.	0.910	4.690	0.990	0.460	0.240
S.D.	8.5	0.0202	0.7358	0.0829	0.0514	0.0368
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 14

FEMALE GROUP: 100 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90204	200.	0.910	4.750	1.070	0.430	0.265
90205	178.	0.994	3.899	1.062	0.461	0.219
MEAN	189.	0.950	4.320	1.070	0.450	0.240
S.D.	15.6	0.0597	0.6018	0.0058	0.0217	0.0325
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 15

FEMALE GROUP: 300 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN	LIVER	KIDNEYS	HEART	SPLEEN
90200	195.	0.933	5.067	1.036	0.431	0.231
90208	190.	0.932	4.395	0.984	0.463	0.221
MEAN	193.	0.930	4.730	1.010	0.450	0.230
S.D.	3.5	0.0012	0.4751	0.0365	0.0229	0.0069
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 16

FEMALE GROUP: UNTREATED						
ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90203	0.174	0.061	0.288	0.039	0.008	0.007
90207	0.232	0.061	0.209	0.039	0.008	0.008
MEAN	0.200	0.061	0.249	0.039	0.008	0.008
S.D.	0.0407	0.0000	0.0561	0.0003	0.0002	0.0007
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 17

FEMALE GROUP: 0 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90210	0.167	0.054	0.216	0.035	0.005	0.008
90211	0.219	0.051	0.268	0.038	0.010	0.010
MEAN	0.190	0.053	0.242	0.037	0.008	0.009
S.D.	0.0367	0.0022	0.0366	0.0018	0.0036	0.0013
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 18

FEMALE GROUP: 25 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90201	0.164	0.058	0.281	0.035	0.007	0.008
90206	0.183	0.057	0.214	0.035	0.006	0.008
MEAN	0.170	0.058	0.248	0.035	0.007	0.008
S.D.	0.0135	0.0011	0.0474	0.0004	0.0003	0.0001
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 19

FEMALE GROUP: 100 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90204	0.260	0.061	0.162	0.041	0.006	0.007
90205	0.191	0.057	0.208	0.048	0.007	0.008
MEAN	0.230	0.059	0.185	0.045	0.007	0.007
S.D.	0.0488	0.0028	0.0329	0.0052	0.0008	0.0006
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A13 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WTS. RELATIVE TO FINAL BODY WTS. [G/100 G]

PAGE 20

FEMALE GROUP: 300 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90200	0.154	0.051	0.183	0.035	0.008	0.008
90208	0.268	0.057	0.159	0.038	0.007	0.009
MEAN	0.210	0.054	0.171	0.036	0.007	0.009
S.D.	0.0810	0.0038	0.0170	0.0020	0.0005	0.0006
N	2	2	2	2	2	2

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PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 1

MALE GROUP: UNTREATED							
ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90190	307.	1.82	706.044	148.901	73.077	37.363	37.363
90195	265.	1.89	556.614	146.561	63.492	26.455	32.804
MEAN	286.	1.86	631.330	147.730	68.280	31.910	35.080
S.D.	29.7	0.049	105.6631	1.6549	6.7775	7.7128	3.2233
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 2

MALE GROUP: 0 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90192	295.	1.97	544.162	139.594	55.330	36.548	33.503
90199	269.	2.01	499.005	129.851	57.214	25.871	27.363
MEAN	282.	1.99	521.580	134.720	56.270	31.210	30.430
S.D.	18.4	0.028	31.9314	6.8895	1.3322	7.5502	4.3412
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 3

MALE GROUP: 25 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90193	273.	1.90	645.789	144.737	58.421	26.842	32.632
90194	258.	1.80	523.889	137.778	60.556	27.778	31.667
MEAN	266.	1.85	584.840	141.260	59.490	27.310	32.150
S.D.	10.6	0.071	86.1967	4.9207	1.5093	0.6616	0.6823
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 4

MALE GROUP: 100 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90189	267.	1.77	615.819	157.062	63.842	29.379	31.073
90197	270.	1.99	536.181	151.759	56.281	27.136	23.618
MEAN	269.	1.88	576.000	154.410	60.060	28.260	27.350
S.D.	2.1	0.156	56.3129	3.7502	5.3460	1.5859	5.2717
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 5

MALE GROUP: 300 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN	PROS TATE
90187	271.	1.94	526.804	141.753	55.670	28.866	29.897
90196	251.	1.84	569.565	135.870	56.522	25.543	30.435
MEAN	261.	1.89	548.180	138.810	56.100	27.200	30.170
S.D.	14.1	0.071	30.2365	4.1598	0.6021	2.3494	0.3804
N	2	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

MALE GROUP: UNTREATED						
ANIMAL	TESTES	EPIDIDYMIDES	THYMUS	ADRENAL GLANDS	PITUITARY	THYROIDSPARATHY
90190	189.011	40.110	21.066	4.005	0.709	1.071
90195	177.778	40.212	19.831	3.810	0.513	0.931
MEAN	183.390	40.160	20.448	3.908	0.611	1.001
S.D.	7.9430	0.0716	0.8734	0.1386	0.1383	0.0991
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 7

MALE GROUP: 0 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90192	147.208	39.086	18.335	3.467	0.569	0.980
90199	167.662	37.313	20.229	2.891	0.612	0.925
MEAN	157.430	38.200	19.282	3.179	0.590	0.953
S.D.	14.4629	1.2536	1.3391	0.4076	0.0307	0.0384
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 8

MALE GROUP: 25 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROID S/PARATHY
90193	162.105	38.947	20.147	2.768	0.489	0.895
90194	182.778	40.556	23.778	4.194	0.733	0.911
MEAN	172.440	39.750	21.963	3.481	0.611	0.903
S.D.	14.6177	1.1372	2.5671	1.0084	0.1724	0.0116
N	2	2	2	2	2	2

MALE GROUP: 100 MG/KG/DAY						
ANIMAL	TESTES	EPIDIDYMIDES	THYMUS	ADRENAL GLANDS	PITUITARY	THYROIDSPARATHY
90189	178.531	41.808	22.616	3.023	0.475	1.124
90197	160.302	38.693	16.312	2.985	0.402	0.849
MEAN	169.420	40.250	19.464	3.004	0.438	0.987
S.D.	12.8903	2.2022	4.4578	0.0266	0.0513	0.1945
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

PAGE 10

MALE GROUP: 300 MG/KG/DAY

ANIMAL	TESTES	EPIDID YMIDES	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROID S /PARATHY
90187	169.072	41.753	13.897	3.928	0.479	1.000
90196	186.957	34.239	15.016	3.755	0.587	1.038
MEAN	178.010	38.000	14.457	3.842	0.533	1.019
S.D.	12.6461	5.3128	0.7915	0.1219	0.0761	0.0269
N	2	2	2	2	2	2

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

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FEMALE GROUP: UNTREATED

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN
90203	195.	1.78	514.045	106.742	48.876	29.775
90207	194.	1.81	417.127	101.657	50.829	27.624
MEAN	195.	1.80	465.590	104.200	49.850	28.700
S.D.	0.7	0.021	68.5312	3.5951	1.3806	1.5210
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

PROJECT NO.:WIL-402020M
SPONSOR:AMERICAN PETROLEUM

TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

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FEMALE GROUP: 0 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN
90210	203.	1.82	508.791	112.637	45.604	32.418
90211	196.	1.96	367.347	97.449	50.000	22.959
MEAN	200.	1.89	438.070	105.040	47.800	27.690
S.D.	4.9	0.099	100.0162	10.7398	3.1082	6.6881
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

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FEMALE GROUP: 25 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN
90201	220.	2.03	565.025	113.793	46.305	28.571
90206	208.	1.86	466.667	104.301	55.914	23.656
MEAN	214.	1.95	515.850	109.050	51.110	26.110
S.D.	8.5	0.120	69.5497	6.7119	6.7943	3.4758
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

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INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

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FEMALE GROUP: 100 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN
90204	200.	1.82	521.978	117.582	47.253	29.121
90205	178.	1.77	392.090	106.780	46.328	22.034
MEAN	189.	1.80	457.030	112.180	46.790	25.580
S.D.	15.6	0.035	91.8444	7.6387	0.6541	5.0113
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

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TABLE A14 (SCHEDULED NECROPSY)
14-DAY RAT DERMAL STUDY OF DISTILLATES, LIGHT CATALYTIC CRACKED
INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

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FEMALE GROUP: 300 MG/KG/DAY

ANIMAL	FBW(G)	BRAIN WT (GRAMS)	LIVER	KIDNEYS	HEART	SPLEEN
90200	195.	1.82	542.857	110.989	46.154	24.725
90208	190.	1.77	471.751	105.650	49.718	23.729
MEAN	193.	1.80	507.300	108.320	47.940	24.230
S.D.	3.5	0.035	50.2793	3.7755	2.5199	0.7046
N	2	2	2	2	2	2

FBW = FINAL BODY WEIGHT

FEMALE GROUP: UNTREATED						
ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROID S/PARATHY
90203	19.101	6.635	31.562	4.275	0.888	0.809
90207	24.862	6.497	22.381	4.133	0.840	0.895
MEAN	21.980	6.566	26.972	4.204	0.864	0.852
S.D.	4.0735	0.0973	6.4917	0.1009	0.0338	0.0608
N	2	2	2	2	2	2

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INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

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FEMALE GROUP: 0 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90210	18.681	6.066	24.071	3.945	0.560	0.896
90211	21.939	5.122	26.755	3.786	1.015	0.985
MEAN	20.310	5.594	25.413	3.865	0.788	0.940
S.D.	2.3034	0.6671	1.8976	0.1127	0.3216	0.0630
N	2	2	2	2	2	2

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INDIVIDUAL ORGAN WEIGHTS RELATIVE TO BRAIN WEIGHTS [G/100 G]

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FEMALE GROUP: 25 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90201	17.734	6.330	30.463	3.823	0.729	0.872
90206	20.430	6.355	23.935	3.876	0.704	0.876
MEAN	19.080	6.342	27.199	3.849	0.717	0.874
S.D.	1.9064	0.0176	4.6157	0.0380	0.0175	0.0031
N	2	2	2	2	2	2

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FEMALE GROUP: 100 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90204	28.571	6.665	17.747	4.489	0.665	0.747
90205	19.209	5.701	20.915	4.842	0.729	0.763
MEAN	23.890	6.183	19.331	4.665	0.697	0.755
S.D.	6.6202	0.6818	2.2401	0.2495	0.0452	0.0109
N	2	2	2	2	2	2

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FEMALE GROUP: 300 MG/KG/DAY

ANIMAL	UTERUS	OVARIES/ OVIDUCTS	THYMUS	ADRENAL GLANDS	PITU ITARY	THYROIDES /PARATHY
90200	16.484	5.484	19.593	3.758	0.808	0.896
90208	28.814	6.073	17.051	4.073	0.734	0.983
MEAN	22.650	5.779	18.322	3.916	0.771	0.939
S.D.	8.7187	0.4171	1.7979	0.2229	0.0518	0.0619
N	2	2	2	2	2	2

POFBWv4.25
12/29/2010