



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

APR 19 1993

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

MEMORANDUM

Subject: Triadimefon Data Requirements Update

From: Anthony F. Maciorowski, Chief  
Ecological Effects Branch  
Environmental Fate and Effects Division (H7507C)

To: Mark Wilhite, PM Team 53 Reviewer  
Special Review and Reregistration Division (H7508C)

Attached are 5 actions (D167380, D174193, D166958, D179333, and D162709, Case No. 816353, S# 109901) which resulted in 14 EEB Data Evaluation Record of studies plus 2 addendums for previously submitted studies.

The enclosed table, "Data Requirements for Ecological Effects Branch", summarizes the data requirements for triadimefon.

Please contact Dennis J. McLane (305-5096) if you have any further questions.



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Date: 4-9-93  
Case No: 816353  
Chemical No: 109901

TRIADIMEFON  
DATA REQUIREMENTS FOR  
ECOLOGICAL EFFECTS BRANCH

| Data Requirements                                  | Composition <sup>1</sup> | Use Group <sup>2</sup> | Does EPA Have Data To Satisfy This Requirement? (Yes, No) | Bibliographic Citation            | Must Additional Data Be Submitted under FIFRA3(c)(2)(B)? |
|----------------------------------------------------|--------------------------|------------------------|-----------------------------------------------------------|-----------------------------------|----------------------------------------------------------|
| <b>6 Basic Studies in Bold</b>                     |                          |                        |                                                           |                                   |                                                          |
| <b>71-1(a) Acute Avian Oral, Quail/Duck</b>        | (TGAI)                   | A,C,I,K                | YES                                                       | 41895901                          | NO                                                       |
| <b>71-1(b) Acute Avian Oral, Quail/Duck</b>        | (TEP)                    | -----                  | NO                                                        | -----                             | NO                                                       |
| <b>71-2(a) Acute Avian Diet, Quail</b>             | (TGAI)                   | A,C,I,K                | YES                                                       | 00050066                          | NO                                                       |
| <b>71-2(b) Acute Avian Diet, Duck</b>              | (TGAI)                   | A,C,K                  | NO                                                        | 00050067                          | YES                                                      |
| <b>71-3 Wild Mammal Toxicity</b>                   | (TGAI)                   | -----                  | NO                                                        | -----                             | NO                                                       |
| <b>71-4(a) Avian Reproduction Quail</b>            | (TGAI)                   | A,C                    | YES                                                       | 248177,<br>42342301               | NO                                                       |
| <b>71-4(b) Avian Reproduction Duck</b>             | (TGAI)                   | A,C                    | YES                                                       | 42342302                          | NO                                                       |
| <b>71-5(a) Simulated Terrestrial Field Study</b>   | -----                    | -----                  | NO                                                        | -----                             | NO                                                       |
| <b>71-5(b) Actual Terrestrial Field Study</b>      | -----                    | -----                  | NO                                                        | -----                             | NO                                                       |
| <b>72-1(a) Acute Fish Toxicity Bluegill</b>        | (TGAI)                   | A,C,K                  | NO                                                        | 00070704                          | YES                                                      |
| <b>72-1(b) Acute Fish Toxicity Bluegill</b>        | (TEP)                    | A,C                    | NO                                                        | 147863 or<br>460087004*           | NO                                                       |
| <b>72-1(c) Acute Fish Toxicity Rainbow Trout</b>   | (TGAI)                   | A,C,I,K                | NO                                                        | 00070704                          | YES                                                      |
| <b>72-1(d) Acute Fish Toxicity Rainbow Trout</b>   | (TEP)                    | A,C                    | NO                                                        | 147864 or<br>460087005*           | NO                                                       |
| <b>72-2(a) Acute Aquatic Invertebrate Toxicity</b> | (TGAI)                   | A,C,I,K                | YES                                                       | 231311,<br>147862 or<br>460089003 | NO                                                       |
| <b>72-2(b) Acute Aquatic Invertebrate Toxicity</b> | (TEP)                    | A,C                    | NO                                                        | 147865 or<br>460087006            | NO                                                       |
| <b>72-3(a) Acute Estu./Mari Tox Fish</b>           | (TGAI)                   | -----                  | NO                                                        | NO                                | RESERVED                                                 |
| <b>72-3(b) Acute Estu./Mari Tox Mollusk</b>        | (TGAI)                   | -----                  | NO                                                        | NO                                | RESERVED                                                 |
| <b>72-3(c) Acute Estu./Mari Tox Shrimp</b>         | (TGAI)                   | -----                  | NO                                                        | NO                                | RESERVED                                                 |

\* In Bibliographic Citation column indicates study may be upgradeable

Date:4-9-93  
Case No:816353  
Chemical No:109901

TRIADIMEFON  
DATA REQUIREMENTS FOR  
ECOLOGICAL EFFECTS BRANCH

| Data Requirements                       | Composition <sup>1</sup> | Use Group <sup>2</sup> | Does EPA Have Data To Satisfy This Requirement? (Yes, No) | Bibliographic Citation        | Must Additional Data Be Submitted under FIFRA3(c)(2)(B)? |
|-----------------------------------------|--------------------------|------------------------|-----------------------------------------------------------|-------------------------------|----------------------------------------------------------|
| 72-3(d) Acute Estu/Mari Tox Fish        | (TEP)                    | -----                  | NO                                                        | -----                         | RESERVED                                                 |
| 72-3(e) Acute Estu/Mari Tox Mollusk     | (TEP)                    | -----                  | NO                                                        | -----                         | RESERVED                                                 |
| 72-3(f) Acute Estu/Mari Tox Shrimp      | (TEP)                    | -----                  | NO                                                        | -----                         | RESERVED                                                 |
| 72-4(a) Early Life-Stage Fish           | (TGAI)                   | A,C                    | NO                                                        | 248177<br>41922103*<br>251243 | YES                                                      |
| 72-4(b) Life-Cycle Aquatic Invertebrate | (TGAI)                   | A,C                    | YES                                                       | 246736<br>41922102            | NO                                                       |
| 72-5 Life-Cycle Fish                    | (TGAI)                   | A,C                    | NO                                                        | -----                         | RESERVED                                                 |
| 72-6 Aquatic Org. Accumulation          | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 72-7(a) Simulated Aquatic Field Study   | (TEP)                    | A,C                    | NO                                                        | -----                         | NO                                                       |
| 72-7(b) Actual Aquatic Field Study      | (TEP)                    | A,C                    | NO                                                        | -----                         | NO                                                       |
| 122-1(a) Seed Germ./Seedling Emerg.     | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 122-1(b) Vegetative Vigor               | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 122-2 Aquatic Plant Growth              | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 123-1(a) Seed Germ./Seedling Emerg.     | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 123-1(b) Vegetative Vigor               | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 123-2 Aquatic Plant Growth              | (TGAI)                   | A,C                    | NO                                                        | 159558<br>41616007            | YES                                                      |
| 124-1 Terrestrial Field Study           | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 124-2 Aquatic Field Study               | (TGAI)                   | A,C                    | NO                                                        | -----                         | RESERVED                                                 |
| 141-1 Honey Bee Acute Contact           | (TGAI)                   | A,C                    | YES                                                       | 42307804                      | NO                                                       |
| 141-2 Honey Bee Residue on Foliage      | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |
| 141-5 Field Test for Pollinators        | (TGAI)                   | A,C                    | NO                                                        | -----                         | NO                                                       |

\* In Bibliographic Citation column indicates study may be upgradeable

1. Composition: TGA = Technical grade of the active ingredient; PAIRA = Pure active ingredient, radiolabeled; TEP = Typical end-use product

2. Use Group: A = Terrestrial/Food; B = Terrestrial/Feed; C = Terrestrial Non-Food; D = Aquatic Food; E = Aquatic Non-Food (Outdoor); F = Aquatic Non-Food (Industrial); G = Aquatic Non-Food (Residential); H = Greenhouse Food; I = Greenhouse Non-Food; J = Forestry; K = Residential Outdoor; L = Indoor Food; M = Indoor Non-Food; N = Indoor Medical; O = Indoor Residential; Z = Use Group for Site 0000

DP Barcode : D179333  
 PC Code No : 109901  
 EEB Out :

To: Mark Wilhite  
 PM Team Reviewer 53  
 Special Review & Reregistration Division (H7508C)

From: Anthony F. Maciorowski, Chief  
 Ecological Effects Branch/EFED (H7507C)

Attached, please find the EEB review of...

Reg./File # : 003125

Chemical Name : 1-(4-Chlorophenoxy)-3,3-dimethyl-1-(1H1,2,4 -  
 triazol-1-yl)-2-butanone

Type Product : Fungicide

Product Name :

Company Name : Mobay Corporation

Purpose : Review 71-4(a) MRID 42342301 71-4(b) MRID  
 42342302

Action Code : 606 Date Due : 08/21/92

Assigned Scientist : McLane, Dennis J. Date In EEB: 06/16/92

EEB Guideline/MRID Summary Table: The review in this package contains an evaluation of the following:

| GDLN NO | MRID NO  | CAT     | GDLN NO | MRID NO | CAT | GDLN NO  | MRID NO | CAT |
|---------|----------|---------|---------|---------|-----|----------|---------|-----|
| 71-1(A) | N/A      |         | 72-2(A) | N/A     |     | 72-7(A)  | N/A     |     |
| 71-1(B) | N/A      |         | 72-2(B) | N/A     |     | 72-7(B)  | N/A     |     |
| 71-2(A) | N/A      |         | 72-3(A) | N/A     |     | 122-1(A) | N/A     |     |
| 71-2(B) | N/A      |         | 72-3(B) | N/A     |     | 122-1(B) | N/A     |     |
| 71-3    | N/A      |         | 72-3(C) | N/A     |     | 122-2    | N/A     |     |
| 71-3    | N/A      |         | 72-3(C) | N/A     |     | 122-2    | N/A     |     |
| 71-4(A) | 42342301 | Supple. | 72-3(D) | N/A     |     | 123-1(A) | N/A     |     |
| 71-4(B) | 42342302 | Core    | 72-3(E) | N/A     |     | 123-1(B) | N/A     |     |
| 71-5(A) | N/A      |         | 72-3(F) | N/A     |     | 123-2    | N/A     |     |
| 71-5(B) | N/A      |         | 72-4(A) | N/A     |     | 124-1    | N/A     |     |
| 72-1(A) | N/A      |         | 72-4(B) | N/A     |     | 124-2    | N/A     |     |
| 72-1(B) | N/A      |         | 72-5    | N/A     |     | 141-1    | N/A     |     |
| 72-1(C) | N/A      |         | 72-6    | N/A     |     | 141-2    | N/A     |     |
| 72-1(D) | N/A      |         |         |         |     | 141-5    | N/A     |     |

Y=Acceptable (Study satisfied Guideline)/Concur

P=Partial (Study partially fulfilled Guideline but additional information is needed)

S=Supplemental (Study provided useful information but Guideline was not satisfied)

N=Unacceptable (Study was rejected)/Nonconcur

N/A=No studies submitted for EEB.

MRID No. 423423-01

## DATA EVALUATION RECORD

1. **CHEMICAL:** Triadimefon (Bayleton).  
Shaughnessey No. 109901.
2. **TEST MATERIAL:** Triadimefon (Technical Bayleton); CAS No. 43121-43-3; Batch No. 48580; 95% purity; white to tan crystals.
3. **STUDY TYPE:** 71-4. Avian Reproduction Study.  
Species Tested: Bobwhite quail (*Colinus virginianus*).
4. **CITATION:** Stafford, T.R. 1992. Technical Bayleton: A One Generation Reproduction Study with Bobwhite Quail. Study performed by Miles Inc., Stilwell, Kansas. Study No. BL741701. Submitted by Miles Inc., Kansas City, MO. EPA MRID No. 423423-01.
5. **REVIEWED BY:**  
Dennis J. McLane, Wildlife Biologist      Signature: *[Signature]*  
Section 1, Ecological Effect Branch  
Environmental Fate and Effects Division      Date: 3-30-93
6. **APPROVED BY:**  
Les Touart, Section Chief      Signature: *[Signature]*  
Section 1, Ecological Effect Branch  
Environmental Fate and Effects Division      Date: 4-13-93
7. **CONCLUSIONS:** This study is scientifically sound but does not fulfill the guideline requirements for an avian reproduction study. Due to problems with the incubator cracking eggs, weeks 14, 15, and 16 data were omitted and the study extended. EEB can not assume production is the same for both the first three week period and the second three period. Physiological changes would be expected at the end of the reproductive cycle. In addition EEB's statistical analysis shows statistically significant difference between the control and 200 ppm level but not the 587 ppm level or at the 50 ppm lowest level. This same differences occurred with the covariate analysis of the male body weight. The cracking differences may be the result of the incubator incident or the birds at the 200 ppm level, by chance, may be a different population. Based on this the

## DATA EVALUATION RECORD

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5. **REVIEWED BY:**  
  
Carolyn F. Poppell, Sc.M.  
Senior Scientist  
KBN Engineering and  
Applied Sciences, Inc.  
  
Signature: P. Kosalwat  
for CFP  
Date: 10/15/92
6. **APPROVED BY:**  
  
Pim Kosalwat, Ph.D.  
Senior Scientist  
KBN Engineering and  
Applied Sciences, Inc.  
  
Signature: P. Kosalwat  
Date: 10/15/92  
  
Henry T. Craven, M.S.  
Supervisor, EEB/EFED  
USEPA  
  
Signature:  
Date:
7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study. Mean measured dietary concentrations of Bayleton at 50 and 200 ppm a.i. had no effects upon mortality, behavior, or reproductive performance of bobwhite quail during the study. The NOEC was determined to be 200 ppm a.i., based on a significant decrease in percentage of viable embryos of eggs set at 587 ppm a.i. mean measured concentration. *delete*
8. **RECOMMENDATIONS:** N/A.

incubator incident change in protocol would make this test unique and not comparable with other studies.

8. RECOMMENDATIONS: N/A

9. BACKGROUND: On 9-9-82 Rieder reviewed a quail reproduction study which showed effects in eggs cracked, fertile eggs, viable embryos, hatchling, and 14 day old survivors at 100 ppm making the 20 ppm the NOEL. This is a "Core" study. The mallard study reviewed on 9-13-82 showed no effects at the highest level tested and had poor reproductive success in the controls. Due to the poor controls the study was "supplemental".

10. DISCUSSION OF INDIVIDUAL TESTS: N/A.

11. MATERIALS AND METHODS:

- A. Test Animals: Pen-reared, unmated bobwhite quail (*Colinus virginianus*) were purchased from Barrett's Quail Farm, Houston, Texas. The birds were approximately 16 weeks of age at study initiation, and were acclimated to the laboratory environment for a minimum of 14 days. All birds were from the same hatch, and phenotypically indistinguishable from wild birds. At test initiation, all birds were examined for physical injuries and general health. Birds that were injured or did not appear healthy were excluded from the study.
- B. Dose/Diet Preparation/Food Consumption: Diets were prepared by dissolving the test compound in corn oil and acetone, and mixing with feed. Diets were prepared weekly and stored in a freezer until used. The control diet contained an amount of the solvent (acetone) and carrier (corn oil) equal to that in the treated diets. The acetone subsequently evaporated from the test diet. Based on known toxicity data, nominal test concentrations of technical triadimefon used in the study were 50, 200, and 600 parts per million (ppm) of active ingredient (a.i.). Each of the four groups of birds were fed the appropriate diet from test initiation until terminal sacrifice.

Basal diet for adult birds was formulated by Agway, Inc. Offspring were fed Teklad Quail Starter. The composition of these diets was presented in the report. The test substance was not mixed into the diet of the offspring. Food and water were supplied *ad libitum* during acclimation and during the test.

Samples of control and treated diets were collected immediately after mixing and frozen. Samples taken on weeks 1, 5, 10, 15, and 20 were analyzed for triadimefon diet concentration. Homogeneity testing was performed on the first feed mixture from the 50 and 600 ppm diet levels. The stability of test material in the diet was determined by analysis of samples from feeders on odd-numbered days during the first week of the study. Samples were analyzed using gas chromatography by the Miles Inc. Environmental Fate Analytical Laboratory.

- C. **Design:** The birds were randomly distributed into four groups as follows:

| triadimefon Nominal<br>Concentration | Number<br>of Pens | <u>Birds Per Pen</u> |         |
|--------------------------------------|-------------------|----------------------|---------|
|                                      |                   | Males                | Females |
| Control (0 ppm)                      | 18                | 1                    | 1       |
| 50 ppm                               | 18                | 1                    | 1       |
| 200 ppm                              | 18                | 1                    | 1       |
| 600 ppm                              | 18                | 1                    | 1       |

Treatment levels were based upon known toxicity data. Adult birds were identified by individual leg bands. The primary phases of the study and their approximate durations were as follows:

1. Acclimation - 2 weeks
2. Pre-photostimulation - 7 weeks
3. Pre-egg laying (with photostimulation) - 5 weeks
4. Egg laying - 12 weeks
5. Post-adult sacrifice (final incubation, hatching, 14-day offspring rearing period) - 6 weeks.

- D. **Pen Facilities:** Adult birds were housed in pens constructed of stainless steel wire grid and sheeting. The pens measured approximately 55 x 27 x 24 cm with sloping floors. The average temperature in the adult study room was 72°F (22°C) with an average relative humidity of 50%.

The photoperiod during the first 7 weeks of the study was 7 hours of light per day. The photoperiod was then increased to 17 hours of light per day for the duration of the study. Throughout the study, the birds received a minimum of 6 foot-candles of illumination provided by daylight spectrum fluorescent lights. A 40-minute "dawn/dusk" cycle was used in light/dark transition.

- E. **Adult Observations/Gross Pathology:** Adult birds were observed at least once daily throughout the study for

signs of toxicity, injuries, or illness. Mortalities occurring prior to terminal adult sacrifice were recorded and necropsied. Adult body weights were measured at study initiation, weekly through week 8, and at terminal sacrifice (week 22). Feed consumption was measured by cage weekly throughout the adult phase of the study.

- F. Eggs/Eggshell Thickness: Eggs were collected twice daily, labeled according to pen of origin, and fumigated to prevent pathogen contamination. The eggs were then stored at 60°F (15.6°C) with a relative humidity of 50%. Eggs were removed from the egg cooler weekly and candled for shell cracks. Cracked eggs were recorded and discarded. Eggs not cracked or used for eggshell thickness measurements were placed in an incubator maintained at 99.7°F (37.6°C) with a relative humidity of approximately 55%. All eggs were rotated automatically every 2 hours while in the incubator. Eggs were candled again on day 11 of incubation to determine fertility and embryo viability and on day 18 to determine embryo survival.

Eggs were collected every other week for eggshell strength and thickness measurements. Eggshell strength measurements were taken at three points around the equator. Eggs were then opened, the contents removed, the shell washed, and allowed to air dry for a minimum of 48 hours at room temperature. The average thickness of the dried shell plus membrane was determined by measuring (to the nearest 0.01 mm) three points around the equator of the egg using a micrometer.

- G. Hatchlings: Hatchlings were removed from the hatcher on days 24 and 25 of incubation, banded, weighed, and housed according to week of hatch and parental treatment group. Hatchlings were identified by numbered wing bands and placed in batteries of brooding pens from the time of hatch through day 14 post-hatch. Each pen measured 90 x 72 x 24 cm, and was constructed of galvanized wire mesh and sheeting. Temperatures in the brooding compartment were maintained at 100°F (37.8°C). The photoperiod was maintained at 12 hours of light per day. Hatchlings were fed untreated diet. Hatchling body weights were measured and recorded at hatch and on day 14. Feed consumption was not monitored.

Hatchlings were observed daily throughout the 14-day period for signs of toxicity, injuries or illness. Mortalities occurring prior to the end of the 14-day

period were recorded and discarded. Hatchlings surviving to day 14 were sacrificed, weighed, and discarded.

- H. **Statistics:** Prior to statistical analysis, all percentage data were transformed using a square-root arcsine transformation. Bartlett's test or Levene's test of equal variance was performed on each study parameter to determine if treatment groups had unequal variances. If variances were not determined to be unequal, subsequent analyses were conducted using parametric techniques. If unequal variances were detected, non-parametric procedures were used. Parametric procedures included a standard one-way analysis of variance. If ANOVA indicated treatment groups were significantly different from controls, the means of the treatment groups were compared to control means using a one-tailed Dunnett's test. If non-parametric procedures were required, the Kruskal-Wallis and Dunn's Summed Rank test were used.

Each of the following parameters was analyzed statistically:

|                            |                       |
|----------------------------|-----------------------|
| Adult Body Weight          | Hatchling Body Weight |
| Adult Feed Consumption     | 14-Day Old Survivors  |
| Eggs Laid per Hen          | per Hen               |
| Eggs Cracked of Eggs Laid  | 14-Day Old Survivors  |
| Viable Embryos of Eggs Set | of Hatchlings         |
| Live 3-Week Embryos of     | Survivor Body Weight  |
| Viable Embryos             | Eggshell Strength     |
| Hatchlings per Hen         | Eggshell Thickness    |
| Hatchlings of 3-Week       | Hatchlings of Viable  |
| Embryos                    | Embryos               |

## 12. REPORTED RESULTS

- A. **Diet Analysis:** Homogeneity testing indicated that the test material was thoroughly mixed into the diet with the coefficients of variance of  $\leq 6\%$ . The average measured concentrations were 92 and 96% of the 50- and 600-ppm nominal values, respectively. The test material was determined to be stable in the diet when stored at room temperature for 7 days. Mean measured concentrations were 80%, 91%, and 78% of nominal concentrations for the 50-, 200-, and 600-ppm diets, respectively, after 7 days of storage at room temperature. Mean measured diet concentrations during the 20-week exposure period are shown in Table 1 (attached).

- B. Mortality and Behavioral Reactions: A total of 8 birds died during the course of the study. Two mortalities occurred in the control group. One control female that had suffered cage-mate aggression was found dead during week 12. Another control female was found dead during week 22. No symptoms were evident prior to death and no gross lesions were found during the *post-mortem* examination.

Four mortalities occurred at the 50 ppm level. One male died during week 5 and the *post-mortem* examination revealed a blocked intestine. A female died during week 6, showing signs of emaciation upon examination. A male died during week 15 and a female died during week 17, both due to cage-mate aggression.

One female in the 200 ppm group died during week 15, apparently as a result of severe cage-mate aggression.

At the 587 ppm level, one female died during week 17. The bird was noted as ataxic during the first two weeks of the study, apparently due to an unusual curve to the spine that affected mobility. The bird was found dead during week 17, after being observed as hyporeactive several days prior.

The authors concluded that none of the observed mortalities were treatment-related. All mortalities were considered incidental, with no clear dose-response in evidence. No overt signs of intoxication were observed during the study in any test group. *Post-mortem* observations demonstrated several anomalies; however, all observations occurred in a small number of birds and no dose-response was indicated (Table 4, attached).

The authors reported a malfunction of the incubator during week 17 of the study, which cracked a number of eggs from weeks 14, 15, and 16. A number of eggs were cracked at the 200 and 600 ppm levels, preventing accurate statistical analysis. Reproductive data (eggs laid and cracked, viability, 3-week embryo survival, hatch data and hatch weights) for these three weeks were therefore not included in the statistical analysis. The study was extended an additional 3 weeks to provide a minimum of 8 weeks of reproductive data.

- C. Adult Body Weight and Food Consumption: There were no apparent treatment-related effects upon adult body

weight at any of the concentrations tested (Table 2, attached). There was a slight, but statistically significant, decrease in feed consumption during week 15 in the 50 ppm level and a statistically significant increase during week 5 at the 200 ppm level (Table 3, attached). There was no clear dose-response and these were considered to be incidental findings.

- D. **Reproduction:** When compared to the control group, there were no statistically significant differences in reproductive parameters at any concentration tested (Tables 5, 6, and 7, attached).
- E. **Egg Shell Thickness:** There were no significant differences in the overall mean eggshell thickness and strengths of control eggs compared to treatment eggs (Table 9, attached).
- F. **Offspring Body Weight:** There were no apparent or significant differences between the control and any treatment group in body weights of offspring at hatching or at 14 days of age (Table 7, attached).

13. **STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:**

There were no apparent effects on adult quail fed triadimefon-treated diets. Adult body weight data showed no significant differences between control birds and birds treated with technical triadimefon. Feed consumption data did not demonstrate a compound- or treatment-related effect. No clinical signs of toxicity were observed and no compound- or treatment-related mortality occurred in any dietary level. No observable effects occurred in any of the monitored reproductive parameters. The LOEC for bobwhite quail is greater than 587 ppm a.i. of triadimefon.

The report stated that the study was conducted in conformance with Good Laboratory Practice regulations (40 CFR Part 160). Quality assurance audits were conducted during the study and the final report was signed by a Quality Assurance Officer for Miles Inc.

14. **REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

- A. **Test Procedure:** The test procedures were in accordance with Subdivision E - Hazard Evaluation: Wildlife and Aquatic Organisms, ASTM, and SEP guidelines except for the following deviations:

Behavioral observations of offspring were not reported.

Observations on food palatability were not reported.

- B. Statistical Analysis:** Statistical analyses of reproductive parameters were performed by the reviewer using analysis of variance (ANOVA) arcsine square-root transformation of the ratio data. The comparison between control data and data from each treatment level was made using multiple comparison test, Bonferroni. Printouts are attached.

Four parameters show statistical significance. eggs cracked, eggs cracked/eggs laid, male body weight and female body weight. The Bonferroni test would only separate out the differences in levels for eggs cracked and male body weight. These are discussed below under section C.

In addition to these items "Table 6. Reproductive success Data for Quail Fed Bayleton" has a several wrong values. Attached is EEB's version of the same with the reported values corrected values.

- C. Discussion/Results:** Chemical analyses of diet samples show that measured concentrations of triadimefon were very similar to nominal concentrations. All measured values were within 2% of nominal values. Homogeneity and stability data indicate that the method of diet preparation achieved a homogeneous mix and triadimefon was stable in the diet.

Due to problems with the incubator cracking eggs, weeks 14, 15, and 16 data were omitted and the study extended. EEB can not assume production is the same for both the first three week period and the second three period. Physiological changes would be expected at the end of the reproductive cycle. In addition EEB's statistical analysis shows statistically significant difference between the control and 200 ppm level but not the 587 ppm level or at the 50 ppm lowest level. This same differences occurred with the covariate analysis of the male body weight. The cracking differences may be the result of the incubator incident or the birds at the 200 ppm level, by chance, may be a different population. Based on this the incubator incident change in protocol would make this test unique and not comparable with other studies.

- D. Adequacy of the Study:**

(1) **Classification:** Supplemental

- (2) **Rationale:** Extending the study and disregarding three weeks of data does not follow the guideline.
- (3) **Repairability:** No, however EEB has a core bobwhite quail reproduction study for this chemical and no other work with bobwhite are required.

5. COMPLETION OF ONE-LINER: Yes; March 30, 1993

RIN 5710-93

TRIADMEFON EFB REVIEW

Page      is not included in this copy.

Pages 16 through 24 are not included.

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The material not included contains the following type of information:

- ☐ Identity of product inert ingredients.
- ☐ Identity of product impurities.
- ☐ Description of the product manufacturing process.
- ☐ Description of quality control procedures.
- ☐ Identity of the source of product ingredients.
- ☐ Sales or other commercial/financial information.
- ☐ A draft product label.
- ☐ The product confidential statement of formula.
- ☐ Information about a pending registration action.
- ☒ FIFRA registration data.
- ☐ The document is a duplicate of page(s)         .
- ☐ The document is not responsive to the request.

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The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

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O T E E E V L N H S P O P P O
B R T L C S E E H S K T H A R F O R S R S
S T W T W T D M E F T
1 A 42 3 36 36 21 18 0.296 6.743 24.544 6073 221 226 209 269
2 A 33 1 30 30 20 20 0.282 6.476 25.540 5397 222 252 198 244
3 A 47 0 45 42 39 32 0.284 7.255 30.657 6086 204 226 232 310
4 A 36 1 32 30 28 26 0.289 7.122 31.842 5899 206 238 209
5 A 12 2 8 8 5 2 0.272 5.500 25.150 5794 253 242 228 275
6 A 14 0 13 13 13 12 0.316 6.858 31.733 5745 233 275 231 261
7 A 42 6 33 20 18 12 0.345 6.742 28.727 5580 199 219 245 322
8 A 48 0 45 44 44 5 4 0.319 6.180 29.850 6237 240 264 228 320
9 A 42 0 39 36 36 33 0.305 7.436 35.775 6139 251 295 236 279
10 A 30 0 28 27 25 10 0.312 7.330 28.000 5888 251 276 261 323
11 A 37 0 35 35 35 26 19 0.322 7.185 26.732 5929 233 251 225 303
12 A 51 1 47 18 14 10 0.317 6.479 24.130 6237 244 269 221 277
13 A 42 2 38 38 36 34 0.310 7.379 32.830 5866 238 270 231 322
14 A 41 0 39 39 38 34 0.315 7.165 30.504 5661 201 228 237 311
15 A 41 0 39 39 38 34 0.315 7.165 30.504 5661 201 228 237 311
16 A 34 0 32 32 21 10 0.330 6.600 27.142 5860 214 254 234 282
17 A 26 2 31 30 30 26 24 0.293 7.115 29.146 5553 214 230 217 262
18 A 36 2 31 30 30 26 24 0.293 7.115 29.146 5553 214 230 217 262
19 A 41 0 39 38 38 36 34 0.332 7.297 33.550 6097 249 280 236 296
20 B 43 2 39 33 33 25 16 0.301 6.884 27.419 6329 233 296 234 318
21 B 46 0 43 43 43 41 35 0.311 7.076 28.497 6028 241 265 222 300
22 B 50 2 45 43 42 38 35 0.311 6.484 28.306 6216 245 273 221 295
23 B 33 1 29 29 28 24 17 0.267 7.475 23.418 5722 239 270 199 271
24 B 42 1 38 31 28 24 17 0.267 7.475 23.418 5722 239 270 199 271
25 B 39 1 26 26 26 23 12 0.295 6.729 21.713 5577 223 238 227 286
26 B 32 1 29 29 29 22 22 0.345 8.473 34.186 5646 228 253 236 305
27 B 42 2 22 19 18 18 0.316 7.361 30.083 5908 253 297 224 270
28 B 42 1 38 31 28 24 17 0.267 7.475 23.418 5722 239 270 199 271
29 B 42 0 39 23 17 13 3 0.315 7.115 29.146 5553 214 230 217 262
30 B 42 0 39 23 17 13 3 0.315 7.115 29.146 5553 214 230 217 262
31 B 42 0 39 23 17 13 3 0.315 7.115 29.146 5553 214 230 217 262
32 B 45 1 42 38 38 30 18 0.329 7.360 27.044 6378 229 250
33 B 45 1 42 38 38 30 18 0.329 7.360 27.044 6378 229 250
34 B 25 1 22 20 20 16 12 0.273 6.200 22.158 5300 226 235 211 232
35 B 25 1 22 20 20 16 12 0.273 6.200 22.158 5300 226 235 211 232
36 B 25 1 22 20 20 16 12 0.273 6.200 22.158 5300 226 235 211 232
37 C 25 1 22 20 20 16 12 0.273 6.200 22.158 5300 226 235 211 232
38 C 25 1 22 20 20 16 12 0.273 6.200 22.158 5300 226 235 211 232
39 C 55 1 22 20 20 16 12 0.273 6.200 22.158 5300 226 235 211 232
40 C 31 2 28 27 26 18 0.334 7.204 24.195 5600 238 273 230 304
41 C 27 3 21 21 19 17 0.285 8.841 30.918 6274 237 261 243 275
42 C 45 4 38 38 38 34 27 0.293 8.318 33.778 6040 252 271 231 310
43 C 19 1 16 16 16 12 10 0.318 6.723 29.340 6610 256 289 241 324
44 C 39 1 36 33 26 16 11 0.332 6.563 29.918 6803 252 288 276 342
45 C 39 1 36 33 26 16 11 0.332 6.563 29.918 6803 252 288 276 342
46 C 49 2 44 39 39 35 31 0.325 6.451 28.990 5484 234 243 228 268
47 C 40 1 37 36 36 34 34 0.312 7.291 35.574 6212 242 284 236 302
48 C 24 1 21 20 20 19 17 0.301 7.532 31.006 3490 261 219
49 C 31 2 27 26 26 18 15 0.307 6.406 22.831 5569 200 223 238 309
50 C 11 1 9 6 5 3 0.293 5.700 29.967 5577 239 272 228 272
51 C 38 3 33 15 12 11 0.306 7.267 31.355 6252 227 258 234 314
52 C 38 3 33 15 12 11 0.306 7.267 31.355 6252 227 258 234 314
53 C 43 4 36 36 27 17 0.309 6.315 32.128 5630 225 255 215 268
54 C 42 1 40 35 26 21 15 0.315 6.662 32.618 5931 245 273 241 305
55 D 39 1 37 37 37 33 30 0.333 7.118 28.957 5860 237 272 224 288
56 D 39 1 37 37 37 33 30 0.333 7.118 28.957 5860 237 272 224 288
57 D 31 3 26 26 26 23 21 0.277 6.765 29.243 5812 249 301 218 285
58 D 14 3 9 9 9 9 9 0.286 6.765 29.243 5812 249 301 218 285
  
```

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 59 D 26 24 23 23 18 18 0.297 7.244 33.317 5542 232 246 244 311  
 60 D 41 2 36 31 31 8 6 0.329 6.525 29.567 5734 224 246 230 311  
 61 D 29 27 26 26 23 22 0.312 7.048 23.464 5624 208 241 244 311  
 62 D 36 34 34 34 29 28 0.324 7.510 30.532 5495 216 251 218 291  
 63 D 22 20 15 15 12 11 0.322 7.175 34.982 5547 230 276 229 281  
 64 D 39 1 35 35 34 24 18 0.319 7.221 27.417 5829 235 260 240 308  
 65 D 42 2 37 11 10 0.319 7.221 27.417 5829 235 260 240 308  
 66 D 45 2 40 37 36 25 21 0.315 7.108 33.114 6379 247 282 237 308  
 67 D 19 1 16 15 14 9 7 0.288 7.000 29.500 5474 231 256 232 274  
 68 D 35 2 31 23 23 22 19 0.363 7.327 29.679 5713 221 259 214 270  
 69 D 35 1 31 24 24 20 20 0.313 7.625 30.955 5970 237 255 230 298  
 70 D 50 1 46 45 44 41 31 0.313 7.455 29.539 6166 213 249 228 303  
 71 D 31 29 29 27 20 20 0.294 6.265 30.130 5468 224 249 212 272  
 72 D 37 3 32 13 13 11 10 0.303 7.127 26.360 6001 221 251 260 338

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TRT=A

| N Obs | Variable | N  | Minimum    | Maximum    | Mean        |
|-------|----------|----|------------|------------|-------------|
| 18    | EL       | 16 | 12.000000  | 51.000000  | 36.0625000  |
|       | EC       | 16 | 0          | 6.000000   | 1.1250000   |
|       | ES       | 16 | 8.000000   | 47.000000  | 32.6250000  |
|       | VE       | 16 | 8.000000   | 44.000000  | 29.3750000  |
|       | LE       | 16 | 5.000000   | 44.000000  | 28.2500000  |
|       | NH       | 16 | 2.000000   | 34.000000  | 19.6250000  |
|       | HS       | 16 | 2.000000   | 32.000000  | 17.0625000  |
|       | THICK    | 16 | 0.272000   | 0.345000   | 0.3090000   |
|       | HATWT    | 16 | 5.500000   | 7.436000   | 6.8250000   |
|       | SURVWT   | 16 | 24.130000  | 35.775000  | 28.6785000  |
|       | FOOD     | 18 | 3030.00    | 6237.00    | 5718.72     |
|       | PREM     | 18 | 199.000000 | 262.000000 | 229.5555556 |
|       | POSTM    | 16 | 219.000000 | 295.000000 | 254.6875000 |
|       | PREF     | 18 | 198.000000 | 261.000000 | 229.7222222 |
|       | POSTF    | 15 | 244.000000 | 323.000000 | 291.6666667 |

| N Obs | Variable | Std Dev     |
|-------|----------|-------------|
| 18    | EL       | 11.162504   |
|       | EC       | 1.6278821   |
|       | ES       | 10.8742816  |
|       | VE       | 10.5506714  |
|       | LE       | 10.8412791  |
|       | NH       | 10.6638017  |
|       | HS       | 9.5531408   |
|       | THICK    | 0.0195482   |
|       | HATWT    | 0.5123599   |
|       | SURVWT   | 3.3775691   |
|       | FOOD     | 706.5264497 |
|       | PREM     | 19.1962687  |
|       | POSTM    | 23.6042899  |
|       | PREF     | 14.3846550  |
|       | POSTF    | 25.5669057  |

TRT=B

| N Obs | Variable | N  | Minimum   | Maximum   | Mean       |
|-------|----------|----|-----------|-----------|------------|
| 18    | EL       | 14 | 22.000000 | 50.000000 | 36.5000000 |
|       | EC       | 14 | 0         | 2.000000  | 0.9285714  |
|       | ES       | 14 | 19.000000 | 45.000000 | 33.2142857 |
|       | VE       | 14 | 19.000000 | 43.000000 | 30.0714286 |
|       | LE       | 14 | 16.000000 | 43.000000 | 29.0714286 |

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|        |    |            |            |             |
|--------|----|------------|------------|-------------|
| NH     | 14 | 12.000000  | 41.000000  | 25.1428571  |
| HS     | 14 | 3.000000   | 35.000000  | 19.7857143  |
| THICK  | 14 | 0.267000   | 0.345000   | 0.3070000   |
| HATWT  | 14 | 6.200000   | 8.473000   | 7.0257857   |
| SURVWT | 14 | 7.810000   | 34.186000  | 27.1500000  |
| FOOD   | 18 | 902.000000 | 6857.00    | 5169.36     |
| PREM   | 18 | 204.000000 | 268.000000 | 236.5555556 |
| POSTM  | 14 | 230.000000 | 303.000000 | 263.5000000 |
| PREF   | 18 | 199.000000 | 271.000000 | 231.6666667 |
| POSTF  | 14 | 182.000000 | 328.000000 | 281.6428571 |

| N Obs | Variable | Minimum    | Maximum    | Std Dev |
|-------|----------|------------|------------|---------|
| 18    | EL       | 8.9076458  | 8.9076458  |         |
|       | EC       | 0.8287419  | 0.8287419  |         |
|       | ES       | 8.6307017  | 8.6307017  |         |
|       | VE       | 8.2505411  | 8.2505411  |         |
|       | LE       | 8.9825839  | 8.9825839  |         |
|       | NH       | 8.9344376  | 8.9344376  |         |
|       | HS       | 9.5930950  | 9.5930950  |         |
|       | THICK    | 0.0213073  | 0.0213073  |         |
|       | HATWT    | 0.5918204  | 0.5918204  |         |
|       | SURVWT   | 6.9478655  | 6.9478655  |         |
|       | FOOD     | 1700.02    | 1700.02    |         |
|       | PREM     | 15.4813825 | 15.4813825 |         |
|       | POSTM    | 24.5631055 | 24.5631055 |         |
|       | PREF     | 20.4133751 | 20.4133751 |         |
|       | POSTF    | 39.0711523 | 39.0711523 |         |

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TRT=C

| N Obs | Variable | N  | Minimum    | Maximum    | Mean        |
|-------|----------|----|------------|------------|-------------|
| 18    | EL       | 17 | 1.000000   | 55.000000  | 33.0588235  |
|       | EC       | 11 | 1.000000   | 4.000000   | 2.2727273   |
|       | ES       | 17 | 1.000000   | 52.000000  | 29.4117647  |
|       | VE       | 17 | 1.000000   | 48.000000  | 26.6470588  |
|       | LE       | 17 | 1.000000   | 47.000000  | 25.1764706  |
|       | NH       | 17 | 1.000000   | 41.000000  | 20.8823529  |
|       | HS       | 17 | 1.000000   | 38.000000  | 18.1764706  |
|       | THICK    | 16 | 0.285000   | 0.334000   | 0.3110000   |
|       | HATWT    | 17 | 5.700000   | 8.841000   | 6.9877059   |
|       | SURVWT   | 17 | 22.831000  | 35.574000  | 30.4247059  |
|       | FOOD     | 18 | 3490.00    | 6803.00    | 5801.89     |
|       | PREM     | 18 | 200.000000 | 261.000000 | 238.0000000 |
|       | POSTM    | 17 | 223.000000 | 289.000000 | 265.0588235 |
|       | PREF     | 18 | 210.000000 | 276.000000 | 232.5555556 |
|       | POSTF    | 17 | 262.000000 | 345.000000 | 297.5294118 |

| N Obs | Variable | Std Dev     |
|-------|----------|-------------|
| 18    | EL       | 14.0288568  |
|       | EC       | 1.1037127   |
|       | ES       | 13.1484734  |
|       | VE       | 12.8352112  |
|       | LE       | 12.8171530  |
|       | NH       | 12.4593457  |
|       | HS       | 11.4413466  |
|       | THICK    | 0.0139762   |
|       | HATWT    | 0.7654010   |
|       | SURVWT   | 3.2998580   |
|       | FOOD     | 712.9138129 |

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|       |            |
|-------|------------|
| PREM  | 16.8488087 |
| POSTM | 19.5846579 |
| PREF  | 16.2742027 |
| POSTF | 25.4880306 |

TRT=D

| N Obs | Variable | N  | Minimum    | Maximum    | Mean        |
|-------|----------|----|------------|------------|-------------|
| 18    | EL       | 17 | 14.000000  | 50.000000  | 33.5882353  |
|       | EC       | 11 | 1.000000   | 3.000000   | 1.9090909   |
|       | ES       | 17 | 9.000000   | 46.000000  | 30.0000000  |
|       | VE       | 16 | 11.000000  | 45.000000  | 26.5000000  |
|       | LE       | 16 | 10.000000  | 44.000000  | 26.0625000  |
|       | NH       | 15 | 8.000000   | 41.000000  | 21.2000000  |
|       | HS       | 15 | 6.000000   | 31.000000  | 18.8000000  |
|       | THICK    | 17 | 0.277000   | 0.363000   | 0.3121765   |
|       | HATWT    | 15 | 6.265000   | 7.625000   | 7.1008667   |
|       | SURVWT   | 15 | 23.464000  | 34.982000  | 29.7837333  |
|       | FOOD     | 18 | 3644.00    | 6379.00    | 5678.94     |
|       | PREM     | 18 | 208.000000 | 273.000000 | 231.8888889 |
|       | POSTM    | 17 | 241.000000 | 301.000000 | 262.0000000 |
|       | PREF     | 18 | 202.000000 | 280.000000 | 228.5000000 |
|       | POSTF    | 17 | 270.000000 | 338.000000 | 296.6470588 |

| N Obs | Variable | Std Dev     |
|-------|----------|-------------|
| 18    | EL       | 9.4476110   |
|       | EC       | 0.8312094   |
|       | ES       | 9.1378334   |
|       | VE       | 9.7843412   |
|       | LE       | 9.6985824   |
|       | NH       | 9.0490726   |
|       | HS       | 7.6737028   |
|       | THICK    | 0.0206011   |
|       | HATWT    | 0.3601751   |
|       | SURVWT   | 2.8168488   |
|       | FOOD     | 573.3001957 |
|       | PREM     | 15.2311171  |
|       | POSTM    | 16.7965770  |
|       | PREF     | 13.5960634  |
|       | POSTF    | 18.3641675  |

1. ANALYSIS OF EL DATA  
\*\*\*\*\*

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General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 64 observations can be used in this analysis.

1. ANALYSIS OF EL DATA  
\*\*\*\*\*

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## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 141.86305147   | 0.38    | 0.7682 |
| Error           | 60 | 7477.49632353  |         |        |
| Corrected Total | 63 | 7619.35937500  |         |        |

| R-Square | C.V.     | RESP Mean   |
|----------|----------|-------------|
| 0.018619 | 32.16873 | 34.70312500 |

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 141.86305147 | 0.38    | 0.7682 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 141.86305147 | 0.38    | 0.7682 |

## 1. ANALYSIS OF EL DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 60 MSE= 124.6249  
Critical Value of Dunnnett's T= 2.410

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -9.409                       | 0.438                          | 10.284                       |
| D - A             | -11.846                      | -2.474                         | 6.898                        |
| C - A             | -12.376                      | -3.004                         | 6.368                        |

## 1. ANALYSIS OF EL DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 60 MSE= 124.6249

Critical Value of T= 2.72855  
Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -10.710                      | 0.438                          | 11.585                       |
| B - D             | -8.082                       | 2.912                          | 13.905                       |
| B - C             | -7.552                       | 3.441                          | 14.434                       |
| A - B             | -11.585                      | -0.438                         | 10.710                       |
| A - D             | -8.136                       | 2.474                          | 13.084                       |
| A - C             | -7.606                       | 3.004                          | 13.613                       |
| D - B             | -13.905                      | -2.912                         | 8.082                        |
| D - A             | -13.084                      | -2.474                         | 8.136                        |
| D - C             | -9.918                       | 0.529                          | 10.977                       |
| C - B             | -14.434                      | -3.441                         | 7.552                        |
| C - A             | -13.613                      | -3.004                         | 7.606                        |
| C - D             | -10.977                      | -0.529                         | 9.918                        |

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
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General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 52 observations can be used in this analysis.

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
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## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F     |
|-----------------|----|----------------|---------|------------|
| Model           | 3  | 15.21128871    | 3.59    | 0.0202     |
| Error           | 48 | 67.76948052    |         |            |
| Corrected Total | 51 | 82.98076923    |         |            |
| R-Square        |    |                |         | RESP Mean  |
| 0.183311        |    |                |         | 1.48076923 |
| Type I SS       |    |                |         | F Value    |
|                 |    |                |         | Pr > F     |

|        |    |             |         |        |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 15.21128871 | 3.59    | 0.0202 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 15.21128871 | 3.59    | 0.0202 |

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
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### General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 48 MSE= 1.411864  
Critical Value of Dunnnett's T= 2.439

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                | Simultaneous                 |     |
|-------------------|------------------------------|--------------------------------|------------------------------|-----|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |     |
| C - A             | 0.013                        | 1.148                          | 2.283                        | *** |
| D - A             | -0.351                       | 0.784                          | 1.919                        |     |
| B - A             | -1.257                       | -0.196                         | 0.864                        |     |

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
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### General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 48 MSE= 1.411864  
Critical Value of T= 2.75202

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                | Simultaneous                 |     |
|-------------------|------------------------------|--------------------------------|------------------------------|-----|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |     |
| C - D             | -1.031                       | 0.364                          | 1.758                        |     |
| C - A             | -0.133                       | 1.148                          | 2.429                        | *** |
| C - B             | 0.027                        | 1.344                          | 2.662                        |     |
| D - C             | -1.758                       | -0.364                         | 1.031                        |     |
| D - A             | -0.497                       | 0.784                          | 2.065                        |     |
| D - B             | -0.337                       | 0.981                          | 2.298                        |     |
| A - C             | -2.429                       | -1.148                         | 0.133                        |     |
| A - D             | -2.065                       | -0.784                         | 0.497                        |     |
| A - B             | -1.000                       | 0.196                          | 1.393                        |     |

|       |        |        |        |     |
|-------|--------|--------|--------|-----|
| B - C | -2.662 | -1.344 | -0.027 | *** |
| B - D | -2.298 | -0.981 | 0.337  |     |
| B - A | -1.393 | -0.196 | 1.000  |     |

## 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
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### General Linear Models Procedure

Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 64 observations can be used in this analysis.

## 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
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### General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 168.13458508   | 0.49    | 0.6896 |
| Error           | 60 | 6844.22478992  |         |        |
| Corrected Total | 63 | 7012.35937500  |         |        |

| R-Square | C.V.     | RESP Mean   |
|----------|----------|-------------|
| 0.023977 | 34.22854 | 31.20312500 |

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 168.13458508 | 0.49    | 0.6896 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 168.13458508 | 0.49    | 0.6896 |

## 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
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### General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -8.831                       | 0.589                          | 10.010                       |
| D - A             | -11.591                      | -2.625                         | 6.341                        |
| C - A             | -12.180                      | -3.213                         | 5.753                        |

### 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 60 MSE= 114.0704  
Critical Value of T= 2.72855

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -10.076                      | 0.589                          | 11.254                       |
| B - D             | -7.303                       | 3.214                          | 13.732                       |
| B - C             | -6.715                       | 3.803                          | 14.320                       |
| A - B             | -11.254                      | -0.589                         | 10.076                       |
| A - D             | -7.526                       | 2.625                          | 12.776                       |
| A - C             | -6.937                       | 3.213                          | 13.364                       |
| D - B             | -13.732                      | -3.214                         | 7.303                        |
| D - A             | -12.776                      | -2.625                         | 7.526                        |
| D - C             | -9.407                       | 0.588                          | 10.584                       |
| C - B             | -14.320                      | -3.803                         | 6.715                        |
| C - A             | -13.364                      | -3.213                         | 6.937                        |
| C - D             | -10.584                      | -0.588                         | 9.407                        |

### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 63 observations can be used in this analysis.

### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 157.18510738   | 0.47    | 0.7068 |
| Error           | 59 | 6626.56092437  |         |        |
| Corrected Total | 62 | 6783.74603175  |         |        |

R-Square C.V. RESP Mean  
0.023171 37.76386 28.06349206

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 157.18510738 | 0.47    | 0.7068 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 157.18510738 | 0.47    | 0.7068 |

### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 112.3146  
Critical Value of Dunnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -8.659                       | 0.696                          | 10.052                       |
| C - A             | -11.633                      | -2.728                         | 6.177                        |
| D - A             | -11.914                      | -2.875                         | 6.164                        |

### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 112.3146  
Critical Value of T= 2.73013

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous |                          |                        | Simultaneous |                          |                        |
|----------------|--------------|--------------------------|------------------------|--------------|--------------------------|------------------------|
|                | Lower Limit  | Difference Between Means | Upper Confidence Limit | Lower Limit  | Difference Between Means | Upper Confidence Limit |
| B - A          | -9.892       | 0.696                    | 11.285                 | -9.892       | 0.696                    | 11.285                 |
| B - C          | -7.018       | 3.424                    | 13.867                 | -7.018       | 3.424                    | 13.867                 |
| B - D          | -7.017       | 3.571                    | 14.160                 | -7.017       | 3.571                    | 14.160                 |
| A - B          | -11.285      | -0.696                   | 9.892                  | -11.285      | -0.696                   | 9.892                  |
| A - C          | -7.350       | 2.728                    | 12.806                 | -7.350       | 2.728                    | 12.806                 |
| A - D          | -7.355       | 2.875                    | 13.105                 | -7.355       | 2.875                    | 13.105                 |
| C - B          | -13.867      | -3.424                   | 7.018                  | -13.867      | -3.424                   | 7.018                  |
| C - A          | -12.806      | -2.728                   | 7.350                  | -12.806      | -2.728                   | 7.350                  |
| C - D          | -9.931       | 0.147                    | 10.225                 | -9.931       | 0.147                    | 10.225                 |
| D - B          | -14.160      | -3.571                   | 7.017                  | -14.160      | -3.571                   | 7.017                  |
| D - A          | -13.105      | -2.875                   | 7.355                  | -13.105      | -2.875                   | 7.355                  |
| D - C          | -10.225      | -0.147                   | 9.931                  | -10.225      | -0.147                   | 9.931                  |

5. ANALYSIS OF LE DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 63 observations can be used in this analysis.

5. ANALYSIS OF LE DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

| Dependent Variable: RESP |    |                |         |        |
|--------------------------|----|----------------|---------|--------|
| Source                   | DF | Sum of Squares | F Value | Pr > F |
| Model                    | 3  | 155.52048319   | 0.45    | 0.7207 |
| Error                    | 59 | 6851.33665966  |         |        |

R-Square  
0.022195  
C.V.  
39.84122  
RESP Mean  
27.04761905

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 155.52048319 | 0.45    | 0.7207 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 155.52048319 | 0.45    | 0.7207 |

5. ANALYSIS OF LE DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 116.1244  
Critical Value of Dunnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous |                          |                        | Simultaneous |                          |                        |
|----------------|--------------|--------------------------|------------------------|--------------|--------------------------|------------------------|
|                | Lower Limit  | Difference Between Means | Upper Confidence Limit | Lower Limit  | Difference Between Means | Upper Confidence Limit |
| B - A          | -8.692       | 0.821                    | 10.335                 | -8.692       | 0.821                    | 10.335                 |
| D - A          | -11.378      | -2.188                   | 7.003                  | -11.378      | -2.188                   | 7.003                  |
| C - A          | -12.128      | -3.074                   | 5.981                  | -12.128      | -3.074                   | 5.981                  |

5. ANALYSIS OF LE DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 116.1244  
Critical Value of T= 2.73013

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous |                          |                        | Simultaneous |                          |                        |
|----------------|--------------|--------------------------|------------------------|--------------|--------------------------|------------------------|
|                | Lower Limit  | Difference Between Means | Upper Confidence Limit | Lower Limit  | Difference Between Means | Upper Confidence Limit |
| B - A          | -9.945       | 0.821                    | 11.588                 | -9.945       | 0.821                    | 11.588                 |
| B - D          | -7.758       | 3.009                    | 13.776                 | -7.758       | 3.009                    | 13.776                 |

8:32 Tuesday, March 30, 1993

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 249.29036324   | 0.76    | 0.5233 |
| Error           | 58 | 6373.62899160  |         |        |
| Corrected Total | 61 | 6622.91935484  |         |        |

R-Square 0.037641 C.V. 48.53896 RESP Mean 21.59677419

# 6. ANALYSIS OF NH DATA

\*\*\*\*\*

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

# 6. ANALYSIS OF NH DATA

\*\*\*\*\*

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 249.29036324   | 0.76    | 0.5233 |
| Error           | 58 | 6373.62899160  |         |        |
| Corrected Total | 61 | 6622.91935484  |         |        |

R-Square 0.037641 C.V. 48.53896 RESP Mean 21.59677419

# 6. ANALYSIS OF NH DATA

\*\*\*\*\*

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General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 109.8902  
Critical Value of Dunnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - A          | -3.745                              | 5.518                    | 14.781                              |
| D - A          | -7.522                              | 1.575                    | 10.672                              |
| C - A          | -7.559                              | 1.257                    | 10.073                              |

# 6. ANALYSIS OF NH DATA

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 109.8902  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - D          | -6.699                              | 3.943                    | 14.585                              |
| B - C          | -6.075                              | 4.261                    | 14.596                              |
| B - A          | -4.962                              | 5.518                    | 15.998                              |
| D - B          | -14.585                             | -3.943                   | 6.699                               |
| D - C          | -9.827                              | 0.318                    | 10.462                              |
| D - A          | -8.717                              | 1.575                    | 11.867                              |
| C - B          | -14.596                             | -4.261                   | 6.075                               |
| C - D          | -10.462                             | -0.318                   | 9.827                               |
| C - A          | -8.717                              | 1.257                    | 11.232                              |
| A - B          | -15.998                             | -5.518                   | 4.962                               |
| A - D          | -11.867                             | -1.575                   | 8.717                               |
| A - C          | -11.232                             | -1.257                   | 8.717                               |

# 7. ANALYSIS OF HS DATA

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

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Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

7. ANALYSIS OF HS DATA  
 \*\*\*\*\*  
 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 58.75412375    | 0.21    | 0.8911 |
| Error           | 58 | 5484.16523109  |         |        |
| Corrected Total | 61 | 5542.91935484  |         |        |

R-Square C.V. RESP Mean  
 0.010600 52.83811 18.40322581

| Source | DF | Type I SS   | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 58.75412375 | 0.21    | 0.8911 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 58.75412375 | 0.21    | 0.8911 |

7. ANALYSIS OF HS DATA  
 \*\*\*\*\*  
 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 94.55457  
 Critical Value of Dunnnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by \*\*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - A          | -5.869                              | 2.723                    | 11.315                              |

7. ANALYSIS OF HS DATA  
 \*\*\*\*\*  
 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 94.55457  
 Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - D          | -8.886                              | 0.986                    | 10.857                              |
| B - C          | -7.978                              | 1.609                    | 11.196                              |
| B - A          | -6.998                              | 2.723                    | 12.444                              |
| D - B          | -10.857                             | -0.986                   | 8.886                               |
| D - C          | -8.786                              | 0.624                    | 10.034                              |
| D - A          | -7.809                              | 1.738                    | 11.284                              |
| C - B          | -11.196                             | -1.609                   | 7.978                               |
| C - D          | -10.034                             | -0.624                   | 8.786                               |
| C - A          | -8.138                              | 1.114                    | 10.366                              |
| A - B          | -12.444                             | -2.723                   | 6.998                               |
| A - D          | -11.284                             | -1.738                   | 7.809                               |
| A - C          | -10.366                             | -1.114                   | 8.138                               |

8. ANALYSIS OF EGGSHELL THICKNESS DATA  
 \*\*\*\*\*  
 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 63 observations can be used in this analysis.

8. ANALYSIS OF EGGSHELL THICKNESS DATA  
 \*\*\*\*\*  
 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 0.00023813     | 0.22    | 0.8826 |
| Error           | 59 | 0.02135447     |         |        |
| Corrected Total | 62 | 0.02159260     |         |        |

| R-Square | C.V.     | RESP Mean  |
|----------|----------|------------|
| 0.011028 | 6.138580 | 0.30992063 |

| Source | DF | Type I SS  | F Value | Pr > F |
|--------|----|------------|---------|--------|
| TRT    | 3  | 0.00023813 | 0.22    | 0.8826 |

| Source | DF | Type III SS | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 0.00023813  | 0.22    | 0.8826 |

## 8. ANALYSIS OF EGGSHELL THICKNESS DATA

34

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 0.000362  
Critical Value of Dunnnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| D - A          | -0.01281                            | 0.00318                  | 0.01916                             |
| C - A          | -0.01423                            | 0.00200                  | 0.01823                             |
| B - A          | -0.01880                            | -0.00200                 | 0.01480                             |

## 8. ANALYSIS OF EGGSHELL THICKNESS DATA

35

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 0.000362  
Critical Value of T= 2.73013

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| D - C          | -0.01692                            | 0.00118                  | 0.01927                             |
| D - A          | -0.01492                            | 0.00318                  | 0.02127                             |
| D - B          | -0.01357                            | 0.00518                  | 0.02392                             |
| C - D          | -0.01927                            | -0.00118                 | 0.01692                             |
| C - A          | -0.01636                            | 0.00200                  | 0.02036                             |
| C - B          | -0.01501                            | 0.00400                  | 0.02301                             |
| A - D          | -0.02127                            | -0.00318                 | 0.01692                             |
| A - C          | -0.02036                            | -0.00200                 | 0.01636                             |
| A - B          | -0.01701                            | 0.00200                  | 0.02101                             |
| B - D          | -0.02392                            | -0.00518                 | 0.01357                             |
| B - C          | -0.02301                            | -0.00400                 | 0.01501                             |
| B - A          | -0.02101                            | -0.00200                 | 0.01701                             |

## 9. ANALYSIS OF HATCHLING WEIGHT DATA

36

8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

## 9. ANALYSIS OF HATCHLING WEIGHT DATA

37

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 0.63371156     | 0.62    | 0.6033 |
| Error           | 58 | 19.68054362    |         |        |
| Corrected Total | 61 | 20.31425518    |         |        |

| R-Square | C.V.     | RESP Mean  |
|----------|----------|------------|
| 0.031195 | 8.343413 | 6.98169355 |

| Source | DF | Type I SS  | F Value | Pr > F |
|--------|----|------------|---------|--------|
| TRT    | 3  | 0.63371156 | 0.62    | 0.6033 |

| Source | DF | Type III SS | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 0.63371156  | 0.62    | 0.6033 |

## 9. ANALYSIS OF HATCHLING WEIGHT DATA

8:32 Tuesday, March 30, 1993

38

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 0.33932  
Critical Value of Dunnnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                              | Difference       |                              | Simultaneous                 |
|-------------------|------------------------------|------------------------------|------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit | Between<br>Means | Upper<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| D - A             | -0.230                       | 0.276                        | 0.276            | 0.781                        | 0.781                        |
| B - A             | -0.314                       | 0.201                        | 0.201            | 0.715                        | 0.715                        |
| C - A             | -0.327                       | 0.163                        | 0.163            | 0.653                        | 0.653                        |

## 9. ANALYSIS OF HATCHLING WEIGHT DATA

8:32 Tuesday, March 30, 1993

39

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 0.33932  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                              | Difference       |                              | Simultaneous                 |
|-------------------|------------------------------|------------------------------|------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit | Between<br>Means | Upper<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| D - B             | -0.516                       | 0.075                        | 0.075            | 0.666                        | 0.666                        |
| D - C             | -0.451                       | 0.113                        | 0.113            | 0.677                        | 0.677                        |
| D - A             | -0.296                       | 0.276                        | 0.276            | 0.848                        | 0.848                        |
| B - D             | -0.666                       | -0.075                       | -0.075           | 0.516                        | 0.516                        |
| B - C             | -0.536                       | 0.038                        | 0.038            | 0.612                        | 0.612                        |
| B - A             | -0.382                       | 0.201                        | 0.201            | 0.783                        | 0.783                        |
| C - D             | -0.677                       | -0.113                       | -0.113           | 0.451                        | 0.451                        |
| C - B             | -0.612                       | -0.038                       | -0.038           | 0.536                        | 0.536                        |
| C - A             | -0.392                       | 0.163                        | 0.163            | 0.717                        | 0.717                        |
| A - D             | -0.848                       | -0.276                       | -0.276           | 0.296                        | 0.296                        |

| Source | DF | Type III SS | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 0.63371156  | 0.62    | 0.6033 |

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA

8:32 Tuesday, March 30, 1993

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General Linear Models Procedure

Dunnnett's T tests for variable: RESP

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 18.68925  
Critical Value of Dunnnett's T= 2.414

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA

8:32 Tuesday, March 30, 1993

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General Linear Models Procedure

Dunnnett's T tests for variable: RESP

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 18.68925  
Critical Value of Dunnnett's T= 2.414

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA

8:32 Tuesday, March 30, 1993

42

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 18.68925  
Critical Value of Dunnnett's T= 2.414

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA

8:32 Tuesday, March 30, 1993

42

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 18.68925  
Critical Value of Dunnnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              | Difference       |                              | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|------------------|------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit | Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| C - A             | -1.890                       |                              | 1.746            |                              | 5.382                        |                              |
| D - A             | -2.646                       |                              | 1.105            |                              | 4.857                        |                              |
| B - A             | -5.348                       |                              | -1.528           |                              | 2.291                        |                              |

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA 43

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 18.68925  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              | Difference       |                              | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|------------------|------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit | Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| C - D             | -3.543                       |                              | 0.641            |                              | 4.825                        |                              |
| C - A             | -2.367                       |                              | 1.746            |                              | 5.860                        |                              |
| C - B             | -0.987                       |                              | 3.275            |                              | 7.537                        |                              |
| D - C             | -4.825                       |                              | -0.641           |                              | 3.543                        |                              |
| D - A             | -3.139                       |                              | 1.105            |                              | 5.350                        |                              |
| D - B             | -1.755                       |                              | 2.634            |                              | 7.022                        |                              |
| A - C             | -5.860                       |                              | -1.746           |                              | 2.367                        |                              |
| A - D             | -3.350                       |                              | -1.105           |                              | 3.139                        |                              |
| A - B             | -2.793                       |                              | 1.528            |                              | 5.850                        |                              |
| B - C             | -7.537                       |                              | -3.275           |                              | 0.987                        |                              |
| B - D             | -7.022                       |                              | -2.634           |                              | 1.755                        |                              |
| B - A             | -5.850                       |                              | -1.528           |                              | 2.793                        |                              |

## 11. ANALYSIS OF FOOD CONSUMPTION DATA 44

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

## 11. ANALYSIS OF FOOD CONSUMPTION DATA 45

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 4430343.66667  | 1.40    | 0.2510 |
| Error           | 68 | 71845032.77778 |         |        |
| Corrected Total | 71 | 76275376.44444 |         |        |

| R-Square | C.V.     | RESP Mean   |
|----------|----------|-------------|
| 0.058084 | 18.38041 | 5592.277778 |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 4430343.66667 | 1.40    | 0.2510 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 4430343.66667 | 1.40    | 0.2510 |

## 11. ANALYSIS OF FOOD CONSUMPTION DATA 46

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 68 MSE= 1056545  
Critical Value of Dunnnett's T= 2.403  
Minimum Significant Difference= 823.17

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              | Difference       |                              | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|------------------|------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit | Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| C - A             | -740.0                       |                              | 83.2             |                              | 906.3                        |                              |
| D - A             | -862.9                       |                              | -39.8            |                              | 783.4                        |                              |
| B - A             | -1372.3                      |                              | -549.2           |                              | 274.0                        |                              |

## 11. ANALYSIS OF FOOD CONSUMPTION DATA 47

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

File:c:\baybq1.out Page 23  
 NOTE: This test controls the type I experimentwise error rate,  
 but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 68 MSE= 1056545  
 Critical Value of T= 2.72  
 Minimum Significant Difference= 931.14  
 Means with the same letter are not significantly different.

| Bon Grouping | Mean   | N  | TRT |
|--------------|--------|----|-----|
| A            | 5801.9 | 18 | C   |
| A            | 5718.7 | 18 | A   |
| A            | 5678.9 | 18 | D   |
| A            | 5169.6 | 18 | B   |

# 8. ANALYSIS OF ES/EL DATA \*\*\*\*\* 8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
 Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 64 observations can be used in this analysis.

# 8. ANALYSIS OF ES/EL DATA \*\*\*\*\* 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
 Weight:

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 1283.14209035  | 0.68    | 0.5698 |
| Error           | 60 | 37935.59417793 |         |        |
| Corrected Total | 63 | 39218.73626828 |         |        |

R-Square  
 0.032718  
 C.V.  
 34.99586  
 RESPONSE Mean  
 71.85072982

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 1283.14209036 | 0.68    | 0.5698 |
| Source | DF | Type III SS   | F Value | Pr > F |

File:c:\baybq1.out Page 24  
 TRT

1283.14209036 0.68 0.5698

# 8. ANALYSIS OF ES/EL DATA \*\*\*\*\* 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 60 MSE= 632.2599  
 Critical Value of Dunnnett's T= 2.410

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - A          | -22.047                             | 0.132                    | 22.311                              |
| D - A          | -22.415                             | -1.305                   | 19.804                              |
| C - A          | -22.692                             | -1.582                   | 19.527                              |

# 8. ANALYSIS OF ES/EL DATA \*\*\*\*\* 8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 60 MSE= 632.2599  
 Critical Value of T= 2.72855

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - A          | -24.976                             | 0.132                    | 25.240                              |
| B - D          | -23.324                             | 1.437                    | 26.199                              |
| B - C          | -23.047                             | 1.714                    | 26.476                              |
| A - B          | -25.240                             | -0.132                   | 24.976                              |
| A - D          | -22.592                             | 1.305                    | 25.203                              |
| A - C          | -22.315                             | 1.582                    | 25.480                              |
| D - B          | -26.199                             | -1.437                   | 23.324                              |
| D - A          | -25.203                             | -1.305                   | 22.592                              |
| D - C          | -23.256                             | 0.277                    | 23.809                              |
| C - B          | -26.476                             | -1.714                   | 23.047                              |
| C - A          | -25.480                             | -1.582                   | 22.515                              |
| C - D          | -23.809                             | -0.277                   | 23.256                              |

9. ANALYSIS OF VE/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 63 observations can be used in this analysis.

9. ANALYSIS OF VE/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight:

| Source          | DF | Sum of Squares  | F Value       | Pr > F |
|-----------------|----|-----------------|---------------|--------|
| Model           | 3  | 8299.28195996   | 0.38          | 0.7674 |
| Error           | 59 | 428930.79313120 |               |        |
| Corrected Total | 62 | 437230.07509116 |               |        |
| R-Square        |    | C.V.            | RESPONSE Mean |        |
| 0.018981        |    | 112.9781        | 75.46985706   |        |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 8299.28195996 | 0.38    | 0.7674 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 8299.28195996 | 0.38    | 0.7674 |

9. ANALYSIS OF VE/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 7270.013  
Critical Value of Dunnnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| C - A          | -74.137                             | -2.494                   | 69.149                              |
| B - A          | -77.904                             | -2.631                   | 72.641                              |
| D - A          | -78.408                             | -5.688                   | 67.032                              |

9. ANALYSIS OF VE/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 7270.013  
Critical Value of T= 2.73013

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| A - C          | -78.588                             | 2.494                    | 83.576                              |
| A - B          | -82.559                             | 2.631                    | 87.821                              |
| A - D          | -76.614                             | 5.688                    | 87.989                              |
| C - A          | -83.576                             | -2.494                   | 78.588                              |
| C - B          | -83.875                             | 0.137                    | 84.150                              |
| C - D          | -77.888                             | 3.194                    | 84.275                              |
| B - A          | -87.821                             | -2.631                   | 82.559                              |
| B - C          | -84.150                             | -0.137                   | 83.875                              |
| B - D          | -82.134                             | 3.056                    | 88.246                              |
| D - A          | -87.989                             | -5.688                   | 76.614                              |
| D - C          | -84.275                             | -3.194                   | 77.888                              |
| D - B          | -88.246                             | -3.056                   | 82.134                              |

10. ANALYSIS OF LE/VE DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 63 observations can be used in

10. ANALYSIS OF LE/VE DATA 57  
\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
WT

| Source          | DF | Sum of Squares  | F Value       | Pr > F |
|-----------------|----|-----------------|---------------|--------|
| Model           | 3  | 3952.17301678   | 0.55          | 0.6509 |
| Error           | 59 | 141629.83787649 |               |        |
| Corrected Total | 62 | 145582.01089327 |               |        |
| R-Square        |    | C.V.            | RESPONSE Mean |        |
| 0.027147        |    | 58.78426        | 83.34706900   |        |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 3952.17301678 | 0.55    | 0.6509 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 3952.17301678 | 0.55    | 0.6509 |

10. ANALYSIS OF LE/VE DATA 58  
\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 2400.506  
Critical Value of Dunnnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|------------------------|
| D - A          | -38.050                             | 3.737                    | 45.524                 |
| B - A          | -40.653                             | 2.600                    | 45.853                 |
| C - A          | -40.512                             | 0.655                    | 41.823                 |

10. ANALYSIS OF LE/VE DATA 59  
\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 2400.506  
Critical Value of T= 2.73013

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|------------------------|
| D - B          | -47.815                             | 1.137                    | 50.089                 |
| D - C          | -43.510                             | 3.081                    | 49.673                 |
| D - A          | -43.555                             | 3.737                    | 51.029                 |
| B - D          | -50.089                             | -1.137                   | 47.815                 |
| B - C          | -46.331                             | 1.944                    | 50.220                 |
| B - A          | -46.352                             | 2.600                    | 51.552                 |
| C - D          | -49.673                             | -3.081                   | 43.510                 |
| C - B          | -50.220                             | -1.944                   | 46.331                 |
| C - A          | -45.936                             | 0.655                    | 47.247                 |
| A - D          | -51.029                             | -3.737                   | 43.555                 |
| A - B          | -51.552                             | -2.600                   | 46.352                 |
| A - C          | -47.247                             | -0.655                   | 45.936                 |

11 ANALYSIS OF NH/LE DATA 60  
\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class Levels | Values    |
|--------------|-----------|
| TRT          | 4 A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

11 ANALYSIS OF NH/LE DATA 61  
\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
WT

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 34954.6424329  | 2.62    | 0.0590 |
| Error           | 58 | 257579.3376450 |         |        |
| Corrected Total | 61 | 292533.9800779 |         |        |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 34954.6424329 | 2.62    | 0.0590 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 34954.6424329 | 2.62    | 0.0590 |

R-Square 0.119489  
C.V. 103.6038  
RESPONSE Mean 64.32291717

## 11 ANALYSIS OF NH/LE DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

62

## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 4441.023  
Critical Value of Dunnnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - A          | -46.87                              | 12.02                    | 70.90                               |
| C - A          | -46.89                              | 9.15                     | 65.20                               |
| D - A          | -52.40                              | 5.43                     | 63.26                               |

## 11 ANALYSIS OF NH/LE DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

63

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 4441.023  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - C          | -62.84                              | 2.86                     | 68.56                               |
| B - D          | -61.07                              | 6.58                     | 74.23                               |
| B - A          | -54.61                              | 12.02                    | 78.64                               |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 34954.6424329 | 2.62    | 0.0590 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 34954.6424329 | 2.62    | 0.0590 |

R-Square 0.119489  
C.V. 103.6038  
RESPONSE Mean 64.32291717

## 12 ANALYSIS OF NH/EL DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

64

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

## 12 ANALYSIS OF NH/EL DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

65

## General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight: WT

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 23130.7696136  | 1.32    | 0.2758 |
| Error           | 58 | 338166.5731202 |         |        |
| Corrected Total | 61 | 361297.3427338 |         |        |

R-Square 0.064021  
C.V. 146.2286  
RESPONSE Mean 52.21785170

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 23130.7696136 | 1.32    | 0.2758 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 23130.7696136 | 1.32    | 0.2758 |

## 12 ANALYSIS OF NH/EL DATA

66

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 5830.458  
Critical Value of Dunnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -58.341                      | 9.129                          | 76.599                       |                              |                                |                              |
| C - A             | -58.724                      | 5.493                          | 69.710                       |                              |                                |                              |
| D - A             | -61.694                      | 4.566                          | 70.826                       |                              |                                |                              |

## 12 ANALYSIS OF NH/EL DATA

67

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 5830.458  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - C             | -71.645                      | 3.636                          | 78.917                       |                              |                                |                              |
| B - D             | -72.951                      | 4.563                          | 82.078                       |                              |                                |                              |
| B - A             | -67.207                      | 9.129                          | 85.466                       |                              |                                |                              |
| C - B             | -78.917                      | -3.636                         | 71.645                       |                              |                                |                              |
| C - D             | -72.965                      | 0.927                          | 74.820                       |                              |                                |                              |
| C - A             | -67.162                      | 5.493                          | 78.148                       |                              |                                |                              |
| D - B             | -82.078                      | -4.563                         | 72.951                       |                              |                                |                              |
| D - C             | -74.820                      | -0.927                         | 72.965                       |                              |                                |                              |
| D - A             | -70.401                      | 4.566                          | 79.533                       |                              |                                |                              |
| A - B             | -85.466                      | -9.129                         | 67.207                       |                              |                                |                              |
| A - C             | -78.148                      | -5.493                         | 67.162                       |                              |                                |                              |
| A - D             | -79.533                      | -4.566                         | 70.401                       |                              |                                |                              |

## 17. ANALYSIS OF HS/NH DATA

68

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

|       |        |         |
|-------|--------|---------|
| Class | Levels | Values  |
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

## 17. ANALYSIS OF HS/NH DATA

69

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight:

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 11049.8455232  | 1.17    | 0.3306 |
| Error           | 58 | 183232.6862714 |         |        |
| Corrected Total | 61 | 194282.5317946 |         |        |

R-Square C.V. RESPONSE Mean  
0.056875 80.30322 69.99298118

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 11049.8455232 | 1.17    | 0.3306 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 11049.8455232 | 1.17    | 0.3306 |

## 17. ANALYSIS OF HS/NH DATA

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\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 3159.184  
Critical Value of Dunnett's T= 2.414

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |

D - A 1.646 50.419  
C - A -0.188 47.082  
B - A -5.529 43.800

## 17. ANALYSIS OF HS/NH DATA 71

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate  
but generally has a higher type II error rate than  
Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 3159.184  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                | Simultaneous                 |  |
|-------------------|------------------------------|--------------------------------|------------------------------|--|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |  |
| D - A             | -53.538                      | 1.646                          | 56.829                       |  |
| D - C             | -52.559                      | 1.833                          | 56.225                       |  |
| D - B             | -49.548                      | 7.510                          | 64.569                       |  |
| A - D             | -56.829                      | -1.646                         | 53.538                       |  |
| A - C             | -53.294                      | 0.188                          | 53.669                       |  |
| A - B             | -50.327                      | 5.865                          | 62.056                       |  |
| C - D             | -56.225                      | -1.833                         | 52.559                       |  |
| C - A             | -53.669                      | -0.188                         | 53.294                       |  |
| C - B             | -49.737                      | 5.677                          | 61.092                       |  |
| B - D             | -64.569                      | -7.510                         | 49.548                       |  |
| B - A             | -62.056                      | -5.865                         | 50.327                       |  |
| B - C             | -61.092                      | -5.677                         | 49.737                       |  |

## 18. ANALYSIS OF EC/EL DATA 72

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

Class Levels Values

TRT 4 A B C D

Number of observations in data set = 72

NOTE: Due to missing values, only 52 observations can be used in  
this analysis.

## 18. ANALYSIS OF EC/EL DATA 73

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight:

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 21265.9430788  | 5.55    | 0.0024 |
| Error           | 48 | 61266.8314288  |         |        |
| Corrected Total | 51 | 82532.7745076  |         |        |

R-Square C.V. RESPONSE Mean  
0.257667 365.3248 9.77941571

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 21265.9430788 | 5.55    | 0.0024 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 21265.9430788 | 5.55    | 0.0024 |

## 18. ANALYSIS OF EC/EL DATA 74

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for  
comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 48 MSE= 1276.392  
Critical Value of Dunnnett's T= 2.439

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                | Simultaneous                 |  |
|-------------------|------------------------------|--------------------------------|------------------------------|--|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |  |
| C - A             | -26.223                      | 7.908                          | 42.039                       |  |
| D - A             | -28.012                      | 6.119                          | 40.250                       |  |
| B - A             | -31.428                      | 0.462                          | 32.353                       |  |

## 18. ANALYSIS OF EC/EL DATA 75

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Model Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate  
but generally has a higher type II error rate than  
Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 48 MSE= 1276.392

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | F Value | Pr > F |
|-------------------|------------------------------|--------------------------------|------------------------------|---------|--------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |         |        |
| C - D             | -40.135                      | 1.789                          | 43.713                       | 1.43    | 0.2419 |
| C - B             | -32.169                      | 7.445                          | 47.060                       |         |        |
| C - A             | -30.602                      | 7.908                          | 46.418                       |         |        |
| D - C             | -43.713                      | -1.789                         | 40.135                       | 1.43    | 0.2419 |
| D - B             | -33.958                      | 5.656                          | 45.271                       |         |        |
| D - A             | -32.391                      | 6.119                          | 44.628                       |         |        |
| B - C             | -47.060                      | -7.445                         | 32.169                       | 1.43    | 0.2419 |
| B - D             | -45.271                      | -5.656                         | 33.958                       |         |        |
| B - A             | -35.519                      | 0.462                          | 36.444                       |         |        |
| A - C             | -46.418                      | -7.908                         | 30.602                       | 1.43    | 0.2419 |
| A - D             | -44.628                      | -6.119                         | 32.391                       |         |        |
| A - B             | -36.444                      | -0.462                         | 35.519                       |         |        |

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

|                              |    |                |         |        |  |
|------------------------------|----|----------------|---------|--------|--|
| Dependent Variable: RESPONSE |    |                |         |        |  |
| Source                       | DF | Sum of Squares | F Value | Pr > F |  |
| Model                        | 3  | 27690.2372138  | 1.43    | 0.2419 |  |
| Error                        | 58 | 373105.5695924 |         |        |  |
| Corrected Total              | 61 | 400795.8068062 |         |        |  |
| R-Square                     |    |                |         |        |  |
| C.V.                         |    |                |         |        |  |
| RESPONSE Mean                |    |                |         |        |  |
| 0.069088                     |    |                |         |        |  |
| 140.7999                     |    |                |         |        |  |
| 56.96386831                  |    |                |         |        |  |
| Source                       | DF | Type I SS      | F Value | Pr > F |  |

|        |    |               |         |        |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 27690.2372138 | 1.43    | 0.2419 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 27690.2372138 | 1.43    | 0.2419 |

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 6432.855  
Critical Value of Dunnnett's  $T = 2.414$

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -60.65                       | 10.22                          | 81.09                        |
| C - A             | -60.20                       | 7.25                           | 74.71                        |
| D - A             | -64.33                       | 5.27                           | 74.87                        |

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 6432.855  
Critical Value of  $T = 2.73177$

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - C             | -76.11                       | 2.96                           | 82.04                        |
| B - D             | -76.48                       | 4.94                           | 86.36                        |
| B - A             | -69.97                       | 10.22                          | 90.40                        |
| C - B             | -82.04                       | -2.96                          | 76.11                        |
| C - D             | -75.63                       | 1.98                           | 79.60                        |
| C - A             | -69.06                       | 7.25                           | 83.57                        |
| D - B             | -86.36                       | -4.94                          | 76.48                        |
| D - C             | -79.60                       | -1.98                          | 75.63                        |

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D - A 5.27 84.02  
A - B -90.40 -10.22 69.97  
A - C -83.57 -7.25 69.06  
A - D -84.02 -5.27 73.47

# 20. ANALYSIS OF HS/ES DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

Class Levels Values  
TRT 4 A B C D

Number of observations in data set = 72

NOTE: Due to missing values, only 62 observations can be used in this analysis.

# 20. ANALYSIS OF HS/ES DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight: WT

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 11232.7388106  | 0.57    | 0.6356 |
| Error           | 58 | 379582.1689482 |         |        |
| Corrected Total | 61 | 390814.9077588 |         |        |

| R-Square | C.V.     | RESPONSE Mean |
|----------|----------|---------------|
| 0.028742 | 161.4615 | 50.10371249   |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 11232.7388106 | 0.57    | 0.6356 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 11232.7388106 | 0.57    | 0.6356 |

# 20. ANALYSIS OF HS/ES DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for

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comparisons of all treatments against a control.  
Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 6544.52  
Critical Value of Dunnnett's T= 2.414  
Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| C - A          | -61.997                             | 6.038                    | 74.074                              |
| D - A          | -64.961                             | 5.239                    | 75.440                              |
| B - A          | -66.967                             | 4.516                    | 75.999                              |

# 20. ANALYSIS OF HS/ES DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 6544.52  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| C - D          | -77.488                             | 0.799                    | 79.085                              |
| C - B          | -78.236                             | 1.522                    | 81.280                              |
| C - A          | -70.938                             | 6.038                    | 83.014                              |
| D - C          | -79.085                             | -0.799                   | 77.488                              |
| D - B          | -81.401                             | 0.723                    | 82.848                              |
| D - A          | -74.186                             | 5.239                    | 84.665                              |
| B - C          | -81.280                             | -1.522                   | 78.236                              |
| B - D          | -82.848                             | -0.723                   | 81.401                              |
| B - A          | -76.360                             | 4.516                    | 85.392                              |
| A - C          | -83.014                             | -6.038                   | 70.938                              |
| A - D          | -84.665                             | -5.239                   | 74.186                              |
| A - B          | -85.392                             | -4.516                   | 76.360                              |

# 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Class Level Information

Class Levels Values  
TRT 4 A B C D

Number of observations in data set = 72

NOTE: Due to missing values, only 64 observations can be used in this analysis.

# 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 85 \*\*\*\*\* 8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dependent Variable: POSTM

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 4  | 18951.3735127  | 31.35   | 0.0001 |
| Error           | 59 | 8916.3764873   |         |        |
| Corrected Total | 63 | 27867.7500000  |         |        |

| R-Square | C.V.     | POSTM Mean   |
|----------|----------|--------------|
| 0.680047 | 4.704441 | 261.31250000 |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 1015.8713235  | 2.24    | 0.0929 |
| PREM   | 1  | 17935.5021891 | 118.68  | 0.0001 |

| Source | DF | Type III SS   | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 226.4369999   | 0.50    | 0.6841 |
| PREM   | 1  | 17935.5021891 | 118.68  | 0.0001 |

| Parameter | Estimate    | Y for H0: Parameter=0 | Std Error of Estimate |
|-----------|-------------|-----------------------|-----------------------|
| INTERCEPT | 31.90009643 | 1.50                  | 0.1401                |
| TRT A     | -5.00624621 | -1.17                 | 0.2476                |
| TRT B     | -3.35439315 | -0.75                 | 0.4549                |
| TRT C     | -1.72884257 | -0.41                 | 0.6849                |
| PREM      | 0.00000000  | 10.89                 | 0.0001                |

NOTE: The X'X matrix has been found to be singular and a generalized inverse was used to solve the normal equations. Estimates followed by the letter 'B' are biased, and are not unique estimators of the parameters.

# 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 86 \*\*\*\*\* 8:32 Tuesday, March 30, 1993

## General Linear Models Procedure Least Squares Means Coefficients for TRT Least Square Means

| TRT | A | B | C |
|-----|---|---|---|
|-----|---|---|---|

Coefficients

| Effect | INTERCEPT | 1 | 1 | 1 |
|--------|-----------|---|---|---|
| TRT    | A         | 1 | 0 | 0 |
|        | B         | 0 | 1 | 0 |
|        | C         | 0 | 0 | 1 |
|        | D         | 0 | 0 | 0 |

|      |           |           |           |           |
|------|-----------|-----------|-----------|-----------|
| PREM | 233.59375 | 233.59375 | 233.59375 | 233.59375 |
|------|-----------|-----------|-----------|-----------|

|     |   |
|-----|---|
| TRT | D |
|-----|---|

Coefficients

| Effect | INTERCEPT | 1 |
|--------|-----------|---|
| TRT    | A         | 0 |
|        | B         | 0 |
|        | C         | 0 |
|        | D         | 1 |

|      |           |
|------|-----------|
| PREM | 233.59375 |
|------|-----------|

# 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 87 \*\*\*\*\* 8:32 Tuesday, March 30, 1993

## General Linear Models Procedure Least Squares Means

| TRT | POSTM LSMEAN | Std Err LSMEAN | Pr >  T  HO:LSMEAN=0 | LSMEAN Number |
|-----|--------------|----------------|----------------------|---------------|
| A   | 258.750813   | 3.095873       | 0.0001               | 1             |
| B   | 260.402666   | 3.297799       | 0.0001               | 2             |
| C   | 262.028216   | 2.994511       | 0.0001               | 3             |
| D   | 263.757059   | 2.985920       | 0.0001               | 4             |

Pr &gt; |T| HO: LSMEAN(i)=LSMEAN(j)

| i/j | 1      | 2      | 3      | 4      |
|-----|--------|--------|--------|--------|
| 1   |        | 0.7177 | 0.4522 | 0.2476 |
| 2   | 0.7177 |        | 0.7154 | 0.4549 |
| 3   | 0.4522 | 0.7154 |        | 0.6849 |
| 4   | 0.2476 | 0.4549 | 0.6849 |        |

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

# 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 88 \*\*\*\*\* 8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: POSTM

NOTE: This tests controls the type I experimentwise error for

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 151.125  
Critical Value of Dunnett's T= 2.411

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                              | Difference<br>Between<br>Means | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |                                | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| C - A             | 0.046                        | 20.697                       | 10.371                         | 20.697                       | ***                          |
| B - A             | -2.036                       | 19.661                       | 8.813                          | 19.661                       |                              |
| D - A             | -3.013                       | 17.638                       | 7.312                          | 17.638                       |                              |

## 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 89

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: POSTM

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 59 MSE= 151.125  
Critical Value of T= 2.73013

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                              | Difference<br>Between<br>Means | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |                                | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| C - B             | -10.554                      | 13.672                       | 1.559                          | 13.672                       |                              |
| C - D             | -8.453                       | 14.571                       | 3.059                          | 14.571                       |                              |
| C - A             | -1.319                       | 22.062                       | 10.371                         | 22.062                       |                              |
| B - C             | -13.672                      | 10.554                       | -1.559                         | 10.554                       |                              |
| B - D             | -10.613                      | 13.613                       | 1.500                          | 13.613                       |                              |
| B - A             | -3.470                       | 21.095                       | 8.813                          | 21.095                       |                              |
| D - C             | -14.571                      | 8.453                        | -3.059                         | 8.453                        |                              |
| D - B             | -13.613                      | 10.613                       | -1.500                         | 10.613                       |                              |
| D - A             | -4.378                       | 19.003                       | 7.312                          | 19.003                       |                              |
| A - C             | -22.062                      | 1.319                        | -10.371                        | 1.319                        |                              |
| A - B             | -21.095                      | 3.470                        | -8.813                         | 3.470                        |                              |
| A - D             | -19.003                      | 4.378                        | -7.312                         | 4.378                        |                              |

## 22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 90

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 72

NOTE: Due to missing values, only 63 observations can be used in this analysis.

## 22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 91

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Dependent Variable: POSTF

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 4  | 26781.0404037  | 19.05   | 0.0001 |
| Error           | 58 | 20387.5627709  |         |        |
| Corrected Total | 62 | 47168.6031746  |         |        |

| R-Square | C.V.     | POSTF Mean   |
|----------|----------|--------------|
| 0.567773 | 6.412733 | 292.36507937 |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 2381.9379085  | 2.26    | 0.0911 |
| PREF   | 1  | 24399.1024952 | 69.41   | 0.0001 |

| Source | DF | Type III SS   | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 657.0374343   | 0.62    | 0.6030 |
| PREF   | 1  | 24399.1024952 | 69.41   | 0.0001 |

| Parameter | Estimate     | T for H0: Parameter=0 | Pr >  T | Std Error of Estimate |
|-----------|--------------|-----------------------|---------|-----------------------|
| INTERCEPT | -16.78754778 | B                     | -0.44   | 0.6594                |
| TRT A     | -5.08190511  | B                     | -0.77   | 0.4473                |
| TRT B     | -9.18247185  | B                     | -1.35   | 0.1823                |
| TRT C     | -3.60558824  | B                     | -0.56   | 0.5785                |
| TRT D     | 0.00000000   | B                     |         |                       |
| PREF      | 1.36241072   | B                     | 8.33    | 0.0001                |

NOTE: The X'X matrix has been found to be singular and a generalized inverse was used to solve the normal equations. Estimates followed by the letter 'B' are biased, and are not unique estimators of the parameters.

## 22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 92

\*\*\*\*\*  
8:32 Tuesday, March 30, 1993

General Linear Models Procedure

Least Squares Means

Coefficients for TRT Least Square Means

| TRT | A | B | C |
|-----|---|---|---|
|-----|---|---|---|

## Coefficients

| Effect | INTERCEPT    | 1            | 1            | 1            |
|--------|--------------|--------------|--------------|--------------|
| TRT    | A            | 1            | 0            | 0            |
|        | B            | 0            | 1            | 0            |
|        | C            | 0            | 0            | 1            |
|        | D            | 0            | 0            | 0            |
| PREF   | 230.01587302 | 230.01587302 | 230.01587302 | 230.01587302 |

| Effect | INTERCEPT    | 1            |
|--------|--------------|--------------|
| TRT    | A            | 0            |
|        | B            | 0            |
|        | C            | 0            |
|        | D            | 1            |
| PREF   | 230.01587302 | 230.01587302 |

| Effect | INTERCEPT    | 1            |
|--------|--------------|--------------|
| TRT    | A            | 0            |
|        | B            | 0            |
|        | C            | 0            |
|        | D            | 1            |
| PREF   | 230.01587302 | 230.01587302 |

## 22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

General Linear Models Procedure  
Least Squares Means

| TRT | POSTF<br>LSMEAN | Std Err<br>LSMEAN | Pr >  T <br>H0:LSMEAN=0 | LSMEAN<br>Number |
|-----|-----------------|-------------------|-------------------------|------------------|
| A   | 291.506637      | 4.840904          | 0.0001                  | 1                |
| B   | 287.406071      | 5.058295          | 0.0001                  | 2                |
| C   | 292.982954      | 4.579829          | 0.0001                  | 3                |
| D   | 296.588543      | 4.547207          | 0.0001                  | 4                |

Pr &gt; |T| H0: LSMEAN(i)=LSMEAN(j)

| i/j | 1      | 2      | 3      | 4      |
|-----|--------|--------|--------|--------|
| 1   |        | 0.8254 | 0.4473 | 0.4473 |
| 2   | 0.5605 |        | 0.4208 | 0.1823 |
| 3   | 0.8254 | 0.4208 |        | 0.5785 |
| 4   | 0.4473 | 0.1823 | 0.5785 |        |

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

## 22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: POSTF

NOTE: This tests controls the type I experimentwise error for

## Comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 351.5097  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous<br>Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Simultaneous<br>Upper<br>Confidence<br>Limit |
|-------------------|----------------------------------------------|--------------------------------|----------------------------------------------|
| C - A             | -10.138                                      | 5.863                          | 21.863                                       |
| D - A             | -11.020                                      | 4.980                          | 20.981                                       |
| B - A             | -26.808                                      | -10.024                        | 6.761                                        |

## 22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA

\*\*\*\*\*

8:32 Tuesday, March 30, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: POSTF

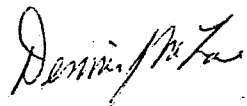
NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 58 MSE= 351.5097  
Critical Value of T= 2.73177

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous<br>Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Simultaneous<br>Upper<br>Confidence<br>Limit |
|-------------------|----------------------------------------------|--------------------------------|----------------------------------------------|
| C - D             | -16.685                                      | 0.882                          | 18.450                                       |
| C - A             | -12.281                                      | 5.863                          | 24.006                                       |
| C - B             | -2.598                                       | 15.887                         | 34.371                                       |
| D - C             | -18.450                                      | -0.882                         | 16.685                                       |
| D - A             | -13.163                                      | 4.980                          | 23.124                                       |
| D - B             | -3.480                                       | 15.004                         | 33.489                                       |
| A - C             | -24.006                                      | -5.863                         | 12.281                                       |
| A - D             | -23.124                                      | -4.980                         | 13.163                                       |
| A - B             | -9.009                                       | 10.024                         | 29.057                                       |
| B - C             | -34.371                                      | -15.887                        | 2.598                                        |
| B - D             | -33.489                                      | -15.004                        | 3.480                                        |
| B - A             | -29.057                                      | -10.024                        | 9.009                                        |

DATA EVALUATION RECORD

1. **CHEMICAL:** Triadimefon (Bayleton).  
Shaughnessey No. 109901.
2. **TEST MATERIAL:** Triadimefon (Technical Bayleton); CAS No. 43121-43-3; Batch No. 48580; 95% purity; white to tan crystals.
3. **STUDY TYPE:** 71-4. Avian Reproduction Study.  
Species Tested: Mallard duck (*Anas platyrhynchos*).
4. **CITATION:** Stafford, T.R. 1992. Technical Bayleton: A One Generation Reproduction Study with Mallard Ducks. Study performed by Miles Inc., Stilwell Kansas. Study No. BL740801. Submitted by Miles Inc., Kansas City, MO. EPA MRID No. 423423-02.
5. **REVIEWED BY:**  
  
Dennis J. McLane, Wildlife Biologist      Signature:   
Section 1, Ecological Effect Branch  
Environmental Fate and Effects Division Date: 4-13-93
6. **APPROVED BY:**  
  
Les Touart, Section Chief      Signature:   
Section 1, Ecological Effect Branch  
Environmental Fate and Effects Division Date: 4-15-93
7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study. Mean measured dietary concentrations of triadimefon at 46, 185, and 780 ppm a.i. had no effects upon mortality, behavior, or reproductive performance of mallard ducks during the study. The NOEC was 780 ppm a.i. mean measured concentration.
8. **RECOMMENDATIONS:** N/A
9. **BACKGROUND:** On 9-9-82 Rieder reviewed a quail reproduction study which showed effects in eggs cracked, fertile eggs, viable embryos, hatchling, and 14 day old survivors at 100 ppm making the 20 ppm the NOEL. This is a "Core" study. The mallard study reviewed on 9-13-82 showed no effects at the highest level tested, but had poor reproductive success in

## DATA EVALUATION RECORD

1. **CHEMICAL:** Triadimefon (Bayleton).  
Shaughnessey No. 109901.
2. **TEST MATERIAL:** Triadimefon (Technical Bayleton); CAS No. 43121-43-3; Batch No. 48580; 95% purity; white to tan crystals.
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5. **REVIEWED BY:**  
  
Carolyn F. Poppell, Sc.M.  
Senior Scientist  
KBN Engineering and  
Applied Sciences, Inc.  
  
Signature: P. Kosalwat  
for CFP  
Date: 10/13/92
6. **APPROVED BY:**  
  
Pim Kosalwat, Ph.D.  
Senior Scientist  
KBN Engineering and  
Applied Sciences, Inc.  
  
Signature: P. Kosalwat  
Date: 10/13/92  
  
Henry T. Craven, M.S.  
Supervisor, EEB/EFED  
USEPA  
  
Signature:  
Date:
7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study. Mean measured dietary concentrations of Bayleton at 46, 185, and 780 ppm a.i. had no effects upon mortality, behavior, or reproductive performance of mallard ducks during the study. The NOEC was 780 ppm a.i. mean measured concentration.
8. **RECOMMENDATIONS:** N/A.
9. **BACKGROUND:**

the controls. Due to the poor control performance the study was "supplemental".

10. DISCUSSION OF INDIVIDUAL TESTS: N/A.

11. MATERIALS AND METHODS:

A. Test Animals: Pen-reared, unmated mallard ducks (*Anas platyrhynchos*) were purchased from Whistling Wings Inc., Hanover, Illinois. The birds were approximately 20 weeks of age at study initiation, and were acclimated to the laboratory environment for a minimum of 14 days. All birds were from the same hatch, and phenotypically indistinguishable from wild birds. At test initiation, all birds were examined for physical injuries and general health. Birds that were injured or did not appear healthy were excluded from the study.

B. Dose/Diet Preparation/Food Consumption: Diets were prepared by dissolving the test compound in corn oil and acetone, and mixing with feed. Diets were prepared weekly and stored in a freezer until used. The control diet contained an amount of the solvent (acetone) and carrier (corn oil) equal to that in the treated diets. The acetone subsequently evaporated from the test diet. Based on known toxicity data, nominal test concentrations of technical triadimefon used in the study were 50, 200, and 800 parts per million (ppm) of active ingredient (a.i.). Each of the four groups of birds were fed the appropriate diet from test initiation until terminal sacrifice.

Basal diet for adult birds was formulated by Agway, Inc. Offspring were fed Teklad Duck Starter. The composition of these diets were presented in the report. The test substance was not mixed into the diet of the offspring. Food and water were supplied *ad libitum* during acclimation and during the test.

Samples of control and treated diets were collected immediately after mixing and frozen. Samples taken on weeks 1, 5, 10, 15, and 20 were analyzed for triadimefon diet concentration. Homogeneity testing was performed on the first feed mixture from the 50 and 800 ppm diet levels. The stability of test material in the diet was determined by analysis of samples from feeders on odd-numbered days during the first week of the study. Samples were analyzed using gas chromatography by the Miles Inc. Environmental Fate Analytical Laboratory.

- C. **Design:** The birds were randomly distributed into four groups as follows:

| Triadimefon Nominal<br>Concentration | Number<br>of Pens | <u>Birds Per Pen</u> |         |
|--------------------------------------|-------------------|----------------------|---------|
|                                      |                   | Males                | Females |
| Control (0 ppm)                      | 15                | 1                    | 1       |
| 50 ppm                               | 15                | 1                    | 1       |
| 200 ppm                              | 15                | 1                    | 1       |
| 800 ppm                              | 15                | 1                    | 1       |

Treatment levels were based upon known toxicity data. Adult birds were identified by individual leg bands. The primary phases of the study and their approximate durations were as follows:

1. Acclimation - 2 weeks
2. Pre-photostimulation - 8 weeks
3. Pre-egg laying (with photostimulation) - 2 weeks
4. Egg laying - 10 weeks
5. Post-adult sacrifice (final incubation, hatching, 14-day offspring rearing period) - 6 weeks.

- D. **Pen Facilities:** Adult birds were housed in pens constructed of stainless steel wire grid and sheeting. The pens measured approximately 80 x 60 x 50 cm with sloping floors. The average temperature in the adult study room was 72°F (22°C) with an average relative humidity of 50%.

The photoperiod during the first 8 weeks of the study was 7 hours of light per day. The photoperiod was then increased to 17 hours of light per day for the duration of the study. Throughout the study, the birds received a minimum of 6 foot-candles of illumination. A 40-minute "dawn/dusk" cycle was used in light/dark transition.

- E. **Adult Observations/Gross Pathology:** Adult birds were observed at least once daily throughout the study for signs of toxicity, injuries, or illness. Mortalities occurring prior to terminal adult sacrifice were recorded and necropsied. Adult body weights were measured at study initiation, weekly through week 8, and at terminal sacrifice (week 20). Feed consumption was measured by cage weekly throughout the adult phase of the study.
- F. **Eggs/Eggshell Thickness:** Eggs were collected twice daily, labeled according to pen of origin, and washed with chlorine-based detergent and germicidal soap to

prevent pathogen contamination. The eggs were then stored at 60°F (15.6°C) with a relative humidity of 50%. Eggs were removed from the egg cooler weekly and candled for shell cracks. Cracked eggs were recorded and discarded. Eggs not cracked or used for eggshell thickness measurements were placed in an incubator maintained at 99.5°F (37.5°C) with a relative humidity of approximately 55%. All eggs were rotated automatically every hour while in the incubator. Eggs were candled again on day 14 of incubation to determine fertility and embryo viability and on day 21 to determine embryo survival.

Eggs were collected every other week for eggshell strength and thickness measurements. Eggshell strength measurements were taken at three points around the equator. Eggs were then opened, the contents removed, the shell washed, and allowed to air dry for a minimum of 48 hours at room temperature. The average thickness of the dried shell plus membrane was determined by measuring (to the nearest 0.01 mm) three points around the equator of the egg using a micrometer.

- G. **Hatchlings:** Hatchlings were removed from the hatcher on days 27 and 28 of incubation, banded, weighed, and housed according to week of hatch and parental treatment group. Hatchlings were identified by numbered wing bands and placed in batteries of brooding pens from the time of hatch through day 14 post-hatch. Each pen measured 90 x 72 x 24 cm, and was constructed of galvanized wire mesh and sheeting. Temperatures in the brooding compartment were maintained at 100°F (37.8°C). The photoperiod was maintained at 12 hours of light per day. Hatchlings were fed untreated diet. Hatchling body weights were measured and recorded at hatch and on day 14. Feed consumption was not monitored.

Hatchlings were observed twice daily throughout the 14-day period for signs of toxicity, injuries or illness. Mortalities occurring prior to the end of the 14-day period were recorded and discarded. Hatchlings surviving to day 14 were sacrificed, weighed, and discarded.

- H. **Statistics:** Prior to statistical analysis, all percentage data were transformed using a square-root arcsine transformation. Bartlett's test or Levene's test of equal variance was performed on each study parameter to determine if treatment groups had unequal variances. If variances were not determined to be

unequal, subsequent analyses were conducted using parametric techniques. If unequal variances were detected, non-parametric procedures were used. Parametric procedures included a standard one-way analysis of variance. If ANOVA indicated treatment groups were significantly different from controls, the mean of the treatment groups were compared to control means using a one-tailed Dunnett's test. If non-parametric procedures were required, the Kruskal-Wallis or Dunn's Summed Rank test were used.

Each of the following parameters was analyzed statistically:

|                            |                       |
|----------------------------|-----------------------|
| Adult Body Weight          | Hatchling Body Weight |
| Adult Feed Consumption     | 14-Day Old Survivors  |
| Eggs Laid per Hen          | per Hen               |
| Eggs Cracked of Eggs Laid  | 14-Day Old Survivors  |
| Viable Embryos of Eggs Set | of Hatchlings         |
| Live 3-Week Embryos of     | Survivor Body Weight  |
| Viable Embryos             | Eggshell Strength     |
| Hatchlings per Hen         | Eggshell Thickness    |
| Hatchlings of 3-Week       | Hatchlings of Viable  |
| Embryos                    | Embryos               |

## 12. REPORTED RESULTS

- A. Diet Analysis: Homogeneity testing indicated that the test material was thoroughly mixed into the diet (coefficients of variance of  $\leq 11\%$ ). The average measured concentrations were 98 and 95% of the 50- and 800-ppm nominal values, respectively. The test material was determined to be stable in the diet when stored at room temperature for 7 days. Mean measured concentrations were 75%, 96%, and 86% of nominal concentrations for the 50-, 200-, and 800-ppm diets, respectively, after storage for 7 days at room temperature. Mean measured diet concentrations during the 20-week exposure period are shown in Table 1 (attached).
- B. Mortality and Behavioral Reactions: Only one mortality occurred during the study. One male in the 185 ppm a.i. treatment group died from injuries incurred while trying to free his head from the cage wire. No compound- or treatment-related adult mortality occurred in any test group during the course of the study. Occurrences of feather loss and lacerations were observed, but were attributed to normal laboratory pen housing. No overt

signs of intoxication were observed during the study in any test group.

*Post-mortem* observations revealed anomalies, although they occurred in a small number of birds and no dose-response was indicated (Table 4, attached). The authors concluded that observations were not treatment-related.

- C. Adult Body Weight and Food Consumption: There were no apparent treatment-related effects upon adult body weight at any of the concentrations tested (Table 2, attached). There was a statistically significant decrease in feed consumption during weeks 5 and 14 in the 185 ppm a.i. treatment group (Table 3, attached). The authors concluded that these findings were incidental, and not treatment-related.
- D. Reproduction: When compared to the control group, there were no statistically significant differences in reproductive parameters at any concentration tested (Tables 5, 6, and 7, attached).
- E. Egg Shell Thickness: There were no significant differences in the overall mean eggshell thickness and strengths of control eggs compared to treatment eggs (Table 9, attached).
- F. Offspring Body Weight: The overall mean hatch weight and the overall 14-day survivor weights were not significantly lower for birds in treatment groups when compared to controls (Table 7, attached). Mean hatch weight for hatchlings in the 185 ppm group was significantly higher than controls. The authors concluded that this difference was not treatment-related due to the lack of a distinct dose-response relationship.

13. STUDY AUTHOR'S CONCLUSIONS/QUALITY ASSURANCE MEASURES:

There were no apparent effects on adult ducks fed triadimefon-treated diets. Adult body weight data showed no significant differences between control birds and birds treated with technical triadimefon. Feed consumption data did not demonstrate a compound- or treatment-related effect. No clinical signs of toxicity were observed and no compound- or treatment-related mortality occurred in any dietary level. No apparent effects occurred in any of the monitored reproductive parameters. The LOEC for mallard ducks is greater than 780 ppm a.i. of triadimefon.

The report stated that the study was conducted in conformance with Good Laboratory Practice regulations (40 CFR Part 160). Quality assurance audits were conducted during the study and the final report was signed by a Quality Assurance Officer for Miles Inc.

**14. REVIEWER'S DISCUSSION AND INTERPRETATION OF STUDY RESULTS:**

- A. Test Procedure:** The test procedures were in accordance with Subdivision E - Hazard Evaluation: Wildlife and Aquatic Organisms, ASTM, and SEP guidelines except for the following deviations:

Behavioral observations of offspring were not reported.

Observations on food palatability were not reported.

- B. Statistical Analysis:** Statistical analyses of reproductive parameters were performed by the reviewer using analysis of variance (ANOVA) arcsine square-root transformation of the ratio data. The comparison between control data and data from each treatment level was made using multiple comparison test, Bonferroni. Printouts are attached.

Two parameters show statistical significance. eggs cracked, and female body weight. However, there is not a dose-response relationship. The Dunnett's Test indicates that the control and the 185 ppm level are different but the highest (780 ppm) and lowest (46 ppm) levels are not. For the female weight the 46 ppm level is different from the 780 ppm level and no differences were found between the control and the treatment levels. Bonferroni test was used for female weight because of the unequal n. All levels were 15 except 185 ppm level it was 14.

In addition to these items "Table 6. Reproductive Success Data for Mallard Fed Triadimefon" has a calculations for Viable (Fertile) of Eggs Set (%) several wrong values. Attached is EEB's version of the same with the reported values corrected values. All printouts are attached.

- C. Discussion/Results:** Chemical analyses of diet samples show that measured concentrations of triadimefon were similar to nominal concentrations. All measured values were within 9% of nominal values. Homogeneity and stability data indicate that the method of diet preparation achieved a homogeneous mix and triadimefon was stable in the diet.

The statistical significant revealed did not indicate that the reproductive parameters for treatment were different for those of the birds on the controls

This study is scientifically sound and fulfills the guideline requirements for an avian reproduction study.

**D. Adequacy of the Study:**

(1) Classification: Core.

(2) Rationale: N/A.

(3) Repairability: N/A.

15. COMPLETION OF ONE-LINER: Yes; August 10, 1992.

RIN 5710-93

TRIADMEFON EEB REVIEW

Page \_\_\_\_\_ is not included in this copy.

Pages 56 through 64 are not included.

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The material not included contains the following type of information:

- ☐ Identity of product inert ingredients.
- ☐ Identity of product impurities.
- ☐ Description of the product manufacturing process.
- ☐ Description of quality control procedures.
- ☐ Identity of the source of product ingredients.
- ☐ Sales or other commercial/financial information.
- ☐ A draft product label.
- ☐ The product confidential statement of formula.
- ☐ Information about a pending registration action.
- ☒ FIFRA registration data.
- ☐ The document is a duplicate of page(s) \_\_\_\_\_.
- ☐ The document is not responsive to the request.

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**8:15 Wednesday, March 31, 1993**

| O<br>B<br>S<br>T | E<br>L | E<br>C<br>S | E<br>V<br>E | L<br>E<br>H | H<br>S | T<br>H<br>I<br>C<br>K | S                     |                       |             |                  | P<br>R<br>E<br>M | P<br>O<br>S<br>T<br>M | P<br>R<br>E<br>F | P<br>O<br>S<br>T<br>F |      |
|------------------|--------|-------------|-------------|-------------|--------|-----------------------|-----------------------|-----------------------|-------------|------------------|------------------|-----------------------|------------------|-----------------------|------|
|                  |        |             |             |             |        |                       | H<br>A<br>T<br>W<br>T | U<br>R<br>V<br>W<br>T | F<br>O<br>D | P<br>R<br>E<br>M |                  |                       |                  |                       |      |
| 1                | 70     | 1           | 64          | 56          | 56     | 54                    | 52                    | 0.395                 | 39          | 194              | 27631.3          | 1306                  | 1405             | 1025                  | 1371 |
| 2                | 50     | 2           | 42          | 32          | 31     | 29                    | 29                    | 0.403                 | 44          | 215              | 37044.9          | 1204                  | 1279             | 1077                  | 1283 |
| 3                | 66     | 14          | 46          | 44          | 44     | 41                    | 41                    | 0.414                 | 49          | 287              | 36044.0          | 1303                  | 1364             | 1127                  | 1356 |
| 4                | 58     | 3           | 39          | 33          | 33     | 33                    | 33                    | 0.390                 | 37          | 198              | 27203.2          | 1300                  | 1156             | 1004                  | 1133 |
| 5                | 54     | 3           | 45          | 45          | 45     | 44                    | 44                    | 0.427                 | 43          | 218              | 35722.1          | 1280                  | 1289             | 994                   | 1245 |
| 6                | 74     | 0           | 68          | 59          | 58     | 58                    | 58                    | 0.393                 | 41          | 238              | 35947.9          | 1232                  | 1295             | 1039                  | 1578 |
| 7                | 77     | 0           | 65          | 63          | 63     | 58                    | 59                    | 0.412                 | 42          | 251              | 35504.0          | 1094                  | 1192             | 1070                  | 1362 |
| 8                | 62     | 0           | 57          | 55          | 55     | 53                    | 53                    | 0.414                 | 41          | 247              | 33766.2          | 1215                  | 1313             | 1055                  | 1321 |
| 9                | 84     | 6           | 72          | 69          | 69     | 68                    | 68                    | 0.364                 | 37          | 252              | 40706.1          | 1179                  | 1376             | 1075                  | 1418 |
| 0                | 75     | 2           | 68          | 66          | 66     | 63                    | 62                    | 0.401                 | 36          | 237              | 35767.2          | 1232                  | 1352             | 996                   | 1105 |
| 1                | 11     | 0           | 0           | 0           | 0      | 0                     | 0                     | 0.355                 | 35          | 235              | 30525.1          | 1195                  | 1478             | 1148                  | 1538 |
| 2                | 48     | 1           | 42          | 42          | 42     | 40                    | 40                    | 0.398                 | 40          | 230              | 35353.8          | 1319                  | 1412             | 1111                  | 1274 |
| 3                | 64     | 5           | 54          | 52          | 49     | 49                    | 49                    | 0.393                 | 41          | 229              | 33609.7          | 1147                  | 1326             | 965                   | 1166 |
| 4                | 73     | 3           | 65          | 63          | 63     | 62                    | 59                    | 0.403                 | 38          | 228              | 36678.9          | 1242                  | 1326             | 1087                  | 1177 |
| 5                | 15     | 0           | 0           | 0           | 0      | 0                     | 0                     | 0.387                 | 36          | 233              | 31720.7          | 1387                  | 1419             | 1156                  | 1299 |
| 6                | 71     | 4           | 61          | 61          | 60     | 57                    | 56                    | 0.407                 | 39          | 230              | 35932.2          | 1274                  | 1292             | 1108                  | 1219 |
| 7                | 51     | 2           | 8           | 45          | 45     | 42                    | 41                    | 0.393                 | 39          | 230              | 30450.4          | 1100                  | 1297             | 948                   | 1244 |
| 8                | 14     | 0           | 64          | 42          | 42     | 42                    | 40                    | 0.404                 | 40          | 256              | 32836.4          | 1267                  | 1613             | 988                   | 1261 |
| 9                | 70     | 0           | 72          | 72          | 72     | 71                    | 71                    | 0.409                 | 40          | 214              | 27692.1          | 1162                  | 1347             | 1024                  | 1185 |
| 0                | 8      | 3           | 35          | 35          | 35     | 34                    | 34                    | 0.405                 | 41          | 221              | 42426.3          | 1134                  | 1436             | 1150                  | 1250 |
| 1                | 39     | 0           | 35          | 35          | 35     | 34                    | 34                    | 0.405                 | 41          | 221              | 42426.3          | 1134                  | 1436             | 1150                  | 1250 |
| 2                | 87     | 2           | 64          | 56          | 54     | 52                    | 52                    | 0.404                 | 42          | 209              | 34378.0          | 1141                  | 1220             | 1037                  | 1137 |
| 3                | 56     | 1           | 64          | 56          | 54     | 52                    | 52                    | 0.404                 | 42          | 209              | 34378.0          | 1141                  | 1220             | 1037                  | 1137 |
| 4                | 57     | 4           | 48          | 47          | 46     | 43                    | 42                    | 0.413                 | 41          | 217              | 34258.9          | 1176                  | 1375             | 892                   | 1150 |
| 5                | 7      | 2           | 48          | 47          | 46     | 43                    | 42                    | 0.413                 | 41          | 217              | 34258.9          | 1176                  | 1375             | 892                   | 1150 |
| 6                | 34     | 6           | 64          | 62          | 61     | 52                    | 47                    | 0.373                 | 39          | 235              | 35461.7          | 1172                  | 1226             | 1142                  | 1290 |
| 7                | 76     | 6           | 55          | 53          | 52     | 50                    | 50                    | 0.405                 | 41          | 206              | 36006.8          | 1198                  | 1305             | 1087                  | 1301 |
| 8                | 64     | 0           | 59          | 58          | 57     | 55                    | 55                    | 0.401                 | 40          | 230              | 47361.0          | 1361                  | 1469             | 1053                  | 1454 |
| 9                | 64     | 2           | 65          | 60          | 60     | 56                    | 50                    | 0.401                 | 43          | 240              | 35687.9          | 1289                  | 1242             | 990                   | 1283 |
| 0                | 72     | 3           | 66          | 65          | 65     | 62                    | 57                    | 0.381                 | 43          | 231              | 39160.2          | 1187                  | 1774             | 1033                  | 1131 |
| 1                | 33     | 3           | 38          | 33          | 33     | 31                    | 31                    | 0.377                 | 44          | 191              | 33760.2          | 1135                  | 1774             | 913                   | 1268 |
| 2                | 63     | 2           | 55          | 55          | 55     | 54                    | 53                    | 0.393                 | 43          | 229              | 39259.0          | 1234                  | 1279             | 986                   | 1368 |
| 3                | 63     | 2           | 68          | 67          | 67     | 65                    | 64                    | 0.393                 | 43          | 229              | 39259.0          | 1234                  | 1279             | 986                   | 1368 |
| 4                | 45     | 3           | 47          | 47          | 47     | 46                    | 46                    | 0.347                 | 40          | 241              | 35131.5          | 1272                  | 1419             | 981                   | 1161 |
| 5                | 46     | 3           | 49          | 47          | 46     | 46                    | 46                    | 0.347                 | 40          | 241              | 35131.5          | 1272                  | 1419             | 981                   | 1161 |
| 6                | 46     | 4           | 66          | 65          | 65     | 57                    | 56                    | 0.427                 | 38          | 223              | 32723.2          | 1250                  | 1283             | 1017                  | 1283 |
| 7                | 46     | 4           | 66          | 65          | 65     | 57                    | 56                    | 0.427                 | 38          | 223              | 32723.2          | 1250                  | 1283             | 1017                  | 1283 |
| 8                | 69     | 3           | 55          | 55          | 55     | 54                    | 53                    | 0.384                 | 43          | 216              | 38494.3          | 1138                  | 1248             | 1118                  | 1458 |
| 9                | 69     | 3           | 55          | 55          | 55     | 54                    | 53                    | 0.384                 | 43          | 216              | 38494.3          | 1138                  | 1248             | 1118                  | 1458 |
| 0                | 64     | 0           | 64          | 61          | 61     | 60                    | 60                    | 0.419                 | 44          | 238              | 39989.3          | 1432                  | 1580             | 1095                  | 1511 |
| 1                | 64     | 0           | 64          | 61          | 61     | 60                    | 60                    | 0.419                 | 44          | 238              | 39989.3          | 1432                  | 1580             | 1095                  | 1511 |
| 2                | 55     | 3           | 62          | 55          | 54     | 54                    | 54                    | 0.346                 | 39          | 243              | 34030.6          | 1178                  | 1280             | 960                   | 1234 |
| 3                | 60     | 3           | 62          | 55          | 54     | 54                    | 54                    | 0.346                 | 39          | 243              | 34030.6          | 1178                  | 1280             | 960                   | 1234 |
| 4                | 60     | 5           | 60          | 50          | 50     | 58                    | 58                    | 0.373                 | 39          | 184              | 33329.5          | 1124                  | 1359             | 960                   | 1234 |
| 5                | 68     | 2           | 57          | 57          | 57     | 54                    | 54                    | 0.379                 | 41          | 229              | 39927.2          | 1147                  | 1409             | 1093                  | 1390 |
| 6                | 68     | 4           | 58          | 57          | 57     | 54                    | 54                    | 0.379                 | 41          | 229              | 39927.2          | 1147                  | 1409             | 1093                  | 1390 |
| 7                | 77     | 2           | 66          | 68          | 68     | 62                    | 61                    | 0.387                 | 43          | 259              | 32416.2          | 1354                  | 1551             | 1143                  | 1597 |
| 8                | 77     | 2           | 66          | 68          | 68     | 62                    | 61                    | 0.387                 | 43          | 259              | 32416.2          | 1354                  | 1551             | 1143                  | 1597 |
| 9                | 77     | 5           | 66          | 65          | 65     | 63                    | 63                    | 0.363                 | 38          | 207              | 36052.8          | 1277                  | 1248             | 1056                  | 1399 |
| 0                | 74     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 1                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 2                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 3                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 4                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 5                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 6                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 7                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 8                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |
| 9                | 59     | 6           | 68          | 66          | 66     | 62                    | 62                    | 0.363                 | 39          | 234              | 39735.0          | 1144                  | 1250             | 1051                  | 1372 |

SAS 8:15 Wednesday, March 31, 1993<sup>2</sup>

**TRT=A**

| N Obs | Variable | N  | Minimum    | Maximum    | Mean       |
|-------|----------|----|------------|------------|------------|
| 15    | EL       | 15 | 0          | 84.000000  | 57.000000  |
|       | EC       | 15 | 0          | 14.000000  | 3.733333   |
|       | ES       | 15 | 0          | 72.000000  | 48.466667  |
|       | VE       | 15 | 0          | 69.000000  | 45.266667  |
|       | LE       | 15 | 0          | 69.000000  | 45.200000  |
|       | NH       | 15 | 0          | 68.000000  | 43.666667  |
|       | HS       | 15 | 0          | 68.000000  | 43.133333  |
|       | THICK    | 13 | 0.364000   | 0.427000   | 0.400585   |
|       | HATWT    | 13 | 36.000000  | 49.000000  | 40.615846  |
|       | SURWT    | 13 | 194.000000 | 287.000000 | 232.615846 |
|       | FOOD     | 15 | 26678.90   | 40706.10   | 34391.36   |
|       | PREM     | 15 | 1087.00    | 1319.00    | 1222.33    |
|       | POSTM    | 15 | 1156.00    | 1478.00    | 1323.00    |
|       | PREF     | 15 | 965.000000 | 1148.00    | 1058.07    |
|       | POSTF    | 15 | 1105.00    | 1578.00    | 1315.40    |

| N Obs | Variable | Std Dev |
|-------|----------|---------|
|-------|----------|---------|

|    |        |             |
|----|--------|-------------|
| 15 | EL     | 25.2982213  |
|    | EC     | 4.4795833   |
|    | ES     | 22.5162375  |
|    | VE     | 21.5521516  |
|    | LE     | 21.5976189  |
|    | NH     | 20.8555120  |
|    | HS     | 20.6116010  |
|    | THICK  | 0.0152841   |
|    | HATWT  | 3.5009156   |
|    | SURVWT | 24.4626874  |
|    | FOOD   | 4581.22     |
|    | PREM   | 73.8034713  |
|    | POSTM  | 85.9925246  |
|    | PREF   | 53.3646039  |
|    | POSTF  | 136.4136566 |

**TRT=B**

| N  | Obs | Variable | N  | Minimum     | Maximum     | Mean        |
|----|-----|----------|----|-------------|-------------|-------------|
| 15 |     | EL       | 15 | 14.0000000  | 78.0000000  | 60.5333333  |
|    |     | EC       | 15 | 0           | 6.0000000   | 1.6666667   |
|    |     | ES       | 15 | 8.0000000   | 72.0000000  | 53.5333333  |
|    |     | VE       | 15 | 0           | 72.0000000  | 50.1666667  |
|    |     | LE       | 15 | 0           | 72.0000000  | 49.4666667  |
|    |     | NH       | 15 | 0           | 71.0000000  | 47.2000000  |
|    |     | HS       | 15 | 0           | 71.0000000  | 45.9333333  |
|    |     | THICK    | 15 | 0.3730000   | 0.4270000   | 0.4004667   |
|    |     | HATWT    | 14 | 36.0000000  | 43.0000000  | 40.3571429  |
|    |     | SURVWT   | 14 | 206.0000000 | 256.0000000 | 228.0714286 |
|    |     | FOOD     | 15 | 27692.10    | 47361.00    | 36066.19    |
|    |     | PREM     | 15 | 1100.00     | 1387.00     | 1216.87     |
|    |     | POSTM    | 15 | 1220.00     | 1778.00     | 1387.20     |
|    |     | PREF     | 15 | 892.0000000 | 1156.00     | 1048.80     |
|    |     | POSTF    | 15 | 1131.00     | 1454.00     | 1249.20     |

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|        |    |            |            |            |
|--------|----|------------|------------|------------|
| EC     | 15 | 0          | 12.000000  | 3.200000   |
| ES     | 15 | 39.000000  | 76.000000  | 59.400000  |
| VE     | 15 | 28.000000  | 68.000000  | 55.400000  |
| LE     | 15 | 28.000000  | 68.000000  | 55.266667  |
| NH     | 15 | 26.000000  | 63.000000  | 52.666667  |
| HS     | 15 | 26.000000  | 63.000000  | 52.266667  |
| THICK  | 15 | 0.346000   | 0.427000   | 0.388200   |
| HATWT  | 15 | 38.000000  | 44.000000  | 40.933333  |
| SURVWT | 15 | 184.000000 | 264.000000 | 228.800000 |
| FOOD   | 15 | 28553.30   | 43005.70   | 33916.53   |
| PREM   | 15 | 1124.00    | 1442.00    | 1242.33    |
| POSTM  | 15 | 1169.00    | 1583.00    | 1337.47    |
| PREF   | 15 | 960.000000 | 1172.00    | 1073.87    |
| POSTF  | 15 | 1193.00    | 1597.00    | 1361.80    |

| N Obs | Variable | Std Dev     |
|-------|----------|-------------|
| 15    | EL       | 10.3403970  |
|       | EC       | 3.0047581   |
|       | ES       | 9.3028413   |
|       | VE       | 12.0522671  |
|       | LE       | 12.2034343  |
|       | NH       | 11.6598620  |
|       | HS       | 11.7014448  |
|       | THICK    | 0.0241016   |
|       | HATWT    | 2.2509257   |
|       | SURVWT   | 22.0849011  |
|       | FOOD     | 4160.87     |
|       | PREM     | 101.7557767 |
|       | POSTM    | 108.7538943 |
|       | PREF     | 66.1598353  |
|       | POSTF    | 122.6022605 |

1. ANALYSIS OF EL DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

1. ANALYSIS OF EL DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F    |
|-----------------|----|----------------|---------|-----------|
| Model           | 3  | 1080.1833333   | 1.21    | 0.3136    |
| Error           | 56 | 16626.0000000  |         |           |
| Corrected Total | 59 | 17706.1833333  |         |           |
| R-Square        |    |                | C.V.    | RESP Mean |

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| N Obs | Variable | Std Dev     |
|-------|----------|-------------|
| 15    | EL       | 16.7965416  |
|       | EC       | 1.7994708   |
|       | ES       | 16.0617855  |
|       | VE       | 16.9514714  |
|       | LE       | 16.8220377  |
|       | NH       | 15.9427547  |
|       | HS       | 15.4016078  |
|       | THICK    | 0.0130322   |
|       | HATWT    | 1.7805420   |
|       | SURVWT   | 14.1609663  |
|       | FOOD     | 5179.08     |
|       | PREM     | 86.0463884  |
|       | POSTM    | 149.7632417 |
|       | PREF     | 75.0154270  |
|       | POSTF    | 88.2676126  |

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TRT=C

| N Obs | Variable | N  | Minimum    | Maximum    | Mean       |
|-------|----------|----|------------|------------|------------|
| 15    | EL       | 15 | 43.000000  | 83.000000  | 64.666667  |
|       | EC       | 15 | 0          | 19.000000  | 4.533333   |
|       | ES       | 15 | 35.000000  | 74.000000  | 54.733333  |
|       | VE       | 15 | 25.000000  | 73.000000  | 49.733333  |
|       | LE       | 15 | 24.000000  | 73.000000  | 49.400000  |
|       | NH       | 15 | 21.000000  | 72.000000  | 47.200000  |
|       | HS       | 15 | 19.000000  | 72.000000  | 46.400000  |
|       | THICK    | 15 | 0.347000   | 0.423000   | 0.384000   |
|       | HATWT    | 15 | 38.000000  | 49.000000  | 42.066667  |
|       | SURVWT   | 15 | 191.000000 | 263.000000 | 227.000000 |
|       | FOOD     | 15 | 27159.00   | 48800.90   | 35664.99   |
|       | PREM     | 15 | 1059.00    | 1366.00    | 1229.93    |
|       | POSTM    | 14 | 1149.00    | 1715.00    | 1323.36    |
|       | PREF     | 15 | 913.000000 | 1176.00    | 1047.73    |
|       | POSTF    | 14 | 1110.00    | 1406.00    | 1263.93    |

| N Obs | Variable | Std Dev     |
|-------|----------|-------------|
| 15    | EL       | 12.5906239  |
|       | EC       | 5.5015149   |
|       | ES       | 13.1554805  |
|       | VE       | 14.0482163  |
|       | LE       | 14.0702320  |
|       | NH       | 14.3138295  |
|       | HS       | 14.5886453  |
|       | THICK    | 0.0166003   |
|       | HATWT    | 2.4918916   |
|       | SURVWT   | 19.0787840  |
|       | FOOD     | 4856.16     |
|       | PREM     | 83.5262719  |
|       | POSTM    | 143.6226933 |
|       | PREF     | 82.7236938  |
|       | POSTF    | 93.7053190  |

TRT=D

| N Obs | Variable | N  | Minimum   | Maximum   | Mean      |
|-------|----------|----|-----------|-----------|-----------|
| 15    | EL       | 15 | 44.000000 | 84.000000 | 68.266667 |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 1080.18333333 | 1.21    | 0.3136 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 1080.18333333 | 1.21    | 0.3136 |

## 1. ANALYSIS OF EL DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 296.8929  
Critical Value of Dunnnett's T= 2.414  
Minimum Significant Difference= 15.191

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous           |                          |                        |
|----------------|------------------------|--------------------------|------------------------|
|                | Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |
| D - A          | -3.924                 | 11.267                   | 26.457                 |
| C - A          | -7.524                 | 7.667                    | 22.857                 |
| B - A          | -11.657                | 3.533                    | 18.724                 |

## 1. ANALYSIS OF EL DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWD.

Alpha= 0.05 df= 56 MSE= 296.8929  
Critical Value of T= 2.74  
Minimum Significant Difference= 17.209

Means with the same letter are not significantly different.

| Bon Grouping | Mean   | N  | TRT |
|--------------|--------|----|-----|
| A            | 68.267 | 15 | D   |
| A            | 64.667 | 15 | C   |
| A            | 60.533 | 15 | B   |
| A            | 57.000 | 15 | A   |

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 65.78333333    | 1.40    | 0.2520 |
| Error           | 56 | 876.40000000   |         |        |
| Corrected Total | 59 | 942.18333333   |         |        |

| R-Square | C.V.     | RESP Mean  |
|----------|----------|------------|
| 0.069820 | 120.4876 | 3.28333333 |

| Source | DF | Type I SS   | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 65.78333333 | 1.40    | 0.2520 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 65.78333333 | 1.40    | 0.2520 |

## 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 15.65  
Critical Value of Dunnnett's T= 2.414  
Minimum Significant Difference= 3.4877

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

Simultaneous Simultaneous

| TRT Comparison | Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |
|----------------|------------------------|--------------------------|------------------------|
| C - A          | -2.688                 | 0.800                    | 4.288                  |
| D - A          | -4.021                 | -0.533                   | 2.954                  |
| B - A          | -5.554                 | -2.067                   | 1.421                  |

### 2. ANALYSIS OF EC DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

#### General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGW.

Alpha= 0.05 df= 56 MSE= 15.65  
Critical Value of T= 2.74  
Minimum Significant Difference= 3.9511

Means with the same letter are not significantly different.

| Bon Grouping | Mean  | N  | TRT |
|--------------|-------|----|-----|
| A            | 4.533 | 15 | C   |
| A            | 3.733 | 15 | A   |
| A            | 3.200 | 15 | D   |
| A            | 1.667 | 15 | B   |

### 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

#### General Linear Models Procedure

Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

### 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

#### General Linear Models Procedure

Dependent Variable: RESP

| Source | DF | Sum of Squares | F Value | Pr > F |
|--------|----|----------------|---------|--------|
| Model  | 3  | 907.9333333    | 1.18    | 0.3250 |
| Error  | 56 | 14344.0000000  |         |        |

Corrected Total 59 15251.93333333

R-Square C.V. RESP Mean  
0.059529 29.61961 54.03333333

| Source | DF | Type I SS   | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 907.9333333 | 1.18    | 0.3250 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 907.9333333 | 1.18    | 0.3250 |

### 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

#### General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 256.1429  
Critical Value of Dunnett's T= 2.414  
Minimum Significant Difference= 14.11

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| D - A          | -3.176                              | 10.933                   | 25.043                              |
| C - A          | -7.843                              | 6.267                    | 20.376                              |
| B - A          | -9.043                              | 5.067                    | 19.176                              |

### 3. ANALYSIS OF ES DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

#### General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGW.

Alpha= 0.05 df= 56 MSE= 256.1429  
Critical Value of T= 2.74  
Minimum Significant Difference= 15.985

Means with the same letter are not significantly different.

| Bon Grouping | Mean   | N  | TRT |
|--------------|--------|----|-----|
| A            | 59.400 | 15 | D   |
| A            | 54.733 | 15 | C   |

A 53.533 15 B  
A 48.467 15 A  
A

#### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

#### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F      |
|-----------------|----|----------------|---------|-------------|
| Model           | 3  | 773.7833333    | 0.94    | 0.4263      |
| Error           | 56 | 15322.4000000  |         |             |
| Corrected Total | 59 | 16096.1833333  |         |             |
| R-Square        |    | C.V.           |         | RESP Mean   |
| 0.048072        |    | 33.00557       |         | 50.11666667 |

| Source | DF | Type I SS   | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 773.7833333 | 0.94    | 0.4263 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 773.7833333 | 0.94    | 0.4263 |

#### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 273.6143  
Critical Value of Dunnett's T= 2.414

Minimum Significant Difference= 14.583

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| D - A          | -4.450                              | 10.133                   | 24.716                              |
| B - A          | -9.783                              | 4.800                    | 19.383                              |
| C - A          | -10.116                             | 4.467                    | 19.050                              |

#### 4. ANALYSIS OF VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGM.

Alpha= 0.05 df= 56 MSE= 273.6143  
Critical Value of T= 2.74  
Minimum Significant Difference= 16.521

Means with the same letter are not significantly different.

| Bon Grouping | Mean   | N  | TRT |
|--------------|--------|----|-----|
| A            | 55.400 | 15 | D   |
| A            | 50.067 | 15 | B   |
| A            | 49.733 | 15 | C   |
| A            | 45.267 | 15 | A   |

#### 5. ANALYSIS OF LE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

#### 5. ANALYSIS OF LE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF       | Sum of Squares | F Value | Pr > F      |
|-----------------|----------|----------------|---------|-------------|
| Model           | 3        | 769.66666667   | 0.94    | 0.4294      |
| Error           | 56       | 15348.66666667 |         |             |
| Corrected Total | 59       | 16118.33333333 |         |             |
| R-Square        |          | C.V.           |         | RESP Mean   |
|                 | 0.047751 | 33.22166       |         | 49.83333333 |

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 769.66666667 | 0.94    | 0.4294 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 769.66666667 | 0.94    | 0.4294 |

## 5. ANALYSIS OF LE DATA

22

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 274.0833  
Critical Value of Dunnnett's T= 2.414  
Minimum Significant Difference= 14.596

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous |                          |                        |
|----------------|--------------|--------------------------|------------------------|
|                | Lower Limit  | Difference Between Means | Upper Confidence Limit |
| D - A          | -4.529       | 10.067                   | 24.662                 |
| B - A          | -10.329      | 4.267                    | 18.862                 |
| C - A          | -10.396      | 4.200                    | 18.796                 |

## 5. ANALYSIS OF LE DATA

23

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 56 MSE= 274.0833  
Critical Value of T= 2.74  
Minimum Significant Difference= 16.535

Means with the same letter are not significantly different.

| Mean   | N  | TRT |
|--------|----|-----|
| 55.267 | 15 | D   |
| 49.467 | 15 | B   |
| 49.400 | 15 | C   |
| 45.200 | 15 | A   |

## 6. ANALYSIS OF NH DATA

24

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

## 6. ANALYSIS OF NH DATA

25

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 621.51666667   | 0.80    | 0.4966 |
| Error           | 56 | 14419.46666667 |         |        |
| Corrected Total | 59 | 15040.98333333 |         |        |

| R-Square | C.V.     | RESP Mean   |
|----------|----------|-------------|
| 0.041322 | 33.65224 | 47.68333333 |

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 621.51666667 | 0.80    | 0.4966 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 621.51666667 | 0.80    | 0.4966 |

## 6. ANALYSIS OF NH DATA

26

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 257.4905  
Critical Value of Dunnett's T= 2.414  
Minimum Significant Difference= 14.147

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| D - A             | -5.147                       | 9.000                          | 23.147                       |
| C - A             | -10.613                      | 3.533                          | 17.680                       |
| B - A             | -10.613                      | 3.533                          | 17.680                       |

#### 6. ANALYSIS OF NH DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

##### General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 56 MSE= 257.4905  
Critical Value of T= 2.74  
Minimum Significant Difference= 16.027

Means with the same letter are not significantly different.

| Bon Grouping | Mean   | N  | TRT |
|--------------|--------|----|-----|
| A            | 52.667 | 15 | D   |
| A            |        |    |     |
| A            | 47.200 | 15 | C   |
| A            |        |    |     |
| A            | 47.200 | 15 | B   |
| A            |        |    |     |
| A            | 43.667 | 15 | A   |
| A            |        |    |     |

#### 7. ANALYSIS OF HS DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

##### General Linear Models Procedure

Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

#### 7. ANALYSIS OF HS DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

##### General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F      |
|-----------------|----|----------------|---------|-------------|
| Model           | 3  | 662.5333333    | 0.87    | 0.4606      |
| Error           | 56 | 14165.2000000  |         |             |
| Corrected Total | 59 | 14827.7333333  |         |             |
| R-Square        |    |                |         |             |
| C.V.            |    |                |         |             |
|                 |    |                |         | RESP Mean   |
|                 |    |                |         | 46.93333333 |

| Source | DF | Type I SS   | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 662.5333333 | 0.87    | 0.4606 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 662.5333333 | 0.87    | 0.4606 |

#### 7. ANALYSIS OF HS DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

##### General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 252.95  
Critical Value of Dunnett's T= 2.414  
Minimum Significant Difference= 14.022

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| D - A             | -4.888                       | 9.133                          | 23.155                       |
| C - A             | -10.755                      | 3.267                          | 17.288                       |
| B - A             | -11.222                      | 2.800                          | 16.822                       |

#### 7. ANALYSIS OF HS DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

##### General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWQ.

Alpha= 0.05 df= 56 MSE= 252.95

General Linear Models Procedure  
Dunnnett's T tests for variable: RESP  
NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.  
Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 0.000318  
Critical Value of Dunnnett's T= 2.409  
Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit |          | Difference Between Means |       | Simultaneous Upper Confidence Limit |       |
|----------------|-------------------------------------|----------|--------------------------|-------|-------------------------------------|-------|
|                | Lower                               | Upper    | Between                  | Means | Lower                               | Upper |
| B - A          | -0.01635                            | -0.00007 | -0.00007                 |       | 0.01621                             |       |
| D - A          | -0.02862                            | -0.01234 | -0.01234                 |       | 0.00394                             |       |
| C - A          | -0.03282                            | -0.01654 | -0.01654                 |       | -0.00026                            | ***   |

Bonferroni (Dunn) T tests for variable: RESP  
NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.  
Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 0.000318  
Critical Value of T= 2.73894  
Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit |          | Difference Between Means |       | Simultaneous Upper Confidence Limit |       |
|----------------|-------------------------------------|----------|--------------------------|-------|-------------------------------------|-------|
|                | Lower                               | Upper    | Between                  | Means | Lower                               | Upper |
| A - B          | -0.01844                            | 0.00007  | 0.00007                  |       | 0.01858                             |       |
| A - D          | -0.00617                            | 0.01234  | 0.01234                  |       | 0.03085                             |       |
| A - C          | -0.00197                            | 0.01654  | 0.01654                  |       | 0.03505                             |       |
| B - A          | -0.01858                            | -0.00007 | -0.00007                 |       | 0.01844                             |       |
| B - D          | -0.00557                            | 0.01227  | 0.01227                  |       | 0.03010                             |       |
| B - C          | -0.00137                            | 0.01647  | 0.01647                  |       | 0.03430                             |       |
| D - A          | -0.03085                            | -0.01234 | -0.01234                 |       | 0.00617                             |       |
| D - B          | -0.03010                            | -0.01227 | -0.01227                 |       | 0.00557                             |       |
| D - C          | -0.01363                            | 0.00420  | 0.00420                  |       | 0.02203                             |       |
| C - A          | -0.03505                            | -0.01654 | -0.01654                 |       | 0.00197                             |       |
| C - B          | -0.03430                            | -0.01647 | -0.01647                 |       | 0.00137                             |       |
| C - D          | -0.02203                            | -0.00420 | -0.00420                 |       | 0.01363                             |       |

Means with the same letter are not significantly different.

| Bon Grouping | Mean   | N  | TRT |
|--------------|--------|----|-----|
| A            | 52.267 | 15 | D   |
| A            | 46.400 | 15 | C   |
| A            | 45.933 | 15 | B   |
| A            | 43.133 | 15 | A   |

General Linear Models Procedure  
Class Level Information  
Class Levels Values  
TRT 4 A B C D

Number of observations in data set = 60

NOTE: Due to missing values, only 58 observations can be used in this analysis.

General Linear Models Procedure

| Dependent Variable: RESP |    |                |         |        | Pr > F     |  |
|--------------------------|----|----------------|---------|--------|------------|--|
| Source                   | DF | Sum of Squares | F Value |        |            |  |
| Model                    | 3  | 0.00313548     | 3.29    | 0.0275 |            |  |
| Error                    | 54 | 0.01717136     |         |        |            |  |
| Corrected Total          | 57 | 0.02030684     |         |        |            |  |
| R-Square                 |    |                |         |        | RESP Mean  |  |
| 0.154405                 |    |                |         |        | 0.39305172 |  |
| C.V.                     |    |                |         |        |            |  |
| 4.536865                 |    |                |         |        |            |  |
| Type I SS                |    |                |         |        | Pr > F     |  |
| Source                   | DF | Type I SS      | F Value |        |            |  |
| TRT                      | 3  | 0.00313548     | 3.29    | 0.0275 |            |  |
| Type III SS              |    |                |         |        | Pr > F     |  |
| Source                   | DF | Type III SS    | F Value |        |            |  |
| TRT                      | 3  | 0.00313548     | 3.29    | 0.0275 |            |  |

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8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 57 observations can be used in this analysis.

9. ANALYSIS OF HATCHLING WEIGHT DATA 37  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 24.82458068    | 1.27    | 0.2951 |
| Error           | 53 | 346.15787546   |         |        |
| Corrected Total | 56 | 370.98245614   |         |        |

| R-Square | C.V.     | RESP Mean   |
|----------|----------|-------------|
| 0.066916 | 6.230595 | 41.01754386 |

| Source | DF | Type I SS   | F Value | Pr > F |
|--------|----|-------------|---------|--------|
| TRT    | 3  | 24.82458068 | 1.27    | 0.2951 |
| Source | DF | Type III SS | F Value | Pr > F |
| TRT    | 3  | 24.82458068 | 1.27    | 0.2951 |

9. ANALYSIS OF HATCHLING WEIGHT DATA 38  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 6.531281  
Critical Value of Dunnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |

|   | - A | -0.884 | 1.451  | 3.787 |
|---|-----|--------|--------|-------|
| C | - A | -2.018 | 0.318  | 2.654 |
| D | - A | -2.632 | -0.258 | 2.116 |

9. ANALYSIS OF HATCHLING WEIGHT DATA 39  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 6.531281  
Critical Value of T= 2.74091

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |       | Upper<br>Confidence<br>Limit |
|-------------------|------------------------------|--------------------------------|-------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means |       |                              |
| C - D             | -1.424                       | 1.133                          | 3.691 |                              |
| C - A             | -1.203                       | 1.451                          | 4.106 |                              |
| C - B             | -0.894                       | 1.710                          | 4.313 |                              |
| D - C             | -3.691                       | -1.133                         | 1.424 |                              |
| D - A             | -2.536                       | 0.318                          | 2.972 |                              |
| D - B             | -2.027                       | 0.576                          | 3.179 |                              |
| A - C             | -4.106                       | -1.451                         | 1.203 |                              |
| A - D             | -2.972                       | -0.318                         | 2.536 |                              |
| A - B             | -2.440                       | 0.258                          | 2.956 |                              |
| B - C             | -4.313                       | -1.710                         | 0.894 |                              |
| B - D             | -3.179                       | -0.576                         | 2.027 |                              |
| B - A             | -2.956                       | -0.258                         | 2.440 |                              |

10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA 40  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 57 observations can be used in this analysis.

10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA 41  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 242.57696163   | 0.20    | 0.8977 |
| Error           | 53 | 21712.40549451 |         |        |
| Corrected Total | 56 | 21954.98245614 |         |        |

|          |          |              |
|----------|----------|--------------|
| R-Square | C.V.     | RESP Mean    |
| 0.011049 | 8.837863 | 229.01754386 |

| Source | DF | Type I SS    | F Value | Pr > F |
|--------|----|--------------|---------|--------|
| TRT    | 3  | 242.57696163 | 0.20    | 0.8977 |
| Source | DF | Type III SS  | F Value | Pr > F |
| TRT    | 3  | 242.57696163 | 0.20    | 0.8977 |

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA

42

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 409.668

Critical Value of Dunnnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| D - A          | -22.314                             | -3.815                   | 14.683                              |
| B - A          | -23.347                             | -4.544                   | 14.259                              |
| C - A          | -24.114                             | -5.615                   | 12.883                              |

## 10. ANALYSIS OF 14-DAY SURVIVOR WEIGHT DATA

43

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 409.668

Critical Value of T= 2.74091

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| A - D          | -17.207                             | 3.815                    | 24.837                              |
| A - B          | -16.824                             | 4.544                    | 25.912                              |
| A - C          | -15.407                             | 5.615                    | 26.637                              |
| D - A          | -24.837                             | -3.815                   | 17.207                              |
| D - B          | -19.887                             | 0.729                    | 21.344                              |
| D - C          | -18.457                             | 1.800                    | 22.057                              |
| B - A          | -25.912                             | -4.544                   | 16.824                              |
| B - D          | -21.344                             | -0.729                   | 19.887                              |
| B - C          | -19.544                             | 1.071                    | 21.687                              |
| C - A          | -26.637                             | -5.615                   | 15.407                              |
| C - D          | -22.057                             | -1.800                   | 18.457                              |
| C - B          | -21.687                             | -1.071                   | 19.544                              |

## 11. ANALYSIS OF FOOD CONSUMPTION DATA

44

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

## 11. ANALYSIS OF FOOD CONSUMPTION DATA

45

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESP

| Source          | DF | Sum of Squares  | F Value | Pr > F |
|-----------------|----|-----------------|---------|--------|
| Model           | 3  | 46843966.9138   | 0.70    | 0.5536 |
| Error           | 56 | 1241878027.9160 |         |        |
| Corrected Total | 59 | 1288721994.8298 |         |        |

|          |          |              |
|----------|----------|--------------|
| R-Square | C.V.     | RESP Mean    |
| 0.036349 | 13.45105 | 35009.768333 |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 46843966.9138 | 0.70    | 0.5536 |
| Source | DF | Type III SS   | F Value | Pr > F |

| TRT | 3 | 46843966.9138 | 0.70 | 0.5536 |
|-----|---|---------------|------|--------|
| TRT |   |               |      |        |

## 11. ANALYSIS OF FOOD CONSUMPTION DATA 46

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESP

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 56 MSE= 22176393  
Critical Value of Dunnnett's T= 2.414  
Minimum Significant Difference= 4151.7

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -2477                        | 1675                           | 5827                         |
| C - A             | -2878                        | 1274                           | 5425                         |
| D - A             | -4627                        | -475                           | 3677                         |

## 11. ANALYSIS OF FOOD CONSUMPTION DATA 47

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESP

NOTE: This test controls the type I experimentwise error rate, but generally has a higher type II error rate than REGWD.

Alpha= 0.05 df= 56 MSE= 22176393  
Critical Value of T= 2.74  
Minimum Significant Difference= 4703.3

Means with the same letter are not significantly different.

| Bon Grouping | Mean  | N  | TRT |
|--------------|-------|----|-----|
| A            | 36066 | 15 | B   |
| A            | 35665 | 15 | C   |
| A            | 34391 | 15 | A   |
| A            | 33917 | 15 | D   |

## 8. ANALYSIS OF ES/EL DATA 48

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

## Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 58 observations can be used in this analysis.

## 8. ANALYSIS OF ES/EL DATA 49

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight: WT

| Source          | DF       | Sum of Squares | F Value       | Pr > F |
|-----------------|----------|----------------|---------------|--------|
| Model           | 3        | 4875.78766668  | 1.04          | 0.3812 |
| Error           | 54       | 84175.47502887 |               |        |
| Corrected Total | 57       | 89051.26269555 |               |        |
| R-Square        |          | C.V.           | RESPONSE Mean |        |
|                 | 0.054753 | 57.51653       | 68.64410058   |        |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 4875.78766667 | 1.04    | 0.3812 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 4875.78766667 | 1.04    | 0.3812 |

## 8. ANALYSIS OF ES/EL DATA 50

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 1558.805  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -33.423                      | 2.622                          | 38.667                       |

D - A 1.340 37.385  
C - A -0.256 35.789  
-36.302

## 8. ANALYSIS OF ES/EL DATA 51

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 1558.805  
Critical Value of T= 2.73894

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |        | Difference       |                              | Simultaneous<br>Upper<br>Confidence<br>Limit |
|-------------------|------------------------------|--------|------------------|------------------------------|----------------------------------------------|
|                   | Lower<br>Confidence<br>Limit | Means  | Between<br>Means | Upper<br>Confidence<br>Limit |                                              |
| B - D             | -38.205                      | 1.281  | 40.768           | 40.768                       |                                              |
| B - A             | -38.355                      | 2.622  | 43.599           | 43.599                       |                                              |
| B - C             | -36.608                      | 2.878  | 42.365           | 42.365                       |                                              |
| D - B             | -40.768                      | -1.281 | 38.205           | 38.205                       |                                              |
| D - A             | -39.637                      | 1.340  | 42.517           | 42.517                       |                                              |
| D - C             | -37.890                      | 1.597  | 41.083           | 41.083                       |                                              |
| A - B             | -43.599                      | -2.622 | 38.355           | 38.355                       |                                              |
| A - D             | -42.517                      | -1.340 | 39.637           | 39.637                       |                                              |
| A - C             | -40.720                      | 0.256  | 41.233           | 41.233                       |                                              |
| C - B             | -42.365                      | -2.878 | 36.608           | 36.608                       |                                              |
| C - D             | -41.083                      | -1.597 | 37.890           | 37.890                       |                                              |
| C - A             | -41.233                      | -0.256 | 40.720           | 40.720                       |                                              |

## 9. ANALYSIS OF VE/ES DATA 52

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 58 observations can be used in this analysis.

## 9. ANALYSIS OF VE/ES DATA 53

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight: WT

| Source          | DF | Sum of Squares  | F Value | Pr > F |
|-----------------|----|-----------------|---------|--------|
| Model           | 3  | 3439.74290669   | 0.16    | 0.9239 |
| Error           | 54 | 391124.50459398 |         |        |
| Corrected Total | 57 | 394564.24750066 |         |        |

| R-Square | C.V.     | RESPONSE Mean |
|----------|----------|---------------|
| 0.008718 | 109.7830 | 77.52209456   |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 3439.74290670 | 0.16    | 0.9239 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 3439.74290670 | 0.16    | 0.9239 |

## 9. ANALYSIS OF VE/ES DATA 54

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 7243.046  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |        | Difference       |                              | Simultaneous<br>Upper<br>Confidence<br>Limit |
|-------------------|------------------------------|--------|------------------|------------------------------|----------------------------------------------|
|                   | Lower<br>Confidence<br>Limit | Means  | Between<br>Means | Upper<br>Confidence<br>Limit |                                              |
| B - A             | -75.505                      | 2.193  | 79.891           | 79.891                       |                                              |
| D - A             | -76.882                      | 0.816  | 78.514           | 78.514                       |                                              |
| C - A             | -78.256                      | -0.558 | 77.140           | 77.140                       |                                              |

## 9. ANALYSIS OF VE/ES DATA 55

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 7243.046  
Critical Value of T= 2.73894

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              |  | Difference<br>Between<br>Means | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|--|--------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |  |                                | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| B - D             | -83.739                      | 86.494                       |  | 1.377                          | 86.494                       |                              |
| B - A             | -86.136                      | 90.522                       |  | 2.193                          | 90.522                       |                              |
| B - C             | -82.365                      | 87.867                       |  | 2.751                          | 87.867                       |                              |
| D - B             | -86.494                      | 83.739                       |  | -1.377                         | 83.739                       |                              |
| D - A             | -87.513                      | 89.145                       |  | 0.816                          | 89.145                       |                              |
| D - C             | -83.743                      | 86.490                       |  | 1.374                          | 86.490                       |                              |
| A - B             | -90.522                      | 86.136                       |  | -2.193                         | 86.136                       |                              |
| A - D             | -89.145                      | 87.513                       |  | -0.816                         | 87.513                       |                              |
| A - C             | -87.771                      | 88.887                       |  | 0.558                          | 88.887                       |                              |
| C - B             | -87.867                      | 82.365                       |  | -2.751                         | 82.365                       |                              |
| C - D             | -86.490                      | 83.743                       |  | -1.374                         | 83.743                       |                              |
| C - A             | -88.887                      | 87.771                       |  | -0.558                         | 87.771                       |                              |

# 10. ANALYSIS OF LE/VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 57 observations can be used in this analysis.

# 10. ANALYSIS OF LE/VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight:

| Source          | DF | Sum of Squares | F Value       | Pr > F |
|-----------------|----|----------------|---------------|--------|
| Model           | 3  | 7239.99836329  | 3.60          | 0.0192 |
| Error           | 53 | 35484.19587578 |               |        |
| Corrected Total | 56 | 42724.19423907 |               |        |
| R-Square        |    | C.V.           | RESPONSE Mean |        |
| 0.169459        |    | 29.45609       | 87.84246673   |        |

| Source | DF | Type I SS | F Value | Pr > F |
|--------|----|-----------|---------|--------|
|--------|----|-----------|---------|--------|

| Source | DF | Type III SS   | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 7239.99836328 | 3.60    | 0.0192 |

# 10. ANALYSIS OF LE/VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 669.5131  
Critical Value of Dunnnett's T= 2.412

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              |  | Difference<br>Between<br>Means | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|--|--------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |  |                                | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| D - A             | -24.067                      | -0.419                       |  | -23.229                        | 23.229                       |                              |
| C - A             | -25.840                      | -2.192                       |  | -21.457                        | 21.457                       |                              |
| B - A             | -27.970                      | -3.933                       |  | -20.105                        | 20.105                       |                              |

# 10. ANALYSIS OF LE/VE DATA

\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 669.5131  
Critical Value of T= 2.74091

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              |  | Difference<br>Between<br>Means | Simultaneous                 |                              |
|-------------------|------------------------------|------------------------------|--|--------------------------------|------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |  |                                | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |
| A - D             | -26.455                      | 0.419                        |  | 27.293                         | 27.293                       |                              |
| A - C             | -24.683                      | 2.192                        |  | 29.066                         | 29.066                       |                              |
| A - B             | -23.583                      | 3.933                        |  | 31.249                         | 31.249                       |                              |
| D - A             | -27.293                      | -0.419                       |  | -26.455                        | 26.455                       |                              |
| D - C             | -24.124                      | -1.773                       |  | -27.669                        | 27.669                       |                              |
| D - B             | -22.841                      | -3.514                       |  | -29.869                        | 29.869                       |                              |
| C - A             | -29.066                      | -2.192                       |  | -24.683                        | 24.683                       |                              |
| C - D             | -21.669                      | -1.773                       |  | -24.124                        | 24.124                       |                              |
| C - B             | -24.614                      | -1.741                       |  | -28.096                        | 28.096                       |                              |

B - A -31.249 -3.933 23.383  
 B - D -29.869 -3.514 22.841  
 B - C -28.096 -1.741 24.614

## 11 ANALYSIS OF NH/LE DATA 60

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
 Class Level Information

Class Levels Values

TRT 4 A B C D

Number of observations in data set = 60

NOTE: Due to missing values, only 57 observations can be used in this analysis.

## 11 ANALYSIS OF NH/LE DATA 61

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
 Weight: WT

| Source          | DF | Sum of Squares | F Value       | Pr > F |
|-----------------|----|----------------|---------------|--------|
| Model           | 3  | 1612.68108312  | 0.30          | 0.8269 |
| Error           | 53 | 95700.05209786 |               |        |
| Corrected Total | 56 | 97312.73318099 |               |        |
| R-Square        |    | C.V.           | RESPONSE Mean |        |
| 0.016572        |    | 53.54530       | 79.35911416   |        |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 1612.68108312 | 0.30    | 0.8269 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 1612.68108312 | 0.30    | 0.8269 |

## 11 ANALYSIS OF NH/LE DATA 62

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 1805.661  
 Critical Value of Dunnnett's T= 2.412  
 Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| C - A          | -40.490                             | -1.653                   | 37.183                              |
| D - A          | -40.570                             | -1.734                   | 37.103                              |
| B - A          | -41.327                             | -1.852                   | 37.623                              |

## 11 ANALYSIS OF NH/LE DATA 63

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 53 MSE= 1805.661  
 Critical Value of T= 2.74091

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| A - C          | -42.481                             | 1.653                    | 45.787                              |
| A - D          | -42.400                             | 1.734                    | 45.868                              |
| A - B          | -43.008                             | 1.852                    | 46.712                              |
| C - A          | -45.787                             | -1.653                   | 42.481                              |
| C - D          | -42.448                             | 0.080                    | 42.609                              |
| C - B          | -43.083                             | 0.198                    | 43.480                              |
| D - A          | -45.868                             | -1.734                   | 42.400                              |
| D - C          | -42.609                             | -0.080                   | 42.448                              |
| D - B          | -43.163                             | 0.118                    | 43.400                              |
| B - A          | -46.712                             | -1.852                   | 43.008                              |
| B - C          | -43.480                             | -0.198                   | 43.083                              |
| B - D          | -43.400                             | -0.118                   | 43.163                              |

## 12 ANALYSIS OF NH/LE DATA 64

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
 Class Level Information

Class Levels Values

TRT 4 A B C D

NOTE: Due to missing values, only 58 observations can be used in this analysis.

12 ANALYSIS OF NH/EL DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
WT

| Source          | DF | Sum of Squares  | F Value | Pr > F |
|-----------------|----|-----------------|---------|--------|
| Model           | 3  | 5324.38782539   | 0.38    | 0.7700 |
| Error           | 54 | 254238.70165500 |         |        |
| Corrected Total | 57 | 259563.08948039 |         |        |

R-Square C.V. RESPONSE Mean  
0.020513 112.1457 61.18446277

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 5324.38782538 | 0.38    | 0.7700 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 5324.38782539 | 0.38    | 0.7700 |

12 ANALYSIS OF NH/EL DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 4708.124  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - A          | -61.815                             | 0.828                    | 63.472                              |
| D - A          | -62.221                             | 0.422                    | 63.065                              |
| C - A          | -64.860                             | -2.217                   | 60.426                              |

12 ANALYSIS OF NH/EL DATA  
\*\*\*\*\*

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8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 4708.124  
Critical Value of T= 2.73894

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| B - D          | -68.217                             | 0.407                    | 69.031                              |
| B - A          | -70.386                             | 0.828                    | 72.043                              |
| B - C          | -65.578                             | 3.045                    | 71.669                              |
| D - B          | -69.031                             | -0.407                   | 68.217                              |
| D - A          | -70.793                             | 0.422                    | 71.636                              |
| D - C          | -65.985                             | 2.639                    | 71.263                              |
| A - B          | -72.043                             | -0.828                   | 70.386                              |
| A - D          | -71.636                             | -0.422                   | 70.793                              |
| A - C          | -68.997                             | 2.217                    | 73.431                              |
| C - B          | -71.669                             | -3.045                   | 65.578                              |
| C - D          | -71.263                             | -2.639                   | 65.985                              |
| C - A          | -73.431                             | -2.217                   | 68.997                              |

17. ANALYSIS OF HS/NH DATA  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 56 observations can be used in this analysis.

17. ANALYSIS OF HS/NH DATA  
\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE  
WT

| Source | DF | Sum of Squares | F Value | Pr > F |
|--------|----|----------------|---------|--------|
| Model  | 3  | 3533.27308669  | 0.70    | 0.5534 |

|                 |    |                |          |  |               |  |  |
|-----------------|----|----------------|----------|--|---------------|--|--|
| Error           | 52 | 86872.88578063 |          |  |               |  |  |
| Corrected Total | 55 | 90406.15886732 |          |  |               |  |  |
| R-Square        |    |                | C.V.     |  | RESPONSE Mean |  |  |
| 0.039082        |    |                | 47.96979 |  | 85.20648250   |  |  |

|        |    |               |         |        |
|--------|----|---------------|---------|--------|
| Source | DF | Type I SS     | F Value | Pr > F |
| TRT    | 3  | 3533.27308669 | 0.70    | 0.5534 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 3533.27308669 | 0.70    | 0.5534 |

## 17. ANALYSIS OF HS/NH DATA

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\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 52 MSE= 1670.632  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| D - A             | -36.633                      | 1.497                          | 39.627                       |                              |                                |                              |
| C - A             | -39.017                      | -0.887                         | 37.244                       |                              |                                |                              |
| B - A             | -40.065                      | -1.334                         | 37.397                       |                              |                                |                              |

## 17. ANALYSIS OF HS/NH DATA

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\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 52 MSE= 1670.632  
Critical Value of T= 2.74295

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |

|       |         |        |        |
|-------|---------|--------|--------|
| D - A | -41.924 | 1.497  | 44.918 |
| D - C | -38.554 | 2.384  | 43.322 |
| D - B | -38.832 | 2.831  | 44.494 |
| A - D | -44.918 | -1.497 | 41.924 |
| A - C | -42.535 | 0.887  | 44.308 |
| A - B | -42.771 | 1.334  | 45.440 |
| C - D | -43.322 | -2.384 | 38.554 |
| C - A | -44.308 | -0.887 | 42.535 |
| C - B | -41.215 | 0.447  | 42.110 |
| B - D | -44.494 | -2.831 | 38.832 |
| B - A | -45.440 | -1.334 | 42.771 |
| B - C | -42.110 | -0.447 | 41.215 |

## 18. ANALYSIS OF EC/EL DATA

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\*\*\*\*\*  
8:15 Wednesday, March 31, 1993General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 58 observations can be used in this analysis.

## 18. ANALYSIS OF EC/EL DATA

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\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

## General Linear Models Procedure

Dependent Variable: RESPONSE  
Weight:

| Source          | DF | Sum of Squares | F Value | Pr > F |
|-----------------|----|----------------|---------|--------|
| Model           | 3  | 18087.5933679  | 1.61    | 0.1976 |
| Error           | 54 | 202126.7638323 |         |        |
| Corrected Total | 57 | 220214.3572002 |         |        |

| R-Square | C.V.     | RESPONSE Mean |
|----------|----------|---------------|
| 0.082136 | 555.3865 | 11.01589336   |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 18087.5933679 | 1.61    | 0.1976 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 18087.5933679 | 1.61    | 0.1976 |

18. ANALYSIS OF EC/EL DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

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## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 3743.088  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| C - A             | -55.400                      | 0.455                          | 56.311                       |
| D - A             | -57.532                      | -1.676                         | 54.179                       |
| B - A             | -61.060                      | -5.204                         | 50.654                       |

18. ANALYSIS OF EC/EL DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

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## General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 3743.088  
Critical Value of T= 2.73894

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| C - A             | -63.043                      | 0.455                          | 63.953                       |
| C - D             | -59.056                      | 2.132                          | 63.320                       |
| C - B             | -55.529                      | 5.660                          | 66.848                       |
| A - C             | -63.953                      | -0.455                         | 63.043                       |
| A - D             | -61.821                      | 1.676                          | 65.174                       |
| A - B             | -58.294                      | 5.204                          | 68.702                       |
| D - C             | -63.320                      | -2.132                         | 59.056                       |
| D - A             | -65.174                      | -1.676                         | 61.821                       |
| D - B             | -57.660                      | 3.528                          | 64.716                       |
| B - C             | -66.848                      | -5.660                         | 55.529                       |
| B - A             | -68.702                      | -5.204                         | 58.294                       |
| B - D             | -64.716                      | -3.528                         | 57.660                       |

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

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General Linear Models Procedure  
Class Level Information

Class Levels Values  
TRT 4 A B C D

Number of observations in data set = 60

NOTE: Due to missing values, only 58 observations can be used in this analysis.

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

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## General Linear Models Procedure

Dependent Variable: RESPONSE

Weight: WT

| Source          | DF | Sum of Squares  | F Value | Pr > F |
|-----------------|----|-----------------|---------|--------|
| Model           | 3  | 3514.51060279   | 0.20    | 0.8993 |
| Error           | 54 | 324248.59204171 |         |        |
| Corrected Total | 57 | 327763.10264450 |         |        |

R-Square C.V. RESPONSE Mean  
0.010723 108.2144 71.60724749

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 3514.51060279 | 0.20    | 0.8993 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 3514.51060279 | 0.20    | 0.8993 |

19. ANALYSIS OF NH/ES DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

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## General Linear Models Procedure

Dunnnett's T tests for variable: RESPONSE

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 6004.604  
Critical Value of Dunnnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

Simultaneous Simultaneous

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

| TRT Comparison | Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |
|----------------|------------------------|--------------------------|------------------------|
| D - A          | -72.163                | -1.418                   | 69.326                 |
| B - A          | -72.733                | -1.988                   | 68.756                 |
| C - A          | -73.699                | -2.954                   | 67.790                 |

## 19. ANALYSIS OF NH/ES DATA 79

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8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate but generally has a higher type II error rate than Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 6004.604  
Critical Value of T= 2.73894

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous           |                          | Simultaneous           |  |
|----------------|------------------------|--------------------------|------------------------|--|
|                | Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |  |
| A - D          | -79.006                | 1.418                    | 81.843                 |  |
| A - B          | -78.436                | 1.988                    | 82.413                 |  |
| A - C          | -77.470                | 2.954                    | 83.378                 |  |
| D - A          | -81.843                | -1.418                   | 79.006                 |  |
| D - B          | -76.929                | 0.570                    | 78.069                 |  |
| D - C          | -75.963                | 1.536                    | 79.034                 |  |
| B - A          | -82.413                | -1.988                   | 78.436                 |  |
| B - D          | -78.069                | -0.570                   | 76.929                 |  |
| B - C          | -76.533                | 0.966                    | 78.464                 |  |
| C - A          | -83.378                | -2.954                   | 77.470                 |  |
| C - D          | -79.034                | -1.536                   | 75.963                 |  |
| C - B          | -78.464                | -0.966                   | 76.533                 |  |

## 20. ANALYSIS OF HS/ES DATA 80

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8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 58 observations can be used in this analysis.

20. ANALYSIS OF HS/ES DATA 81

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dependent Variable: RESPONSE

Weight:

| Source          | DF | Sum of Squares  | F Value | Pr > F |
|-----------------|----|-----------------|---------|--------|
| Model           | 3  | 3664.79938921   | 0.21    | 0.8873 |
| Error           | 54 | 310497.01347793 |         |        |
| Corrected Total | 57 | 314161.81286714 |         |        |

R-Square C.V. RESPONSE Mean  
0.011665 108.1330 70.12512508

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 3664.79938921 | 0.21    | 0.8873 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 3664.79938921 | 0.21    | 0.8873 |

## 20. ANALYSIS OF HS/ES DATA 82

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnett's T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 5749.945  
Critical Value of Dunnett's T= 2.409

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT Comparison | Simultaneous           |                          | Simultaneous           |  |
|----------------|------------------------|--------------------------|------------------------|--|
|                | Lower Confidence Limit | Difference Between Means | Upper Confidence Limit |  |
| D - A          | -69.423                | -0.195                   | 69.033                 |  |
| B - A          | -71.225                | -1.997                   | 67.231                 |  |
| C - A          | -71.644                | -2.416                   | 66.812                 |  |

## 20. ANALYSIS OF HS/ES DATA 83

\*\*\*\*\*

8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: RESPONSE

NOTE: This test controls the type I experimentwise error rate

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File:b:baymd.out Page 37  
 but generally has a higher type II error rate than  
 Tukey's for all pairwise comparisons,  
 Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 5749.945  
 Critical Value of T= 2.73894  
 Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| A - D             | -78.505                      | 0.195                          | 78.895                       |
| A - B             | -76.703                      | 1.997                          | 80.697                       |
| A - C             | -76.285                      | 2.416                          | 81.116                       |
| D - A             | -78.895                      | -0.195                         | 78.505                       |
| D - B             | -74.035                      | 1.802                          | 77.639                       |
| D - C             | -73.617                      | 2.220                          | 78.058                       |
| B - A             | -80.697                      | -1.997                         | 76.703                       |
| B - D             | -77.639                      | -1.802                         | 74.035                       |
| B - C             | -75.419                      | 0.418                          | 76.256                       |
| C - A             | -81.116                      | -2.416                         | 76.285                       |
| C - D             | -78.058                      | -2.220                         | 73.617                       |
| C - B             | -76.256                      | -0.418                         | 75.419                       |

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 84  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
 Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 59 observations can be used in this analysis.

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 85  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993

General Linear Models Procedure

| Dependent Variable: POSTM |          |                |         |              |
|---------------------------|----------|----------------|---------|--------------|
| Source                    | DF       | Sum of Squares | F Value | Pr > F       |
| Model                     | 4        | 177876.417057  | 3.36    | 0.0158       |
| Error                     | 54       | 714562.159214  |         |              |
| Corrected Total           | 58       | 892438.576271  |         |              |
| R-Square                  |          |                | C.V.    | POSTM Mean   |
|                           | 0.199315 | 8.564849       |         | 1343.0847458 |

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| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 41165.228652  | 1.04    | 0.3836 |
| PREM   | 1  | 136711.188405 | 10.33   | 0.0022 |
| Source | DF | Type III SS   | F Value | Pr > F |
| TRT    | 3  | 56030.196598  | 1.41    | 0.2495 |
| PREM   | 1  | 136711.188405 | 10.33   | 0.0022 |

| Parameter | Estimate    | T for H0: Parameter=0 | Pr >  T | Std Error of Estimate |
|-----------|-------------|-----------------------|---------|-----------------------|
| INTERCEPT | 603.0906609 | 2.62                  | 0.0115  | 230.39794961          |
| TRT A     | -2.6441391  | -0.06                 | 0.9502  | 42.16491340           |
| TRT B     | 64.7873518  | 1.55                  | 0.1311  | 42.26448258           |
| TRT C     | -13.9969283 | -0.33                 | 0.7446  | 42.74768735           |
| TRT D     | 0.0000000   | 0.00                  | 1.0000  | 42.74768735           |
| PREM      | 0.5911264   | 3.21                  | 0.0022  | 0.18390835            |

NOTE: The X'X matrix has been found to be singular and a generalized inverse was used to solve the normal equations. Estimates followed by the letter 'B' are biased, and are not unique estimators of the parameters.

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 86  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
 Least Squares Means  
 Coefficients for TRT Least Square Means

| TRT       | A            | B            | C            |
|-----------|--------------|--------------|--------------|
| Effect    | Coefficients |              |              |
| INTERCEPT | 1            | 1            | 1            |
| TRT A     | 1            | 0            | 0            |
| TRT B     | 0            | 1            | 0            |
| TRT C     | 0            | 0            | 1            |
| TRT D     | 0            | 0            | 0            |
| PREM      | 1230.7288136 | 1230.7288136 | 1230.7288136 |
| TRT       | D            |              |              |
| Effect    | Coefficients |              |              |
| INTERCEPT | 1            |              |              |
| TRT A     | 0            |              |              |
| TRT B     | 0            |              |              |
| TRT C     | 0            |              |              |
| TRT D     | 1            |              |              |
| PREM      | 1230.7288136 |              |              |

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 21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 87  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993  
 General Linear Models Procedure  
 Least Squares Means

| TRT | POSTM<br>LSMEAN | Std Err<br>LSMEAN | Pr >  T <br>HO:LSMEAN=0 | LSMEAN<br>Number |
|-----|-----------------|-------------------|-------------------------|------------------|
| A   | 1327.96279      | 29.74154          | 0.0001                  | 1                |
| B   | 1395.39428      | 29.81065          | 0.0001                  | 2                |
| C   | 1316.61000      | 30.81549          | 0.0001                  | 3                |
| D   | 1330.60693      | 29.77802          | 0.0001                  | 4                |

Pr > |T| HO: LSMEAN(I)=LSMEAN(J)

| i/j | 1      | 2      | 3      | 4      |
|-----|--------|--------|--------|--------|
| 1   |        | 0.1144 | 0.7923 | 0.9502 |
| 2   | 0.1144 |        | 0.0724 | 0.1311 |
| 3   | 0.7923 | 0.0724 |        | 0.7446 |
| 4   | 0.9502 | 0.1311 | 0.7446 |        |

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 88  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993  
 General Linear Models Procedure

Dunnnett's T tests for variable: POSTM

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 13232.63  
 Critical Value of Dunnnett's T= 2.418

Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - A             | -37.36                       | 64.20                          | 165.76                       | -37.36                       | 64.20                          | 165.76                       |
| D - A             | -87.10                       | 14.47                          | 116.03                       | -87.10                       | 14.47                          | 116.03                       |
| C - A             | -103.00                      | 0.36                           | 103.72                       | -103.00                      | 0.36                           | 103.72                       |

21. COVARIATE ANALYSIS OF MALE BODY WEIGHT DATA 89  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993  
 General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: POSTM

NOTE: This test controls the type I experimentwise error rate

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File:b:baymd.out Page 40  
 but generally has a higher type II error rate than  
 Tukey's for all pairwise comparisons.  
 Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 13232.63  
 Critical Value of T= 2.73894  
 Comparisons significant at the 0.05 level are indicated by \*\*\*\*.

| TRT<br>Comparison | Simultaneous                 |                                |                              | Simultaneous                 |                                |                              |
|-------------------|------------------------------|--------------------------------|------------------------------|------------------------------|--------------------------------|------------------------------|
|                   | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit | Lower<br>Confidence<br>Limit | Difference<br>Between<br>Means | Upper<br>Confidence<br>Limit |
| B - D             | -85.31                       | 49.73                          | 164.78                       | -85.31                       | 49.73                          | 164.78                       |
| B - C             | -53.24                       | 63.84                          | 180.93                       | -53.24                       | 63.84                          | 180.93                       |
| B - A             | -50.85                       | 64.20                          | 179.25                       | -50.85                       | 64.20                          | 179.25                       |
| D - B             | -164.78                      | -49.73                         | 65.31                        | -164.78                      | -49.73                         | 65.31                        |
| D - C             | -102.97                      | 14.11                          | 131.19                       | -102.97                      | 14.11                          | 131.19                       |
| D - A             | -100.58                      | 14.47                          | 129.51                       | -100.58                      | 14.47                          | 129.51                       |
| C - B             | -180.93                      | -63.84                         | 53.24                        | -180.93                      | -63.84                         | 53.24                        |
| C - D             | -131.19                      | -14.11                         | 102.97                       | -131.19                      | -14.11                         | 102.97                       |
| C - A             | -116.73                      | 0.36                           | 117.44                       | -116.73                      | 0.36                           | 117.44                       |
| A - B             | -119.25                      | -64.20                         | 50.85                        | -119.25                      | -64.20                         | 50.85                        |
| A - D             | -129.51                      | -14.47                         | 100.58                       | -129.51                      | -14.47                         | 100.58                       |
| A - C             | -117.44                      | -0.36                          | 116.73                       | -117.44                      | -0.36                          | 116.73                       |

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 90  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993  
 General Linear Models Procedure  
 Class Level Information

| Class | Levels | Values  |
|-------|--------|---------|
| TRT   | 4      | A B C D |

Number of observations in data set = 60

NOTE: Due to missing values, only 59 observations can be used in this analysis.

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA 91  
 \*\*\*\*\*  
 8:15 Wednesday, March 31, 1993  
 General Linear Models Procedure

Dependent Variable: POSTF

| Source          | DF | Sum of Squares | F Value | Pr > F       |
|-----------------|----|----------------|---------|--------------|
| Model           | 4  | 188870.228108  | 4.09    | 0.0057       |
| Error           | 54 | 622885.399011  |         |              |
| Corrected Total | 58 | 811755.627119  |         |              |
| R-Square        |    | C.V.           |         | POSTF Mean   |
| 0.232669        |    | 8.273351       |         | 1298.1525424 |

| Source | DF | Type I SS     | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 117570.298547 | 3.40    | 0.0242 |
| PREF   | 1  | 71299.929561  | 6.18    | 0.0160 |

| Source | DF | Type III SS   | F Value | Pr > F |
|--------|----|---------------|---------|--------|
| TRT    | 3  | 88114.9060576 | 2.55    | 0.0655 |
| PREF   | 1  | 71299.9295607 | 6.18    | 0.0160 |

| Parameter | Estimate    | T for H0: Parameter=0 | Pr >  T | Std Error of Estimate |
|-----------|-------------|-----------------------|---------|-----------------------|
| INTERCEPT | 812.8086365 | B                     | 3.65    | 0.0006                |
| TRT       | -38.3225880 | B                     | -0.97   | 222.54924290          |
|           | -99.7852028 | B                     | -2.52   | 39.55154279           |
|           | -82.6027341 | B                     | -2.05   | 39.55446905           |
|           | 0.0000000   | B                     | 2.49    | 40.38109839           |
| PREF      | 0.5112286   | B                     | 2.49    | 0.20562589            |

NOTE: The X'X matrix has been found to be singular and a generalized inverse was used to solve the normal equations. Estimates followed by the letter 'B' are biased, and are not unique estimators of the parameters.

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Least Squares Means  
Coefficients for TRT Least Square Means

| TRT       | A            | B            | C            |
|-----------|--------------|--------------|--------------|
| Effect    | Coefficients |              |              |
| INTERCEPT | 1            | 1            | 1            |
| TRT       | 1            | 0            | 0            |
|           | 0            | 1            | 0            |
|           | 0            | 0            | 1            |
|           | 0            | 0            | 0            |
| PREF      | 1056.3898305 | 1056.3898305 | 1056.3898305 |
| TRT       | D            |              |              |
| Effect    | Coefficients |              |              |
| INTERCEPT | 1            |              |              |
| TRT       | 0            |              |              |
|           | 0            |              |              |
|           | 0            |              |              |
|           | 1            |              |              |
| PREF      | 1056.3898305 |              |              |

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure  
Least Squares Means

| TRT | POSTF<br>LSMEAN | Std Err<br>LSMEAN | Pr >  T <br>HO:LSMEAN=0 | LSMEAN<br>Number |
|-----|-----------------|-------------------|-------------------------|------------------|
| A   | 1314.54275      | 27.73289          | 0.0001                  | 1                |
| B   | 1253.08014      | 27.77463          | 0.0001                  | 2                |
| C   | 1270.26261      | 28.81689          | 0.0001                  | 3                |
| D   | 1352.86534      | 27.96263          | 0.0001                  | 4                |

| Pr >  T | H0: LSMEAN(i)=LSMEAN(j) |
|---------|-------------------------|
| i/j     | 1 2 3 4                 |
| 1       | 0.1233 0.2734 0.3345    |
| 2       | 0.1233 0.6686 0.0146    |
| 3       | 0.2734 0.6686 0.0457    |
| 4       | 0.3345 0.0146 0.0457    |

NOTE: To ensure overall protection level, only probabilities associated with pre-planned comparisons should be used.

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Dunnett's T tests for variable: POSTF

NOTE: This tests controls the type I experimentwise error for comparisons of all treatments against a control.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 11534.91  
Critical Value of Dunnett's T= 2.418

Comparisons significant at the 0.05 level are indicated by '\*\*\*\*'.

| TRT Comparison | Simultaneous Lower Confidence Limit | Difference Between Means | Simultaneous Upper Confidence Limit |
|----------------|-------------------------------------|--------------------------|-------------------------------------|
| D - A          | -48.42                              | 46.40                    | 141.22                              |
| C - A          | -147.97                             | -51.47                   | 45.03                               |
| B - A          | -161.02                             | -66.20                   | 28.62                               |

22. COVARIATE ANALYSIS OF FEMALE BODY WEIGHT DATA  
\*\*\*\*\*  
8:15 Wednesday, March 31, 1993

General Linear Models Procedure

Bonferroni (Dunn) T tests for variable: POSTF

NOTE: This test controls the type I experimentwise error rate

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 but generally has a higher type II error rate than  
 Tukey's for all pairwise comparisons.

Alpha= 0.05 Confidence= 0.95 df= 54 MSE= 11534.91  
 Critical Value of T= 2.73894

Comparisons significant at the 0.05 level are indicated by '\*\*\*'.

| TRT<br>Comparison | Simultaneous                 |                              | Difference<br>Between<br>Means | Simultaneous                 |                              |     |
|-------------------|------------------------------|------------------------------|--------------------------------|------------------------------|------------------------------|-----|
|                   | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |                                | Lower<br>Confidence<br>Limit | Upper<br>Confidence<br>Limit |     |
| D - A             | -61.01                       | 153.81                       | 46.40                          | 153.81                       | 153.81                       |     |
| D - C             | -11.44                       | 207.19                       | 97.87                          | 207.19                       | 207.19                       | *** |
| D - B             | 5.19                         | 220.01                       | 112.60                         | 220.01                       | 220.01                       | *** |
| A - D             | -153.81                      | 61.01                        | -46.40                         | 61.01                        | 61.01                        |     |
| A - C             | -57.84                       | 160.79                       | 51.47                          | 160.79                       | 160.79                       |     |
| A - B             | -41.21                       | 173.61                       | 66.20                          | 173.61                       | 173.61                       |     |
| C - D             | -207.19                      | 11.44                        | -97.87                         | 11.44                        | 11.44                        |     |
| C - A             | -160.79                      | 57.84                        | -51.47                         | 57.84                        | 57.84                        |     |
| C - B             | -94.59                       | 124.04                       | 14.73                          | 124.04                       | 124.04                       |     |
| B - D             | -220.01                      | -5.19                        | -112.60                        | -5.19                        | -5.19                        | *** |
| B - A             | -173.61                      | 41.21                        | -66.20                         | 41.21                        | 41.21                        |     |
| B - C             | -124.04                      | 94.59                        | -14.73                         | 94.59                        | 94.59                        |     |