

APPENDIX A

INFORMED CONSENT

I _____
(full name of prospective participant)

have been informed of the procedures and requirements to participate in a research project dealing with the effect of Electrical and Thermogenic Stimulation on Weight Reduction and various physiological parameters, to be conducted at the Institute of Sport Research of the University of Pretoria.

I am amenable to being assigned to any of the experimental groups and thus willingly participate in the said research project at my own risk.

I declare hereby that no information has been withheld that could exclude me from participating in an exercise programme, and am aware that I am entitled to withdraw from the study at any time if I should wish.

I hereby also grant the researcher permission to use my results for publication and/or presentation purposes, with my anonymity being ensured.

Signature of prospective participant.

Date

Tel: _____(h)

_____(w)

Witness

1. _____

2. _____



APPENDIX B
Efficacy of Electrical and Thermogenic Stimulation on Weight Reduction among Obese Females

1. RESULT SHEET

NAME: _____
 (surname and initials)

SEX: _____ E _____ DATE: _____

STATURE: _____ cm AGE: _____ yrs MASS: _____ kg

SKINFOLDS (mm)				DIAMETER (cm)			
Triceps				Biacromial			
Subscapular				Trans chest			
Suprailiac				Ant-Post chest			
Biceps				Bi-iliac			
Calf				Humerus			
Abdominal				Femur			
Mid-thigh				Sagital ½ umbi			
				Sagital umbi			
GIRTHS (cm)							
Relaxed arm							
Contracted arm							
Forearm				Fat %		%	kg
Wrist				Residual %			kg
Chest				Bone %			kg
Mid-thigh				Somatotype		I	
Calf				X =		II	
Ankle				Y =		III	
Hip				Muscle mass		%	Kg
Abdominal				Middle/Hip Ratio			
AB-1 ½ umbi				Body Surface Area			m ²
AB-2 umbi				LBM			%
				Body Mass Index			Kg/m ²
				Fat Mass (W)			Kg

BLOOD PRESSURE _____ PULSE _____

GAS ANALYSIS (RQ) _____

FLEXIBILITY (Hip Flexion) _____ (1)
 _____ (2) Difference _____

SIT UPS (1 minute) _____

LUNG FUNCTION

FVC _____ l

FEV1 _____ l

FEV1 % _____ %

PEF _____ l/s

MEF 50% _____ l/s

MEF 25% _____ l/s

HAEMATOLOGICAL RESPONSES

Cholesterol _____ m.mol/L

HDL Cholesterol _____ m.mol/L

LDL Cholesterol _____ m.mol/L

Triglycerides _____ m.mol/L

Glucose _____ m.mol/L

ULTRASOUND MEASUREMENTS (Sonar)

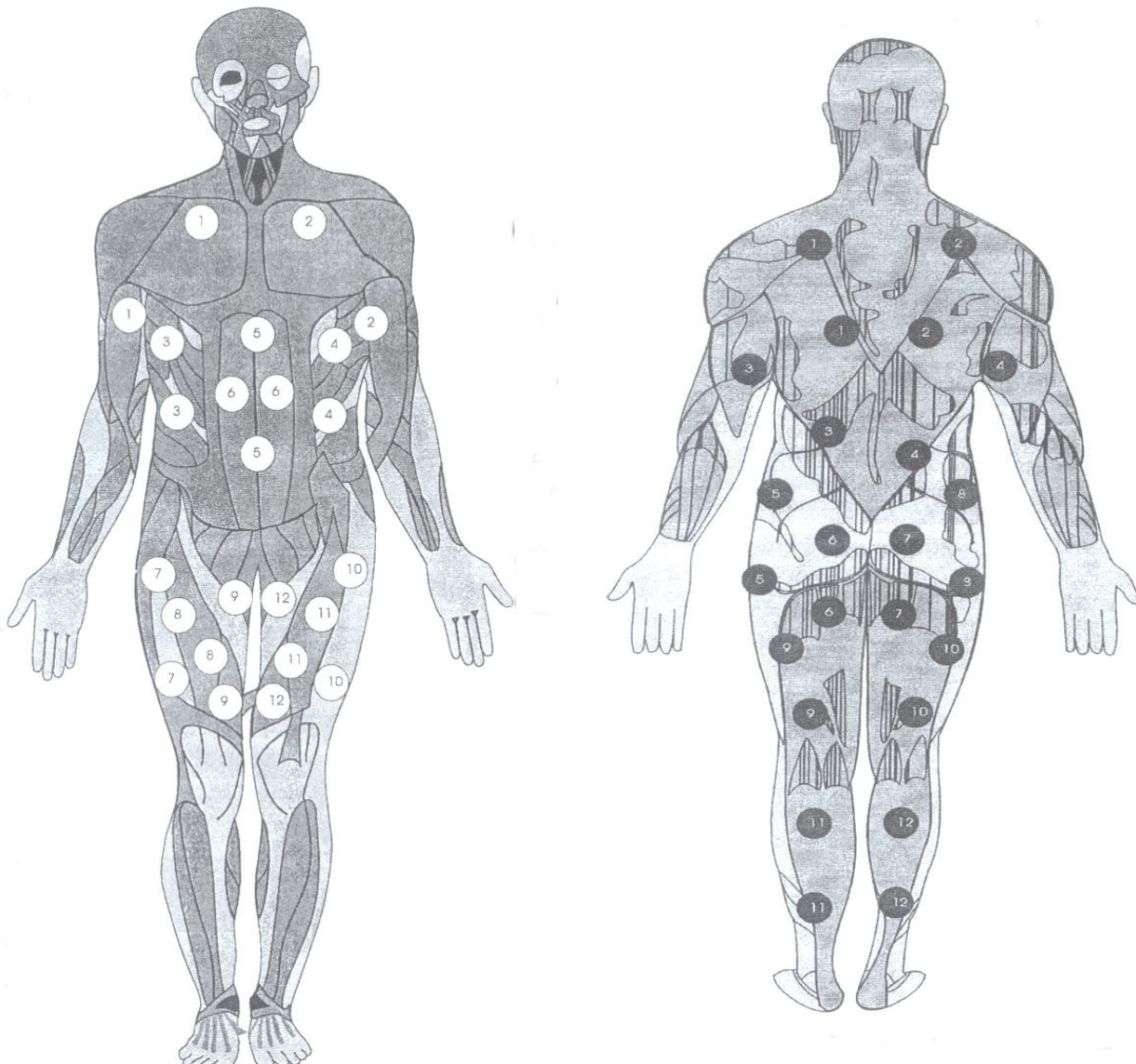
O1 _____ mm

O2 _____ mm

APPENDIX C

(nothing available)

EMS PAD PLACEMENT CHART



APPENDIX E
METABOLISM DIET

In general you consume normal everyday food, eating different amounts of food (calories) in three phases.

- Low calorie phase

At 1000 calories per day, this phase is designed for maximum weight loss, while you consume a nutritionally balanced diet. This menu must be followed for two weeks.

- Booster phase

After two weeks on the low calorie phase you must switch to the booster menu plan with 300 more calories. This phase is designed to boost the metabolic rate. The added calories during the booster phase are made up by carbohydrates.

- Re-entry phase

When you get within two to three kg from your target goal-weight, you must switch to the re-entry phase. Unless you gradually increase your calories you have the risk of gaining weight. This pre-maintenance period serve to get your metabolism ready for normal eating.

LOW CALORIE PHASE

<p>Breakfast every day</p> <p><u>Cereal (¾ cup)</u> Choose that are low in sugar content, such as: Special K 40% Bran Shredded wheat Wheaties Raisin Bran Oatmeal Puffed Wheat</p> <p><u>Milk (½ cup)</u> Low-fat (2%) or skim milk</p> <p><u>Fruit (½ piece)</u> Choice of Orange Pear Apple Grapefruit Peach</p> <p><u>Coffee or Tea</u> Sugar substitute and/or skim milk may be added if desired.</p>	<p>Lunch: 1</p> <p><u>Fruit plate</u> - Strawberries (½ cup) - Honeydew melon (¼ cup) or substitute fruit in season - Sweet melon (¼ cup) - Cottage Cheese (¼ cup low-fat) - Lettuce (a few leaves under the fruit)</p> <p>Lunch: 2 - Egg (1 whole egg) - Whole wheat bread (1 slice toasted) - Grapefruit (½)</p> <p>Lunch: 3 - Tuna fish (90g water packed) - Lettuce (¼ small head) - Tomato (½ medium) - Cucumber slices (10 slices) - Diet salad dressing (2 table spoons)</p> <p>Lunch: 4 - Tossed salad (large salad bowl with lettuce, tomato, cucumber, radish mix) - 2 tablespoons diet dressing - Roll (1 small hard or Kaiser roll) - 1 tablespoon diet margarine</p> <p>Lunch: 5 Whole tomato stuffed with chicken salad (⅔ cup)</p> <p>Lunch: 6 <u>Fruit salad</u> - Cottage cheese (¼ cup of low fat 50g) - Lettuce (¼ head) - Orange (½ 100g) - Apple (½ 100g) - Grapes (¾ cup)</p> <p>Lunch: 7 - Omelette: egg whites (3 eggs) - Cottage cheese (¼ cup low fat 50g) - Onion (⅓ small 20g) - Green pepper (¼ cup chopped 50g) - Mushroom (¼ cup chopped 50g)</p> <p>NOTE: Fry egg whites lightly in frying pan, using vegetable cooking spray. As egg whites set, add cottage cheese, onion, green pepper and fold over omelette to cover filling.</p>	<p>Dinner: 1 - Baked chicken (150g or 2 breasts) - Baked potato (1 medium, no butter) - Vegetable: Choice of green beans, broccoli, asparagus (½ cup), strawberries (½ cup 80g), vanilla yoghurt (1 tablespoon over fruit)</p> <p>Dinner: 2 - Baked or broiled fish (190g of any type, no butter) - Rice (½ cup) - Vegetable: Choice of two – broccoli, carrots, green beans, cauliflower, asparagus, spinach (½ cup each) - Orange slices (½ cup with dash of vanilla yoghurt if desired 100g)</p> <p>Dinner: 3 - Broiled lean hamburger (180g) - Egg noodles (½ cup, cooked) - Vegetable: Choice of green beans, broccoli, asparagus (½ cup)</p> <p>Dinner: 4 - Baked chicken (150g or 2 breasts) - New potatoes (½ cup) - Vegetable: Choice of spinach, green beans, broccoli (½ cup) - Fruit: Choice of pineapple (slice) or strawberries (½ cup)</p> <p>Dinner: 5 - Broiled fish or shrimp (180g) - Corn on the cob (1 medium) - Small tossed salad (with 2 tablespoons diet dressing) - Peach (1 whole) or substitute fruit in season</p> <p>Dinner: 6 - Broiled steak (150g visible fat removed) - Baked potato (medium with 2 tablespoons of diet margarine) - Vegetables: choice of broccoli, asparagus (½ cup)</p> <p>Dinner: 7 - Spaghetti (½ cup) - Meatless sauce (commercially prepared sauce) - Parmesan cheese (sprinkled lightly over spaghetti 5-10g) - Tossed salads (small bowl of lettuce, tomato, cucumber, radish mix with 2 tablespoons diet dressing) - Roll or bread (2 medium slices of Italian or French bread, with not butter or garlic)</p>	<p>Late-snack: 1 Cinnamon toast (2 slices of in-sliced wheat bread sprinkled lightly with cinnamon and artificial sweetner and toast under the broiler)</p> <p>Late-snack: 2 - Small tossed salad (2 tablespoons diet dressing) - Apple (½)</p> <p>Late-snack: 3 - Cereal (½ cup; choice of shredded wheat or 40% bran) - Milk (½ cup low-fat or skim) - Banana (½ 50g)</p> <p>Late-snack: 4 - Cottage cheese (¼ cup low-fat 150g) - Apple (½)</p> <p>Late-snack: 5 Raw vegetable plate (mixture of 6 each of raw carrot sticks, celery, radishes and cauliflower with diet dip – if desired)</p> <p>Late-snack: 6 Sliced banana (1 whole, lightly sprinkled with cinnamon artificial sweetner mixture and toasted under broiler)</p> <p>Late-snack: 7 <u>Fruit plate</u> - Apple (½ 100g) - Banana (½ 50g) - Raisins (1 tablespoon 10g)</p> <p>NOTE: Slice and mix fruit together.</p>
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BOOSTER PHASE

<p>Breakfast every day</p> <p><u>Cereal (¼ cup)</u> Choose that are low in sugar content, such as:</p> <ul style="list-style-type: none"> - Special K - 40% Bran - Shredded wheat - Wheaties - Raisin Bran - Oatmeal - Puffed Wheat <p><u>Milk (½ cup)</u> Low-fat (2%) or skim milk</p> <p><u>Fruit (½ piece)</u> Choice of</p> <ul style="list-style-type: none"> - Orange - Pear - Apple - Grapefruit - Peach <p><u>Coffee or Tea</u> Sugar substitute and/or skim milk may be added if desired.</p>	<p>Lunch: 1</p> <ul style="list-style-type: none"> - Tuna fish sandwich: Whole wheat bread (2 slices) tuna (80g) water-packed canned tuna, mixed with 1 teaspoon mayonnaise, lettuce - Peach (½ small 100g) <p>Lunch: 2</p> <ul style="list-style-type: none"> - Chicken salad (90g chicken with teaspoon mayonnaise and 1 teaspoon chopped celery) - Lettuce (few leaves under salad) - Tomato (½ sliced) <p>Lunch: 3</p> <ul style="list-style-type: none"> - Cottage cheese (⅓ cup low-fat 45g) - Sweet melon (¼ cut in wedges) - Strawberries (½ cup sliced) - Lettuce (few leaves under fruit) <p>Lunch: 4</p> <ul style="list-style-type: none"> - Eggs (2 any style, if fried use vegetable cooking spray) - Whole wheat bread, toasted (1 slice) - Grapefruit (½) <p>Lunch: 5</p> <ul style="list-style-type: none"> - Tossed salad (large salad bowl with lettuce, tomato, cucumber, radish, green pepper and carrot, mixed together with 3 tablespoons diet dressing) - Fruit: Choice of apple or pear (120g) <p>Lunch: 6</p> <p>Open-faced grilled cheese and tomato sandwich (2 slices of white or whole wheat bread, each topped with slices of tomato and low-fat (diet) cheese and grilled lightly under broiler)</p> <p>Lunch: 7</p> <ul style="list-style-type: none"> - Egg salad sandwich: Rye or whole wheat bread (2 slices) - Egg salad: (1 whole egg, chopped with 1 tablespoon mayonnaise) - Strawberries (½ cup substitute fruit in season) 	<p>Dinner: 1</p> <ul style="list-style-type: none"> - Cornish hen (app 150g of meat) - New potatoes (½ cup 100g) - Vegetables: Choice of carrots, green beans, broccoli, asparagus (½ cup 125ml) - Strawberries (½ cup, topped with a tablespoon vanilla yoghurt) or fruit in season <p>Dinner: 2</p> <ul style="list-style-type: none"> - Baked or broiled fish (180g no butter) - Baked potato (1 medium, no butter) - Vegetable: Choice of two – broccoli, carrots, green beans, cauliflower, asparagus, spinach (½ cup each 250 ml) - Apple-raisin mix (½ apple, diced mixed with 1 tablespoon raisins 10g) <p>Dinner: 3</p> <ul style="list-style-type: none"> - Roast lamb or veal (150g fat removed) - Baked potato (1 medium 100g with 1 teaspoon diet margarine) - Vegetable: Choice of green beans, broccoli, asparagus (½ cup) <p>Dinner: 4</p> <ul style="list-style-type: none"> - Spaghetti (1 cup cooked noodles) - 250 ml meatless sauce (5g commercially prepared sauce - Parmesan cheese (10 ml) sprinkled lightly over spaghetti - Bread (2 medium slices of Italian or French bread, with 1 tablespoon diet margarine) <p>Dinner: 5</p> <ul style="list-style-type: none"> - Broiled fish or shrimp – 200g - Rice (1 cup – 250 ml) - Vegetables: Choice of two – broccoli, carrots, green beans, cauliflower, asparagus, spinach (½ cup each) - Orange slices (½ cup with one tablespoon vanilla or lemon yoghurt) <p>Dinner: 6</p> <ul style="list-style-type: none"> - Roast beef (150g) - Baked potato (1 medium, no butter) - Vegetables: Choice of broccoli, baby marrow or asparagus (½ cup 125 ml) - Tossed salad (small bowl of lettuce, onion, cucumber and radishes mixed with 2 table-spoons diet dressing) <p>Dinner: 7</p> <ul style="list-style-type: none"> - Turkey or chicken (150g) - Rice (½ cup 125 ml) - Vegetable: Choice of two: spinach, green beans, broccoli, carrots, asparagus, cauliflower (½ cup each) - Fruit: Apple, orange, peach (½ - 100g) 	<p>Late-snack: 1</p> <p>English muffin (1 whole with 1 tablespoon diet margarine)</p> <p>Late-snack: 2</p> <p>Popcorn (4 cups of popped popcorn with 1 tablespoon diet margarine, no salt)</p> <p>Late-snack: 3</p> <ul style="list-style-type: none"> - Raw vegetable plate (mix raw carrot sticks, celery, cauliflower, radishes) - Cream Crackers (6 unsalted) <p>Late-snack: 4</p> <p>Fruit: Choice of two: banana, orange, pear, apple peach or grapefruit</p> <p>Late-snack: 5</p> <p>Whole wheat bread roll with ½ teaspoon cream cheese</p> <p>Late-snack: 6</p> <ul style="list-style-type: none"> - Cereal: Choice of shredded wheat or 40% bran (½ cup 125 ml) - Milk (½ cup low-fat or skim 125 ml) - Banana (1 whole 100g) <p>Late-snack: 7</p> <p>Repeat your favourite meal above</p>
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RE-ENTRY PHASE

<p>Breakfast every day</p> <p>Fruit juice (½ cup) choice of unsweetened or fresh grapefruit, orange, apricot or prune juice</p> <p>Cereal (¾ cup) Choose 40% Bran Albran, Raisin Bran or other high fibre cereal</p> <p>Milk (½ cup) Low-fat (2%) or skim milk</p> <p>Fruit (1 whole) Choice of Orange Pear Banana Apple Grapefruit Peach</p>	<p>Lunch: 1 - Chicken salad sandwich: Chicken salad (90g diced chicken mixed with 1 tablespoon mayonnaise) - Whole wheat bread (2 pieces) - Lettuce (1 or 3 leaves on sandwich) - Pear (½ 120g)</p> <p>Lunch: 2 - Hamburger: Hamburger roll (1 whole), beef patty (90g of broiled lean beef) with ½ tablespoon mayonnaise or 2 tablespoons tomato sauce - Lettuce (1 or 2 leaves) - Tomato (120g)</p> <p>Lunch: 3 - Cottage cheese (⅓ cup, low-fat 45g) - Sweet melon or fruit in season (120g) - Strawberries (½ cup sliced 120g) - Lettuce (2 or 3 leaves)</p> <p>Lunch: 4 - Omelette (2egg omelette filled with tomatoes, peppers, onions and cheddar cheese) - Bread or roll (2pieces with 2 tablespoons diet margarine)</p> <p>Lunch: 5 - Tuna fish sandwich: tuna (60g with 1 tablespoon mayonnaise) - Bran bread (2 slices) - Lettuce (1 or 2 leaves) - Tomato (2slices) - Peach (1 whole 120g)</p> <p>Lunch: 6 Large salad: (large salad bowl) with lettuce, tomato, onion, carrots, pepper, radishes, diced chicken or turkey and croutons, topped with 2 tablespoons salad dressing</p> <p>Lunch: 7 - Open-faced grilled cheese and tomato sandwich (2 slices of whole wheat or rye bread, each topped with slices of tomato and diet cheese, grilled lightly under broiler)</p>	<p>Dinner: 1 - Baked or broiled fish, shrimp, crab or lobster meat (180g) - Tossed salad (small bowl of lettuce, tomato, onion, radish mixture with 2 tablespoons salad dressing) - Sweet potato (1 whole, ½ teaspoon diet margarine) - Vegetable: choice of carrots, green beans broccoli, spinach, asparagus (½ cup)</p> <p>Dinner: 2 Macaroni and cheese (1 cup 250 ml) asparagus spears (4), tomato (1 whole grilled under broiler with tarragon 120g)</p> <p>Dinner: 3 - Steak (150g, broiled, visible fat removed) - Baked potato (1 whole with 1 tablespoon diet margarine) - Vegetable: choice of corn, peas, beans spinach (½ cup), salad (small bowl of raw spinach, onions, radishes, cucumber and carrots with 2 tablespoons diet dressing)</p> <p>Dinner: 4 - Baked chicken (150g or 2 breasts) - New potatoes (½ cup 100g) - Vegetable: choice of carrots, spinach, asparagus, green beans (1 cup) - Baked apple (1 whole, cut in half, topped with cinnamon and sugar substitute, baked for 2-30 minutes at 180c)</p> <p>Dinner: 5 - Baked or broiled fish (180g) - Rice (1 cup, tablespoon diet margarine) - Vegetables: corn, peas, beans (1 cup) - Orange slices (1 cup 120g)</p> <p>Dinner: 6 - Roast beef, lamb or veal (150g visible fat removed) - Baked potato (1 with 2 tablespoons sour cream) - Vegetables: choice of asparagus, green beans, carrots, broccoli, spinach (1 cup) - Bread or roll (2 pieces, no margarine)</p> <p>Dinner: 7 - Spaghetti (2 cups cooked noodles) - Meatless sauce (180 ml commercially prepared sauce) - Parmesan cheese sprinkled lightly over spaghetti 30g - Bread (2 medium slices of Italian or French bread, 1 tablespoon diet margarine)</p>	<p>Late-snack: 1 - English muffin (1 whole with 1 tables. diet margarine, 1 tables. jam or jelly) - Grapes (1 cup) or seasonal fruit</p> <p>Late-snack: 2 - Cream crackers (6) - Milk (1 cup, low-fat)</p> <p>Late-snack: 3 - Whole wheat bread roll (1 whole with 2 tbles. Cream cheese) - Fruit: choice of orange, apple, pear (1 whole 120g)</p> <p>Late-snack: 4 - Raw vegetable plate (mix raw carrot sticks, celery radishes and cauliflower) - Melba toast (4 pieces with 2 tbles. Diet margarine) - Juice: choice of orange, apple, grapefruit or prune</p> <p>Late-snack: 5 Yoghurt (250 ml of any fruit-flavoured yoghurt)</p> <p>Late-snack: 6 - Popcorn (4 cups, 1 tbles. Diet margarine, no salt) - Fruit: choice of apple, orange, pear, peach, melon (1 whole 120g)</p> <p>Late-snack: 7 Repeat your favourite meal above</p>
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APPENDIX F**RANDOMIZED TRIAL SYNOPSIS**

- *Design** : Pretest-posttest, double-blind placebo-controlled trial.
- *Randomisation** : Subjects assigned to three groups using a table of random numbers.
- *Participant flow:**
- Enrollment : n = 76
 - Allocation :
 - Group TS = 26
 - Group EST = 25
 - Group ESP = 25
 - Follow-up :
 - Withdrawals: n = 7
 - Medical reasons: n = 3
 - Personal reasons: n = 4
 - Analysis :
 - n = 69
 - Group TS = 23
 - Group EST = 23
 - Groups ESP = 23
- Group TS : Thermogenic Stimulation and following a standardized diet.
 - Group EST : Electrical Muscle Stimulation and Thermogenic Stimulation combined and following the standardized diet.
 - Group ESP : Electrical Muscle Stimulation and Thermogenic Placebo combined and following the standardized diet.
- *Allocation Concealment** : Product (Thermo Lean) and placebo housed in securitainers of same color and size. Distinction between product and placebo made with a letter of the alphabet e.g. A; B or C.
- *Blinding** : Double blinding used with the study leader keeping record of subject group allocation. Group allocation revealed post data analysis.

APPENDIX G
NOMOGRAPHIC CHART FOR
COMPUTING BODY SURFACE AREA (BSA)

(nothing available)