

Prepared for:
San Diego Gas & Electric

Evaluation of the 2000 SDG&E Residential HVAC Training Program

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Introduction

Proctor Engineering Group (PEG) was retained by San Diego Gas & Electric (SDG&E) to deliver training services for residential contractors delivering duct testing and sealing services under the Residential Contractor Program (RCP).

San Diego Gas and Electric Company has a PY2000 milestone to:

“Achieve a number of Residential Contractor Program contractors with expertise in duct testing/whole system approach (i.e. demonstrated required skills through testing).”

The verification requirements for this milestone are to:

"Provide training records and PY 1999 baseline. Follow up on trained contractors to identify measures incorporated into each new project engaged in."

Criteria for Judging Achievement of Milestone

Proctor Engineering Group devised a measurement plan for this project with the input and cooperation of San Diego Gas and Electric Company. The research questions addressed were:

1. How many contractors were trained under the PY 2000 RCP training program component?
2. What was the level of awareness and knowledge of contractors after attending the SDG&E training sessions? The level of awareness was measured by the test results of the attending personnel.
3. What was the level of participation in the RCP duct testing and sealing program component after training? The level of participation was measured by the actual number of runs (??? **UNCLEAR, runs of what?**) completed by the contractors after attending training.

Training Component

Trainings were held throughout 2000. Trainings ran from January through December.

Contractor personnel attended a two-day training to introduce them to the concepts of duct testing and sealing. The training included coverage of the following topics:

- Testing for duct leakage, the operation of the Duct Blaster™, other diagnostic tests including the half-nelson, door closure, pressure relief tests.
- Necessary tool and material lists.
- Correct duct-sealing methods.
- Duct system installation and repair.
- Verification of proper repair/installation.
- Customer interaction on the sales of repairs and proper installation.
- Interactions with other house systems (combustion safety, infiltration, comfort issues).
- Use of CheckMe!®, the systematic technician support and sales software.
- Understanding the use of the CheckMe!® Customer Hot Line and the Technician Hot Line.

The Duct System Testing and Repair training consists of a half day classroom training and one and one half days in the field with four duct technicians attending. A total of 3 duct systems will be tested and sealed, if necessary.

Each technician trained receives a program binder containing:

- RCP Program policies and procedures
- Previous studies: frequency of problems and savings
- Duct leakage effects
- Duct testing set-up and procedure
- Duct testing and sealing related articles

All participants successfully completing each training session were given a certificate of completion. In addition, Proctor Engineering Group notified the League of California Homeowners of the contractors and technicians successfully completing the training. The

contractors were then ~~be~~ eligible for RCP certification through the League.

Baseline

The baseline for this milestone is based on the number of contractors attending the SDG&E duct testing and sealing training in PY 1999. There were a total of 19 contractors trained under the PY 1999 program. Table 1 lists the contractors trained under the PY 1999 program.

Table 1: PY 1999 Contractors Trained

Count	Contractors Trained
1	Aairco Air Conditioning & Heating
2	Action Air Conditioning & Heating
3	Air Doc Inc.
4	Albert Plumbing, Heating & Air
5	Alliance Heating & Air Conditioning
6	ASI Hastings, Inc.
7	Cal-West Air Conditioning, Inc.
8	Dad's Heating & Air Conditioning
9	Fire & Ice Heating and AC, Inc.
10	Jerry's Heating & Air Conditioning, Inc.
11	John Stevenson Plumbing
12	La Jolla Mechanical
13	Locke Air Conditioning & Custom Sheet Metal, Inc.
14	Lomack Service Corp.
15	MJB Heating & Air Conditioning, Inc
16	MoorCo, Inc.
17	PDQ Heating & Air Conditioning
18	Southcoast Heating & Air Conditioning
19	Thompson Heating & Air

Results

Number of Contractors Trained

The PY 2000 program exceeded the established milestone by training a total of 21 new contractors. Table 2 lists the contractors trained under the PY 2000 program.

Table 2: PY 2000 Contractors Trained

Count	Contractors Trained
1	ADC Heating & Air
2	Air Best Heating & Air Conditioning, Inc.
3	Air Plus Mechanical
4	American Residential Services, Inc.
5	American Synergy
6	Blue Ribbon Plumbing, Heating & AC
7	California Mechanical Services
8	Central Plumbing, Heating & Air
9	Coast Heating & Air Conditioning, Inc.
10	Coast Tech Heating & AC
11	Crystal Air Heating & AC
12	Express AC & Refrigeration Services, Inc.
13	Future Air & Window Systems
14	Greg Stayton
15	Hassinger Heating & Air Conditioning
16	Home Comfort Zone
17	Lloyd's Plumbing, Heating & Air
18	Oasis Air Conditioning & Heating
19	Rancho Energy Services Co., Inc.
20	Tierrasanta Heating, Air, & Refrigeration
21	Weather Machines

Results of Post Training Testing

There were a total of 80 technicians trained for the 21 contractors participating in the PY 2000 training program. Technicians were given a seven question test at the end of training to determine their comprehension of the materials covered. Tables 3 & 4 present the results of the analysis of the test results.

Table 3: Test Results - Technicians

Test Score	Frequency	Percent	Cumulative
100%	34	42.5	42.5
86%	36	45	87.5
71%	9	11.25	98.75
57%	1	1.25	100
Total	80	100	

Tom, please repeat this table based on contractors, not technicians (the milestone is about training contractors, not technicians). This table will be derived from the changes to the Appendix listing

Table 4: Test Results- Contractors

Average Test Score	Frequency	Percent	Cumulative
100%			42.5
86%			87.5
71%			98.75
57%			100
Total	21	100	

Contractor Participation in RCP After Training

Contractor participation was examined to determine if the contractors used the training they received in conjunction with the RCP. Twelve of the twenty one contractors (57%) trained participated in the RCP after training. These twelve contractors completed a total 1,377 duct tests and 702 duct sealing jobs. Contractors attempted to seal 62% of the duct systems tested.

APPENDIX A CONTRACTOR / TECHNICIAN INFORMATION

Company	First Name	Last Name	Training Date	Test Score
ADC Heating & Air	Jeff	Bombard	April 11, 2000	86%
ADC Heating & Air	Quinn	Miller	April 11, 2000	86%
ADC Heating & Air	Fred	Poscharscky	April 11, 2000	86%
Contractor Average Score				86%
Air Best Heating & Air Conditioning, Inc.	Terry J.	Baker	September 22, 2000	100%
Air Best Heating & Air Conditioning, Inc.	Ron	Taylor	September 22, 2000	86%
Contractor Average Score				93%
Continue this after every contractor				
Air Plus Mechanical	Carol	Clark	March 22, 2000	86%
Air Plus Mechanical	Ben	Sidoti	March 22, 2000	100%
Air Plus Mechanical	Doug	Sowden	March 22, 2000	86%
Air Plus Mechanical	Sean	Sowden	December 28, 2000	86%
American Residential Services, Inc.	Pedro	Bravo	April 21, 2000	86%
American Residential Services, Inc.	Mark	McCulloch	April 21, 2000	100%
American Residential Services, Inc.	Steve	Monsanto	April 21, 2000	100%
American Residential Services, Inc.	James	Stuermer	April 21, 2000	100%
American Synergy	Benjamin A.	Calderon	September 6, 2000	86%
American Synergy	Dan	Langston	September 6, 2000	86%
American Synergy	Leroy	Mendez	September 6, 2000	86%
American Synergy	Jeremy	Price	September 6, 2000	100%
American Synergy	Scott	Price	September 7, 2000	86%
American Synergy	Gary	Smith	September 6, 2000	86%
American Synergy	Eliott	Smith	September 7, 2000	100%
American Synergy	Lincoln	Taylor	September 7, 2000	86%
American Synergy	Roger	Thornton	September 6, 2000	100%
Blue Ribbon Plumbing, Heating & AC	Ruben	Magana	November 9, 2000	86%
Blue Ribbon Plumbing, Heating & AC	Mario	Martinez	November 9, 2000	71%
Blue Ribbon Plumbing, Heating & AC	Ty	Visser	November 9, 2000	100%
California Mechanical Services	Manfred H.	Thyssen	January 6, 2000	71%
California Mechanical Services	Marie	Byam	January 6, 2000	100%
California Mechanical Services	Esteban	Garibaldi	January 6, 2000	71%
Central Plumbing, Heating & Air	Joel	Casdan	April 20, 2000	86%
Central Plumbing, Heating & Air	Jeff	Green	April 20, 2000	100%
Central Plumbing, Heating & Air	Robert	Harman	April 20, 2000	100%
Central Plumbing, Heating & Air	Alex	Sanchez	April 20, 2000	86%

Coast Heating & Air Conditioning, Inc.	David	Reed	January 28, 2000	86%
Coast Heating & Air Conditioning, Inc.	Marty	Kamery	January 28, 2000	86%
Coast Heating & Air Conditioning, Inc.	Gary	Allison	January 28, 2000	71%
Coast Tech Heating & AC	Don	DeAngelis	March 16, 2000	100%
Coast Tech Heating & AC	Matt	DeAngelis	March 16, 2000	86%
Coast Tech Heating & AC	Jim	Fleming	March 16, 2000	100%
Crystal Air Heating & AC	Joshua	Angiel	September 11, 2000	71%
Crystal Air Heating & AC	Ralph	Bell	March 16, 2000	100%
Crystal Air Heating & AC	Ryan	Bell	September 11, 2000	86%
Crystal Air Heating & AC	Steven	Davis	September 11, 2000	100%
Express AC & Refrigeration Services, Inc.	Salim	Chohan	July 27, 2000	86%
Express AC & Refrigeration Services, Inc.	Rainner	Dunca	August 24, 2000	100%
Express AC & Refrigeration Services, Inc.	Nick	Javer	July 27, 2000	100%
Express AC & Refrigeration Services, Inc.	Westley	McDowell	July 27, 2000	86%
Express AC & Refrigeration Services, Inc.	Anthony	Phillips	August 24, 2000	100%
Express AC & Refrigeration Services, Inc.	Rashpal	Singh	July 27, 2000	57%
Future Air & Window Systems	Mike	Branthy	August 9, 2000	86%
Future Air & Window Systems	Jason Michael	Mathis	August 9, 2000	100%
Greg Stayton	Greg	Stayton	August 9, 2000	100%
Hassinger Heating & Air Conditioning	Matt	Cramer	April 26, 2000	100%
Hassinger Heating & Air Conditioning	Josh	Martin	April 26, 2000	100%
Hassinger Heating & Air Conditioning	Bryan	Quenga	April 26, 2000	100%
Hassinger Heating & Air Conditioning	Vince	Sweeney	April 26, 2000	71%
Home Comfort Zone	John	Bunyan	March 14, 2000	86%
Home Comfort Zone	Jim	Nutz	March 14, 2000	100%
Home Comfort Zone	Mike	Nutz	March 14, 2000	86%
Home Comfort Zone	Trevor	Rombouts	March 14, 2000	86%
Lloyd's Plumbing, Heating & Air	Steve	Boze	May 19, 2000	71%
Lloyd's Plumbing, Heating & Air	David L.	Daniels	October 18, 2000	100%
Lloyd's Plumbing, Heating & Air	Mark	Dunk	October 18, 2000	100%
Lloyd's Plumbing, Heating & Air	Todd	Humphries	May 19, 2000	86%
Lloyd's Plumbing, Heating & Air	Steve	Jasperse	May 19, 2000	86%
Lloyd's Plumbing, Heating & Air	Miguel	Rosado	May 19, 2000	86%
Oasis Air Conditioning & Heating	Jason	Conzelmann	April 5, 2000	100%
Oasis Air Conditioning & Heating	Dan	Kobzeff	April 5, 2000	100%
Oasis Air Conditioning & Heating	Doug	Liefke	April 5, 2000	100%
Oasis Air Conditioning & Heating	Dan	Outlaw	April 5, 2000	100%
Rancho Energy Services Co., Inc.	Daniel	Denton	April 13, 2000	86%
Rancho Energy Services Co., Inc.	Justin	Hebert	June 5, 2000	71%
Rancho Energy Services Co., Inc.	Ryan	Hughes	April 13, 2000	100%
Rancho Energy Services Co., Inc.	Jerome	Jones	April 13, 2000	71%
Rancho Energy Services Co., Inc.	Greg	Powley	April 13, 2000	86%
Tierrasanta Heating, Air, & Refrigeration	Hektor	Barcenas	June 5, 2000	86%
Tierrasanta Heating, Air, & Refrigeration	Mario	Bautista	June 5, 2000	100%
Tierrasanta Heating, Air, & Refrigeration	Matthew	Metanat	June 5, 2000	86%
Weather Machines	Bruce	McClain	August 15, 2000	86%

Weather Machines	Scott	McClain	August 15, 2000	86%
Weather Machines	Chuck	McClain	August 15, 2000	100%