# APPLIED TECHNOLOGY SERVICES

**Non Destructive Examination**

3400 Crow Canyon Road, San Ramon, CA 94583

## Data Sheet for RT Characterization of DSAW vs. SSAW Pipeline long seam welds

**Examiner**/Level (Print): _____ Date: _____

(Sign) _____ Line No.: _____

Company: PGE / ATS Location: _____

**Interpreter**/Level (Print) GPS data: _____

(Sign) _____ Pipe Size: _____

Company: PGE / ATS Documented pipe thickness: _____

**Reviewer**/Level (Print) Minimum thickness found: _____

(Sign) _____ OD Corrosion: Yes* No*

Company: PGE / ATS

### NDT Equipment, Procedures and Results

RT Procedure #: _____ Length of weld examined: _____

RT method: X Ray* Gamma* $^{*}Se^{75}$ / $^{*}Ir^{192}$ Acceptable to API 5L: Yes* No*

UT Procedure #: _____ UT Equip. Serial numbers: _____

Surface NDT Procedure #: _____ Surface NDT method: _____

Surface NDT results: _____ Acceptable or Rejectable: Accept* Reject*

**Note * delete or line through where applicable**

### Weld Characterization

#### DSAW

- ☐ Similar width OD & ID crowns.
- ☐ Light density at weld center across superimposed crowns.
- ☐ Visible edges of OD & ID weld crowns.
- ☐ In the "Flat Topped" area, the ID weld crown will have a uniform density across the 4-inch area and a weld bead characteristic of a machine submerged arc weld (uniform with bead width similar to OD crown).

#### SSAW

- ☐ OD crown but no uniform ID crown.
- ☐ Evidence of possible use of temporary chill ring.
- ☐ More uniform density across weld crown indicating less reinforcement on ID.
- ☐ Root geometry.
- ☐ Moderate weld indications observed.

#### OTHER

- ☐ Only OD crown, with possible ID repairs.
- ☐ Evidence of repairs.
- ☐ Grinding marks.

## DSAW vs. SSAW Characterization Radiography Guidelines:

A) Take initial RT exposure of the area to be characterized to evaluate weld and base metal condition.

B) Take UT thickness measurements of adjacent base metal. This will be used as information during "flat topping".

C) Mark 4-inch long section and carefully grind off the OD weld crown. Avoid grinding into the base metal and ensure a 1:3 taper on the ends of the ground region. The UT data above is information only for grinding purposes.

D) After grinding flush the 4-inch long section, take a second RT exposure using the guidelines described in steps E through I below. After completing the second RT exposure, continue with steps J through M.

E) Place lead "V" markers along the two edges of the OD weld crown in two areas (the "V" markers are used to identify the OD crown edges).

E) Use a 1-inch increment number belt to clearly define area of interest (position belt ~ ¼" from edge of seam weld).

F) Place the source exactly 180° from the center of the weld seam (shoot thru the OD cap)

G) Use D5 and D4 film or equivalent for conventional radiography. Density should be between 2.5 and 3.5.

H) Use appropriate penetrameter for weld pipe thickness

I) Take photographs of the final set-up showing the "flat top" area, "V" markers, penetrameters and source position.

J) As an option, the width of the ID weld crown can be verified using a Ultrasonic "A" scan (noting the transition from the base metal to the ID weld toes and measuring the distance between the weld toes). This method is only use for information only to help validate the RT data.

K) Make final evaluation of film/images based on the criteria listed above for DSAW and SSAW welds.

L) After RT shot, complete film report, this data sheet and submit to PG&E customer along with the film/images.

M) After the RT activities are completed, perform an MT inspection of the 4-inch section that was ground flush in step C above. Either the MT dry power or wet fluorescent techniques are acceptable. Document the results in a separate MT inspection report.

**FINAL CONCLUSION (circle or underline):** **DSAW** **SSAW** **OTHER**

## GENERAL COMMENTS:

1) Add additional comments regarding characterization if applicable:

_____

## Disclaimers:

1) Best effort.
2) Based on most typical conditions.
3) Abnormal conditions could affect interpretation reliability, such as:

_____