PACIFIC GAS AND ELECTRIC COMPANY

GAS TRANSMISSION AND DISTRIBUTION
GAS ENGINEERING
GAS INTEGRITY MANAGEMENT AND TECHNICAL SUPPORT
Risk Management

Procedure for Risk Management

Procedure No. RMP-05
Rev. 4
Design/Materials Threat Algorithm

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Rev. No.	Date	Description	Prepared By	Approved By	Approved Mgr/.Dir, GasIntegrity
0	11/13/01	Initial Issue	DJC	CMW	SEE ABOVE
1	11/25/03	Revised as Shown	DJC	CMW	ADE
2	9/28/05	Revised as Shown	DJC	CMW	CMW
3	10/28/05	Revised as Shown	EEM	DJC	CMW
4	12/28/09	Revised as Shown	[illegible]	SEBE	[illegible]

6.0 DESIGN/ MATERIALS THREAT ALGORITHM

6.1 Gas Transmission

Design Materials (DM) shall be calculated per the direction of the DM Steering Committee. The committee has determined that the factors in A through F of this section are significant to determining the Likelihood of Failure (LOF) of a gas pipeline due to *design/material* issues. The DM contribution to LOF shall be the summation of assigned points times the assigned weighting for the following factors:

A) Pipe Seam Design (30% Weighting): Points will be awarded as follows:

Criteria	Points	Contrib.
Furnace Butt Weld (FBW) (Jef = 0.6)	100	30
Single Submerged Arc Weld SSAW (Jef = 0.8)	60	18
Low Freq. ERW* (Jef = 1.0)	90	27
A.O.Smith or Flash Weld (Jef = 1.0)	90	27
High Freq. ERW (Jef = 1.0)	20	6
Double Submerged Arc Weld (DSAW) (Jef = 1.0)	10	3
Seamless	10	3
Pre 1990 Spiral (Jef = 0.8)	90	27
1990 and newer Spiral (Jef=1.)	20	6
Other**	100	30
Default (Welds made prior to 1970)	100	30
Default (Welds made in 1970 and after)	20	6

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* Welds made prior to 1970 using the ERW welding process are assumed to be made using low frequency.

B) Girth Weld Condition (15% Weighting): Points will be awarded as follows:

Criteria	Points	Contrib.
Pre 1930 Girth Welds (Both Arc and oxyacetylene, regardless of seismic zone)	100	15
Pre 1947 Girth Welds within area of ground acceleration $\geq$ 0.2g	100	15
Shielded pre-1960 Bell-Spigot/BBCR**	40	6
Default	0	0

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** Shielded Metal Arc Welds (SMAW) made prior to 1960 or girth weld joints made with Bell-Spigot or BBCR joints.