

MEMORANDUM OF UNDERSTANDING

between

California Gas Transmission (CGT)

and

Operations, Maintenance & Construction (GC Gas)

December 17, 2003



**Memorandum of Understanding-Gas Transmission Construction
Between
California Gas Transmission
And
Operations, Maintenance & Construction
Revised 2003**

Preface: The following agreement details communication, coordination, authority and responsibility for the construction of California Gas Transmission (CGT) pipeline and station facilities by the Title 300 workforce of Operations, Maintenance & Construction (OM&C). This agreement reflects collaboration between both departments and ensures our continued focus on professional project management as well as improvements in safety, efficiency and cost reduction.

This agreement contains specific measures of performance for both departments. These performance measures are intended to increase mutual accountability while at the same time providing objective feedback on progress toward goals.

1.0 Workload Planning: Workload planning is a key element of PG&E's ability to efficiently manage its construction resources. Therefore, CGT and OM&C agree to the following:

1.1 Annual Forecast & Workload Leveling: CGT will submit an annual forecast of OM&C Title 300 resource needs no later than November 15th of the previous year. The annual forecast shall detail man-hours forecast for each OM&C Area by month. OM&C will analyze its overall workload leveling needs and provide feedback to CGT. When practical, CGT will alter work schedules to facilitate OM&C's workload leveling needs. A final annual forecast will then be submitted after CGT's capital budget is authorized. Copies of the forecast will be sent to the OM&C Director for each area and the GSM&TS¹ Director. CGT and OM&C will track actual versus forecast man-hours in each OM&C Area in order to provide feedback back to both Departments on their ability to accurately forecast manpower needs on an annual basis.

Monthly Forecast: CGT will update its on-line resource forecast (gcfst.xls) by the 7th of each month. CGT's resource forecast is updated daily and is located on the CGT web site (Utility Operations/ California Gas Transmission/ Gas System Maintenance and Technical Support/ Financial/ Summary Reports.....gcfst is the second file under Miscellaneous Reports). The report can also be accessed directly from Excel using the following address (file:\\WALNUTCRK01\CGT\CLEANUP\Intranet Docs\sum_rpts\gcfcast.xls) or from the attached website at the top of the Miscellaneous Report section (http://www/gsm/Financial/rpts_order.htm). OM&C can use the on-line forecast

¹ Gas System Maintenance & Technical Support

in preparation of its resource plan. The forecast will show all jobs forecast to be in construction in the current and following 3 months. The format of the report shall be OM&C Area, Job Description, and forecast man-hours and / or mandays per month. CGT will also send an electronic copy of the forecast (pulled from the website) to all OM&C GC Superintendents on the 10th of each month. CGT and OM&C will meet monthly in the Resource Utilization Team meetings to review the CGT project forecast and GC resource availability. CGT will also participate in the monthly OM&C prioritization and resource allocation meetings in each area on an as-needed basis.

1.2.1 Both CGT and OM&C share accountability for the successful scheduling of jobs and associated resources. CGT is responsible for providing accurate workload forecasts so that OM&C can make decisions about resource levels. OM&C is then responsible for adhering to the construction schedules established by the CGT Project Manager. However, CGT Project Managers may adjust construction schedules to facilitate OM&C manpower scheduling needs when doing so is consistent with overall project needs. When resource and/or schedule limitations within an area do not allow OM&C to construct a project, the OM&C and CGT resource leads will work together to determine the required resource adjustments and contracting necessary to accomplish all CGT work systemwide. The decision to "contract out" Exhibit XVI Projects is the responsibility of OM&C with input from CGT. The decision to "contract out" non-Exhibit XVI Projects is the responsibility of CGT with input from OM&C. It is recognized that original planning schedules change throughout the year due to a variety of reasons. In the event that work originally planned to be constructed by OM&C needs to be contracted out (due to resource limitations or other business reasons), OM&C will strive to provide as much advance notification to CGT as practical (8 weeks will be the goal). Likewise, CGT will strive to have job packages complete for OM&C to administer contract construction as early as practical (8 weeks will be the goal).

1.3 SAP Work Management: CGT is currently not included in the implementation schedule for OM&C's Work Management system. Each OM&C Area Title 300 Distribution Superintendent will be responsible for scheduling and managing resources once the job is in construction.

1.4 Engineering Lead-Time: Maintaining adequate lead-time between job assignment (receipt of work assignment letter, authorized job copies and construction drawings) and the start of construction is a key factor in OM&C's ability to efficiently plan and execute construction activities. As such, CGT's goal for lead-time will be:

- GPRP - 100% of jobs with 4 weeks lead time or better
- Service Reliability - 100% of jobs with 4 weeks lead time or better
- WRO - 80% of jobs with 4 weeks lead time or better
- New Business - 60% of jobs with 4 weeks lead time or better

- Contracted Work 90% of jobs with 8 weeks lead time or better
- Emergency - Lead time not applicable

2.0 OM&C Construction Review For Job Estimate: Obtaining OM&C input on job design, schedule and costs during estimate development results in improved estimates. CGT estimators and project managers shall contact OM&C Title 300 Distribution Supervisors for their input. OM&C shall complete a Construction Review within 10 working days of receiving a job package from CGT for all jobs with an assigned cost greater than \$100,000. The Construction Review will be based on information in the "For Plant To Be Installed" Detail Sheet included in the job package. While concurrence on job costs is not required, both OM&C and CGT shall have sufficient dialogue to fully understand the differences of opinion. "Differences of opinion" must be documented by both parties on the CGT Work Assignment Letter (See section 3.0) before construction can begin. If necessary, OM&C will utilize the Change Order process (see section 5.) to request additional funds in the areas of proposed cost disagreement.

3.0 CGT Work Assignment: When assigning work to OM&C, CGT will submit a CGT Work Assignment (see **Attachment 1 example**) with as complete a job package as possible to the appropriate OM&C Area Title 300 Distribution Superintendent. The job package should contain the necessary paperwork (construction drawings, permits, Corporate Real Estate requirements, etc.) for OM&C to perform as accurate a job review as possible with the information supplied. Information that is missing during the time of the Work Assignment (encroachment permits, etc.) will be documented on the Work Assignment letter. The CGT Work Assignment form will be viewed as a contract between OM&C and CGT. The scope, project duration, and costs for work assigned will not be exceeded or changed without prior written approval via the Change Order process (see Section 5). On jobs greater than \$100,000 assigned costs, the work assignment form will also detail by what method and how often costs will be reported and forecast." The CGT Work Assignment, not the associated job estimate, defines the scope, schedule and costs for work. The goal of the work assignment is to formally authorize OM&C to expend CGT funds and manage the construction of assigned work. OM&C will not spend money that is not assigned by the Work Assignment form or authorized by an approved Change Order. At a minimum, the work assignment will detail: the date of work assignment, the financial funding for OM&C's portion of the assigned work (broken down by labor mandays, standard rate labor \$, material, contract and other items to be initiated and controlled by OM&C), the agreed on date construction can start, the required completion date, whether any permits are still pending, the status of any long lead time material, the order to be charged, and the name and phone number of the project manager. In particular, the CGT project manager and OM&C are responsible for addressing the impact that any missing/late permits may have on the assigned work schedule. The responsible OM&C Area First Line Supervisor may sign and approve CGT Work Assignment letters for Projects up to \$100,000 assigned costs (gross) with a cc to the OM&C Area Title 300 Distribution Superintendent. The approving

signature of the OM&C Area Title 300 Distribution Superintendent shall be required on all CGT projects with an assigned cost of over \$100,000 (gross).

3.1 CGT Project Manager Authority: When necessary, CGT Project Managers have the authority to assign preliminary work to OM&C in advance of final job estimate authorization. However, such assignments must still be made by issuing a CGT Work Assignment. CGT Project Managers are accountable for following CGT and corporate guidelines for such actions. OM&C is not responsible for verifying the Project Manager's compliance with these requirements.

4.0 Job progress, status & cost reporting requirements: OM&C will report job progress including forecast construction costs to the CGT Project Manger on an agreed to schedule for each project. The agreed schedule will be stipulated in the CGT Work Assignment letter (See section 3.0). OM&C will develop project cost, schedule, contracting, and communication plans to insure successful project execution. A "Preconstruction Meeting" shall be conducted by the CGT Project Manager with OM&C Team Members a minimum of two (2) weeks prior to construction to develop said plans and establish roles and responsibilities for the Project Team Members. At a minimum, CGT and OM&C will conduct "Construction Progress Meetings when 30%, 60%, and 90% of assigned dollars have been expended by OM&C on Projects with assigned costs greater than \$100,000. On Projects with assigned dollars greater than \$500,000, Construction Progress Meetings will be conducted on an agreed schedule stipulated in the CGT Work Assignment letter (See section 3.0). At the "Construction Progress Meeting, OM&C will provide progress reports to CGT detailing:

- Up to date Planned vs. Actual Costs
- Physical % Complete vs. % of Assigned Money Spent
- Proposed and Issued Change Orders and their Impact on Forecast at Completion Costs.
- Forecast At Completion Costs.

(See Attachments 2 and 3 for examples of recommended types of progress reports.)

5.0 Change Orders: CGT and OM&C will utilize Change Orders (see Attachment 4) to formally record and communicate changes in the scope, project duration, or cost of the work as originally specified and agreed to in the CGT Work Assignment. For additional work (not part of original Work Assignment) that CGT wants to assign to OM&C, CGT will initiate the Change Order Form and send it to OM&C for all proposed changes requested by CGT. OM&C will provide a cost estimate for the CGT directed change and return the Change Order to the CGT Project Manager within 5 working days. Change Orders for changes in scope, project duration, or cost of the work encountered by OM&C during construction shall be immediately prepared by OM&C and submitted to the CGT Project Manager by e-mail. The Change Order should detail the change in scope as well as the expected financial impact to the job. Verbal notification to the CGT Project Manager is permissible

provided a written Change Order follows it up immediately. The CGT Project Manager shall respond to the Change Order within 5 working days. If CGT fails to respond within 5 working days, **OM&C shall not proceed with portions of the work that deviate from the assigned scope, schedule or cost.** The CGT Project Manager (PM) approves change Orders, and it is the PM's responsibility to determine if the change will drive the total job costs over the assigned amount and/or authorized job estimate amount. If additional funding is required, the PM is responsible for releasing contingency or processing a request for additional funding.

5.1 Request For Additional funding: It is the responsibility of OM&C to notify the CGT Project Manager immediately of any need for additional funding beyond the amount originally specified in the CGT Work Assignment. A Change Order form detailing the additional funding request shall be e-mailed to the CGT PM with a copy to the OM&C T300 Superintendent's office. The e-mail may include:

- Paragraph 1: This is notification that (job name and number) requires additional funding. The job was originally authorized for (\$) and the actuals spent to date are (\$) and the forecast at completion is (\$).
- Paragraph 2: The need for additional funding is driven by the following factors...(sap conversion issue, variance, materials, etc) and states the Construction man-days authorized and actuals. If productivity is an issue, state the estimated unit rate and actual unit rate and why.
- Paragraph 3: Based on current spending and production rates, expenditures on this project will reach the currently authorized amount on (date) and the project will be (%) complete. If we have not received an authorization for additional funding on this job by (date) construction activities will cease and we will de-mobilize off the project. Should that occur, the project's re-authorized funding will need to be increased by (\$___) to cover mobilization costs to reactivate this job.

6.0 Overrun Notification: OM&C will not exceed the CGT Work Assignment dollar amount without written prior approval of the CGT Project Manager via a Change Order. If costs managed by OM&C exceed their authorized Work Assignment dollar amount (including approved Change Orders) without prior approval by the CGT Project Manager, this will be considered an overrun. In the case of an overrun, OM&C will need to provide the CGT Project Manager, with a copy to the OM&C T300 Superintendent's office, a Change Order with the Overrun Box checked with reasons why the overrun occurred, date of notification, forecast vs. assigned costs (broken down by labor, material, etc., lessons learned to prevent another overrun, and forecast dollars to complete the Project.

6.1 CGT Project Manager Authority: When notified of a potential, pending or actual overrun, the CGT Project Manager has the authority to:

- a) Require OM&C to stop construction.
- b) Modify the scope or schedule of the work via a revised CGT Work Assignment or approved Change Order.

- c) Release additional funds to OM&C via a revised CGT Work Assignment or approved Change Order.

7.0 As-builts and Job Close-out: OM&C responsibility for the as-builts and job close-out process are shown in Attachments 6. As-builts shall be submitted to CGT within 30 calendar days of completion of construction. The remaining OM&C job close-out process shall be completed within 30 calendar days of the construction complete date. In addition, OM&C and CGT will determine who will be responsible for forwarding the appropriate operational notice information to the local District E&M Mapping group within 24 hours after the facilities become operational. This decision will be based on local practice and documented in the Work Assignment letter (see Attachment 1).

8.0 Post Construction Critique: OM&C and CGT will conduct project critiques in order to focus on areas for mutual improvement. On designated Projects, the CGT Work Assignment will include the need for a formal project critique by OM&C and CGT (See Attachment 1). CGT Project Managers will be responsible for initiating and facilitating the critiques with OM&C. All CGT Work Assignments over \$500,000 in assigned costs shall have written project critiques completed by the CGT Project Manager and attached to the PSRS subdirectory. The written project critiques shall review original assigned costs, final costs, and unit costs. Critiques shall address the quality of engineering and project planning; variances in scope, schedule, cost; quality, safety issues, best practices learned, and shall identify any corrective actions recommended for future work. OM&C shall review and have the opportunity to comment on the Post Construction Critique before it is distributed. Written critique reports shall be distributed to the appropriate CGT manager, CGT Construction & Project Management Superintendent and the OM&C Title 300 Distribution Superintendent.

9.0 Measuring Financial Performance: Measures of financial performance are a key tool in PG&E's efforts to minimize and control costs. As such, OM&C and CGT agree to use the following measures. (Note: This section is currently under review by CGT.)

10.0 PCC Charges: Attachment 5 shows the uniform requirements that OM&C uses to determine what costs may not be charged to jobs. Exceptions to the rules shown in Attachment 5 require prior approval of the CGT Project Manager.

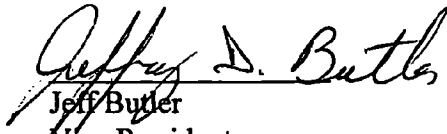
11.0 Contracting CGT Work: OM&C and CGT agree to abide by existing Company/Union agreements (Exhibit XVI) pertaining to the contracting of construction work. OM&C agrees to obtain CGT input for any union negotiations or agreements that impact or alter the company's ability to contract gas transmission construction and/or inspection work.

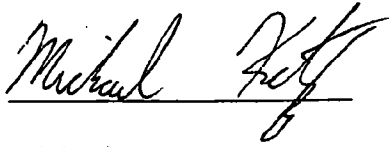
12.0 Work Procedures Issues:

- 12.1 Tie-in Procedures: A written sequence of operations shall be prepared for any tie-in work on CGT facilities. The sequence of operations shall either be incorporated directly in the Clearance Procedure or referenced as an attachment to the Clearance. CGT and OM&C shall conduct a "Pre-Tie-In Meeting" to develop the OM&C Tie-In Procedures that will be incorporated into the CGT Clearance Procedure. Refer to California Gas Transmission Standard Number 4131, Revision 1 for minimum requirements concerning Pipeline Shutdowns and Tie-ins.
- 12.2 Deviations from Design: All deviations to job design must be approved by the CGT Pipeline and/or Station Engineer. CGT's Project Manager shall be OM&C's point of contact for any design changes.
- 12.3 Excavating near Transmission Facilities: OM&C is responsible to follow all PG&E polices concerning excavating around gas transmission facilities including but not limited to Gas Information Bulletin #151 (CGT Policy Preventing Mechanical Damage to Transmission Lines. See Attachment #7
- 13.0 Work Quality: Work quality is of high importance to both OM&C and CGT. CGT will periodically inspect ongoing and completed construction work for safety and adherence to standards and specifications. Concerns will be shared directly with OM&C's job foreman and/or Title 300 Distribution Supervisor. Concerns of a serious or repetitive nature will be discussed with the Title 300 Distribution Superintendent.
- 14.0 Safety: It is important to ensure that safety issues are addressed in a proper and timely manner. Safety issues concerning existing CGT facilities shall be communicated directly to the appropriate CGT District Superintendent. Safety concerns involving new CGT facility construction projects shall be communicated directly to the CGT Project Manager or Construction Manager, or the CGT Construction & Project Management Superintendent.
- 15.0 Emergency Repair Preparedness: It is important that PG&E maintain its gas transmission emergency repair capability. CGT will work with OM&C to determine the appropriate types and quantities of equipment, vehicles and specialized tools that shall be held by OM&C for system-wide needs. Once the list is created, OM&C shall perform an annual review to ensure that the specified items are still readily available for emergency repair needs. Budgeting and funding for specialized items used solely for gas transmission work (e.g. Test Heads) will be the responsibility of CGT. Such items shall be properly recorded as transmission assets. (Note: This section is currently under review by CGT.)
- 16.0 CGT Key Contacts and On-Call Personnel: Key Contact and On-Call Personnel information is available in Volume II of the GSM&TS Emergency Plan Manual. The

16.0 CGT Key Contacts and On-Call Personnel: Key Contact and On-Call Personnel information is available in Volume II of the GSM&TS Emergency Plan Manual. The latest copy of this manual is listed under "On Call Lists" in the Organization Section of the GSM&TS Web Site.

Effective Date: This agreement is effective 12-17, 2003. It will be updated as deemed necessary by the signing parties. The following parties are in agreement as stated above:


Jeff Butler
Vice President
Operations, Maintenance & Construction


Michael Katz
Vice President
California Gas Transmission



ATTACHMENT 1
Work Assignment (Rev. 2)
from California Gas Transmission
TO OM&C

Order:	SO7041326	Date:	03/21/03
Project Description:	Relocate 4,481' of Mather District Feeder Main	Area:	6
Project Location:	Folsom Blvd So/of Blue Ravine Road	City:	Folsom

To:	[REDACTED]	Organization:	GC Gas
Address:	[REDACTED]	City:	[REDACTED]

From:	[REDACTED]	Title	Project Manager
Address:	[REDACTED]	City:	[REDACTED]

COST The following gross financial expenditures are authorized: **\$1,082,018**

Labor:	\$584,640	Direct Material:	\$129,120
Contract:	\$363,258	Std. Cost Var:	
Other	\$5,000	Std Cost for Est.	\$90/hr

AGREED SCHEDULE:

<u>Deliverable</u>	<u>Approx Mandays Budgeted</u>	<u>Start</u>	<u>Complete</u>
Complete installation of 4,481' of 12" Mather DFM	768	4/21/03	7/18/03
Inert and Abandon 4,438' of 8" Mather DFM	44	4/21/03	7/18/03
Mandays Budgeted for District support from Sacramento (Not included in above assigned \$)	12	4/21/03	7/18/03

SCOPE OF WORK AUTHORIZED:

Install 344' of 12" Mather DFM. Abandon 344' of 8" Mather DFM. Install 4,137' of 12" Mather DFM. Abandon 4,094' of 8" Mather DFM (cut in 1,000' sections). Replace pavement removed/damaged during pipeline installation and tie-ins. Remove casing vents, 8" pipe from casing, and fill casing with slurry.

CURRENT JOB STATUS:

	Yes	No	N/A	Explanation
Job Estimate Attached?	X			
Final Construction Drawings Attached?	X			
Long lead-time material already ordered?	X			12" pipe ordered
All permits approved & acquired?	X			
All Right-of-ways acquired?	X			

COMMENTS:

Clearance responsibilities will be handled by [REDACTED], Sacramento District. All operations must be coordinated with Sacramento District. This Work Assignment is a "contract" between OM&C (GC) and CGT (GSM&TS). The Scope, Schedule, and Costs for work assigned will **not be exceeded or changed without prior approval** via an "approved" CGT Change Order. OM&C will not spend money that is not approved. OM&C shall complete a Construction Review and return the signed Work Assignment within 10 working days of receiving a complete job package (including permits) from CGT. The Construction Review will be based on all required information including but not limited to the "For Plant To Be Installed" Detail Sheet which is included in the job package.



ATTACHMENT 1
Work Assignment (Rev. 2)
from California Gas Transmission
TO OM&C

While concurrence on job costs is not required, both OM&C and CGT shall fully understand the differences of opinion. These differences of opinion must be documented by both parties on the Work Assignment before construction can begin. If necessary, OM&C will utilize the Change Order process to request additional funds in the areas of proposed cost disagreement

A Pre-Construction Meeting will be conducted by the CGT Project Manager with GC before construction begins. GC will develop project cost, schedule, and communication plans to insure successful project completion. GC shall submit a "weekly" progress and status report to the CGT Project Manager. The progress and status report shall detail the previous weeks activities including pipeline footage completed for the week, footage completed to date, and any significant events that could impact the scope, schedule, or cost of the Project. Also Project Progress meetings will be held a minimum of twice a month (or unless otherwise indicated by the Project Manager) for the duration of the Project. At Progress Meetings, GC shall provide reports detailing up to date planned vs. actual costs, physical % complete vs. % of assigned money spent, proposed and issued change orders, and forecast at completion costs. For this project, OM&C will also be responsible for forwarding the appropriate operational information to the local OM&C District E&M mapping group within 24 hrs after the facilities become operational.

This job estimate contains Contingency dollars. Contingency is a cost allowance added to the estimated total cost of a project to provide funds for uncertainties in work, quantities, unit prices, labor productivity, schedule activity duration, standard cost variance, etc. Release of contingency funds for scope changes is unacceptable. Scope changes involve performing additional work not approved on the original job estimate and not required by the immediate project. Release of contingency dollars must be tied to a specific event. Contingency dollars can only be release by the CGT Project Manager via an approved Change Order.

Upon completion of the Project, OM&C and CGT will conduct a Post Construction Critique. The Critique shall address the quality of engineering, project planning, variances in scope, schedule and cost, quality, safety issues, best practices learned, and shall identify any corrective actions recommended for future work. Written critique reports shall be distributed to the CGT Construction & Project Management Superintendent and the OM&C Title 300 Distribution Superintendent.



Signature: CGT Project Manager

Signature: Work Group Supervisor

Signature: OM&C Title 300 Superintendent

FINANCIAL AND PROGRESS REPORT

Order Number 7041328 Amount Assigned \$1,082,018 Period Ending 02/10/03

Job Description Relocate 4, 481 Feet of Mather District Feeder Main, Folsom Blvd and Blue Ravine Road, City of Folsom

Assigned \$	\$ Used this period	\$ Used To Date	% \$ Used	Est. \$ to Comp	Total Forecast \$
\$1,082,018	\$50,400	\$160,000	14.8%	\$922,018	\$1,082,018

% Physical Work this Period	% Comp To Date
3.8%	13.4%

Assigned Man-Days	Md's used this period	Md's used to date	% MD's Used	Est MD's to Comp.	Total Forecast MD's
812	70	177	21.8%	677	864

MAJOR ITEMS	AUTHORIZED				FORECAST			WORK COMPLETED TO DATE						% Comp
	% Job	Units	MDs	Dollars	Units	MDs	Dollars	This period			To Date			
								Units	MD's	Dollars	Units	MD's	Dollars	
Inst 344' of 12" DFM	7.67%	344	140	\$100,800	344	140	\$100,800	172	70	\$50,400	340	135	\$90,000	7.58%
Aband 344' of 8" TP DFM	0.02%	1	2	\$1,440	1	2	\$1,440				1	2		0.02%
Install 4137' of 12" D	92.20%	4,137	628	\$452,160	4,137	628	\$452,160				260	40		5.79%
Aband 4,084' of 8" TP DFM	0.11%	5	42	\$30,240	5	42	\$30,240							0.00%
Material				\$129,120			\$84,741						\$70,000	
Shoring Rental				\$12,000			\$12,000							
Traffic Control				\$29,000			\$29,000							
Steel Plate Rental				\$2,000			\$2,000							
Hydro Test				\$4,500			\$4,500							
Spoil Removal				\$8,135			\$8,135							
X-Ray				\$21,413			\$21,413							
Backfill		2246 cy		\$134,738	2246 cy		\$134,738							
Paving		12864sf		\$102,912	12864sf		\$102,912							
Sawcutting				\$22,560			\$22,560							
Repl Traffic Sig Wires				\$6,000			\$6,000							
City Inspection				\$5,000			\$5,000							
Contract CP Eng				\$20,000			\$20,000							
Totals	100.00%	4,487	812	\$1,082,018	4,487	812	\$1,037,639	172	70	\$50,400	601	177	\$160,000	13.39%

If is estimated that labor and material will overrun by more than \$1.00, fill in below:

Check cause of overrun LABOR MATERIAL CONTRACT OTHER

Explain overrun in more detail with attached approved change order.



NOTIFICATION OF ADDITIONAL JOB COSTS OR CHANGES

California Gas Transmission
ATTACHMENT 4

CHANGE IN: SCOPE

SCHEDULE

COST

Date:

Change Order No.

To: CGT Project Manager

Order: PSRS #:

Source Document No:

Project Description:

Project Location:

City:

If this change order is approved, the total estimated financial cost of the original work assignment plus all approved change orders is now: \$ _____

The total estimated financial cost of this change order is: \$ _____

Labor:

Direct Material:

Contract:

Std. Cost Var:

Other:

THE PROJECT IS CURRENTLY

% COMPLETE.

EXPLANATION OF CHANGE OR ADDITIONAL COST OR OVERRUN: _____

IS WORK ASSIGNMENT PROJECTED TO OVERRUN If so, complete FORECAST:

	Currently Assigned	Forecast
Labor @ std Rate	\$ _____	\$ _____
Material	\$ _____	\$ _____
Contract	\$ _____	\$ _____
Other	\$ _____	\$ _____
Total	\$ _____	\$ _____

These added costs are either anticipated or about to be expended on this project and, to the best of our knowledge, were not included in the estimate. Please authorize our construction forces to continue and expend these additional funds or contact my office with other instructions.

Notification of additional charges by:

Supervisor

Phone No.

Address:

City:

To Project Manager: Please sign authorizing change and receipt of cost notification, return copy to Construction.

(Signature: Project Manager)

Date:

ATTACHMENT 5
OM&C PCC vs. ORDER CHARGING EXAMPLES

Correct and consistent accounting is a vital part of all of our jobs. One of the areas where consistency can be improved is determining when it is appropriate to charge costs to a PCC vs. direct charging to an order. PG&E's Activity Price Policy states "activity prices are carefully predetermined costs needed in the delivery of goods or services". It also states that these activity prices "are used to move costs from the provider of a service to the receiver of a service so that all costs ultimately end up in the appropriate FERC accounting and Business Unit Income Statement". The Activity Price Policy is available on the following Budget Department web site:

<http://www/budget/Policies/Docs/stdcostInstruction.doc>

Since this policy is general in nature, some additional clarity is needed in OM&C to ensure that the interpretation of the policy is consistent. **The basic premise in OM&C is that all items that represent part of the ongoing resource inputs to support construction activities are PCC charges. Items that are specific to an individual job and are not recurring expenses are order charges.** This basic premise applies to all types of charges including vehicles, rentals, tools, equipment and labor. Specific examples are shown below for clarification.

FLEET

All fleet (vehicles and equipment) both internal (company owned) and external (rental) shall be planned and included in the PCC standard rate. The only exceptions are specialized vehicles that are specific to a single job and rental units that are not typically owned by PG&E because they are not frequently used or are a different size than those generally purchased by the company for regular use. Examples of PCC and order charges related to fleet are shown below. *(This is not intended to be a complete list, just a few examples for illustrative purposes.)*

Charge to PCC	Charge to Order
Dump Trucks	Helicopters
Water Trucks	Special Cranes
Loaders	Rock Wheels

If a specialized vehicle or piece of equipment is required for a job, construction should identify the need during the job review process and add the necessary items to the job estimate.

NON-FLEET RENTAL AND OTHER PURCHASES

The criteria used for non-fleet rentals and other purchases are basically the same as for fleet. **Rentals and purchases (excluding job specific material that is totally consumed or installed as part of the job) shall be planned and included in the PCC standard rate. The only exceptions are specialized tools, equipment and supplies specific to a single job and rental units that are not typically owned by PG&E because they are not frequently used or are a different size than those generally purchased by the company for regular use.** Examples of PCC and order charges

ATTACHMENT 5

related to non-fleet rentals and other purchases are shown below. *(This is not intended to be a complete list, just a few examples for illustrative purposes.)*

Charge to PCC	Charge to Order
Blue Rooms	Hoe Arms
Steel Plates	Rock Splitters
Bucket Teeth	
Saw Blades	
Shovels, wrenches and other commonly used hand tools	
Gloves, safety vests and other personal safety equipment	
Meals and travel expenses	

If specialized tools, equipment and supplies are required for a job, construction should identify the need during the job review process and add the necessary items to the job estimate.

LABOR

Guidelines for major event charging (i.e., large emergencies such as storm response, earthquakes, etc.) are somewhat different than our normal practices due to extraordinary operating conditions. Charging guidelines for major events are contained in the Major Event Charging Guidelines stored on the Business Planning web site: <http://dcs/bp/planningguidelines/majorcharging.asp>

The criteria for labor charges during normal operating conditions call for labor to be charged out by billing hours from the employee's PCC to the orders or PCCs consuming the employee's time. Examples of PCC and order charges related to labor are shown below. *(This is not intended to be a complete list, just a few examples for illustrative purposes.)*

Charge to PCC	Charge to Order
Training	Travel time to and from a job site
General Tailboards	Crew tailboards related to the job
Safety Meetings	
Inclement Weather	

In addition, there are certain classifications that are considered "non-billable" which means that generally none of their time is billed out. Some examples of these classifications are Directors, Managers/Superintendents, Supervisors and Specialists. Contact your business planner to determine what positions in each PCC are non-billable.

Updated August 16, 2002

Please contact [REDACTED] with questions regarding this document.

AS-BUILDING PROCESS

DRAWING MARKUPS FROM CONSTRUCTION 1
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ADDITIONAL POSTING REQUIREMENTS FOR MAJOR STATION FACILITIES 2
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As-Builting

Construction drawings need to be properly as-built by the constructor to reflect installed conditions. In addition to the drawing as-built mark-ups, the constructor must submit a completed CGT Construction As-Built and Pressure Report Checklist along with the additional construction documentation outlined on this form. See attachment for further detail on CGT Weld Documentation Requirements.

Posting requirements regarding the as-built information and the responsibilities of the various parties involved in the as-built process is outlined in the following paragraphs. The As-Builts/Job Close Process Flowchart provides additional detail on the process.

DRAWING MARKUPS FROM CONSTRUCTION

- ◇ Constructor provides field markups of drawings as follows.
 - Main Gas Piping & Pipelines - All modifications to piping installation. Locations of key items are clearly identified. This includes: Changes in pipe data, corrosion protection related equipment, repair locations, tie-ins, taps, pipe fittings and other appurtenances. For bill of materials, update all major material changes, update all descriptions regarding information to establish minimum operating pressure (e.g. ANSI class, size and wall thickness, material yield strength), and include serial numbers of valves & other major equipment.
 - Elementary and Wiring Drawings - All changes
 - Other - Significant design changes only. For bill of materials only show changes to main components.
- ◇ Use the following colors for as-built information:
 - ⇒ Red - Additions
 - ⇒ Green - Deletions
 - ⇒ Blue/Black - Comments Only
- ◇ Complete As-Builts as soon as the work is complete (Must be received by Walnut Creek office within 30 days).
- ◇ Provide one set of color-coded mark-ups and two additional copies with as-built information color-coded, highlighted or clouded on copies.
- ◇ All as-builts should be dated and initialed (LAN ID) by person who marked-up the drawing.
- ◇ Include Project Drawing List with each as-built package for Major Station Facilities. This form should be included with copies of drawings in construction package.

POSTING OF AS-BUILTS – ALL FACILITIES

- ◇ Project Manager or their designee (Project Engineer, District or GC-Gas personnel) provides markups of Operating Diagram and Operating Map drawings to Mapping within (1) one working day of operational date. Mapping updates Operating Diagram and Map. *Note: Markups must also be provided to District or Division Operations and to GSO - Operations Planning and Control.*
- ◇ Project Engineer reviews entire as-built package for accuracy and completeness. Main gas piping as-built mark-ups are filed in job folder along with other required construction documentation and records.
- ◇ For all station work, Design Engineering/Drafting receives a copy of the as-built package and determines in conjunction with the Project Engineer if a maintained "numbered" record drawing set exists for the facility and needs to be updated. *Note: New construction at stations with a maintained "numbered" record drawing set is sometimes accomplished utilizing sketches or "non-numbered" drawings and then later as-building the record drawing set.*
- ◇ For pipeline and station facilities with maintained "numbered" record drawing sets, Design Engineering/Drafting updates drawings in accordance with drawing as-built guidelines using field markups provided by constructor. Project Engineer reviews and approves updated drawings. Records distributes all as-built drawing sets. Drawing list for as-builts filed in job folder.
- ◇ Mapping provides copies of all Strength Test Pressure Reports and pressure charts to System Integrity for filing in MAOP records database.

ADDITIONAL POSTING REQUIREMENTS FOR MAJOR STATION FACILITIES

- ◇ Project Engineer identifies changes and updates drawings for Control System Philosophy and Operation & Maintenance Instructions.

ADDITIONAL POSTING REQUIREMENTS FOR PIPELINES

- ◇ Mapping updates GIS database for newly installed pipe, and also for abandoned and removed pipe, using field markups provided by constructor.
- ◇ Records scans and saves electronically as-built markups for pipeline drawings. Mapping links electronic as-built files to GIS database.

ATTACHMENT 6

Pacific Gas and Electric

CGT CONSTRUCTION AS-BUILT AND PRESSURE REPORT CHECKLIST

This checklist and associated as-built records shall be completed and sent to CGT within 30 calendar days of the operational date. Prepare three copies of as-built job package (red marked as-builts, pressure test reports, test charts, A-forms, face sheet, etc) and mail to Close Out Desk.

Project Name	Operative Date
District/Division	Order Number

From Field Engineer: _____

Today's Date: _____

Mail to: Close Out Desk, Gas System Maint., 375 N. Wiget Lane, Walnut Creek, 94598

Task	Yes	No	N/A	Comments
Job estimate marked up to indicate work completed, start & completion dates along with foreman's signature and initials are filled in.				
As-Built changes to drawings and material lists are marked in red (changes on copies are highlighted).				
Weld inspection stamp signed by qualified weld inspector or 100% x-ray.				
Following items are clearly identified by distance from a known point on existing pipe or other landmark/boundary that is identifiable by mapping or by a GPS coordinate (sub-meter accurate): Changes in pipe data Rectifier, ETS, and Leak locations Repair locations (3 rd party or weld repairs) M-numbers (Tie-ins) T-numbers (Taps) Changes in alignment and or elevation of the pipe due to offsets, rolling offsets, dog legs, etc.) Other Appurtenances (PCFs, repair sleeves, sav-a-valves, threadolets, etc)				
Horizontal distances are listed (as well as length installed distance) for all stationing on profile drawings and detail drawings.				
Sketch of tested section is attached (with angle points, footages and fittings).				
Length tested matches length installed (if not, give explanation).				
Pipe and fitting specifications on test report matches bill of materials on drawings				
Pressure report indicates test start and end time.				
Pressure Report signed by Area Foreman (District Supervisor) and Test Supervisor (Field Engineer).				
Pressure report falls within pressure test limits (any changes must be first authorized by Project Manager).				
Test chart indicates correct start time and date of last calibration.				
All accepted and rejected x-ray reports are attached.				
Main Inspection reports (A-forms) completed for each section of pipeline exposed.				

CGT WELD DOCUMENTATION REQUIREMENTS**ALL PROJECTS**

Tie-in welds and welds requiring repair must be clearly identified by distance from a known point on existing pipe or other landmark/boundary that is identifiable by mapping or by a GPS coordinate (sub-meter accurate).

Project requires 100% non-destructive inspection (NDT) of circumferential welds*

Ensure that Attachment A of GS&S D-40 is accurately and completely filled out and included in the closed out job file. Construction is responsible for this, and construction is expected to have a process in place for verifying that the NDT inspection billing is accurately charged.

Project requires non-destructive inspection (NDT) of a portion (less than 100%) of the circumferential welds*

Ensure that Attachment A of GS&S D-40 is accurately and completely filled out and included in the closed out job. Construction is responsible for this, and construction is expected to have a process in place for ensuring the NDT inspection meets the requirements of GS&S D-40 and for verifying that the NDT inspection billing is accurately charged relative to number of NDT inspections performed. **It is not required that each circumferential weld be stationed but it is recommended.** The stationing of the welds allows construction the opportunity to verify that they have non-destructively tested the appropriate percentage of welds per GS&S D-40 and provides documentation for ensuring a sample of each welder's work is radiographically inspected each day. Stationing also allows construction an "audit path" for verifying that the NDT inspection billing is accurately charged relative to number of NDT inspections performed.

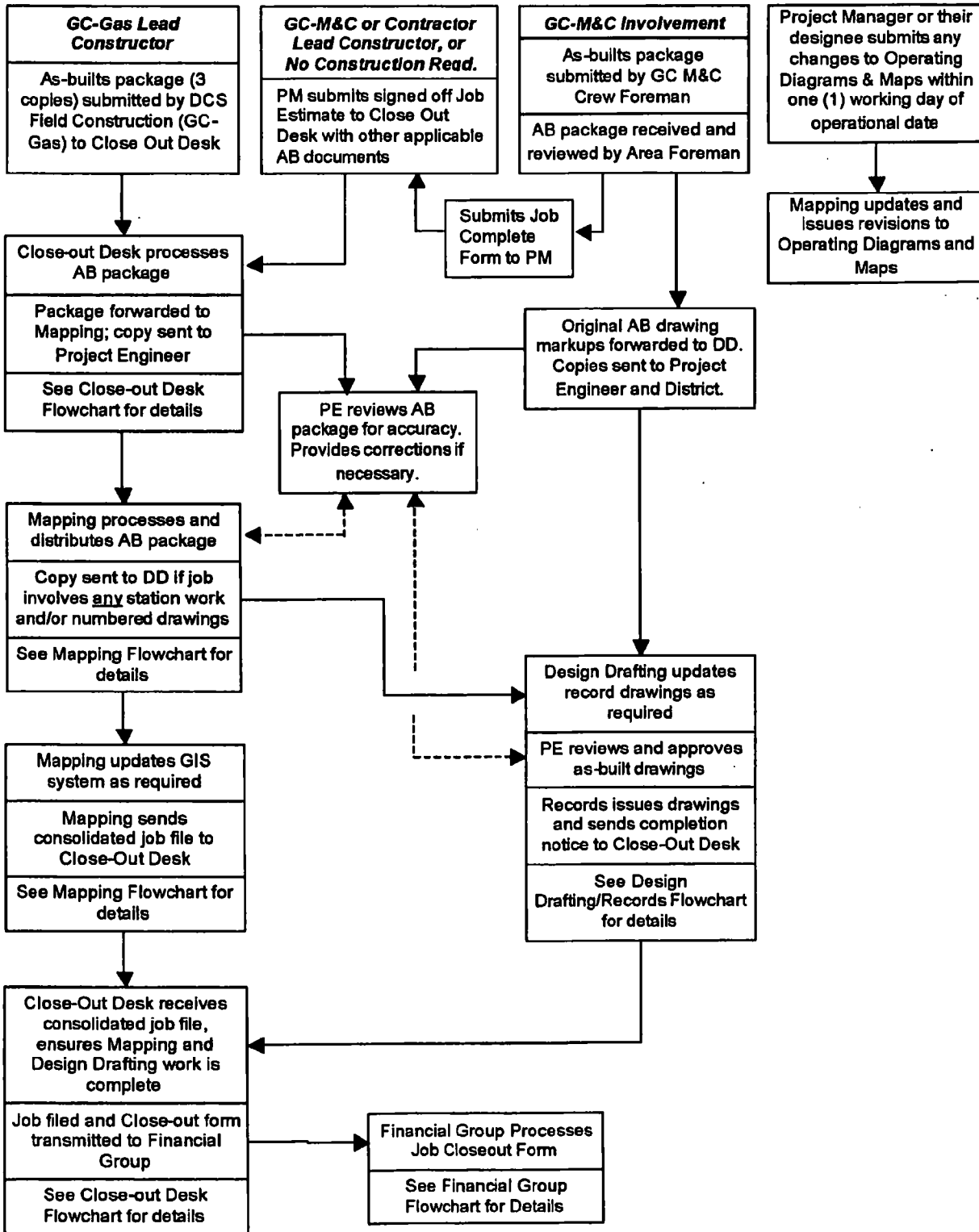
The accuracy of the stationing of these welds should be relative to each segment length installed but does not need to be surveyor accuracy. The stationing can also be achieved with the aid of a sub-meter accuracy GPS device and if this device is used it is not necessary to track the length of each segment of pipe.

- * Pipeline Engineer in conjunction with Project Manager will determine non-destructive inspection (NDT) requirements for each specific project.

ATTACHMENT 6

As-Builts/Job Close Process Flowchart

Pacific Gas and Electric





Pacific Gas and Electric Company

Gas Information Bulletin

Title: Preventing Mechanical Damage to Gas Transmission Lines

Check all appropriate boxes

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> SAFETY ALERT | <input checked="" type="checkbox"/> GAS | <input checked="" type="checkbox"/> DISTRIBUTION | <input type="checkbox"/> ESTIMATING |
| <input checked="" type="checkbox"/> MANDATORY COMPLIANCE | <input type="checkbox"/> ELECTRIC | <input checked="" type="checkbox"/> TRANSMISSION | <input type="checkbox"/> MAPPING |
| <input type="checkbox"/> RECOMMENDED ACTIONS | | <input type="checkbox"/> OPERATIONS | <input type="checkbox"/> SUBSTATION ENGR. |
| <input checked="" type="checkbox"/> INFORMATIONAL/CLARIFICATION | | <input type="checkbox"/> SERVICE | <input type="checkbox"/> TRANS./SUB. M&C |

MOU ATTACHMENT #7

CGT Policy

Preventing Mechanical Damage to Transmission Lines

This policy is intended to reaffirm and clarify required procedures and practices designed to prevent buried transmission lines from being mechanically damaged by external forces. This policy applies to **ALL** buried transmission lines and pipeline facilities owned by CGT, and the requirements apply to **ALL** parties involved with mark and locate, excavation, and stand by responsibilities targeted to prevent mechanical damage of buried transmission lines.

This policy provides requirements in addition to existing PG&E standards, and replaces the existing Local Transmission Standby Policy (LTSP – January 2000) and GSM Standby Policy (1997). Existing PG&E standards and guidelines include UO S4412 Protection of Underground Infrastructure, UO G14412 Site Delineation and Mark and Locate Surface Markings, and UO G14413 Procedures for Excavating Pipelines and Services.

This policy was developed by a cross functional team of GSM employees. Past incident report root cause findings, policies, as well as knowledge of actual field practices being employed, were all used in the development of this policy.

LOCATING TRANSMISSION PIPE

Method All CGT-owned transmission lines shall be conductively located using a direct connection. In the event this is absolutely not possible, due to the lack of available facilities to connect to (e.g., ETSs, valves, regulator sets, etc.), in order to obtain authorization to inductively locate the pipe, the locator **MUST** complete the checklist on the USA tag, documenting that all possible effort to connect to the pipe has been expended. For locating local transmission lines, prior to seeking authorization to inductively locate, a Corrosion Mechanic should be consulted for help with direct contact locating. **If the pipe must be inductively located, the locator shall carefully probe and/or hand dig to VERIFY that the transmission line has been properly located.** If probing or hand digging is not possible at the time of mark and locate because of hard surface (e.g., concrete, asphalt, etc.) and the pipe is inductively located to within 5 feet of planned excavation, then exact pipeline location shall be confirmed during excavation with a standby person present. As allowed by UO G14413, power-operated equipment may be used to remove pavement if there are no facilities within the pavement. (If probing or hand digging is not possible at the time of mark and locate because of hard surface and pipe is inductively located greater than 5 feet of planned excavation, every attempt shall be made to install an ETS nearby and conductively locate the pipe prior to excavation.)

Installation of ETS to Allow Conductive Locates In implementing this policy, each district or division crew should proactively identify ETS installations that are required in areas of the system to ensure conductive locates can be performed. These installations should be installed in preparation for future Mark and Locates. If inductive locating is authorized as described above, after the pipe has been exposed by excavation, an ETS shall be installed, if practical, and a direct connection shall be

established to mark and locate the remaining pipe in the USA boundary. If this cannot be accomplished, a Work Request shall be submitted (and the number noted on the USA tag) at the close of the job to ensure an ETS is installed in a suitable and accessible location to facilitate future conductive locating procedures.

Locating Pipeline Offsets or Branches In the event a pipeline offset (change in pipeline direction) or branch has been marked with any instrument, conductively or inductively, the location of the marked pipeline offset or branch SHALL be verified using probing and/or hand digging, PRIOR to allowing any power operated excavation in the USA boundary.

Multiple PG&E Facility Locates In the event two different PG&E pipelines (transmission and distribution) are present within the USA boundary, district and/or division personnel shall make extra effort to communicate with the excavator that two PG&E pipelines are identified on the USA ticket, and that both must be properly marked and located PRIOR to any excavation within the USA boundary.

Discovery of Inaccurate Mark and Locates In the event it is determined during excavation that a buried pipeline has been mis-marked, the responsible engineer should be immediately contacted and the incident investigated to determine root cause.

All other requirements in PG&E Standard S4412 and Guideline G14412 also apply to M&L activities.

EXCAVATION PROCEDURES

The following procedures provide additional clarity on required practices when excavating in the vicinity of transmission lines. All other provisions detailed in Guideline G14413 also apply.

General Requirements

- Excavation procedures described herein, and described in Guideline G14413, apply to ANY excavator, including PG&E or Third Parties.
- At no time is power-operated equipment (including high pressure water/air jetting*) to be used within 12 inches from the outside wall of the pipeline. Hand digging is required within 12 inches from the pipe. Vacuum excavation equipment without high pressure water/air jetting may be used to assist hand digging operation.
 - * High-pressure (in excess of 125 psig) water/air jetting action may damage the wrap on a steel pipeline. Water/air jetting less than 125 psig is allowed within 12 inches of the pipeline.
- If excavation activities are going to occur within 2 foot of the nearest side of the transmission line, the nearest side of the transmission line must be unearthed to ensure the excavator does not hit the transmission line. If construction involving the installation of above ground structures is planned to occur inside the pipeline right of way, confirmation of the pipeline location shall be confirmed by either probing or day lighting the pipeline.
- If excavation procedures include blasting, follow GPTC *Guide for Gas Transmission and Distribution Systems* – Appendix G-192-16. This Guide addresses leak surveys that must be conducted, as well as, other requirements. Please consult the appropriate Pipeline Engineer for more information.

Initial Excavation

- Prior to using any power operated equipment, probing to a depth of 24 inches, at 5 inch spacing, at a right angle to the pipeline is required. Hand digging may be substituted for probing. If the

pipe is determined to be deeper than 24 inches, power operated equipment (including vacuum excavation equipment using high pressure water/air jet) may then be used to remove 12 inches of cover.

- If the initial excavation determines the pipe is deeper, a trench 18 inches deep must then be hand dug at the base of the excavated area, in an effort to daylight the pipe. If it is found the pipe is still deeper than this depth, another 6 inches of earth may be removed using power-operated equipment. The use of probing may be substituted for the hand digging, however it must be ensured that at no time is the power-operated equipment (including high pressure water/air-jetting) within 12 inches from the pipe wall. These procedures are to be followed until the pipe is located and exposed.
- Once the pipe is exposed, all sides of the pipe are to be located and exposed. Once the sides are exposed by hand, excavation with power-operated equipment is allowed, taking care to maintain approximately 12 inches between the power-operated equipment and the pipe. These procedures are to be followed until the pipe is fully located and exposed.

STANDBY REQUIREMENTS

The following describes the stand by requirements when excavations around a transmission pipeline are conducted by PG&E or an outside contractor.

When Required:

Excavation Activities - A Stand By person is required to be on site whenever excavation (digging, trenching, etc.) is within 5 foot from the edge of the pipe. Field visits during excavations that are not planned to be within 5 feet of the edge of the pipe are encouraged, especially during multiple day jobs.

Agricultural Activities - During normal agricultural operations (such as, tilling, discing, or ripping), it is strongly encouraged to have a Stand By person on site during the first day of the operations to ensure the agricultural operator is following safe practices. A Stand By person is required to be on site if any of the following conditions exist.

- The pipe is confirmed to be shallow enough to possibly be hit by the type of agricultural operation being performed.
- The agricultural operator is known to not understand or comply with safe USA and agricultural practices.
- Positive contact (by either face or phone) has not been achieved for this specific USA tag.

Stand By activities for agricultural operations exceeding 1 day are not required, unless any one of the above described conditions are present. When agricultural operations are planned to occur over many days, it is encouraged to conduct field visits to ensure that the operator is still complying with all required safety practices.

Boring Activities - A Stand By person is required when any kind of boring activity is crossing perpendicular to the pipe. A Stand By person is also required for any boring activity parallel to the pipeline that will come within 10 feet to the nearest side of the pipe. Please consult the appropriate Pipeline Engineer for any further clarification on this policy.

Blasting Activities - A Stand By person is required for any blasting activity within 10 feet to the nearest side of the pipeline. Please consult the appropriate Pipeline Engineer to review the nature of the project.

Responsibilities of a Stand By Person

Prior to reporting on site for Stand By duties, the following shall be accomplished:

- Obtain the current USA Tag. (confirm active)
- Review all appropriate drawings (plat sheets, GIS maps, etc.)
- Ensure that you have an operating radio or cell phone.
- Obtain locating equipment.

On Site responsibilities include the following:

- Confirm the existing Surface Marks within the USA boundary by relocating the line.
- Conduct a tailboard with the Excavator and the excavation crew. Review the location of the line, potential safety hazards, and required safe excavation procedures, as required in this clarification and in our standards.
- Inspect the work in progress, and **STOP the work anytime the excavator does not follow the excavation rules discussed with him.** If the excavator continues to break the rules, the job shall be shut down and the appropriate supervisor shall be immediately notified.

The above duties are to be carried out each day the Stand By person is assigned to an excavation site.

INCIDENT INVESTIGATION

In the event a buried Transmission pipeline is hit, and the pipe had been USA'd and Mark and Located by PG&E personnel, and the incident could possibly be contributed to the line being mis-marked, within 3 days of the incident the original Mark and Locate activity must be recreated as part of the root cause analysis.

Approved by:

(original signed by)

B. D. Davis

Date: 04/15/02

Author: [REDACTED]

If you have any questions about this bulletin, please call the employee(s) listed below:

Contact(s):

LAN ID(s):

Phone(s):

