APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

This Quality Assurance Project Plan (QAPjP) has been prepared in connection with potential collaborative project work between APSC Pipeline Service Company (APSC) and the University of Alaska Fairbanks (UAF). The collaborative work is envisioned to include various aspects of transporting crude oil and/or oil-GTL blends. Studies of wax characterization, solids precipitation, fluid properties and rheological measurements are being planned. Such work would require laboratory measurement of fluid and solid properties and their characterization. This QAPjP outlines the general provisions for ensuring quality and integrity of laboratory data generated by UAF.

A.1 QUALITY OBJECTIVES AND CRITERIA FOR EXPERIMENTAL DATA

The data quality objective for this project is to provide valid data of known, acceptable and documented quality for all samples submitted for testing. The data quality indicators to be measured are identified below.

A.1.1 Accuracy and Precision

The goals for analytical testing accuracy and precision are defined by the "bias" and single-analyst 'repeatability' statements for the associated the American Society for Testing and Materials (ASTM) method. These ASTM data quality measures will be met as acceptance criteria standards for data generated, unless otherwise specifically agreed in writing by APSC. If no quantitative measure is defined by ASTM, UAF acceptance criteria will be generated as described below.

When an ASTM method (or other industry standardized method) is not used, then acceptance criteria may be approved by APSC when documented by UAF statistical analysis of recent test data (acquired from testing like/similar matrices), or when those acceptance criteria are documented in the associated UAF procedure document.

A.1.2 Comparability and Representativeness

Representativeness will be addressed through the controlled collection of samples, as governed by the standard sampling and shipping procedures used by UAF and the associated provisions of the APSC Work Order document initiating the activity. Comparability will be addressed through the consistent use of established procedures for sample collection, laboratory analysis, data review, validation and reporting.

A.1.3 Completeness

A completeness goal of 90% is deemed necessary. Valid data are required for each sample type in order to complete accurate data interpretation and to complete effective pipeline modeling. Completeness will be calculated and reported in the Quality Assurance (QA) / Quality Control (QC) reports.

A.1.4 Special Training Requirements/Certification

UAF personnel used in the technical performance of this project will have demonstrated and documented capabilities for the analytical, professional and quality activities they complete. UAF personnel training records, applicable certificates, accreditations and the like will be reviewed and accepted for adequacy and applicability to the project by APSC prior to those staff being assigned to work on a project. Training records of all UAF staff and students working on the project will be kept within the project files at UAF.

Alyeska Pipeline Service Company (APSC) will approve all personnel, in writing, that work on the project. These sign-off documents will become part of the project documentation retained by UAF.

A.1.5 Documentation and Records

Laboratory Records

The following list of the laboratory-specific records will be complied by UAF.

A.1.5.1 Sample Management Records

Sample management records document sample receipt, handling and storage, and scheduling of analyses. The records verify that the chain-of-custody and proper pre-treatments were completed. These records reflect any anomalies in the samples (such as receipt of damaged samples), note proper log-in of samples into the laboratory, and address procedures used to ensure that analytical requirements were met (e.g. handling to prevent light ends loss).

A.1.5.2 Test Methods

Analyses are expected to be performed exactly as prescribed by the documented Standard Operating Procedures (SOPs). If not, test methods documentation will describe how the analyses were actually carried out in the laboratory. This topic includes sample preparation and analysis, instrument standardization and calibration, detection and reporting limits, and test-specific QC criteria. Documentation shall be included that demonstrates laboratory proficiency and compliance in each of these methods.

A.1.5.3 Sample Data

These records contain raw and finished data as produced by technicians and analysts for laboratory testing, and will be maintained in the respective job file folder. These records also include: the overall number of samples, sample location information, any deviations from the SOPs, date analyzed and person performing the work. Corrective actions taken to replace sample data violating an approved protocol must also be noted.

A.1.5.4 QA/QC Reports

These reports will include where applicable the general QC records (e.g. initial demonstration of capability), instrument calibration, routine monitoring of analytical performance and calibration verification. Project-specific information from the QA/QC checks such as calibration check samples (zero check, span check, and mid-range check), field and laboratory replicates, sample splits, and the like will be included where applicable in these reports to facilitate data quality analysis.

A.1.5.5 Data Handling Records

These records document protocols used in data reduction, verification, and validation. Data reduction addresses data transformation operations such as converting raw data into reportable quantities and units, use of significant figures, recording of extreme values, blank corrections, etc.

Data verification ensures the accuracy of data transcription and calculations and, if necessary, by checking a set of computer calculations manually. Data validation ensures that QC criteria have been met.

Each sample received in the laboratory is assigned a unique identification number. Data generated for each sample is referenced to this number. Data generated may be recorded by hand, or through electronic means such as spreadsheets.

A.1.5.6 Data Reporting Package Format and Documentation Control

All individual records that represent actions taken by UAF to achieve data quality and the performance of specific QA functions are potential components of the final data-reporting package. A Data Package Checklist (Table A.1) will be utilized to help ensure that the reporting package is complete and meets the specified requirements.

Interim, draft and final reports, data tables and other deliverables will be provided by UAF to APSC as requested. Hard copy reports will be faxed or courier delivered when requested by APSC. Electronic data deliverables will be provided by UAF using Microsoft Office (Professional) component applications (latest version available to UAF will be used), unless otherwise approved or requested by APSC in writing.

Data passing the second level quality review will be forwarded in electronic data format (MS Excel spreadsheet), with headers/titles as needed to specify date and time of sampling, date/time of sample analysis, name of the person performing the test, test results (with appropriate significant figures), test accuracy and precision (per applicable SOP or published methodology) and comment fields (as required to provide needed explanatory information about the test results, e.g. unusual sample properties, observations, etc.). This electronic submission of reviewed data to the Crude Oil Study (COS) project will be sent promptly after work completion, but not later than ten (10) working days following completion of second level quality review.

All data for all tests will also be collated and reported formally in both electronic and hardcopy formats. The report will follow UAF's standard data and QA/QC report or mutually agreeable format. Electronic submission will consist of 1) MS Word for report text and discussion, and 2) MS Excel for data tables and graphical presentation of test results or other numeric data.

The final draft report will be reviewed by UAF to ensure work results of appropriate quality (completeness, accuracy, precision, etc.). Report release will be authorized by the UAF Principal Investigator's signature (on hardtop) attesting to its acceptability and compliance of the work reported with the provisions of this QAPjP.

A.1.5.7 Data Reporting Package Archiving and Retrieval

All electronic and hardcopy records associated with this UAF-APSC collaborative project produced by UAF will be retained in original form and format for a minimum of 5 years. These records include all logbooks, procedures, analyst notes, instrument calibration information, instrument output files (e.g. chromatograph output data files), raw and finished data, data validation and verification records, the approved QAPjP, personnel qualifications and training records, draft reports, chain of custody and QA/QC reports. Accordingly, UAF will retain the capability to re-examine and reprocess any raw data, (e.g. retain current chromatographic data processing software and its native hardware platform).

A.1.5.8 Electronic Data

Archiving of electronic data will be accomplished through the use of an 8 mm DAT data cartridge or floppy disk based archiving format. Data will be archived according to the source for ease of retrieval. Files will be identified by a name that will relate it to the job file number assigned by UAF during log in. Data generated or calculated using PC-based spreadsheets (MS Excel®, etc.) or other programs will be archived periodically as required. Correspondence or report text and discussion will also be archived.

A.1.5.9 Hardcopy Records

Hardcopy records will be maintained for a minimum of five years. Such records shall include, where applicable, sample test results, external and internal chain-of-custody records sample receipt checklists, data review checklists, data package checklists, test method documents, QA/QC reports, data handling records, final reports, data tables, or quality records.

A.2 MEASUREMENT/DATA ACQUISITION

A.2.1 Sampling Methods Requirements

All field sampling will be performed by qualified staff in a professional manner, consistent with established and documented Quanterra sampling procedures, as approved by APSC for the UAF-APSC collaborative work.

A.2.2 Sample Handling and Custody Requirements

All samples received by UAF will be initially inspected to identify damaged shipping containers, leaking containers or other sample problems. 'Condition upon receipt' records will be generated for all samples.

Documentation of Chain-of-Custody (CoC) will be provided for all samples by UAF upon receipt of the samples. CoC documentation will be maintained (or initiated internally) by UAF for all received samples. Proper sample custody minimizes accidents by assigning responsibility for all stages of sample handling and ensures that problems will be detected and documented if they occur. A sample is in custody if it is in actual physical possession or it is in a secured area that is restricted to authorized personnel.

Sample custody procedures are necessary to prove that the sample data correspond to the sample collected. Aliquots prepared from CoC samples must also have CoC records. These will be generated by UAF and show aliquot identities as associated with the parent CoC

sample. All samples, sub-samples, splits and aliquots will be identified and approximately labeled to show sample custody through its end use. Any unused material must remain in custody until the sample is disposed off or return is directed by APSC.

A.2.2.1 Receipt of Chain of Custody and Log-In

Log-in and receipt of samples will be conducted at UAF by authorized personnel or designee. At the time of receipt, the accompanying CoC will be completed. The receiving log to be used for TAPS/COS samples is shown in Table A.2. CoC forms may be supplied by UAF or other APSC approved forms can be used. Additionally, UAF supplied CoC seals or other acceptable seals will be used to ensure integrity of sample containers. A checklist will be completed for each shipment received and maintained in the job file folder. Samples received will be given a unique identification number. Tables A.3 – A.5 shows the forms to be used for sample log-in and identification purposes. All shipping documents and associated papers will be placed and maintained in the job file folder. If at the time of receipt, any non-conformity is noted with the samples, a representative of APSC will be notified.

A.2.2.2 In-House Laboratory Transfer and Chain of Custody

Samples received will be delivered to the designated sample manager for UAF. The sample manager will be responsible for in-house transfer and chain of custody for each sample. Samples will be maintained in a secured area with access limited to the sample manager or principal investigator. Laboratory personnel will retrieve the sample(s) from the sample manager and complete the required information on the Internal Chain of Custody Record. The forms to be used for maintaining the Chain of Custody Record are shown in Tables A.6 – A.8. Upon completion of the analysis, the analyst will return the sample and complete the internal CoC, relinquishing the sample back to the sample manager. The shipping log to be used for TAPS/COS samples is shown in Table A.9.

A.2.3 Quality Control Requirements

A.2.3.1 Sample Batches

A sample batch represents 10 samples or as noted by individual test methods. APSC samples will not be analyzed in batches containing samples from other sources. APSC samples will be analyzed individually or in batches with other APSC samples only.

A.2.3.2 Instrumentation

Instruments and equipment to be used for sample analysis must have met all required maintenance and calibration requirements before analysis begins. Maintenance and calibration documentation must be completed prior to initiation of sample analysis.

A.2.3.3 Analysts

Analysts, students and technicians involved in sample testing must have met training requirements for the procedure to be used and have 'current' status documentation, UAF certification, other recognized accreditation from an approved accrediting agency, or approval by APSC. One primary analyst is expected to complete all tests comprising a single sample batch for a single test procedure.

A.2.3.4 Accuracy

Procedure accuracy will be checked through the analysis of approved calibration material. Calibration material will be analyzed at the beginning of each batch of APSC samples analyzed and at the beginning of each work day and after every 10^{th} sample and at the end of each work day or whenever a different analyst is involved with sample preparation or sample analysis. Calibration material will also be analyzed at the end of each batch of APSC samples. Any deviation from this process must be documented in the individual SOPs and approved by APSC.

Acceptance criteria must be met before sample analysis can begin or continue. Acceptance criteria will be defined in the individual SOPs. Failure to meet acceptance criteria at the beginning of a sample batch or work shift requires that corrective actions be taken (and documented) and approved by the principal investigator before analysis can restart. Restart requires demonstration of satisfactorily meeting the acceptance criteria. Failure to meet acceptance criteria at the end of a sample batch requires that corrective actions be taken (and documented) and approved by the principal investigator. Unless specific casual analysis results clearly indicate otherwise, all sample test results are invalid since acceptance criteria were last met.

A.2.3.5 Precision

Procedure precision will be checked through the analysis of laboratory replicates. Samples will be split during aliquoting for assignment to various batches for analysis. Precision will be measured using the following guidelines in cases where representative sub-samples can be obtained.

Both known and blind replicates will be prepared during this process. At least one replicate will be analyzed in each sample batch or by each analyst completing test results within the batch. Test results for (known) laboratory replicates must be checked against their acceptance criteria promptly. Acceptance criteria must be met to continue the analysis process. Failure to meet acceptance criteria requires that corrective actions be taken (and documented) and approved by the principal investigator before analysis can restart. Restart requires demonstration of satisfactorily meeting acceptance criteria.

Test results for (blind) laboratory replicates must be checked by the principal investigator against their acceptance criteria promptly (before the end of work shift). Acceptance criteria must be met to continue the analysis process. Failure to meet acceptance criteria requires that corrective actions be taken (and documented) and approved by the principal investigator before analysis can restart. Restart requires demonstration of satisfactorily meeting acceptance criteria.

A.2.4 Instrumentation/Equipment Testing, Inspection, and Maintenance

Analytical instrumentation will be inspected once a month by UAF trained technicians, other personnel approved by APSC, or the analyst before use. Regular preventative maintenance will be performed according to the equipment manufacturer's recommendations and these records may be reviewed by APSC if needed.

Repair maintenance will be completed as needed, and no instrument or equipment will be used when known to be in a state of repair, regardless of the perceived margins for data quality or safety associated with the repair required. Instruments requiring repair will be clearly tagged as "Out of Service." When an instrument or piece of equipment is identified as requiring repairs, then validation of the previous test made with such instrumentation or equipment is required.

A.2.4.1 Instrument/Equipment Calibration and Frequency

Analytical instrumentation calibration/standardization will be performed in accordance with UAF's standard policy using the associated approved analytical SOPs or the manufacturer's recommendations following UAF SOPs. When an instrument or piece of equipment is identified as needing calibration, then validation of the previous test made with such instrumentation or equipment is required. No testing will be performed by equipment out of the calibration date.

A.2.5 Data Management

The UAF project team will ensure that all mathematical operations and analyses performed on raw ("as-collected") data are reviewed for correctness. This review examines any change to data form of expression, location, quantity, or dimensionality to ensure that it is completed correctly and consistent with the approved SOPs. These operations include data recording, validation, transformation, transmittal, reduction, analysis, management, storage and retrieval.

A.2.5.1 Data Recording

UAF will complete internal checks (including verification and validation checks) to ensure data quality during data encoding in the data entry process for all the data collected.

A.2.5.2 Data Validation

Data validation is based on the acceptance criteria specified in the appropriate technical SOP or published industry procedure (i.e. ASTM or GPA). A project specific QA requirements matrix will be developed.

A.2.5.3 Data Transformation

Data transformation is the conversion of individual data point values into related test result values. Raw data (individual data point) obtained in the laboratory are converted to test resultant values by various calculation routines as detailed in the appropriate technical SOPs, associated reporting form, and/or industry standard method. Where applicable, example calculation routines and/or "dummy spreadsheets" are to be included as an adjunct to the technical SOPs. Calculations will be provided in the final data package to adequately follow the progress from raw to reported data.

A.2.5.4 Data Transmittal

Data transmittal occurs when data are transferred from one person or location to another or when data are copied from one form to another (e.g. copying raw data from a notebook onto a data entry form for keying into a computer file and electronic transfer of data over a telephone or computer network). The UAF project team will conduct and document the review of data transmittal, which will include verification of computer entry from logbooks and/or instrument printouts.

A.2.5.5 Data Reduction

Data reduction includes all processes that change the number of data items. This process is distinct from data transformation, in that it entails an irreversible reduction in the size of the data set and an associated loss of detail. Wherever practical, raw data are reduced using automated data processing. This involves the use of validated spreadsheets. A validated set of raw data is utilized to ensure that inadvertent changes have not been made to the calculation routines contained in these spreadsheets. Manual calculations are documented in the specific method logbook form. As a part of the data verification process, manual calculations will be verified by the UAF project team by performing a random set of sample calculations and checking the same.

A.2.5.6 Data Analysis

As a part of the overall QA/QC of the project, UAF will provide a quality assurance document that summarizes the findings of the QA samples to include statistical representations where appropriate to include at a minimum comparison to the method or SOP precision in the QAPjP QA Requirements Matrix.

A.2.5.7 Data Tracking

Data management includes tracking the status of data as they are collected, transmitted and processed. Management of sample analysis and data review is monitored in general for all the data collected.

A.2.5.8 Data Storage and Retrieval

All electronic and hard copy records associated with this UAF-APSC collaborative project produced by UAF will be retained in original form and format for a minimum of 5 years. These records include all logbooks, procedures, analyst notes, instrument calibration information, instrument output files (e.g. chromatograph output data files), raw and finished data, and data validation and verification records. Accordingly, UAF will retain the capability to re-examine and reprocess any raw data, (e.g. retain current chromatographic data processing software and its native hardware platform).

Electronic data will be archived on a removable media and placed with the associated job file folder for ease of retrieval. The data archived will be in the original commercially available format as processed (i.e. Excel®, Word®, etc.) copied electronically where feasible to CD-ROM media device supplied by APSC for the project. Copies of data pages from bound, controlled logbooks will also be placed in the respective job file folder for ease of retrieval.

A.3 ASSESSMENT/OVERSIGHT

A.3.1 Assessments and Response Actions

At the request of the UAF-APSC Project Supervisor, the APSC Analytical Services Lead (ASL) will conduct an assessment or the APSC Internal Audit Manager (IAM) (or designee) will conduct an audit of the UAF laboratory activities addressed under this QAPjP. The APSC ASL or IAM (or designee) will have the authority to issue a Stop Work Order upon finding a significant condition that would adversely affect the quality and usability of the data. The UAF Principal Investigator will have the responsibility for initiating and implanting response actions

associated with findings identified during the on-site-audit. Once the response actions have been implemented, the APSC ASL or IAM (or designee) will perform a follow-up assessment/audit to verify and document that the response actions were implemented effectively.

In-house audits performed by UAF Laboratories may be conducted in accordance with this QAPjP or its own Quality Management Procedures (QMP). When performed and APSC work is associated with the audit, APSC will receive a copy of the audit report along with accompanying information explaining any impacts (measured or estimated) on the APSC work so audited. The information will address examples of conditions indicating out-of-control situations, who is responsible for initiating the corrective actions, and what steps may be taken.

A.3.1.1 Reports to Management

Once the project is complete and the resulting data obtained, the UAF principal investigator will prepare a final project report. The report will include a summary of the activities performed during the project and present the resulting data explaining its likely meanings, draw conclusions, etc. (Statements about problems concerning data quality will be presented along with an explanation of their impact, if any, on the certainty of the data reported).

A.4 DATA VALIDATION AND USABILITY

The purpose of this element is to state the criteria for deciding the degree to which each data item has met its quality specifications. APSC will estimate the potential effect that each deviation from this QAPjP may have on the usability of the associated data item, its contribution to the quality of the reduced and analyzed data, and its effect on the decisions made from these data.

A.4.1 Data Review, Validation and Verification Requirements

UAF data will be reviewed by the project team. Second level review will be the responsibility of the UAF principal investigator or designee. The second level review will be done, in general, on all the data collected by UAF. The UAF Principal investigator will also be responsible for overall data validation and final approval of the data, in accordance with project purpose and use of the data.

A.4.2 Validation and Verification Methods

The process of data verification requires UAF to confirm by examination or provision of objective evidence that the requirements of the specified QC acceptance criteria have been met. Verification examines the result of a given activity to determine conformance to the stated requirements for that activity. For example, have the data been collected according to a specified method and have the collected data been faithfully recorded and transmitted? Do the data fulfill specified data format requirements? The UAF process of data verification must effectively ensure the accuracy of data by using validated methods and protocols. As a part of this verification process, UAF will utilize a data review and data package checklist to provide documentation of the review and ensure it meets the specified requirements.

A.4.3 Reconciliation with User Requirements

Completeness will also be evaluated to determine if the completeness goal for this project has been met. If the QC data and/or other data quality indicators do not meet the project's requirements as outlined in this QAPjP (including the accuracy of calibration materials), the data may be discarded, and retest and re-sampling, if necessary, may occur. The UAF principal investigator and project team will evaluate the cause of the failure (if possible) and make the decision to discard that data and re-sample. If the failure is tied to the analysis, calibration and maintenance techniques will be reassessed as identified by the appropriate lab personnel. If the failure is associated with the sample collection and re-sampling is needed, the samplers will be retained.

Table A.1 Data package checklist

i. Sample Identification Number:

ii. Type of Sample Tested: Welker Sample/Pooled Sample/Other Samples Explain.

iii. Type of Tests carried out on the sample:

iv. Date and Time of Tests. List all the tests:

v. Analyst Name:

vi. Was the equipment functional? If no, explain the corrective steps taken.

vii. Was the equipment calibrated properly? Was the calibration satisfactory? Explain.

viii. Is the final data reviewed? If yes, data reviewed by:

Table A.2 Receiving Log for TAPS/COS Samples.

University of Alaska Fairbanks - Petroleum Development Laboratory						Form: SLF - 10
Receiving Log for TAPS/COS Samples						
RECEIVER: Petroleum Engineering Department 437 Duckering Bldg., P. O. Box 755880 Fairbanks, AK 99775-5880			**SHIPPER:**			**CUSTODY RECORD / REPORT TO:** Project Manager: Dr. Godwin A. Chukwu (907) 474-7748
Date Received:			Carrier and Waybill Number:			Received By:
			Sample Identification Information			
#	Identification Number	Welker Cylinder No. (Only for Welker Samples)	COC Seal Number	Container Type, Size	Shipping Documents (yes/no)	Sample Condition Upon Receipt at UAF
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
Chain of Custody Records			(Internal UAF-PDL)			
Action Taken with Shipment			**Date**		**Relinquished By**	**Received By**

Table A.3 Sample Log-In and Identification of TAPS/COS Test Samples.

University of Alaska Fairbanks - Petroleum Development Laboratory							Form: SLF-100
Sample Log-In and Identification of TAPS/COS Test Samples							
LABORATORY:	Petroleum Engineering Department 437 Duckering Bldg., P.O. Box 755880 Fairbanks, AK 99775-5880		CUSTODY RECORD / REPORT TO: Project Manager: Godwin A. Chukwu				
Sample Identification Information			**Sampling Information**				**Sample Condition Upon Receipt at UAF-PDL**
UAF-PDL ID No.	Cylinder No. (Only for Walker Samples)	Contractor I.D. No.	Origin/Location	Date (If Applicable)	Pressure (If Applicable)	Container Type,Size	Cylinder/Sample Condition
Analyst Signature:			Date of Log-In:				

Table A.4 Sample Log-In and Identification of a TAPS/COS "Pooled" Test Sample.

University of Alaska Fairbanks - Petroleum Development Laboratory					Form: SLF-200
Sample Log-In and Identification of a TAPS/COS "Pooled" Test Sample					
LABORATORY:	Petroleum Engineering Department 437 Duckering Bldg., P.O. Box 755880 Fairbanks, AK 99775-5880			CUSTODY RECORD / REPORT TO: Project Manager: Dr. Godwin A. Chukwu (907) 474-7748	
Sample Identification				**Sample Information**	
Date	UAF-PDL ID No.	Container Type, Size	Sample Volume, ml	Description of Sample	Reason for "Pooling" Sample
Conditions during "Pooling"					
Date	"Pooling" Temperature	"Pooling" Pressure	Sample # (below)	Volume Added, ml	Comments
Identification of Samples Used To Produce "Pooled" Sample					
#	UAF-PDL Sample ID No.	Container Type, Size	Sample Volume, ml	Description of Sample	Comments
1					
2					
3					
4					
5					
6					
7					
Analyst Signature:			Date:		

Table A.5 Sample Log-In and Identification of TAPS/COS Test Aliquots.

University of Alaska Fairbanks - Petroleum Development Laboratory										Form: SLF-300
Sample Log-in and Identification of TAPS/COS Test Aliquots										
LABORATORY:	Petroleum Engineering Department 437 Duckering Bldg., P.O. Box 755880 Fairbanks, AK 99775-5880				CUSTODY RECORD / REPORT TO: Project Manager: Dr. Godwin A. Chukwu (907) 474-7748					
Initial Sample Identification										
UAF-PDL ID No.			Contractor ID No.				Sample Description			
Reconditioning and Aliquoting Conditions										
Date	Analyst Signature		Equil. Temp	Equil. Time			Pressure	Comments		
Test Aliquot Identification										
Aliquot ID No.		Aliquot Volume		Container Type & Size				Designated Test & Comments		

Table A.6 Chain of Custody Record for TAPS/COS Test Samples.

University of Alaska Fairbanks - Petroleum Development Laboratory								Form: COC-100
Chain of Custody Record for TAPS/COS Test Samples								
LABORATORY: Petroleum Engineering Department, 437 Duckering Bldg., P.O. Box 755880, Fairbanks, AK 99775-5880				CUSTODY RECORD / REPORT TO: Project Manager: Dr. Godwin A. Chukwu				
Sample Description:								
	Sample Identification Information			Field Sampling Information				Sample Condition Upon Receipt at UAF-PDL
		Cylinder No.			Date	Pressure	Container	Cylinder/Sample Condition
Custodian	UAF-PDL ID No.	(Only for Walker Samples)	Contractor I.D. No.	Origin/Location	(If Applicable)	(If Applicable)	Type, Size	

Cylinder/Sample History				
Date	Cylinder/Sample Location	Action taken with Sample & comments	Relinquished By	Received By

Final Action:	Action By:	Date:

Table A.7 Chain of Custody Record for TAPS/COS "Pooled" Test Sample.

University of Alaska Fairbanks - Petroleum Development Laboratory						Form: COC-200
Chain of Custody Record for TAPS/COS "Pooled" Test Sample						
LABORATORY:				CUSTODY RECORD / REPORT TO:		
Petroleum Engineering Department				Project Manager: Dr. Godwin A. Chukwu		
437 Duckering Bldg., P.O. Box 755880				Petroleum Engineering Department		
Fairbanks, AK 99775-5880				437 Duckering Bldg., P.O. Box 755880		
				Fairbanks, AK 99775-5880		
"Pooled" Sample Information						
Custodian	UAF-PDL ID No.	Container Type	Sample Volume	Sample Description		Reason for "Pooling" Sample
Sample History						
Date	"Pooled" Sample Location		Action taken with "Pooled" Sample		Relinquished By	Received By
Final Action:				Action By:		Date:

Table A.8 Chain of Custody Record for TAPS/COS Test Aliquots.

University of Alaska Fairbanks - Petroleum Development Laboratory				**Form: COC-300**
Chain of Custody Record for TAPS/COS Test Aliquots				
LABORATORY:	Petroleum Engineering Department 437 Duckering Bldg., P.O. Box 755880 Fairbanks, AK 99775-5880	CUSTODY RECORD / REPORT TO: Project Manager: Dr. Godwin A. Chukwu		
Sample Description:				
Sample Identification				
Aliquot ID No.	Container Type & Size	Aliquot Volume, ml	Custodian (Analyst)	Date of Aliquoting
Sample History				
Date	Aliquot Location	Action taken with aliquot & comments	Relinquished By	Received By
Final Action:			**Action By:**	**Date:**

Table A.9 Shipping Log for TAPS/COS Samples.

University of Alaska Fairbanks - Petroleum Development Laboratory					Form: SLF - 20
Shipping Log for TAPS/COS Samples					
SHIP TO:		**SHIPPER:** Petroleum Engineering Department 437 Duckering Bldg., P.O. Box 755880 Fairbanks, AK 99775-5880			**CUSTODY RECORD / REPORT TO:** Project Manager: Dr. Godwin A. Chukwu (907) 474-7748
Date Shipped:		Carrier and Waybill Number:			Shipped By:

	Sample Identification Information					
#	UAF-PDL ID	Welker Cylinder No. (Only for Welker Samples)	Sample Description	Container Type, Size	Shipping Documents (yes/no)	Sample Condition Upon Leaving UAF-PDL
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Chain of Custody Records (Internal UAF-PDL)

Action Taken with Shipment	Date	Relinquished By	Received By