

DESCRIPTION OF THE KDOR FORMAT FOR REPORTING MONTHLY  
LEASE PRODUCTION DATA FROM  
OIL AND GAS FIELDS OF KANSAS

by

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Kansas Geological Survey  
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## **Description of the KDOR format for reporting monthly lease production data from oil and gas fields of Kansas**

This report analyzes the data structure used by the Kansas Department of Revenue (KDOR) to electronically tabulate the monthly production from the oil and gas leases of Kansas. Kansas Corporation Commission (KCC) obtains an electronic copy of the KDOR production data for its own regulatory purposes. The underlying objective for this study was to understand the data structure used by KDOR to record the monthly oil and gas production so that a production database could be built within the web site of Kansas Geological Survey (KGS). The KGS lease production database is an Oracle database, and the public is allowed free access to this production with the help of customized search engines.

The production data of the oil and gas leases is public data and yet before the advent of the KGS database, the public could access this data by either laboriously searching through the printed monthly production reports or by buying it for a fee from private agencies. The impetus behind creating this production database at the KGS has been to provide the public with free and easy access to public domain information.

This study is a part of the systems design endeavor to build and maintain a lease production databases at the KGS. This system is designed to electronically accept the monthly production data file from the KCC and then automatically process each line of the new information for errors. The system will also flag the errors and bring them to the attention of the database manager and finally incorporate the error free data into the database. The lease production data file originates at the KDOR, and KDOR uses a format to layout this file. It is very critical to understand the details of this underlying format because such an exercise enables one to understand the various possibilities and causes that result in errors creeping into the system. **Attachment 1** is a description of the general structure of the format used by KDOR to construct the lease production database. The first part of this report describes in detail each of the entry parameters included in this format.

Reporting and typing errors have been known to creep into the monthly lease production file created at the KDOR, and thus a system of cross checking each lease entry is required to reduce the chances of corrupting the system database with the new data. The second part of this report outlines the logical steps of checks carried out on each lease entry to test its authenticity automatically. **Attachment 2** is the flow chart describing this cross checking mechanism. When errors or values outside the conventional and expected range are detected, the system flags the information and doesn't append it to the existing database. The database manager checks the flagged information and decides on the next course of action regarding its verification.

The details about the KDOR format structure was largely gathered from conversations with Mr. Jim Hemmen of the KCC, Wichita.

## Definitions used in Attachment 1

**Operator:** owns and operates the lease. Does not report the monthly production to KDOR generally.

**Purchaser:** buys the production of a lease from an operator. In most cases, the purchaser reports monthly production of oil/gas leases to the KDOR.

**Transporter:** transports the production for the purchaser. Does not report the production to KDOR. Works for the purchaser.

## Details of the KCC production file format – Attachment 1

**Regis-ID** (tax-returnee)

ID given by the KDOR to the purchaser or the operator.

Numbers that start with 9 generally represent oil reclaiming companies. These companies do not purchase any lease production. They are called in to clean the stock tanks in the field and so they report the tank bottom production, i.e., the oil recovered from the tank bottom during the cleaning. They usually do not identify the lease operator when they enter in the production data. Usually a tank is cleaned once every year and a different oil reclaiming company may be contracted by the lease operator in the future.

Note :

The oil reclaiming companies are given a Regis-ID and Lease-ID. **The Lease-ID of oil reclaiming companies does not represent any “physical lease”** as the oil reclaiming companies simultaneously collect the tank bottoms from tanks located on different leases. KDOR has a cross-reference table linking each lease-ID to the corresponding lease details. **It appears that even for “non-physical leases”, the KDOR reference table contains data describing the different lease details** (because the KDOR database can not handle blank entries for the different fields). It is unusual but not impossible to obtain enough tank bottom sediment from stock tanks on one lease and thus reclaim sufficient crude oil to report that volume to the KDOR. As a general rule, the more often an oil lease sells a load of oil, the more often the operator will need the services of an oil reclaimer unless he recovers awfully clean oil from the wells. Therefore, prolific leases may have more records of reported tank bottom volumes per unit of time. **A tank bottom listing most often does not tie back to an existing single oil lease, but ties back to the company that did the reclaiming.** However as mentioned previously, **prolific oil leases can result in reclaimed oil volumes coming from one lease.** When **oil reclaiming companies** report a production, they use **“O” in the “P/O” field** (because they handle tank bottom from many different leases which may be operated by different operators).

**Gas wells should not report a tank bottom production.** Tank bottom production can be reported from leases which have wells that produce gas and crude oil.

If a lease has only one stock tank, then the tank bottom volume and the monthly production volume can not be reported for the same month. However, there is no means to identify from the production data file whether a particular lease has one or more operating stock tanks on it.

***Report-period*** (tax-returnee)

Each KCC file contains the monthly production for a lease. The production is tagged by its corresponding year and month (YYMM). For each lease, the first entry line contains the recent month's production value. A lease can have an additional line to show a late production entry (when the production of a previous month was reported late) or corrections/adjustments are reported on a previously entered production value.

Note : Many gas wells may have more than one entry to denote its production of the month. Each production entry is generally related to a different regis-ID as that part of the production was sold to a different purchaser (happens when gas prices are high or when they fluctuate). In such cases, the monthly gas production is the sum of the individual entries for that particular month. In rare cases, even oil leases report more than one production value (when high lease production feeds two tank batteries). However, in such cases the lease regis-ID is the same. In fact, there will be no difference (other than in the run volumes) in the lines showing the production from the two or more stock tank batteries located on one lease.

***County*** (DOR-No table)

This is the county ID that is given by the KDOR. The KDOR county ID is different from the API county ID.

***Lease-name*** (DOR-No table)

Denotes the name of the lease. The KDOR maintains a table that references each lease-ID to a table containing the details of the lease (Attachment 3). One of the details contained in this lease table is the lease name.

Production attributed to a particular lease may be corrected at a future date because of miscalculation of the lease production during the initial report. Some times production volumes from one lease may get attributed to another lease by mistake. In these situations, production volumes in a past recorded entry get adjusted either by addition or subtraction as shown in the form of an example below.

File	Production Month	Lease-name	Lease-ID	Production	Comments
Jan	Jan.	AAA	x	10	Jan. prod. for lease AAA
	Jan.	BBB	y	22	Jan. prod. for lease BBB
Feb	Feb	AAA	x	15	Feb. prod. for lease AAA
	Feb	BBB	y	16	Feb. prod. for lease BBB
March	Feb	AAA	x	-4	Correction on Feb. prod. of AAA
	Mar	AAA	x	20	Mar. prod. for lease AAA
	Mar	BBB	y	30	Mar. prod. for lease BBB
April	Mar	AAA	x	-2	Correction on Mar. prod. Of AAA
	Mar	BBB	y	2	Mar. BBB vol. adjusted
	Apr	AAA	x	15	Apr. prod. for lease AAA
	Apr	BBB	y	14	Apr. prod. for lease BBB

**License-no** (DOR-No table)

This is unique to the lease operator and is issued by the KCC. However, often times the license-number provided within the DOR-No table is an expired number, i.e., the lease had either changed ownership in the past and the DOR-No table was not updated or the original operator let their license expire and then obtained a new license number from KCC under the same or different name.

All operators have to register with the KCC and get an operating license. The recent leases carry a number starting with 3. The middle aged ones start with 1 and the oldest ones start with 0. In case the operator name changes (i.e. change of spelling or due to the lease changing hands), the license number may or may not change.

Note :

Regis-ID and License-No will never be the same as one comes from the KDOR and the other from the KCC.

**Runs** (tax-returnee)

Denotes the monthly lease production volume of oil or gas. Allowable width for this parameter is 9. **The gas production volume is represented as a whole number. However, the oil production volume displays two digits to the right of the decimal**, i.e., to read a run volume for oil one has to insert a decimal point after two digits from the right. The extreme right digit in the run volume is a code that is described below :

{	positive zero
A to I	positive 1 to 9
}	negative zero
J to R	negative 1 to 9

If the reported oil lease production volume is greater than 5 digits then a warning flag needs to be raised (production from the most prolific leases are mostly expressed by four digit numbers) . In case of gas production, a warning flag should be raised in case the production volume is more than 6 digits. Sometimes, additional lines may be reported for a gas well and it shows zero run volumes. These entries should be ignored as they represent tax corrections.

If the lease does not produce in one month or has ceased to produce then the lease does not appear on the data file. Zero does not denote a production. Negative values can also be present here. Negative production volumes denote the credit given to the purchaser for paying tax on the volume that is actually not supposed to be taxed. This negative volume is the volume that has been adjusted to accommodate the price fluctuations. Also sometimes a Y volume of production gets reported under lease A when it actually belongs to lease B. So when this mistake gets discovered, -Y volume is reported for lease A and +Y volume gets added to lease B. So lease B will have two lines entered for the current month. The first line denotes the current month's production while the second line denotes the +Y volume adjustment. Similarly, two lines get reported for lease A too. However, though a -Y production is reported for lease A, there is no mention (under lease A) as to where the +Y production was transferred too.

Note :

**Duplication of run volumes for oil** - Sometimes there is communication gap between the operator and the purchaser about filing the production/tax to the KDOR. This results in the run volume of a lease to be reported twice (both by the operator and purchaser) for the same report period. In such cases though the run volumes are exactly the same, the entries in the "P/O" field and "Regis-ID" field are different. Care should be taken so that the lease production of a particular report period is not duplicated. **This duplication can occur within a production file or may be spread over different production files.** When a lease records more than one production entry for a report-period and has similar entries in the "P/O" field and the "Regis-ID" field then it means that the lease production is being channeled to different stock tanks. In such cases, it will need a freak coincidence to get exactly equal run volumes.

**Sequence of reporting runs** - If in a particular file there is more than one entry (either "R" or "A") for a lease, then the run volume related to the oldest month is reported first.

**Remitter** (DISC entry perhaps)

This is an ID number that is given by the KDOR and is used to designate the tax payee. In most cases the remitter ID is the same as the Regis-ID. In some cases, the purchaser contracts a transporting company to transfer the oil and this transporting company files the production returns. However, the tax is paid by the purchaser.

**DOR-No (Lease ID #)** (tax-returnee)

This is the lease ID no. When the number starts with 1 then it is an oil lease (there is no distinction between an oil and a condensate lease in Kansas). When the number starts with 2 then it represents

a gas lease. One lease may have two ID numbers. This happens when a producing lease (i.e. one that already has a lease ID) gets sold and the new owner is under the impression that a new ID is required to file the tax returns on the production. KDOR issues a new lease ID without checking in detail if an ID has already been issued to the lease. Thus in the monthly production data file, the old lease ID number does not get reported any more (as if the lease has been shut down). The production (and hence the tax) for the lease is now reported under the new lease ID.

Production for new leases can not be reported till they get a lease ID number. However production volumes of new leases without a location get reported at the top of the file with zeroes entered for their "Legal description".

Note: For gas well - sometimes more than 1 gas well is connected to the gas meter. Then the gas lease ID represents a meter and not any lease in particular. Some times the pipeline meters are located near a central spot or near the first well drilled in the lease/area. Thus the meter is recording production of more than one well. In such cases the ID represents not any lease but rather a collection/measuring point. Sometimes a metering point is named after the nearest well or the first well drilled in that area/lease. In such cases, when new well/s get connected to this metering point then the well carrying the metering point's name shows a significant jump in production.

PI has a cross referencing file to link PI ID with the DOR-ID. PI mostly accepts DOR-ID on face value. So mistakes in DOR-IDs are not corrected at PI.

The oil leases come at the top and thus the gas leases follow the oil leases.

#### ***Operator-Name*** (DOR-No table)

Leases change hands with time, i.e., their operators change. Tax returns/production data are generally reported by the purchaser, and they may at times forget to report the change in the operator name for a particular lease (denoted by the lease ID number).

#### ***Field-Code*** (DOR-No table)

The field code ties a lease with a field name. However, most of the time it is left as zero. PI usually inputs this data, i.e., PI uses its own data base to group leases under fields. This database of PI includes wells, leases, producing horizons and respective fields. The field code is not a very reliable piece of data in the KDOR database.

Note: In some cases, the KDOR file may contain field-codes. The origin of these codes is not known at the moment.

#### ***Legal-Description*** (DOR-No table)

This consists of the Section-Township-Range description of the lease. This should be a reliable piece

of data in the KDOR data file provided no bad mistakes have been made. The legal description is sorted by a numerical sequence in the monthly production file. Thus, a lease appears at a different place in the file if a wrong legal description has been assigned to it. Hence, while making a cross-check between the recent production file and the production file of the previous month, the lease with the wrong legal description will appear in at a different place. Such a “check” may even imply that the lease perhaps did not report a production for the recent month. So the whole file for the recent month has to be searched/scanned for every lease rather than searching for a particular location within the monthly production file.

Sometimes, production gets reported for leases (especially new ones) without their legal description. In such cases, zeroes are entered for the legal description. Leases with zeroes as their legal description appear at the top of the monthly production file.

**Note : Legal description can not be left as blank.** Also at times the production data entry operator may forget to use right-justification after entering the data and this results in all the legal description getting shifted to the right. This leads to some crazy legal descriptions being allocated for the affected leases. The data input program is not capable of discriminating between valid and invalid legal description for the state of Kansas. In Kansas, all townships carry a South (S) suffix. However, the ranges can carry either a East (E) or a West (W) suffix. Sometimes due to mistakes in data entry, the KDOR reference table (describing the leases) **interchanges the (E) with (W) or vice-versa or may have an invalid entry for the township (i.e. a letter other than “S”).**

#### ***Producing-Wells*** (DOR-No table)

This is not a very reliable piece of data as the KDOR has no interest in this information. This represents the number of wells producing in a lease. Often times, the purchasing/transporting companies are the last to know about the current status (i.e. whether any new wells came on line in a lease or any well got shut/plugged) of producing wells in a lease. Often times new wells that get drilled in a lease do not immediately get reported in the producing-wells of a lease in spite of their production being included in the reported production for the lease. PI takes the KDOR value for this data on face value.

For gas wells in eastern Kansas, often multiple wells feed into one meter and so here the production is not related to a lease. In these cases, the production actually is tagged to the leases in which the gas meter is located or the lease which went on production first. The actual number of wells that are connected to this meter (i.e. the producing wells) are not reported.

#### ***Zone*** (DOR-No table)

This identifies the formation that produces the oil/gas. Purchasing/transporting companies have very little information about this. Also, the lease may be sold and the new operator may complete the well in a different zone. Information about such new additional completions often do not get added to the initial completion information. Also, some wells have multiple completions where the well produces

from different zones simultaneously. Thus, this data is not very accurate for oil wells. Accuracy of this data improves in case of gas wells.

Note : A blank value signifies that the data is not available.

***Depth-Of-Well*** (DOR-No table)

This is a **positive number**. Blank signifies that the data is not available. If a data is available then it is a good piece of information. This value signifies the depth of the first producing horizon that was brought on line. If lower horizons were plugged and currently production is from a newly completed upper horizon then it will perhaps not find a mention in the records. Even deeper zones discovered/completed later do not get mentioned many a time.

Note : This usually refers to the first well drilled on the lease.

***Pur-Op-Sw*** (DISC entry perhaps)

This value is limited to either “P” or “O”.

Pur - purchaser

Op - operator

This describes whether the operator or the purchaser files the tax/production returns for a particular lease. For gas wells, sometimes the operator files the tax returns. For oil wells, the purchaser files the tax returns in most cases.

Note : If “P” is entered then it means that the “purchaser” has filed the tax return and not the “operator”. In such a case, the “Regis-ID” refers to the “purchaser”. If “O” is entered then it means that the “operator” has filed the tax return and not the “purchaser”, and the “Regis-ID” refers to the “operator”. The KDOR will utilize the KCC-assigned license no if the license number is already a part of the DOR-No table. However, if the DOR-No table does not have a license number then the KDOR assigns an unique code of its own. **Thus the KCC given license-no may not be included in the KDOR production data file.**

***Ret-Adj-Sw*** (DISC entry)

This value is limited to either “R” or “A”.

Ret - return

Adj - adjustment

Return - signifies that it is the initial reported production (oil/gas) for a particular lease for a particular month. As it is the first reported production value it is subjected to a correction any time in the future.

Adjustment - when the lease production value is corrected at a later month, then the “adjustment” (i.e. “A”) term is used to denote that the production reported beside the lease description is not the production of that month but is an adjustment to an earlier reported production value. The period which is corrected is denoted by the report-period (i.e. the “YYMM”). The correction volume is denoted by either a positive or a negative value for the “RUN”.

Note : “A” is never used to designate a change or correction of any kind on descriptors such as “lease-name”, “county”, and “legal description”. If an error is ever discovered in any one of these fields, then KDOR can not correct it by using the “A” option in the “Ret-Adj-Sw” field. In such a case, KDOR will have to start over and create a new record for that well or lease with a new lease code number.

Some times, an “Adj” may be reported without any corresponding volume. Adjustments are initiated by the operators, but they are reported with a “P” value in the “Pur-Op-Sw” field.

Also, every production file is related to a “**base-month**”, i.e., the month whose production data is contained in the majority of the entries in a file. Sometimes, the production of a particular lease may not be reported in its base-month. This missed production volume ultimately gets reported along with the production of a later base-month. Though the production of the missed month is reported for the first time, it is accompanied by an “A” entry in the “Ret-Adj-Sw” field. There are times, when the operator/purchaser submitted (in paper form) the production volume on time (i.e. they used “R”) but there a delay occurred in including this record into the production data file for the corresponding month. Thus, the KDOR enters this late first-time production volume in a file with a later base-month by using a “R” in the “R/A” field as it simply copies the contents of the tax filing form filled by the operator/purchaser.

### ***KCC Assessment*** (tax-returnee)

This represents the amount in dollars that is owed to the KDOR (tax valuation).

### ***Trucked-by-whom***

As oil prices change, the operator changes the purchasers/transporting companies. Some times the purchasing companies are different from the transporting companies.

This is not a very relevant data. Usually it is left blank.

### ***WSU-Fields***

This is a code that is used by the KCC to selectively retrieve data from the monthly production file of the KDOR/WSU.

### **Attachment 3:**

This attachment lists the identifiers related to each lease, to each entry of production data, and to the “DISC”. It also shows the list of data entered by each lease operator or producer when they report the lease production to the KDOR. Data entered by the lease operator/producer is based on the DOR-ID number. The KDOR system uses a cross referencing table to link this lease ID to a list of related identifiers.

### **Summary:**

Most of the field descriptors can be divided into two major groups namely the “lease identifiers” and the “production data identifiers”. Due to the quality of the reported data, some of the “lease identifiers” are “not accurate” (NotAccu). Some field descriptors “change” (CanChng) from report to report. Five field descriptors reported in the KDOR-Production data file appear to be “redundant identifiers” from the stand point of lease production data. The different field descriptors are categorized below.

### **Acknowledgements:**

I would like to thank Mr. Jim Hemmen for his time and help in explaining to me the details about format structure followed by the KDOR to record the monthly lease production of Kansas. I would also like to thank Mr. Kurt Look of the KGS for helping me to design the flow chart shown in Attachment 2.

**Attachment 1 – KDOR Format for recording monthly lease production**

000010\* RECORD DESCRIPTION FOR DEPARTMENT OF REVENUE PRODUCTION  
 000020\* RECORD LENGTH = 128 BYTES

000060	01	DOR-PROD.			1+128
000070	05	REGIS-ID	PIC 9(5).		1+5
000080	05	REPORT-PERIOD	PIC 9(4).	(YYMM)	6+4
000090	05	COUNTY	PIC 999.		10+3
000100	05	LEASE-NAME	PIC X(20).		13+20
000110	05	LICENSE-NO	PIC 9(5).		33+5
000120	05	RUNS	PIC S9(9).		38+9
000130	05	REMITTER	PIC 9(5).		47+5
000140	05	DOR-NO	PIC 9(6).		52+6
000150	05	OPERATOR-NAME	PIC X(20).		58+20
000160	05	FIELD-CODE	PIC 9(5).		78+5
000170	05	LEGAL-DESC	PIC X(8).	(SEC/TWNSHIP/RANGE)	83+8
000180	05	PRODUCING-WELLS	PIC 999.		91+3
000190	05	ZONE	PIC X(6).		94+6
000200	05	DEPTH-OF-WELL	PIC 9(4).		100+4
000210	05	PUR-OP-SW	PIC X.		104+1
000220	05	RET-ADJ-SW	PIC X.		105+1
000230	05	KCC-ASSESSMENT	PIC S9(7)V99.		106+9
000240	05	TRUCKED-BY-WHOM	PIC X(14).		115+14
000250	05	WSU-FIELDS	REDEFINES TRUCKED-BY-WHOM.		115+14
000260		10 TAPE-IDENTIFICATION.			115+6
000270		15 DATE-OF-TAPE.			115+4
000280		20 YY	PIC XX.		115+2
000290		20 MM	PIC XX.		117+2
000300		15 SEQ-NO	PIC XX		119+2
000310		10 FILLER	PIC X(8).		121+8

IF DOR # < 200000 THEN IT IS OIL WELL ELSE GAS WELL

### Attachment 3

Codes used below:

NotAccu.: data often not accurate

CanChng: data can change with time

NA: data not available

DISC: data information and system design body for the state of Kansas

#### **Lease Identifiers:**

DOR-No	
Lease Name	
Legal Desc	
County	
Field	<b>NotAccu.</b>
Operator Name	<b>NotAccu. &amp; CanChng</b>
Producing Wells	<b>NotAccu.</b>
Zones	<b>NotAccu.</b>
Depth of Well	<b>NotAccu.</b>

#### **Production data identifiers:**

Report Period	
Regis-ID	<b>CanChng</b>
Runs	

#### **DISC Identifiers:**

Remitter  
Pur-Op-Sw  
Ret-Adj-Sw

#### **Additional Info :**

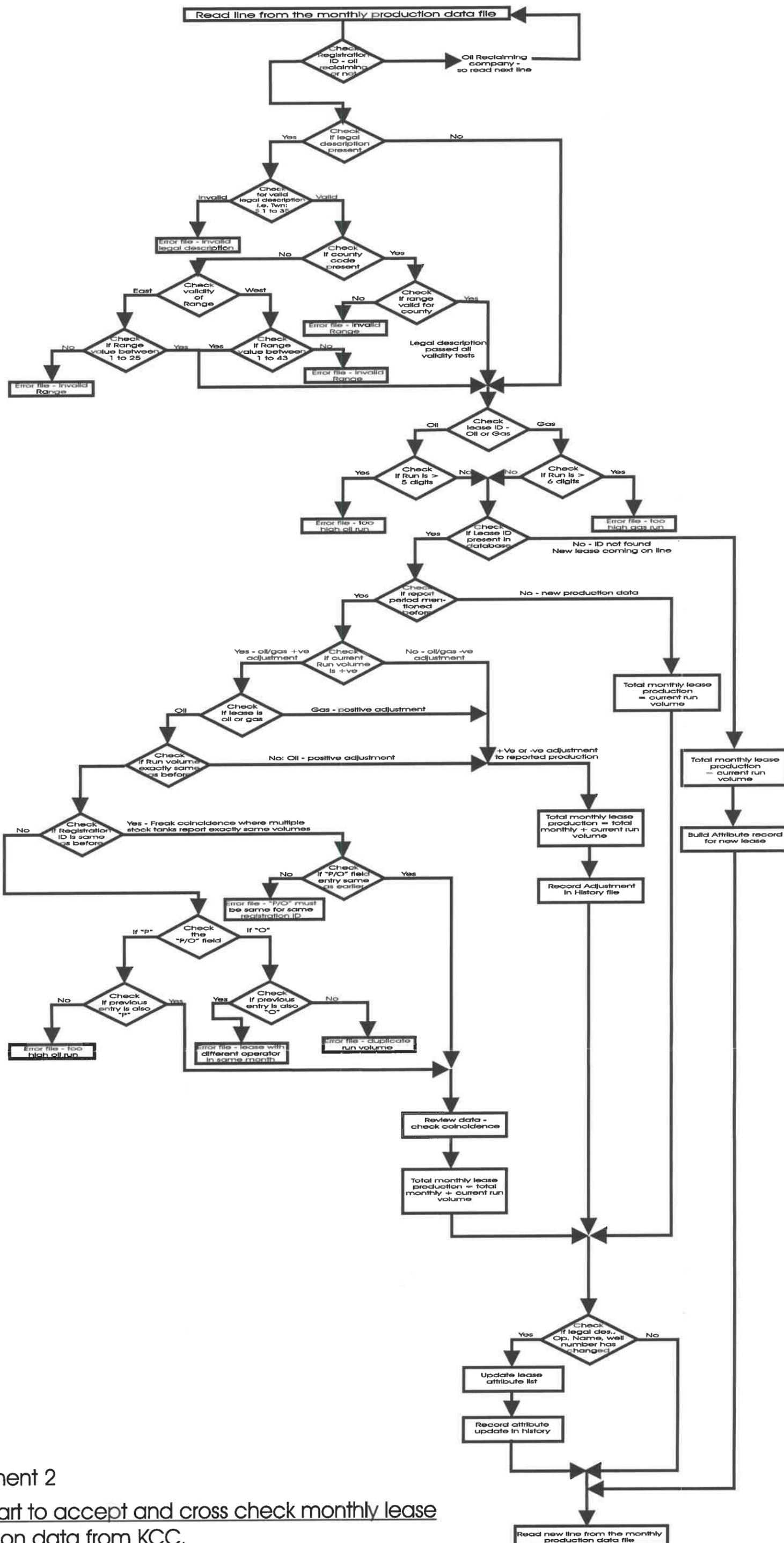
KCC Assessment  
Trucked by whom

#### **Data entered by tax returnee:**

DOR-No ----->  
Regis-ID  
Run  
Report Period  
KCC Assessment

#### **Cross Reference Lease-Table of KDOR:**

Lease name	(fixed)
Operator name	(CanChng)
Depth	(NotAccu)
Zone	(NotAccu)
Legal description	(fixed)
County	(fixed)
Well no.	(CanChng & NotAccu)
License no.	(CanChng & NotAccu)
Field	(fixed but maybe NA)



Attachment 2

Flow Chart to accept and cross check monthly lease production data from KCC.