Abduljaleel Mohammed Hamad Alrobaiei

Computer Technical Department, Technical Colledge, Imam Ja'far Alsadiq University Abdaljalil\_mohammed@ijsu.edu.iq

### Abstract

The Lube oil Dora refinery needs a computer program to automize Its activities, because now most of laboratories in the world use computer programs to receive data and use standards informations and comparing them to get the suitable results, So this computer program is done to make the laboratory in a better form.

The computer program takes the lube oil sample name and gives its specifications and tells the analyst all the tests required to make on it, and after the selection of the analyst, then make the tests, the program will get the results, and show the standard informations and comparing them by the analyst, after that the program will show the report required for any period of time.

The program has an ability to show and print data at any time, and also edit, delete, add, and exit from the data files of the lube oils informations and standards and the test results.

This program was done by using a laptop with a suitable specifications and programming by FOXPRO 9 computer language.

Keywords: lube oil, foxpro 9, computer program, dora refinery, lube oil laboratory

Date of Submission: 25-05-2024

Date of Acceptance: 06-06-2024

## I. Introduction

The objectives of this research are to change the manualy work done daily in the laboratory to a work done with computer using a program written in Foxpro 9 language like the work of most companies works in the analysis of lubricating oil in the world.

Now more of 9000 company in the world use a computer program written with different computer languages to analyze lubricating oil in their laboratories, for example, Midor refinery in Egypt[1], SGS testing and control services in Singapore[2], Oil analyzers in Canada[3], Atlas Co. in Mumbai in India[4], VPS Co. in USA[5], D-A-Lubricant Co. in Lebanon[6], Metslab Co. in Abu Dhabi[7], Oil testing Lab Bureau Veritas in USA[9], Jordan petroleum refinery Co. LTD in Jordan<sup>(9)</sup>, and Intertek Co. in USA[10]<sup>--</sup> etc.

# II. Materails Required:

1.	This computer program is done with a Laptop has the following specifications:
Device name	DESKTOP-KNC7LJM
Processor	Intel(R) Core(TM) i7-7500U CPU @ 2.70GHz 2.90 GHz
Installed RAM	8.00 GB (7.80 GB usable)
Device ID	36E1DDC9-0676-4208-A136-A9288FCC5630
Product ID	00329-00000-00003-AA164
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display
Edition Window	vs 10 Enterprise
Version 22H2	•
Installed on	6/11/2023
OS build19045.4	170
Experience	Windows Feature Experience Pack 1000.19054.1000.0

2. Foxpro 9 computer language.

# III. Theory:

The theory of this work depends on the activities of Lube oil Laboratory in Dora Refinery which is :

1. The samples brought daily to the laboratory by a sample collector.

2. The operator of this computer program will define the lube oil name and use the computer program to print the specifications of this lube oil

3. The specification paper will send to the analyst to choose the tests required to be done on this sample, and collects the results

- 4. The operator will introduce the results in the computer program.
- 5. Then compare these results with the allowable standards.
- 6. All these data and results will be saved by the computer program.
- 7. The computer program will type any report required by the staff, the main menu is :

No.	sellections
1	Tests
2	Results
3	Certificate
4	Specifications
5	Result Data
6	Comparing Data
7	Time Period report
8	Return

IV. Work Procedure:

To use the computer program , do the followings:

1. Click on the logo of the computer program in the Desktop :



2. Type the password :

the password can be changed by the operator at any time.



3. Choose the required choice from the main menu which illustrated above, if the first selection is choosed, the program ask the name of lube oil:



➢ Microsoft Visual FoxPro File Edit View Tools Program Window	w Help		п×
	LUBE UNI	TREPORT	
LUBE OIL NAME :	BABIL LUBE OIL	DATE : 04/06/24	
Visc. @ 40C	NO	vISC. @ 100 C 13.0-16.5	
VISCOSITY INDEX	95 min	API GRAVITY @ 15.6C 0.895	
COC. FLASH C	236 min	COC. FIRE C	
PM FLASH C		ZN WT%	
POUR POINT	-9 max	COLOR	
PHOSPHORUS		TBN MGKOH/Gmoil 5.0 min	
SAP.No.MaKOH/Gmoil		NeutNo.MaKOH/Gmoil	
S.E.No.Sec:		Ram.Res.%wt.:	
ASH %wt.:		Sul Ash %wt.: 0.62-0.72	
H2O Vol.:	nea.	Sulfur wt%:	
Rust Test:		Dielec.Str (2.5mm K.V.):	
Timken Load Ib:		Foam @24C: nil	
Foam @ 93.8C:		Air Release Minit.:	
Soluble wt%:		Phenol Antioxid:	
Ca wt%		H2O ppm	
Corrosive Sulfur:		Time Sample Received: 15/04/05	
Time Sample Report:	15/04/05		
nine oumple nepon.	To Print Select: 🚾 🔤	Signed: qasim ctivate Windows Go to Settings to activate Wind	
₽ Type here to search		11 📕 🎒 🍪 ENG 🐴	51 PM 6/2024

4. After typing the lube oil name, it's specifications will be shown

The above page will be printed and sent to the analyst to choose the required tests, then the test results will be collected.

5. The test results will be introduced in the computer program by the operator:



The program let a choice to print the data or not, and after choosing, the operator will go to the down step.

- rosoft Visual FoxPro 🧦 Mic -ile Edit View Tools Program Window Help IMAM JA'FAR ALSADIQ UNIVERSITY TECHNICAL COLEDGE LUBE OIL LABORATORY COMPUTER PROGRAM COMPARING THE TEST RESULTS Com & Blending: TESTING DATE: 04/17/24 CODE UNIT: LUBE OIL NAME: BABIL LUBE OIL TEST NAME STANDARED VAL. EXPERIMENTAL VAL. COMP. RESULTS TEST NAME STANDARED VAL. EXPERIMENTAL VAL. COMP. RESULT visc. @ 40C NO 15 vISC.@100C 13.0-16.5 20 VISCOSITY INDEX 95 min API GRAVITY 15.6C 0.895 0.98 0.8998 COC. FLASH C COC. FIRE C 236 min 220 230 🧶 📑 😒 😇 👪 💼 🗔 🚱 树 🗄 🔎 Type here to search 📦 🔟 89°F Sunny
- 6. Comparing the results with the standard data.

- After filling the comparing data, the program will return to the main menu.
- 7. Click the certificate choice from the main menu : the program ask typing the code of the test :

וער אור איר איר איר איר איר איר איר איר איר אי	– 🗆 ×
IMAM JA'FAR ALSADIQ UNIVERSITY TECHNICAL COLEDGE LUBE OIL LABORATORY COMPUTER PROGRAM CERTIFICATE REPORT	
PLEASE TYPE THE TEST CODE :	
	Activate Windows Go to Settings to activate Windows.
📲 🔎 Type here to search 🛛 🍕 🎯 🛱 💽 🛱 🚼 💼 💼 🕞 🚱 🐓 😕 🌚	92°F Sunny \land 📼 ENG 4/17/2024 😽

After typing the code of the test, the following page will occure :

		•					
Microsoft Visual FoxPro							- U X
File Edit View loois Program Win	dow Help						
			IMAM JA'FAR ALS	ADIQ UNIVERSITY			
			TECHNIC	L COLEDGE			
			LUBE OIL LABORATO		OGRAM		
				TEET DESULTS	5 GH/AM		
			COMPARING THE	TESTRESULTS			
Com & Blending: A.P.	TESTIN	G DATE: 01/01/24	CODE : 124	UNIT: REFINING	LUBE OIL NAM	E: BABIL LUBE OIL	
TEST NAME STAND	ARED VAL.	EXPERIMENTAL VAL	COMP. RESULTS	TEST NAME STA	ANDARED VAL.	EXPERIMENTAL VAL.	COMP. RESULTS
Visc. @ 40C	NO	3	1	vISC. @ 100 C	13.0-16.5	15.0	2
VISCOSITY INDEX	95 min	98	3	API GRAVITY 15.6	C 0.895	0.896	4
COC. FLASH C	236 min	240	5	COC. FIRE C		260	6
POUR POINT C	-9 max	-12	7	T.B.N. MG KOH	5.0 min	6	8
SULPHATED ASH WT%	0.62-0.72	0.05	9	COLOR		RED	10
PHOSPHORUS		5	11	H2O VOL.	neg.	1	12
FOAM @ 24C	nil	NIL	13	FOAM @ 93.3C		NIL	14
FOAM@24C AFTER CO	C	23	15	Sulfur wt%:		1	16
Rust Test:		NIL	17	Dielec.Str.(2.5mm h	K.V	NIL	18
Timken Load lb:		5	19	Air Release Minit.:		5	20
Soluble wt%:		4	21	Phenol Antioxid:		NIL	22
Ca wt%:		NIL	23	H2O ppm		1	24
Corrosive Sulfur:		NIL	25	PM FLASH C		250	26
ZN WT%:		0.1	27	SAP.MG/KOH :		7	28
NEUT. MG KOH:		0.3 To Print Select:	Yes No 29	SENO.SEC :		5 Activate Windo	ows 30
RAM.RES.WT%:		1	31	ASH WT% :		2	32
F P Type here to search	<b>10</b>	0 🕫 👪 💼	🚍 💁 🚧 🧕 😂	4		🤔 89°F Sunny 🔿 🛍	ENG 4/6/2024

All the informations about the test (specifications of the lube oil, the standard data, the result of the tests done and the comparing results) will occure, and there is a choice to print the certificate paper or not. After that the program returns to the main menu.

8. Click the specification button , the program asks to type the lube oil name :



After typing the lube oil name, the following page will appear:

Microsoft Visual FoxPro File Edit View Tools Program Window	Help		- o x
	LUBE	UNIT REPORT	
LUBE OIL NAME : Visc. @ 40C VISCOSITY INDEX	BABIL LUBE OIL NO 95 min	DATE : 04/06/24 vISC. @ 100 C API GRAVITY @ 15.6C	13.0-16.5 0.895
COC. FLASH C PM FLASH C POUR POINT	236 min -9 max	COC. FIRE C ZN WT% COLOR	
PHOSPHORUS SAP.No.MgKOH/Gmoil S.E.No.Sec:		TBN MGKOH/Gmoil NeutNo.MgKOH/Gmoil Ram.Res.%wt.:	5.0 min
ASH ‰vt.: H2O Vol.: Rust Test:	neg.	Sul Ash %wt.: Sulfur wt%: Dielec.Str.(2.5mm K.V.):	0.62-0.72
Timken Load Ib: Foam @ 93.8C: Soluble wt%:		Foam @24C: Air Release Minit.: Phenol Antioxid:	nil
Ca wt%: Corrosive Sulfur: Time Sample Report:	15/04/05	H2O ppm Time Sample Received:	15/04/05
P Type here to search	To Print Select: 🚾		Go to Settings to activate Windows.

Which contains the specifications of the required lube oil, also the program let a choice to print the data or not, after that four choices (EDIT, ADD, DELETE, and EXIT), if the operator clicks the EDIT choice, the following page will be occure:

➢ Microsoft Visual FoxPro File Edit View Tools Program Window He	lp			- 🗆 ×
	LUB	E UNIT REP	ORT	
LUBE OIL NAME :	BABIL LUBE OIL OIL		DATE : 04/06/24	15/04/05
Visc. @ 40C	ŅO		vISC. @ 100 C	13.0-16-5 3.5
VISCOSITY INDEX	95 min		API GRAVITY @ 15.6C	0,895,0
COC. FLASH C	236 min		COC. FIRE C	
PM FLASH C			ZN WT%	
POUR POINT	-9 max		COLOR	
PHOSPHORUS			TBN MGKOH/Gmoil	5.0 min
SAP.No.MgKOH/Gmoil			NeutNo.MgKOH/Gmoil	
S.E.No.Sec:			Ram.Res.%wt.:	
ASH %wt.:			Sul Ash %wt.:	0.620.72.72
H2O Vol.:	neg.		Sulfur wt%:	
Rust Test:			Dielec.Str.(2.5mm K.V.):	
Timken Load Ib:			Foam @24C:	ni
Foam @ 93.8C:			Air Release Minit.:	
Soluble wt%:			Phenol Antioxid:	
Ca wt%:			H2O ppm	
Corrosive Sulfur:			Time Sample Received:	1509405, 05
Time Sample Report:	1509405, 05		Pieped	SAMIR
	To Print Select:	Yes No	Signed.	Go to Settings to activate Windows
Select one of the followings:	EDIT DATA ABOVE	DELETE DATA ABOVE	ADD NEW DATA	EXIT TO MAIN MENU
🗄 🔎 Type here to search 🛛 📹	🅦 H 💽 🖲 👪 💼	🚍 💁 🏏 🖊 😂		🥞 89°F Sunny \land 📼 ENG 👫 4/6/2024 📑

The program let the operator to change the data as he likes , then the program will save the new data, and return to the main menu.

Microsoft Visual FoxPro ile Edit View Tools Program Window	Help		- □ >
	LUBE U	NIT REPORT	
LUBE OIL NAME :	BABILLUBEOUL OIL	DATE : 04/06/24	15/04/05
Visc. @ 40C	NO	vISC. @ 100 C	130,3653.5
VISCOSITY INDEX	95 min	API GRAVITY @ 15.6C	0,895
COC. FLASH C	236 min	COC. FIRE C	
PM FLASH C		ZN WT%	
POUR POINT	-9 max	COLOR	
PHOSPHORUS		TBN MGKOH/Gmoil	5.9 min
SAP.No.MgKOH/Gmoil		NeutNo.MgKOH/Gmoil	
S.E.No.Sec:		Ram.Res.%wt.:	
ASH %wt.:		Sul Ash %wt.:	0.620.72.72
H2O Vol.:	neg.	Sulfur wt%:	
Rust Test:		Dielec.Str.(2.5mm K.V.):	
Timken Load Ib:		Foam @24C:	nil.
Foam @ 93.8C:		Air Release Minit.:	
Soluble wt%:		Phenol Antioxid:	
Ca wt%:		H2O ppm	
Corrosive Sulfur:		Time Sample Received:	15/04/05, 05
Time Sample Report:	15/04/05, 05		ewed =
	To Print Select: 🔤 🛽	Signed:	Contractivate Windows
Select one of the following	S: EDIT DATA ABOVE DELETE DAT	ABOVE ADD NEW DATA	GO to Settings to activate Windows. EXIT TO MAIN MENU

The program let the operator to add a new data, then the program will save the new data, and return to the main menu.

10. If the operator clicks the DELETE choice, the program will delete this lube oil specifications and returns to the main menu.

11. If the operator clicks the EXIT choice, the program will returns to the main menu.

12. If the operator clicks the RESULT DATA choice from the main menu , the program asks to type the test code:

	- 🗆 ×
IMAM JA'FAR ALSADIQ UNIVERSITY TECHNICAL COLEDGE LUBE OIL LABORATORY COMPUTER PROGRAM CERTIFICATE REPORT	
PLEASE TYPE THE TEST CODE :	
	Activate Windows Go to Settings to activate Windows.
🖶 🔎 Type here to search 🛛 🙏 🔯 🛱 😥 🛱 👫 💿 💼 😭 🍉 🚱 🍁 🔟	49 92°F Sunny \land 🗈 ENG 12:25 PM

After typing the code of the test, the following page will appears:

Microsoft Visual FoxPro File Edit View Tools Program Window Hel	p				- 0 ×
IN	1AM LUBE (	JA'FAR A TECHNICAL		)IQ UNIVE )GE jter program	RSITY 1
LUBE OIL NAME:	BABIL LUBE	OIL		TESTING DATE:	01/01/24
CODE :	124	UNIT:	REFINING	Com & Blending:	A.P.
Visc. @ 40C	3			vISC.@100C	15.0
VISCOSITY INDEX	98			API GRAVITY @ 15.6C	0.896
COC. FLASH C	240	PM FLASH C	250	COC. FIRE C	260
POUR POINT C	-12	ZN WT%	0.1	T.B.N. MG KOH	6
SULPHATED ASH WT%	0.05	SAP.No.MgKOH/Gmoil	7	COLOR	RED
PHOSPHORUS	5	Neut.No.MgKOH/Gmoil	0.3	H2O VOL.	1
FOAM @ 24C	NIL	S.E.No.Sec	5	FOAM @ 93.3C	NIL
FOAM @ 24C AFTER COOL	23	Ram.Res.%WT	1	Sulfur wt%:	1
Rust Test:	NIL	ASH %WT	2	Dielec.Str.(2.5mm K.V.):	NIL
Timken Load lb:	5	Air Release Minit.:	5	BATCH NUMBER:	500
Phenol Antioxid:	NIL	TANK NUMBER:	600	Soluble wt%:	4
H2O ppm	1			Ca wt%:	NIL
Time Sample Received:	03/02/2024			Corrosive Sulfur:	NIL
Time Sample Report:	03/02/2024			Signed:	
Select one of the followings:	EDIT DATA ABOVE	DELETE DATA ABOV	]	ADD NEW DATA	Go to Settings to activate Windows. EXIT TO MAIN MENU
🚦 🔎 Type here to search	🚋 H 🔇	) 🙃 👪 💼 📃 🚱 👃	7 🖪 💿 😆	WI	Near record ∧ 100 ENG 4/18/2024 5

The operator can choose one of the following (EDIT, ADD, DELETE & EXIT), if he click the EDIT choice the following page will occure:

- IN	ΛAN	IJA'FAR	ALSA	DIQ UNIV	ERSITY
		TECHNICA	COLE	DGE	
					01/01/202
CODE :	124	UNIT:	REFINING	Com & Blending:	A.P.
Visc. @ 40C				vISC. @ 100 C	15.0
	98			API GRAVITY @ 15.6C	0.896
COC. FLASH C	240	PM FLASH C	250	COC. FIRE C	260
POUR POINT C	-12	ZN WT%	0.1	T.B.N. MG KOH	6
SULPHATED ASH WT%	0.05	SAP.No.MgKOH/Gmoil		COLOR	RED
PHOSPHORUS		Neut.No.MgKOH/Gmoil	0.3	H2O VOL.	
FOAM @ 24C	NIL	S.E.No.Sec		FOAM @ 93.3C	NIL
FOAM @ 24C AFTER COO	23	Ram.Res.%WT		Sulfur wt%:	
Rust Test:	NIL	ASH %WT		Dielec.Str.(2.5mm K.V.):	NIL
Timken Load Ib:		Air Release Minit.:		BATCH NUMBER:	500
Phenol Antioxid:	NIL	TANK NUMBER:	600	Soluble wt%:	
H2O ppm				Ca wt%:	NIL
Time Sample Received:	03/02/2024			Corrosive Sulfur:	NIL
Time Sample Report:	03/02/2024			Signed:	SAJED Activate Windows Go to Settings to activate Window

The operator can change and correct the data, then the program return to the main menu, if the operator click the ADD button , the following page will occure:

	ИAN	1 JA'FAR	ALSA	DIQ UNIVI	ERSITY
		TECHNICA	J. COLEI	DGE	
	LURE				ΔM
	BABIL LUBE O				01/01/202
TEST CODE:	124	UNIT:	REFINING	Com & Blendina:	AP.
Visc. @ 40C				vISC. @ 100 C	15.0
VISCOSITY INDEX	98			API GRAVITY @ 15.6C	0.896
COC. FLASH C	240	PM FLASH C		COC. FIRE C	260
POUR POINT C	-12	ZN WT%	250	T.B.N. MG KOH	0.1
SULPHATED ASH WT%	0.05	SAP.No.MaKOH/Gmoil		COLOR	RED
PHOSPHORUS		Neut.No.MgKOH/Gmoil	0.3	H2O VOL.	
FOAM @ 24C	NIL	S.E.No.Sec		FOAM @ 93.3C	NIL
FOAM @ 24C AFTER COC	)L <sup>23</sup>	Ram.Res.%WT		Sulfur wt%:	
Rust Test:	NIL	ASH %WT		Dielec.Str.(2.5mm K.V.);	NIL
Timken Load Ib:		Air Release Minit.:		BATCH NUMBER:	500
Phenol Antioxid:	NIL	TANK NUMBER:	600	Soluble wt%:	
H2O ppm				Ca wt%:	NIL
Time Sample Received:	03/02/2024			Corrosive Sulfur:	NIL
Time Sample Report:	03/02/2024			Signed:	Activate Windows

The operator can add new result data, and then return to the main menu, if the operator click the DELETE button, the program will delete the current test results and return to the main menu, and if the operator click the EXIT button, the program returns to the main menu.

13. If the operator clicks the COMPARING DATA choice from the main menu, the program asks to type the test code:

Microsoft Visual FoxPro File Edit View Tools Program Window Help	- • ×
IMAM JA'FAR ALSADIQ UNIVERSITY TECHNICAL COLEDGE LUBE OIL LABORATORY COMPUTER PROGRAM CERTIFICATE REPORT	
PLEASE TYPE THE TEST CODE :	
	Activite Windows
	Activate WINDOWS Go to Settings to activate Windows.
🖷 🔎 Type here to search 🛛 🙏 🛃 🔁 💼 🚼 🚔 🧰 💭 🕼 💆 🙆 📦 🔯	🥞 92°F Sunny \land 🗉 ENG <sup>12:25</sup> PM 4/17/2024 😽

After typing the test code, the following page will occure:

Microsoft Visual FoxPro			saffrican salas substanting			and a start of the second of the second of the second second second second second second second second second s	- 🗆 X
TEST NAME STAND	ARED VAL.	EXPERIMENTAL VAL	. COMP. RESULTS	TEST NAME ST	TANDARED VAL.	EXPERIMENTAL VAL.	COMP. RESULT
Visc. @ 40C	NO	3	1	vISC. @ 100 C	13.0-16.5	15.0	2
VISCOSITY INDEX	95 min	98	3	API GRAVITY 15	.6C 0.895	0.896	4
COC. FLASH C	236 min	240	5	COC. FIRE C		260	6
POUR POINT C	-9 max	-12	7	T.B.N. MG KOH	5.0 min	6	8
SULPHATED ASH WT%	0.62-0.72	0.05	9	COLOR		RED	10
PHOSPHORUS		5	11 Full-screen Snin	H2O VOL.	neg.	1	12
FOAM @ 24C	nil	NIL	13	FOAM @ 93.3C		NIL	14
FOAM @ 24C AFTER CC	)	23	15	Sulfur wt%:		1	16
Rust Test:		NIL	17	Dielec.Str.(2.5mm	IK.V	NIL	18
Timken Load lb:		5	19	Air Release Minit.		5	20
Soluble wt%:		4	21	Phenol Antioxid:		NIL	22
Ca wt%:		NIL	23	H2O ppm		1	24
Corrosive Sulfur:		NIL	25	PM FLASH C		250	26
ZN WT%:		0.1	27	SAP.MG/KOH:		7	28
NEUT. MG KOH:		0.3	29	SENO.SEC :		5	30
RAM.RES.WT%:		1	31	ASH WT% :		2	32
Type here to search	ect the ED	€ 🖬 👪 🖻	following page wi	toccure:		89°F Sunny ^ ۱۹	ENG 4/6/2024 3
Microsoft Visual FoxPro			ionowing page wi	ii occure.			- 🗆 ×
TEST NAME STAND	IMAN ARED VAL	JA'FA TECHN experimental val	R ALSA	ADIQ I EDGE			COMP. RESULT:
	NO	1	5	VISC @ 100 C	12.0.16.5	0	6
VISCOSITY INDEX	95 min	3	7	API GRAVITY 15	6C 0.895	4	8
COC FLASH C	236 min	5	9	COC FIRE C		6	11
POUR POINT C	-9 max	7	12	T B N MG KOH	5 0 min	8	14
SUI PHATED ASH WT%	0.62-0.72	9		COLOR	0.01111	10	17
PHOSPHORUS	0.02 0.72	11	18	H20 V0I	peg	12	
FOAM@24C	nil	13		F0AM@933C	neg.	14	
	) )	15		Sulfur wt%		16	
PUAN @ 24C AFTER CC	,	17		Dielec Str /2 5mm	UKAV	19	
Timken Load Ib:		10		Air Pelease Minit		20	
Soluble wt%:		21		Phenol Antiovid		20	
		21		H2O ppm		24	
Corrosive Sulfur:		25		PM FLASH C		26	10
ZNI WT%		23	13	SAP MG/KOH		28	16
NEUT MGKOH		29	0.3	SENO SEC :		30 Activate Wind	ows
RAM.RES.WT%:		31		ASH WT% :		Go to Settings to a	tivate Windows.
						52	

After editing the above data, the program return to the main menu, if the operator select the DELETE button , the program will ask to type the test code and after typing the test code , it will delete this test results with its comparing results.

If the operatore select the ADD button, the program will ask to type the test code , and after typing the test code , the following page will occure:

➢ Microsoft Visual FoxPro File Edit View Tools Program Win	ndow Help					- • ×
TEST NAME STAND	IMA Ared Val.	M JA'FA TECHNI experimental val	R ALSA CAL COLI	ADIQ UNI' EDGE test name: standared v	VERSIT	L. COMP. RESULT:
 Visc @ 40C	NO	1	5	VISC @ 100 C 13 0-16	5 2	6
VISCOSITY INDEX	95 min	3	7	API GRAVITY 15.6C 0.895	4	8
COC FLASH C	236 min	5	9	COC FIRE C	6	11
POUR POINT C	-9 max	7	12	TBN MGKOH 50 min	8	14
SUI PHATED ASH WT%	0.62-0.72	9		COLOR	10	17
PHOSPHORUS	0.02 0.72	11	18	H20 VOI neg	12	
FOAM@24C	nil	13		FOAM @ 93.3C	14	
FOAM @ 24C AFTER CO		15		Sulfur wt%	16	
Rust Test		17		Dielec Str (2 5mm K \/	18	
Timken Load Ib:		19		Air Release Minit :	20	
Soluble wt%:		21		Phenol Antiovid:	22	
Ca wt%		23		H2O nom	24	
Corrosive Sulfur:		25		PMFLASHC	26	10
		27	13	SAP MG/KOH ·	28	16
NELT MGKOH		29	03	SENO SEC :	30 Activate Wir	ndows
RAM.RES.WT%:		31		ASH WT% :	Go to Settings to 32	activate Windows.
Type here to search	<b>1</b>	e 💽 🖻 👪 💼 📮	1 🕒 🖌 🖉	单 🔟	🥚 94°F Sunny 🔿	1:59 PM ENG 4/18/2024

After adding the new data, the program will return to the main menu.

14. If the operator clicks the TIME PERIOD REPORT choice from the main menu, the program asks to type the time period required:

₩ Microsoft Visual FoxPro File Edit View Tools Program Window Help		- • ×
IMAM JA'FAR ALS TECHNICAL CO LUBE UNIT REPORT FROM	ADIQ UN	IVERSITY
Type the DATE PEROID	jarna:202	B4/18/202
🕂 🔎 Type here to search 🛛 🛤 🎦 🕅 🖬 🕋 💽 💽 🕨 🗡	🔊 📣 vīj	Activate Windows Go to Settings to activate Windows.

After typing the time period , the program prepare a file data for this period only from the original file , and ask if the operator wants to rewrite the previous file or not , selecting YES to delete the old file and type a new file with the same name.



Then the program will type all the tests done during this time period (10 tests in one page, and wait rhe operator to click PRESS ANY KEY TO CONTINUE to see the new page until the results are finished.

Interest and a second seco	ual FoxPro Tools Program Wi	ndow Help								- 🗆 X
		LUBE	OIL P	ERIOD	REPOR	F FROM	01/0	1/20	то	01/01/22
No.	BATCH No.		TEST DAT	re:	TANK No.	LUBE C	DIL NAME	TEST CODE		
1.00	50		01/01/20		7	BABIL I	LUBE OIL	130		
2.00	300		01/01/20		15	1		1000		
3.00	500		01/01/20		600	BABIL I	LUBE OIL	25		
4.00	150		01/01/21		6	1		1000		
5.00	500		01/01/21		600	BABIL I	LUBE OIL	250		
6.00	500		01/01/22		600	BABIL I	LUBE OIL	300		
7.00	120		01/01/22		130	BABIL I	LUBE OIL	150		
									Activate Go to Satti	PRESS ANY KEY TO CONTINUE
E Q TV	pe here to search		H 👩 1			۸ ا			89°E Sunny	ENG 201 PM

When the operator click the final PRESS ANY KEY TO CONTINUE, the following page will occure to let the operator to choose if he want to print data or not.

<b>↓</b> M File	icrosoft Visual FoxPro Edit View Tools Program Wi	ndow Help					- 0 ×
		LUBE OIL PE		RT FROM 01	/01/20	то	01/01/25
No.	BATCH No.	TEST DATE	TANK No.	LUBE OIL NAME	TEST CODE		
	1	04/17/24		BABIL LUBE OIL	300		
	2	04/17/24		BABIL LUBE OIL	250		
	3	04/17/24		BABIL LUBE OIL	600		
	4	04/17/24		BABIL LUBE OIL	500		
	TO PRINT THE ABO	/E DATA SELECT :	ामस्	NO		Activa Go to S	ate Windows ettings to activate Windows.
	Q Type here to search		👷 🐟 🗖 🗛 🕨	<b>1</b> 🔊 龄 🗖		94°Ε Su	nov 🛆 🗐 ENG 231 PM

If the operator select YES the data will printed and return to the main menu, if NO the program will return to the main menu.

15. If the operator clicks the EXIT choice from the main menu, the program will exit to the desktop screen.

#### **Conclusion:** V.

By using thid computer program, the operator in the laboratory of Dora Refinery can:

Type the specifications of the lube oil prepared to test, and give it to the analyst to sign the suitable 1. tests required.

Introduce the test results in the program, and give a comparing paper between the standard and 2. experimental data, and let the analyst to compare between them and type the results of comparing.

Edit, delete, add new data to the file of informations about lube oils, test, and comparing results. 3.

4. Give a report at any time about the tests done during and required period time.

#### **References:**

- Fouad Agamy,"laboratory's key role in ensuring oil quality", Midor refinery, 14 july 2014. [1].
- Andre Lacroix," Oil condition Monitoring (OCM)", SGS testing and control services Singapore Pte Ltd, Singapore, 2024 [2].
- [3]. Heather Nichols," Oil Analysis & Oil Testing Services - Oil Analyzers, INC" Canada,2024
- Nathan kinert, "Lubricating Testing Oil condition monitoring program", ATLAS, Mumbai, India,2024 Malcolm Cooper, "Oil Condition Monitoring", VPS Co., USA,2024 [4].
- [5].
- [6]. John MacCall,"CLS Data Oil Analysis Program-D-A-Lubricant Company", Lebanon, 2024
- [7]. [8]. Sudhanandh,"Tope Oil Testing Lab Service : Ensure Quality with Mets Laboratories", Abu Dhabi, 2023 Hinda Gharbi, "Oil Analysis , Lubricant Oil Analysis Oil Testing Lab – Bureau Veritas" , USA,2023
- [9]. Abdulkareem Alalawin, "Future Plans - Jordan Petroleum Refinery Co. LTD ", Jordan, 2024
- [10]. Ratnesh Rai, "lubricant and OCM Testing Laboratories - Intertek", ?Mumbai, Indai, 2024