

### CERTIFICATE OF ANALYSIS

<b>SAMPLE NAME</b>	Clove Bud oil		
<b>FORM</b>	Oil		
<b>CUSTOMER NAME</b>	Buckley & Phillips Aromatics		
<b>CERTIFICATION DATE</b>	06 May 2019		
<b>CUSTOMER REFERENCE</b>	29916/30		
<b>ARL JOB #</b>	A190904	<b>LAB REF. #</b>	ARL1902307
<b>ANALYSIS</b>	GCFID - Area%		

TEST	ISO 3142** SPECIFICATION	RESULTS	TEST METHOD
	Area %		
β-caryophyllene	2.0 - 7.0	6.60	ARL-TM101-3*
eugenol	75.0 - 85.0	81.30	
eugenyl acetate	8.0 - 15.0	9.30	

\* Assay by GC (FID detection –area percent report)

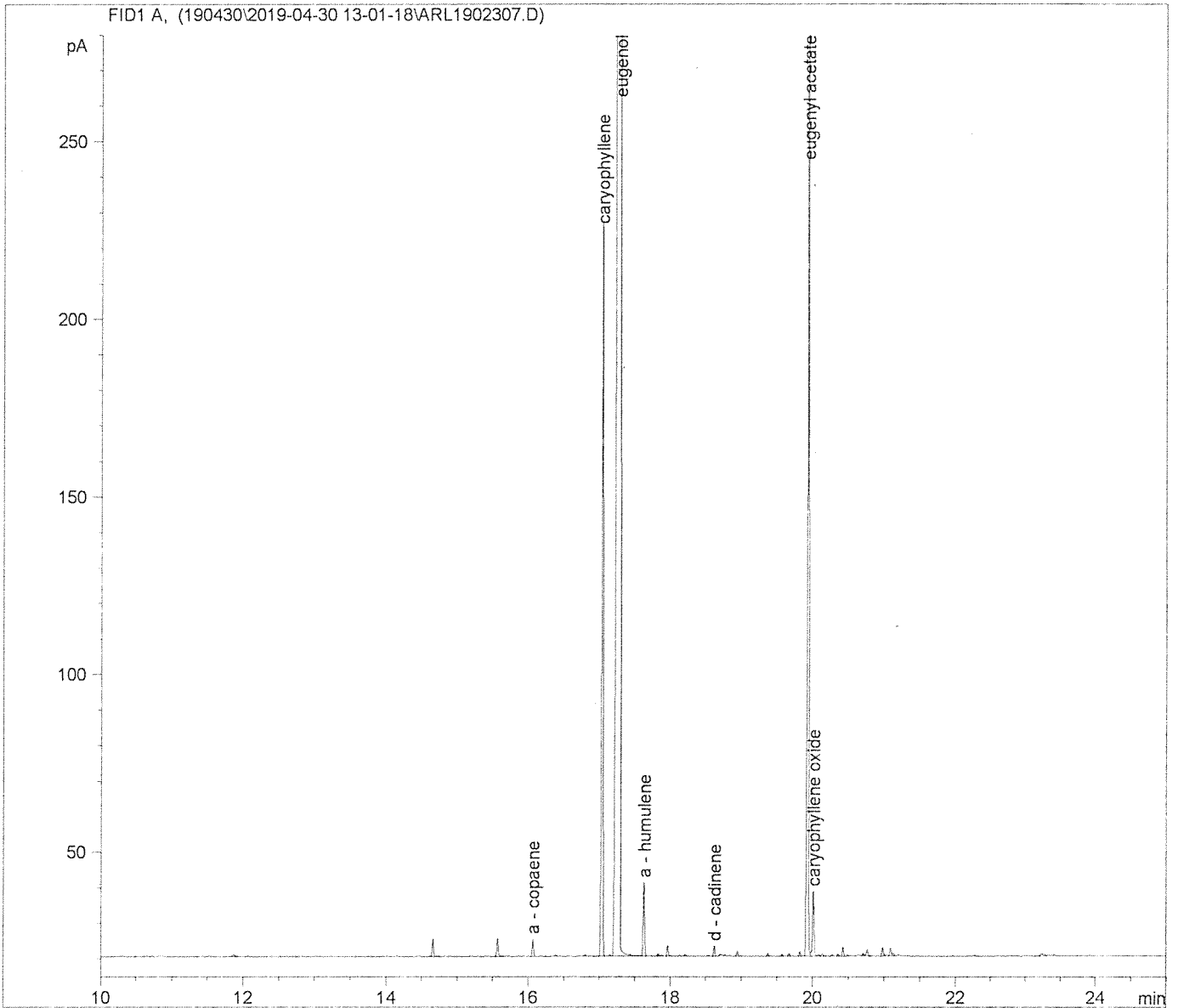
\*\* Oil of clove buds [*Syzygium aromaticum* (L.) Merr. Et Perry, syn. *Eugenia caryophyllus* (Sprengel) Bullock et S. Harrison]

  
 Dr Jeanette Balindong  
 ANALYTICAL OFFICER

  
 Mr Ashley Dowell  
 MANAGER - ARL

Sample Name: CLOVE BUD OIL 29916/30

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Acq. Operator   : Ana & Jeanette                Seq. Line :   13
Acq. Instrument : GC-3                          Location  : Vial 13
Injection Date  : 4/30/2019 9:05:16 PM         Inj       :    1
                                                    Inj Volume: 1 µl
Acq. Method     : C:\DATA\GC-3\DATA\190430\2019-04-30 13-01-18\CLOVE.M
Last changed    : 2/22/2019 12:30:00 PM by Jeanette Balindong
Analysis Method : C:\DATA\GC-3\METHODS\CLOVE.M
Last changed    : 2/22/2019 12:30:00 PM by Jeanette Balindong
Method Info     : Method to analyse essential oils
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02/05/19

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Area Percent Report  
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Sorted By : Signal  
Calib. Data Modified : 2/22/2019 12:20:08 PM  
Multiplier: : 1.0000  
Dilution: : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A,

Peak #	RetTime [min]	Type	Width [min]	Area [pA*s]	Area %	Name
1	16.064	VB	0.0219	6.70897	0.15314	a - copaene
2	17.042	BV	0.0225	288.92667	6.59530	caryophyllene
3	17.291	BV	0.0349	3561.72632	81.30312	eugenol
4	17.635	VB	0.0220	29.31180	0.66910	a - humulene
5	18.626	BB	0.0211	3.93599	0.08985	d - cadinene
6	19.936	VV	0.0215	407.23846	9.29599	eugenyl acetate
7	20.015	VV	0.0228	27.04459	0.61734	caryophyllene oxide

Totals : 4324.89280 98.7238

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\*\*\* End of Report \*\*\*

✓ 02/05/19