

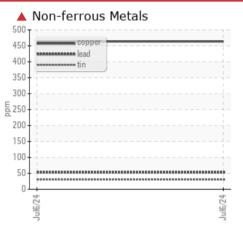


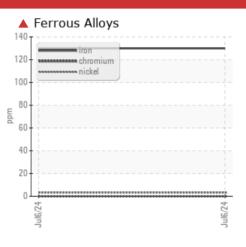
## **PROBLEM SUMMARY**

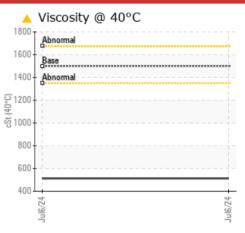


#### Machine Id K2 P2 NW Component Bearing Fluid MOBIL MOBILGEAR SHC 1500 (40 LTR)

### COMPONENT CONDITION SUMMARY







no image

#### RECOMMENDATION

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

#### PROBLEMATIC TEST RESULTS Sample Status SEVERE Iron ASTM D5185(m) >20 **130** ppm Lead ppm ASTM D5185(m) >20 **5**3 Copper ppm ASTM D5185(m) >20 **464** Tin ppm ASTM D5185(m) >20 30 Visc @ 40°C cSt 513 ASTM D7279(m) 1500

PrtFilter

Customer Id: CARDUN Sample No.: WC0959800 Lab Number: 02647705 Test Package: IND 2



To manage this report scan the QR code

*To discuss the diagnosis or test data:* Kevin Marson +1 (289)291-4644 x4644 Kevin.Marson@wearcheck.com

*To change component or sample information:* Gloria Gonzalez +1 (289)291-4643 x4643 <u>gloria.gonzalez@wearcheck.com</u> no image

RECOMMENDED ACTIONS							
Action	Status	Date	Done By	Description			
Change Fluid			?	We recommend that you drain the oil from the component if this has not already been done.			
Resample			?	We recommend an early resample to monitor this condition.			

HISTORICAL DIAGNOSIS



## **OIL ANALYSIS REPORT**



X

#### Machine Id K2 P2 NW Component Bearing Fluid MOBIL MOBILGEAR SHC 1500 (40 LTR)

#### DIAGNOSIS

#### Recommendation

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

#### 🔺 Wear

Copper and iron and lead ppm levels are severe. Tin ppm levels are abnormal. Bearing wear is indicated. The low ferrous density (PQ) index indicates the wear metal levels are due to corrosion.

#### Contamination

There is no indication of any contamination in the oil.

#### Fluid Condition

Viscosity of sample indicates oil is within ISO 460 range, advise investigate. The AN level is acceptable for this fluid. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

SAMPLE INFORMATION         method         limit/base         current         history1         history2           Sample Number         Client Info         06 Jul 2024             Sample Date         Client Info         4             Oil Age         mths         Client Info         0             Oil Age         mths         Client Info         N/A             Oil Age         mths         Client Info         N/A             CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >2         NEG             WEAR METALS         method         limit/base         current         history1         history2           Vater         WC Method         >2         NEG              Itron         ppm         ASTM D5185(m)         >20         1             Nickel         ppm         ASTM D5185(m)         >20         30             Auminum         ppm         <								
Sample Date         Client Info         06 Jul 2024             Machine Age         mths         Client Info         4             Oil Age         mths         Client Info         0             Sample Status         Client Info         N/A             CONTAMINATION         method         imit/base         current         history1         history2           Water         WC Method         >2         NEG             WEAR METALS         method         imit/base         current         history1         history2           PQ         ASTM D585(m         >20         130             Iron         ppm         ASTM D585(m         >20         3             Nickel         ppm         ASTM D585(m         >20         1             Aluminum         ppm         ASTM D585(m         >20         1             Copper         ppm         ASTM D585(m         >20         30             Antimony         ppm         ASTM D585(m	SAMPLE INFORM	<b>IATION</b>	method	limit/base	current	history1	history2	
Machine Age         mths         Client Info         4             Oil Age         mths         Client Info         N/A             Sample Status         Imathematical Severe              CONTAMINATION         method         imit/base         current         history1         history2           Water         WC Method         >2         NEG             WATAR METALS         method         imit/base         current         history1         history2           PQ         ASTM D8184'         71              Chromium         ppm         ASTM D5185(m)         >20         3             Nickel         ppm         ASTM D5185(m)         >20         1             Aluminum         ppm         ASTM D5185(m)         >20         1             Autinum         ppm         ASTM D5185(m)         >20         30             Autinum         ppm         ASTM D5185(m)         >20         30             Co	Sample Number		Client Info		WC0959800			
Oil Age         mths         Client Info         0             Sample Status         Client Info         N/A             CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >2         NEG             WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184"         71               Nickel         ppm         ASTM D5185(m)         >20         0             Nickel         ppm         ASTM D5185(m)         >20         3             Lead         ppm         ASTM D5185(m)         >20         1             Lead         ppm         ASTM D5185(m)         >20         464             Antimony         ppm         ASTM D5185(m)         >20         464             Antimony         ppm         ASTM D5185(m)         0	Sample Date		Client Info		06 Jul 2024			
Oil Changed         Client Info         N/A             Sample Status         nethod         limit/base         current         history1         history2           Water         WC Method         >2         NEG             WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184'         71              tron         ppm         ASTM D5185(m)         >20         0             Chromium         ppm         ASTM D5185(m)         >20         0             Nickel         ppm         ASTM D5185(m)         >20         1             Silver         ppm         ASTM D5185(m)         >20         1             Lead         ppm         ASTM D5185(m)         >20         464             Yanadium         ppm         ASTM D5185(m)         >20         406             Yanadium         ppm         ASTM D5185(m)         0 <td>Machine Age</td> <td>mths</td> <td>Client Info</td> <td></td> <th>4</th> <td></td> <td></td>	Machine Age	mths	Client Info		4			
Sample Status         SEVERE             CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >2         NEG             WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184'         71              Chromium         ppm         ASTM D5185(m)         >20         1 30             Nickel         ppm         ASTM D5185(m)         >20         3             Aluminum         ppm         ASTM D5185(m)         >20         3             Aduminum         ppm         ASTM D5185(m)         >20         4 664             Autimony         ppm         ASTM D5185(m)         >20         4 664             Autimony         ppm         ASTM D5185(m)         20         4 664             Vanadium         ppm         ASTM D5185(m)         0	Oil Age	mths	Client Info		0			
CONTAMINATION         method         limit/base         current         history1         history2           Water         WC Method         >2         NEG             WAR METALS         method         limit/base         current         history1         history2           PQ         ASTM 06184'         71             Iron         ppm         ASTM 06186/m         >20         0            Nickel         ppm         ASTM 05185/m         >20         3             Nickel         ppm         ASTM 05185/m         >20         1             Aluminum         ppm         ASTM 05185/m         >20         1             Lead         ppm         ASTM 05185/m         >20         4         644             Antimony         ppm         ASTM 05185/m         >20         4         644             Astm 05185/m         >20         A         464              Antimony         ppm         ASTM 05185/m         0           <	Oil Changed		Client Info		N/A			
Water         WC Method         >2         NEG             WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D6184'         71              Iron         ppm         ASTM D6186'm         >20         0             Othromium         ppm         ASTM D6185'm         >20         3             Nickel         ppm         ASTM D6185'm         >20         3             Silver         ppm         ASTM D6185'm         >20         1             Aluminum         ppm         ASTM D6185'm         >20         4         53             Lead         ppm         ASTM D6185'm         >20         4         544             Tin         ppm         ASTM D5185'm         >20         4         50             Copper         ppm         ASTM D5185'm         >20         30              Vanadium         ppm         ASTM D	Sample Status				SEVERE			
WEAR METALS         method         limit/base         current         history1         history2           PQ         ASTM D8184"         71             Chromium         ppm         ASTM D5186(m) >20         0             Nickel         ppm         ASTM D5186(m) >20         3             Nickel         ppm         ASTM D5186(m) >20         3             Silver         ppm         ASTM D5186(m) >20         1             Aluminum         ppm         ASTM D5186(m) >20         1             Copper         ppm         ASTM D5186(m) >20         53             Lead         ppm         ASTM D5185(m) >20         30             Copper         ppm         ASTM D5185(m)         0             Vanadium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0	CONTAMINATIO	N	method	limit/base	current	history1	history2	
PQ       ASTM D8184'       71           Iron       ppm       ASTM D8186(m)       >20       130           Chromium       ppm       ASTM D5185(m)       >20       3           Nickel       ppm       ASTM D5185(m)       >20       3           Nickel       ppm       ASTM D5185(m)       >20       3           Silver       ppm       ASTM D5185(m)       <20	Water		WC Method	>2	NEG			
Iron         ppm         ASTM D5185(m)         >20         ▲ 130             Chromium         ppm         ASTM D5185(m)         >20         0             Nickel         ppm         ASTM D5185(m)         >20         3             Nickel         ppm         ASTM D5185(m)         <1	WEAR METALS		method	limit/base	current	history1	history2	
Chromium         ppm         ASTM D5185(m)         >20         0             Nickel         ppm         ASTM D5185(m)         >20         3             Titanium         ppm         ASTM D5185(m)         <1	PQ		ASTM D8184*		71			
Nickel         ppm         ASTM D5185(m)         >20         3             Titanium         ppm         ASTM D5185(m)         <1	Iron	ppm	ASTM D5185(m)	>20	<b>1</b> 30			
Titanium       ppm       ASTM D5185(m)       <1           Silver       ppm       ASTM D5185(m)       <20	Chromium	ppm	( )	>20				
Silver         ppm         ASTM D5185(m)         <1             Aluminum         ppm         ASTM D5185(m)         >20         1             Lead         ppm         ASTM D5185(m)         >20         53             Copper         ppm         ASTM D5185(m)         >20         464             Tin         ppm         ASTM D5185(m)         >20         30             Antimony         ppm         ASTM D5185(m)         0              Vanadium         ppm         ASTM D5185(m)         0              Cadmium         ppm         ASTM D5185(m)         0              ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         30             Molybdenum         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         167	Nickel	ppm	ASTM D5185(m)	>20	3			
Aluminum       ppm       ASTM D5185(m)       >20       1           Lead       ppm       ASTM D5185(m)       >20       ▲ 53           Copper       ppm       ASTM D5185(m)       >20       ▲ 464           Tin       ppm       ASTM D5185(m)       <21		ppm	. 7		<1			
Lead         ppm         ASTM D5185(m)         >20         ▲ 53             Copper         ppm         ASTM D5185(m)         >20         ▲ 464             Tin         ppm         ASTM D5185(m)         >20         ▲ 30             Antimony         ppm         ASTM D5185(m)         <1	Silver	ppm	ASTM D5185(m)		<1			
Copper         ppm         ASTM D5185(m)         >20         4 464             Tin         ppm         ASTM D5185(m)         >20         A 30             Antimony         ppm         ASTM D5185(m)         <1	Aluminum	ppm	ASTM D5185(m)	>20	1			
Tin         ppm         ASTM D5185(m)         >20         30             Antimony         ppm         ASTM D5185(m)         <1	Lead	ppm	ASTM D5185(m)	>20	<b>4</b> 53			
Antimony         ppm         ASTM D5185(m)         <1             Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         30             Barium         ppm         ASTM D5185(m)         0             Maganese         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         1             Calcium         ppm         ASTM D5185(m)         146             Phosphorus         ppm         ASTM D5185(m)         167             Sulfur         ppm         ASTM D5185(m)         146             Sulfur         ppm         ASTM D5185(m)         3479	Copper	ppm	ASTM D5185(m)	>20	<b>4</b> 64			
Vanadium         ppm         ASTM D5185(m)         0             Beryllium         ppm         ASTM D5185(m)         0             Cadmium         ppm         ASTM D5185(m)         0             ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185(m)         30             Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         1             Magnesium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         167             Sulfur         ppm         ASTM D5185(m)         146             Sulfur         ppm         ASTM D5185(m)         3479             Sulfur         ppm         ASTM D5185(m)<>15         12 <td>Tin</td> <td>ppm</td> <td>ASTM D5185(m)</td> <td>&gt;20</td> <th><u> </u></th> <td></td> <td></td>	Tin	ppm	ASTM D5185(m)	>20	<u> </u>			
BerylliumppmASTM D5185(m)0CadmiumppmASTM D5185(m)0ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)30BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)0ManganeseppmASTM D5185(m)1CalciumppmASTM D5185(m)82CalciumppmASTM D5185(m)167ZincppmASTM D5185(m)167SulfurppmASTM D5185(m)3479LithiumppmASTM D5185(m)-<1	Antimony	ppm	ASTM D5185(m)		<1			
CadmiumppmASTM D5185(m)0ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)30BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)0ManganeseppmASTM D5185(m)1MagnesiumppmASTM D5185(m)82CalciumppmASTM D5185(m)146PhosphorusppmASTM D5185(m)167ZincppmASTM D5185(m)19SulfurppmASTM D5185(m)3479LithiumppmASTM D5185(m)<1	Vanadium	ppm	ASTM D5185(m)		0			
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)30BariumppmASTM D5185(m)0MolybdenumppmASTM D5185(m)0ManganeseppmASTM D5185(m)1MagnesiumppmASTM D5185(m)82CalciumppmASTM D5185(m)146PhosphorusppmASTM D5185(m)167ZincppmASTM D5185(m)19SulfurppmASTM D5185(m)3479LithiumppmASTM D5185(m)CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)PotassiumppmASTM D5185(m)>10FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Beryllium	ppm	ASTM D5185(m)		0			
Boron         ppm         ASTM D5185(m)         30             Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         0             Manganese         ppm         ASTM D5185(m)         0             Magnesium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         167             Phosphorus         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <11	Cadmium	ppm	ASTM D5185(m)		0			
Barium         ppm         ASTM D5185(m)         0             Molybdenum         ppm         ASTM D5185(m)         0             Manganese         ppm         ASTM D5185(m)         1             Magnesium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         146             Calcium         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <1             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         12             Sodium         ppm         ASTM D5185(m) <th>ADDITIVES</th> <th></th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	ADDITIVES		method	limit/base	current	history1	history2	
Molybdenum         ppm         ASTM D5185(m)         0             Manganese         ppm         ASTM D5185(m)         1             Magnesium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         146             Calcium         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <11	Boron	ppm	ASTM D5185(m)		30			
Manganese         ppm         ASTM D5185(m)         1             Magnesium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         146             Phosphorus         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <1	Barium	ppm	ASTM D5185(m)		0			
Magnesium         ppm         ASTM D5185(m)         82             Calcium         ppm         ASTM D5185(m)         146             Phosphorus         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)             CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185(m)         >15         12             Sodium         ppm         ASTM D5185(m)         >20         <1	Molybdenum	ppm	ASTM D5185(m)		0			
Calcium         ppm         ASTM D5185(m)         146             Phosphorus         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <1	Manganese	ppm	ASTM D5185(m)		1			
Phosphorus         ppm         ASTM D5185(m)         167             Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <1	Magnesium	ppm	ASTM D5185(m)		82			
Zinc         ppm         ASTM D5185(m)         19             Sulfur         ppm         ASTM D5185(m)         3479             Lithium         ppm         ASTM D5185(m)         <1	Calcium	ppm	ASTM D5185(m)		146			
SulfurppmASTM D5185(m)3479LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1512SodiumppmASTM D5185(m)>20<1PotassiumppmASTM D5185(m)>20<1FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2	Phosphorus	ppm	ASTM D5185(m)		167			
LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1512SodiumppmASTM D5185(m)<1	Zinc	ppm	ASTM D5185(m)		19			
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m) >1512SodiumppmASTM D5185(m)<1	Sulfur	ppm	ASTM D5185(m)		3479			
Silicon         ppm         ASTM D5185(m)         >15         12             Sodium         ppm         ASTM D5185(m)         <1             Potassium         ppm         ASTM D5185(m)         >20         <1             FLUID DEGRADATION         method         limit/base         current         history1         history2	Lithium	ppm	ASTM D5185(m)		<1			
SodiumppmASTM D5185(m)<1	CONTAMINANTS		method	limit/base	current	history1	history2	
Potassium         ppm         ASTM D5185(m)         >20         <1             FLUID DEGRADATION         method         limit/base         current         history1         history2	Silicon	ppm	ASTM D5185(m)	>15	12			
FLUID DEGRADATION method limit/base current history1 history2	Sodium		ASTM D5185(m)		<1			
				>20	<1			
Acid Number (AN)         mg KOH/g         ASTM D974*         1.40	FLUID DEGRADA	TION	method	limit/base	current	history1	history2	
	Acid Number (AN)	mg KOH/g	ASTM D974*		1.40			



(1200 St (40°C) 1200 St (40°C) 800 600 400 u16/24

# **OIL ANALYSIS REPORT**

500	Non-ferrous Metals	VISUAL		method	limit/base	current	history1	history2
400-	copper	White Metal	scalar	Visual*	NONE	VLITE		
	unsummer tin	Yellow Metal	scalar	Visual*	NONE	NONE		
300 • Ed		Precipitate	scalar	Visual*	NONE	NONE		
200-		Silt	scalar	Visual*	NONE	LTMOD		
100-		Debris	scalar	Visual*	NONE	LIGHT		
0		Sand/Dirt	scalar	Visual*	NONE	NONE		
	Jul6/24 Jul6/24	Appearance	scalar	Visual*	NORML	NORML		
	ت ت	Odor	scalar	Visual*	NORML	NORML		
	Ferrous Alloys	Emulsified Water	scalar	Visual*	>2	NEG		
140-		Free Water	scalar	Visual*		NEG		
120.	nickel	FLUID PROPERT	IES	method	limit/base	current	history1	history2
80.		Visc @ 40°C	cSt	ASTM D7279(m)	1500	<b>6</b> 513		
- 60∙ 40∙		SAMPLE IMAGES	S	method	limit/base	current	history1	history2
20• 0-	Profession Profession	Color					no image	no image
1800 1600 1400	Viscosity @ 40°C Abnormal Base Abnormal	Bottom					no image	no image
1200 1000 800 600 400		PrtFilter					no image	no image
	Jul6/24 - Jul6/24 -	GRAPHS						
	7	Ferrous Alloys				PQ		
	Acid Number	iron			20	Sminn		
1.4		E 50-			18	0-		
(B/HOY BW)					16	0		
≧ 0.8 -		Jul6/24			4Z/9Inc 12	0-		
0.6		3 1 2			D	Abnormal		
0.6 ·		Non-ferrous Metal	s		10			
¢ 0.2•		600 conner				0		
0.0	Jul6.24 -	400 - Head Head			4	0		
	۲L	200 - 200			2			
		0				0		
250-	PQ	Jul6/2			Jul6/2	Jul6/24		Jul6/24
200-	Severe .	Viscosity @ 40°C						- -
		2000 T			( <sup>B</sup> /H	Acid Number		<u> </u>
150 · 킨	Ahnomal	요bnormal Base 1500 - Abnormal			(B/HOX HOX B1.	0		
100-	Abnormal	유명 1500 - Abnormal 정 1000			ber (n	5		
50.					.0 Number			
0-		200 - +			6/24	Jul6/24		Jul6/24 -
	Jul6/24	Jul In			Jul	Jul		Jul6
	Laboratory Sample No. Lab Number Unique Number Test Package To discuss this sample repor Test denoted (*) outside scop	: 5813257 : IND 2 ( Additional Tes t, contact Customer Serv.	Recei Teste Diagr sts: Botto ice at 1-8	ived : 12 id : 16 nosed : 16 m, BottomAr 800-268-213	2 Jul 2024 5 Jul 2024 Jul 2024 - Kev nalysis, FILTI 1.	rin Marson ERPATCH, TAN	R.R. #2 Man) Contac harsh.murria@	, 600 5 Hwy W Dundas, ON CA L9H 5E2 :: Harsh Murria

Report Id: CARDUN [WCAMIS] 02647705 (Generated: 07/16/2024 09:08:16) Rev: 1

Validity of results and interpretation are based on the sample and information as supplied.

Contact/Location: Harsh Murria - CARDUN Page 4 of 4