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Report No. 57

The use of Helicopters in British ForestsOrigin

The possibility of using helicopters to provide forest transport in inaccessible areas has been under examination for some time so advantage was taken of the presence of a helicopter in a mountainous forest area. A trial was arranged to establish some facts on the usage of this method of transport. Extraction being one of the obvious uses of helicopters the trial was based mainly on this operation but, also bearing in mind, the other possibilities such as direction of fire fighting operations, the carriage of stores for fencing, spraying etc.

Conditions of the trial

The aircraft used was an Agusta-Bell 47G an American design made under licence in Italy. The payload is 600 lbs. and the flying speed is 60 m.p.h. The trial took place at Glenduror forest near Fort William in Scotland on the 9th October 1956 in perfect weather conditions. Visibility was good and there was no wind.

A quantity of second thinnings had been collected in a clearing roughly 50 yards x 50 yards on level ground at a point 600 feet above and 1500 yards distant from the road point where it was desired to deposit the timber.

Observations

1. The particular aircraft used on this trial was fitted with brackets for the carriage of iron pipes secured horizontally under the fuselage. The forest thinnings were made up into bundles of up to four poles each to be carried in the same way. The aircraft is fitted with a ratchet winch used to pull the load up tight against the brackets.

(i) *Dingston* " The original idea for picking up the load had been for the helicopter to hover overhead and drop a winch rope for the load to be hauled up as is done in air sea rescue operations. This method cannot, however, be used on the small Bell machine as it does not carry the necessary long haul winch. It may, in fact, never be possible to use this method because a hanging load not rigidly secured is not liked by helicopter operators. Unloading is achieved by the machine hovering a few feet above the delivery point and automatically releasing the load without landing.

(i) *Dingston* "(ii) *Mr. P. J. P. P.*(iii) *Mr. P. J. P. P.*(iv) *Mr. S. C. S.*(v) *Mr. M. C. R. R.*(vi) *Mr. B. J. B.*(vii) *Mr. O. S. O.*(viii) *Mr. S. S. S.*

A photograph of the machine lifting a load is attached to this report.

Observations

2. Eleven flights were made starting with loads of 400 lbs. and gradually increasing to the full payload capacity of 600 lbs. Each flight was made without the slightest difficulty and the pilot expressed the view that he could continue indefinitely.

Experience gained during the day suggests that a landing area of 50 yards x 50 yards is greater than is really necessary but the shape should give a longer and narrower strip to give a good run in and run out in the direction of the prevailing wind.

On more than one occasion the machine flew away, delivered the load and was back again before the next load could be prepared.

3. As experience was gained during the day the time taken for the complete sequence of operations of loading, flying, delivering at the unloading point and flying back was reduced to 5 minutes 37 seconds. Out of this time 3 minutes were absorbed in loading. With practice this time could be considerably reduced and it seems reasonable to expect that this machine could extract 3 tons per hour.

The maximum cost that this operation would bear is some 30/- per ton at which rate the machine would be earning £4.10.0. per hour, a figure far below present day helicopter operating costs.

4. Various lengths of poles were carried, the longest individual pole being 27 feet. This was a much longer load than had previously been thought possible with this type and size of aircraft.

5. There was no opportunity to find out the maximum gradient on which the helicopter could safely land but the ease with which the pilot set this machine down in various positions suggested that considerable latitude is permissible.

6. Flights over the forest showed how much can be seen in great detail from a helicopter. The ability to fly and hover close to the tree tops and close to trees growing on a steep hillside enables a far more detailed examination to be made than is possible by any other means.

Spraying and direction of forest fire fighting by wireless could be done with great accuracy. The whole forest drainage plan can be seen including every point where the flow of water is interrupted.

Conclusions

This trial has provided some practical data on the application of small helicopters to certain forest operations. Methods of loading and unloading long poles are now known and some indication of the carrying rate per hour has also been revealed.

It is quite certain that, whilst helicopters are extremely convenient for many forest operations, they will not be an economic proposition until their operating costs are reduced far below the present figure.

Further
Action

Helicopter development will continue to be watched and trials will be resumed if substantially lower operating costs are achieved.

R. G. Shaw

Machinery Research Officer

November, 1956



The Agusta Bell 47G helicopter taking off with a
600 lb. load of forest thinnings at Glenduror.

- Planet News Photograph -

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