

31st, January 1962

2210

Reference RWP/SG P 382

Mngr.....	Eng. Supt.....
Sec.....	A/F, Mngr.....
Asst. Sec.....	Ch. Eng. A/D.....
Ch. Acct.	Pers. Supt.....
5 FEB 1962	
Stores.....	Supply Sales.....
Ansd.....	Init.....

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Attention : the MANAGER.

Subject : SNECMA time study methods.

Dear Sir,

Further to our P 93 & P 136 on the above subject we wish to advise as follows.

(I) In order to provide a good background to SNECMA time studies and estimates we have been supplied with copies of their detail sheets covering a number of parts. These are being forwarded in air freight parcel AFP 47 and we have the following comments to make :

- a) Sheets marked "Temps théorique" are estimates while those marked "Temps chronométré" are time studies by stop watch.
- b) There are two types of sheets supplied, those identified "SNECMA 9009.03. 07.396 & 397" are current.
- c) Column "J.A. Moyen" is for the speed rating of the operator as assessed by the time study observer.
- d) Columns "Manuel corrigé" and "Mécanique". The former is for handling times and hand feed times, the latter for mechanical feed times.
- e) Column "Temps stand. de préparation" is for set up time.
- f) The "Aléas d'usinage % Manuels et Mécaniques" which are allowances added to the unit time to cover unavoidable delays are explained in a translation attached to P 136.

NOTED
CNPS

[Handwritten signature]

g) The summarizing of the times is we believe self explanatory but although sheet says "Total des temps secs" the figures are minutes and decimal minutes. Also the additional allowance S.I.K.D which appears on some operations is applicable only to set up time in "Générale Mécanique" (batch production with constant changes) and " $\frac{1}{2}$ chaines" (small part production-frequent changes) shops and varies from 10 to 20 %.

S.I.K.D. = suivant instructions Kellermann Direction.

h) A special allowance "impondérable supplémentaire" may be made, with the agreement of the time study chief, to cover special cases such as :

Hard materials,
Parts difficult to machine,
Parts easily deformed,
Very heavy parts,

and similar cases which are not covered by the general allowances.

i) In the calculation of set up time the items "Mise en route" & "Piece type" "Mise en route", is an allowance for :

- collecting the operation sheets.
- " " tooling & equipment.
- having the work slip recorded with time of starting by shop time keeper, before commencing the operation, and on completion of the operation for,
- returning operation sheets.
- " tooling & equipment.
- delivering work slip to shop time keeper.

"Piece Type", is an allowance for having the first off unit inspected prior to proceeding with the remainder of the batch and varies in accordance with the complexity etc.. of the operation and the time necessary to carry out the inspection required.

There are standard allowances for these items although in special cases stop watch studies are sometimes made. There are also standard allowances for setting up tool & equipment which were established originally by stop watch but are of course varied to take account of the peculiarities of each particular operation.

j) There are no detail sheets for heat treatment, processing, or inspection times as these operations are not on incentives, and the nature of the work does not lend itself to accurate estimating. SNECMA regard these times as approximations only and use them only to arrive at an estimate of cost price.

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k) Abbreviations - hereunder is a translation of some of the more common abbreviations used on the sheets.

ROAB	= ramener outil arrêt broche	= withdraw tool stop spindle
MM	= mouvement manuel	= hand movement
PP	= prendre passe	= take a cut
Dég.	= dégager	= to disengage, to clear, to back off
RP	= reprendre passe	= take another cut
Déb.	= débayer	= to throw out of gear, of feed, releasing
Vérif.	= vérifier	= check (dims, etc...)
évol. tour.	= évoluer tourelle	= position toolpost or turret
éb.	= ébauche	= rough
emb.	= embrayer	= to engage (a feed), to connect
app.	= approcher	= to approach.

(2) Operations noted as "avec op XX"

As a result of further investigation of the above we must classify these operations in 4 groups.

Group 1) Operations which are done in the idle time of op XX & in which case only the time of the longer operation is quoted refer P 136 para. 5.

Group 2) Operations which require hand control or close attention to the machine for full operation e.g. plunge grinding operations - in this case time quoted for "oper XX" is total time for operation "XX" and operation or operations noted as "avec op XX".

Group 3) Operations such as occur on compressor blades where additional cutters are set up on the arbor to carry out work which is shown on the operation sheets as a separate operation and which are in fact absorbed in "oper XX" but for some reason operation sheets have not been altered.

Group 4) Operations where additional fixture and cutters are set up to carry out the "avec" operation at the same time as "operation XX".

There appears to be no way of differentiating between these groups other than by studying the operation sheets.

(3) Where the notation "Xp 100" or "X pour 100" appears on the time study sheet in the column "Designation of operation" it indicates that only X% of each batch require this operation. The unit^{time} quoted is the time required to process each unit requiring work.

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(4) In addition to the information supplied in P 93 regarding the time study sheets, we are now advised that the markings in column C.H. have been extended as follows :

- "A" indicates that the additional allowance (SIKD) has been added to the set up time for this op.
- "X" indicates operation has been stop watch *studied*.
- "Y" indicates "A" + "X".

(5) In some cases operations "Marquage" (marking of part number & similar information) have a preparation time shown on the time study sheet but no "temps unitaire" (unit time) the reason being that these are small components which are not individually marked but only boxed and the box labelled. The preparation time shown being the total time required for the batch.

(6) On the subject of times for repairs there is a book called a "Barême" which is made up by the Département des Méthodes SNECMA and covers :

- a) all the repairs which are carried out on the engine.
- b) indicates the operation sheets (if any) applicable to each repair.
- c) the allowed hours for carrying out each repair.

This book should be invaluable when considering all aspects of engine repairs and we understand is to be supplied to us under the agreement.

(7) In reply to a query as to which departments worked on collective bonus and which departments were on a flat rate, we are advised that all production dept. are on bonus ; however SNECMA do not consider heat treatment or processing dept. as production departments.

Therefore, we have :

- a) heat treatment & processing.
- b) inspection.
- c) stores.

all on a flat rate which we understand recognizes the fact that dher departments are on incentives.

On collective bonus we have :

Dept. 220 - Springs	301 - Heavy mechanical presses
290 - Engine assembly	310 - Sheet cutting & liner forming
300 - Heavy hydraulic presses	312 - Press cutting & drawing.

All other production departments and the engine repair department are on individual bonus with the exception of those situated at Villaroche.

Yours faithfully,

G.H. Foster
G.H. FOSTER