Manual of
STUDIO OPERATING
INSTRUCTIONS

MANUAL OF STUDIO OPERATING INSTRUCTIONS

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A MANUAL OF
STUDIO OPERATING INSTRUCTIONS

Issued by

H.C.P. Ops.

STUDIO OPERATING INSTRUCTIONS

CONTENTS

STUDIO OPERATING INSTRUCTIONS

AMENDMENT RECORD 1

Amendment No.	Date	Initials	Amendment No.	Date	Initials

SOUND SERVICE ENGINEERING OPERATIONAL INSTRUCTION   OI. 1.4
EXTERNAL SERVICES ENGINEERING INSTRUCTION
TRANSMITTER MAINTENANCE INSTRUCTION   No. 59 Issue 10
CENTRAL PROGRAMME OPERATIONS INSTRUCTION   No. 1
PRESENTATION DEPARTMENT INSTRUCTION

                                                       1st March 1961

CONTROL AND MODULATION RANGE

PREFACE

This Instruction will come into force on 1st March 1961, and will supersede all previous Instructions on this subject.

The intention of the Instruction is to define, as far as practicable, the programme meter limits to which Technical Operators, Studio Managers and Engineers should work for all types of programme.

It cannot be too strongly emphasised that programme monitoring is a combined function of ear and eye, and that slavish regard to programme meter readings alone will not give the best results. A programme must sound balanced, as between voice and voice, artists and orchestra, etc., and this cannot be achieved by reference to programme meter alone. This must however be achieved without exceeding the maximum programme meter reading of 6. Both in the Tables and the context of this Instruction a quoted peak value means a maximum permissible peak for any particular programme. It may be that such a peak will only be reached once during a programme, and occasionally not at all.

Programme distribution chains are reasonably stable and a programme well controlled at source should need no further adjustment either en route or at a transmitter.

1. CHECKING PROGRAMME VOLUME

Programme meter checks are only to ensure that P.P.Ms. at two points are in step and there is no guarantee that a maximum peak will be registered during such a check.

The standard method of checking programme volume when queries are raised is by comparing, over a telephone, programme meter readings. It must be realised that such checks made on fast programme meters are inexact due to the fast-moving character of the instruments. Checks employing slow programme meters can be regarded as accurate but such meters should only be used for this purpose and never for control.

2. <u>PROGRAMMES EXPECTED TO BE HEARD UNDER DIFFICULT LISTENING CONDITIONS</u>

The Tables in this Instruction cover all cases in which it can be assumed that Listeners will be listening with full attention to a programme. On the other hand, some programmes may well be directed to an audience the majority of whom will be listening under difficult circumstances, often with considerable background of extraneous noise, e.g. in the kitchen or on car radios. In such cases, the ratio of music to speech will have to be altered and sometimes reversed to ensure maximum intelligibility of speech. The Home Service from opening until 0900 and the Light Programme from opening until 1830 approximately, should be treated in this way. Other programmes requiring this treatment will be notified individually by H.C.P.Ops. from time to time.

3. <u>SPEECH PROGRAMMES IN DOMESTIC SERVICES</u>

With the exception of News Bulletins and Weather Forecasts, speech programmes in the domestic services are controlled to a peak figure of 6; News and Weather peak $4\frac{1}{2}$. 6 is, however, a maximum permissible peak and all speech will not necessarily reach this figure.

4. <u>TABLES</u>

<u>TABLE I</u>

<u>News and Talks</u>

	Peak Volume
News and Weather (Domestic Services)	$4\frac{1}{2}$
News (External Services)	6
Talks - Discussions - Shipping Forecasts	6

In discussions, different voices should be reasonably matched in loudness within the overall limit of 6. See also Table 5 referring to talks in the intervals of music programmes.

<u>TABLE 2</u>

<u>Drama</u>

Narration	4
Loudest Speech	6
Quiet Speech	2
Incidental Music and Off-Stage Effects	Judged aurally

TABLE 3

Light Orchestral, Dance, Brass and Military Bands

	Peak Volume
All	6 (Minimum peaks 2 †)
Announcements	5 or to fit the nature of the music

†Short periods up to 30 seconds are permissible in which peaks do not reach 2, but exceed 1.

TABLE 4

Variety Productions

Speech	6
Band or Orchestra Content	4

Only in very exceptional circumstances should the music sound louder than speech.

TABLE 5

Symphonic and Operatic Productions

Announcements and Narration	4
Music (Maximum)	6
Music (Minimum)	Passages of approximately half a minute duration are permitted below 1 without pre-warning to Control Room.

N.B. Talks during the intervals of Concerts should match aurally the loudness of the Announcements in the Concerts.

TABLE 6

Instrumental Recital and Chamber Music

	Peak Volume
Harpsichords, Virginals and Spinets	4
Clavichords	2

> N.B. The P.P.M. does not give a true indication of the loudness of any of the above instruments.

All others	6 (Min. 1)

TABLE 7

Church Services

Mid-week Evensongs and

Similar Services

Choir	Maximum	6 (Min. 1)
Precentor		3–4
Lessons and Prayers		4
Organ		6

Services with Congregations

Singing	Maximum	6 (Min. 2)
Prayers, Sermon and Lessons		5
Organ Voluntary		6

Daily Service, Epilogue and

Similar Studio Services

Singing	Maximum	6 (Min. 2)
Prayers and Readings		5

TABLE 8

Special Cases

	Peak Volume
Bow Bells Interval Signal	$1\frac{1}{2}$
Big Ben	Heaviest Chimes 3 Strokes 4
G.T.S. Time Signals	4
Close-down National Anthem	4
Bagpipes	4
Signature Tunes	Signature Tunes of speech programmes should not exceed a maximum of $4\frac{1}{2}$.

5. APPLAUSE

In the past, applause has frequently been broadcast at too high
a level, and often audience reaction to a joke has been made to
sound more like the sustained applause at the end of a programme.
As a general rule, an average meter reading of 3 is suitable, though
there may be exceptions, but peaks of 5 should not be exceeded.

6. STUDIO ANNOUNCEMENTS

These should be controlled at such a volume that they bear an
acceptable relation to the programme and thus the peak volume may
lie anywhere between 3 and 6 depending on the nature of the programme.
In music programmes designed for serious listening a peak volume for
speech of about 4 is a rough guide. Where music is for background
listening, or is of a very noisy nature, peaks of 6 on speech may
be more appropriate. (See 2.)

7. VOLUME AT THE BEGINNING OF PROGRAMMES

Whilst efficient control is important at all times, the greatest care
must be taken to ensure that programmes begin at the correct volume,
and it is at this time that the Continuity Operator should be
particularly vigilant, mainly to avoid over-modulation. His
instructions are to take immediate action in cases of over-modulation
by first reducing and then checking with source, although he should
wait a few seconds to see if the excess volume is corrected at source
before taking action and so avoid possible double correction. In the
case of under-modulation, he must check with source before taking

action. For this reason, it is important that studio or O.B. should, whenever possible, obtain a voice or programme test including also announcements over orchestra before a recording or transmission. Exceptions should not be made because the programme will be introduced by a well-known voice.

8. <u>VOLUME WITHIN PROGRAMMES</u>

Studio Managers must try to achieve an overall 'loudness' for any particular programme so that no particular part of it would force a listener to adjust the volume control of his receiver, bearing in mind that most listeners will be listening under conditions less favourable than a studio cubicle.

9. <u>EDITED RECORDINGS</u>

When passages are deleted from a recording, or a composite recorded programme is built from a number of different tapes or records, the edited version must comply with the terms of this Instruction, judged both by ear and by programme meter.

10. <u>THE CONTINUITY ANNOUNCER</u>

The most common cause of complaint about programme volume is the difference, or apparent difference, between successive programmes. A talk followed by a dance band is a typical example. In such cases, the Continuity Announcer can help to bridge the gap to some extent. He can do much to create an illusion of uniformity by so modulating his voice that he carries the listener from the end of one programme to the beginning of the next without abrupt changes, or apparent changes, in volume. The aim should be to make it unnecessary for the listener to adjust his volume control.

11. <u>HANDLING OF QUERIES</u>

In addition to the Studio Manager or O.B. Engineer at the source of programme, many others have a legitimate interest and responsibility in ensuring that programmes are transmitted at the correct volume, as for instance, Continuity, Recording, SB switching, and Transmitter Engineers and Operators. All have the right to query the volume of an incoming programme and such queries should not be resented or treated lightly.

(A.P. MONSON)   (R.V.A. GEORGE)   (F. AXON)
   S.E.S.B.   H.C.P.Ops.   S.S.E.X.B.

        (J.D.M. SNAGGE)   (W.E.C. VARLEY)
           H. PRES.   S.E.T.

CENTRAL PROGRAMME OPERATIONS INSTRUCTION: NO.2

1st April 1961

CONTRIBUTIONS TO PROGRAMME SERVICES

PREFACE

This Instruction lays down the operational procedure for Studio contributions Recorded Reproductions, and O.B. contributions to Programme Services.

The main object of this procedure is to ensure that the programme circuit is correctly established from the source of programme to the destination, which in the present case is always a Continuity. To achieve this it is important that all line-up tone and test programme should originate from the source and not from any intermediate point in the contribution chain.

In the case of contributions which for exceptional reasons are routed through a Control Room control position, the control position may be considered as the source of programme and may, therefore, originate line-up tone provided it is manned and used to monitor and control until the real source has assumed full responsibility.

In the case of contributions to studio outside sources or mixers there is generally a rehearsal or previous transmission during which the circuit may be established. In other cases the procedure should be as laid down in this Instruction.

On a few occasions it may be necessary for a contribution circuit to be used for consecutive contributions. In such cases the Control Room responsible for the switch will accept the line-up tone and identification on behalf of the Continuity.

The pre-transmission procedure given below occupies a ten minute period before the start of transmission. If during this period the source is contributing to another destination, then part or all of the pre-transmission procedure may have to be omitted and the Continuity may have to accept the programme material for volume and identification. At the end of the contribution the source should proceed with the remainder of the line-up procedure after a pause of 30 seconds.

This Instruction is to take effect from 1st August 1961.

1. LOCAL STUDIO CONTRIBUTIONS TO CONTINUITIES

1.1 At Zero minus 10 minutes

The Studio must supply line-up tone and test telephone to Continuity.

1.2 At Zero minus 4 minutes (or earlier if pre-arranged)

The Studio must cut tone, buzz-in (one buzz) and upon receipt of answering red light flick from Continuity must supply an Identification via the programme circuit using if possible a studio microphone.

The Identification must include the following information:-

1.2.1 Designation of Studio and Continuity.

1.2.2 Full programme title.

1.2.3 Booked times of start and end.

1.2.4 Starting and ending procedure.

1.2.5 Time check.

The last three items may be omitted from the Identification if they have already been checked directly by telephone.

After Identification the Studio must feed rehearsal material at reasonable programme volume, or must restore line-up tone.

The Continuity will then telephone the Studio, confirm receipt of the Identification and discuss any other details.

1.3 At Zero minus 1 minute

Studio must cut rehearsal material or tone and must now be in the transmission condition.

1.4 At Zero minus 10 seconds

The Continuity must provide warning red light flicks until Studio buzzes-in (one buzz). The buzz-in means that the studio has faded up and is ready to go ahead.

02.2

1.5   At Zero Hour

If buzz-in has already been received Continuity will fade up the
Studio channel and apply a steady red light, and the Studio will
go ahead.

Continuity must not fade up and apply steady red light until a buzz-in
is received, and if the buzz-in has not been received by Zero plus
10 seconds Continuity should telephone the Studio.

1.6   At End of Contribution

Studio will buzz-out (two buzzes).

On receipt of buzz-out, or upon instructions from Presentation
Assistant, Continuity must fade out channel and remove red light.

Finally if a recording from transmission is scheduled the Studio
will check that the recording is satisfactory.

If a recording is being made by separate feed the Studio must complete
the programme and maintain the red light locally.

Note: If more than one Studio is contributing direct to Continuity
       for a composite programme, then all sources should be tested
       well in advance of their contribution preferably before the
       start of the programme. The arrangements for cueing and
       signalling should also be agreed before the programme since
       the usual red light flicks and buzz-in procedure will not
       be suitable.

2.   STUDIO CONTRIBUTIONS VIA S.B. LINES TO CONTINUITIES

2.1   At Zero minus 10 minutes

The Studio must supply line-up tone.

2.2   At Zero minus 4 minutes (or earlier if pre-arranged)

The studio must cut tone and supply an Identification via the
programme circuit using if possible a studio microphone.

The Identification must include the following information:-

2.2.1   Designation of Studio and Continuity.

2.2.2   Full programme title.

2.2.3   Booked times of start and end.

02.3

2.2.4   Starting and ending procedure.

2.2.5   Time check.

The last three items may be omitted from the Identification if they have already been checked directly by telephone.

After the Identification the Studio must feed rehearsal material at reasonable programme volume, or restore line-up tone.

2.3   At Zero minus 1 minute

Studio must cut rehearsal material or tone and must now be in the transmission condition.

2.4   At Zero Hour

Studio will apply own red light and go ahead as agreed.

2.5   At End of Contribution

If a recording from transmission is scheduled the Studio will check that the recording is satisfactory.

3.   O.B. CONTRIBUTIONS TO CONTINUITIES

The basic procedure described below applies both to O.B. contributions via the S.B. System and to 'local' O.B. contributions.

3.1   At Zero minus 10 minutes

The O.B. point must originate line-up tone and test telephone where a direct line exists.

3.2   At Zero minus 4 minutes (or earlier if pre-arranged)

The O.B. point must cut tone and supply an Identification via the programme circuit using the main apparatus and one of the O.B. microphones or an identification microphone at the Control point.

The Identification must include the following information:-

3.2.1   Title and location of O.B.

3.2.2   Designation of Continuity.

3.2.3   Booked time of start and end.

3.2.4   Starting and ending cues.

3.2.5   Time check

The last three items may be omitted from the Identification if they have already been checked directly by telephone.

After the Identification the O.B. point must provide O.B. programme material or line-up tone using the main apparatus in either case. Programme material is only acceptable for this purpose if it is continuous and of reasonable programme volume.

3.3 At Zero minus 1 minute

Programme material or tone must be cut by the O.B. point.

3.4 At Zero Hour

The O.B. will go ahead in accordance with the agreed starting procedure.

3.5 At End of Contribution

The O.B. should continue to feed programme to line until it is certain that all destinations, which may include recording rooms and one or more Continuities, have finished with programme.

Exceptions will sometimes occur, e.g. O.Bs. from which speeches are made, in which the O.B. Assistant or Engineer is best able to judge the right exit point, especially as the fade may have to be a rapid one.   Such exceptions must whenever possible be agreed between O.B. and Presentation Departments in advance and Engineering staff informed of the decision.

(R.V.A. George)
(H.C.P.Ops.)

OUTSIDE BROADCASTS

VARIATIONS IN VOLUME TO LINE   JULY 1961

The following Engineering Instruction has recently been issued
by S.E.S.B. and is reproduced here for the information of Studio
Managers who may be concerned with the control of O.B.'s.

There are occasions when it is necessary, in order to overcome
line noise from an O.B., to increase the volume to line above
+4db.   Such cases will generally be known in advance and the
sending volume and other line conditions will be specified by
Lines Department.   In no case will the sending volume exceed
+10db.

If the necessity to send a volume higher than +4db arises
because line noise develops just before or during the programme,
the situation should be met by allowing the P.P.M. to peak to
7 (i.e. +8db) for the duration of the O.B., or for as long as
the line noise persists.   This adjustment should be made in
agreement with the receiving end.

(R.V.A. George)
(H.C.P.Ops.)

RECORDINGS: OPERATIONAL PROCEDURE

PREFACE

The following has been issued as a Sound Service Engineering Operational Instruction (No. OI. 8.1).   It is now issued as a Central Programme Operations Instruction as it entails the active co-operation of Studio Managers at the source of a recording.

This Instruction describes the general procedure for the handling of recordings in Static Recording Channels and in the Central Recording Room. It does not apply to recordings from international circuits, or to News tape recordings carried out by remote control by Traffic Managers.

Every effort should be made to complete closed circuit recordings within the booked period and if this is not possible Central Bookings in London, or the appropriate Booking Section in the Regions should be asked for an extension. If an extension is possible Bookings will make any required studio studio or line arrangements. Operational staff may however, at their discretion, agree to start a recording early, or to accept an over-run of a few minutes, when circumstances permit.

In all cases described below the recording equipment should be lined up and tested at least 10 minutes before the booked starting time.

1. **SINGLE CHANNEL**

    1.1 **Closed Circuit Recordings with direct Control Line**

    A direct control line between source and Recording Channel will be provided whenever possible.

    At Zero minus 10 minutes the Channel should telephone the source and check all details, including Title, R.P. Reference Number and duration. The source should then originate line-up tone and the Channel should check level and record at least 10 seconds of the tone.

    The source should then provide a programme test which should be a representative sample of the material to be recorded. The Channel will report when satisfied with the programme test and starting cue will be arranged.

    If a fault develops during the recording the source, and the Control Room when appropriate, should be informed immediately, but recording should not be discontinued unless the nature of the fault makes this step necessary. The source will decide either to stop and restart from a point indicated or to continue to the end and then repeat the faulty portion.

In the case of O.Bs. or programmes performed before an audience the above procedure may have to be modified. It may not be convenient to provide a programme test, but during the warming up period there may be material which will service this purpose, and this should be fed to the Recording Channel at normal programme volume. In the case of programmes performed before an audience exclusively for recording over closed circuit a programme test must be provided.

1.2   Closed Circuit Recordings without direct Control Line

At Zero minus 10 minutes the source will originate line-up tone. The Channel will check level and record at least ten seconds of tone.

At Zero minus 4 minutes, or earlier if pre-arranged, the source will cut tone and supply an Identification via the programme circuit.

The Identification must include the following information:

1.3.1   Designation of source and Recording Channel.

1.3.2   Full title and R.P. Reference No.

1.3.3   Approximate duration.

1.3.4   Starting arrangements and Cues.

The source will then provide a programme test which should be a representative sample of the material to be recorded.

In the case of O.Bs. or programmes performed before an audience the above procedure may have to be modified. It may not be convenient to provide a programme test, but there may be material which will serve this purpose, and this should be fed to the Recording Channel at normal volume. In the case of programmes performed before an audience exclusively for recording over closed circuit a programme test must be provided.

At the end of the recording the Channel will pass a report as quickly as possible to the local Control Room.

1.3.   Recordings from Transmission

Transmissions may be recorded from Programme Distribution, available for this purpose in some areas on the Recording Ring Main, or it may be desirable to use a separate feed direct from the Studio or O.B. without passing through the Continuity in order to avoid superimposed time signals, special announcements and fades due to over-runs.

Separate feeds may be booked in advance by Bookings, or may become necessary due to last minute changes in programme presentation.

Control Room will advise the source as early as possible that a recording is being made by separate feed so that the source will not fade before completion of the programme and will maintain the Red Light.

When it is known before transmission that a separate feed is required Control Room should supply the feed at or before Zero minus 10 minutes, and the Channel should check level and record at least 10 seconds of the source tone and check the source Identification.

In the case of recordings from Distribution at least 10 seconds of local line-up tone will be recorded.

If a fault develops or a recording is for any reason unsatisfactory the Channel should advise the source via the Control Room giving details of which part needs repeating. The decision as to whether a repeat is possible will be made at the source and will often depend on artists' contracts.

In London the Recording Supervisor must be kept informed if a repeat is required.

At the end of a recording from Transmission the Channel should pass a report to the source via the Control Room.

2. CENTRAL RECORDING ROOM

2.1 Recording under Remote Control

The machines are started and stopped by remote control from the Studio cubicle and the tape output is monitored by the Studio Manager.

If more than one reel is likely to be required two machines will be set up and the Studio Manager will undertake to warn the Central Recording Room Supervisor after 28 minutes of recording on each reel that a changeover is imminent.

At Zero minus 10 minutes the Studio will supply line-up tone and contact the Supervisor for Identification details. The machine will be switched to 'remote' to enable the Studio Manager to record the Studio tone. The level of the tone incoming and recorded will be checked in the Central Recording Room. If levels are correct the Channel Supervisor will inform the Studio Manager who will cut tone, fade out the main fader, and finally stop the machine. It is

important that this last operation is carried out in the correct order so that the start of the recording is preceded by a few seconds of clean tape.

At the end of the recording the Studio Manager will complete the Recording Report and take it to the Channel Supervisor.

2.2 Recording under local control, monitored by Programme Reporters

The machines are operated manually in Central Recording Room and the tape output is monitored by a Programme Reporter.

The general procedure is the same as in a Single Channel, as described in Section 1.

If more than one reel is likely to be required two machines will be set up and the Programme Reporter will undertake to warn the Supervisor of the imminence of changeovers.

At the end of the recording the Programme Reporter will complete a Recording Report and take it to the Channel Supervisor.

2.3 Recording under local control, not monitored at time of recording

In exceptional cases, such as long sports commentaries of which only short excerpts may subsequently be required, the tape output may not be monitored at the time of recording.

Such recordings must be carried out in duplicate, both recordings to be retained.

The Channel Supervisor will complete the Recording Reports which must be clearly marked 'NOT MONITORED'.

2.

CENTRAL PROGRAMME OPERATIONS INSTRUCTION: O.5

MAY 1962

IDENTIFICATION OF RECORDING, REPRODUCING AND EDITING CHANNELS

This is a reprint of Sound Service Engineering Operational Instruction No. O.I. 7.3 and is included for information.

PREFACE

Each Channel is identified by a symbol consisting of a letter indicating the Station or Region, together with a number indicating the Channel or Vehicle under a local numbering system.

Particular machines in a Channel may be indicated by the addition of /1, /2, /3, etc.

The whole identification is written without spaces or punctuation.

Example:- H7/1 indicates No 1 machine in Channel H7.

CHANNEL IDENTIFICATION LETTERS

New York Office	A
Bush House	E
Paris Office	F
London Station	H
London O.B's.	L
Midland Region	M
North Region	N
West Region	R
Scotland	S
Transcription Recording Unit	T
Northern Ireland	U
Maida Vale	V
Wales	W

TRANSPORTABLE EQUIPMENT (XP MACHINES)

In the case of transportable machines used in studios the normal studio identification serves to identify the Channel.

CENTRAL PROGRAMME OPERATIONS INSTRUCTION: O.6

MAY 1962

RECORDINGS AND REPRODUCTIONS

ALLOCATION AND SPACING OF COMMITMENTS

This is a reprint of Sound Service Engineering Operational Instruction
No. OI. 7.4 and is included for reference.

PREFACE

The allocation of recording and reproducing facilities is under the control
of Central Programme Operations Department in London and Programme Services
Assistants in the Regions.

This Instruction details the rules governing the allocation and spacing of
commitments in static Recording and Reproducing Channels and Central Recording
and Reproducing Rooms.

These rules do not apply to recordings and reproductions carried out in
Continuities or on O.B's., or to News Department tape recordings carried out
by Traffic Managers.

1. SPACING OF COMMITMENTS

    In addition to the period shown on the booking schedule intervals
    between bookings will be allowed and the total time - booked period
    plus intervals - will be taken into account for the purpose of
    calculating the number of channels available at any one time.

    The rules regarding spacing of commitments do not apply to Central
    Recording and Reproducing Rooms.

    1.1 Pre-booking Interval

         The normal pre-booking interval will be quarter of an hour except
         for the following cases in which half an hour will be allowed:

         1.1.1 A change of systems, e.g. a tape booking followed by a
                disk booking in the same channel.

         1.1.2 A channel not booked during the previous two hours.

    1.2 Post-booking Interval

         A post-booking interval of fifteen minutes will be allowed after
         the following:

         1.2.1 A tape recording.

1.2.2 A recording of despatches from abroad.

1.2.3 A recording from or reproduction to the Third Programme (unless followed by the same type of Third Programme booking).

These post booking intervals are to allow a clearing up period and for possible over-running of the programme and will be additional to the quarter of an hour pre-booking interval of the following booking.

Where the following booking has a half hour pre-booking interval they will run concurrently and the interval between the bookings will not exceed half an hour.

2. MAXIMUM NUMBER OF CHANNELS BOOKED SIMULTANEOUSLY

The maximum number of channels at each centre which may be booked simultaneously varies at set times during the 24 hours.

The number of commitments at any one time should not normally exceed the agreed maximum but the Shift Supervisor may, at his discretion, operate additional channels to overcome a temporary overload. If he does so he should report the fact in his Supervisory Log.

3. STAFF SHORTAGE AND TECHNICAL DIFFICULTIES

There may be times when because of breakdowns or shortage of staff the number of channels available will be less than that agreed. The Shift Supervisor must notify Bookings at once when this is the case, whether or not a booking already made is threatened. When the difficulty has been overcome Bookings should be informed without delay.

If a channel becomes unserviceable and cannot be made to function normally within fifteen minutes Bookings should be informed, even if there are no outstanding commitments for that channel or if the channels remaining in service are numerically sufficient for handling the agreed maximum load. If, in a case of this nature, Bookings are left in ignorance of what has occurred they may make arrangements affecting the channel and these arrangements will later have to be cancelled.

The Shift Supervisor may find it necessary for technical reasons to rearrange the allocation of commitments between individual channels. Before doing so he should discuss the matter with Bookings to find out if the proposed rearrangement creates any difficulties from their point of view.

4. OVERBOOKING

When a booking cannot be accepted the Shift Supervisor will inform Bookings at once so that alternative arrangements may be made.

5. <u>EARLY STARTS AND OVERRUNS</u>

Every effort should be made by all concerned to complete closed circuit recordings within the booked period and if this is not possible the permission of Bookings Section should normally be obtained for any extension. If an extension is possible Bookings Section will make any required Studio or line arrangements and inform Programme Reporters if necessary. Operational staff may however, at their discretion, agree to start a recording a few minutes early, or to accept an over-run of a few minutes, when circumstances permit.

6. <u>NOTICE REQUIRED FOR EXTRA BOOKINGS</u>

A quarter of an hour preparation time before a booking is normally the minimum. The Shift Supervisor will accept an additional booking of which he receives less than fifteen minutes notice only when this course appears to be justified, as for example in the case of a request to record an urgent news dispatch.

In the case of reproductions, extra bookings at short notice are made only in emergencies and should be accepted whenever possible.

7. <u>AMENDMENTS NECESSITATED BY TECHNICAL EMERGENCIES</u>

A special case arises when arrangements have to be made without loss of time in connection with the use of expensive international circuits or as the result of a fault occurring in the S.B. system. In these circumstances amendments to the Recording Schedule may be made by the Shift Supervisor subject to the availability of channels and staff. Bookings must be informed with the minimum of delay.

MAY 1962

COPYRIGHT

This is a reprint of Sound Service Engineering Operational Instruction No. OI. 7.6 and is of direct concern to Studio Managers.

1. ## COMMERCIAL RECORDS

   It is the responsibility of the producer to obtain clearance of copyright, whenever necessary, from Copyright Department before a programme containing commercial gramophone records or tapes is pre-recorded or recorded from transmission.

   When a recording contains commercial records a Copyright Warning showing the Title and R.P. Reference Number will accompany the recording, and the tape box or disk label will display a red asterisk. The copying of any part of the recording containing these commercial records is prohibited.

   The copying of a complete recorded programme for purely technical reasons is permitted. For example, a programme consisting of a number of extracts from records, which would be difficult to handle on transmission, might be dubbed to tape for convenience.

   The BBC has authority to copy extracts from most makes of commercial long-playing records on to 78 r.p.m. disks or on to tape. Such extracts must be treated in all respects as if they were commercial recordings and must bear the make and number of the long-playing record concerned and not a BBC reference number.

2. ## MUSIC RECORDINGS

   Owing to changes in the agreements governing the recording of musical items it is no longer necessary for operational staff to classify recordings as containing or not containing music, and this information should be omitted in the Recording Report.

MAY 1962

ORDER OF PRECEDENCE OF PROGRAMMES

This instruction is an extract from Sound Service Engineering Operational Instruction No. OI. 1.5 and is reproduced here for the information of Studio Managers.

PREFACE

The order of precedence of programmes given in this Instruction is for guidance in dealing with restoration of programmes in the event of breakdowns. It is not intended to be an indication of priority for allocation of circuit quality. Grade I and II programmes will, of course, take precedence over all other programmes.

1. DOMESTIC PROGRAMMES

Distribution of	Television Sound – Priority 1
" "	Home Service – Priority 2
" "	Light Programme – Priority 3
" "	Third/Network 3 – Priority 4
Complete programme contributions to	Television Sound – Priority 5
" " " "	Home Service – Priority 6
" " " "	Light Programme – Priority 7
" " " "	Third/Network 3 – Priority 8
Inserts to Programmes for	Television Sound – Priority 9
" " " "	Home Service – Priority 10
" " " "	Light Programme – Priority 11
" " " "	Third/Network 3 – Priority 12
Area Broadcast Programmes	Priority 13

This applies during television programme hours only. It does not apply during television trade test periods, when television sound would have the lowest priority.

In the case of recordings over S.B. lines, the nature of the programme will affect its priority. If the material is important and not repeatable the priority should be rated between 'Contributions' and 'Inserts' i.e. between 8 and 9. Recordings of which a repeat can easily be obtained should be last in order of priority.

Contributions to External Services programmes should be treated on their merits in the same way as recordings.

E.1.1

TRANSMITTER PROCEDURE

This is described in T.M.I. 181. Some notes from this Instruction are given below:-

Domestic Programmes

a. Each programme service is entitled to the use of its own transmitters during normal programme hours and in future transmitters are to be used strictly for the programme for which they are scheduled in the latest issue of T.M.I. 175. For example, at a station having transmitters for both Home and Light Programmes, the Light Programme transmitter may be re-tuned as a reserve for the Home transmitter in the case of a breakdown outside Light Programme hours, but the Light Programme transmitter must be re-tuned again in time to carry its normal programme. The Home Service shutdown would then have to continue until the Home Service transmitter had been repaired. This ruling applies at all times including periods when Grade I Broadcasts are taking place.

b. If a failure of the public electricity supply occurs at a dual programme long or medium wave station, the order of precedence will be followed to decide which programme shall be radiated from a single spare transmitter which can be powered from diesel engine supply.

MAY 1962

RESPONSIBILITY FOR ACCEPTANCE OF POOR QUALITY CONTRIBUTIONS

This is a reprint of Sound Service Engineering Operational Instruction
No. OI. 3.1.

It is the responsibility of Presentation Department to decide whether a
contribution which is of poor technical quality is acceptable for
transmission in a programme service.

The Presentation Assistant in each appropriate Continuity should be
informed as early as possible if any impending or current contribution
is of poor technical quality. If the defect is sufficiently serious
the Presentation Assistant must be asked to decide whether the
contribution is acceptable for transmission.

In cases in which contributions are rejected by the Presentation Assistant
as unfit for transmission due to technical defects and in cases in which
any doubt exists as to whether a contribution is fit for transmission due
to technical defects a recording of a representative sample of the material
should be made whenever possible.

CENTRAL PROGRAMME OPERATIONS INSTRUCTION: 0.12

MAY 1962

B.B.C. STATION ABBREVIATIONS

This list is reprinted from Sound Service Engineering Operational Instruction No. OI. 1.9.

Code letters are allocated to some BBC Stations for use as abbreviations.

A list of the more common abbreviations is given below.

When necessary to distinguish between Studio premises and Transmitters having the same code the suffixes /S or /T are added.

The abbreviations are not in all cases identical to the abbreviations used by the Post Office, and they should not, therefore, be used in dealings with the Post Office.

AB	Aberdeen	DE	Dundee	LI	Lincoln
AP	Alexandra Palace	DEI	Droitwich	LIS	Lisnagarvey
ASP	Crowborough	DG	Douglas	LLA	Llanddona
		DIV	Divis	LLG	Llangollen
BAR	Bartley	DR	Dover	LS	Leeds
BE	Belfast	DS	Dumfries	LV	Liverpool
BG	Bangor	DX	Daventry		
BGD	Burghead			ME	Moorside Edge
BM	Birmingham	EH	Edinburgh	MEL	Meldrum
BNT	Barnstaple	EX	Exeter	MR	Manchester
BP	Brookmans Park			MV	Maida Vale
BR	Brighton	FK	Folkestone		
BRW	Barrow	FRM	Fareham	NC	Norwich
BS	Bristol			NHT	North Hessary Tor
BTH	Bournemouth	GW	Glasgow	NOT	Nottingham
BU	Bush House	GY	Guernsey	NT	Newcastle
BX	Bexhill				
BY	Blaen Plwyf	HM	Holme Moss	OF	Oxford
		HU	Hull	OY	Orkney
CAV	Caversham				
CB	Cambridge	JY	Jersey	PK	Postwick
CE	Carlisle			PN	Penmon
CF	Cardiff	KS	Kirk-o'-Shotts	PP	Pontop Pike
CL	Clevedon	KW	Kingswood Warren	PR	Preston
CM	Cheltenham			PT	Portsmouth
CP	Crystal Palace	LBH	London BH	PTB	Peterborough
CR	Cromer	LD	Londonderry	PY	Plymouth

RK	Rosemarkie		TAC	Tacolneston
RM	Redmoss		TF	Tatsfield
RMG	Ramsgate		TM	Thrumster
RMP	OSE.3 (Rampisham)		TN	Towyn
ROW	Rowridge		TO	Truro
RR	Redruth		TOL	Tolsford Hill
SC	Sutton Coldfield		WA	Washford
SCB	Scarborough		WH	Whitehaven
SF	Sheffield		WK	Wrekenton
SG	Stagshaw		WL	Whitehawk Hill
SK	OSE.8/9 (Skelton)		WN	Wood Norton
SL	Sandale		WOF	OSE.10 (Woofferton)
SN	Stockton		WRT	Wrotham
SNF	Snaefell		WST	Westerglen
SO	Southampton		WV	Wenvoe
SP	Start Point		WX	Wrexham
STK	Stoke			
SX	Swansea			

FLEXIBILITY OF WORKING IN TECHNICAL AND PROGRAMME OPERATIONS

PREFACE

Experience in the production of sound programmes using modern techniques has shown that between the specialist functions of Technical Operators and Studio Managers there is a limited area of common ground in which too rigid a division of duties can give rise to cumbersome and uneconomic working.

In order to increase efficiency it has been agreed that under carefully controlled conditions certain duties are to be interchangeable between the two categories of staff.

Application of this scheme must be based upon recognition of the fact that the greater part of the work of the T.O.s and S.M.s demands considerable specialist knowledge and experience, and if high standards are to be maintained the areas in which interchange of duties can operate will be very limited.

This Instruction gives guidance on the operation of the scheme which should be put into effect in London and the Regions as soon as staff with the necessary additional training become available.

SCOPE OF INTERCHANGE OF DUTIES

Opportunities for profitable interchange will most commonly occur in the recording and simple editing of programme ingredients, as for example effects montages, by S.M.s in studio cubicles during rehearsal, and simple mixing and control by T.O.s, as in the linkage of tapes and local narration in an editing suite.

Recordings of programme ingredients by S.M.s will not be booked as recordings and will not bear an R.P. number.

It is not intended that S.M.s should undertake the recording of whole programmes.

BOOKING PROCEDURE AND ALLOCATION OF STAFF

In London the initial co-ordination of demands will continue to rest with the Central Bookings Unit who, on information supplied by the Producer, will inform the appropriate S.S.M. who will consult with Supervisor, Editing Unit to decide the staff to be employed.

Only those staff who have received adequate additional training and have proved competent in the new skills will be allocated to duties outside their normal field.

TRAINING OF STAFF

Engineering Training School courses for S.M.s and T.O.s have been modified to cover the new aspects of their work.

For London staff on-station instruction will be organised for S.M.s by E.i.C. London Station and for T.O.s by Instructor, C.P.Ops.

Similar training arrangements should be made in the Regions.

(R.V.A. George)   (A.P. Monson)

CENTRAL PROGRAMME OPERATIONS INSTRUCTION O.14

JANUARY 1963

USE OF THE PUBLIC TELEPHONE IN BROADCAST PROGRAMMES

PREFACE

This instruction is a reprint of Sound Service Engineering Operational
Instruction No. Ol. 1.13 and is of direct concern to Studio Managers.

The unrestricted use of the public telephone in broadcast programmes would
involve certain risks to the BBC and to the Post Office in view of the
lack of control over material so derived, and the possibility of crossed
lines, operator interjections and other similar faults.   The BBC is legally
responsible as publishers for any defamatory material which might be
broadcast.   The Post Office is responsible for maintaining the secrecy of
the public telephone service, and are also anxious to avoid anything which
would reflect unfavourably on the service.   In view of these dangers the
use of the public telephone in broadcast programmes is conditional upon the
strict observance of certain rules agreed with the Post Office.   These
rules are specified below.

This Instruction also describes the operational procedure for the recording
of telephone calls.

1. CONDITIONS

    1.1   In no circumstances may telephone material be broadcast live.

    1.2   In certain circumstances telephone material may be recorded
           provided the recording is edited before transmission to remove
           any extraneous matter such as cross-talk, interjections by
           operators, or other undesirable noises which would mar the
           transmission or reflect unfavourably on the telephone service.

    1.3   It is not permissible to record, much less to broadcast, a
           telephone conversation between third parties.   This applies even
           if the conversation has been picked up by radio, as could occur
           for example in the case of conversations between ships at sea or
           between ship and shore.

    1.4   Reference may be made in a broadcast, if particularly desired, to
           the fact that material is of telephone origin, but in any mention
           of a telephone recording it must be made clear that it is a BBC
           recording.

1.5   In the case of news despatches recorded from the telephone in
       which the circuit quality is below normal it is usual to make an
       apology of the following form:

         "This is a recorded report the quality of which is not up to
         our usual standard as it was not possible to make the normal
         arrangements."

1.6   The telephone may only be used to collect programme material if
       there has been insufficient time to provide a programme circuit
       in the normal way.   In the case of overseas calls the BBC decide
       whether programme circuits or ordinary telephone facilities
       should be used, having regard to consideration of circuit quality,
       cost, convenience, etc.

1.7   The mention of any real telephone number in a broadcast is, with
       certain exceptions, strictly forbidden.   Exceptions are made in
       the case of police messages and in the case of Regional Weather
       Forecasts in which at the request of the Meteorological Office the
       listeners may be invited to ring a given number for further
       information.

1.8   If it is necessary to mention an imaginary telephone number in a
       broadcast the number used must be obtained from Lines Department
       and not guessed at or extracted from any existing BBC lists, all
       of which are now obsolete.   A list of members of Lines Department
       who can give advice on telephone numbers is provided as an Appendix
       to this Instruction.

1.9   The simulation of telephone conversations by "effects" techniques
       is permissible.

1.10   Recorded telephone calls must not be broadcast without prior consent
       of the participants.

Any other method of using the public telephone in sound broadcasting
programmes must be referred to S.E.S.B.

2. RECORDING OF NEWS ITEMS FROM THE PUBLIC TELEPHONE SYSTEM

Facilities exist in London and at Regional Centres for recording via the
public telephone of urgent news items from News Reporters in the field.

The operational procedure is described in the following instructions
which have been issued to Reporters in the field.

Instructions to Reporters in the Field

2.1   Any telephone may be used for news reports. If possible a telephone should be used in a quiet location.

2.2   If the line is very bad you may be asked to make the call again, or alternatively the BBC official may ring you if this is more convenient.

2.3   It is essential that you speak at the normal distance from the telephone mouthpiece. For instance, the telephone mouthpiece should not be placed under the chin.

2.4   The voice should be raised as is done in broadcast announcements. You should never shout.

2.5   If the telephone is not working properly you may be asked to hold it in one hand and sharply tap the mouthpiece with the other hand.

2.6   If operation 2.5 is not satisfactory you may be asked to place two or more layers of handkerchief over the mouthpiece of the telephone. On no account should the handkerchief be stuffed into the mouthpiece cavity.

2.7   The control room engineer will ask for a one or two minute speech test.

2.8   When the test is completed you will be asked to go ahead on a five or ten second cue. Alternatively you may be asked to go ahead immediately after the three minute pips.

2.9   If the pips occur while you are making a recording you should stop and repeat the sentence marred by the pips. Similarly if any other interruption occurs the sentence should be repeated. The offending interruption can then be removed during the process of editing.

2.10 After the news report has been read you should await the engineer's report before hanging up the receiver.

APPENDIX

If it is necessary to mention an imaginary telephone number in a broadcast the number used must be obtained from Lines Department and not guessed at or extracted from any existing BBC lists, all of which are now obsolete.   A list of members of Lines Department who can give advice on telephone numbers is given below:-

		on B.H. PABX 4201
or		on B.H. PABX 4101
or	A. to S.E.L.	on B.H. PABX 4333
or	A.S.E.L.	on B.H. PABX 4111
or	S.E.L.	on B.H. PABX 4113

March 1961

STUDIO 6C MODIFICATIONS

The modifications are mainly concerned with outside sources, the aim being to provide facilities similar to the Type B Desk, and some are of a temporary character pending the introduction of the new Control Room.

On the left-hand key panel there are only two additions, one is a locking key which gives normal studio facilities in the middle position. Putting the key down gives Clean Feed, and the up position, Clean Feed plus Transmission Talkback.

The other new key is a spare amplifier change-over key associated with the clean feed circuit. On the right-hand key panel various modifications have been made. There are 24 spaces for keys in 2 rows of 12, for ease of identification the top row will be called A and the bottom row B, and numbered from left to right. In addition, the Control Room Buzzer is on its own at the top of the key panel.
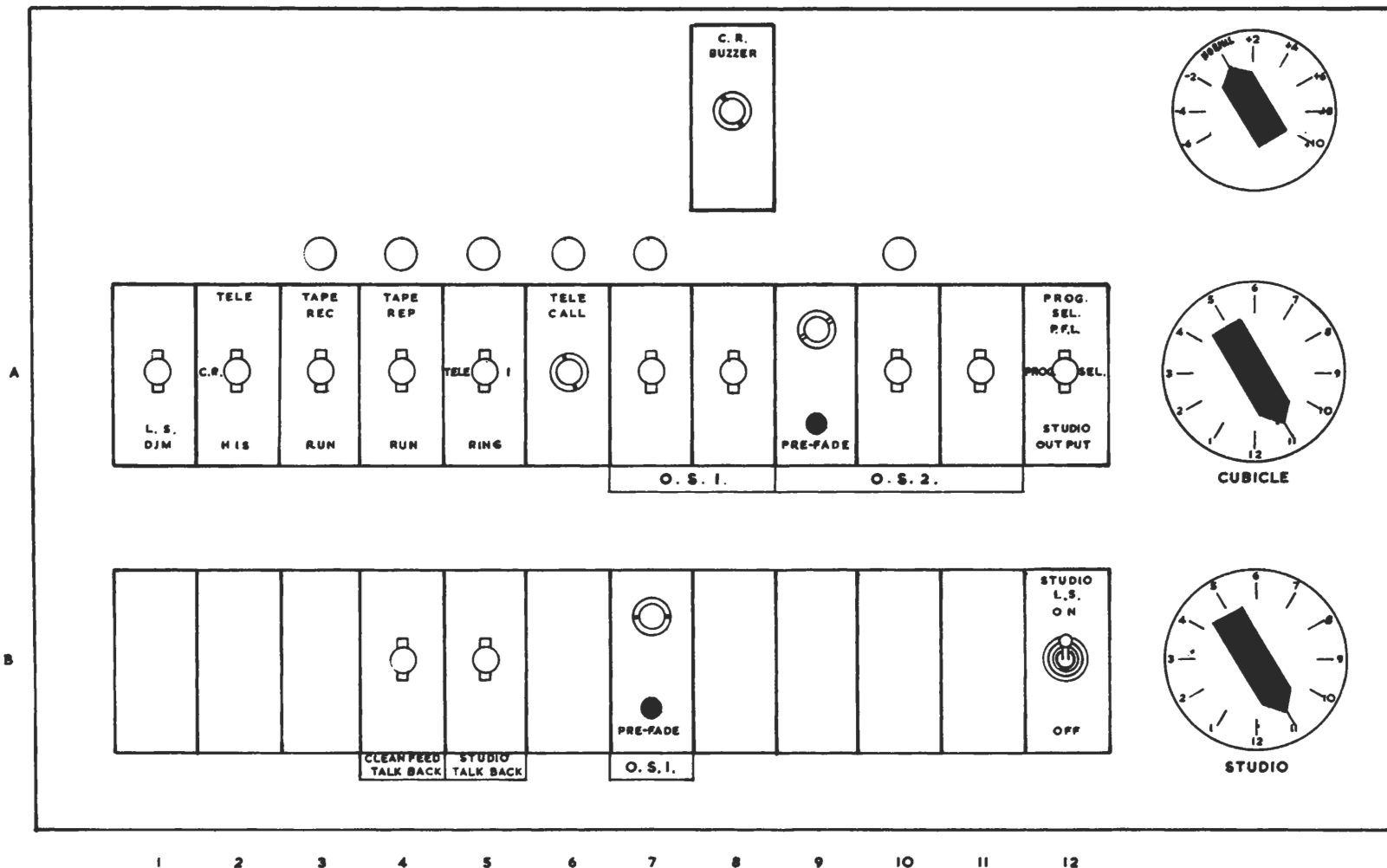
The key arrangement at present is:-

A1 - Loudspeaker dim.

A2 - switches telephone 1 to Control Room in the middle position and to H18 in the down position.

A3 - H18 remote recording. Red signal light above the key shows when record facilities are present. Press key down to start.

A4 - ditto for H18 remote reproduce light in this case is green.

A5 - controls telephone 1, press down to ring, up to recall Control Room.

A6 - press to ring telephone 2 when it is connected by Control Room to an outside source. This button is retained only as a temporary measure: eventually it will be replaced by the individual ring buttons for the two outside sources.

A7 - not yet in use.

A8 - not yet in use.

A9 - push button not yet in use, but black pull switch gives Pre-fade O.S.1. on the cubicle loudspeaker if key A12 is in the up position.

A10 — not yet in use.
A11 — not yet in use.
A12 — cubicle speaker control middle position connected
to Programme Selector.   Up position also gives
Programme Selector, but this is replaced by
Outside Source Pre-fade if the black pull-switches
on A.9. or B.6. are operated. Down gives Studio
Output.
B4 — Clean Feed Talk-back.
B5 — normal Studio Talk-back.
B6 — press button not yet in use. Pull switch O.S.2.
Pre-fade if A.12. is up.   This button and switch
with eventually be mounted in the position occupied
by the Tele 2 call button (A6)
B12 — Studio Loudspeaker cut off.

STUDIO 6C
RIGHT HAND KEY PANEL

S.I. FIG.I.

C. R.
BUZZER

	TELE	TAPE REC	TAPE REP		TELE CALL						PROG. SEL. P.F.L

A

C.R.

TELE 1

PRE-FADE

PROG. SEL.

L. S. DIM

H I S

RUN

RUN

RING

STUDIO OUTPUT

O. S. I.

O. S. 2.

CUBICLE

B

PRE-FADE

STUDIO L.S. ON

OFF

CLEAN FEED TALK BACK

STUDIO TALK BACK

O. S. I.

STUDIO

1   2   3   4   5   6   7   8   9   10   11   12

March 1961

PRODUCTION SUITES H50 & H53

These are each comprised of a studio with a large cubicle and recording channel combined.

The studio has 2 mic points and No.2 is a universal. A Narrators point is also fitted but this is not wired at present.

There is a talk-back speaker and provision for a A.G.R. speaker, although one is not supplied.   There is also a Narrators speaker point but again this is not at present wired.

The cubicle contains a type B mark II control desk, 3 - BTR 2 recording machines, 2 - TD/7, 1 - RP 2, and 1 - L.S.U. 10.   H53 also has a DRD 6 and H50 has the wiring for one.   In addition a TR 90 can be used but has to be booked if required.   The control desk is standard Type B mark II as found in Studio 8 and elsewhere but has the following modifications:-

a) On the extreme top right there is a sub-panel with 5 locking keys.   Three of these are in use and are, from left to right, TR 90 remote start, Tape Console remote start and Reverberation Plate mains supply. The Tape Console remote start operates whichever of the BTR 2 is switched to remote.

b) Below this is a sub-panel with 2 - C.12 polar diagram selector switches, only the left-hand one is wired and this is to socket 2 in the studio.

c) On the sub-panel, controlling the cubicle and studio loudspeakers, is a key to the left of the L.S. DIM key;   this puts the output of the tape console onto the speaker instead of studio out or ring main.

d) On the main panel bottom left-hand corner, on the right of the talk-back, is Telephone 1 ring key.

e) The A.E.R. and Split Gram facilities are normal, with the right-hand TD 7 moving over to channel 8 if that toggle switch is depressed.   However, the R.P.2. and D.R.D. 6 (if fitted) come up on jacks on the jackfield and have to be plugged to any mic channel. Therefore they cannot be put in circuit with them.

f)   The Effects Units (or distorts) are wired to channels
      2 and 9.
g)   The Narrator Independent channel is not in use.

Note that the outside source phone and cue sub-panels are also not
in use.

Also, although the C.12 polar diagram selector is built-in, the
power unit has to be plugged to the IN and OUT and mains sockets
in the cubicle.

NEW MIXER SUITES 1A AND 3B

These two new mixer suites are, except for some very minor details,
identical in operation and in the facilities provided.   It is the
intention to provide yet a third identical mixer in the Basement area
in due course.

Each mixer is provided with a special Type B Studio Desk, together with
a separate Engineering Control Position.   Four tape reproducing machines
are installed, together with one RP2/1 and two TD/7's.   In the case of
3B only, an associated recording channel H.30, will take the bulk of the
News recording, the machines in this channel working remotely from
Foreign and Home Traffic positions.   An associated editing room, H.31,
is also available.   It will also be possible for convenience of working,
to record in H.30 from the reproducing machines in 3B, and from outside
sources fed to 3B.

Normal Studio Use - No Outside Sources

The studio is equipped with a fixed News-reading table having two
suspended microphones.   These are normally plugged to Mic.1 and Mic.2
faders, found in the bottom row on the Panel.   Two other microphone
sockets are provided, Mic.3 normally used with fader 3 on the panel,
and Mic.4, intended to be plugged in place of Mic.2 on the panel for
shows where three separate discussion tables are required.

A microphone cut key is provided on the News reading table with a
corresponding "announcers control" key on the Panel.   The cut key
mutes all the studio microphones.   Indicator lights show whether or
not the announcers key is in circuit.   The use of the announcers key
does NOT cut the fader out of circuit, it is <u>still necessary to fade
the mic. up.</u> The normal Type B jackfield arrangements are provided,
with three cue light circuits.   There is no master cue.   The four
tape machines can be connected either in pairs to two channels, or
more normally, all four to one "Tape"channel. Jacks are provided on
the jackfield to enable this to be achieved.   The grams all appear
on the gram fader and <u>are not cross pluggable.</u> The jackfield in 3B
is situated on the wall behind the Engineering T.O.'s desk, and in 1A.

The studio can be operated using all these facilities without the need for an Engineer in attendance.

Operation with Outside Sources

Simultaneous operation of up to ten outside sources is possible, each on its own fader. Any or all of these can be arranged for clean feed working, with or without clean feed talkback. Unlike previous clean feed operation, all ten outside source channels are controlled by the main fader whether or not clean feed is in use.

The setting up of outside sources is an Engineering function, and it is not anticipated that an S.M. will operate the source selection equipment. In a show with only a few outside sources, the equipment may be set up in advance, the Engineering Position not being manned throughout the show. When a large number of outside sources are required, an engineer will be in full time attendance. In 3B, the engineers in H.30 will assist if operation of the T.O.'s position is required at any time when it is not specifically manned. They will also give any help required in the general operation of the studio. Seven of the available outside source channels are connected to the source multiple via the selector system, and the T.O. can bring up any source appearing in the source multiple to any of these channels. Such sources will include any B.H. studio, Radio Terminal and Trans Atlantic Telephone, with the addition of a number of O.B. chains, any of which can be fed, via the Control Room O.B. position, from an outside contributor.

Channel 8 is a further source pluggable from Control Room, likewise Channels 9 and 10, which are also associated with the Despatch Positions in Control Room.

Selection of any of the seven sources on the automatic switching is achieved by the T.O. punching up the code associated with the required source on the punch board at the top of his Panel, and then operating the "Select" key by the side of the indicator for the Channel on which the source is to appear. The code number will then appear on this indicator showing that the source has been selected. Selection is impossible if the channel is faded up, and in this condition an "X" appears on the indicator panel. The change from one source to another, provided the channel is faded out, takes only a fraction of a second, and so many more than ten sources can be used in a given show if required.

> It must be stressed that under no circumstances must an S.M. operate the source selection equipment unless he has been asked to do so by Control Room, and given the necessary code number. Failure to observe this rule may, because of the nature of the equipment, cause serious interference with another user of the source selected, with possibly disastrous consequences.

The selection of a source to a channel on the desk automatically brings up various other facilities. The Control lines are connected to the appropriate keys on the T.O.'s Desk, and can be extended by him to the Panel. The T.O.'s position becomes a small exchange for all the Outside Sources, and a ring from any of these will appear directly at this desk and not ring in Control Room. If an outside source wishes to speak to Control Room the T.O. can ring them by operating the "Call EMX" key, and they will then come across the line. A key labelled "Transfer to EMX" is provided so that if the studio is left unmanned for any reason all the communication with Outside sources can be handed over to Control Room until the operator returns to the mixer.

The source selection equipment will also bring up "cue lines" to the Outside source, if these are available. The T.O. can, at the request of S.M. or Producer, switch "clean feed" or "cue programme" to either control line or cue line, and can switch talkback to the clean feed on either line as required.

If the "outside source" is in fact another B.H. studio, a further facility is provided, and the far studio red light signalling is operated by the cue key on the right of the O/S fader.

Talkback and Prefade Facilities

There are 4 talkback circuits and they all use the same talkback amplifier, therefore an order of precedence has to be established. The order is:-

      1.   MASTER TALKBACK (overides everything)

      2.   STUDIO TALKBACK

      3.   CUBICLE (REVERSE) TALKBACK

      4.   INDIVIDUAL TALKBACKS

There are 2 talkback microphones in the cubicle and they operate on Master and Studio talkbacks according to which side of the desk the talkback keys are operated. Only the right-hand microphone works to Individual talkback.

1. MASTER TALKBACK

This Key performs the following operations:

Rehearsal

      (a) it directs talkback speech from the cubicle T.B. microphone to

           (i)   the main programme chain (after the main fader) and thence to the OUTPUT of the mixer,

(ii)   to any outside source receiving CUE PROGRAMME on the
        control or cue line,

(iii)   to any outside source receiving CLEAN FEED in the
        control or cue line if the T.O.'s "TB ON CF" Key
        for the source is operated.

(iv)   to the STUDIO LOUDSPEAKER and STUDIO H.P. POINTS via
        point 11 (local output) of the STUDIO PROGRAMME
        SELECTOR switch.   The STUDIO LOUDSPEAKER is made
        live irrespective of the positions of the microphone
        fader and if it is desirable to avoid disturbing the
        studio with master talkback the selector should be
        tuned to a blank point.

(v)   to the CUBICLE H.P. POINTS if the H.P. Key is thrown
        to MIXER OUT.   It is also available if the H.P.
        PROGRAMME SELECTOR is at point 11 and the H.P. Key
        is thrown to PROGRAMME SELECTOR.

(b) CUBICLE TALKBACK Key in the studio is made inoperative and
     if already operated it is immediately over-ridden.

(c) QUALITY L.S. in cubicle is cut.

(d) PFL & TB L.S. is dimmed.

(e) Talkback is visible on PPM.

NOTE: (a) no provision is made for general two-way talkback
             with outside sources but pre-fade is still available
             (dimmed) on individual circuits.

        (b) the ST L.S. ON/OFF switch is over-ridden.

Transmission

Conditions similar to Rehearsal Master Talkback except:

(a) main programme chain is not disturbed and talkback is not
     routed to Point 11 of PROGRAMME SELECTOR SWITCHES.

(b) studio receives talkback direct on headphones (and not
     via STUDIO PROGRAMME SELECTOR) and on STUDIO L.S. if all
     microphones are closed.   The STUDIO L.S. ON/OFF switch
     is also over-ridden by MASTER TRANSMISSION TALKBACK.

2. STUDIO TALKBACK

Rehearsal

When either STUDIO TALKBACK Key is operated on the panel the following conditions are established:

(a)   Lamp is lit above CUBICLE TALKBACK Key ("Reverse" talkback) in studio.

(b)   CUBICLE TALKBACK Key is made inoperative and if already operated it is over-ridden.

(c)   Output of talkback amplifiers is fed directly to STUDIO L.S. and to STUDIO H.P. points.   The circuit by-passes the STUDIO PROG. SELECTOR, i.e. it is not necessary to ensure that this switch is set at Point 11 (local output).

(d)   QUALITY L.S. in Cubicle is cut.

(e)   PFL & TB L.S. in Cubicle is dimmed.

Transmission

Similar to rehearsal condition except that talkback is only fed to STUDIO L.S. if all microphone faders are closed.

3. CUBICLE TALKBACK

This "reverse" talkback is available in both the Rehearsal and Transmission condition but STUDIO TALKBACK and MASTER TALKBACK take precedence.

When the CUBICLE TALKBACK Key is operated in the studio the following conditions are set up:

(a)   Lamp is lit above both STUDIO TALKBACK Keys on panel.

(b)   Studio TB mic. is connected to input of talkback amplifiers and the output of these amplifiers is routed to the PFL & TB L.S. (It also appears at the CUBICLE H.P. jacks if the H.P. Key is operated to MIXER OUT & PFL.)

(c)   STUDIO L.S. is cut.

As indicated above the STUDIO TALKBACK Key immediately over-rides the reverse talkback and it is therefore possible to answer from the Cubicle without waiting for the studio to release the Cubicle Talkback Key.

It should be noted that the INDIVIDUAL TALKBACK Keys do not over-ride CUBICLE TALKBACK.   If the latter is in use when one of the INDIVIDUAL Keys is pressed the outside source will receive reverse talkback.

4. INDIVIDUAL TALKBACK

Keys on the T.O.'s desk direct <u>either</u> the output of the CUE PROGRAMME SELECTOR or the output of the CLEAN FEED network to <u>either</u> the CONTROL LINE or a separate CUE LINE associated with each of the ten outside sources.

There are thus four separate conditions for each outside source (with "OFF" conditions):

    (a)   CUE PROGRAMME SELECTOR TO CONTROL LINE

    (b)   CUE PROGRAMME SELECTOR TO CUE LINE

    (c)   CLEAN FEED TO CONTROL LINE

    (d)   CLEAN FEED TO CUE LINE

Conditions (a) and (d) can be set up simultaneously and conditions (b) and (c) may also be established at the same time.

The feed from the CUE PROGRAMME SELECTOR is over-ridden whenever the INDIVIDUAL or the MASTER TB Keys are pressed.

CLEAN FEED is only over-ridden by INDIVIDUAL and/or MASTER TALKBACK if the T.O. has operated the "TB on CF" Key for the appropriate channel (s).

The INDIVIDUAL TALKBACK Keys have two operative positions – up 'locking' giving PFL only and down 'non-locking'giving TB & PFL.

When an INDIVIDUAL TALKBACK Key is pressed the following operations are completed:

    (a)   if one of the INDIVIDUAL TALKBACK Keys is in the PFL only condition this is immediately over-ridden.

    (b)   the output of the CUBICLE T.B. mic. is directed to the outgoing control and/or cue lines. As mentioned above CUE PROGRAMME is always over-ridden but CLEAN FEED is not disturbed unless the T.O.'s "TB ON CF" Key is operated.

    (c)   all other INDIVIDUAL TALKBACK Keys are made inoperative.

    (d)   PFL & TB L.S. is dimmed and the distant source is heard on the loudspeaker. If the reply is too faint the INDIVIDUAL TALKBACK Key may be thrown to the up position which removes the dimming from the PFL & TB L.S.

    (e)   the distant source may also be heard on CUBICLE H.P. if the H.P. Key is operated to MIXER OUT & PFL

NOTE: (1)   only one individual circuit is available at any time and operating a second individual Key will not be effective unless and until the first is released.

         (2)   individual talkback is over-ridden if the reverse talkback is operated. The contributor in the studio will then be heard at the distant point instead of the producer or S.M. in the cubicle. The PFL & TB L.S. will also be switched away from the distant source and connected to the studio talkback microphone.

Two operators headsets can be plugged into the desk and used for INDIVIDUAL TALKBACK. When they are in use their earphones are in parallel but only one microphone can be used at a time and is selected by a key on the panel marked L.H. & R.H. Operating this key cuts the talkback microphone in the cubicle from the individual talkbacks and cuts prefade from the P.F.L. & T.B. L.S. and transfers it to the headsets.

It is then possible to use the Studio and Cubicle talkbacks without overiding the Individual talkbacks on the headsets.

USE OF LIP MICROPHONE FOR TALKBACK

To avoid the constant dimming of the PFL/TB L.S. when talkback Keys are pressed a lip microphone may be used. When this is plugged in the normal talkback microphone is automatically made inoperative and the dimming circuits of the P.F.L. & T.B. loudspeaker in the cubicle are not operated when a talkback Key is pressed.

The Quality L.S. is still <u>cut</u> however when Studio or Master Talkback are used in rehearsal condition.

SIMULTANEOUS OPERATION OF TALKBACK KEYS

(a)   two or more Individual Keys - the first to operate seizes the circuit and all other are inoperative,

(b)   individual and studio talkback Keys - circuits associated with the Keys are established together i.e. it is possible to talk to one outside source and the studio simultaneously. If the studio answer, using cubicle talkback Key, see (e),

(c)   master and studio talkback Keys - in this case the circuits associated with studio talkback only are established but the master talkback is still available to outside sources. Master talkback is cut, however, from the main programme chain.

(d)   cubicle talkback with master and/or studio talkback - cubicle talkback is over-ridden,

(e)   cubicle talkback and individual talkback - talkback speech
        is transferred from talkback microphone in cubicle to studio
        talkback microphone.   PFL in cubicle transferred to output
        of studio TP microphone.

(f)   individual and master - the function carried out by the
        individual Key is taken over by the master.

3.B. DESPATCH WORKING

Two Conference circuits are available at a time and are switched by the Despatch Position in Control Room to channels 9 and 10. (There are two Despatch positions both capable of handling all four conference circuits.)

If the appropriate channel is faded up the incoming despatch is heard clean, that is free from talkback from any other part of the conference circuit.

To join in the conference circuit there are two LISTEN/TALKBACK keys on the bottom row of the right-hand side panel which are associated with channels 9 and 10 for despatch working, and function in the same way as the outside source PFL/TALKBACK keys.

If direct talkback to the despatch position operator is required the next key in the row (marked RECALL 1 and RECALL 2) is flicked up (channel 9) or down (channel 10).   This will call the despatch position operator and he will cut the talkback for that channel from the conference circuit so that it is between studio and despatch position only.

The despatch position operator can cut the talkback of any or all the contributors to the conference circuit whilst still letting them hear the rest of the circuit.

The fourth key in the row is a normal telephone circuit direct to the despatch position.

Cue programme to a conference circuit is selected by the cue programme selector on the panel but is fed into the circuit by 2 keys on the T.O.'s desk in 3.B.   They are in the centre of the panel above the C.R. Intercom.

There are no indicator lights on the S.M.'s panel to show when these keys are made.

As with normal outside source working the talkback cuts cue programme.

MODIFICATIONS TO STUDIO 3B

The TD/7 desks in this studio have now been removed and replaced with four Philips tape reproducers, mounted in a bench with quadrant faders arranged in pairs between machines 1 & 2 and 3 & 4.

Back stop contacts on the faders have been utilized so that, provided the machine "play" button has been pressed, the tape is started the moment the fader is moved from the end stop.

A toggle switch is provided on the facia next to the prefade jack, and when this switch is in the down position the "fader start" facility is removed, the machine then starting on its own "play" button.

Two aluminium plates are provided for each machine.   These <u>must</u> be used with cine spools, and their purpose is to increase the rotating mass so that the mechanical brakes will operate satisfactorily, having normally been adjusted for use with the heavier NAB spool.

The output of these machines appears on the normal "gram" fader in addition to the RP2/1, and is not pluggable to other channels.

3B MONITORING OF 3C PRE-TRANSMISSION TALK-UP

Both producer and S.M. in 3B may wish to monitor a talk-up which is being handled in 3C.   If the talk-up is under the <u>direct</u> control of 3C (i.e. <u>not</u> being handled by a Despatch Position) the TO in 3B should be asked to select 3C to one of the channels on the desk.   The monitoring of 3C's output can now be done by putting the prefade key associated with the channel being used into the "up" position and <u>both</u> ends of the talk-up can then be heard on the PFL loudspeakers or on the head-sets as desired. Since 3B will only be listening it is unnecessary for any <u>outgoing</u> cue or talkback circuits to be established and none of the lamps on the right-hand panel should be lit.   It is worth remembering that the S.M.'s in 3C and 3B can talk to each other over the telephone circuit which is automatically established when 3C is selected as a source in 3B and it is suggested that when 3C has been selected the S.M. in 3B should inform his colleague of this.   3B should, of course, use the right-hand (outside source) telephone: 3C will receive and originate calls to 3B on his left-hand (source/route) telephone.   Furthermore, when 3C is selected to the panel in 3B the red light/buzzer return circuit is available and it may be worthwhile arranging for the S.M. in 3C to "buzz-out" when the talk-up is over.

When the talk-up has been completed, the TO in 3B should be asked to select the distant contributor to a channel on the desk and at the same time he will advise the Control Room via his intercom. that the same circuit to 3C should be broken down.   Once the distant contributor is selected to a channel in 3B, he will, of course, now receive cue programme or clean feed as required by suitable selection on the keys of the TO's desk and the corresponding lamps should be lit.   Final briefing and checking of cues can then be completed from 3B.

> It is unwise to switch the distant contributor to the panel in 3B whilst the talk-up is in progress in 3C since this could parallel various circuits in the source multiple and may cause confusion.   In an emergency however, or when running very close to transmission time, the distant contributor could be selected so that a pre-fade check of circuit and level (left-hand PPM) may be made but it is important that no cue circuits should be made until the circuit to 3C has been cleared down.

It is worth emphasising that it is possible to select the source to 3B within seconds of the end of the talk-up and the delays which were inevitable in the manual transference of circuits from 3A to 4A will not occur since the switching is directly in the hands of the TO in 3B.

If the Despatch Position are handling an extended conference circuit
(with 3C as a simple contributor into conference the distant contributor
will, of course, be fed to 3B for inclusion in the programme via the
Despatch Position and the normal routine will then apply.   The circuit
will be available on OS9 or OS10 and 3B can speak into conference or
simply listen to the conference circuit using one of the two PFL/TB keys
associated with Despatch working.   When transmission time approaches
the Despatch Position operator will clear the conference network so that
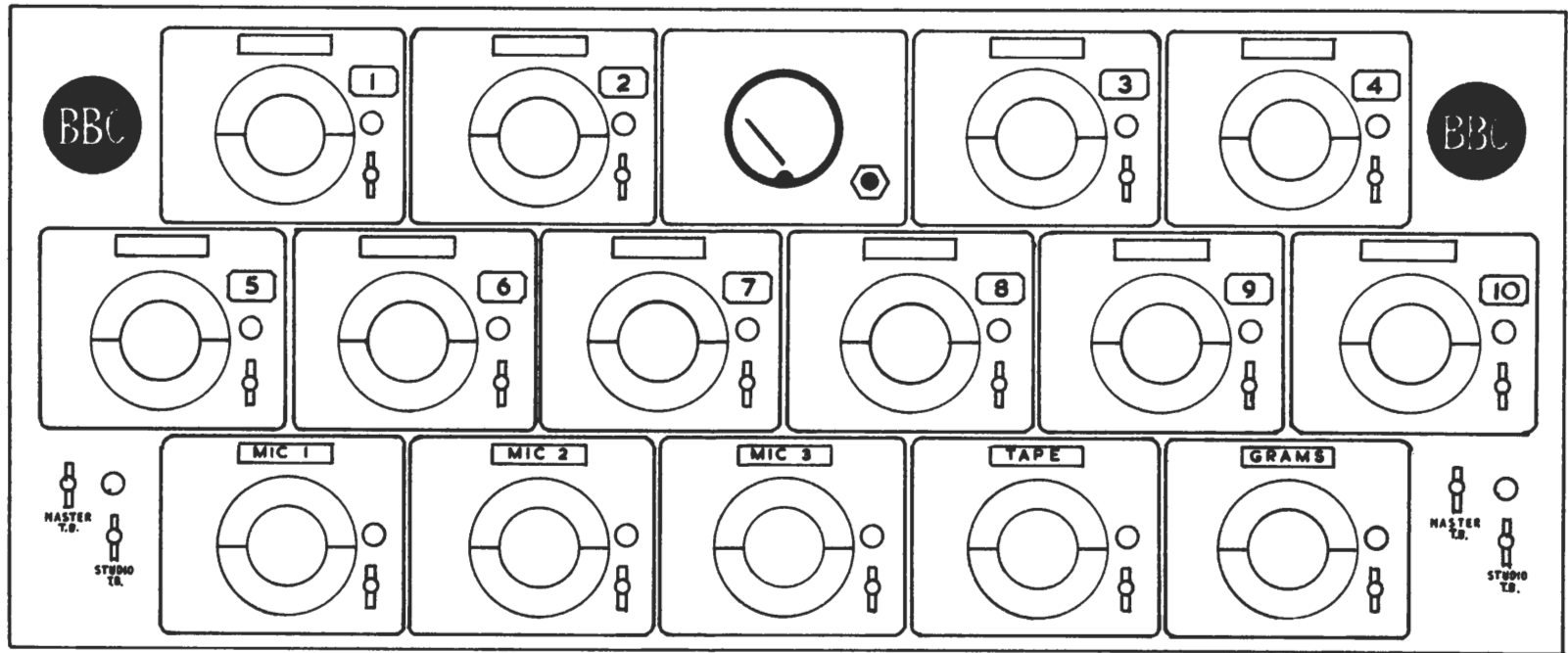3B can inject cue into conference.
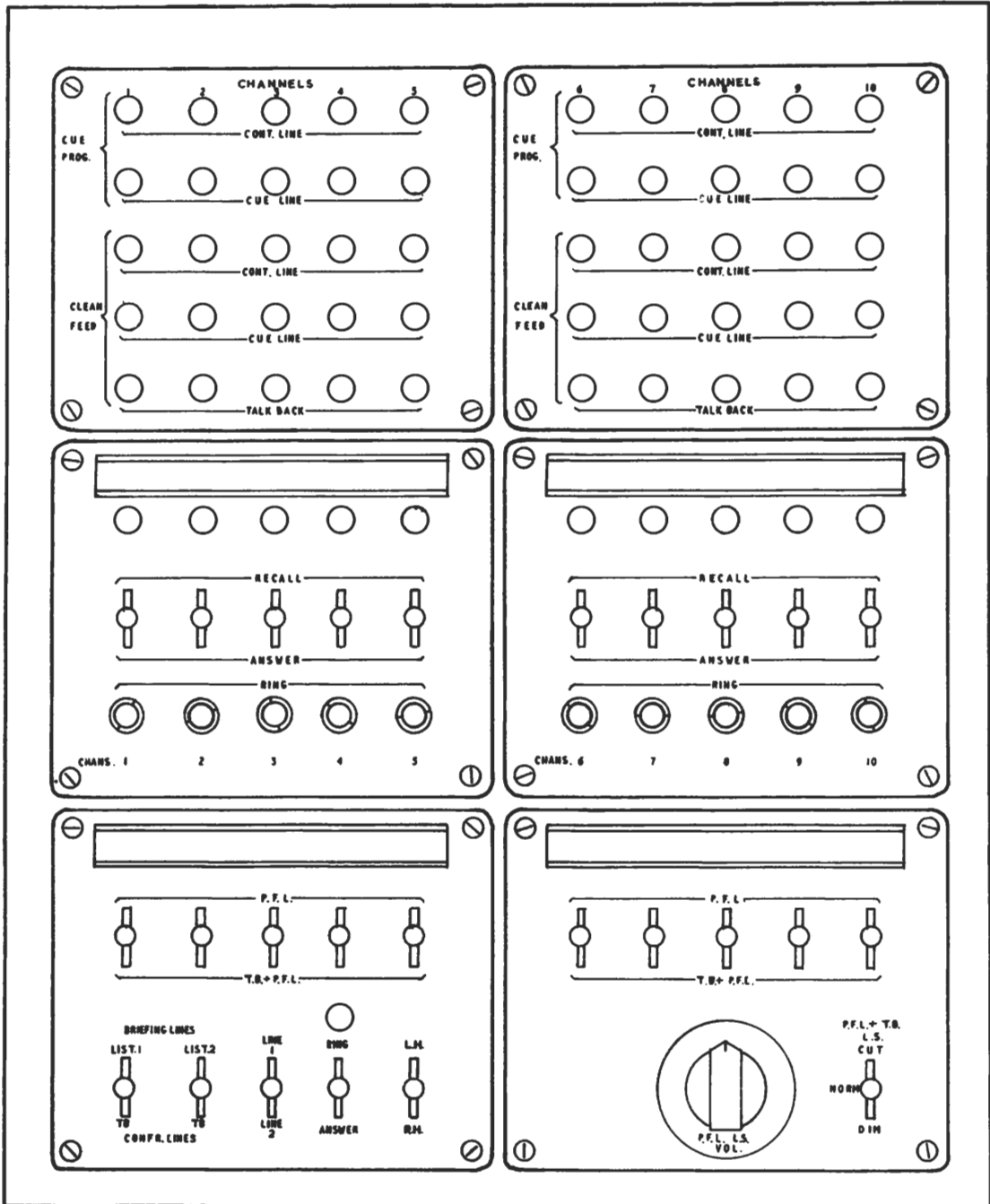
SIMPLIFIED BLOCK SCHEMATIC OF STUDIO 3.B.
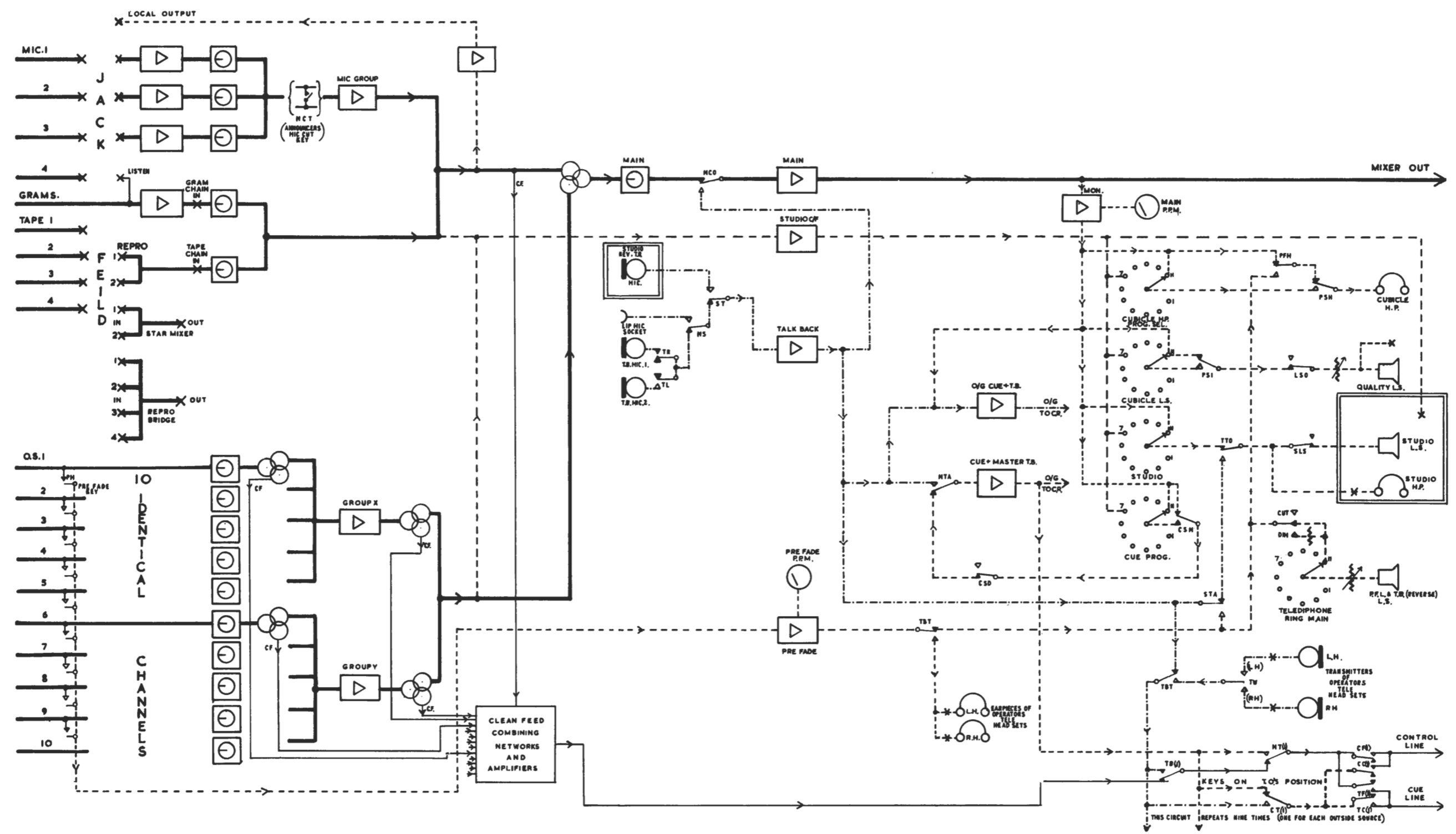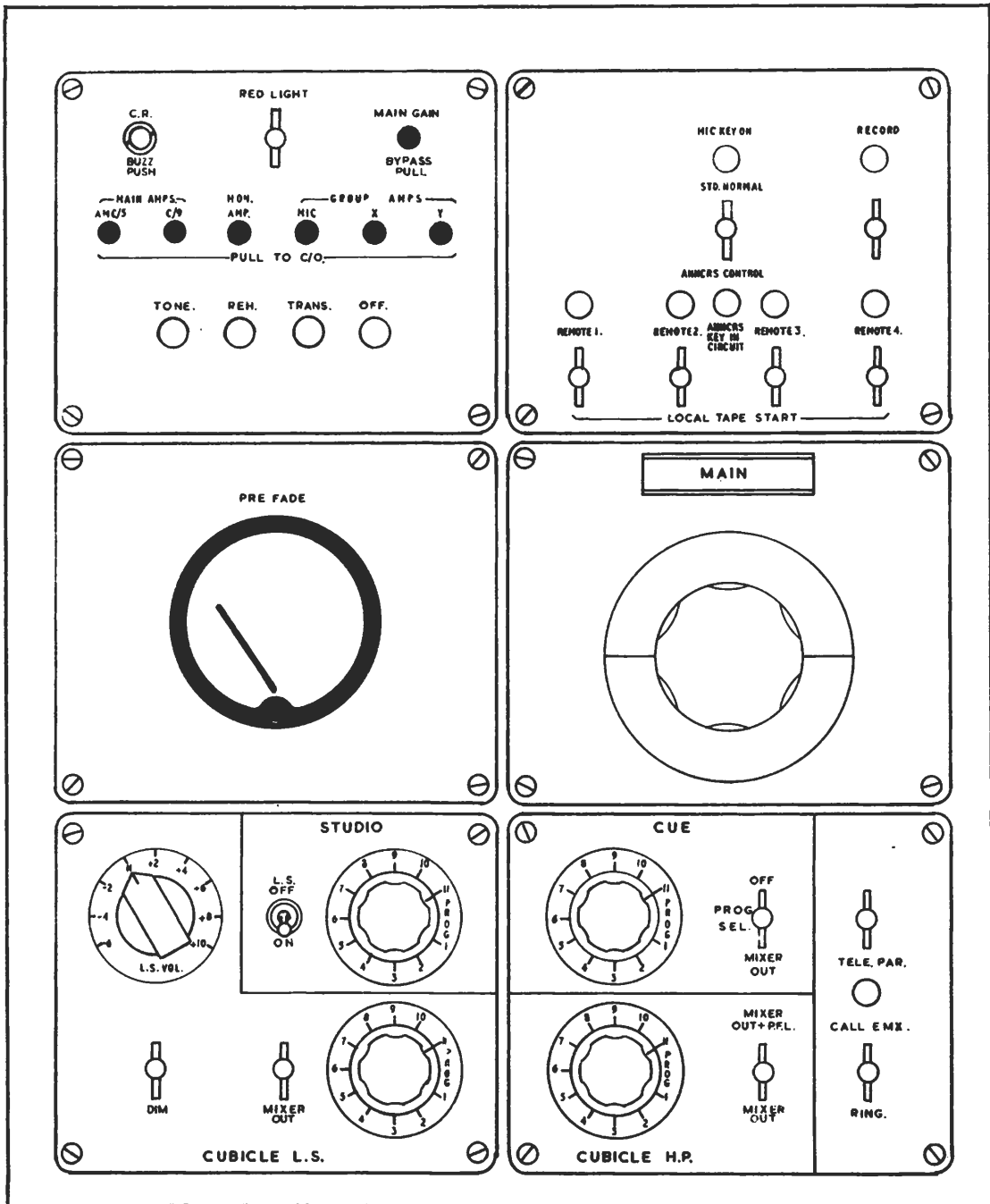
STUDIO 3.B. LEFT HAND PANEL.

STUDIO 3B. CENTRE PANEL LAYOUT

S.S. FIG.3.
ISSUE.I. NOV. 61.

STUDIO 3.B. RIGHT HAND PANEL

MARCH 1962

STUDIO 3C

3C is primarily a newsreading studio and is therefore equipped with 2 microphones hung side by side over the table.   An announcers mic. control box similar to 3B is provided.   When the studio is in announcer's control condition the mic. key locks up for off, middle position on, and non-locking cough cut down.   This key cuts both mics.   A sign is illuminated when either of the mics is live.

Reverse talk-back is provided to the cubicle.

Studio headphone listening (with volume control) can be either cue programme from the programme selector on the box, or talk-back via the studio programme selector on the cubicle control desk.

The control desk is a type B Mark I with 4 outside sources. These are tied to the 4 channels on the top row.   The bottom row has 2 mic. channels, tape and grams.

The centre channel of this row, with a red knob, is the clean feed channel for two-way programmes and is not controlled by the main fader.   The two-way clean feed key is alongside, and operating it to either C.F. or C.F. & T.T.B. will transfer the incoming O.S.1 to this channel.

Tele 1 is controlled by a key in the bottom left-hand corner of the panel, down rings the destination (or C.R. if one is not selected), up rings C.R. (recall).

Tele 2 has a sub-panel at the top right and has five sets of lights, keys and push buttons, one for each outside source and one to the Despatch Position in C.R.

DESPATCH WORKING

The keys for the two conference (briefing) circuits from the Despatch Position are on a box under the talk-back mic.   They are in two pairs, the first (Yellow) key gives talk-back into the conference circuit in the down position and headphone listening in the up position.   The second (Grey) key calls the despatch operator who can then break the studio from the conference circuit and converse directly via the talkback.

Note that this key operates signalling equipment in the Despatch Position, and the operator <u>must</u> answer in order to cancel this signal. If the key is operated accidentally, therefore, a break will occur in the conference network when the operator clears the signal.

The programme output of these circuits will be on channels O.S.3 and O.S.4. There are 4 cue keys to feed cue programme to the outside sources via either the cue or control lines. Note that these are inoperative in clean feed conditions.

PRE-TRANSMISSION TALK UPS

Studio 3C is regularly booked for preliminary talk-up with a distant contributor who will eventually be included live in the programme originating in another studio, usually in 3B, e.g. "Ten O'Clock". The contributor may have a straight piece or may join in discussion with a speaker in London. In either case it is desirable to have this talk-up in a separate studio in order that the rest of the rehearsal in 3B can continue undisturbed and also to provide more private and quiet conditions for the producer and/or local speaker than can be expected in the main studio. It is not customary to continue to use 3C for transmission since the continuity of the programme is disturbed if all those involved in the transmission are not brought together.

The handling of the talk-up in 3C will depend largely on whether or not Foreign News staff wish to join the programme conference or use the circuit for other purposes (e.g. recording a despatch).

The notes which follow are, therefore, related to this requirement.

A.   FOREIGN NEWS NOT PARTICIPATING

This is the simplest case and Control Room will simply switch the distant contributor to 3C O.S.1 at the booked time.

If the circuit is incoming via Radio Terminal (RT), Trans Atlantic Terminal (TAT) or Continental Trunks, it is usual - but not imperative - to return clean feed to the distant end: on the other hand, for circuits originating in this country it is unnecessary (technically) to employ clean feed although no harm is done if this condition is set up at the specific request of the contributor.

The return feedback circuit is tied to levels 3 and 4 of the source selection switch and as soon as the source is switched to 3C no further action is required by the Control Room to set up the clean feed condition. Hence the decision whether or not to employ clean feed now rests entirely with the S.M. and on his decision the feed to levels 3 and 4 will consist either of clean feed (with or without talkback) or cue programme/talkback. Control Room will, of course, advise in cases of doubt and when the use of clean feed is not a technical necessity the S.M. should check the wishes of the distant

contributor when contact has been established and be guided by him.

The two conditions will now be considered.

1. Clean Feed Condition

    (a) If the equipment is kept in the "rehearsal" condition
         throughout, talkback is available (yellow key) in either
         the "Clean Feed" (down) or CF/TTB (up) position of the key.

    (b) It is unnecessary to operate the green key which directs cue
         programme to cue or control line.   (In fact, cue programme
         cannot be sent from the studio programme selection switch
         in 3C when the clean feed condition is established.   However,
         the facility will be provided in due course).

    (c) If the producer and/or local contributor wish to talk from
         the studio the appropriate microphone channel should be
         opened, together with the "red" channel: the H.P. points
         in the studio (and cubicle) are automatically connected to
         the incoming circuit only and thus a "clean feed" condition
         is also established at the local end.

    (d) The clean feed and studio talkback keys operate separately
         and if the S.M. wishes to speak to both ends simultaneously
         both keys should pressed.

2. "Non Clean Feed" Condition

    (a) In this case it is necessary to operate the cue key for the
         channel concerned (up - "cue to cue line" levels 3 and 4:
         down - "cue to control line" levels 5 and 6) and Control Room
         will advise on the type of return circuit which is being used.

    (b) Local microphone channel and the appropriate OS fader should
         be opened if talk-up from the studio is required.

    (c) When the cue key has been operated the distant contributor
         will receive cue programme as selected on the studio programme
         selector switch.   For talk-up this should, of course, be on
         point 11 so that the distant end will hear the local contributor
         or talkback.

    (d) The H.P. points in the studio also receive the output of the
         studio programme selector.

    (e) If the control line is in use for the cue circuit it is
         important to remember that the telephone answer key associated
         with the outside source will cut cue programme (and talkback)
         if it is left in the down (answer) condition.

B.   FOREIGN NEWS JOINING IN CONFERENCE

1.   If members of Foreign News staff wish to join in the talk-up it
     is much simpler if they simply join the S.M. in 3C cubicle and
     speak to the distant end as necessary by using the talkback key.

2.   There may be occasions when this is not possible and other centres,
     such as Bush or AP, may wish to join the conference: further-
     more, Foreign Traffic may wish to use the circuit at some stage
     for recording to H30.   In these circumstances, despatch working
     must be employed and the focal point of control passes from the
     S.M. in 3C to the TO in the Control Room Despatch Position.
     Note carefully:

     (a)   the distant contributor will be selected by the Despatch
           Position operator into one of his four conference networks.
           3C should not expect to receive the contributor on an outside
           source channel and the most serious confusion will arise if
           this if inadvertently done.

     (b)   the normal programme output (levels 1 and 2) of 3C will be
           brought into the conference network by means of the "Free
           Channel Select" switch in the Despatch Position and thus 3C
           can speak into conference from either the studio or by
           means of the normal talkback key in the cubicle.

     (c)   studio and cubicle should monitor the conference network on
           the normal feedback line (point 10 on programme selectors)
           and because the conference network employs clean feed
           circuits throughout, 3C will not hear themselves returning
           on this point.   Since the distant contributor is not
           available on the panel in 3C the question of whether or
           not to select "clean feed" working does not arise.

     (d)   when 3C is being used simply as "another source" into the
           conference network the keys on the subsidiary box on the
           right of the desk are inoperative and irrelevant.
           Telephone communication to the Despatch Position is via
           the normal source/route tele.   (Left-hand, No.1) and
           not on the circuit to the right of OS4 telephone circuits.

     (e)   there is no possibility (or indeed, any necessity) to feed
           cue programme into conference and it must be emphasised
           that when 3C is selected into conference in this way the
           conditions are quite different to those which apply when
           the distant contributor is expected to do a live insert into
           a programme originating in 3C (e.g. an insert into a News
           broadcast).

In the latter case, the normal routine for despatch
working applies, (see Page S4.1) and must be established
before the News broadcast begins.

The Producer or S.M. in 3B may wish to monitor the talk-up and
details of this are given in Instruction S3.11 and 12.

BBC

BBC

TONE   REH   TRANS   OFF

C.R.

MAIN GAIN   MAIN AMP   MON AMP

BY-PASS PULL   C/O PULL   BY-PASS PULL

RED LIGHT

LOCAL   LOCAL   REC

START

CUE PROGRAMME KEYS
FEEDBACK LINES
OS1   OS2   OS3   OS4
CONTROL LINES

CUE PROG.

STD. NORMAL

MIC ON   ANNCRS.   ANNCRS.
CONTROL CIRCUIT

OS1   OS2   OS3   OS4   PRESENTATION POSITION

RECALL

ANSWER

RING

P.F.

MAIN	O.S.1	O.S.2	O.S.3	O.S.4

STUDIO

CUBICLE

L.S. DIM   STD. OUT

MIC.1	MIC. 2	INC. CONT.	TAPE	GRAMS

STUDIO T.B.

RING CR

RING DEST.

CE + T.T.B.

CLEAN FEED

C.E. T.B.
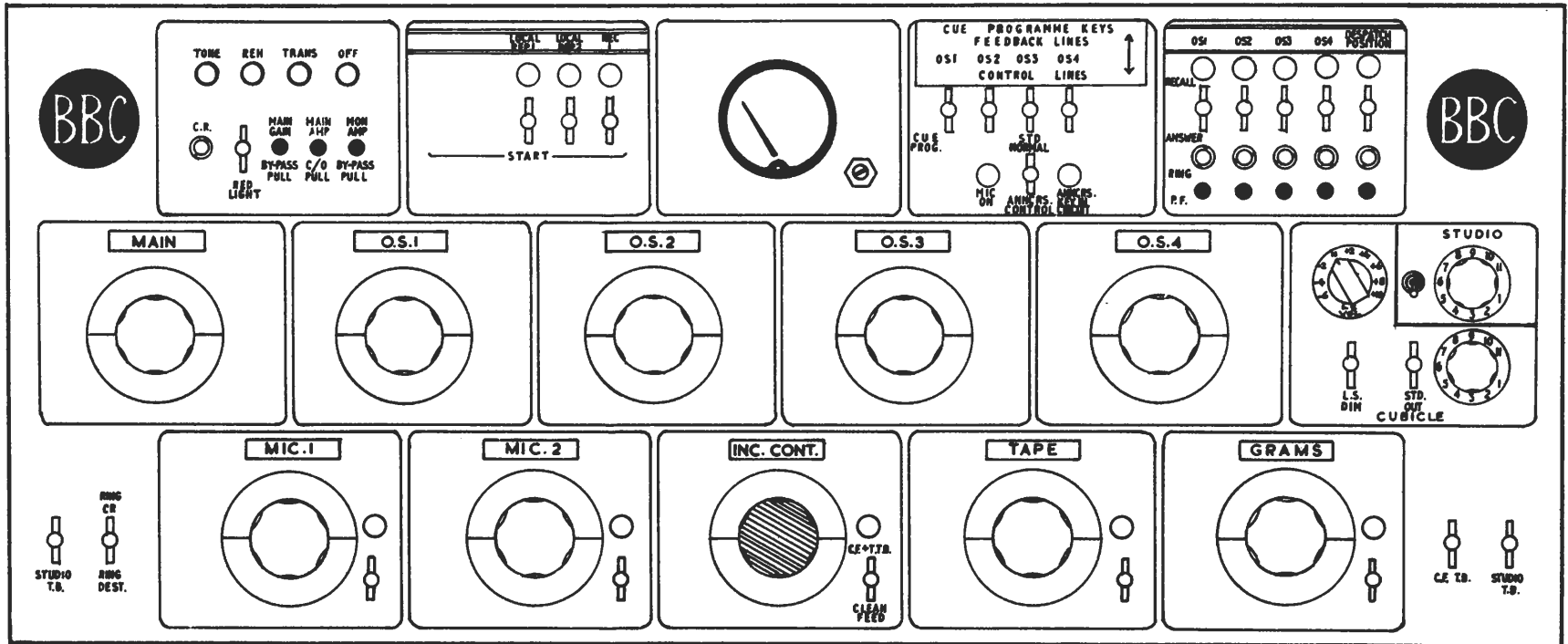
STUDIO T.B.

STUDIO 3C PANEL LAYOUT

STUDIO B1

B1 is now back in service in a modified form as a talks/gram studio.   The old
Light Programme Continuity studio is now used in conjunction with B1 panel and
has 2 mic. points.   Mic 1 is slung over the table.   There are now 1 TD/7,
1 RP2/1 and 2 DRD/5's; 2 tape sockets have also been fitted.   The old announcer's
desk is still in the cubicle, but is not in operational use.   The provision for
the announcer's lip mic. has been deleted.   12 outside source lines have been
retained (although the panel has room for 24) and could still be booked if 1A
or 3B were not available, but as they are not connected to switches in the
Source Multiple and must all be plugged by Control Room, this use is likely
to be very limited.

However, a short description of the Outside Source facilities may prove useful.
There are 6 channels divided into 2 groups, red and blue, with appropriate
coloured knobs.   Each channel has 4 push buttons and 4 lamps (white, green,
red, blue), and 4 sources (a, b, c, d) can be plugged to the channel.   One
source can then be selected by the push buttons and the corresponding lamp
will light.   This source can then be faded up.   If the next source to be
used is on the same channel, the button can be pressed without affecting the
source faded up.   When the channel is faded out the lamps will change and
the new source is automatically connected.

On the right-hand panel there are 24 keys, coloured to correspond with the
push buttons and lamps.   In the mid position they feed cue down the Control
Line to the outside source.   (Cue programme is selected by the studio
programme selector)   The up position is pre-fade and the down is individual
talk-back.

The prefade is on the cubicle L.S. in rehearsal conditions, and also in
transmission conditions if the L.S. is switched to TRANS. P.F.L. Prefade
also appears on the desk headphones if the white key on the left-hand
panel is down.

Also Prefade is switched to the desk headphones when an individual
talk-back key is used thus giving 2-way communication.

Only one individual talk-back key can be used at once, the master talk-back
replaces cue programme on all outside sources.

A lip mic. can be substituted for the talk-back mic. and is plugged to a skirting F. & E. socket at the left of the desk. When this is in use the cubicle L.S. is not dimmed by the use of talk-back.

There is one outside source telephone and this is switched to the desired source by the T.O. in the other cubicle. A talk-back system to him is provided on the right of the panel.

The 4 independent channels W, X, Y, Z, are now tied to Mic. 1, Mic. 2, TAPE and GRAMS.

The cue keys on channels W and X both work the studio cue light, those on Y and Z are the Red and Blue channels are disconnected.

The Red light key now only applies the local red light and cannot be used to signal other studios.

LEEVERS-RICH REPRODUCER   JUNE 1961

DECK LAYOUT:

At the back, between the 2 spools, is the mains ON-OFF switch and
indicator lamp. The spool centres are European standard and N.A.B.
bosses are provided.   These have been machined down so that the
spool can be dropped over the boss in situ, thus speeding up spool
changing.   By unscrewing the screw in the centre of the turn-buckle,
the assembly can be removed to permit the use of cine spools.
The cine spools will prove to be a rather slack fit as the makers
intended that the screw should be replaced to lock the cine spool on.
However, this is too cumbersome for most of our work and very little
harm seems to result from omitting the screw.   In front of the
left-hand spool is a small pulley, which is spring-loaded sideways
to provide some tape tension.   The tape comes off the spool
round this pulley clockwise and then round a larger pulley, with
stroboscopic markings on top, in an anticlockwise direction.
Next across the front of the head block and tape lifting guides
to the capstan.   This is half-shrouded as it has a top bearing.
The tape has to be manoeuvred between the open side of the shroud
and the pinch wheel and clock-wise round the pulley that drives
the timing indication and on to the take-up spool.

The timing indication is calibrated for 15" per.sec. only and in
minutes and $\frac{1}{10}$ of a minute!   It can be reset to zero by a white
thumb wheel at the side.

The SPOOL/PLAY switch is on the right of the deck and the positions
are self-explanatory. In a matching position on the left is the
spool control knob which controls the direction and speed of the
tape during fast winds.   To the left of the head block is the
speed change switch marked 15" x 7½".

There is a small catch in front of the heads marked LIFT and CANCEL.
In the CANCEL position, this moves the second tape lifting guide in,
so that the tape is brought into contact with the reproduce head
when spooling, to permit setting up and editing.   The catch remains

in position and cannot be restored to LIFT without switching
the machine to PLAY.   To the left and above the spool control
is a toggle switch marked LOCAL and REMOTE.   This is set to
LOCAL at all times except when it is desired to start the
machine from the panel.

PANEL LAYOUT:

On a sloping panel in front of the deck are, from left to
right, the OUTPUT FADER, a rotary switch marked A.E.R.,
DIRECT and BOTH.   In the DIRECT position the output is
fed to the studio jack field, in A.E.R. to the A.E.R. fader
on the panel, and then to a speaker in the studio, (if the
studio has these facilities) and in BOTH to the two together.

In the middle of the sloping panel is a V.U. meter which is
connected via a selection switch which also feeds the
monitor amplifier.   This is marked INPUT, OFF and OUTPUT.
The INPUT position is used during recording, if the machine
is so equipped.   The OUTPUT position gives the output of
the machine before the fader, and so can be used for setting
up and editing.   The jacks between the switch and the speaker
are for monitoring.   These are break jacks which cut the
monitor speaker when the headphone jack plug is inserted.

AMPLIFIERS:

On the front of the machine there are two amplifiers.   The
one in the middle is the repro. line amplifier.   (Although at
the moment it is labelled "MONITOR").   The switch marked,
$7\frac{1}{2}$", DIRECT, 15" SEC. is the frequency correction and must be
set to correspond with the speed change switch on the deck.
In the DIRECT position there will be no output to the panel.
Below this switch there are two rubber grommets through which
two screw heads can be seen.   These should not be moved as they
alter the frequency correction networks.

In the centre, covered by a plastic cap, is a screwdriver
adjustment which controls the volume sent to line.   The other
amplifier, on the right of the machine, is the monitor amplifier
and the knob controls the speaker or headphone volume.

REPRODUCING INSTRUCTIONS:

The machine is switched on and the tape laced up as previously
described.   The spool/play switch is moved to PLAY and the
output fader faded up.   With the panel controls set to normal
the tone on the beginning of the tape should read 4 on the P.P.M.
and -2 db on the V.U. meter.   If it does not, the repro. amplifier
gain control can be adjusted with a screwdriver to give a P.P.M.
reading of 4, ignoring the V.U. meter reading.   Any large
discrepancies should be reported to Maintainance.

To set up the tape is played through until the wanted material
is located.   With the machine switched to SPOOL, the spool
control in the middle of its travel and the lifting catch to
CANCEL, the tape can be moved slowly backwards and forwards
past the repro. head by rotating the spools with the fingers.
When the exact point has been found a yellow pencil mark can
be made on the tape on the right-hand tape lifting guide.
If the tape is set back so that this mark is just to the left
of the head block a clean start can be assured when switching
to PLAY.   If a closer set up on 7½" sec. is required on speech,
then the mark may be set back to the left-hand lifting guide.

When the tape is correctly set it may be manually started from
the machine by switching to PLAY and fading up the machine fader,
or remotely started by the panel operator.   In this case, the
local/remote switch must be first set to REMOTE, then the machine
switched to PLAY and the fader faded up last of all.   Switching
to play with the fader up may cause a plop on the circuit if the
panel fader is up for the other machine.   When both the switches
are set a green light comes up on the panel, under the key for the
machine.

If the key is then depressed the machine will start.   Note that
it is possible to stop and spool the machine even when it has been
started from the panel and the switch is still to REMOTE.

When spooling at speed, great care must be taken not to switch
from SPOOL to PLAY without waiting for the machine to come to rest
in between, otherwise large quantities of tape may spill off the
reels and twist up and jam in very inaccessible places.   If any
loops form when switching off they must be tightened up by hand
before switching to play or spool again.

Also when spooling fast the tape should be slowed down by rotating
the spool control to the opposite direction before switching to OFF.
If this is not done there is a grave risk of stretching the tape,
especially when small spools are in use.   There have been instances
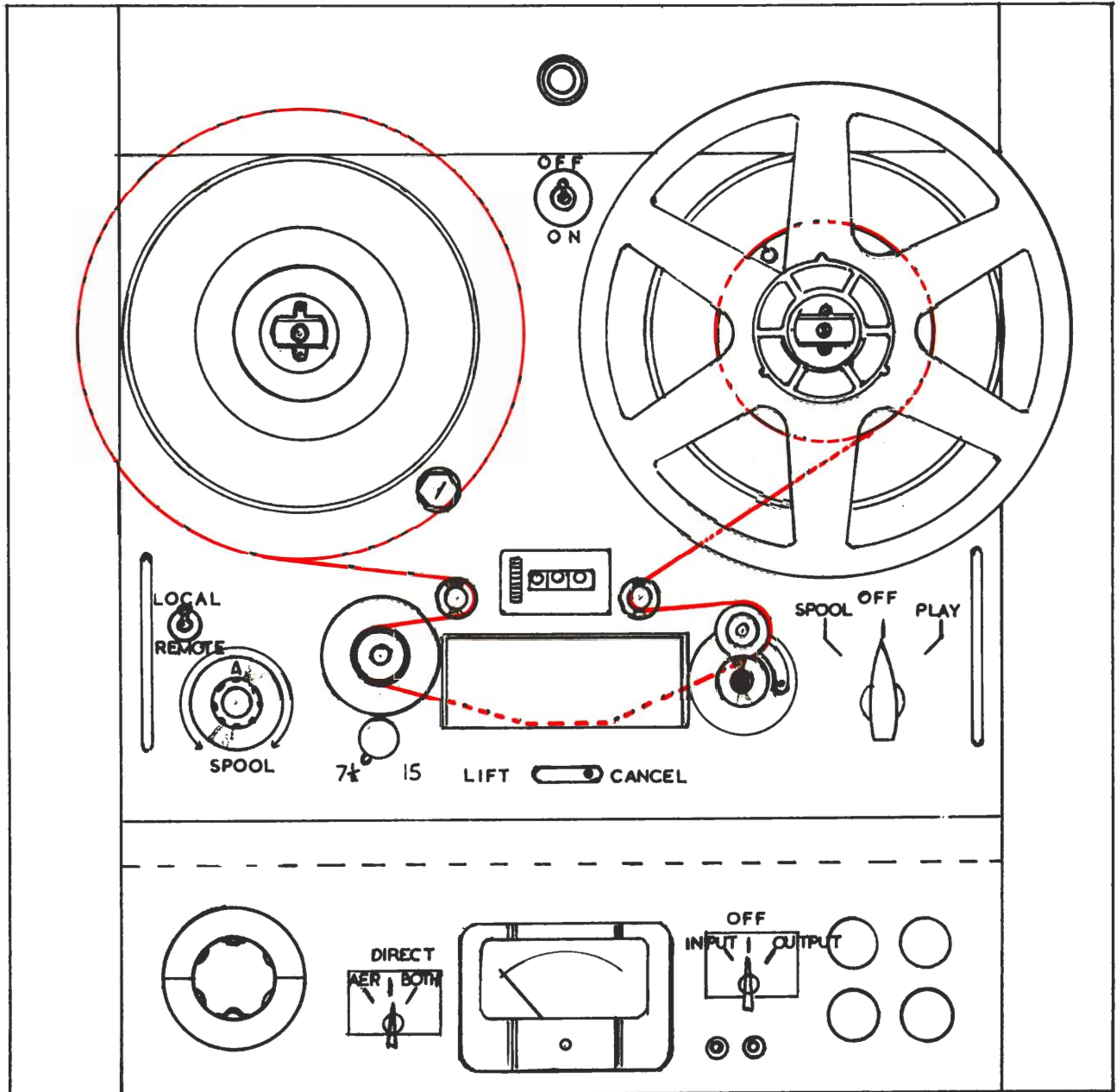of irreparable damage to tapes when these precautions have not been
taken.

A point to remember about the monitor circuit is that when the
headphone jack plug is withdrawn the monitor speaker is connected.
Therefore, after setting up on headphones switch the monitor off,
otherwise when the machine is started for reproduction the output
will be heard on the monitor speaker as well as the main cubicle
speaker and this may be distracting.

Another pitfall is the fact that there is a dead position on the
speed change switch between $7\frac{1}{2}$ and 15 which switches off the
capstan motor.   Also, switching to the position marked DIRECT,
between $7\frac{1}{2}$ and 15, on the frequency correction switch results in
no output.

MODIFICATIONS

In studio L2 the A.E.R. position of the switch has been utilized
to give a direct feed to the recording channel H6.   This feed
does not go through the studio panel and is intended for dubbing
tapes whilst the studio is on transmission.   The BOTH position
of the switch is inoperative.

PILOT LAMP

OFF
ON

LOCAL

REMOTE

A

SPOOL

SPOOL OFF PLAY

7½ 15 LIFT CANCEL

DIRECT

AER BOTH

OFF
INPUT OUTPUT

OUTPUT
FADER

V.U. METER H/P JACKS MONITOR
L.S.

LEEVERS RICH TAPE MACHINE
LAY OUT
R.I.S.

CENTRAL PROGRAMME OPERATIONS INSTRUCTION R2

TR/90 MACHINES

PREFACE

The EMI TR/90 tape machine has been in use for some years now, mainly as a
trolley mounted XP Unit.   A formal instruction would therefore seem to be
superfluous, but the following notes may serve as a useful reminder of the
functions of the various controls.   For convenience they are presented in
tabular form.

DECK CONTROLS	Condition for Repro.	Condition for Record
1) LOCAL/REMOTE switch - In the LOCAL position the machine is controlled by the SPOOL, REPLAY and OFF buttons on the deck. In the REMOTE position these are inoperative and so it is only used where suitable remote control facilities exist.	LOCAL	LOCAL
2) CINE/N.A.B. switch - varies the tape tension and N.A.B. is used if either spool is over 7 inches diameter.	usually N.A.B.	usually N.A.B.
3) SPOOLING ARM - is only used when rewinding tapes for storage, to give an even wind. It should not be left in contact with the tape the whole time, especially when spooling on at full speed.	withdrawn	withdrawn
4) SPOOL BUTTON - releases the brakes and puts the spool control in circuit.		
5) REPLAY BUTTON - releases the brakes and applies voltage to the spool motors so that they tend to rotate in opposite directions and thus tension the tape. At the same time the pressure roller is pressed against the capstan and thus drives the tape, forward. The tape lifting guides also move inwards and allow the tape to contact the head.	Press to start	Press to start (in conjunction with RECORD BUTTON).
6) OFF BUTTON - releases the pressure roller, applies the brakes and disconnects the spool motors.	Press to stop	Press to stop
7) SPEED CHANGE SWITCH - gives $7\frac{1}{2}$ or 15 ins./sec. as indicated by pilot lamps on the head cover. A screwdriver is needed to operate it.	As required	As required
8) SPOOL CONTROL KNOB - When the SPOOL BUTTON is pressed this varies the voltage on the spool motors so that the tape can run either way at varying speed.		

DECK CONTROLS (Cont'd)	Condition for Repro.	Condition for Record
9) "END OF TAPE" SWITCH ARM - switches the capstan motor on when pulled to the left by the tape tension. If the machine is not to be used for some time during rehearsal, the tape should be slackened off to release the arm and stop the motor to prevent overheating. However, be sure to tension the tape again before pressing the REPLAY button or bad snatching will occur.	Held to left by tape tension	Held to left by tape tension
10) TAPE LIFTING GUIDE CATCH - normally in the SPOOL condition the tape lifting guides keep the tape away from the heads to prevent wear. However, in order to hear the tape for editing and setting-up they can be pressed in and held by a catch.	Released	Released
11) TIMING INDICATOR - shows the amount of tape used in minutes at $7\frac{1}{2}$ ins./sec. in black and 15 ins./sec. in red.	Set to Zero at start of tape.	Set to Zero at start of tape.

TOP PANEL	Condition for Repro.	Condition for Record
1) LINE INPUT JACK	Do not use	Do not use
2) REPLAY PRE-SET GAIN CONTROLS - marked 15 and 7.5. These are adjusted so that line-up tone on a tape gives a V.U. meter reading of -2. This should give a P.P.M. reading of about 4 with the panel controls at normal settings. Do not work with the repro gain flat out or distortion will occur. Compensate for any low level on the studio panel or inform maintainance if very low. This is the only pre-set control that may be adjusted and the cover plate is drilled to permit this.	LINED UP TO GIVE V.U. METER READING OF -2 ON ZERO LEVEL LINE-UP TONE TAPE.	LINE UP TO GIVE V.U. METER READING OF -2 ON ZERO LEVEL LINE-UP TONE TAPE.
3) LINE OUTPUT JACK	Do not use	Do not use

SECOND PANEL	Condition for Repro.	Condition for Record
1) RECORD GAIN CONTROL – sets the level for recording		As set on line up. Usually between 5 & 7
2) METER SWITCH – marked M, E, B1, and B2. In M the V.U. meter is connected to METER KEY. E measures erase current, B bias current and B2 bias current if the machine is equipped for stereophonic recording.	M	M
3) METER KEY – marked REC, LINE IN, and LINE OUT. In REC the meter measures across the record head (record amplifier output) LINE IN, record amplifier input and LINE OUT, the repro. amplifier output.	LINE OUT	LINE OUT
4) MONITOR KEY – connects the monitor amplifier in the same way as meter key connects the meter.	LINE OUT	LINE OUT
5) MONITOR SWITCH – cuts input to monitor amplifier.	ON	ON
6) MONITOR GAIN – controls headphone volume	about 6-7	about 6-7
7) RECORD BUTTON – if pressed in conjunction with the REPLAY BUTTON on the deck the red pilot light is illuminated instead of the green and the erase and record heads are brought into circuit.		Press to record (with REPLAY button)
8) L.S. JACK – This is a low impedance ($5\,\Omega$) output for feeding direct to the speech coil of a monitor speaker. It is not a standard G.P.O. jack and no attempt should be made to use a double-ender or headphones in it.	Do not use (Unless machine is fitted with monitor L.S.)	Do not use

THIRD PANEL	Condition for Repro.	Condition for Record
1) OUTPUT SWITCH - this is a 5 position switch and the positions are:- CTY. USE - for use in continuity suites. RECORD - for recording studio output via the F. & E. plug and socket. REPRO - machine output is fed to the studio jackfield via the F. & E. plug and socket.	SWITCHED TO REPRO. IN STUDIOS EQUIPPED WITH F. & E. SOCKETS, OR STD. CH. IN STUDIOS EQUIPPED WITH PAINTON TYPE	SWITCHED TO RECORD IN STUDIOS EQUIPPED WITH F. & E. SOCKETS OR STD. CH. IN STUDIOS EQUIPPED WITH PAINTON TYPE
ACOUSTIC EFFECTS - the machine output is fed direct into the A.E.R. chain. STD. CH. - standard channel - for use in recording channels and also in studios where the F. & E. plugs and sockets have been replaced by 24 way Painton types.	SWITCH TO A.E.R. ("Both" facility not normally available)	
2) INPUT JACK &		
3) OUTPUT JACK - for use in locations where no F. & E. or Painton sockets are provided.		
4) REPRO FADER	FADED UP	FADED OUT. (If this is faded up in a studio with Painton Sockets and the machine is recording on STD. CH., there is a danger that feed back will occur.)

BOTTOM PANEL

This is the mains unit panel and carries the mains switch, indicator lamp and
fuses.   The fuses are double pole (one in each leg of the mains) and there is
no spare.   The rating is 5 amps.

The mains voltage selector is under a cover on the left, but is not likely to
need adjustment unless the machine has been moved from one building to another.
The pre-set controls under the other cover are for minimizing hum and should not
be moved.

LINE-UP FOR TR90 MACHINES

REPRO LINE-UP:

A standard line-up tape (on tone at the start of the programme tape) is played and the REPRO GAIN CONTROL for the appropriate speed adjusted to give a V.U. meter reading of -2 on LINE OUT.
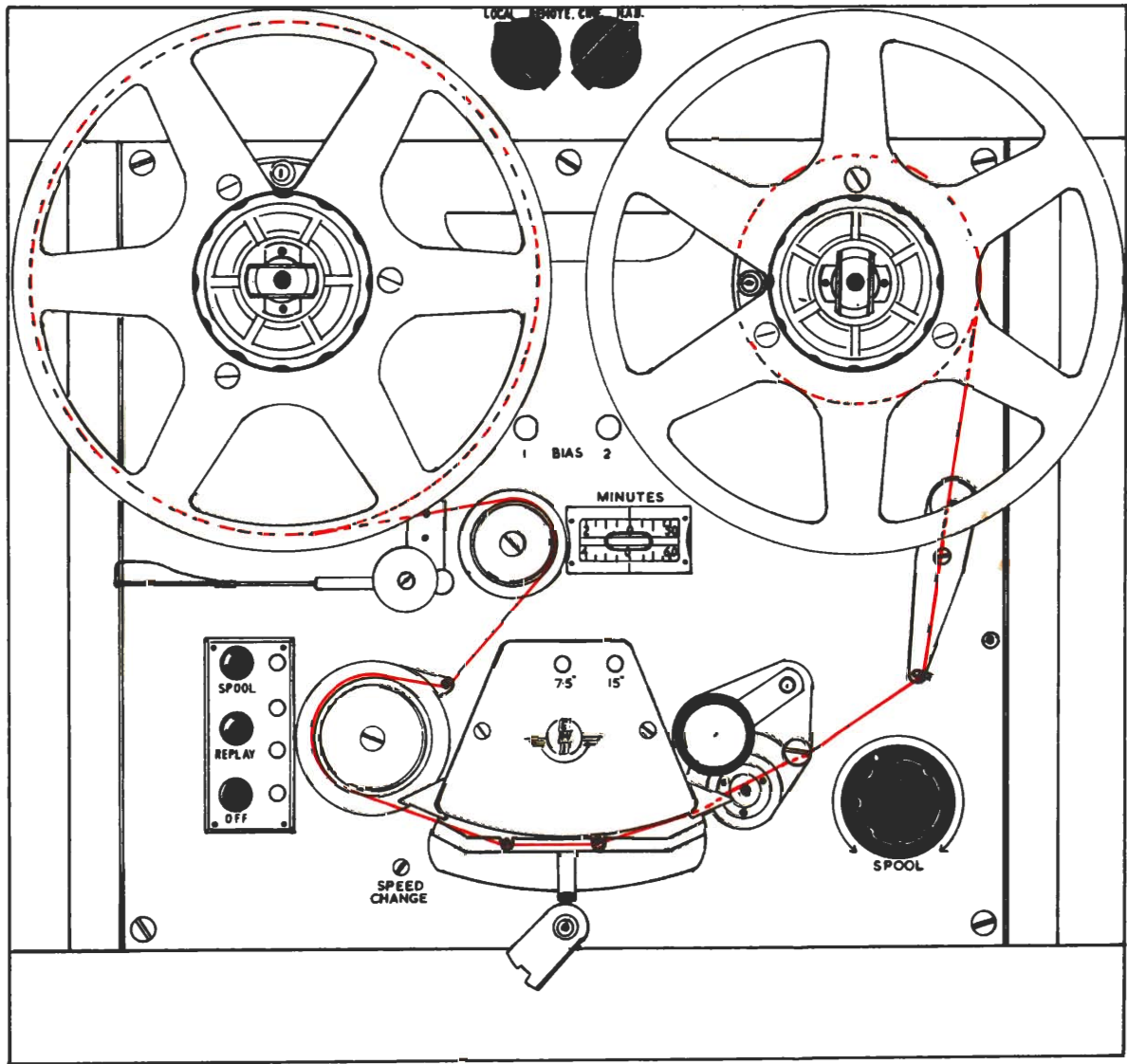
RECORDING LINE-UP:

With the repro chain lined up from a standard line-up tape, record tone from source and adjust RECORD GAIN CONTROL to give a V.U. meter reading of -2. (Still on LINE OUT).

Then move the meter switch to RECORD and check the V.U. meter reading. If any subsequent recording is taken from another source the RECORD GAIN must be adjusted on the new sources tone to give the same V.U. meter reading.

N.B.: If the tape is of normal sensitivity and the V.U. meter gain is correctly set, the LINE OUT and RECORD readings will be the same (-2).
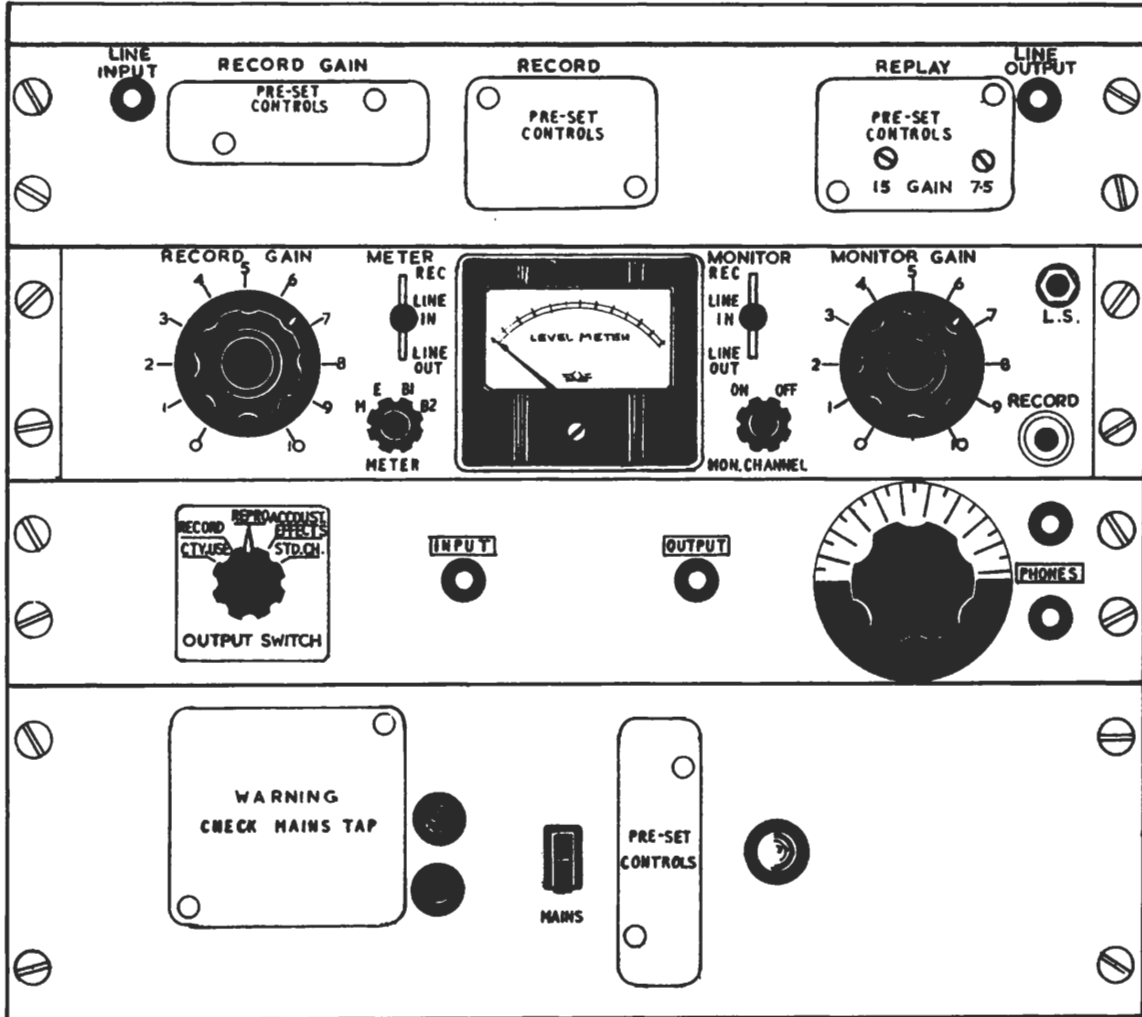
T.R. 90.

DECK LAY OUT.

LOCAL REMOTE. CUE ‛A.B.

BIAS

1   2

MINUTES

SPOOL

REPLAY

OFF

7.5"   15"

SPEED
CHANGE

SPOOL

R.2. FIG. 1.

T.R. 9 O.

AMPLIFIER   PANEL   LAY OUT.

LINE INPUT

RECORD GAIN — PRE-SET CONTROLS

RECORD — PRE-SET CONTROLS

REPLAY — PRE-SET CONTROLS — 15 GAIN — 7.5

LINE OUTPUT

RECORD GAIN — 1 2 3 4 5 6 7 8 9 10

METER — REC — LINE IN — LINE OUT

METER — E B1 M B2

LEVEL METER

MONITOR — REC — LINE IN — LINE OUT — ON OFF — MON. CHANNEL

MONITOR GAIN — 1 2 3 4 5 6 7 8 9 10

L.S.

RECORD

OUTPUT SWITCH — RECORD CTY. USE — REPRO — ACOUST. EFFECTS — STD. CH.

INPUT

OUTPUT

PHONES

WARNING CHECK MAINS TAP

MAINS

PRE-SET CONTROLS

R.2.   FIG. 2.

MARCH 1962

NEW B.H. CONTROL ROOM

The change-over from the old manual Control Room, which used plugs and cords, to the new Control Room using automatic switches is now almost complete, and the following notes are a simplified description of the operation of the new equipment, together with a summary of the extra facilities which may be available in studios.

The new Control Room in many ways resembles a modern Automatic Telephone Exchange, and in consequence many of the terms used are those found in telephone practice, e.g. outlet, level, route, etc.

The system employed is known as Source-Route switching and by its means any of 200 programme sources, together with their associated control lines and other facilities, can be switched to a number of destinations.   The sources are combined in a "Source Multiple", and each destination is provided with a set of switches, to which the multiple is connected.   Among the sources would be Studio outputs, Repro channels and Continuity outputs, and destinations would include Recording channels, Continuity, and Studio outside sources.   Hence it will be seen that a given location may appear both as Source and Destination. It is important, therefore, that the S.M. should be clear on which his programme is going, i.e. the Studio output is a source, and the Outside source channel a destination.

The heart of the new Control Room equipment is the Selector Room, in which, mounted on a series of bays, are a large number of motor driven uniselectors.

The uniselector is a multi way switch, having an arc of contacts, 52 in all, 50 of which are connected with programme circuits, the other two being concerned with the operation of the uniselector itself. Each contact is known as an outlet.   The switching is performed by a wiping arm which travels round the contact arc, driven by a high speed motor.   Sixteen sets of arcs and wipers form one switch, the wipers being ganged together so that they all move at once.   The different arcs are known as "levels".   When the selector is not in use, the wipers "home" on the first contact of the arc, one of the two

not connected with programme.   Operation of the Push Button equipment, either in the Control Room itself at the Miscellaneous Switching Position (M.S.P.), or at any other position where selection equipment is provided, such as a Continuity or Mixer Suite, puts a "marking" voltage on the particular outlets of the marking levels corresponding to the source required.

Operation of the appropriate "select" key for the route on which the source is to be selected will cause the motor of the uniselector to start.   The wipers will then rotate until they reach the outlet previously marked, when the marking voltage will cause the motor to stop.   The marked source will then appear on the desired route.   A further two levels are used to give visual indication back to the selecting position that the required source has, in fact, been selected.   In order to prevent unwanted sources appearing momentarily on the route as the wiper arm passes the other outlets on the bank, a muting relay prevents any programme from passing to the route until the selector has stopped.

The most complex sources, such as studios, mixers and despatch positions, need still more facilities, and so more levels are required for these.

The following list gives the possible switchable levels of a source:-

	Levels	1 & 2	Programme Pair
		3 & 4	Programme Feedback, cue, or monitoring of Remote Recordings, etc.
		5 & 6	Control Telephone, normally, or can be used for Clean feed, cue, or talkback from control positions.
		7	Telephone Switching circuits
		8	EMX Recall Signalling
		9	Spare
		10	Recording Remote Start
		11	Remote Record Indicator (or Remote Repro Indicator)
		12	Studio Red light, signalling (or Repro remote start)
		13 & 14	Source Code Indicator, lights
		15 & 16	Switch Control (marking)

The total number of sources available is 200 and these are combined into the "Source Multiple". This source multiple consists of three switch source multiples, designated A, B, and C/D. Every route selecting system has connections to all these "Source Multiple Levels".

Sources which use all the available levels are designated A and B sources, and there can be a maximum of 100 of these, 50 on each of two switches. The switches are known, obviously, as the A and B switches and the source coding will be the letter A or B followed by a number, 00 to 49. Typical A and B sources are studios, mixers and despatch positions.

Many other sources, however, will not require all the facilities available on the A and B sources. O.B. chains, Transatlantic Telephone (TAT), and Radio Terminal (RT) will not need such facilities as studio signalling and remote recording, and so a fewer number of source multiple levels will be used. In this case the levels are:-

        1 & 2)
        3 & 4)
        5 & 6) as before
        7 & 8)

Such sources are known as C sources, and are coded with the letter C and a number 00 to 49.

Even simpler sources must be allocated to inputs, sources consiting of a programme feed and feedback lines only. Examples of these are Home, Light and Third Distributions, Big Ben, G.T.S., and 1 Kc/s Tone. In these cases only four source multiple levels are employed:-

        9 & 10   Programme

        11 & 12   Feedback

The feedback circuit is present, but not normally used. These sources are termed D sources, and hence are coded with the letter D and a number, 00 to 49 as before.

Since the C and D sources require only 8 and 4 levels respectively, they can both be accommodated physically on one 16 level switch; having wipers so arranged that either the C or the D levels can be selected.

Indicating and marking on the C/D selectors are on selector levels 13/14; 15/16 as before, a change-over relay determing whether a C or D code is actually selected.

From the above it will be seen that every route will have three actual selector switches A, B and C/D and 200 sources will be available in all.

Protective circuits are arranged so that only one of the three selectors can be driven at one time, so that only one source can be selected.

As they are complex and simple sources, the former using many switchable levels and the latter only a few, so there must be complex and simple destinations.   Even if a source has the full facilities it can only use those which are also present at the destination.

All studios, continuities, and recording channels are complex destinations, and full facilities are available.   Simple destinations would include lines to Regions, where normally only programme and feedback circuits are provided.   Other facilities may be possible if specially booked, in which case Control Room would need to use either plugged connections or substitute switches having the required levels.

Each set of selector switches carries the full 200 outlets, and so it will be seen that any single source, e.g. Home Distribution, will be present on the source outlet, in this case D18, on every set of switches.   It is thus perfectly possible for a number of routes of destinations to be selected to the same source, any one of the 200, and this can involve certain dangers.   In the particular example quoted, if the source D18 was selected to an Outside source channel in a Mixer Suite, it would be possible, by the accidental insertion of a plug into the "Listen" jack on that channel, to feed other programme material into Home Distribution or even to short it out, thereby removing all programme from the complete SB Network.

If two routes select the same source on an A or B selector, all the signalling and control line circuits are joined together, as well as the programme circuits, and complete chaos can ensue.

> From the foregoing it will be seen that it is imperative
> that an S.M. does NOT operate source selection equipment
> unless he has been told to do so by Control Room, and
> given the necessary instructions so that errors do not
> occur.

Communication Facilities

In addition to the programme switching equipment, telephone communication equipment is provided via four Engineering Manual Exchanges (EMX), Main, SB, OB and TV.   The Main EMX enables control lines telephone communications to be established between 200 subscribers.   The exchange is of the cordless type, the connection between subscribers being made by a selector system operated by push buttons.   An indicator light shows when a given subscriber is engaged.

The Main EMX operates on the same control lines that are used on the Programme Selector Switches as far as studio and Mixer sources are concerned, and in the absence of any selection of a studio,normal control line working is possible from the studio to Main EMX.

When a studio has been selected to a given route, or an outside source
has been selected to a studio, the engaged light shows on the EMX indicator
board and normal ringing from the studio to its destination, e.g. Continuity,
on the left-hand (route) telephone will not ring EMX. The EMX operator will
not therefore answer in this case. Similarly normal ringing from the studio
on the right-hand (OS) telephone will only raise the outside source. EMX
can, however, be raised by ringing on the "EMX Recall" key, when the EMX
operator will put himself across the circuit and can join in conversation
from either or both ends. When he has finished, and clears his circuit,
the equipment reverts to two ended working.

In studios equipped for feeding cue programme to outside source control
lines, normal ringing on the telephone circuit will cause previously
selected cue programme to be removed, but this will automatically be
restored at the end of the conversation, when the telephone equipment is
cleared down. This applies to normal control line speech between studio
and route, or studio to outside source, and also to those occasions when
EMX is joining in a conversation; cue programme will not be restored
until destination and EMX have cleared down.

Under some circumstances it may be that the EMX operator himself is
not speaking on the line, but has used his exchange equipment to connect,
for example, an outside source to a studio other than the one to which
it is selected, in order, say to discuss a later programme. In this
case, when the conversation is completed, the EMX operator may not know
that his facility has been finished with, and will not clear the circuit,
so that cue programme is not restored. If this occurs, a further call
from studio to EMX is needed to request the operator to clear.