Vi 210

DOSSIER
NOUVELLES TECHNOLOGIES

(60 minutes)

L'Unité Production audiovisuelle de la Commission des Communautés européennes a préparé un dossier audiovisuel sur les nouvelles technologies développées dans le cadre des différents projets de recherche soutenus par la Communauté européenne (ESPRIT, SUPERNODE, BRITE/EURAM, BRUGEL, JET JOINT, ELSAM ...)

Le plan de montage du dossier video suit l'ordre des priorités du nouvel accord 1990-1994 sur la recherche européenne qui sera approuvé formellement par le Conseil des Ministres fin avril 1990.

Le dossier de 60 minutes comprend des images et des graphiques sur les sujets suivants :

- Technologies diffusantes (calculateurs parallèles, semi-conducteurs, lasers, super-conducteurs)
- Gestion des ressources naturelles (phytopathologie, embryogénèse et représentations graphiques des molécules, éoliennes, fusion nucléaire)
- Recherche appliquée (TVHD)
- Recherche fondamentale (sismologie des étoiles)
- Cinq graphiques qui illustrent les différents aspects de la recherche et du développement en Europe en comparaison avec les U.S.A. et le Japon.

Les moyens financiers dont dispose la recherche dans la Communauté sont réduits : 5,4 milliards d'écus pour 1990-1994.
C'est pourquoi l'effort de recherche du nouveau programme-cadre s'est concentré sur trois lignes d'actions prioritaires :
1. le développement des technologies diffusantes;
2. la gestion des ressources naturelles;
3. la valorisation des ressources intellectuelles;
ainsi que le soutien à la recherche appliquée et fondamentale.

C'est dans cet ordre de priorité que sont présentés les différents projets soutenus par la Communauté européenne.

LISTE DES PLANS

00'00" Générique de la communauté en 3 D.

1. *LES TECHNOLOGIES DIFFUSANTES*

A. TECHNOLOGIES DE L'INFORMATION ET DES COMMUNICATIONS

Le projet SUPERNODE qui réunissait les Universités de Grenoble et de Southampton, les société RSRE (U.K.), APSIS (FR), INMOS (U.K.) et Telmat (FR) a mis au point un système de calculateurs à l'architecture parallèle.
Un appareil - T 800 - a été réalisé.
Il regroupe 3.500 transistors et travaille à la vitesse de 1,5 MFLP.

TELMAT INFORMATIQUE
SOULTZ (FR)
CALCULATEURS PARALLÈLES

00'16" Extérieurs. Bâtiment TELMAT INFORMATIQUE
00'22" Test des cartes de transputer par ordinateur
01'02" Plan général T-NODE
T-NODE est un réseau de transputer entièrement reconfigurable, modulaire et extensible. Le transputer est construit autour d'un processeur 32 bits et peut exécuter de façon optimale des traitements parallèles.
L'architecture T-NODE est issue des techniques developpées par les partenaires français et anglais du projet P1085 du programme ESPRIT (European Strategic Programme for Research in Information Technology - Programme stratégique européen de recherche et développement relatif aux technologies de l'information.

01'08" Détail du nom T-NODE
01'23" Images de synthèse
01'40" Chambre de programmation
Le réseau de transputer peut être utilisé comme station de calcul indépendant, ou peut être connecté à d'autres pour former un réseau de transputer plus large. Il est possible de construire ainsi une machine de la puissance de 64 systèmes T-NODE.
Les systèmes T-NODE sont particulièrement adaptés dans le cas d'applications nécessitant de gros besoins de calcul comme le traitement d'image, le traitement du signal, la simulation ou les problèmes de physique ou d'ingenierie.
01'55" Programme : "voyageur de commerce".
L'ordinateur recherche le trajet optimal pour un voyageur de commerce qui doit visiter le plus grand nombre de villes en parcourant la distance minimale en passant une fois dans chaque ville.
02'13" Extérieurs : Centre Hospitalier spécialisé de Rouffach (FR) avec la fondation FORENAP (Fondation pour la Recherche en Neuroscience appliquée à la Psychiatrie). Elle a travaillé à la création d'un système de traitement de 32 signaux EEG (électroencéphalogramme), ainsi qu'à la création de la visualisation des activités cérébrales en 3-D.
Cette technique est utilisée en psychiatrie à des fins diagnostiques ou psychopharmacologiques.
02'21" Préparation du patient : les électrodes sont posés sur le scalp.
02'32" Détail.
02'41" Le polygraphe : enregistrement classique sur papier lors d'un électroencéphalogramme.
02'46" Visualisation sur écran d'ordinateur des activités électriques du cerveau.
02'50" Détail de la console.
02'58" Une visualisation précise et réaliste est obtenue par l'utilisation du processeur graphique CUBI 9000 qui permet le calcul des images de synthèse en quelques secondes.
Le calcul des cartographies est transféré sur T-NODE, alors que la machine gère l'image.
L'image montre les activités du cortex cérébral dans 4 bandes fréquentielles.
- Delta : 0-4 HZ
- Theta : 4-8 HZ
- Alpha : 8-13 HZ
- Beta : 13-40 HZ

03'05" Détail.
03'12" Plan général.
03'19" Chercheur.
03'31" Extrait de la cassette montrant une animation en 3 D image par image en temps réel.

B. TECHNOLOGIE DES MATERIAUX

1. Le développement de nouveaux matériaux est essentiel pour les industries de l'aérospatiale, de l'énergie nucléaire ou de l'électronique.
   Des instruments d'analyse hautement performants ont été développés dans les laboratoires européens, tel le spectomètre à électrons AUGER à haute résolution réalisé par l'Université de Liverpool (U.K.).
   Ce spectomètre permet d'analyser la structure électronique locale des matériaux et l'interface entre le métal et les matériaux semi-conducteurs tel que le silicium, le germanium, l'arséniure de galène et l'arséniure de galène-aluminium.
   Les semi-conducteurs sont utilisés pour toutes les communications informatiques.

DEPARTEMENT DE PHYSIQUE
UNIVERSITE DE LIVERPOOL (R.U.)
SEMI-CONDUCTEURS

04'00" Extérieurs. Université de Liverpool.
04'06" Intérieur du laboratoire : chercheurs au travail.
04'17" Détail du spectomètre.
04'31" Manipulation des morceaux de silicium avec la pince.
04'50" Le spectromètre est recouvert d'une protection en aluminium en LEED (Low Energy Electron Diffraction), pour la cuisson.
05'09" Le spectromètre d'AUGER, la nuit pendant le processus de cuisson.
05'14" Retrait de la protection de cuisson et du papier aluminium des points d'observation et des autres parties de l'appareil.
05'34" Connexion du préamplificateur, câblage et mise au point.
06'05" Refroidissement : l'azote liquide est versé dans un seau et ensuite dans le spectromètre.
06'27" Connexion de cables de voltage.
06'36" A travers le point d'observation : l'échantillon de silicium est chauffé à 1.000 C afin de le purifier de tout résidu d'oxygène. Ce processus est répété plusieurs fois jusqu'à obtention du degré de pureté voulu. Selon le degré de cuisson, l'échantillon change de couleur pour virer au rouge.
06'42" Chercheur regardant dans la lunette.
07'00" Echantillon de silicium à travers le point d'observation.
07'09" Chercheur déplaçant l'échantillon de silicium.
07'14" Pistolet à rayons X.
07'26" Clavier de contrôle du pistolet à rayons X.
07'43" Détail du spectromètre d'Auger.

2. Un pont de 6 m de long et à trois axes a été construit à Culham Laboratory. (U.K. Atomic Energy Authority) pour démontrer la souplesse de contrôle du processus laser ainsi que sa haute performance.
   Cet équipement de soudure par laser à haute puissance est le résultat d'une collaboration entre plus de 20 partenaires d'un projet du programme BRITE/EURAM.

LABORATOROIRE DE CULHAM
ABINGDON - OXFORDSHIRE (R.U.)
CONTRÔLE SOUPLE DU PROCESSUS LASER

07'50" Extérieurs.
08'04" Vue intérieure.
08'09" Mise en place du pont mobile.
08'22" Détail du laser CO2 de 10 KW.
08'27" Test de bonne marche du pont mobile.
08'37" Test d'exécution de soudure au laser.
08'46" Pont mobile : vue de haut.
08'52" Panoramique autour du pont mobile.
09'17" Ingénieurs au travail devant le terminal de l'ordinateur et réglant le rayon laser à travers le point d'observation.
09'35" Ingénieur regardant à travers le point d'observation du laser.
09'43" Ingénieur près de la fenêtre de protection procédant à une soudure.
10'03" Ingénieurs discutant des processus devant un moniteur affichant les résultats de l'expérience.
10'25" Détail de l'échantillon soudé.

3. De nouvelles méthodes de fabrication de matériaux supra-conducteurs ont été mises au point dans les laboratoires de l'Université de Dublin grâce au découpage au laser.

DEPARTEMENT DE PHYSIQUE PURE ET DE PHYSIQUE APPLIQUEE
UNIVERSITE DE DUBLIN
TRINITY COLLEGE (IRL)

10'43" Extérieurs. Trinity College.
11'16" Minéral de roche.
11'28" Machine à scier le minéral.
11'34" Tranches de minéral dans les mains du chercheur
11'39" Les tranches de minéral sont posées dans un petit récipient.
11'55" La solution "ACRIFIX" fixe le minéral dans un bloc solide plus maniable.
12'14" Préparation du polissage à la main.
12'30" Les tranches de minéral sont fixées à la machine à polir.
12'42" Polissage mécanique.
12'55" Les images du microscope sont examinées par les chercheurs.
13'01" Graphique avec diffraction des rayons X.
13'12" Chercheur préparant le film chimique nécessaire aux manipulations suivantes.
14'00" Les tranches de minéral sont préparées pour la cuisson au four à 500°C.
14'36" Les tranches sont sorties du four.
14'41" Le film chimique bleu est pulvérisé sur les tranches.
15'22" Les tranches de minéral passent au four une seconde fois, pour chauffer le film chimique et produire la phase superconductrice.
15'22" Reconstitution d'une application laser.
16'10" Démonstration de la résistance de remise à zéro pour le minéral refroidi à la température de l'azote liquide.
Le nouveau substrat est à présent superconducteur.

2. GESTION DES RESSOURCES NATURELLES

A. SCIENCES ET TECHNOLOGIE DU VIVANT

1. Ce laboratoire de phytopathologie effectue des recherches sur le Cladesporium Fulvum, le champignon qui provoque la moisissure des feuilles de tomates.
   Le champignon attaque la plante par le stomate des feuilles. Le phénomène est connu partout dans le monde.
   Les scientifiques recherchent les protéines importantes pour la communication entre la moisissure pathogène et la tomate.

LABORATOIRE DE PHYTOPATHOLOGIE
UNIVERSITE D'AGRONOMIE WAGENINGEN (P.B.)

16'24" Extérieurs.
16'38" Intérieur du laboratoire de phytopathologie.
16'44" Le champignon parasite.
16'48" Le scientifique prépare une solution de spores fongiques.
17'01" Des tomates de huit semaines sont aspergées de cette solution.
17'16" Serre-isoloir : un chercheur recouvre des plants de tomate d'une protection en plastique. Deux semaines plus tard, les feuilles seront entièrement atteintes car le champignon parasite se nourrit des sucres et amino-acides présents dans ces espaces intercellulaires.
17'40" Cinq images au microscope électronique à balayage.
La face intérieure d'une feuille de tomate avec l'hyphe grandissant du champignon parasite - les différents stomates de la feuille sont clairement visibles. Un hyphe pénètre le stomate d'une feuille de tomate (grossissement : 800 X).
17'45" Un stomate d'une feuille de tomate avec l'hyphe du champignon parasite. (grossissement : 4.000 X).
17'50" Après avoir pénétré la feuille de tomate, le champignon parasite croît dans les espaces intercellulaires de la feuille de tomate autour des cellules mésophylles (grossissement : 5.000 X).
17'55" Conidiophores émergeant d'un stomate de la feuille de tomate (grossissement : 2.500 X).
18'05" Après deux semaines : les feuilles contaminées sont rassemblées.
Taches brunes sur la surface arrière (nouveaux champignons).
18'16" Les feuilles contaminées sont enlevées et déposées dans un récipient.
18'36" Le chercheur coupe les feuilles en morceaux.
18'49" Dans le récipient avec les feuilles contaminées, on place des anneaux en plomb et on ajoute de l'eau.
19'05" Le récipient est posé dans l'appareil servant à pratiquer l'infiltration sous vide.
19'12" L'air est retiré et l'eau s'infiltre dans les feuilles.
19'34" Les feuilles sont posées sur un papier absorbant.
19'40" Les feuilles sont roulées et mises dans un récipient pour la centrifugation.

20'02" Le récipient contenant les feuilles centrigugées est retiré du conteneur. Le récipient de dessous contient à présent un liquide brunâtre de lavage intercellulaire.
20'17" Injection du liquide dans une éprouvette.
20'23" Chercheur injectant le liquide aux tomates.
21'01" Etiquettes identifiant l'injection pratiquée.
21'09" Serre.
21'22" Tomate de deux semaines.
21'27" Tomate de quatre semaines.
21'32" Tomate de six semaines.
21'37" Tomate de huit semaines.
21'42" Vue générale de tomates de deux, quatre, six et huit semaines.
21'47" Feuilles de tomates contaminées avec leur étiquette d'identification de l'injection pratiquée.
22'01" Chercheur quittant la serre.

2. En partant d'une très petite quantité de tissus, il est possible de développer des cellules in vitro qui deviendront de nouvelles plantes de la même espèce.
Cette méthode qui fait appel à la "culture tissulaire" est une technique très importante en biotechnologie.
Les scientifiques recherchent quels processus moléculaires sont à la base des régénérations optimales : seul un petit nombre de cellules se développent en embryons.
Au département de biologie moléculaire de l'Université d'agronomie de Wageningen, les scientifiques analysent les protéines qui sont responsables du développement cellulaire.

DEPARTEMENT DE BIOLOGIE MOLECULAIRE
UNIVERSITE D'AGRONOMIE (PAYS-BAS)

22'10" Récolte des carottes.
22'28" Intérieur du laboratoire.
22'38" Eprouvette avec tissus cellulaires.
22'43" Carotte dans une éprouvette.
22'53" Une petite quantité de tissus cellulaires est prélevée et préparée pour une régénération in vitro.
23'16" Eprouvette remplie d'un bouillon de protéines nutritives et de cellules de plante en cours de régénération.
23'25" L'agitateur orbital mélange constamment le contenu de l'éprouvette de façon à ce que les tissus cellulaires ne puissent pas se développer les uns sur les autres ou se déposer au fond de l'éprouvette.
23'32" Désinfection des éprouvettes.
23'36" Les cellules de plantes sont mises dans un autre récipient lorsque le bouillon de protéines nutritives n'est plus actif.
24'10" La date est ensuite indiquée sur l'éprouvette.

24'24" La solution est filtrée.
24'56" Transfert des tissus cellulaires de la plante dans trois récipients, pour que les chercheurs examinent quelles protéines sont responsables du développement de la cellule (ou embryogénie).
25'37" Chercheur devant un rayonnage climatisé.
25'50" Chercheur devant son microscope.
26'12" Vue des cellules au microscope.
26'37" Chercheur transférant des cellules dans des récipients pour examen de l'embryogénie.
27'10" Quatre récipients contenant des cellules pour une expérience de croissance.
27'14" Récipient de contrôle ne contenant pas des cellules.
27'18" Récipient contenant les protéines inhibitrices.
27'22" Récipient contenant les protéines inhibitrices et un bouillon de protéines nutritives.
27'26" Récipient contenant les protéines inhibitrices et simulatrices.
27'31" Images au microscope : phases de la croissance cellulaire et embryogénie.
27'58" Détail de l'échantillon de protéines à l'intérieur d'une cellule
28'06" ADN d'une protéine.
28'14" Vue générale du laboratoire.

CASSETTE N° 2

3. Le programme d'ordinateur BRUGEL (Biochemistry Reaserach Utility Graphic Edition Language) permet de manipuler les structures des protéines et de les visualiser dans l'espace.
   Cette représentation moléculaire peut servir à l'étude de l'interaction entre deux molécules ou à la recherche de segments de protéine ce qui est fort utile pour l'ingéniérie des protéines.
   Dans le cas présent, le logiciel est utilisé pour visualiser la barnase, une protéine couramment soumise à des études expérimentales et théoriques. La forme générale de la protéine est montrée ainsi que les différents aspects de sa structure. Il s'agit d'une chaîne d'unité (amino-acides). Une partie de la chaîne forme des structures régulières comme des hélices, ...etc.

UNITÉ DE CONFORMATION DE MACROMOLÉCULES BIOLOGIQUES
UNIVERSITÉ LIBRE DE BRUXELLES (B)

Graphiques moléculaires

00'00" Extérieurs.
00'07" Salle avec ordinateur et armoire de conservation des données.
00'14" Logo du programme BRUGEL.
00'26" Maquette solide pour visualiser la structure d'une protéine (insuline).
00'36" Graphique "fil de fer" de cette même protéine.
00'42" Composition de cette protéine.
Les sphères blanches représentent les atomes d'hydrogène
Les sphères vertes représentent les atomes de carbone
Les sphères rouges représentent les atomes d'oxygène
Les sphères bleues représentent les atomes d'azote
La structure des protéines est telle que tous les atomes sont assemblés de manière compacte.
00'50" Vue des tranches de la surface de la protéine.
00'57" Représentation en coupe de la protéine.
01'02" Vue de la surface et de la structure "fil de fer" de la protéine.
01'14" Vue de la structure "fil de fer" en rotation; épine dorsale de la protéine : parties colorées en vert; chaînes latérales : parties colorées en bleu. Noms des différents amino-acides. La barnase a 1.700 atomes : ces atomes sont liés entre eux par des liens covalents.
01'32" Un des amino-acides avec l'asparagine (ASP), la structure "fil de fer"en rotation.
01'36" Image en rotation de l'amino-acide.
01'46" Structure "fil de fer" de l'un des amino-acides du glutamine (GLU).
01'59" Dans la structure globale des protéines, certains éléments sont récurrents : ils constituent la structure secondaire. Les différents types de la structure locale de la barnase sont colorés comme suit : rouge : hélices, vert : plan Bêta, bleu, virant au bleu clair : coil.
Vue "fil de fer" de l'épine dorsale.
Vue du ruban coloré suivant l'épine dorsale
02'11" Scientifique au travail derrière son ordinateur.
02'35" Hélice rouge. Les lignes pointillées rouges représentent des interactions stabilisantes.
02'41" Série de plans Bêta.
02'49" Visualisation des mouvements de la protéine.
Chaque structure en "V" est une molécule d'eau.
02'55" Coupe de la surface.
03'03" La structure spatiale d'une protéine est flexible et mobile mais son organisation générale est stable.
03'10" Chaque résidu de cette structure est mobile.
03'17" Rotation d'un amino-acide entouré de molécules d'eau.
03'24" La protéine est entourée de molécules d'eau : à la fin de la simulation les molécules d'eau sont réparties au hasard (rouge = mobile, bleu = immobile).
03'30" Visualisation de l'interaction d'une protéine avec son substrat.
03'34" Inhibition seule.
03'40" Surfaces interactives de la protéine et du substrat.
03'45" Surface de la protéine et interaction entre les sous-unités.
03'56" Rotation de la surface des sous-unités de la protéine et de certaines molécules d'eau.
04'03" Image similaire avec ruban blanc et vue en coupe de la surface.

B. ENERGIE

1. Le développement des sources d'énergie renouvelable est un objectif capital. L'énergie éolienne en est un bon exemple. Ce projet illustre le fonctionnement du prototype d'éolienne de 2MW de 90 m de haut, du projet ELSAM à Tjaereborg sur la côte danoise.
   Une attention particulière a été portée à l'intégration du projet dans l'environnement.
   L'aspect général de l'aérogénérateur ne se démarque pas du modèle utilisé traditionnellement au Danemark.
   Le rotor est face au vent et a trois pales sur un axe rigide.
   La puissance est contrôlée par un système électrohydraulique de précision.
   Les pales sont faites en polyester renforcé par de la fibre de verre monolithique.
   Les matériaux de surface sont fabriqués selon les procédés utilisés pour la construction de navires. Les différents éléments sont cargués pour être assemblés.

   DONNEES PRINCIPALES DU PROTOTYPE 2MW

Diamètre du rotor	61,1 m
Vitesse de pointe, charge maximale	71,7 m/s
Hauteur de l'axe	60,0 m
Puissance du générateur	2 MW
Vitesse du vent enclenchement/ moyenne/décrochage	5/15/25 m/s
Poids du rotor	67 t
Poids total, sans tour	211 t

PROJET ELSAM
TJAEREBOERG (DK)
AEROGENERATEUR

04'08" Panneau de signalisation vers Tjaereborg.
04'14" Réserve naturelle autour des éoliennes.
05'08" Vue des petites éoliennes et de l'aerogénérateur de 2 MW . Le modèle de cette unité est basé sur un modèle précédent, le 630 KW Nibe B, et il est relié à un réseau géré par ELSAM, la coopérative d'énergie desservant la partie occidentale du Danemark.
05'14" Ingénieurs contournant l'aerogénérateur.
05'30" Détail du rotor.
05'37" Détail des pales.
05'47" Ingénieur montant dans la tour.
05'56" Ingénieur montant dans l'ascenseur.
06'10" Vue aérienne de l'ascenseur vers la nacelle.
06'28" Intérieur de l'aerogénérateur, dans la nacelle au sommet.
07'00" Ingénieurs au travail, derrière l'ordinateur central de contrôle.
07'21" Intérieur du rotor.
08'28" Eoliennes.
08'42" Ingénieurs et techniciens, étudiant les plans.
09'04" Ingénieur devant l'ordinateur analysant les données météorologiques et statistiques.
09'15" Extérieurs.

2. La part la plus importante des crédits de la Communauté pour la recherche sur l'énergie est consacrée au développement de la fusion thermonucléaire.
A Culham, près d'Oxford (R.U.), la Communauté européenne développe son propre réacteur à fusion sur le principe du Tokamak; le Joint European Torus (JET) est le plus grand projet unique de recherche coordonnée sur la fusion nucléaire de la Communauté de l'Energie Atomique (EURATOM).
Le but principal de Jet (Joint European Torus) est l'établissement de la faisabilité scientifique de la fusion nucléaire en tant que nouvelle source d'énergie.
Pour utiliser les réactions de fusion comme source d'énergie, il est nécessaire de chauffer un combustible gazeux (un mélange de 2 isotopes d'hydrogène, de deutérium et de tritium) à des températures dépassant les 100 millions de degrés Celsius, c.à.d. une température plusieurs fois supérfieure à celle du coeur du soleil.

PROJET COMMUN JET
LABORATOIRE DE CULHAM (R.U.)
FUSION NUCLEAIRE

09'20 Extérieurs.
19'27" La sous-station de 440 KV, avec Torus Hall en arrière plan.
09'43" Quatre réservoirs de stokage à droite de la sous-station de 400 KV.
09'50" Panorama autour de la station.
10'00" Détail de Torus Hall.
10'05" Cryolithes dans le sous-sol.
10'29" Torus Hall : Neutral Beam Injection Heating - l'injection de particules énergétiques dans le plasma est une méthode éprouvée pour augmenter sa température. En effet, dans le plasma, les particules neutres abandonnent leur énergie par collision et augmentent par le fait sa température. Le JET possède deux unités d'injection produisant un maximum de vingt millions de watts de chaleur.
10'49" Vue générale de Torus Hall.
11'05" Ingénieur avec un talkie-walkie
11'20" Electricien au travail.
11'25" Techniciens au travail.
11'32" Visiteurs.
11'41" Ingénieurs sortant du vaisseau sous vide et marchant vers le couloir.
11'47" Panneau "Entrée interdite".
11'51" Entrée de Torus Hall.
12'02" Camera TV surveillant le Torus Hall.
12'07" Salle de contrôle.
12'52" Ligne de transfert rapide : elle est utilisée pour mettre des échantilllons de matériaux dans le plasma et les exposer aux impuretés.
13'12" Ecran avec simulation graphique de la même ligne de transfert rapide - détecteur dans le vaisseau sous vide.
13'18" Bras articulé : pour atteindre l'intérieur du vaisseau sous vide : l'un des plus grands systèmes contrôlés à distance jamais construit. Il est unique sur le plan de sa flexibilité et de sa capacité de charge. Il a neuf mouvements possibles et peut transporter jusqu'à une tonne à son extrémité. Longueur horizontale : 9 mètres.

13'34" Ecran avec simulation graphique du bras articulé hors du vaisseau sous vide.
13'41" Idem dans le vaisseau sous vide.
14'02" Equipement de contrôle à distance : un test est effectué face à l'écran TV.
14'20" Test du contrôle à distance dans le hangar d'assemblage.
14'47 Ingénieurs derrière la console de contrôle.
14'53" Lumières de l'accélérateur.
14'58" Hangar d'assemblage : vues générales.
15'32" Ingénieurs dans l'une des sections sous vide du vaisseau.
15'48" Torus Hall.

3. SOUTIEN A LA RECHERCHE APPLIQUEE

Le projet EUREKA 95 fut créé en 1986 pour encourager la création d'un système européen de télévision à haute définition (TVHD) compatible ainsi que l'équipement de production, de transmission et de réception adapté.
Les objectifs principaux du projet sont :
1. proposer une norme TVHD studio;
2. assurer la transmission du signal TVHD au moyen de la norme HD-MAC;
3. boucler la chaîne TVHD : production - transmission - réception.

Des spécialistes de l'industrie, de la télévision et de la recherche de plus de 30 pays européens se sont mis au travail. La norme européenne de TVHD sera présentée cette année à l'Assemblée plénière du Conseil Consultatif International de la Radio-communication.

ALEXANDRA PALACE
BBC - LONDRES (R.U.)
EUREKA 95
Enregistrement TVHD

15'56" Extérieurs. Alexandra Palace.
16'04" Equipe de la BBC enregistrant un programme de démontration EUREKA 95 en TVHD.
Titre : "We return you to the studio".
Directeur : Philip ASHBY.
17'08" Tournage près du car mobileTVHD.
17'17" Logo "EUREKA".
17'23" L'équipe au travail.
18'14" Panneau commémoratif.
18'30" Intérieur du car TVHD.
Le système d'enregistrement TVHD 1.250 lignes consiste en un ensemble de 4 enregistreurs digitaux (composant D-1) en 625 lignes. Chaque enregistreur reprend un quart de l'information du signal. Cette méthode permet aux utilisateurs d'obtenir une image en 625 lignes de chaque enregistreur.

18'46" Exemple d'une image TVHD.
19'27" Tournage à l'intérieur dans le premier studio de Ally Pally (Alexandra Palace).
20'50" Photo de famille de l'équipe.
20'58" Extérieurs du département de recherche de la BBC : KINGSWOOD WARREN.
21'05" Intérieur du laboratoire de recherche. Chercheur expliquant la recherche sur le mouvement.
23'05" Chercheur face à un moniteur TVHD et un moniteur de 625 lignes.
Conversion de 625 à 1.250 lignes.
Conversion de 1.250 à 625 lignes.

CENTRE DE RECHERCHE THOMSON VILLINGEN (RFA)

23'33" Extérieurs.
23'47" Intérieur du laboratoire.
Recherche sur un moniteur TVHD studio et sur l'équipement de studio.
24'54" Chercheur travaillant sur un des 40 prototypes d'un téléviseur grand écran multi-format basé sur un chassis HIGH SCAN adapté à la réception satellite, au traitement D-2 MAC/D-MAC, aux différentes normes européennes et à la visualisation simultanée de plusieurs chaînes.
Le téléviseur sera disponible encore cette année.

Information technique :
. Traitement numérique du signal (PAL/SECAM/NTSC) en 1.250 lignes sur un écran de 36".
Chaque ligne d'une source en 625 lignes est artificiellement régénérée dans le récepteur et ainsi doublée.
. Contrôle de format de l'écran : possibilité de montrer le format 3:4 en 16:6 en plein écran.
. Le châssis contient 2 tuners : image dans l'image.
. Le son est traité entièrement en numérique.
25'50" Quelques exemples de modes de réception et formats.
26'14" Image de fleurs.
26'21" Caméra TVHD Thomson Proscan 16:9 devant les fleurs.

4. SOUTIEN A LA RECHERCHE FONDAMENTALE ET VALORISATION DES RESSOURCES INTELLECTUELLES

Un exemple de la coopération dans le secteur de la recherche fondamentale est le projet sur la structure interne des étoiles de l'Observatoire Kapteyn et de l'Université de Groningue aux Pays-Bas.
Un interferomètre, ou sismographe de très haute stabilité a été conjointement mis au point.
Cet appareil est depuis avril 1989 à l'Observatoire européen de "Cerro la Silla" dans les Andes Chiliennes pour étudier le ciel de l'hémisphère Sud.

Son premier objectif sera d'étudier l'Alpha Centaure : l'étoile la plus brillante de l'Hémisphère Sud. Les astronomes néerlandais collaborent avec leurs collègues danois à l'étude des étoiles similaires au soleil. Un des aspects de cette recherche consiste à déterminer l'âge des étoiles en mesurant l'oscillation du spectre.

OBSERVATOIRE KAPTEYN
UNIVERSITE DE GRONINGUE (P.P.)
SISMOLOGIE DES ETOILES

26'36" Extérieurs.
26'50" Intérieur de l'observatoire avec le téléscope
26'58" Lune.
27'03" Téléscope.
27'07" Sismographe et chercheurs face au traceur graphique.
27'21" Traceur graphique et oscilloscope.
27'45" ORION (jeune étoile).
27'51" M 13 HERCULES, (jeune étoile).
27'55" Laser connecté au sismographe.
28'08" Rayon infrarouge.
28'16" Câble connecté au sismographe pour transporter le rayon laser.
28'28" Trois palpeurs qui mesurent la température à l'intérieur du sismographe.
28'34" Ingénieur devant son ordinateur.
28'39" Ecran avec les résultats des mesures effectuées.
28'49" Diagramme.

GRAPHIQUES

29'04" Graphique n° 1 :

COMPARAISON DU POURCENTAGE DE CHERCHEURS PAR RAPPORT A LA POPULATION - 1989

U.SA.
Population : 244 millions
Chercheurs : 825 mille 0,33 %

JAPON
Population : 122 millions
Chercheurs : 400 mille 0,32 %

CE
Population : 320 millions
Chercheurs : 500 mille 0,15 %

29'27" Graphique n° 2 :
TECHNOLOGIES DE L'INFORMATION EN EUROPE
POURCENTAGES PAR RAPPORT AU PIB EN 1990 ET EN 2000
En 1990, les technologies de l'information représentent 8 % du PIB communautaire moyen.
En 2000, le pourcentage passera à 15 % du PIB.

29'45" Graphique n° 3 :

DEFICIT DU SECTEUR ELECTRONIQUE EUROPEEN PAR RAPPORT AU JAPON.

1984	:	8.5 milliards écus
1988	:	20.2 milliards écus
prévision 1994	:	30.6 milliards écus

30'08" Graphique n° 4 :

DÉFICIT DU SECTEUR ÉLECTRONIQUE EUROPÉEN PAR RAPPORT AUX U.S.A.

1984	:	10.8 milliards écus
1988	:	17.2 milliards écus
prévision 1994	:	23.6 milliards écus

30'30" Graphique n° 5 :

REPARTITION DU BUDGET RECHERCHE ET DEVELOPPEMENT 1990 - 1994

Technologies diffusantes : 54 %
Technologies de l'information, des communications, industrielles, et des matériaux.

Gestion des ressources naturelles : 37 %
Environnement, technologies du vivant, énergie.

Valorisation des ressources intellectuelles : 9 %

FIN

NEW TECHNOLOGIES

DOSSIER

(60 minutes)

This dossier has been prepared by the Audiovisual Production Unit of the Commission of the European Communities to illustrate the new technologies developed within the projects supported by the European Community (Esprit, Superncde, Brite/Euram, Brugel, Jet Joint Undertaking, Elsam, etc.).

The montage of the dossiers follows the order of priorities mentioned in the 1990-94 agreement on European research which will be formally approved by the Council of Ministers at the end of April 1990.

This 60 minute dossier comprises pictures and graphs on the following subjects:

- Enabling technologies (parallel computers, semiconductors, lasers, superconductors);
- Management of natural resources (phytopathology, embryogenesis, molecular graphics, wind turbines, nuclear fusion);
- Applied research (HDTV);
- Basic research (seismology of stars);
- Five graphs illustrating the different aspects of research and development in Europe in comparison with the United States and Japan.

Community research has limited funds at its disposal: ECU 5 400 million for 1990-94.

The research effort of the new framework programme has therefore been concentrated on three priority action lines:

1. development of enabling technologies;
2. management of natural resources;
3. exploitation of intellectual resources;

and support for applied and basic research.

The various projects supported by the European Community are presented in this priority order.

SHOT LIST

00'00" Community credits!! in 3D

1. ENABLING TECHNOLOGIES

A. INFORMATION TECHNOLOGY AND COMMUNICATIONS

The Supernode project, involving the Universities of Grenoble and Southampton, the companies RSRE (UK), APSIS (France), INMOS (UK) and Telmat (France), has developed a parallel-architecture computer system.

A machine, the T800, has been built.

It contains 3 500 transistors and runs at a speed of 1.5 MFLOPS.

TELMAT INFORMATIQUE
SOULTZ (France)
PARALLEL COMPUTERS

00'16" Exteriors: Telmat Informatique building
00'22" Computerized testing of transputer boards
01'02" General view of T-NODE
T-NODE is a fully configurable, modular and expandable transputer network. The transputer is built around a 32-bit processor and is optimized for parallel processing.

The T-NODE architecture came about as a result of the techniques developed by the French and British partners in project P1085 of the Esprit programme (European Strategic Programme for Research in Information Technology).

01'08" Close-up of the name T-NODE
01'23" Computer-generated pictures
01'40" Programming room
The transputer network can be used as a standalone workstation or connected to others to form a larger transputer network. In this way a system with the power of 64 T-NODE systems can be constructed.
T-NODE systems are particularly well suited to number-crunching applications such as image processing, signal processing, simulation, or physics or engineering problems.
01'55" "Travelling salesman" program
The computer searches for the optimum route for a travelling salesman who has to visit as many towns as possible, travelling the minimum distance and visiting each town once.

02'13" Exteriors: specialist hospital at Rouffach (France) with the Forenap foundation (Fondation pour la Recherche en Neuroscience appliquée à la Psychiatrie). It has worked on the creation of a system to process 32 EEG (electroencephalogram) signals and a three-dimensional display of brain activity.
This technique is used in psychiatry for diagnosis or psychopharmacological purposes.
02'21" Preparing the patient: electrodes are placed on the scalp.
02'32" Close-up
02'41" The polygraph: conventional encephalogram recording on paper.
02'46" Display of the brain's electrical activity on a computer screen.
02'50" Close-up of the console
02'58" An accurate and realistic display is obtained by using the CUBI 9000 graphics processor which can generate computer images in a few seconds.
The computation of the maps is transferred to the T-NODE, while the machine manages the image.
The image shows cerebral cortex activity in four frequency bands:
- delta: 0-4 Hz
- theta: 4-8 Hz
- alpha: 8-13 Hz
- beta: 13-40 Hz

03'05" Close-up
03'12" General view
03'19" Research worker
03'31" Extract from the cassette showing real-time 3D animation image-by-image.

B. MATERIALS TECHNOLOGY

1. The development of new materials is essential for the aerospace, nuclear energy and electronics industries.
High-performance analysis instruments have been developed in European laboratories, such as the Auger high-resolution electron spectrometer built by the University of Liverpool (UK).
This spectrometer can analyse the local electronic structure of materials and the interface between the metal and the semiconductor materials such as silicon, germanium, gallium arsenide and gallium aluminium arsenide.
Semiconductors are used in all computerized communications.

DEPARTMENT OF PHYSICS
UNIVERSITY OF LIVERPOOL (UK)
SEMICONDUCTORS

04'00" Exteriors: Liverpool University
04'06" Inside the laboratory: research scientists at work
04'17" Close-up of the spectrometer
04'31" Manipulating pieces of silicon with tweezers
04'50" The spectrometer is covered with an aluminium LEED (low energy electron diffraction) baking cover.
05'09" The Auger spectrometer, at night during the baking process
05'14" Removing the baking cover and aluminium foil from the viewports and other parts of the equipment.
05'34" Connecting, wiring up and adjusting the preamplifier
06'05" Cooling: liquid nitrogen is poured into a bucket and then into the spectrometer.
06'27" Connecting the voltage cables
06'36" Through the viewport: the silicon specimen is heated to 1 000°C to purify it of any oxygen residue. This process is repeated several times until a sample of the desired purity is obtained. As heating proceeds, the specimen changes to a red colour.
06'42" Research worker looking into the viewport.
07'00" A silicon specimen seen through the viewport.
07'09" Research worker moving the silicon specimen.
07'14" X-ray gun
07'26" Control board for the X-ray gun
07'43" Close-up of the Auger spectrometer.

2. A 6 metre long three-axis gantry has been built at Culham Laboratory (UK Atomic Energy Authority) to demonstrate adaptive control of highperformance laser processing.
This high-power laser welding equipment is the result of cooperation between over 20 partners in a project under the Brite/Euram programme.

CULHAM LABORATORY
ABINGDON, OXFORDSHIRE (UK)
ADAPTIVE CONTROL OF LASER PROCESSING

07'50" Exteriors
08'04" Interior view
08'09" Positioning the travelling gantry
08'22" Close-up of the 10 kW CO_2 laser
08'27" Testing the travelling gantry
08'37" Testing the laser welder
08'46" Travelling gantry - topshot
08'52" Panoramic view around the travelling gantry
09'17" Engineers working at the computer terminal and adjusting the laser beam through the viewport
09'35" Engineer looking through the laser viewport
09'43" Engineer near the protective window performing a weld
10'03" Engineers discussing the processes at a monitor displaying the results of the experiment
10.25" Close-up of the welded sample

3. New methods for manufacturing superconducting materials by laser cutting have been developed in the laboratories of the University of Dublin.

DEPARTMENT OF PURE AND APPLIED PHYSICS
TRINITY COLLEGE DUBLIN (IRELAND)

10'43" Exteriors - Trinity College
11'16" Mineral rock
11'28" Mineral sawing machine
11'34" Slices of mineral in a scientist's hand
11'39" The slices of mineral are placed in a jar.
11'55" The Acrifix solution fixes the mineral in a solid block which is easier to handle.
12'14" Preparation of hand polishing
12'30" The slices of mineral are attached to the polishing machine.
12'42" Mechanical polishing
12'55" Scientists examine the surface under a microscope
13'01" Graph with X-ray diffraction pattern
13'12" Scientist preparing the chemical film needed for subsequent operations
14'00" The slices of mineral are prepared for the oven where they are baked at 500°C.
14'36" The slices are removed from the oven.
14'41" The blue chemical film is sprayed onto the slices.
15'22" The slices of mineral are baked in the oven a second time, to heat up the chemical film and produce the superconducting phase.
15'22" Reconstruction of a laser application
16'10" Demonstration of the drop to zero resistance of the mineral when cooled with liquid nitrogen
The new substrate has now become superconducting.

2. MANAGEMENT OF NATURAL RESOURCES

A. LIFE SCIENCES AND TECHNOLOGY

1. This phytopathology laboratory is carrying out research on Cladesporium fulvum, the fungus which causes leaf mould on tomatoes.

   The fungus attacks the plant through the stomata of the leaves. This phenomenon is known worldwide.

   Scientists are studying which proteins are important for the communication between the pathogenic mould and the tomato plant.

LABORATORY OF PHYTOPATHOLOGY
AGRICULTURE UNIVERSITY WAGENINGEN (NL)

16'24" Exteriors
16'38" Inside the phytopathology laboratory
16'44" The parasitic fungus
16'48" A scientist prepares a solution of fungus spores
17'01" The solution is sprayed onto eight-week-old tomato plants.
17'16" Greenhouse-isolatory: a scientist puts tomato plants under a plastic cover. Two weeks later the leaves will be completely infected since the parasitic fungus feeds on the sugars and amino acids in the intercellular spaces.
17'40" Five scanning electron microscope pictures
The lower surface of a tomato leaf with growing hyphae of the parasitic fungus - the various stomata of the leaf are clearly visible. One hypha is penetrating a stoma of a tomato leaf (magnification 800 x).
17'45" A stoma of a tomato leaf with penetrating hyphae of the parasitic fungus (magnification: 4 000 x).
17'50" After penetrating the tomato leaf the parasitic fungus grows in the intercellular spaces of the tomato leaf around the mesophyll cells (magnification 5 000 x).
17'55" Conidiophores emerging from a stoma of a tomato leaf (magnification: 2 500 x).
18'05" Two weeks later: the affected leaves are gathered. The brown spots on the lower surface are new fungus.
18'16" The affected leaves are removed and put into a flask.
18'36" The scientist cuts up the leaves.
18'49" Lead rings are placed in the flask of affected leaves and water is added.
19'05" The flask is placed in the vacuum infiltration machine.
19'12" The air is withdrawn and the water infiltrates into the leaves.
19'34" The leaves are placed on blotting paper.
19'40" The leaves are rolled up and put into a centrifuging tube.

20'02" The tube containing the centrifuged leaves is removed from the container. The bottom tube now contains a brown intracellular washing fluid.
20'17" Injection of the liquid into a test tube.
20'23" A scientist injects the liquid into the tomato plants.
21'01" Labels identifying the injection
21'09" Greenhouse
21'22" Two-week-old tomato plant
21'27" Four-week-old tomato plant
21'32" Six-week-old tomato plant
21'37" Eight-week-old tomato plant
21'42" General view of tomato plants at two, four, six and eight weeks
21'47" Sick tomato leaves with labels for identifying the injection
22'01" Scientist leaving the greenhouse

2. Starting from a very small quantity of plant tissue, it is possible to have cells develop in vitro into new plants of the same species.

This method, using so-called "cell tissue culture", is a very important technique in biotechnology.

Scientists are investigating which molecular processes underlie optimum regeneration ; only a restricted number of cells develop into embryos.

At the department of molecular biology at the Agriculture University of Wageningen, scientists are investigating which proteins are responsible for cell growth.

DEPARTMENT OF MOLECULAR BIOLOGY
AGRICULTURE UNIVERSITY (NETHERLANDS)

22'10" Harvesting of carrots
22'28" Inside the laboratory
22'38" Test tube containing cell tissue cultures
22'43" Carrot plant in a flask
22'53" A small sample of cell tissue is taken and prepared for in-vitro regeneration.
23'16" Flask of growth medium with nutritious proteins and plant cells which are regenerating
23'25" An orbital shaker keeps the flask contents moving, so that the cell tissues cannot grow together or sink to the bottom.
23'32" Disinfecting the flasks
23'36" The plant cells are put into another bowl when the growth medium with nutritious proteins is exhausted.
24'10" The date is then marked on the flask.

24'24" The solution is filtered.
24'56" Transferring the plant cell tissue into three bowls so that scientists can investigate which proteins are responsible for this cell growth or embryogenesis.
25'37" Scientist in front of climate box
25'50" Scientist looking through microscope
26'12" Microscope images of cells
26'37" Scientist transferring plant cells into bowls for the investigation of embryogenesis
27'10" Four bowls containing cells for a growth experiment
27'14" Bowl as control, containing plant cells only
27'18" Bowl containing inhibition protein
27'22" Bowl containing the inhibition protein and a nutritious medium protein
27'26" Bowl containing inhibition protein and stimulation protein
27'31" Microscope images: stages of cell growth and embryogenesis
27'58" Close-up of a pattern of proteins occurring inside a cell
28'06" DNA pattern of a protein
28'14" General view of the laboratory

CASSETTE No 2

3. The BRUGEL computer program (Biochemistry Research Utility Graphic Editing Language) can manipulate protein structures and display them in space.

   This molecular graphics tool can be used to study the interaction between two molecules or search for protein segments, very useful for protein engineering.

   In this case, the software is used to display barnase, a protein which is often the subject of experimental and theoretical studies. The general form of the protein, along with various aspects of its structure. It is a unity chain (amino acids). Part of the chain forms regular structures such as helices, etc.

UNITE DE CONFORMATION DE MACROMOLECULES BIOLOGIQUES
UNIVERSITE LIBRE DE BRUXELLES (B)

Molecular graphics

00'00" Exteriors
00'07" Computer room and data storage cabinet
00'14" BRUGEL programme logo
00'26" Solid model representing a protein structure (insulin)
00'36" Wireframe graphic of the same protein
00'42" Composition of the protein:
the white spheres represent hydrogen atoms
the green spheres represent carbon atoms
the red spheres represent oxygen atoms
the blue spheres represent nitrogen atoms.
The structure of proteins is such that all the atoms are compactly packed.
00'50" View of slices of the protein surface
00'57" Cross-sectional view of the protein
01'02" View of the surface and the wireframe structure of the protein
01'14" View of rotating wireframe structure; the backbone of the protein is coloured green; the lateral chains are coloured blue. Names of several amino acids. Barnase has 1 700 atoms linked by covalent bonds.
01'32 One of these amino acids known as asparagine (ASP); rotating wireframe structure
01'36" Rotating image of the amino acid
01'46" Wireframe structure of one of the amino acids, glutamine (GLU)
01'59" Local features can be recognized in the global structure of the proteins; they constitute the secondary structure. The different types of local structure of barnase are coloured as follows: red - helices; green - extended strand; blue - turns; light blue - unstructured part (coil).
Wireframe view of the backbone
View of coloured ribbon following the backbone
02'11" Scientist working at a computer
02'35" Red helix; the red dotted lines represent stabilizing interactions.
02'41" A set of extended strands
02'49" Display of protein movements
Each V-shaped structure is a water molecule.
02'55" Slice of the surface
03'03" The spatial structure of a protein is flexible and mobile but its general organization is stable.
03'10" Each residue of the structure is mobile.
03'17" Rotating amino acid surrounded by water molecules
03'24" The protein is surrounded by water molecules; at the end of the simulation the water molecules are randomly distributed (red = mobile, blue = stationary).
03'30" Display of the protein's interaction with its substrate
03'34" Inhibition only
03'40" Interacting surfaces of the protein and substrate
03'45" Surface of the protein and interaction between its sub-units
03'56" Rotating view of the surface of the protein sub-units and some water molecules
04'03" Similar picture, with white ribbon and sectional view of the surface

B. ENERGY

1. The development of renewable energy sources is a prime objective. Wind energy is a good example. The ELSAM project illustrates the working of the prototype 2MW 90m-high wind generator at Tjaereborg on the Danish coast.

   Special efforts have been made to blend the project in with its environment. The wind generator is similar in general appearance to the type normally used in Denmark.

   The rotor is upwind and has three blades on a rigid hub. The power is controlled by a precision electrohydraulic system. The blades are made of monolithic glass-fibre-reinforced polyester.

   The surface shells are made using shipbuilding techniques. Clewing techniques are used for assembly.

   MAIN DESIGN DATA OF THE 2MW PROTOTYPE

Rotor diameter	61.1 m
Tip speed, full load	71.7 m/s
Hub height	60.0 m
Generator power	2 MW
Cut-in/rated/cut-out wind speed	5/15/25 m/s
Rotor weight	67 t
Total weight, excluding tower	211 t

ELSAM PROJECT
TJAEREBORG (DK)
WIND GENERATOR

04'08"	Sign of Tjaereborg
04'14"	Nature reserve around wind turbines
05'08"	View of small wind turbines and the 2MW wind generator. The design of this unit is based on the earlier 630 kW Nibe B machine, and is connected to the grid operated by ELSAM, the energy cooperative serving the western part of Denmark.
05'14"	Engineers walking round the wind turbine
05'30	Close-up of rotor
05'37"	Close-up of blades
05'47"	Engineer going up the tower
05'56"	Engineer taking the lift
06'10"	Top view of the lift coming up the shaft
06'28"	Inside the wind generator, in the nacelle at the top
07'00"	Engineers working at the central monitoring computer
07'21"	Inside the hub
08'28"	Wind generators
08'42"	Engineers and technicians studying drawings
09'04"	Engineer analysing meteorological and statistical data at a computer
09'15"	Exteriors

2. The largest share of Community funding on energy research goes to the development of thermonuclear fusion..

At Culham, near Oxford (UK), the European Community is developing its own fusion reactor based on the Tokamak principle; the Joint European Torus (JET) is the largest single project of the coordinated nuclear fusion research programme of the European Atomic Energy Community (Euratom).

The principle aim of JET (Joint European Torus) is to establish the scientific feasibility of nuclear fusion as a new source of energy.

To utilize fusion reactions as an energy source it is necessary to heat a gaseous fuel (a mixture of the two hydrogen isotopes, deuterium and tritium) to temperatures in excess of 100 million degrees Celsius - several times hotter than the centre of the sun.

JET JOINT UNDERTAKING
CULHAM LABORATORY (UK)
NUCLEAR FUSION

09'20" Exteriors
09'27" The 440 kV substation, with Torus Hall in the background
09'43" Four storage tanks on the right of the 400 kV substation
09'50" Surroundings
10'00" Close-up of Torus Hall
10'05" Cryolines in the basement
10'29" Torus Hall: neutral beam injection heating - the injection of energetic particles into the plasma is a proven method of raising its temperature. In the plasma, the neutral particles give up their energy by collisions and hence raise its temperature. JET has two injection units producing a maximum of 20 million watts (MW) of heating.
10'49" General view of the Torus Hall
11'05" Engineer with walkie-talkie
11'20" Electrician at work
11'25 Technicians at work
11'32" Visitors
11'41" Engineers coming out of the vacuum vessel and walking across the gangway
11'47" No-entry sign
11'51" Entrance to Torus Hall
12'02" TV camera monitoring the Torus Hall
12'07" Control room
12'52" Fast transfer line: used for putting samples of material into the plasma and exposing them to impurities.
13'12" Screen with graphic simulation of the same fast transfer line - detector in the vacuum chamber
13'18" The articulated boom, for reaching inside the vacuum vessel, is one of the largest remote handling systems ever built and is unique in terms of its flexibility and load-carrying capability. It has nine possible movements and can carry up to one tonne at the end of its nine meter horizontal reach.

13'34" Screen with graphic simulation of the articulated boom outside the vacuum chamber.
13'41" Ditto inside the vacuum chamber
14'02" Remote handling equipment: test being carried out opposite TV screen
14'20" Remote handling test in the assembly hall
14'47" Engineers at the control console
14'53" Lights of the accelerator
14'58" Assembly hall: general views
15'32" Engineers in one of the sections of the vacuum vessel
15'48" Torus Hall

3. SUPPORT FOR APPLIED RESEARCH

Eureka project 95 was set up in 1986 to promote the creation of a compatible high-definition television (HDTV) system, and suitable production, transmission and reception equipment.
The project's major objectives are as follows:
1. to propose an HDTV studio standard;
2. to ensure transmission of the HDTV signal by means of the HD-MAC standard;
3. to complete the HDTV chain (production, transmission, reception).

Specialists from the industry, television and research from over 30 European countries took part in the work. The European HDTV standard will be submitted this year to the plenary assembly of the International Radio Consultative Committee (CCIR).

ALEXANDRA PALACE
BBC - LONDON (UK)
EUREKA 95
HDTV recording

15'56" Exteriors: Alexandra Palace
16'04" BBC recording crew making a demonstration programme using the Eureka 95 HDTV system
Title: "We return you to the studio"
Director : Philip Ashby
17'08" Crew at work in front of the HDTV mobile laboratory
17'17" Eureka logo
17'23" The crew at work
18'14" Commemorative plaque
18'30" Inside the HDTV van
The 1 250-line HDTV recording system consists of four 625-line digital (D-1 component) recorders. Each recorder handles a quarter of the information in the signal. This method allows users to obtain a 625-line picture from each recorder.

18'46" Example of an HDTV picture
19'27" Crew at work in the Ally Pally (Alexandra Palace) No 1 studio
20'50" Family photo of the entire crew
20'58" Exteriors of the BBC research department at Kingswood Warren
21'05" Inside the research laboratory. Researcher explaining motion vector research.
23'05" Researcher in front of HDTV and 625-line monitors.
Conversion from 625 to 1 250 lines
Conversion from 1 250 to 625 lines

THOMSON RESEARCH CENTRE
VILLINGEN (WEST GERMANY)

23'33" Exteriors
23'47" Inside of laboratory
Research on a studio colour HDTV monitor display and studio equipment
24'54" Researcher working on one of the forty prototypes for a large-screen multi-format television set based on a high-scan chassis capable of satellite reception, D-2 MAC/D-MAC processing, various European standards and simultaneous display of several channels.

It will be availble for customers later this year.

Technical features:
. digital processing of PAL, SECAM and NTSC signals for 36" 1 250-line screens;
Each line of a 625-line source signal is doubled by artificial regeneration.
. screen format control to display 4:3 ratio on full 16:9 screen;
. the chassis contains two tuners for multiple screen display;
. full digital sound.
25'50" Examples of reception modes and formats
26'14" Picture of flowers
26'21" Flowers in front of a Thomson Proscan 16:9 camera

4. SUPPORT FOR BASIC RESEARCH AND MANAGEMENT OF INTELLECTUAL RESOURCES

An example of cooperation in basic research is the project on the internal structure of stars by the Kapteyn Observatory and the University of Groningen in the Netherlands.

An interferometer, or super-stable seismograph, has been jointly developed.

In April 1989 the device was transferred to the European observatory "Cerro la Silla" in the Chilean Andes to study the sky of the southern hemisphere.

The first objective will be to study Alpha Centauri, the brightest star in the southern hemisphere. The Dutch astronomers are working closely with their Danish colleagues to study sun-like stars. One aspect of this research is to determine the age of stars by measuring spectrum oscillation.

KAPTEYN OBSERVATORY
UNIVERSITY OF GRONINGEN (NL)
SEISMOLOGY OF STARS

26'36" Exteriors
26'50" Inside the observatory, showing the telescope
26'58" The moon
27'03" The telescope
27'07" Seismograph and scientists in front of a graphic plot
27'21" Graphic plot and oscilloscope
27'45" Orion (young star)
27'51" M13 Hercules (young star)
27'55" Laser connected to the seismograph
28'08" Infrared beam
28'16" Cable connected to seismograph to carry the laser beam
28'28" Three sensors which measure the temperature inside the seismograph
28'34" Engineer in front of computer
28'39" Screen showing results of measurements
28'49" Diagram

GRAPHS

29'04" Graph No 1

RESEARCH SCIENTISTS AS A PERCENTAGE OF POPULATION - 1989

USA
Population: 244 million
Research scientists: 825 000 0.33%

JAPAN
Population: 122 million
Research scientists: 400 000 0.32%

European Community
Population: 320 million
Research scientists: 500 000 0.15%

29'27" Graph No 2

INFORMATION TECHNOLOGY IN EUROPE
PERCENTAGE OF GDP IN 1990 AND 2000
In 1990, information technology represents 8% of the average Community GDP.

In the year 2000 the figure will rise to 15% of GDP.

29'45" Graph No 3

DEFICIT IN THE EUROPEAN ELECTRONICS SECTOR IN RELATION TO JAPAN

1984:	ECU 8 500 million
1988:	ECU 20 200 million
forecast 1994:	ECU 30 300 million

30'08" Graph No 4

DEFICIT IN THE EUROPEAN ELECTRONICS SECTOR IN RELATION TO THE UNITED STATES

1984:	ECU 10 800 million
1988:	ECU 17 200 million
forecast 1994:	ECU 26 600 million

30'30" Graph No 5

DISTRIBUTION OF RESEARCH AND DEVELOPMENT BUDGET 1990-94

Enabling technologies: 54%
Information technology, communications, industrial and materials technologies

Management of natural resources: 37%
Environment, life sciences and technologies, energy

Management of intellectual resources: 9%

END

Vi 2 12

I.T.P

Pieter Mertens

responsable shotlist en française

André Jacquot

→ J.C. Lieffrig

G. Dubois

NEW TECHNOLOGIES

European Community

Filmotheque

NOUVELLES TECHNOLOGIES : Banque d'images

1. UNIVERSITY OF WAGENINGEN - LABORATORY OF PHYTOPATHOLOGY : Cladosporium Fulvum, the fungus that affects the tomato-plant
2. UNIVERSITY OF WAGENINGEN - DEPT; OF MOLECULAR BIOLOGY : The carrot and the secrets of embryogenesis
3. UNIVERSITE LIBRE DE BRUXELLES - UNITE DE CONFORMATION DE MACROMOLECULES BIOLOGIQUES : BRUGEL
4. STATE UNIVERSITY OF GRONINGEN - KAPTEYN OBSERVATORY : Seismology of stars
5. ELSAMPROJEKT TJAEREBORG : Windturbine
6. UNIVERSITY OF LIVERPOOL - DEPT; OF PHYSICS : Semiconductors
7. ABINGDON - CULHAM LABORATORIES : Jet Joint Undertaking
8. UNIVERSITY OF DUBLIN : DEPT.OF PURE AND APPLIED PHYSICS : Superconductors
9. ABINGDON - CULHAM LABORATORIES : 2 KW CO2 Laser

75.000.000

Money for 5 more.

50.000.000

① 30. (en septembre) Computer in parallell - applications
Meganode (Esprit) - (Metz + Grenoble) → 3D image → synthetic image → meteo image

② TVHD (Thomson) - Axis (shooting)
(Philips) - what we have is audiovisual. + Madrid

③ "Autodesign" for chip - (Philips)

~~④ Satellite - Optique fibre~~ (

~~⑤ Eurotunnel~~ ?

CODE : BAP - 0093 NL WAGENINGEN - NL

Department of Molecular Biology
AGRICULTURE UNIVERSITY WAGENINGEN
De Dreijen 11
6703 BC Wageningen (THE NETHERLANDS)

MOLECULAR BIOLOGY

Starting with an inconsiderable quantity of plant tissue, it's possible to have cells in vitro developed into new plants of the same species.

This method, using the so-called "cell tissue culture", is a very important technique in biotechnology.

Scientists wonder which molecular processes underlie the regeneration (development) of cells into plants.
Under optimal regeneration circumstances, only a restricted number of cells develop into embryos.

Apperently embryogenic cells distinguish themselves in a early stage from non-embryogenic cells.
Therefore research is concentrating on the factors that determine whether a cell is going to regenerate or not and how this is controlled on a molecular level ?"
In the end, the answer to this question is very important for molecular biology and for better in vitro regeneration of commercial plants.

CODE : BAP - 0093 NL WAGENINGEN - NL

The carrot, and the secrets of embryogenesis

SYNOPSIS VIDEOTAPE

This research is focussed on the **molecular analysis of carrot somatic embryogenesis.**
For these research purposes the carrot plant is extremely suited. This acquired knowledge can be put to commercial use for the in vitro regeneration of plants and crops.

A chronological rèsumè :

-The tissue of carrot plants is prepared for in vitro regeneration. A number of cells of this plant tissue is growing in a flask with a medium of nutritious proteins.
Only very few of them develop embryos.

Scientists investigate which proteins are responsible for this cell growth or embryogenesis. Therefore they are experimenting and analysing the various proteins which occur inside a cell or were excreted from the cell tissue culture in the medium of nutritious proteins. The cells that develop embryos distinguish themselves in an early stage of those who don't.

Light microscope images show the different consecutive stages of cells developping into embryos (embryogeneses).
This presentation also shows the many preparations for in vitro regeneration of cell tissue cultures.

CODE : E.C. T.V. - 006 ABINGDON -UK

ADAPTIVE CONTROL OF LASER PROCESSING
BRITE PROJECT

LASER APPLICATIONS GROUP
Culham Laboratory
Abingdon
Oxfordshire (UNITED KINGDOM)
phone number 00-44-235-46.42.06
fax number 00-44-235-46.36.82

A major research programme in "**Adaptive Control of Laser Processing**" was made possible by combining the resources of the **Laser Applications Group** at the UK Atomic Energy Authority's **Culham Laboratory** with those of the **TNO Applied Physics and Metals Institutes** in the Netherlands.
The work which has also involved 24 other partners from West-Germany, the Netherlands and the United Kingdom, is aimed at **developing high power laser beam technology in manufacturing processes** for the aerospace, automobile, nuclear, shipbuilding, electrical and general fabrications industries.
This three year project, which commenced on 1st October 1986 has the following objectives:

- **Investigate beam quality and stability** in different types of high power CO2 lasers.
- Determine the **influence of operational factors** on selected manufacturing processes with CO2 and Nd:YAG lasers.
- Develop a **servo-controlled beam alignment system** for use with multi-kilowatt laser beams.
- Select an **on-line weld penetration monitor** and demonstrate its reliability when used with a 10kW CO2 laser.
- Adapt a **seam following vision system** for controlling laser welding processes.
- Study **effects on "keyhole" stability** of varying laser welding parameters and optimize weld quality.
- Design and **construct a large gantry** to demonstrate adaptive control of welding with a 10kW CO2 laser.

A 6 meter long three-axis welding gantry has now been constructed at Culham for use with the 10kW CO2 laser. These "demonstrator welding gantry" facilities will be used to demonstrate adaptive control of laser processing by providing the closed-loop controls that are needed to produce welded joints in heavy section components with conventional edge preparations and varying joint gaps.

This project should be completed as scheduled by october 1989. Following that, additional laser materials processing facilities will be available at Culham Laboratory for future **BRITE/EURAM** projects and/or industrial exploitation.

CODE : E.C. T.V. - 006-ABINGDON -UK

ADAPTIVE CONTROL OF LASER PROCESSING

SHOTLIST VIDEOTAPE

00:00	OUTDOORS: sign CULHAM LABORATORY pan Right (car driving to entrance)
00:14	Car drives up to barrier
00:37	View from inside the car (driving past buildings from the Culham Laboratory)
01:02	INSIDE LABORATORY: General View of the 6 meter long welding gantry assembled at Culham. Details of the gantry put in its place.
01:30	Topshot of the Assembly Hall with the 10kW CO2 laser. tilt-down to the seperate compartment with the welding gentry.
01:47	tilt-down over the focus unit to the Seampilot vision system and wire feed unit, fitted to the vertical slideway.
02:10	Topshot: 2 engineers at work .one in front of computer terminal .other looking through viewport and adjusting the laserbeam
02:23	view of engineer in front of computer terminal
02:27	view of man looking through viewport
02:50	detail of the manipulation of the Servo Controlled Beam Allignment system
03:00	man looking through protective window (blue light from the laser beam is reflected on his face)
03:05	two other engineers are discussing the results of the welding process (in front of television monitor showing details of the experiment) zoom-in to monitor
03:42	detail of specimen being discussed zoom-out to general view.

e n d

CODE : EC TV - 005 DUBLIN - IRL

SUPERCONDUCTORS

Making superconducting films with laserablation

00:00	Outdoors : View of Trinity College University of Dublin
00:10	Walking students
00:17	General view of central court.
00:22	two students talking
00:27	General view : walking students
00:31	General view and zoom out - old university buildings - walking students -
00:43	detail of tower
00:46	scientist enters a building
00:54	Indoors : close-up of mineral (rock) on sawing machine and zoom out to scientist sawing the mineral.
01:04	Close-up of the sawing of the mineral into slices, in order to make an superconducting substrate
01:08	detail of scientist's hand with slices of the mineral.
01:11	Close-up of scientist's face
01:16	Close-up of hand - fixation of slices
01:20	Close-up hand putting slices in a jar
01:25	Close-up student's face + hands
01:33	Close-up of acrifixpowder
01:39	Close-up student's face
01:42	Close-up of hands - acrifix fluid is poured in jar with the acrifix powder
01:50	VCU mixing the fluid and the powder
01:56	Close-up of hands- the solution is transferred to the jar with the slice
02:07	Close-up of jar with slice and the acrifix solution
02:12	Fade in (after the fixation-process): scientist takes out the mineral slice out of the jar
02:23	Close-up of preparation of the hand polishing
02:30	detail of scientist's face
02:33	Close-up of hand polishing
02:39	Close-up of slice being attached to the polishing machine
02:51	CU polishing powder
02:59	scientist in front of the polishing machine
03:01	cu evolving surface of polishing machine
03:07	the surface is examined with a microscope
03:24	cu graphic with x-ray diffraction pattern and zoom out to two scientists
03:31	general view of scientist preparing the chemicals
03:46	detail of the crushing of the chemicals
03:54	detail of scientist's face
04:00	the crushed cristals are put in a flask
04:09	scientist makes a solution
04:27	scientist examins the solution

04:46 detail of hand with blue solution
04:48 cu hand - mineral slice is prepared for the oven
04:58 general view : the slice is placed in the oven where it will be heated to approximately 500 Celcius.
05:09 scientist programs the oven and closes the door
05:21 general view : after the baking the scientist removes the slices from the oven
05:31 cu of the cooler:(with blue cooling solution)
05:41 cu of metal brick with several slices
05:44 cu spraying the solution on the slices
05:48 cu sprinkler with hand
06:23 general view : scientist placing the slices into the oven a second time
06:23 scientist in front of computer terminal with laser-apllication on the background
06:37 shoulder shot : scientist looking to lasersystem with the slice, and zoom in to the infrared laserbeam
06:50 + general view
06:58 set-up of the laserapplication
07:03 vcu red infrared laserbeam spot on the slice
07:10 cu brick - shows an heating spot of the invisible long wavelenght infrared laserbeam
07:14 cu demonstration of the drop to zero resistance when cooled to liquid nitrogen temperature / the new substrate has now become superconducting

e n d

03:05 General view of the control room - JET uses a computerised Control and Data Acquisition System (CODAS) to provide a flexible, easy and safe method of operation.
JET is controlled and monitored from the two control rooms using a network of about 40 mini-computers

03:27 Fast transfer line : is used for putting samples of material into plasma and exposing them to the impurities - the sample is removed and analysed

03:46 Screen : graphic with the same fast transfer line - detector into the vacuum vessel (simulation)

03:53 Torus Hall - the articulated boom:
zoom in to vacuum vessel - this articulated boom, used for reaching inside the JET vacuum vessel is one of the biggest remote handling systems ever built and is unique in terms of its flexibility and load-carrying capability - it has nine possible movements, and can carry up to 1 tonne at the end of its 9 meter horizontal reach.

04:07 Sequel : detail

04:11 Sequel : screen with graphic simulation of the articulated boom into the vacuum vessel

04:29 Remote handling equipment : test being carried out - detail of TV-screen with image of the test with remote handling on the floor of the assembly hall - zoom out

04:39 Sequel: movements of robot arms visible on screens

04:42 Assembly Hall: testing of the remote-handling

04:48 close-up: engineers face

04:50 close-up: tip of robot arm

04:53 Assembly Hall : general view

04:57 General view of a part of the assembly hall + pan R to one of the eight sections of the JET vacuum vessel under construction in this manufacturer's special clean-room building.
the all-welded vessel is made up of alternative thin bellows sections and thicker rigid sectors - the 100 tonne vessel is made of Inconel

05:11 Man steps on the ladder towards a section of the JET vacuum vessel

05:38 Sequel : man into this section

05:56 General view of the diagnostic wing of JET

06:02 Sequel: man in front of control desk
+ details of the handling of the equipment.

06:29 e n d

CODE : EC TV - 005 DUBLIN - IRL

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SUPERCONDUCTORS

Making superconducting films with laserablation

SYNOPSIS VIDEOTAPE

The production of a superconductor starts with the **sawing of the mineral** (rock) **into slices.** Those slices are used to make a substrate material, that later becomes superconducting.

After the sawing, the slice is fixated with a so-called acryfix fixation, so that the slice can be polished by hand.

Then the slice is polished mechanically with a polishing machine using several types of polishing powder for each phase. Scientists interrupt the polishing to obtain an X-ray diffraction (graphic) of the sample to check the constituents and structure.

In the laboratory the new substrate is placed in an oven and heated to 500 degrees Celsius.
Afterwards, the substrate is removed from the oven and the (chemical) film is sprayed onto the substrate.
Then the substrate is once again placed in the oven, for heating this (chemical) film and to produce the correct superconducting phase.
Last set-up is the demonstration of the laserapplication : making films by laserablation.
Scientist sits in front of a computer terminal, typing the instructions for servo-automatic handling.
The long wave lenght infrared laserbeam is normaly not visible. To demonstrate, the scientist shows a servo-automatic handling with another (and this time) visible infrared laserbeam. The red spot of the infrared laderbeam is focussed on the sample (substrate) and moves to the left.
To demonstrate, the last close-up of this set-up shows a normal brick with a heating spot of the long wavelenght infrared laserbeam. Last shot, demonstration of the drop to zero resistance when cooled to liquid nitrogen temperature.
The new substrate has now become superconducting.

Jet Joint Undertaking

The Joint European Torus

-The suroundings of Jet Joint in Abingdon, the main entrance, the 400 KV substation with its storage tanks.
-The cryolines in the basement beneath the Jet Torus Hall.
-1 of 2 Neutral Beam Injection Systems in the main Torus Hall.
-Torus Hall with supervisors and visitors on the floor and workers on scaffolders.

-The different detectors to measure the density and the electronic temperature of the Jet plasma.
The high temperature plasma is created and contained in a toroïdal (ring-shaped) vacuum vessel, confined and controlled by magnetic fields.
This vaccuum vessel is an all-welded, doublewalled structure with a D-shaped cross-section. The main component of the magnetic field is produced by 32 of these D-shaped coils, that are evenly spaced around the torus.
These JET magnets are the largest ever built.
Unlike accelerator magnets which operate at a modest field strenght and moderate level of mechanical stress, the JET magnets have to sustain very severe pulsating loads. Fatigue problems on JET are the more critical since replacing a magnet would be a major task involving a prolonged down-time of the experiment.

-A range of machines is required to place and hold devices, which carry and manipulate components of JET.
One example of such a large high precision robot is the articulated boom: one of the biggest remote-handling systems ever built, that can enter and carry equipment through the main port aperture of only 940 x 430 mm and position its tip within 2 mm.
Illustrated with computer graphics of the same action of the remote-handling on a screen (simulations).

-One of the two control rooms. The testing of the remote handling system takes place in a seperate computerroom. Towards the end of the Jet programme, it is planned to operate with deuterium and tritium plasmas to obtain abundant fusion reactions. With both tritium, a radio-active form of hydrogen, and the high energy neutrons produced as a result of the fusion reactions, the whole Jet machine will become siffiently radio-active to require that all maintenance and repair work is carried out using remotely-controlled equipment.

-The assembly hall with one of the eight sections of the Jet vacuum vessel under construction.

Joint European Torus

SHOTLIST VIDEOTAPE

00:00	Jet Joint Undertaking
00:05	The 400 kV substation, which includes the 400 kV SF6 incoming breaker - zoom out to building with Torushall in the background
00:20	Four storage tanks on the right side of the 400 kV substation
00:24	Surroundings
00:27	Electricity pole + tilt-down to 400 kv substation + white JET building on the background
00:34	Electricity pole + JET building
00:38	Roof of Jet building - Torus Hall in the middle
00:41	Indoors : cryolines in the basement beneath the Jet Torus Hall (big aluminium lines)
01:03	Torus Hall - sequel: Neutral Beam Injection Heating - the injection of energetic particles into the plasma is a proven method of raising its temperature - a beam charged hydrogen or deuterium particles is produced in a plasma source, and then accelerated to increase its energy - for charged particles to cross the magnetic field, used to confine the plasma, they have to be neutralized - this is achieved by passing them through hydrogen gas - in the plasma the neutral particles give up their energy by collisions, and hence raise its temperature - JET has two injection units producing a maximum of 20 million watts (MW) of heating.
01:19	Torus Hall : general view with wide-angle + tilt up of the vacuum vessel.
01:30	An electrician at work
01:40	top-shot on scaffolding
01:42	Torus Hall : wide-angle top of the vacuum vessel.
01:51	Topshot: man welding
01:58	Torus Hall : visitors
02:08	Close-up of worker on scaffolding
02:13	man in front of control-panel + tilt up to vessel
02:24	man is coming out of the vacuum vessel and walking across the gangway (the entrance to the vacuum vessel is strictly limited for security purposes, to prevent that objects could fall into the magnets which would cause immense damage)
02:30	Close-up of sign: "No entry without valid permit"
02:33	Entry of the Torus Hall : In a determined stage of the experiments an enormous gate will be closed so that no human being will be able to enter the hall.
02:43	Close-up of a TV-camera controlling the Torus Hall
02:47	Control room : zoom out from a TV-screen with image of the TV camera controlling the Torus Hall to man who sits in front of a large desk with several keyboards and screens + details of face and screen

04:09	New action : student and scientist alternatively look through the viewport + detail.
04:22	Close-up of the siliciumspecimen through viewport
04:27	Sequel : scientist moves the siliciumspecimen around
04:34	Sequel : close-up through viewport
04:38	X-ray gun + operation
04:49	sequel : controlboard of x-ray gun + detail
04:53	student's face
04:57	Detail : turning the knob
05:05	General view of X-ray gun
05:10	Close-up and tilt-down: from the connecting cables to mainframe electronics rack and 2 scientists sitting in front of computer
05:54	Outdoors Davesbury Laboratory : main buildings
06:09	indoors : travelling through a corridor + shot of main hall
06:44	Sequel : man walking in corridor
06:53	Sequel : travelling from his viewpoint
07:01	Scientists in front of a new apparatus - Laboratory of Liverpool is shortly going to work jointly with the Davesbury Laboratories Scientist from Liverpool greets his colleague
07:11	Sequel: scientist from Liverpool talking with his colleague from Davesbury in front of pieces of new machinery covered with tinfoil. e n d

CODE : E.C. T.V. - 004 ABINGDON - UK

JET JOINT UNDERTAKING
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NUCLEAR FUSION

The principal aim of Jet -the Joint European Torus- is to establish the scientific feasibility of nuclear fusion as a new source of energy. The fuels for application of nuclear fusion are virtually limitless available.
The task of creating and controlling fusion reactions on earth, similar to those occuring naturally in the sun and the stars, is an exciting and challenging one, both scientifically and technically.

JET **-Joint European Torus-** is the largest single project of the coördinated nuclear fusion research programme of the European Atomic Energy Community (EURATOM).
In 1973, an international teaml was set up to design JET.
Approval to proceed with the project was given by the EEC Council of Ministers in 1977.
The Jet Joint Undertaking was set up to construct and operate the Joint European Torus. There are about 650 scientists, engineers, and administrators working on the Jet Project, who are drawn from Euratom and 14 participating countries.
In addition, there are a number of scientists from elsewhere in the world working on the project.

To utilise fusion reactions as an energy source it is necessary to heat a gaseous fuel (a mixture of the two hydrogen isotopes, deuterium and tritium) to temperatures in excess of 100 million degrees Celsius - several times hotter than the centre of the sun. At these temperatures, the gas is in the so-called "plasma state".

SEMICONDUCTORS

SYNOPSIS VIDEOTAPE

The new auger electron spectrometer in the Laboratory, gets covered with a baking-cover, so that the specimen can bake during the night. This is the first step of the process of making a semiconductor.
In the morning the new auger electron spectrometer is uncovered, as are the vieuwports and other parts of the apparatus.

Different cables are connected, for example a pre-amplifier that reïnforces the electronic signals - output data - and sends them to the computerracks.

Student puts liquid nitrogen (- 196 degrees celsius) in apparatus to cool it down, and thereby improving the pressure status of the Auger spectrometer.

The voltagecables are connected. Through the viewport one can see that, in order to purify the siliciumspecimen it gets heated to 1000 degrees celsius. This procedure is repeated several times to further purify the surface of the selicium. The specimen can be positioned inside of the apparatus by means of a lever.
An X-ray gun is used to examine the surface of the purified silicium.

When highly excited atoms loose energy they frequently do so by emitting x-rays. But a more common way in which excited atoms loose energy is by the emission of electrons. The study of these "Auger" electrons is more difficult than the study of x-rays since elctrons do not penetrate very far in air.
Consequently Auger spectroscopy requires expensive ultra high vacuum equipment.
When the Auger work began in Liverpool it was widely held that the special profiles of Auger transitions were independent of the chemical environment of the excited atoms and that in consequence Auger spectra could not reveal any information on electronic structure. This view arose from experience with low resolution Auger equipment which is used in elemental analysis.
By concentrating on high resolution measurements of the spectra of Auger processes which involve valence levels the Liverpool group have played a major role in establishing Auger spectroscopy as a probe of the local electronic structure of materials. It is now accepted that Auger spectra can yield important information, and much of which cannot be obtained in any other way.

The decision to build the new Auger electron spectrometer is the culmination of fifteen years of work in which the Liverpool group have developped high resolution Auger spectroscopy as a probe of there electronic structure of materials.

SEMICONDUCTORS

SHOTLIST VIDEOTAPE

00:00	Outdoors : Streat near the university of Liverpool
00:09	Indoor of laboratory (high-angle): men at work
00:26	Details of Laboratory
00:41	Scientist opens a bowl with a siliciumwafer - and zoom out to scientist who's looking at it
00:52	Handling pieces of silicium with a pincet
00:58	Laboratory : general view of the new auger spectrometer
01:02	Sequel : spectrometer is covered with baking-cover
01:07	Sequel : student covers part of the auger spectrometer
01:18	Laboratory : general view of the new auger spectrometer by night - during the baking process
01:32	Sequel : two men remove the baking cover and the tinfoil from the viewports and several other parts of the apparatus
01:42	Sequel : removal of the protective tinfoil from the LEED or "Low Energy Electron Diffraction"
01:47	Sequel : preparing the apparatus for the connection of the pre-amplifier
01:58	Close-up scientist's face
02:01	Sequel : connecting the pre-amplifier + general view of the same action
02:44	Close-up of container with liquid nitrogen and zoom out to student who pours it in a bucket (producing a lot of white fume).
02:51	Sequel : student takes the bucket and walks to the auger spectrometer
03:05	Sequel : student pours the liquid nitrogen in the spectrometer + detail of young man's face (covered with fume)
03:24	Sequel : close-up white fume of liquid nitrogen
03:30	Sequel and end of this action : general view with the auger spectrometer and the white fume
03:36	Connecting of voltagecables + detail.
03:44	Close-up through the viewport : siliciumspecimen is heated to 1000 degrees celsius in order to purify it from any oxygen residue. This process is repeated several times untill the required state of purity is reached. Due to the heating the specimen changes in colour (from dark to red).
03:54	sequel : close-up scientist's face - looking through the viewport + detail of red heated siliciumspecimen

03:38	OUTDOORS: windturbine
03:46	+ general view of the site with 3 smaller turbines
03:59	nacelle + zoom-in to hub
04:13	detail of hub
04:18	details of blades
04:41	INTDOORS: general view of nacelle (hub in background) + detail of interior of the hub
04:58	view through window + pan to the right reveals the 2-stage gearbox
05:10	+ details of the gearbox
05:25	
05:27	
05:39	
05:51	OUTDOORS: windturbine in rural landscape. e n d

CODE : E.C. T.V. - 003 LIVERPOOL - U.K.

DEPARTMENT OF PHYSICS
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SEMICONDUCTORS

A new auger spectrometer for analysis of the local electronic structure of materials, and the interface between metal and semi-conducting materials: such as silicium,germaniun,galenium-arsenide and galenium-alluminium-arsenide.

Semi-conductors are used for all computing communications (information processes).
Dr. Peter Weightman of the electron spectroscopy group of Liverpool University physics department has recently been awarded two large grants to build a new auger electron spectrometer. When completed, the new instrument will combine the sensitivity and resolution which is at least ten times better than any existing instrument.
The grants are from the SERC (Science and Engineering Research Council) and the EEC, the latter in the form of a twinning contract between the Liverpool group and scientists from the State University of Groningen (The Netherlands), the University of Messina (Italy) and the CNR research Laboratory in Rome. Scientists from the Dutch and Italian groups will visit Liverpool to work on the new instrument.
In addition the Liverpool Group have recently been awarded a £ 10 million grant to set up an Interdisciplinary Research Centre.

WIND TURBINE
two megawatt power at Tjaereborg

SYNOPSIS VIDEOTAPE

Location of the 2MW windturbine on the Danish coast, at Tjaereborg, near Esbjerg,in its pastoral surroundings. The general appearance is traditional for Danish windturbines. The terrain of the site is flat marshland.

The local population had reservations at the start of the project, though the area had been intended for the installation of windturbines for many years.
In time this opposition has weakened.

Much attention has been given to environmental effects. The site is just on the edge of a Ramsar-area and the Danish authority has been therefore starting investigations into the effects of the turbine on the migration of birds and their breeding areas.

An architect has designed the form and colouring of the 90 m high construction in order to make it as discrete as possible.

The measurment system has been installed in the tower of the 2MW windturbine and has been put into service, and all engineering and reporting will be done by the owner Elsamprojekt A/S.

TABLE 1 : MAIN DESIGN DATA

* rotor diameter	61,1 m
* tip-speed, full load	71,7 m/s
* Hub height	60,0 m
* Generator power	2MW
* cut in/rated/cut out wind	5/15/25 m/s
* rotor weight	67 t
* total weight, exc tower	211 t

WIND TURBINE
two megawatt power at Tjaereborg

SHOTLIST VIDEOTAPE

00:00	Sign of Tjaereborg
00:05	City atmosphere
00:09	Outdoors: pastural surroundings - pasture with wooden electricity pools at the village of Tjaereborg in Danmark
00:15	Close-up wooden pole with electric wirefence + zoom out to a country house
00:23	Close-up of sign "Nature reserve and wild sanctuary"
00:26	view of nature reserve
00:32	bird in sky
00:34	Longshot nature reserve
00:39	detail of plants
00:42	Several little windturbines with the 2mw windturbine on the background
00:45	general view of little church
00:48	Long Shot of the same church from different angle + zoom out inside windturbine
01:02	View of country road (with shadow of the blades) pan to the right to windmills
01:08	Engineer looks to top of the mill
01:12	engineer discusses with colleagues some technical details in front of a chart and other plans
01:17	Close-up of colleague
01:19	Close-up plan - engineer gives instructions
01:22	several views of the meeting
01:32	
01:36	
01:38	
01:45	
01:50	OUTDOORS: windmill in action
01:55	INDOORS(turbine): technician at work in the wind turbine in front of computer that analyses the meteorological data and statistics
02:01	INDOORS(control room): technician at work in front of central monitoring computer + zoom in to screen
02:10	Detail of graphic plotter
02:16	OUTDOORS: Engineer looking upwards
02:20	detail of the tip of the rotor
02:26	INDOORS: General view of the machine room
02:40	OUTDOORS: engineer walks to the windturbine
02:55	INDOORS: he takes the elevator
03:09	TOP VIEW of the elevator shaft (lift is coming up)
03:24	engineer joins his colleagues in top of windmill

CODE : E.C. T.V. - 001 GRONINGEN - NL

Kapteyn Observatory
State University Groningen

SEISMOLOGY OF STARS

00:00	The Observatory at the State University of Groningen
00:14	The dome of the Observatory is opened.
00:27	Indoors : scientist at work near telescope.
00:43	Outdoors : The observatory
00:46	Indoors : mounted telescope
00:51	Scientist walks into the observatory.
01:01	Inside laboratory : general view of seismographe with + scientists in front of a graphic plot
01:07	Scientist in front of an oscilloscope with colleage looking at plot.
01:14	Detail of oscilloscope picture.
01:17	Seismographe + tilt-down to graphic plot
01:23	Detail of the glass fibrecable used for the transport of the infrared laserbeam into the seismograph.
01:28	Seismograph + pan L to table with oscilloscope
	Three young stars
01:38	1.ORION
01:42	2.M13 HERCULES
01:45	3.
01:48	Topshot with wide-angle : laserappliance which is still connected to the seismograph.
01:52	Topshot with wide-angle : details of laserappliance with infrared beam
01:56	The infrared beam + detail
02:00	Close-up : glass fibrecable before connecting into seismograph
02:01	Detail of Seismograph : (with tinfoil) - with the connected glass fibrecable.
02:04	Seismograph
02:07	Close-up : 3 sensors which measure the temperature inside the seismograph
02:09	Detail of cables connecting the seismograph to a computer that registrates the output data of the measuring results.
02:24	Close-up : tilt-up to screen with diagram, showing test-results.
02:36	Close-up : paper with a similar diagram
02:43	Library of the Kapteyn Observatory
02:49	Library : travelling from L to R Scientists standing in front of bookcases On the wall a slide display with several pictures of young stars.

CODE : E.C. T.V. - 002 TJAEREBORG - DK

ELSAMPROJEKT
Tle Porser Station Engineering Division
7000 Eredenica (DENMARK)
phone number 00-45-5-56.44.11

WIND TURBINE, two megawatt power at Tjaereborg

The construction of a 2MW windturbine at Tjaereborg (near Esbjerg in western Jutland)in Denmark, was recently completed. The design of the unit is based on the earlier 630 KW Nibe B machine, and it will be connected to the grid operated by **ELSAM**, the power utility cooperative serving the western part of Denmark.

The general appearance of the 2MW windturbine at Tjaereborg, about 9 km southeast on the west coast of Jutland, is traditional for Danish windturbines.

The rotor is upwind and it has three blades on a rigid hub. The power is controlled by a electrohydraulic full-span pitch control.

The blades are made of monolithic glass fibre reinforced polyester.
The elliptical carrying beam is wound, with a precisely specified glass content. The surface shells are made in a traditional boat manufacturing process.
Clueing techniques are used for assembly.

As there are three large Wind Turbine Generators (WTG's) in this EEC programme, steps have been taken to assure the exchange of comparable results.

CODE : E.C. T.V. - 001 GRONINGEN - NL

SEISMOLOGY OF STARS

Stellar structure and evolution

First of all, the new seismograph apparatus has been connected on a laserappliance, to measure the light intensity of young stars.

In april 1989 the seismograph was transfered to the **European Southern Observatory** (ESO) "Cerro la Silla" in the Andes, 600 km north of Santiago (Chili).
ESO is an European scientific organization of eight members : The Netherlands, Belgium, The Federal Republic of Germany, France, Italy, Denmark, Sweden and Switserland.

The astronomers working in this observatory will have at their disposal a number of highly sophisticated instruments of observation to study the sky of the Southern hemisphere.

In this research with the new seismograph Dutch astronomers will work closely together with their Danish colleages to study young sun-like stars. One of the aspects of this research focusses on determening the age of stars by measuring spectra oscillation.

The seismograph has been developped to conduct this unique research. The seismograph is designed to achieve a velocity stability of near 30 cm/s for periods of many hours, and to have high enough optical efficiency to record at high spectral resolution the very faint light from even the brightest stars. Special optical techniques, including a super stable interferometer, the use of fiber optics to conduct the light from the telescope to the instrument, and the incorporation of space qualified electronics to ensure stability of response. In addition, all critical optical and electronic components are inclosed in a thermostat unit, which is regulated in temperature to a thousandth of a degree.

The first of these researchprojects will deal with Alfa Centauri, the brightest star in the Southern hemisphere.

The accuracy of the seismographic observations might improve man's knowledge of the stellar structure and its evolution.

CODE : E.C. T.V. - 001 GRONINGEN - NL

Kapteyn Observatory
Prof Harvey BUTCHER
STATE UNIVERSITY GRONINGEN
Mensingheweg 20
9301 KA Roden (THE NETHERLANDS)
phone number 00-31-59-06.19.63

SEISMOLOGY OF STARS

Stellar structure and evolution

The purpose of this research project is to explore the possibility of extending the techniques of seismology to distant stars. That is, an attempt will be made to provide and calibrate oscillation and wave transport data, and use these to infer the interior properties of the stars.

01:41 One of this amino acids, the so-called asparagine (ASP) the "wireframe" structure - rotating picture

01:44 Sequel : rotating picture of this amino acid, view as CPK

01:51 The amino acid glutamine (GLU) - "wireframe" structure

02:01 Sequel : rotating picture of this amino acid, view as CPK

02:05 In the global structure of the proteins one can recognize recurrent local features: they constitute the secondary structure. The different type of local structure of the barnase are coloured as follows: red:helices/ green:extended strand/ blue:turns/ light blue:unstructured part (coil); view of wireframe of the backbone; sequel: view of coloured ribbon following the backbone

02:11 Scientist at work in front of a computer

02:21 View of one helix (red) - rotating red dotted lines represent stabilizing interactions

02:24 Sequel : view of a set of extended strands - rotating

02:30 Scientist in front of a computer at work + details of keyboard + screen

02:46 Visualization of the protein movements - the knowledge of these movements come from theoretic studies of molecular dynamics - the simulation of the protein begins by surrounding it with water molecules (rotating kubus) (each "V" like structure is a water molecule)

02:54 Sequel of this simulation : view of slices of the surface

03:04 The spatial structure of a protein is flexible and mobile, but its general organization is stable

03:14 Sequel : each residue is mobile

03:21 Rotating view of all the spatial positions of an amino acid surrounded by water molecules

03:29 The protein is surrounded by water molecules : at the end of the simulation, the water molecules are randomly distributed (the mobility of the different parts is represented by the colour) red=mobile / blue=immobile

03:35 Close-up : typing on keyboard

03:39 Visualization of the protein's interaction with its substrate: pink blue: protein, light blue (white): substrate. The Barnase is an enzyme that divides single stranded RiboNucleic Acid, its substrate - the substrate interacts with a specific region of the protein surface, the active side - other substances, like inhibitors, that have similar shape as the substrate, can interact with the same side : when the substrate or the inhibitor is in the active side, the interaction energy is minimal

03:41	Sequel: inhibition only
03:47	Sequel: interacting surfaces of the protein and the substrate
03:51	Scientist at work
03:55	Surface of the protein - and interaction between its sub-units
04:02	Rotating view of the surface of the sub-units of the protein and some water molecules
04:09	Sequel : similar picture, with white ribbon with sliced view in the surface room with mainframe and data storage box
04:15	Screen/graphic simulation: visualization of the protein with fragments (in colour) of other proteins that have a similar shape as a part of the barnase. This information is usefull, e.g. when scientist want to manipulate them, in order to obtain variants of it, with new characteristics of stability or specificity.
04:31	low-angle shot of computerroom with mainframe and data storage box. e n d

CODE : BAP 0225 B - BRUSSELS - B

Unitè de Conformation de Macromolècules Biologiques
UNIVERSITE LIBRE DE BRUXELLES
avenue Paul Hèger - CP160
B-1050 Brussels (BELGIUM)
phone number 32-2-648.52.00
fax number 32-2-648.89.54

B R U G E L : a computer program to handle proteins.

MOLECULAR GRAPHICS

To visualise a protein one can use a solid model.
The disadvantage of this approach is that it takes a long time to build, that it is very difficult to modify and that the colors of the different parts are fixed.

Therefore scientists have recognized the advantages of working with molecular graphics generated by computer.
BRUGEL or **"Biochemistry Research Utility Graphic Edition Language"** is computer program to handle proteins and visualize their structure.

In the video the program is used to visualize the **barnase**, a protein currently under experimental and theoretical study.
The general shape of the protein is shown, as well as different aspects of its structure: it is a chain of units (amino acids), part of the chain form regular structures like helices, etc...
One shows also that molecular graphics can be used to study the interaction between two molecules or search fragments of other proteins having a similar shape as a part of the protein (useful for protein engineering).

CODE : BAP 0225 B BRUSSELS - B

BRUGEL, a computer program to handle proteins

SHOTLIST VIDEOTAPE

00:00	Outdoors : the university - historical sight of the "Université Libre de Bruxelles"
00:11	Indoors : metal model part of structure
00:14	A solid model to visualize a protein structure (insuline)
00:18	Computerroom with on the foreground a part of the solid model and on the background scientist sitting in front of his graphic computerscreen
00:22	Screen with a molecular graphic of the same protein; (one sub-unit colored in red, the other in blue)
00:28	Scientist at work
00:35	The name of this computer package appears on the screen : **"Biochemistry Research Utility Graphic Edition Language".** BRUGEL is a molecular graphic package. This package allows to visualize the different aspects of the proteins - fade in of the surface of the protein Barnase - rotating picture.
00:52	The wireframe structure of this protein - rotating picture
00:55	CPK view of the protein : the white spheres represent the hydrogin atoms the green spheres are the carbon atoms the red spheres are the oxigen atoms the blue spheres are the nitrogin atoms The structure of the proteins is such that all atoms are compactly packed.
00:59	Sequel : another view as CPK of this protein
01:03	View of slices of the surface of the protein
01:07	Close-up : hand rotating a button on keyboard
01:09	detail of graphic screen: representation of the sliced part on the protein
01:12	View of the surface and the wireframe structure of the protein
01:23	View of wireframe structure rotating; backbone of the protein: green colored parts; laterated chains: blue colored parts appears with the names of several amino acids/ The protein Barnase has 1.700 atoms : these atoms are bound together by covalent links - this protein is composed of a series of units, the amino acids, connected by covalent links

CODE : BAP - 0074 NL WAGENINGEN - NL

SHOTLIST VIDEOTAPE

00:00	Outdoors
00:07	Students are leaving the research institute in Wageningen + pan to sign.
00:08	Indoors : Laboratory of phytopathology : scientist makes a suspension of the parasitic fungus.
00:11	Close-up : the parasitic fungus which causes leaf mould of tomatoleaves : scientific name Cladosporium fulvum.
00:18	Scientist making a suspension of the fungus.
00:26	Flask with suspension.
00:32	Greenhouse of the laboratory : scientist and eight week old tomatoplant : the lower surface of the leaves get sprayed with the suspension of the parasitic fungus + close-up.
00:42	Greenhouse - isolatory : scientist puts an eight week old tomatoplant under a plastic cover and closes the isolatory. The parasitic fungus is growing at the lower surface of the leaves. Two weeks later the leaves will be entirely affected.
	5 scanning electron microscope pictures :
01:03	1. Lower surface of tomatoleaf with growing hyphae of the parasitic fungus - the various stomato of the leaf are clearly visible. One hypha is penetrating a stoma of a tomatoleaf (magnification 800 x).
01:08	2. Close-up of a stoma of a tomatoleaf with penetrating hyphae of the parasitic fungus (magnification 4000 x).
01:13	3. After penetration of the tomatoleaf the parasitic fungus grows in the intercellular spaces of the tomatoleaf around the mesophyl cells. The hyphae of the fungus are clearly visible (magnification 5000 x).
01:18	4. Close-up of conidiophores emerging from a stoma of the tomatoleaf (magnification 2500 x).
01:22	5. Two weeks after the fungus has penetrated the plant, the conidiophores emerge from the stomata and will produce conidia later on (magnification 1600 x). The fungus lives on sugars and amino acids that occur in the intercellular spaces.

01:26	Greenhouse - isolatory : after two weeks, scientist takes the affected tomatoplant out of the isolatory and places it on a cart.
01:35	Scientist gathers the affected leaves. The brown spots on the lower surface are new fungus.
01:46	Laboratory : scientist cuts the affected leaves to pieces and puts them in a flask.
02:04	Flask with affected leaves : placing plumb rings and adding water.
02:13	Placing the flask with tomatoleaves in appliance (vacuum exicator) for in vacuum infiltration.
02:19	Sequel : the vacuum exicator in action : the air in the intercellular spaces of the affected leaves is mechanically withdrawn and refilled with water.
02:41	Sequel : tomatoleaves on a blotting-paper.
02:49	Sequel : rolling up the leaves and putting them in a tube.
02:53	Sequel : tube containing the leaves - tube with perforations, so that the bottom tube will catch the intercellular washing fluid, after centrifugation.
02:57	Sequel : tube with affected leaves, placed in a container for centrifugation.
03:03	Sequel : the centrifugation-appliance, after centrifugation with the container.
03:07	Close-up + zoom out - sequel : tube with the centrifugated leaves taken out of the container. The bottom tube now contains a brown fluid -(the so-called "**intercellular washing fluid**") - including water and soluble substances produced by the fungus and the plant.
03:13	Scientist injects this brown fluid in a tube.
03:27	Greenhouse : scientist injects the brown fluid into a number of different tomatocultivars for assaying its biological activity.
03:32	Sequel : scientist injecting a leaf + detail.
04:01	Attaching label with identification of the injection on the tomatoleaf.
04:06	Zoom out from leaf of tomatoplant to general view of ranks with tomatoplants.
04:15	Close-up : two week old tomatoplant.
04:17	Close-up : four week old tomatoplant.
04:19	Close-up : six week old tomatoplant.
04:21	Close-up : eight week old tomatoplant.
04:23	General view of the two, four, six and eight week old tomatoplants.
04:27	Zoom in to leaf : a while after the injection with the brown intercellular washing fluid : sick leaves with labels for identification of the injection.
04:33	Greenhouse - corridor : scientist, leaving with the cart with the tomatoplant.
04:39	General view of Laboratory : scientists at work
04:50	Scientist looking at a pattern of proteins
05:04	Scientist at work with computer. zoom-in to screen with graphics

CODE : BAP - 0074 NL WAGENINGEN - NL

Laboratory of Phytopathology
AGRICULTURE UNIVERSITY WAGENINGEN
Binnenhaven 9
6709 PD Wageningen (THE NETHERLANDS)
phone number 00-31-8370-83122
telex number 45917

PHYTOPATHOLOGIE

Research on the fungus Cladosporium fulvum, the causal agent of leaf mould of tomatoplants.
The fungus attacks this crop worldwide. This parasitic fungus penetrates the tomatoplant through the stomata of the leaves.

Here it grows in the spaces between the leaf mesophyll cells.

The parasitic fungus lives on sugars and amino acids that occur in these intercellular spaces.

Scientists wonder which proteins are important for the communication between the pathogenic mould and the tomatoplant.

CODE : BAP - 0074 NL WAGENINGEN - NL

Cladosporium fulvum,
the fungus that affects the tomatoplant.

SYNOPSIS VIDEOTAPE

First of all a suspension of fungal spores is made.
Eight week old tomatoplants then get sprayed with this spore suspension.

These tomatoplants are kept at 100 % relative humidity under a plastic cover in the greenhouse for about two weeks.
During this time the parasitic fungus penetrates and colonizes the tomatoleaves.
After two weeks, the leaves will be entirely affected.
One generationcycle of the fungus has then been completed.
Scientists will now gather the leaves and prepare them for experiments in the laboratory.

The air in the intercellular spaces is mechanically withdrawn and refilled with water by in vacuum infiltration. The infiltrated water including soluble substances produced by the fungus and the tomatoplant is gathered by centrifugation. This fluid is called : **"intercellular washing fluid"**, and will finally be injected in a number of different tomatocultivars to asses its biological activity.

A plant's intercellular spaces are the battlefield of the fungus and the tomatoplant.
The question is : "Can scientist unravel the secrets of these communication between the fungus and the tomatoplant ?"

05:31 Scientist in front of the light microscope.
05:36 4 bowls with cells for growth experiment :
05:39 1. bowl as control, only with plant cells;
05:42 2. bowl with inhibition protein;
05:45 3. bowl with inhibition protein and nutritious medium protein;
05:48 4. bowl with inhibition protein and stimulation protein.
05:51 Scientist looking through the light microscope + detail
05:54 Bowl with cells on the light microscope and fade out to microscope images. Stages of cell growth and embryogenesis
06:27 Travelling in the laboratory : scientists sitting in front of the same table - working
06:47 Cool room, 4 degrees Celsius : apparatus for protein analysis
06:52 Scientist in the cool room
06:56 Close-up of a pattern of proteins which occur inside a cell, or were excreted from the cell tissue culture in the medium of nutritious proteins
06:59 DNA-pattern of one protein.
07:07 Room with cell tissu cultures : scientist looking at a flask with cell material.
07:11 Outdoors/night : research institute
e n d

CODE : BAP - 0093 NL WAGENINGEN - NL

SHOTLIST VIDEOTAPE

00:00	Outdoors : harvesting of carrots.
00:21	Indoors laboratory scientist analysing cell tissue cultures.
00:35	Carrot plant in a flask.
00:40	A small amount of cell tissue is cut off and prepared for the in vitro regeneration.
01:01	Scientist in the room with cell tissue cultures.
01:07	Scientist looking at flask - containing a growth medium with nutritious proteins and plant cells which are regenerating.
01:11	An orbital shaker keeps the content of the flask moving, so that cell tissues can't grow to one another or sink to the bottom.
01:16	The several consecutive stages of preparation for in vitro regeneration of cell tissue cultures. Scientist puts the plant cells into a new bowl when the growth medium with nutrious proteins is exhausted.
03:00	Detail of flask.
03:25	Transfering the plant cell tissue into three in vitro bowls. Scientists investigate which proteins are responsible for this cell growth or embryogenesis.
03:40	Scientist in front of climatebox.
03:49	Detail of bowl with plant cells.
03:54	Scientist looking through microscope + details
04:15	Bowl with plant cells on microscope, fade in to microscope images.
04:19	Various light microscope images of cells.
04:25	Scientist transfering plant cells into bowls for the investigation of embryogenesis : adding proteins which stimulate growth (green tube) and proteins which inhibit growth (red tube).
04:41	Detail of bowls with plant cells.
04:45	Detail of little red tube.
05:08	Detail of little green tube.

VI 210

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Information, Communication, Culture

Bureau de Production

Brussels (02) 235.21.23 tlx. 61979 comrtv b

VIDEO TAPE RECORDING REPORT

EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII I"C/DII/BVU(HS)/ BETACAM SP

ORIGINAL/MASTER/COPY

COPY OF

Prog. No

Tape No : Y 0319

Date : 26/03/1990

Prod. No :

Responsable : DOMINIQUE HURET

TITLE : DOSSIER NOUVELLES TECHNOLOGIES
PREMIERE PARTIE /PART ONE VI 210
(1/2)

Version/Language : INTER

VHS + Burnt In T/C fait le :

Archive Fiche de Travail No :

For : Duration : 28 MIN 21 SEC

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After 19 / Refer To / Other

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES T.C incorrecte sur le master SP
Nouveau master digi fait le 5/10/89, avec T.C correcte

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/)

Camera Engineer/Cameraman Source M/C

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/) User Bits ?

VITC IDENTICAL TO LTC : Yes/No LTC : VITC

Sound Noise Reduction System :

		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/ SYNC			ON/OFF
TRACK 2	mute/sync/ SYNC			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Transmission Details

Clock : Yes/No Vision Completed :

Sound Completed :

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes
58	10	BARS						
	00	START PROGRAM						
	18	CALCULATEURS PARALLELES						
04	00	SEMI-CONDUCTEURS LIVERPOOL						
07	50	LASER BRITE PROJET CULHAM						
10	43	SUPER-CONDUCTEURS DUBLIN						
16	24	PHYTOPATHOLOGIE WAGENINGEN/nl						
22	10	EMBRYOGENESE WAGENINGEN						
28	21	FIN DE BANDE						

VI 210

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Bureau de Production

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VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le .....

Archive Fiche de Travail No : .....

EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I'C/DII/BVU(HS)/ BETACAM SP

ORIGINAL/MASTER/COPY

Tape No : Y 0320

Date : 26/03/90

Prod. No : .....

Prog. No : .....

Responsable : DOMINIQUE HURET

TITLE : DOSSIER NOUVELLES TECHNOLOGIES
DEUXIEME PARTIE/PART TWO
(2/2) VI 210

Version/Language : INTER

For ..... Duration : 30MIN 45SEC

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES TC incorrecte sur le master SP
Nouveau master digi fait le 5/04/90 avec TC correcte

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and 0dbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

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TRACK 1	mute/sync/	SYNC		ON/OFF
TRACK 2	mute/sync/	SYNC		ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Spot Checked/Fully Checked

CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes
58	10	BARS						
	00	REPRESENTATION GRAPHIQUES DES MOLECULES/ UNIVERSITE DE BRUXELLES PROJET BRUGEL						
4	08	EOLIENNES TJAEREBORG DK						
9	20	FUSION NUCLEAIRE JET JOINT CULHAM GB						
15	56	TVHD ESPRIT BBC-LONDRES						
		TVHD- THOMSON VILLINGEN RFA						
28	50	GRAPHIQUES						
30	45	FIN DE PROGRAM						

> 501726

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - BIOLOGIE

TAPE No. 501726
BETACAM

** SUB TITLE **
MOLECULAIRE UNIV AGRONOMIE WAGENINGEN

PROJECT :
CLIENT : HURET DOMINIQUE
WORK ORDER :

999999002

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 11:51

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	30/11/88 NOUVELLES TECHNOLOGIES - BIOLOGIE MOLECULAIRE
00:00:00:01	UNIVERSITE D AGRONOMIE WAGENINGEN

> 501727

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - BIOLOGIE

TAPE No. 501727
BETACAM

** SUB TITLE **
MOLECULAIRE UNIV. AGRONOMIE WAGENINGEN

PROJECT :
CLIENT : HURET DOMINIQUE
WORK ORDER :

999999002

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 11:47

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	30/11/88 NOUVELLES TECHNOLOGIES - BIOLOGIE MOLECULAIRE
00:00:00:01	UNIVERSITE D AGRONOMIE WAGENINGEN

> 501728

** TAPE TITLE ** TAPE No. 501728
NOUVELLES TECHNOLOGIES - CONFORMATION DE BETACAM

** SUB TITLE **
MACROMOLECULES BIOLOGIQUES U.L.B

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 11:42

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	01/12/88 NOUVELLES TECHNOLOGIES - CONFORMATION DE
00:00:00:00	MACROMOLECULES BIOLOGIQUES - UNIVERSITE LIBRE DE BRUXELLES

> 501729

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - CONFORMATION DE

TAPE No. 501729
BETACAM

** SUB TITLE **
MACROMOLECULES BIOLOGIQUES U.L.B

PROJECT :
CLIENT : HURET DOMINIQUE
WORK ORDER :

999999002

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 11:37

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	01/12/88 NOUVELLES TECHNOLOGIES - CONFORMATION DE
00:00:00:00	MACROMOLECULES BIOLOGIQUES - UNIVERSITE LIBRE DE BRUXELLES

> 501731

** TAPE TITLE **
NOUVELLES TECHNOLOGIES

TAPE No. 501731
BETACAM

** SUB TITLE **
TJAEREBORG EOLIENNE

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00/24/00/00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 10:18

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
> 00:00:00:00	26/01/89 NOUVELLES TECHNOLOGIES - TJAEREBORG EOLIENNE

> 501734

** TAPE TITLE **
NOUVELLES TECHNOLOGIES

TAPE No. 501734
BETACAM

** SUB TITLE **
TSAEREBORG EOLIENNE

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 10:15

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
> 00:00:00:00	26/01/89 NOUVELLES TECHNOLOGIES - TSAEREBORG EOLIENNE

> 501743

** TAPE TITLE **
NOUVELLES TECHNOLOGIES

TAPE No. 501743
BETACAM

** SUB TITLE **
PROJET JET - FUSION NUCLEAIRE

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 10:11

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	10/02/89 NOUVELLES TECHNOLOGIES - PROJET JET - FUSION
00:00:00:01	NUCLEAIRE

> 501744

** TAPE TITLE **
NOUVELLES TECHNOLOGIES

TAPE No. 501744
BETACAM

** SUB TITLE **
PROJET JET - FUSION NUCLEAIRE

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
19/05/93 9:55

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	10/02/89 NOUVELLES TECHNOLOGIES - PROJET JET - FUSION
00:00:00:01	NUCLEAIRE

> 501730

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - CONFORMATION

TAPE No. 501730
BETACAM

** SUB TITLE **
DE MACROMOLECULES BIOLOGIQUES - U.L.B

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
26/05/93 10:22

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	01/12/89 NOUVELLES TECHNOLOGIES - CONFORMATION DE
00:00:00:01	MACROMOLECULES BIOLOGIQUES - U.L.B

> 501732

** TAPE TITLE ** TAPE No. 501732
NOUVELLES TECHNOLOGIES - TJAEREBORG BETACAM

** SUB TITLE **
EOLIENNE

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S DURATION : 00:24:00:00
AUDIO 4 N/S CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL Recording Report Printed :
26/05/93 10:16

.....
.....

TIMER/TIMECODE EVENT DESCRIPTION/DETAILS

>
00:00:00:00 26/01/89 NOUVELLES TECHNOLOGIES - TJAEREBORG EOLIENNE

> 501733

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - TJAEREBORG

TAPE No. 501733
BETACAM

** SUB TITLE **
EOLIENNE

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
26/05/93 10:13

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	26/01/89 NOUVELLES TECHNOLOGIES - TJAEREBORG EOLIENNE

> 501720

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - UNIVERSITE DE

TAPE No. 501720
BETACAM

** SUB TITLE **
LIVERPOOL SEMI-CONDUCTEURS

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
26/05/93 10:10

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	08/02/89 NOUVELLES TECHNOLOGIES - UNIVERSITE DE LIVERPOOL
00:00:00:01	SEMI-CONDUCTEURS

> 501721

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - UNIVERSITE

TAPE No. 501721
BETACAM

** SUB TITLE **
DE LIVERPOOL SEMI-CONDUCTEURS

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
26/05/93 10:06

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	08/02/89 NOUVELLES TECHNOLOGIES - UNIVERSITE DE LIVERPOOL
00:00:00:01	SEMI-CONDUCTEURS

> 501722

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - UNIVERSITE

TAPE No. 501722
BETACAM

** SUB TITLE **
DUBLIN TRINITY COLLEGE SUPERCONDUCTEURS

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
26/05/93 9:56

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00;00:00:00	17/02/89 NOUVELLES TECHNOLOGIES UNIVERSITE DUBLIN TRINITY
00:00:00:01	COLLEGE SUPERCONDUCTEURS

> 501725

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - LABORATOIRE

TAPE No. 501725
BETACAM

** SUB TITLE **
PHYTOPATHOLOGIE - WAGENINGEN (P.B)

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
25/05/93 16:17

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	29/11/88 NOUVELLES TECHNOLOGIES - LABORATOIRE PHYTOPATHOLOGIE
00:00:00:01	WAGENINGEN (P.B)

> 501724

** TAPE TITLE **
NOUVELLES TECHNOLOGIES - LABORATOIRE

TAPE No. 501724
BETACAM

** SUB TITLE **
PHYTOPATHOLOGIE - WAGENINGEN - (P.B)

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
25/05/93 16:09

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	29/11/88 NOUVELLES TECHNOLOGIES - LABORATOIRE PHYTOPATHOLOGIE
00:00:00:01	WAGENINGEN - (P.B)

> 501723

** TAPE TITLE ** TAPE No. 501723
NOUVELLES TECHNOLOGIES - UNIVERSITE BETACAM

** SUB TITLE **
DUBLIN - TRINITY COLLEGE - SUPER CONDUCT

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S DURATION : 00:24:00:00
AUDIO 4 N/S CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL Recording Report Printed :
25/05/93 16:04

.....
.....

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	17/02/89 NOUVELLES TECHNOLOGIES UNIVERSITE DUBLIN - TRINITY
00:00:00:01	COLLEGE - SUPER CONDUCTEURS

> 501745

** TAPE TITLE **
NOUVELLES TECHNOLOGIES

TAPE No. 501745
BETACAM

** SUB TITLE **
SEISMOLOGIE DES ETOILES: GRONINGEN

PROJECT :
CLIENT : HURET DOMINIQUE 999999002
WORK ORDER :

AUDIO 1 N/S
AUDIO 2 N/S
AUDIO 3 N/S
AUDIO 4 N/S

DURATION : 00:24:00:00
CLIENT PHONE : 99438

- REMARKS -

TAPE STATUS : ORIGINAL

Recording Report Printed :
25/05/93 15:59

TIMER/TIMECODE	EVENT DESCRIPTION/DETAILS
>	
00:00:00:00	00/12/88 NOUVELLES TECHNOLOGIES - SEISMOLOGIE DES ETOILES:
00:00:00:01	GRONINGEN

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Information, Communication, Culture

Bureau de Production Berl 1/110

Brussels (02) 235.21.23 tlx. 61979 comrtv b

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

EEC TV STUDIOS Brussels
625/50 PAL
1"C/2"QUAD/BVU/BETACAM/
ASSEMBLY/SUBMASTER/FINAL
ORIGINAL RECORDING/COPY

SP

Tape No : YO338

Date : 13-14-15/3/18

Prod. No : .....

Prog. No : .....

Responsable : D. H.

TITLE : NOUVELLES TECHNOLOGIES
TELMAT INFORMATIQUE
CALCULATEURS PARALLÈLES

Version/Language : .....

For : ..... Duration : 25'

REPORT FOR ARCHIVES (by responsable) Likely to be of interest to archives. yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

Notes :

ERASURE AUTHORISED BY ; Production : Archives : Responsable :

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum) and peak level tone (+8dBu)

Record Machine No : ..... (AVR2 / VPR20 / VPR2 / BVU110 / BVU50 / BVU150 / BVW 40 / .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Tracks One and Two identical ? Yes/No

Track One : mute/effects/sync .....

Track Two : mute/effects/sync .....

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes
		TELMAT INFORMATIQUE						
		CALCULATEURS						
		PARALLÈLES						
		Cfr. Shotlist ci-joint						

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Directorate-General
Information, Communication, Culture

Bureau de Production

Brussels (02) 235.21.23 tlx. 61979 comrtv b

EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/ .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : Y0347

Date : MARS '90

Prod. No : .....

Responsable : Mr.Jacquot

TITLE : TOURNAGE FILM HDTV BBC LONDRES

.....

.....

Version/Language : .....

For : ..... Duration : 24'00"

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :	Mark identical tracks		Noise Re-duction
TRACK 1 mute/sync/			ON/OFF
TRACK 2 mute/sync/			ON/OFF
TRACK 3 mute/sync/			ON/OFF
TRACK 4 mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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Information, Communication, Culture

Bureau de Production

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/ .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : Y0349

Date : MARS '90

Prod. No : .....

Responsable Mr.Jacquot

TITLE : TOURNAGE FILM HDTV BBC LONDRES

VIDEO TAPE RECORDING REPORT

Version/Language : .....

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

For : ..... Duration : .....

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/ .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : Y0350

Date : AVRIL '90

Prod. No : .....

Responsable : Mr. Jacquot

TITLE : DEPARTEMENT DE RECHERCHE HDTV
(MONITEUR TV HDTV) THOMSON VILLINGEN/RFA

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

Version/Language : .....

For : ..... Duration : 24'00"

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/ .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : Y0351

Date : AVRIL '90

Prod. No : .....

Responsable : Mr. Jacquot

TITLE : DEPARTEMENT DE RECHERCHE HDTV
(MONITEUR TV HDTV) THOMSON VILLINGEN/RFA

VIDEO TAPE RECORDING REPORT

Version/Language : .....

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

For : ..... Duration : 24'00"

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :		Mark identical tracks		Noise Reduction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/ .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : Y0348

Date : MARS '90

Prod. No : .....

Responsable : Mr. Jacqu

TITLE : TOURNAGE FILM HDTV BBC LONDRES

Version/Language : .....

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

For : ..... Duration : 24'00"

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)7 .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : Y0346

Date : MARS 90

Prod. No .....

Responsable : Mr. Jacqu

TITLE : TOURNAGE FILM HDTV BBC LONDRES

.....

.....

Version/Language : .....

For : ..... Duration : 24'00"

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le .....

Archive Fiche de Travail No : .....

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System : .....

		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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Bureau de Production

Brussels (02) 235.21.23 tlx. 61979 comrtv b

EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/ .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prog. No : .....

Tape No : B1746

Date : DECEMBRE '88

Prod. No : .....

Responsable : Mr. Jacquot

TITLE : SEISMOLOGIE DES ETOILES : GRONINGEN

.....

.....

Version/Language : .....

VIDEO TAPE RECORDING REPORT

VHS + Burnt in T/C fait le : .....

Archive Fiche de Travail No : .....

For : ..... Duration : 24'00"

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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Brussels (02) 235.21.23 tlx. 61979 comrtv b

EEC TV STUDIOS Brussels
625/50 PAL
1"C/2"QUAD/BVU/BETACAM/
~~ASSEMBLY~~/SUBMASTER/FINAL
ORIGINAL RECORDING/COPY
SP

Tape No : 10339

Date : 13-14-15/12/89

Prod. No :

Prog. No : Responsable : D.H

TITLE : NOUVELLES TECHNOLOGIES
TELMAT INFORMATIQUE
CALCULATEURS PARALLELES

Version/Language :

For : Duration : 25'

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le :

Archive Fiche de Travail No :

REPORT FOR ARCHIVES (by responsable) Likely to be of interest to archives yes / no

Erase After 19 / Refer To / Other

Notes :

ERASURE AUTHORISED BY : Production : Archives : Responsable :

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum) and peak level tone (+8dBu)

Record Machine No : (AVR2 / VPR20 / VPR2 / BVU110 / BVU50 / BVU150 / BVW 40 /)

Camera Engineer/Cameraman Source M/C

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/) User Bits ?

VITC IDENTICAL TO LTC : Yes/No LTC : VITC

Sound Tracks One and Two identical ? Yes/No

Track One : mute/effects/sync

Track Two : mute/effects/sync

Transmission Details

Clock : Yes/No Vision Completed :

Sound Completed :

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes
00	30	TELMAT INFORMATIQUE						
11	54	CENTRE HOSPITALIER						
		DE ROUFFACH (FR)						
		fondation FORENAP						
		Voir tableau ci-joint						

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Bureau de Production Ber-T/210
Brussels (02) 235.21.23 tlx. 61979 comrtv b

EEC TV STUDIOS Brussels
625/50 PAL
1"C/2"QUAD/BVU/BETACAM/
ASSEMBLY/SUBMASTER/FINAL
ORIGINAL RECORDING/COPY SP

Tape No : 10340
Date : 13-14-15 / 12 / 89
Prod. No :
Prog. No :
Responsable : D.H

TITLE : NOUVELLES TECHNOLOGIES
TELMAT INFORMATIQUE
CALCULATEURS PARALLELES

Version/Language :

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le :

Archive Fiche de Travail No :

For : Duration : 18'

REPORT FOR ARCHIVES (by responsable) Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

Notes :

ERASURE AUTHORISED BY : Production : Archives : Responsable :

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum) and peak level tone (+8dBu)

Record Machine No : ..... (AVR2 / VPR20 / VPR2 / BVU110 / BVU50 / BVU150 / BVW 40 / .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Tracks One and Two identical ? Yes/No

Track One : mute/effects/sync

Track Two : mute/effects/sync

Transmission Details

Clock : Yes/No Vision Completed :

Sound Completed :

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes
		CENTRE HOSPITALIER						
		de ROUFFACH (FR)						
		fondateur FORENAP						
		voir note ci-joint						

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VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

EEC TV STUDIOS Brussels
625/50 PAL
1"C/2"QUAD/BVU/BETACAM/
ASSEMBLY/SUBMASTER/FINAL
ORIGINAL/RECORDING/COPY
S.P

Tape No : 90341

Date : 10/3/89

Prod. No : .....

Prog. No : .....

Responsable : D.H

TITLE : NOUVELLES TECHNOLOGIES
LABORATOIRE DE CULHAM
CONTROLE SOUPLE DU LASER

Version/Language : .....

For : ..... Duration : 24'

REPORT FOR ARCHIVES (by responsable) Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

Notes :

ERASURE AUTHORISED BY : Production : Archives : Responsable :

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum) and peak level tone (+8dBu)

Record Machine No : ..... (AVR2 / VPR20 / VPR2 / BVU110 / BVU50 / BVU150 / BVW 40 / .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Tracks One and Two identical ? Yes/No

Track One : mute/effects/sync .....

Track Two : mute/effects/sync .....

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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Brussels (02) 235.21.23 tlx. 61979 comrtv b

EEC TV STUDIOS Brussels
625/50 PAL
1"C/2"QUAD/BVU/BETACAM/
ASSEMBLY/SUBMASTER/FINAL
ORIGINAL/RECORDING/COPY
S.P.

Tape No : 90542

Date : 10/3/89

Prod. No :

Prog. No : Responsable : D.H

TITLE : NOUVELLES TECHNOLOGIES
LABORATOIRE DE CULHAM (U.K)
CONTROLE SOUPLE DU LASER

Version/Language :

For : Duration : 26'

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le :

Archive Fiche de Travail No :

REPORT FOR ARCHIVES (by responsable) Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

Notes :

ERASURE AUTHORISED BY : Production : Archives : Responsable :

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum) and peak level tone (+8dBu)

Record Machine No : ..... (AVR2 / VPR20 / VPR2 / BVU110 / BVU50 / BVU150 / BVW 40 / .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Tracks One and Two identical ? Yes/No

Track One : mute/effects/sync

Track Two : mute/effects/sync .....

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)/

ORIGINAL/MASTER/COPY
COPY OF

Prog. No :

Tape No : YC345

Date : 10/3/89

Prod. No :

Responsable : D H

TITLE : NOUVELLES TECHNOLOGIES
PROJET JET
FUSION NUCLEAIRE

Version/Language :

VITS + Burnt In Time Code

Archive Fiche de Travail No :

For : Duration : 24'

VIDEO TAPE RECORDING REPORT

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After 19 / Refer To / Other

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/)

Camera Engineer/Cameraman Source M/C

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/) User Bits ?

VITC IDENTICAL TO LTC : Yes/No LTC : VITC

Sound Noise Reduction System :

		Mark identical tracks		Noise Reduction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Technical Report

Transmission Details

Clock : Yes/No Vision Completed :

Sound Completed :

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
I"C/DII/BVU(HS)7 .....

ORIGINAL/MASTER/COPY
COPY OF .....

Prod. No : .....

Tape No : 40344

Date : 31/3/89

Prod. No : .....

Responsable : DH

TITLE : NOUVELLES TECHNOLOGIES
TJAEREBORG
EOLIENNE

Version/Language : .....

For : ..... Duration : 25

VIDEO TAPE RECORDING REPORT

VHS + Burnt In T/C fait le : .....

Archive Fiche de Travail No : .....

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :

		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes

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EEC TV STUDIOS Brussels

BETACAM/BETACAM SP/MII
/C/DII/BVU(HS)/

ORIGINAL/MASTER/COPY

Copy of .....

Tape No : Y0343

Date : 31/3/89

Prod. No : .....

Prog. No : .....

Responsable : D H

TITLE : NOUVELLES TECHNOLOGIES
TJAERE BORG
EOLIENNE

Version/Language : .....

For : ..... Duration : .....

VIDEO TAPE RECORDING REPORT

VHS + Burnt in T/C fait le :

Archive Fiche de Travail No : .....

DISPOSAL INSTRUCTIONS Likely to be of interest to archives yes / no

Erase After ..... 19..... / Refer To ..... / Other .....

ERASURE AUTHORISED BY : Production : Archives : Responsable :

NOTES

TECHNICAL DETAILS Line up is EBU bars (75 % chroma 100 % lum and Odbm tone), 625/50 PAL/COMPONENT

Record Machine No : ..... (VPR 305/ACR 225/KRM 800/CVR 70/CVR 75/ BVU 800/BVW 40/VPR2/ .....)

Camera ..... Engineer/Cameraman ..... Source M/C .....

Timecode VITC T/C Yes/No LTC T/C Yes/No (track 3/.....) User Bits ? .....

VITC IDENTICAL TO LTC : Yes/No LTC : ..... VITC .....

Sound Noise Reduction System :

		Mark identical tracks		Noise Re-duction
TRACK 1	mute/sync/			ON/OFF
TRACK 2	mute/sync/			ON/OFF
TRACK 3	mute/sync/			ON/OFF
TRACK 4	mute/sync/			ON/OFF

Transmission Details

Clock : Yes/No Vision Completed : .....

Sound Completed : .....

Technical Report

Spot Checked/Fully Checked

TAPE CONTENTS

Timer Mns	Timer Secs	Notes	Timecode Hrs	Timecode Mns	Timecode Scs	Timecode Frs	Sound	Technical Notes